The following Motions and Documents were considered by the GFCAcademic Planning Committee at its Wednesday, January 10, 2024 meeting:

CARRIED MOTION;
Agenda Title: **Suspensions from the Program Revitalization for the Bachelor of Commerce Program, Faculty of Business**
THAT the GFC Academic Planning Committee recommend that the Board of Governors approve the proposed suspensions of the following majors in the Bachelor of Commerce Program as set forth in Attachment 1:
- Decision and Information Systems
- Distribution Management
- East Asian Business Studies
- European Business Studies
- Latin American Business Studies
- Natural Resources, Energy and the Environment
- Retailing and Services

Final Item 5.

CARRIED MOTION;
Agenda Title: **Alberta Centre for Labour Market Research**
That the GFC Academic Planning Committee approve, with delegated authority from General Faculties Council, the creation of the Alberta Centre for Labour Market Research, effective upon approval.

Final Item 6.

CARRIED MOTION
Agenda Title: **Creation of the iSMART Research Centre**
That the GFC Academic Planning Committee approve, with delegated authority from General Faculties Council, the creation of the Institute for SMart Augmentative and Restorative Technologies and Health Innovations (iSMART), effective upon approval.

Final Item 7.

FINAL ITEM NO. 5

Decision ☒ Discussion ☐ Information ☐

ITEM OBJECTIVE: Proposed suspension of seven majors in the Bachelor of Commerce Program as a part of the program revitalisation initiative.

DATE	January 10, 2024
TO	GFC Academic Planning Committee
RESPONSIBLE PORTFOLIO	Provost & Vice-President (Academic)

MOTION: THAT the GFC Academic Planning Committee recommend that the Board of Governors approve the proposed suspensions of the following majors in the Bachelor of Commerce Program as set forth in Attachment 1:

- Decision and Information Systems
- Distribution Management
- East Asian Business Studies
- European Business Studies
- Latin American Business Studies
- Natural Resources, Energy and the Environment
- Retailing and Services.

EXECUTIVE SUMMARY:

In September, 2023, the GFC Programs Committee approved a proposal for revitalisation of the Bachelor of Commerce. The proposal included changes to move core Business courses earlier in students' Undergraduate Programs, p*ostpone Major declaration to Winter of Students' second year, standardize the second year of the Undergraduate Program, and to remove INTD 101 as a requirement.*

As a part of this revitalisation initiative, the School of Business proposes the suspension of admission to seven undersubscribed majors. For some of these, the market has moved past their utility, some we have had challenges with teaching resources, and some are not squarely business programs. Keeping them as options is creates challenges with scheduling and course planning, and distracts students from our other thriving majors.

Supporting Materials:

1. Program Suspension Templates for the following: (27 pages)
   - BCom Major in Decision and Information Systems (pages 1-4)
   - BCom Major in Distribution Management (pages 5-8)
   - BCom Major in East Asian Business Studies (pages 9-12)
   - BCom Major in European Business Studies (pages 13-16)
   - BCom Major in Latin American Business Studies (pages 17-20)
   - BCom Major in Natural Resources, Energy and the Environment (pages 21-24
   - BCom Major in Retailing and Services (pages 25-27)

GOVERNANCE OUTLINE

FINAL ITEM NO. 5

***See Schedule A for additional items to include if needed.**

SCHEDULE A:

Engagement and Routing

Consultation and Stakeholder Participation / Approval Route (parties who have seen the proposal and in what capacity) <*Governance Resources Section Student Participation Protocol*>

*Those who are actively **participating**:*

- Students – we have had student voice through two channels: 1. We have students serving on USPC who serve as the student voice. These students raised a number of questions throughout the process of broaching these changes. At several USPC meetings last year I socialized the changes, brought some changes forward for further discussion (and voting) at USPC, and brought several more changes (the ones in the current package) forward in the winter semester. At each meeting, students raised issues and were supportive of the changes. It is also notable that one Student USPC member who was on the executive of the Business Students' Association discussed changes with fellow members of the BSA. 2. We had a town hall with students last fall where some of these changes were discussed to get broader student feedback.

*Those who have been **consulted**:*

- USPC members, as discussed in the previous blurb
- Department Chairs from all 4 of our departments in the ASB.
- The former Dean and Associate Dean Education.
- The current Dean and Vice Dean.
- All faculty were presented these changes before and during Business Council.
- Leaders throughout the School were presented these changes several times at regular (once every 4-6 weeks) leadership meetings.
- PST
- The TYP program
- The Dean and Vice Dean, CSJ (we are still working with them)

*Those who have been **informed**:*

- Leaders and Faculty within the ASB
- Other Faculties (via PST); pointing out that these changes could mean possible additional changes to other faculties' calendar pieces.
- CSJ
- TYP
- We will reach out to affected faculties and CSJ again once these changes are approved

Approval Route:

- GFC Programs Committee – September 14, 2023 (for approval of the Program Revitalisation proposal and recommendation of suspension)
- GFC Academic Planning Committee – January 10, 2024 (for recommendation of suspensions)

FINAL ITEM NO. 5

- General Faculties Council – January 29, 2024 (for recommendation of suspensions)
- Board Learning, Research and Student Experience Committee – March 8, 2024 (for final approval)

Supplementary Notes / Context:

Proposal Template: Program Suspension and Extension of Suspension

Use this template for proposals to suspend approved programs or specializations or to propose an extension to a current suspension.

Fill in the section below that is relevant to your proposal:

- Section A: if you are proposing a suspension of a ministry-approved program or specialization;
- Section B: if you are proposing an extension to a suspension previously approved by the ministry which is still in effect for a program or specialization.

Institutions should:

- ensure that submission content is concise. Any additional information may be appended;
- indicate “not applicable” when questions are not relevant to a particular proposal; and
- ensure that applicable supporting documents are attached to the proposal.

Basic Information (all proposals must complete this section)

Institution	**University of Alberta**
Program Name	**Bachelor of Commerce**
Specialization Name	**Decision and Information Systems**
Credential Awarded	**Bachelor of Commerce**
Proposed start date of suspension	**July 1, 2024**
Proposed end date of suspension	**June 30, 2029**

SECTION A: PROGRAM SUSPENSION

SECTION A: RATIONALE

1. Suspension Rationale
a. Identify the purpose for the suspension with supporting rationale and evidence (e.g., low student demand, declining labour market demand, institutional capacity, need for program redevelopment, quality assurance review recommendation, etc.). ● There is very low student demand. While these skill sets are not obsolete, they can be obtained through the broader field of operations management. There are still a couple of accredited Universities offering a program in this area, including UBC York and Brock, and several smaller universities. Locally, Concordia University of Edmonton also offers a Business Information Systems program. In Alberta more broadly, the University of Calgary offers a program in Management Information systems.
b. Document enrolments (by head count) for the most recent 5-year period, including the current academic year if available.

Enrolment	2018	2019	2020	2021	2022
Total Head count	0	0	0	0	0
● 1st Year of Study	0	0	0	0	0

• 2nd Year of Study	0	0	0	0	0
• 3rd Year of Study	0	0	0	0	0
• 4th Year of Study	0	0	0	0	0
No enrolment for the last 5 years. **Reviewer's Comment:**					

a. Indicate when admissions into program/specialization will be or were closed.
   - July 1, 2024

b. Briefly explain how the proposed end date of the suspension was determined.
   - The typical five-year suspension period will ensure adequate time for any necessary teach-out.

c. Provide specific information about which internal governance body approved the suspension, and provide date of approval.
   - Seconded Motion at Business Council - May 11, 2023
   - Seconded Motion at Undergraduate Policy Committee (USPC) - April 21, 2023

d. Check the applicable box to specify the longer-term plan.
   - ☑ To terminate the program.
   - ☐ To reactivate the program.

SECTION B: ACCESS

a. Identify potential student access considerations and risks to the Alberta Adult Learning System that the suspension of this program could pose (include both (a) information about related programs available to prospective students internally at your institution; and (b) externally at other Alberta institutions).
   - Students wishing to study this could pursue programs at Concordia University of Edmonton or the University of Calgary

b. If the program or specialization is unique in the province, briefly describe consultation within the Alberta Adult Learning System to investigate feasibility of program/specialization transfer.
   - The program was deemed as being not unique. As per Section A 1a, the U of C offers a similar program, and there are many other similar programs across the country to meet this need.

c. Briefly describe the consultation process that occurred with students at your institution regarding this programming change.
   - The Faculty consulted students within Faculty-level committee meetings

d. Briefly describe your institution's plans to assist active students, if any remain, in completing graduation requirements during the suspension period, including information about formal communication and student advising plans.
   - The Faculty will ensure that all active students who may remain in the program will receive continued support from advising staff related to the Calendar year in which they enrolled in the program to ensure they can complete their program within the proposed period of suspension.

e. Briefly describe your institution's plans to accommodate stop-out students, if any have been identified, including information about formal communication plans.

- no stop-out students have been identified in this process. If any come about, we would assist them on a case by case basis. Based on low enrolment numbers, this situation seems unlikely to occur. If a student leaves the BCom program without permission, they are subject to the regular admissions process to be readmitted. If a student leaves with permission, the timeframe for readmission to their previous program is typically 1 year from leaving the program. Given the current enrollment of the Major, students in this situation will either have ample time to complete the program or would be faced with returning to the program and selecting a new major area of concentration.

Reviewer's Comment:

SECTION C: IMPACT

a. Identify which stakeholder groups were consulted regarding demand/need for this program:

☑ Faculty

☐ Employers and professional associations

☐ Advisory Committee(s)

☐ Regulator and/or accreditation bodies

☐ Other (please identify)

b. Briefly describe the consultation process conducted with these stakeholders and summarize the feedback received.

- The Faculty consulted with staff and students through committee meetings. The feedback received from staff was they believed this program did not have adequate support to thrive. The feedback received from students was they were not as interested in pursuing this undersubscribed and specialized major as there were fears of finding work after and having support throughout their program.

c. Identify financial impacts and plans for reallocation of internal resources, particularly staff and classroom and lab space.

- With the suspension of this specialization, limited impact is anticipated. Resources that were being attributed will be reallocated to other areas.

Reviewer's Comment:

SECTION B: SUSPENSION EXTENSION

SECTION A: RATIONALE

a. Briefly describe the rationale for original suspension request. (Attach ministry approval letter for the original suspension.)

- n/a

b. Briefly explain why the extension is needed and include supporting evidence (e.g., active students have not completed graduation requirements).

- n/a

c. If there are students still in the program, describe how they will be supported to complete graduation requirements while the suspension is in place.

- n/a

d. Explain how the duration of the suspension extension was determined.

- n/a

Reviewer's Comment:

SECTION B: OTHER CONSIDERATIONS

Other considerations
a. Are there other factors or considerations the Ministry should take into account when reviewing this proposal? ● n/a
Reviewer's Comment:

RECOMMENDATION (FOR DEPARTMENT USE)
Recommendation(s):
Rationale for Recommendation:
Reviewer(s):
Date Completed:

Proposal Template: Program Suspension and Extension of Suspension

Use this template for proposals to suspend approved programs or specializations or to propose an extension to a current suspension.

Fill in the section below that is relevant to your proposal:

- Section A: if you are proposing a suspension of a ministry-approved program or specialization;
- Section B: if you are proposing an extension to a suspension previously approved by the ministry which is still in effect for a program or specialization.

Institutions should:

- ensure that submission content is concise. Any additional information may be appended;
- indicate “not applicable” when questions are not relevant to a particular proposal; and
- ensure that applicable supporting documents are attached to the proposal.

Basic Information (all proposals must complete this section)

Institution	**University of Alberta**
Program Name	**Bachelor of Commerce**
Specialization Name	**Distribution Management**
Credential Awarded	**Bachelor of Commerce**
Proposed start date of suspension	**July 1, 2024**
Proposed end date of suspension	**June 30, 2029**

SECTION A: PROGRAM SUSPENSION

SECTION A: RATIONALE

1. Suspension Rationale
a. Identify the purpose for the suspension with supporting rationale and evidence (e.g., low student demand, declining labour market demand, institutional capacity, need for program redevelopment, quality assurance review recommendation, etc.). This is a fairly common major or specialization program. The University of Calgary offers a Program in Supply Chain Management, as does Reeves College, SAIT, Bow Valley College, Mount Royal, and Norquest College. Across the country, including the University of Toronto and HEC Montreal, as well as several colleges, so students would have many other options to take a similar program. However, there has been an extremely low student demand, with no enrollment over five years. This maybe because there is little need for a 4-year degree program to pursue work in this area.
b. Document enrolments (by head count) for the most recent 5-year period, including the current academic year if available.

Enrolment	2018	2019	2020	2021	2022

Total Head count	0	0	0	0	0
• 1st Year of Study	0	0	0	0	0
• 2nd Year of Study	0	0	0	0	0
• 3rd Year of Study	0	0	0	0	0
• 4th Year of Study	0	0	0	0	0
No enrolment for the last 5 years. **Reviewer's Comment:**					

a. Indicate when admissions into program/specialization will be or were closed.
   - July 1, 2024

b. Briefly explain how the proposed end date of the suspension was determined.
   - The typical five-year suspension period will ensure adequate time for any necessary teach-out.

c. Provide specific information about which internal governance body approved the suspension, and provide date of approval.
   - Seconded Motion at Business Council - May 11, 2023
   - Seconded Motion at Undergraduate Policy Committee (USPC) - April 21, 2023

d. Check the applicable box to specify the longer-term plan.
   - ☑ To terminate the program.
   - ☐ To reactivate the program.

SECTION B: ACCESS

a. Identify potential student access considerations and risks to the Alberta Adult Learning System that the suspension of this program could pose (include both (a) information about related programs available to prospective students internally at your institution; and (b) externally at other Alberta institutions).
   - There are several post-secondary institutions in Alberta offering a program in Distribution or Supply Chain Management, including:
     - Reeves College
     - SAIT
     - Bow Valley College
     - Mount Royal
     - Norquest College
     - University of Calgary

b. If the program or specialization is unique in the province, briefly describe consultation within the Alberta Adult Learning System to investigate feasibility of program/specialization transfer.
   - The program was deemed as being not unique. As per Section A 1a and Ba, the U of C offers a similar program, and there are many other similar programs across the country to meet this need.

c. Briefly describe the consultation process that occurred with students at your institution regarding this programming change.
   - The Faculty consulted students within Faculty-level committee meetings

d. Briefly describe your institution's plans to assist active students, if any remain, in completing graduation requirements during the suspension period, including information about formal communication and student advising plans.
- The Faculty will ensure that all active students who may remain in the program will receive continued support from advising staff related to the Calendar year in which they enrolled in the program to ensure they can complete their program within the proposed period of suspension.

e. Briefly describe your institution's plans to accommodate stop-out students, if any have been identified, including information about formal communication plans.
- no stop-out students have been identified in this process. If any come about, we would assist them on a case by case basis. Based on low enrolment numbers, this situation seems unlikely to occur. If a student leaves the BCom program without permission, they are subject to the regular admissions process to be readmitted. If a student leaves with permission, the timeframe for readmission to their previous program is typically 1 year from exiting the program. Given the current enrollment of the Major, students in this situation will either have ample time to complete the program or would be faced with returning to the program and selecting a new major area of concentration.

Reviewer's Comment:

SECTION C: IMPACT

a. Identify which stakeholder groups were consulted regarding demand/need for this program:

☑ Faculty
☐ Employers and professional associations
☐ Advisory Committee(s)
☐ Regulator and/or accreditation bodies
☐ Other (please identify)

b. Briefly describe the consultation process conducted with these stakeholders and summarize the feedback received.
- The Faculty consulted with staff and students through committee meetings. The feedback received from staff was they believed this program did not have adequate support to thrive. The feedback received from students was they were not as interested in pursuing this undersubscribed and specialized major as there were fears of finding work after and having support throughout their program.

c. Identify financial impacts and plans for reallocation of internal resources, particularly staff and classroom and lab space.
- With the suspension of this specialization, limited impact is anticipated. Resources that were being attributed will be reallocated to other areas.

Reviewer's Comment:

SECTION B: SUSPENSION EXTENSION

SECTION A: RATIONALE

a. Briefly describe the rationale for original suspension request. (Attach ministry approval letter for the original suspension.)
- n/a

b. Briefly explain why the extension is needed and include supporting evidence (e.g., active students have not completed graduation requirements). ● n/a
c. If there are students still in the program, describe how they will be supported to complete graduation requirements while the suspension is in place. ● n/a
d. Explain how the duration of the suspension extension was determined. ● n/a
Reviewer's Comment:

SECTION B: OTHER CONSIDERATIONS

Other considerations
a. Are there other factors or considerations the Ministry should take into account when reviewing this proposal? ● n/a
Reviewer's Comment:

RECOMMENDATION (FOR DEPARTMENT USE)
Recommendation(s):
Rationale for Recommendation:
Reviewer(s):
Date Completed:

Proposal Template: Program Suspension and Extension of Suspension

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Institutions should:

- ensure that submission content is concise. Any additional information may be appended;
- indicate “not applicable” when questions are not relevant to a particular proposal; and
- ensure that applicable supporting documents are attached to the proposal.

Basic Information (all proposals must complete this section)

Institution	**University of Alberta**
Program Name	**Bachelor of Commerce**
Specialization Name	**East Asian Business Studies**
Credential Awarded	**Bachelor of Commerce**
Proposed start date of suspension	**July 1, 2024**
Proposed end date of suspension	**June 30, 2029**

SECTION A: PROGRAM SUSPENSION

SECTION A: RATIONALE

1. Suspension Rationale
a. Identify the purpose for the suspension with supporting rationale and evidence (e.g., low student demand, declining labour market demand, institutional capacity, need for program redevelopment, quality assurance review recommendation, etc.). ● There is low student demand for this major. This is following job market trends. Programs focusing on business in a particular cultural context have become increasingly obsolete as business has globalized. We believe this sort of major is not what we want to provide students who need to operate in a global business world.I can’t find similar programs in Alberta or across the country, but this is not surprising as it is becoming obsolete
b. Document enrolments (by head count) for the most recent 5-year period, including the current academic year if available.

Enrolment	2018	2019	2020	2021	2022
Total Head count	4	3	5	5	4
● 1st Year of Study	0	0	0	0	0

• 2nd Year of Study	3	1	2	2	1
• 3rd Year of Study	1	2	2	2	0
• 4th Year of Study	0	0	1	1	3
Reviewer's Comment:					

a. Indicate when admissions into program/specialization will be or were closed. • July 1, 2024	
b. Briefly explain how the proposed end date of the suspension was determined. • The typical five-year suspension period will ensure adequate time for any necessary teach-out.	
c. Provide specific information about which internal governance body approved the suspension, and provide date of approval. • Seconded Motion at Business Council - May 11, 2023 • Seconded Motion at Undergraduate Policy Committee (USPC) - April 21, 2023	
d. Check the applicable box to specify the longer-term plan.	☑ To terminate the program. ☐ To reactivate the program.

SECTION B: ACCESS

a. Identify potential student access considerations and risks to the Alberta Adult Learning System that the suspension of this program could pose (include both (a) information about related programs available to prospective students internally at your institution; and (b) externally at other Alberta institutions). • There are no equivalent programs as this area has become increasingly obsolete
b. If the program or specialization is unique in the province, briefly describe consultation within the Alberta Adult Learning System to investigate feasibility of program/specialization transfer. • Programs focusing on business in a particular cultural context have become increasingly obsolete as business has globalized. We believe this sort of major is not what we want to provide students who need to operate in a global business world.I can't find similar programs in Alberta or across the country, but this is not surprising as it is becoming obsolete. The International Business Major can also provide students with a similar degree specialization that is more pertinent to the current global business world.
c. Briefly describe the consultation process that occurred with students at your institution regarding this programming change. • The Faculty consulted students within Faculty-level committee meetings
d. Briefly describe your institution's plans to assist active students, if any remain, in completing graduation requirements during the suspension period, including information about formal communication and student advising plans. • The Faculty will ensure that all active students who may remain in the program will receive continued support from advising staff related to the Calendar year in which they enrolled in the program to ensure they can complete their program within the proposed period of suspension.

e. Briefly describe your institution's plans to accommodate stop-out students, if any have been identified, including information about formal communication plans.
- no stop-out students have been identified in this process. If any come about, we would assist them on a case by case basis. Based on low enrolment numbers, this situation seems unlikely to occur. If a student leaves the BCom program without permission, they are subject to the regular admissions process to be readmitted. If a student leaves with permission, the timeframe for readmission to their previous program is typically 1 year from exiting the program. Given the current enrollment of the Major, students in this situation will either have ample time to complete the program or would be faced with returning to the program and selecting a new major area of concentration.

Reviewer's Comment:

SECTION C: IMPACT

a. Identify which stakeholder groups were consulted regarding demand/need for this program:

☑ Faculty
☐ Employers and professional associations
☐ Advisory Committee(s)
☐ Regulator and/or accreditation bodies
☐ Other (please identify)

b. Briefly describe the consultation process conducted with these stakeholders and summarize the feedback received.
- The Faculty consulted with staff and students through committee meetings. The feedback received from staff was they believed this program did not have adequate support to thrive. The feedback received from students was they were not as interested in pursuing this undersubscribed and specialized major as there were fears of finding work after and having support throughout their program.

c. Identify financial impacts and plans for reallocation of internal resources, particularly staff and classroom and lab space.
- With the suspension of this specialization, limited impact is anticipated. Resources that were being attributed will be reallocated to other areas.

Reviewer's Comment:

SECTION B: SUSPENSION EXTENSION

SECTION A: RATIONALE

a. Briefly describe the rationale for original suspension request. (Attach ministry approval letter for the original suspension.)
- n/a

b. Briefly explain why the extension is needed and include supporting evidence (e.g., active students have not completed graduation requirements).
- n/a

c. If there are students still in the program, describe how they will be supported to complete graduation requirements while the suspension is in place.
- n/a

d. Explain how the duration of the suspension extension was determined. ● n/a
Reviewer's Comment:

SECTION B: OTHER CONSIDERATIONS

Other considerations
a. Are there other factors or considerations the Ministry should take into account when reviewing this proposal? ● n/a
Reviewer's Comment:

RECOMMENDATION (FOR DEPARTMENT USE)
Recommendation(s):
Rationale for Recommendation:
Reviewer(s):
Date Completed:

Proposal Template: Program Suspension and Extension of Suspension

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- Section B: if you are proposing an extension to a suspension previously approved by the ministry which is still in effect for a program or specialization.

Institutions should:

- ensure that submission content is concise. Any additional information may be appended;
- indicate “not applicable” when questions are not relevant to a particular proposal; and
- ensure that applicable supporting documents are attached to the proposal.

Basic Information (all proposals must complete this section)

Institution	**University of Alberta**
Program Name	**Bachelor of Commerce**
Specialization Name	**European Business Studies**
Credential Awarded	**Bachelor of Commerce**
Proposed start date of suspension	**July 1, 2024**
Proposed end date of suspension	**June 30, 2029**

SECTION A: PROGRAM SUSPENSION

SECTION A: RATIONALE

1. Suspension Rationale
a. Identify the purpose for the suspension with supporting rationale and evidence (e.g., low student demand, declining labour market demand, institutional capacity, need for program redevelopment, quality assurance review recommendation, etc.). ● There is low student demand for this major. This follows job market trends. Programs focusing on business in a particular cultural context have become increasingly obsolete as business has globalized. We believe this sort of major is not what we want to provide students who need to operate in a global business world.I can’t find similar programs in Alberta or across the country, but this is not surprising as it is becoming obsolete
b. Document enrolments (by head count) for the most recent 5-year period, including the current academic year if available.

Enrolment	2018	2019	2020	2021	2022
Total Head count	0	1	2	1	0
● 1st Year of Study	0	0	0	0	0
● 2nd Year of Study	0	1	2	1	0

• 3rd Year of Study	0	0	0	0	0
• 4th Year of Study	0	0	0	0	0
Reviewer's Comment:					

a. Indicate when admissions into program/specialization will be or were closed. • July 1, 2024	
b. Briefly explain how the proposed end date of the suspension was determined. • The typical five-year suspension period will ensure adequate time for any necessary teach-out.	
c. Provide specific information about which internal governance body approved the suspension, and provide date of approval. • Seconded Motion at Business Council - May 11, 2023 • Seconded Motion at Undergraduate Policy Committee (USPC) - April 21, 2023	
d. Check the applicable box to specify the longer-term plan.	☑ To terminate the program. ☐ To reactivate the program.

SECTION B: ACCESS

a. Identify potential student access considerations and risks to the Alberta Adult Learning System that the suspension of this program could pose (include both (a) information about related programs available to prospective students internally at your institution; and (b) externally at other Alberta institutions). • There are no equivalent programs as this area has become increasingly obsolete
b. If the program or specialization is unique in the province, briefly describe consultation within the Alberta Adult Learning System to investigate feasibility of program/specialization transfer. • Programs focusing on business in a particular cultural context have become increasingly obsolete as business has globalized. We believe this sort of major is not what we want to provide students who need to operate in a global business world.I can't find similar programs in Alberta or across the country, but this is not surprising as it is becoming obsolete. The International Business Major can also provide students with a similar degree specialization that is more pertinent to the current global business world.
c. Briefly describe the consultation process that occurred with students at your institution regarding this programming change. • The Faculty consulted students within Faculty-level committee meetings
d. Briefly describe your institution's plans to assist active students, if any remain, in completing graduation requirements during the suspension period, including information about formal communication and student advising plans. • The Faculty will ensure that all active students who may remain in the program will receive continued support from advising staff related to the Calendar year in which they enrolled in the program to ensure they can complete their program within the proposed period of suspension.
e. Briefly describe your institution's plans to accommodate stop-out students, if any have been identified, including information about formal communication plans. • no stop-out students have been identified in this process. If any come about, we would assist them on a case by case basis. Based on low enrolment numbers, this situation

seems unlikely to occur. If a student leaves the BCom program without permission, they are subject to the regular admissions process to be readmitted. If a student leaves with permission, the timeframe for readmission to their previous program is typically 1 year from exiting the program. Given the current enrollment of the Major, students in this situation will either have ample time to complete the program or would be faced with returning to the program and selecting a new major area of concentration.

Reviewer's Comment:

SECTION C: IMPACT

a. Identify which stakeholder groups were consulted regarding demand/need for this program:

- ☑ Faculty
- ☐ Employers and professional associations
- ☐ Advisory Committee(s)
- ☐ Regulator and/or accreditation bodies
- ☐ Other (please identify)

b. Briefly describe the consultation process conducted with these stakeholders and summarize the feedback received.

- The Faculty consulted with staff and students through committee meetings. The feedback received from staff was they believed this program did not have adequate support to thrive. The feedback received from students was they were not as interested in pursuing this undersubscribed and specialized major as there were fears of finding work after and having support throughout their program.

c. Identify financial impacts and plans for reallocation of internal resources, particularly staff and classroom and lab space.

- With the suspension of this specialization, limited impact is anticipated. Resources that were being attributed will be reallocated to other areas.

Reviewer's Comment:

SECTION B: SUSPENSION EXTENSION

SECTION A: RATIONALE

a. Briefly describe the rationale for original suspension request. (Attach ministry approval letter for the original suspension.)

- n/a

b. Briefly explain why the extension is needed and include supporting evidence (e.g., active students have not completed graduation requirements).

- n/a

c. If there are students still in the program, describe how they will be supported to complete graduation requirements while the suspension is in place.

- n/a

d. Explain how the duration of the suspension extension was determined.

- n/a

Reviewer's Comment:

SECTION B: OTHER CONSIDERATIONS

Other considerations
a. Are there other factors or considerations the Ministry should take into account when reviewing this proposal? ● n/a
Reviewer's Comment:

RECOMMENDATION (FOR DEPARTMENT USE)
Recommendation(s):
Rationale for Recommendation:
Reviewer(s):
Date Completed:

Proposal Template: Program Suspension and Extension of Suspension

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Fill in the section below that is relevant to your proposal:

- Section A: if you are proposing a suspension of a ministry-approved program or specialization;
- Section B: if you are proposing an extension to a suspension previously approved by the ministry which is still in effect for a program or specialization.

Institutions should:

- ensure that submission content is concise. Any additional information may be appended;
- indicate “not applicable” when questions are not relevant to a particular proposal; and
- ensure that applicable supporting documents are attached to the proposal.

Basic Information (all proposals must complete this section)

Institution	**University of Alberta**
Program Name	**Bachelor of Commerce**
Specialization Name	**Latin American Business Studies**
Credential Awarded	**Bachelor of Commerce**
Proposed start date of suspension	**July 1, 2024**
Proposed end date of suspension	**June 30, 2029**

SECTION A: PROGRAM SUSPENSION

SECTION A: RATIONALE

1. Suspension Rationale
a. Identify the purpose for the suspension with supporting rationale and evidence (e.g., low student demand, declining labour market demand, institutional capacity, need for program redevelopment, quality assurance review recommendation, etc.). ● There is low student demand for this major. This is following job market trends. Programs focusing on business in a particular cultural context have become increasingly obsolete as business has globalized.
b. Document enrolments (by head count) for the most recent 5-year period, including the current academic year if available.

Enrolment	2018	2019	2020	2021	2022
Total Head count	0	0	0	0	0
● 1st Year of Study	0	0	0	0	0
● 2nd Year of Study	0	0	0	0	0
● 3rd Year of Study	0	0	0	0	0

• 4th Year of Study	0	0	0	0	0

no enrolment in the last 5 years
Reviewer's Comment:

a. Indicate when admissions into program/specialization will be or were closed.
   - July 1, 2024

b. Briefly explain how the proposed end date of the suspension was determined.
   - The typical five-year suspension period will ensure adequate time for any necessary teach-out.

c. Provide specific information about which internal governance body approved the suspension, and provide date of approval.
   - Seconded Motion at Business Council - May 11, 2023
   - Seconded Motion at Undergraduate Policy Committee (USPC) - April 21, 2023

d. Check the applicable box to specify the longer-term plan.
   - ☑ To terminate the program.
   - ☐ To reactivate the program.

SECTION B: ACCESS

a. Identify potential student access considerations and risks to the Alberta Adult Learning System that the suspension of this program could pose (include both (a) information about related programs available to prospective students internally at your institution; and (b) externally at other Alberta institutions).
   - There are no equivalent programs as this area has become increasingly obsolete

b. If the program or specialization is unique in the province, briefly describe consultation within the Alberta Adult Learning System to investigate feasibility of program/specialization transfer.
   - Programs focusing on business in a particular cultural context have become increasingly obsolete as business has globalized. We believe this sort of major is not what we want to provide students who need to operate in a global business world.I can't find similar programs in Alberta or across the country, but this is not surprising as it is becoming obsolete. The International Business Major can also provide students with a similar degree specialization that is more pertinent to the current global business world.

c. Briefly describe the consultation process that occurred with students at your institution regarding this programming change.
   - The Faculty consulted students within Faculty-level committee meetings

d. Briefly describe your institution's plans to assist active students, if any remain, in completing graduation requirements during the suspension period, including information about formal communication and student advising plans.
   - The Faculty will ensure that all active students who may remain in the program will receive continued support from advising staff related to the Calendar year in which they enrolled in the program to ensure they can complete their program within the proposed period of suspension.

e. Briefly describe your institution's plans to accommodate stop-out students, if any have been identified, including information about formal communication plans.
   - no stop-out students have been identified in this process. If any come about, we would assist them on a case by case basis. Based on low enrolment numbers, this situation

seems unlikely to occur. If a student leaves the BCom program without permission, they are subject to the regular admissions process to be readmitted. If a student leaves with permission, the timeframe for readmission to their previous program is typically 1 year from exiting the program. Given the current enrollment of the Major, students in this situation will either have ample time to complete the program or would be faced with returning to the program and selecting a new major area of concentration.

Reviewer's Comment:

SECTION C: IMPACT

a. Identify which stakeholder groups were consulted regarding demand/need for this program:

- ☑ Faculty
- ☐ Employers and professional associations
- ☐ Advisory Committee(s)
- ☐ Regulator and/or accreditation bodies
- ☐ Other (please identify)

b. Briefly describe the consultation process conducted with these stakeholders and summarize the feedback received.

- The Faculty consulted with staff and students through committee meetings. The feedback received from staff was they believed this program did not have adequate support to thrive. The feedback received from students was they were not as interested in pursuing this undersubscribed and specialized major as there were fears of finding work after and having support throughout their program.

c. Identify financial impacts and plans for reallocation of internal resources, particularly staff and classroom and lab space.

- With the suspension of this specialization, limited impact is anticipated. Resources that were being attributed will be reallocated to other areas.

Reviewer's Comment:

SECTION B: SUSPENSION EXTENSION

SECTION A: RATIONALE

a. Briefly describe the rationale for original suspension request. (Attach ministry approval letter for the original suspension.)

- n/a

b. Briefly explain why the extension is needed and include supporting evidence (e.g., active students have not completed graduation requirements).

- n/a

c. If there are students still in the program, describe how they will be supported to complete graduation requirements while the suspension is in place.

- n/a

d. Explain how the duration of the suspension extension was determined.

- n/a

Reviewer's Comment:

SECTION B: OTHER CONSIDERATIONS

Other considerations
a. Are there other factors or considerations the Ministry should take into account when reviewing this proposal? ● n/a
Reviewer's Comment:

RECOMMENDATION (FOR DEPARTMENT USE)
Recommendation(s):
Rationale for Recommendation:
Reviewer(s):
Date Completed:

Proposal Template: Program Suspension and Extension of Suspension

Use this template for proposals to suspend approved programs or specializations or to propose an extension to a current suspension.

Fill in the section below that is relevant to your proposal:

- Section A: if you are proposing a suspension of a ministry-approved program or specialization;
- Section B: if you are proposing an extension to a suspension previously approved by the ministry which is still in effect for a program or specialization.

Institutions should:

- ensure that submission content is concise. Any additional information may be appended;
- indicate “not applicable” when questions are not relevant to a particular proposal; and
- ensure that applicable supporting documents are attached to the proposal.

Basic Information (all proposals must complete this section)

Institution	**University of Alberta**
Program Name	**Bachelor of Commerce**
Specialization Name	**Natural Resources, Energy and the Environment**
Credential Awarded	**Bachelor of Commerce**
Proposed start date of suspension	**July 1, 2024**
Proposed end date of suspension	**June 30, 2029**

SECTION A: PROGRAM SUSPENSION

SECTION A: RATIONALE

1. Suspension Rationale
a. Identify the purpose for the suspension with supporting rationale and evidence (e.g., low student demand, declining labour market demand, institutional capacity, need for program redevelopment, quality assurance review recommendation, etc.). ● There is low and declining demand for this major. The reason for this is likely to do with program quality. This is a major that started strong but over time it became increasingly difficult to find instructors. It is also a multidisciplinary major and interest has, over time, leaned more in favour of sustainability studies. At the University of Alberta there is a certificate in sustainability that could be taken instead.
b. Document enrolments (by head count) for the most recent 5-year period, including the current academic year if available.

Enrolment	2018	2019	2020	2021	2022
Total Head count	14	9	6	6	4
● 1st Year of Study	0	0	0	0	0
● 2nd Year of Study	4	1	0	3	1

• 3rd Year of Study	3	5	3	0	2
• 4th Year of Study	7	3	3	3	1
Reviewer's Comment:					

a. Indicate when admissions into program/specialization will be or were closed. • July 1, 2024	
b. Briefly explain how the proposed end date of the suspension was determined. • The typical five-year suspension period will ensure adequate time for any necessary teach-out.	
c. Provide specific information about which internal governance body approved the suspension, and provide date of approval. • Seconded Motion at Business Council - May 11, 2023 • Seconded Motion at Undergraduate Policy Committee (USPC) - April 21, 2023	
d. Check the applicable box to specify the longer-term plan.	☑ To terminate the program. ☐ To reactivate the program.

SECTION B: ACCESS

a. Identify potential student access considerations and risks to the Alberta Adult Learning System that the suspension of this program could pose (include both (a) information about related programs available to prospective students internally at your institution; and (b) externally at other Alberta institutions). • There are no other Business-focused programs in this area in Alberta. However, while it would seem that this might be an important area of contemporary focus, I believe that students favour of taking general programs in Sustainability, which has a multidisciplinary focus. The University of Alberta has a certificate in Sustainability that could be taken instead. I cannot find other programs in Sustainability in Alberta Universities, but there are several across the country
b. If the program or specialization is unique in the province, briefly describe consultation within the Alberta Adult Learning System to investigate feasibility of program/specialization transfer. • As noted above, the Sustainability certificate is an alternative course of study that could be pursued by students as an alternative to this program.
c. Briefly describe the consultation process that occurred with students at your institution regarding this programming change. • The Faculty consulted students within Faculty-level committee meetings
d. Briefly describe your institution's plans to assist active students, if any remain, in completing graduation requirements during the suspension period, including information about formal communication and student advising plans. • The Faculty will ensure that all active students who may remain in the program will receive continued support from advising staff related to the Calendar year in which they enrolled in the program to ensure they can complete their program within the proposed period of suspension.
e. Briefly describe your institution's plans to accommodate stop-out students, if any have been identified, including information about formal communication plans.

- no stop-out students have been identified in this process. If any come about, we would assist them on a case by case basis. Based on low enrolment numbers, this situation seems unlikely to occur. If a student leaves the BCom program without permission, they are subject to the regular admissions process to be readmitted. If a student leaves with permission, the timeframe for readmission to their previous program is typically 1 year from exiting the program. Given the current enrollment of the Major, students in this situation will either have ample time to complete the program or would be faced with returning to the program and selecting a new major area of concentration.

Reviewer's Comment:

SECTION C: IMPACT

a. Identify which stakeholder groups were consulted regarding demand/need for this program:

☑ Faculty

☐ Employers and professional associations

☐ Advisory Committee(s)

☐ Regulator and/or accreditation bodies

☐ Other (please identify)

b. Briefly describe the consultation process conducted with these stakeholders and summarize the feedback received.

- The Faculty consulted with staff and students through committee meetings. The feedback received from staff was they believed this program did not have adequate support to thrive. The feedback received from students was they were not as interested in pursuing this undersubscribed and specialized major as there were fears of finding work after and having support throughout their program.

c. Identify financial impacts and plans for reallocation of internal resources, particularly staff and classroom and lab space.

- With the suspension of this specialization, limited impact is anticipated. Resources that were being attributed will be reallocated to other areas.

Reviewer's Comment:

SECTION B: SUSPENSION EXTENSION

SECTION A: RATIONALE

a. Briefly describe the rationale for original suspension request. (Attach ministry approval letter for the original suspension.)

- n/a

b. Briefly explain why the extension is needed and include supporting evidence (e.g., active students have not completed graduation requirements).

- n/a

c. If there are students still in the program, describe how they will be supported to complete graduation requirements while the suspension is in place.

- n/a

d. Explain how the duration of the suspension extension was determined.

- n/a

Reviewer's Comment:

SECTION B: OTHER CONSIDERATIONS

Other considerations
a. Are there other factors or considerations the Ministry should take into account when reviewing this proposal? ● n/a
Reviewer's Comment:

RECOMMENDATION (FOR DEPARTMENT USE)
Recommendation(s):
Rationale for Recommendation:
Reviewer(s):
Date Completed:

Proposal Template: Program Suspension and Extension of Suspension

Use this template for proposals to suspend approved programs or specializations or to propose an extension to a current suspension.

Fill in the section below that is relevant to your proposal:

- Section A: if you are proposing a suspension of a ministry-approved program or specialization;
- Section B: if you are proposing an extension to a suspension previously approved by the ministry which is still in effect for a program or specialization.

Institutions should:

- ensure that submission content is concise. Any additional information may be appended;
- indicate “not applicable” when questions are not relevant to a particular proposal; and
- ensure that applicable supporting documents are attached to the proposal.

Basic Information (all proposals must complete this section)

Institution	**University of Alberta**
Program Name	**Bachelor of Commerce**
Specialization Name	**Retailing and Services**
Credential Awarded	**Bachelor of Commerce**
Proposed start date of suspension	**July 1, 2024**
Proposed end date of suspension	**June 30, 2029**

SECTION A: PROGRAM SUSPENSION

SECTION A: RATIONALE

1. Suspension Rationale
a. Identify the purpose for the suspension with supporting rationale and evidence (e.g., low student demand, declining labour market demand, institutional capacity, need for program redevelopment, quality assurance review recommendation, etc.). ● There is low student demand for this degree. This is likely because students who wish to manage or own retail stores don’t need a degree to do this work. This has been replaced in favour of focusing on an entrepreneurial skill set. I don't see evidence of many degrees in this area across Canada, which may have to do with it becoming obsolete.
b. Document enrolments (by head count) for the most recent 5-year period, including the current academic year if available.

Enrolment	2018	2019	2020	2021	2022
Total Head count	1	2	3	1	1
● 1st Year of Study	0	0	0	0	0
● 2nd Year of Study	0	0	1	0	0

• 3rd Year of Study	1	0	1	1	0
• 4th Year of Study	0	2	1	0	1
Reviewer's Comment:					

a. Indicate when admissions into program/specialization will be or were closed.
   - July 1, 2024

b. Briefly explain how the proposed end date of the suspension was determined.
   - The typical five-year suspension period will ensure adequate time for any necessary teach-out.

c. Provide specific information about which internal governance body approved the suspension, and provide date of approval.
   - Seconded Motion at Business Council - May 11, 2023
   - Seconded Motion at Undergraduate Policy Committee (USPC) - April 21, 2023

d. Check the applicable box to specify the longer-term plan.
   - ☑ To terminate the program.
   - ☐ To reactivate the program.

SECTION B: ACCESS

a. Identify potential student access considerations and risks to the Alberta Adult Learning System that the suspension of this program could pose (include both (a) information about related programs available to prospective students internally at your institution; and (b) externally at other Alberta institutions).
   - I cannot find other Retailing programs in Alberta, although there are several across Canada, primarily in Colleges. However, I do not see this as a risk to the Alberta Adult Learning System as this is not an area of employment that requires a major from a 4-year degree.

b. If the program or specialization is unique in the province, briefly describe consultation within the Alberta Adult Learning System to investigate feasibility of program/specialization transfer.
   - See section Ba. above - there are other similar programs being delivered in colleges

c. Briefly describe the consultation process that occurred with students at your institution regarding this programming change.
   - The Faculty consulted students within Faculty-level committee meetings

d. Briefly describe your institution's plans to assist active students, if any remain, in completing graduation requirements during the suspension period, including information about formal communication and student advising plans.
   - The Faculty will ensure that all active students who may remain in the program will receive continued support from advising staff related to the Calendar year in which they enrolled in the program to ensure they can complete their program within the proposed period of suspension.

e. Briefly describe your institution's plans to accommodate stop-out students, if any have been identified, including information about formal communication plans.
   - no stop-out students have been identified in this process. If any come about, we would assist them on a case by case basis. Based on low enrolment numbers, this situation seems unlikely to occur. If a student leaves the BCom program without permission, they are subject to the regular admissions process to be readmitted. If a student leaves with

permission, the timeframe for readmission to their previous program is typically 1 year from exiting the program. Given the current enrollment of the Major, students in this situation will either have ample time to complete the program or would be faced with returning to the program and selecting a new major area of concentration.

Reviewer's Comment:

SECTION C: IMPACT

a. Identify which stakeholder groups were consulted regarding demand/need for this program:

☑ Faculty

☐ Employers and professional associations

☐ Advisory Committee(s)

☐ Regulator and/or accreditation bodies

☐ Other (please identify)

b. Briefly describe the consultation process conducted with these stakeholders and summarize the feedback received.

- The Faculty consulted with staff and students through committee meetings. The feedback received from staff was they believed this program did not have adequate support to thrive. The feedback received from students was they were not as interested in pursuing this undersubscribed and specialized major as there were fears of finding work after and having support throughout their program.

c. Identify financial impacts and plans for reallocation of internal resources, particularly staff and classroom and lab space.

- With the suspension of this specialization, limited impact is anticipated. Resources that were being attributed will be reallocated to other areas.

Reviewer's Comment:

SECTION B: SUSPENSION EXTENSION

SECTION A: RATIONALE

a. Briefly describe the rationale for original suspension request. (Attach ministry approval letter for the original suspension.)

- n/a

b. Briefly explain why the extension is needed and include supporting evidence (e.g., active students have not completed graduation requirements).

- n/a

c. If there are students still in the program, describe how they will be supported to complete graduation requirements while the suspension is in place.

- n/a

d. Explain how the duration of the suspension extension was determined.

- n/a

Reviewer's Comment:

SECTION B: OTHER CONSIDERATIONS

FINAL ITEM NO. 6

Decision ☒ Discussion ☐ Information ☐

ITEM OBJECTIVE: To approve the creation of the new Alberta Centre for Labour Market Research housed in the College of Social Sciences and Humanities.

DATE	10 January, 2024
TO	GFC Academic Planning Committee
RESPONSIBLE PORTFOLIO	Vice-President (Research and Innovation)

MOTION: That the GFC Academic Planning Committee approve, with delegated authority from General Faculties Council, the creation of the Alberta Centre for Labour Market Research, effective upon approval.

EXECUTIVE SUMMARY:

Background

The Alberta Centre for Labour Market Research (ACLMR) will be a premier destination for Canadian labour market expertise and an essential Canadian destination for unbiased, high-quality labour market information. The Centre will represent a collective of Canada-based researchers, with the research aggregated and efficiently disseminated through the ACLMR. This research can then help to inform provincial, regional, and federal labour market policies. At its best, the Centre would be able to mobilize its research, expertise, and experts to where it is needed. ACLMR is a place where any interested party, be it a researcher, policy maker, business owner, or labour organizer, should be able to find the best research and/or researcher that fits their needs.

Analysis / Discussion

The ACLMR will be a College-level centre that will delivers high-quality, rigorous, and unbiased labour market research; provide more efficient and targeted access to high-quality labour market information; enhance public engagement through greater outreach with channels of dissemination; inform policy at all levels of government, with proximity to the provincial government as an asset; raise external funding from respected stakeholders, with little to no stipulation as to our output; and deliver a program designed to expand Alberta's expertise in labour market research.

The application has outlined the benefits to the university including multif-partner research, outreach, and community engagement. The ACLMR will support the objectives of the University Strategic Plan and the Strategic Plan for Research and Innovation and will directly contribute to the objectives of the University's Indigenous Strategic Plan, as articulated in the application. The application has carefully presented alignment of the proposed Centre's activities to the pillars of the University Strategic Plan and has highlighted the consultations and engagements that have taken place with Indigenous researchers and communities. The application highlights current connections to Indigenous Peoples and plans to strengthen those relationships and activities.

GOVERNANCE OUTLINE

ITEM NO. 6

Staff in the Office of the Vice-President (Research and Innovation) have worked with the proponents of the proposal, primarily Dr. Joseph Marchand, during the Fall 2023 term to develop the application. Members of the Centres and Institutes Committee (CIC) provided feedback to Dr. Marchand. Associate Vice-President, Dr. André McDonald, provided additional direct guidance to Dr. Marchand. The role of the CIC is to work with individuals intending to bring proposals forward for the establishment of Centres or Institutes, to review and comment on drafts of the proposed Centre or Institute, and, when satisfied with the proposal, to recommend approval of the proposal to APC. As such, the CIC is recommending that APC approve the establishment of the Alberta Centre for Labour Market Research (ACLMR)as an academic centre.

Where applicable, list the legislation that is being relied upon
Post-Secondary Learning Act (PSLA)
UAPPOL Centres and Institutes Policy
UAPPOL Academic Centres and Institutes Establishment Procedure
UAPPOL Academic Centres and Institutes Operation Procedure
GFC Academic Planning Committee Terms of Reference

Next Steps
Once approval for the Centre has been received, the appointment of the Director (Dr. Joseph Marchand) will be confirmed.
The governance structure will be formalized and populated, and other operational plans will be initiated.
Work will begin in each of the areas described in the proposal including research, outreach, and community engagement.
The major seed funding will be finalized, and funds transferred to the University. The additional major funding opportunities articulated in the application will be pursued to support the sustainability of the Centre.

Supporting Materials:
Proposal for the establishment of the Alberta Centre for Labour Market Research (ACLMR) (95 pages, including 9 letters of support).

***See Schedule A for additional items to include if needed.**

SCHEDULE A:

Engagement and Routing

Consultation and Stakeholder Participation / Approval Route (parties who have seen the proposal and in what capacity) <*Governance Resources Section Student Participation Protocol*>

*Those who are actively **participating**:*

- Members of the Centres and Institutes Committee (CIC)
- Dr. Joseph Marchand, Professor, Department of Economics

ITEM NO. 6

*Those who have been **consulted include**:*

- Centres and Institutes Committee (CIC)
- Those listed as signatories of the 9 letters of support (listed on page 14 of the enclosed proposal) including:
  - The College Social Sciences and Humanities
  - The Faculty of Arts and the Department of Economics.
  - U of A academic institutes, including the Institute for Public Economics.
  - External partners including Alberta Labour and Workforce Strategies and other post-secondary institutions.

*Those who have been **informed**:*

-

Approval Route:

Centres and Institutes Committee - Recommendation to APC for approval

APC - For final approval

Supplementary Notes / Context:

Prepared by André McDonald, Office of the Vice-President (Research and Innovation), andre.mcdonald@ualberta.ca

University of Alberta Centres and Institutes Application

Alberta Centre for Labour Market Research

Table of Contents

University of Alberta Template for Proposals to Establish New Academic Centres and Institutes

Proposers will complete and submit this template to the Office of the Provost for approval in accordance with UAPPOL Policy. This template may be used in two ways:

1) **As a cover document attached to a completed proposal which has already been approved by the University for submission for external funding. In this case, the template must present the academic arguments for establishing an academic centre or institute, and provide required information that is absent from the original proposal.**
2) **As an expandable template to be completed. In this case, the completed template may be up to 8 to 10 pages in length (not including letters of support or other appendices relevant to the proposal).**

Before developing a proposal and completing this template, please contact the Office of the Provost to discuss the scope of the proposed initiative and to discuss steps for review under the UAPPOL Centres and Institutes Policy, as well as associated procedures for academic centres and institutes – www.uappol.ualberta.ca .

1. **Faculty Dean Signature**

Signature:	*Date:*
Marvin Washington College Dean & Vice Provost College of Social Sciences & Humanitites University of Alberta	Jan 2, 2024

2. **Name of the Proposed Centre or Institute**

Alberta Centre for Labour Market Research (ACLMR)

3. **Academic Justification for Establishment of a Centre or Institute**

- Define the vision and purpose of the proposed unit
- Demonstrate that the proposed Centre/Institute does not duplicate other efforts at the University
- Document the emerging or established excellence of the group of faculty involved, and describe how the proposed Centre or Institute will position the University of Alberta as a national and international leader

Vision

The Alberta Centre for Labour Market Research (herein, the “ACLMR” or ”the Centre”) will be a premier destination for Canadian labour market expertise and an essential Canadian destination for unbiased, high-quality labour market information. Our organization represents a collective of Canada-based researchers, with our research aggregated and efficiently disseminated through the ACLMR. This research can then help to inform provincial, regional, and federal labour market policies. At its best, the Centre would be able to mobilize its research, expertise, and experts to where it is needed. ACLMR is a place where any interested party, be it a researcher, policy maker, business owner, or labour organizer, should be able to find the best research and/or researcher that fits their needs.

In the long run, the Centre itself is envisioned as a free-floating, third-party entity that will physically locate itself wherever the mass of our researchers, the quantity of quality of our research, and the influence of our research, is the largest. At the moment, that mass of researchers is largest in Edmonton, at the University of Alberta. At a very minimum, the ACLMR would always maintain at least an affiliate centre status with this intuition. Edmonton also serves as the provincial capital, which allows us easier access to physically meet with members of the Government of Alberta. (However, we note that the McDougall Centre in Calgary is also used for this purpose.) And, we already have engagement with the Alberta Government as an initial major funder and foundational partner. Our quarterly interactions with the AB Minister of Jobs, Economy and Trade will be a great opportunity for the GoA to hear about our research and for us to hear about future GoA policies.

Ideally, the geographic coverage goal of ACLMR would be all of the labour market researchers housed in higher education institutions across the three prairie provinces of Alberta, Manitoba, and Saskatchewan. Within Alberta, the University of Alberta, the University of Calgary, the University of Lethbridge, Athabasca University, and Mount Royal University are already represented. That said, we plan to expand our network to add such institutions as the University of Manitoba, University of Saskatchewan, the University of Regina, the University of Winnipeg, Brandon University, and First Nations University of Canada across the provinces of Saskatchewan and Manitoba. Even when doing so, however, the current largest mass of labour market researchers would still be in Edmonton. Prairies Economic Development Canada (PrairiesCan) might be able to help guide this regional reach. In doing so, we look to represent all Albertans, and eventually, all Saskatchewanians and Manitobans.

With a regional footprint expanded to the three Prairie provinces of Canada, the goal would not necessarily be to expand our footprint any larger, like to the national level. Rather, we would expand our funding approach to another Government of Canada agency, namely Employment and Social Development Canada (ESDC), in order to bring federal government attention to our region and vice versa. This possibility would not only open the Centre up to greater funding opportunities, but also access to several related federal ministers, namely the Minister of Employment, Workforce Development and Official Languages; the Minister of Families, Children and Social Development; the Minister of Labour and Seniors; the Minister of Diversity, Inclusion and Persons with Disabilities; the Minister of Citizens' Services; and the Minister for Women and Gender Equality and Youth. These contacts would help bring attention to our research and help inform policies related to our region.

With that larger, longer-term vision in place, we view our initial creation as an academic centre at the University of Alberta, hence the purpose of this application, kicking off our incubation period to greater things. (There is also the possibility that we remain perfectly happy with this academic centre arrangement and never apply for third party status, nor as a UofA affiliated centre.) In 2021, the University of Alberta established a college structure that makes the University the first institution of

higher education to do this in Canada. In response, the ACLMR is looking to be established as the first centre or institute at this newly-created college-level, specifically within the College of Social Sciences and Humanities. The centre and institute rules allowing this to happen were only recently established. We note that our establishment is best fit as a "centre", rather than an "institute", because our subject matter is very narrowly-focused on the one particular topic of labour market research.

The College of Social Sciences and Humanities offers the Centre a home containing four different faculties (Arts, Business, Education, and Law). While the Department of Economics at the UofA is housed within Arts, there are also many economists housed outside of the department and faculty. And, the research of our related economists touches on each of the additional faculties included at the college-level. (For example, see Runjuan Liu in the Alberta School of Business, Jeffrey Penney as an expert researcher in the economics of education, and Andrew Leach, Co-Director of the Institute of Public Economics, as a cross-appointed faculty member in the Faculties of both Arts and Law.) Only the college-level at the UofA makes sense as a home for the Centre, because a lower-level of faculty or department would greatly limit our outreach effort, much of which has already been established.

Our ACLMR group and base of researchers first originated within the University of Alberta through a Faculty of Arts Signature Area of Research and Creative Collaboration known as WELM-Arts (Work, Employment, and Labour Markets), which was formed in 2020 and will extend to 2025. We then expanded our reach across the Province of Alberta, through our application to a generous grant of $1.2 million from the Government of Alberta over our first three years, from 2024 to 2026, with the creation of the Alberta Centre of Labour Market Research being the main deliverable of this funding.

Purpose

In the context of Alberta, the cyclical nature of the provincial economy, coupled with its vulnerability to exogenous shocks, means that the province faces a number of consistent and/or recurring challenges in terms of its labour. These challenges include the dynamics on both the supply and demand side, and are compounded by a number of related issues, including historical patterns of employment and compensation that are becoming less applicable, challenges with the development and retention of skilled labour (geographically, temporally, and sectorally), demographic changes that correspond to gaps in labour supply, the significant economic presence of the energy sector, coupled with an increasing impact of technology and automation, as well as the increasing variation in both the nature of work, and the expectations/experiences of those engaged in the workforce.

The above factors demand that stakeholders, ranging from policymakers to employers, have access to high quality real-time labour market information. However, today, access to public information on labour markets is often not readily available or of good enough quantity and quality to guide the best decisions. This information can also be clouded by the competing biases of some of the parties involved, looking to extend their influence by exhausting resources to actively advocate on their own behalf. For example, some firms may have monopsony (or buying of labour) power over workers and some unions may have monopoly (or selling of labour) power over firms, so they may flood the public with misleading information, making it difficult to gauge what is true. When such misinformation or disinformation is further tied to specific ideologies and gathered without the necessary training to understand and properly explain the observed outcomes, the situation becomes more problematic.

The solution to these challenges will be establishment of the Alberta Centre for Labour Market Research as defined in this application. Through this Centre, labour market researchers housed across all four comprehensive academic and research universities (CARUs), policy researchers (e.g., economic development agencies), and industry researchers (e.g., industry and professional

associations) will have efficient access to the leading labour market research. The centralizing and opening-up of access to province-specific labour market research will contribute to enhanced collaboration, agility, and the impact of outcomes. With greater collaboration and a more amplified voice, all parties involved in labour markets will benefit. The proposed Centre, hosted by the University of Alberta, will be open to all researchers studying labour market dynamics in the province.

As such, the six priorities of the Alberta Centre for Labour Market Research are that the Centre:

- Delivers high-quality, rigorous, and unbiased labour market research.
- Provides more efficient and targeted access to high-quality labour market information.
- Enhances public engagement through greater outreach with channels of dissemination.
- Informs policy at all levels of government, with proximity to the provincial government as an asset.
- Raises external funding from respected stakeholders, with little to no stipulation as to our output.
- Delivers a program designed to expand Alberta's expertise in labour market research.

Excellence

The excellence of the Centre will be the direct result of the quantity and quality of the research produced by its researchers, currently the principal and co-applicants on the original application to the Government of Alberta ACLMR call for proposals. Our body of research draws upon many years of peer-reviewed publications, as well as our previous funding, teaching, and student supervision across our five main Alberta institutions. This team of individuals is not only well-published, but also well-cited. As such, one way to quantify the quality and reach of our research is to use summations of our H-indices, where h of our papers have been cited at least h times, and our citation counts. According to Google Scholar, our aggregate h-index is 242 and total citations are 22,003 across 29 people.

Leadership

As laid out in our ultimate vision for the Centre, the ACLMR seeks to be a leader of labour market information in Canada. The reasons have been stated but generally, our expertise and our research are best disseminated when we are united under one institution. As far as we know, the original Canadian organization of labour researchers was the Canadian Labour Market and Skills Researcher Network (CLSRN), which was run out of University of British Columbia in Vancouver, so also out west. The CLSRN played this role as a leader of labour market information for many years until it was essentially replaced by the Canadian Labour Economics Forum (CLEF), run out of the University of Waterloo. It is notable, however, that its current director and eight member steering committee do not have one person that is from an Alberta institution and only has one individual from the Prairie region (Kelly Foley at the University of Saskatchewan). Therefore, our Alberta first and out-from-there approach will ensure that labour market researchers from the Prairies and out west are recognized.

Uniqueness

Closer to home, namely our home institution of the University of Alberta, the ACLMR will be much bigger than the existing WELM-Arts, which it will fully replace it by the Fall of 2024. Given that WELM-Arts was an organization of only UofA labour market researchers, there is no reason for it to exist separately from the ACLMR at that time. The Centre will also be bigger in scale, as well as different in scope, than the existing Institute for Public Economics (IPE), which is currently Co-Directed by Joseph Marchand, who will be the founding Director of the ACLMR, and Andrew Leach, who has provided a letter of support attached to this centre application. As Professor Leach states, "The addition of the ACLMR as a University of Alberta Centre will present opportunities for collaboration, but no conflicts

	that I can foresee with the Institute for Public Economics (IPE) for which Professor Marchand and I currently serve as Co-Directors. Labour policy is a subset of public economics and labour policies have been and will continue to be part of the focus of the IPE, but they are just that: a part of the focus". He also says, "the current funding proposal for the ACLMR would swamp by orders of magnitude the funding for public economics research in the IPE." Therefore, there will be no duplication of efforts within the UofA, but we will build off of what WELM-Arts is and will collaborate closely with the IPE.
4.	**Provide a statement of the priority of the proposed centre or institute within the overall priorities of the Faculty and/or the University of Alberta. Include a statement of benefits the University of Alberta could expect to receive through creation of the proposed centre or institute, including benefits to students.** The motto of the University of Alberta, *quaecumque vera*, translated as, "whatsoever things are true", has been in place at this institution for over one hundred years, being established in its second year past inception in 1908. It is from a longer biblical quote in a letter from Paul to the Philippians (4:8), translated as: "Finally, brethren, whatsoever things are true, whatsoever things are honest, whatsoever things are just, whatsoever things are pure, whatsoever things are lovely, whatsoever things are of good report; if there be any virtue, and there be any praise, think on these things." In our minds, this University motto means that truth remains the utmost priority of this institution. With the creation of this Centre, our members and affiliates remain steadfast in our commitment to this priority of the University. In order to do so, the Alberta Centre for Labour Market Research will produce the highest quality information, through our narrowly focused discipline of labour market research, meaning the closest to the unbiased truth as one can get within our ability and expertise. This is our solution to the many agents producing biased labour market information, generating noise. With our research production and more attention on our information, the less attention on the noise. Most recently, on September 19, 2023, the University of Alberta released a document titled, *Shape: The University Strategic Plan 2023-2033*, which outlines three main priorities to focus on over the next ten years. These main priorities are Research with Purpose, Engagement with Purpose, and Education with Purpose. As stated by our Dean of the College of Social Sciences and Humanities, Marvin Washington, who is the head of the level of the institution that we will report to, "It is 'with purpose' that gives our work meaning and allows our expertise and values to shine." We agree. *Research with Purpose* Our Alberta Centre for Labour Market Research will adhere to and offer benefits to each priority. Of our six Centre goals stated in our purpose, the first two relate to prioritizing Research with Purpose: - Delivers high-quality, rigorous, and unbiased labour market research. - Provides more efficient and targeted access to high-quality labour market information. We have already proven our ability to deliver high-quality, rigorous, and unbiased labour market research, because each of our members and affiliates were already doing so as faculty members across each of our five Alberta universities, including the University of Alberta, the University of Calgary, University of Lethbridge, Athabasca University, and Mount Royal University. Given that our members already form a diverse team of two dozen productive scholars, our output will only be magnified by aggregating our research under the Alberta Centre for Labour Market Research.

The proposed Centre will also have a robust digital presence designed to increase the credibility and visibility of our researchers and research, by displaying up-to-date statistics about them and their research using a research aggregator, such as Clarivate (Web of Science) or Elsevier (Scopus). Statistics for our researchers may include the use of h-indices, where *h* number of articles have been cited *h* times, and total citation counts. Links and statistics will also be provided for our research, highlighting their impact through article citations and journal impact factors for the journals that they are published in. Search boxes would allow various ways to find our researchers and research.

In the words of Andrew Leach, Co-Director of the Institute for Public Economics, in his support letter:

> *The goal of the ACLMR is to advance labour research with an Alberta focus, continuing the mission of an Arts Signature Area of Research and Collaboration already underway. The six goals expressed in the principal grant application include measures that speak to many of the major priorities in the recently-completed University Strategic Plan, which states our goals for research with impact. The Plan calls for "an increased number of large-scale, multidisciplinary research initiatives that stimulate community-engaged research," and this is exactly what the ACLMR will do. Its research roster includes scholars with a focus on Indigenous engagement, gender inequalities in labour market outcomes, and lower-income individuals' interactions with social policy. These are researchers working directly to, to again quote from the University Strategic Plan, "improve the quality of life for millions of people in communities across Alberta, Canada and the world."*

As seen in our attached proposal to the Government of Alberta, we identified three main research priorities: drivers of labour disruption; labour market capacity building; and labour market equity, diversity, inclusivity, and accessibility. The production of research concerning this last priority additionally meets the output needs under the University's Indigenous Strategic Plan and its Strategic Plan for Equity, Diversity, and Inclusivity. For examples of this related Canadian output, please see the most recent First Nations research of Laurel Wheeler and the most recent gender research of Hussein Alzyoud, Jean-William Laliberte, Xingfei Liu, Andrew McGee, Richard Mueller, and Stefan Staubli. The Centre will therefore help examine related labour market polices in this research area, both past and present, and help to inform future policies.

Engagement with Purpose

The next three goals of the ACLMR relate to our prioritization of Engagement with Purpose:

- Enhances public engagement through greater outreach with channels of dissemination.
- Informs policy at all levels of government, with proximity to the provincial government as an asset.
- Raises external funding from respected stakeholders, with little to no stipulation as to our output.

In our minds, with all of our researchers being employees at five different public higher education institutions within the province of Alberta, we are already committed to making this province better. First, our ability to hear from and share our research with the Government of Alberta, through the Ministry of Jobs, Economy and Trade, is built into the seed funding of $1.2 million already approved, as we are already scheduled to meet on a quarterly basis. The first allotment of $400,000 in the first year of funding is simply waiting for the approval of the creation of the Centre itself at the UofA. Second, our network of Alberta-based researchers, coordinated and supported by the proposed ACLMR, will provide a major addition to the capacity of the province, and its constituent municipalities and employers, to undertake evidence-informed decision and policy making. This additional research capacity is complemented by extensive networks to relevant stakeholders in the

province, including in various levels of government, the chambers of commerce, municipal associations, economic developers, regional economic development alliances, and sectoral bodies.

Education with Purpose

The final goal listed in the purpose of our Centre is related to the priority of Education with Purpose:

- Delivers a program designed to expand Alberta's expertise in labour market research.

The network draws upon a demonstrated capacity to deliver high-quality (peer-reviewed) research across a range of relevant disciplines and subject matter, with training and educational opportunities for Highly Qualified Personnel (HQP) often at the heart of such work. More specifically, these HQP engaging in the process of our research generation will be made up of post-doctoral researchers, graduate students, and undergraduate students, all under the direct supervision and in partnership with our faculty researchers. At the moment, we do not have plans to offer any direct education credentials under our Centre, as we understand that centres and institutes at the UofA do not have the ability to do that yet, with a few limited exceptions. However, we have had the previous goal, under WELM-Arts, to at least map the courses taught within labour economics across the province.

5. **Provide a description of the proposed centre/institute governance structure/reporting lines. Include a diagram of organizational structure.**

The Alberta Centre for Labour Market Research (ACLMR) will have an administrative structure comprised of: Director(s), a Steering Committee, an Advisory Committee, and a Research Committee. See the attached diagram. With respect to filling the positions for our different roles and committees, we will consider each position in the context of our commitment to equity, diversity, and inclusion.

Director(s)

The Director provides academic and administrative oversight for the Centre, with support from three committees for steering, advisory, and research. The founding Director will be appointed for two consecutive five-year terms, with the possibility of renewal every five years. The Director is normally appointed by the Dean of the College of Social Sciences and Humanities following the recommendation of a selection process, with input from the core faculty members of the Centre. The Director will report to the Dean of the College or their designate. The founding Director will be Dr. Joseph Marchand, the Principle Applicant for the Government of Alberta funding for this Centre. There is also the possibility of a Co-Director, similar to the current leadership of the IPE, and/or the possibility of adding potential Associate Directors. All directors must be accomplished academics.

Steering Committee

The Steering Committee will advise the ACLMR on UAPPOL and approves annual budgets and strategic planning for the Centre. It will also offer guidance on how to get the most out of its initial existence as an academic centre at the University of Alberta. It will initially be comprised of:

- Marvin Washington, Dean of the College of Social Sciences and Humanities (Chair)
- Joseph Marchand, Director of the ACLMR
- Andrew McGee or Vera Brencic, UofA-based ACLMR faculty member
- Valentina Galvani, Chair of the Department of Economics

	- Andrew Leach, Co-Director of IPE **Advisory Committee** The Centre will have an Advisory Committee, consisting entirely of external stakeholders. This committee was actually formed to advise the Government of Alberta on its larger $16 million Labour Market Information (LMI) initiative within the Ministry of Jobs, Economy and Trade. The role of this committee is to offer strategic advice and provide links to appropriate networks. The members of this committee will be advocates of the Alberta Centre for Labour Market Research, promoting its research and sharing with others its accomplishments and contributions to the province of Alberta. For more information, please see the attached terms of references. The current members are: - Janet Lane, Director of the Human Capital Centre - Canada West Foundation - [vacant pending recruitment] Chief Operating Officer - Invest Alberta - Jeff Bell, Director, Research & Business Intelligence - Edmonton Global - Jeanette Sutherland, Director EDGE UP, Workforce and Productivity, Calgary Economic Development - Wyatt Skovron, Manager of Policy and Advocacy - Rural Municipalities of Alberta - Jason Leslie, Chief Operating Officer - Alberta Chambers of Commerce - Ryan Reichl, Executive Director, Government of Alberta **Research Committee** The Research Committee for the ACLMR will be comprised of scholars from within the Alberta community, namely the Director as Chair and three additional researchers whose representation will be based on how many researchers appear at those institutions. To begin, one of either Andrew McGee or Vera Brencic can represent the University of Alberta, along with the current Director as Chair, Alex Whalley can represent the University of Calgary, and Lars Hallstrom can represent the University of Lethbridge. This committee is responsible for helping to set research priorities, identify and facilitate research collaborations, and determine the allocation of sub-grants and other awards.
6.	**Provide a statement of the role and qualifications of the centre/institute lead of the proposed centre or institute.** The founding Director of the Alberta Centre for Labour Market Research will be Joseph Marchand. His full CV is attached to this application, and his bio is as follows: Joseph Marchand is a Professor of Economics within the Department of Economics at the University of Alberta in Edmonton, Alberta, Canada. He is best known for his research and teaching of labour economics, such as on aging, energy booms and busts, minimum wages, and mortality, and enhancing understanding of labour markets through better information. His research is published in labour economics journals, such as Industrial and Labor Relations (ILR) Review, the Journal of Economic Inequality, Labour Economics, and the Journal of Urban Economics; policy journals, such as ANNALS of the American Academy of Political and Social Science and the Journal of Policy Analysis and Management; general economics journals, such as the Canadian Journal of Economics and the Journal of Economic Surveys; economics of aging journals, such as the Handbook of the Economics of Population Aging and the Journals of Gerontology; and shorter journals, such as Applied Economics Letters and Economics Letters.

	His teaching of labour economics to both undergraduate (ECON 331, 431) and graduate (ECON 531) students has led to his development of a new labour economics textbook for the Canadian and North American market. He has also taught intermediate microeconomics (ECON 281) and several courses about the creation of economics research (ECON 591, 900, 999). Professor Marchand currently serves as Co-Director of the Institute of Public Economics and as Director of WELM-Arts, a Signature Area of Research and Creative Collaboration in the area of Work, Employment, and Labour Markets within the Faculty of Arts. He has also previously served both the Government of Alberta and the Senate of Canada. Joseph graduated from Rutgers University (BA), New York University (MA), and Syracuse University (PhD), worked at Princeton University, Columbia University, and Syracuse University, and held visiting positions at the University of Wisconsin – Madison, the University of Toronto, and the London School of Economics and Political Science.
7.	**Employees** a) Provide a statement of the employment status of employees (i.e., are they University of Alberta employees?) b) Specific source(s) of any "University funding" must be identified c) Personnel expenditures must include adequate provisions for benefit costs, salary settlements, and other escalating factors. With the approval of this proposal for an academic centre, the ACLMR will initially be established and housed at the University of Alberta. Under the original proposal to the Government of Alberta for the three years of seed funding to create this Centre, the Principal Applicant was Joseph Marchand, a Professor of Economics at the UofA who will serve as the Centre's founding Director. The majority of Co-Applicants were also UofA professors, originally organized under the WELM-Arts initiative, totaling twelve of the twenty-three co-applicants. Therefore, thirteen of the twenty-four involved researchers were already University of Alberta employees, or more than half. Note that this does not even include all of the UofA researchers previously identified under the WELM-Arts initiative, so the number of UofA employees listed here is already a conservative count. The count could be as high as twenty-three UofA employees, with all currently identified researchers. This critical mass of people at the UofA highlights the reason for the Centre's establishment in Edmonton, along with the city being the provincial capital of Alberta, with its proximity to interact with the Government on a regular basis. In addition to the affiliated researchers who are already University of Alberta employees, we will use our funding to help support several current and future UofA employees. First, under our research support, we have the expectation that much of our money will be allocated toward the hiring of UofA students, both graduate and undergraduate, as well as potential post-doctorates in the future. There is also a proposed project coordinator that would be a UofA employee under the current plan. These related personnel expenditures are specified in the financial plan below and in the attached budget. This employee will be hired through a competitive advertisement and will report to the Centre Director. The candidate will have a background in a related field and will assist in seeking out funding opportunities, liaising with internal partners, and help plan the events of the Centre. They will also assist in financial management, constructing grants, and helping to manage contracts. The Centre may also seek support through an administrative assistant who manages communications, financial reporting, filing, and UAPPOL adherence. This administrative assistant would also be a

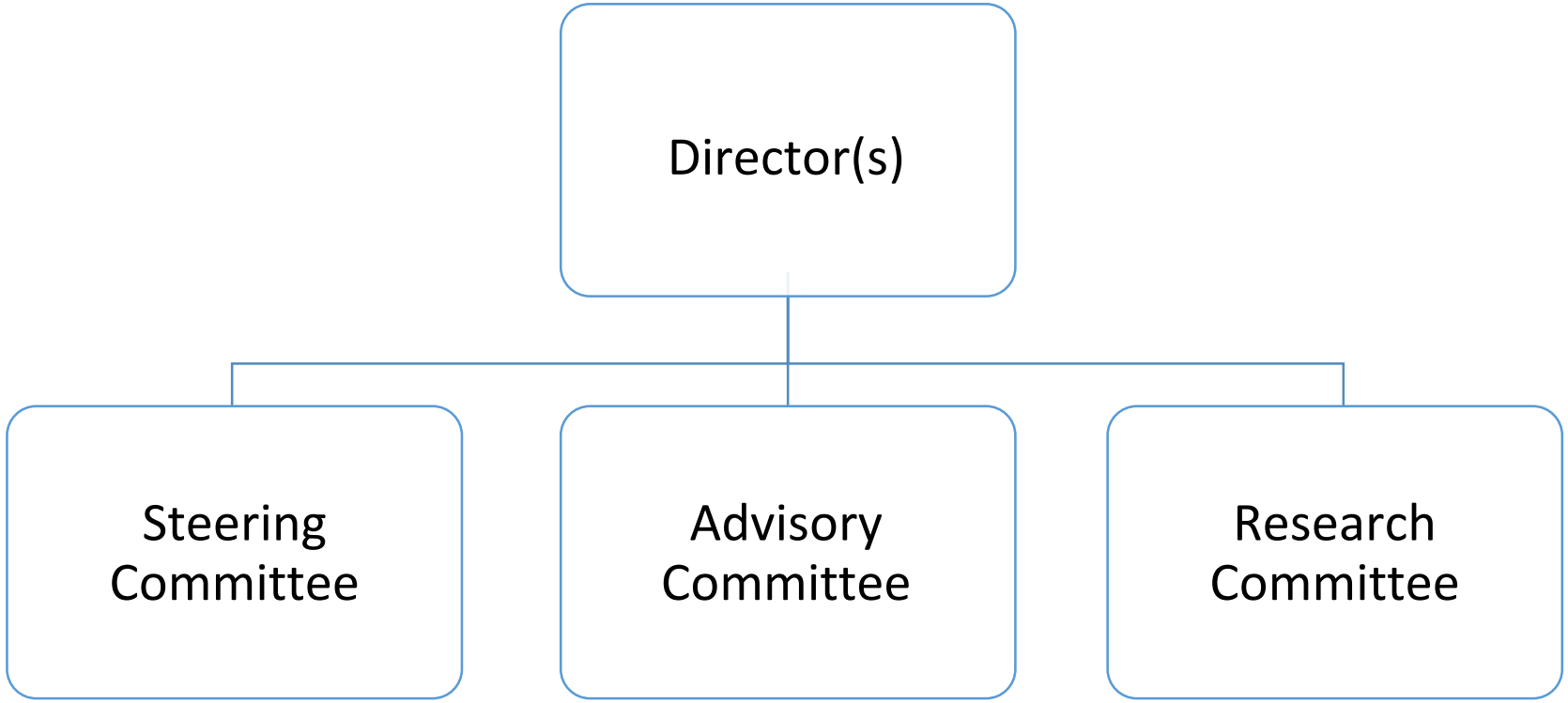
	University of Alberta employee. Given that this role is not specified within the current budget, this position will either require additional funding or in-kind support from the University. For an example of in-kind support, the UofA Department of Economics recently offered the time of its executive assistant to help plan and execute a successful pre-Centre labour economics workshop event.
8.	**Financial Plan** a) Include key sources of operating funds, and include revenue sources and expenditures for [ideally] 5 years projected. b) State specific source(s) of any "University funding" c) Provide a plan for the sustainable funding of the operation of the centre or institute (salaries, equipment and maintenance, IT support [data management, web design, etc.) d) Escalation factors must be built into expenditure projections (i.e. escalation due to inflation, future salary settlements, etc.) e) If in-kind support is identified, the specifics of that support must be listed separately. Prior to the Centre creation, labour market researchers at the University of Alberta were first organized under a Signature Area of Research and Creative Collaboration called WELM-Arts (Work, Employment, and Labour Markets). This was funded with a small amount of money and support through the Faculty of Arts at the University of Alberta since 2020, with the initiative going until 2025. The Alberta Centre for Labour Market Research, which joins labour market researchers from the University of Alberta with other researchers from the University of Calgary, the University of Lethbridge, Athabasca University, and Mount Royal University, will initially be funded through a grant agreement with the Government of Alberta. This grant from the GoA, with the primary goal of establishing such a centre, provides $1.2 million in support over three years from 2024 to 2026. That said, the Government has not ruled out funding the Centre beyond those initial three years, which has been accounted for under a possible future stream of support in year four and beyond. As the initial seed funding comes to its three-year conclusion, we speculate that a federal source, particularly Prairies Economic Development Canada (PrairiesCan), might also add revenue from year three. This money would potentially be used to expand our network to labour market researchers in Saskatchewan and Manitoba, adding institutions such as the University of Manitoba, University of Saskatchewan, the University of Regina, the University of Winnipeg, Brandon University, and First Nations University of Canada. An initial meeting with PrairiesCan representatives will soon take place. Once our regional footprint has been expanded to the three Prairie provinces of Canada, the goal would not necessarily be to expand our footprint any larger, like to a national one. Rather, we would expand our funding approach to another Government of Canada agency, namely Employment and Social Development Canada (ESDC), in order to bring federal government attention to our region and vice versa. This possibility would not only open the Centre up to greater funding opportunities, but also access to several related federal ministers, namely the Minister of Employment, Workforce Development and Official Languages, the Minister of Families, Children and Social Development, the Minister of Labour and Seniors, the Minister of Diversity, Inclusion and Persons with Disabilities, the Minister of Citizens' Services, and the Minister for Women and Gender Equality and Youth. These contacts could help bring attention to our research and help inform policies related to our region. One path to sustainable funding for the Centre would be to use some of the initial GoA or PrairiesCan funding to establish an endowment in the third year, which will then create a stream of interest

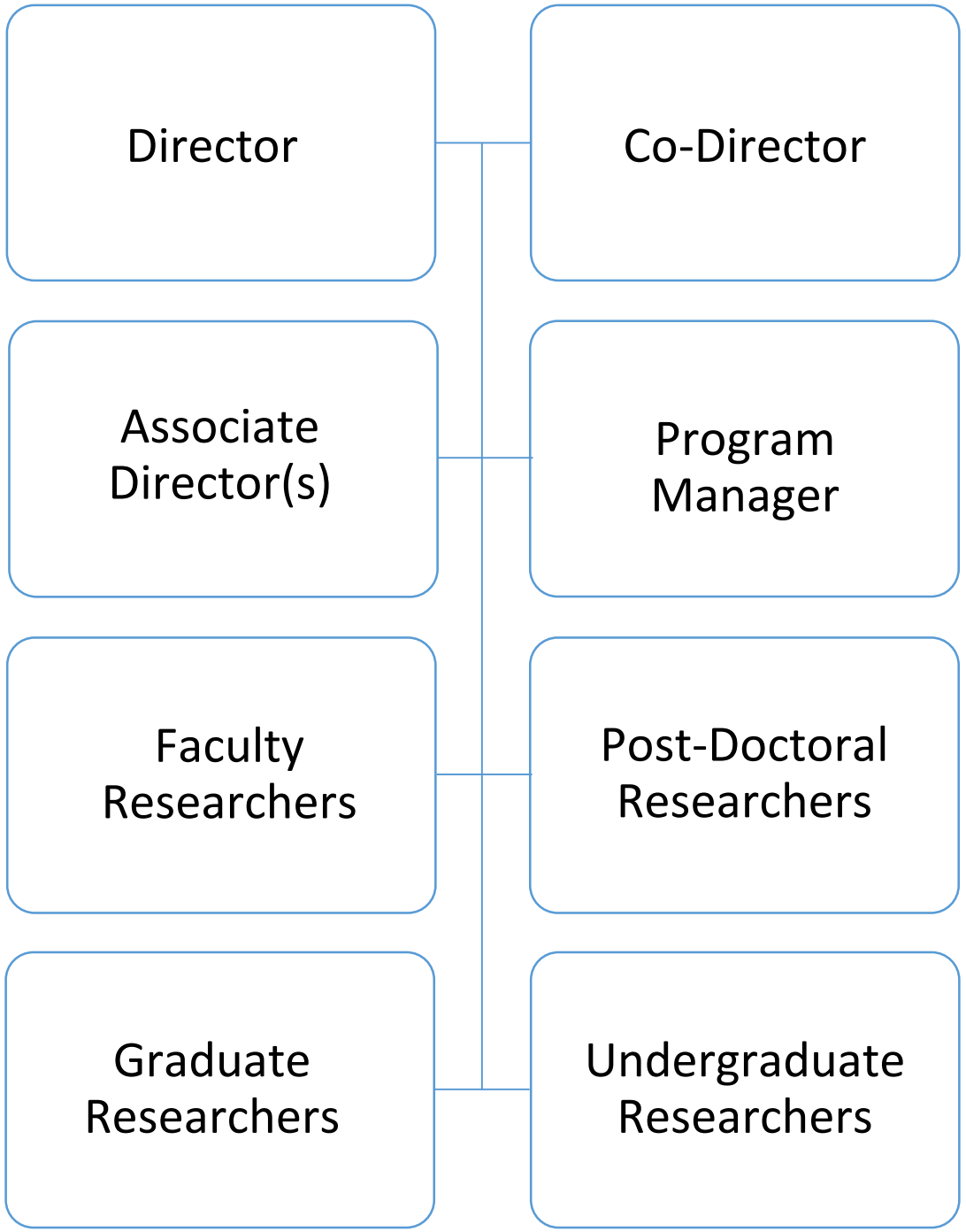
	revenue from the fourth year and beyond. Talks with UofA Advancement regarding this endowment have already begun, and the GoA has thus far been keen to use their funds for this purpose. The proposed expenses of the Centre, beyond the establishment of an endowment, will primarily be for the purposes of research creation, namely for graduate and undergraduate student research assistance and data, which will be split between the proposed home institution (UofA) and its partner institutions (UofC, UofL, AU, MRU). Other types of expenses include those for research linkages (events, travel, and promotion) and research administration (director, coordinator, website, office hardware and operations, and space). Inflation has not yet been accounted for with cost escalation. In-kind contributions, for space and the help of existing personnel, may come from the UofA later on as the Centre grows. Please see the attached five year and future budget plan that is attached.
9.	**Space Requirements.** Space required? Yes **X** No ☐ If "No" selected, where is current space? _____ If "Yes" selected, complete the following: **X** On-site at the University of Alberta **X** Awaiting allocation ☐ Rent/lease required If rent/lease is required, has this been budgeted for? Yes **X** No ☐ Is funding required? Yes☐ No **X** Reasons: The current budget model does not require it. Address the following questions: a) If rent/lease or license is required, what is the University of Alberta's commitment? b) If new space or modifications to existing space are required, has Facilities and Operations been contacted and has this been included in the budget? It will be important for the ACLMR to have even a physical presence on the UofA campus, even if small at first, as it serves as useful to house the director and associate employees, as well as allow our affiliated individuals the space to meet. Perhaps even more importantly, a physical presence also serves as a tangible representation of the Centre and as soft advertising for the Centre on campus. Communication with the UofA Facilities & Operations has already begun and, although funding is not required under the current budget model, the rent/lease has been budgeted for future years, with a request for roughly 2,500 square feet at $20 per square foot, for a total of $50,000 per year. As far as we understand, these costs would only become realized when the Centre would create a third-party entity and be deemed an affiliated centre. In its incubation period as an academic centre, we believe these costs for space would be treated as an in-kind contribution from the University to the Centre. The proposed space at the UofA would be as close as possible to the Department of Economics, i.e., within the HM Tory Building, possibly on the first or second floors, but it could also be shared with the Institute of Public Economics (IPE), possibly with expenses shared, depending on available funding.

10.	**Potential Risks to the University of Alberta** a) State any reputational, financial, and/or operational risks to the University of Alberta. b) Outline plans to mitigate/manage those risks. c) Risk Management Services may be consulted. The University of Alberta has a unique opportunity in approving this centre application to serve as a temporary incubator for what the Alberta Centre for Labour Market Research will eventually become. While reputational risks to the UofA may be perceived during the incubation period, these would be nothing more than growing pains, as existing institutions in the province and beyond will have to adjust to a new entity that exists for the sole purpose of producing high-quality labour market information and using it for improved labour market policy. Our collective previous experience is that several existing institutions will generate much noise around our topics, but our research will cut through that noise using the quality and clarity of tis research. Therefore, the reputational risk to the University of Alberta is only one of upside because, beyond growing pains, early association with the ACLMR will only benefit its partners, as no institution exists with this much targeted expertise. There may be financial risks to the University of Alberta, if the Centre's funding in any particular year needs to be replaced or enhanced, and/or if Centre spending exceeds the funding available. These risks will be mitigated by the appropriate training of staff to follow the UAPPOL protocols. Operational risks at the University of Alberta may be positively correlated with the growth of the ACLMR and would likely increase the need to terminate the academic centre version of the ACLMR and establish a third-party entity with affiliated centre status. Please see our termination plan below.
11.	**Annual Reporting and Strategic Review: In accordance with UAPPOL Policy** a) State a provision for annual reporting to the Reporting Dean b) State a provision for annual reporting to the Office of the Provost c) State a provision for strategic and operational review by the Reporting Dean (or delegate) at no less frequency than every five years. In accordance with UAPPOL policy, there will be annual reports submitted to the Dean of the College of Social Sciences and Humanities, who represents the college-level of the Centre, and the Office of the Vice-President (Research and Innovation), who represents the institution-level of the University. There will also be a strategic and operational five-year review submitted to the Dean of the College. In accordance with the unsigned grant agreement with the Government of Alberta, there will be quarterly reports submitted to the Minister of Jobs, Economy and Trade. This would hasten the production of annual reports and the five-year review for the University of Alberta, as overlap is expected in the reporting to both institutions, but with UofA documents adhering to UAPPOL policy.
12.	**Intellectual Property (IP) and Copyright** a) Will any copyright or patentable IP be created, and if so, how will it be handled? b) How will ownership and commercialization of IP be handled? According to the current language of the unsigned grant agreement with the Government of Alberta, "any Intellectual Property that may be generated through the Project be used for the benefit of Alberta and Albertans. Ownership of any Intellectual Property developed through the Project will

	follow the policies and practices of the Recipient and agreements to which the Recipient is a party." This would mean that the researchers who created the Intellectually Property, regardless of their affiliations, subsequently own it, and not the Centre, host institution, or any partner institutions. However, ownership of any reports made for the purposes of the GoA would lie with the GoA. No commercialization of intellectual property produced by the ACLMR is foreseen for the time being.
13.	**Termination Plan/Provisions** a) Exigency plan for termination: If physical and/or financial resources will remain upon termination, a plan for consultation with donors or agencies associated with the centre or institute must be included in the dissolution plan. As part of the overall vision for the Centre, we see this iteration as an academic centre at the University of Alberta as a first step in the process toward the future creation of an independent third-party entity that would then later apply to be an affiliated centre at the University of Alberta. Termination of the academic centre version of the ACLMR at the University of Alberta could take place for several reasons: - We outgrew the confines of an academic centre, as defined by the University of Alberta, and now want to apply for affiliated status with the University. - The Director and/or the majority of quality researchers are no longer at the University of Alberta but are elsewhere in the province. - We were unable to secure any future funding beyond the initial $1.2 million in seed money from the Government of Alberta. Any termination plan would be carried out in accordance with UAPPOL policy. If resources, whether physical or financial, remained upon termination, the current parties to be consulted with include the Government of Alberta and the University of Alberta. Remaining funds and/or an endowment may need to be returned to their original donors, depending on the relevant grant agreements.
14.	**Letters of Support**: Attach letters from relevant on- and off-campus sources A list of support letter writers and their letters of support are attached to this application in the following order: 1. Suzanne Harbottle, Assistant Deputy Minister, Labour and Workforce Strategies, Government of Alberta 2. Marvin Washington, Dean and Professor, College of Social Sciences and Humanities, University of Alberta 3. Robert Wood, Dean and Professor, Faculty of Arts, University of Alberta 4. Valentina Galvani, Chair and Professor, Department of Economics, University of Alberta 5. Andrew Leach, Co-Director and Professor, Institute for Public Economics, University of Alberta 6. Robert Oxoby, Head and Professor, Department of Economics, University of Calgary 7. Trevor Tombe, Research Fellow and Professor, School of Public Policy, University of Calgary 8. Lars Hallstrom, Director and Professor, Prentice Institute, University of Lethbridge 9. David Finch, Chair and Professor, LearningCITY Collective and Mount Royal University

15.	Provide, if applicable, any **agreements and/or memoranda of understanding between the University of Alberta and its partner(s)** to establish, fund and operate the proposed academic centre or institute. . The Government of Alberta put out a public call for proposals to establish the Alberta Centre for Labour Market Research, with $800,000 in funding over two years, on March 31, 2023. Over the next several weeks, our team of researchers was constructed, and we applied for this funding by the deadline of April 28, 2023. We were notified by the Government of Alberta that our team did indeed win this grant, with the funding increased to $1.2 million over three years, on August 24, 2023. This Government notification included a proposed grant agreement to enter into that has yet to be signed. The reason for the hesitancy to sign the agreement with the Government of Alberta is that, while we were negotiating the terms of the agreement with the Government, we were told that the University of Alberta would have to first approve the creation of the Centre. Once we understood that the University could halt the creation of the Centre, we made the decision to first seek approval of the Centre prior to signing the GoA contract. Any risk of the Centre not being created would negate the purpose of the funding, and the funding would not be renewed beyond the initial $400,000 allotment. The original Government of Alberta call (2 pages), our proposal (48 pages, without the CVs of the Principle Applicant and Co-Applicants for brevity), the GoA award letter (2 pages), and the original GoA contract (8 pages) are attached to this application.


Director(s)
Steering Committee
Advisory Committee
Research Committee


Director
Co-Director
Associate Director(s)
Program Manager
Faculty Researchers
Post-Doctoral Researchers
Graduate Researchers
Undergraduate Researchers

DRAFT - December 2022

Jobs, Economy and Northern Development

Labour Market Information (LMI) Advisory Board

Terms of Reference

1. Role/Purpose

The role of the LMI Advisory Board is to provide strategic advice, share information and identify opportunities for collaboration to ensure Alberta's LMI system generates effective, robust, and targeted information to support the province's labour market.

The LMI Advisory Board sets out to achieve:

I. Better collaboration on LMI between government and industry organizations, and
II. Enhanced awareness of LMI being generated and produced by members.

2. Term

The Terms of Reference is effective from (DD-MM-2023) and will be ongoing until terminated by agreement between the parties.

3. Membership

The Advisory Group will comprise of seven members:

- Jeff Bell, Director, Research & Business Intelligence, Edmonton Global
- Colleen Collins, Vice President, Canada West Foundation
- Deana Haley, Vice President, Corporate Initiatives & Intelligence, Calgary Economic Development
- Mike Holden, Vice President, Policy & Chief Economist, Business Council of Alberta
- Jason Leslie, Chief Operating Officer, Alberta Chambers of Commerce
- Paul McLauchlin, President, Rural Municipalities of Alberta
- Lynette Tremblay, Chief Operating Officer, Invest Alberta

4. Roles and Responsibilities

The roles and responsibilities will be refined during discussion with the group.

The LMI Advisory Board will be accountable for fostering collaboration, providing expert advice and review for LMI products presented, the mutual sharing of LMI which can benefit Alberta businesses, employers, students, and other decision-makers.

The membership of the LMI Advisory Board will commit to:

- Attending all scheduled meetings and if necessary, nominating a proxy,

- Wholeheartedly championing the network within and outside of work areas,
- Sharing all communications and information across all members, and
- Making timely decisions and taking action so as to not hold up the project.

Members of the advisory board will expect:

- That each member will be provided with complete, accurate and meaningful information in a timely manner,
- Given reasonable time to make key decisions, and
- Ongoing 'health checks' to verify the overall status of the network.

5. Meetings

All meetings will be chaired by (insert name and organization).
A meeting quorum will be five members of the advisory group.
Government of Alberta staff will be responsible for:

- Scheduling meetings,
- Preparing agendas and support materials, and
- Preparing meeting notes and information.

Meetings will be held virtually, on a monthly basis, for an hour of allotted time. If required, meetings will be reschedule for a time convenient to members.

6. Amendment, Modification or Variation

This Terms of Reference may be amended, varied or modified in writing after consultation and agreement by LMI Advisory Board members.

JOSEPH MARCHAND

University of Alberta, Department of Economics [link]
7-29 Tory (H.M.) Building, 11211 Saskatchewan Drive NW
Edmonton, Alberta (AB), Canada, T6G 2H4

https://apps.ualberta.ca/directory/person/jmarchan [link]
1-780-492-9425 (workdays) -or- 1-780-758-6507 (weekends)
jmarchan@ualberta.ca -or- joseph.marchand@ualberta.ca

EMPLOYMENT

Professor, Department of Economics, Faculty of Arts, University of Alberta, 2021 – present
Associate Professor, Department of Economics, Faculty of Arts, University of Alberta, 2014 – 2021
Assistant Professor, Department of Economics, Faculty of Arts, University of Alberta, 2007 – 2014
Research Associate (full time), Center for Policy Research, Syracuse University, 2002 – 2007
Research Assistant (part time), School of Social Work, Columbia University, 2001 – 2002
Research Assistant (full time), Office of Population Research, Princeton University, 2000 – 2001

RESEARCH

Labor and Demographic Economics (J)
Primary: Demand and Supply of Labor (J2), Particular Labor Markets (J4), Regional Labor Markets (R23)
Secondary: Demographic Economics (J10), Distribution (D30), Measurement and Analysis of Poverty (I32)

POSITIONS

Co-Director (with Andrew Leach), Institute for Public Economics, University of Alberta, 2023 – present
Director, WELM-Arts (Work, Employment, and Labour Markets), University of Alberta, 2020 – present
Chair, Minimum Wage Expert Panel, Labour and Immigration, Government of Alberta, 2019 – 2020
Visiting Fellow (two weeks), Grantham Research Institute, London School of Economics, Oct. 2019
Expert Witness, Standing Senate Committee on National Finance, Senate of Canada, Apr. 2017
Visiting Professor (two weeks), Department of Economics, University of Toronto, Nov. 2015
Visiting Scholar (four weeks), Institute for Research on Poverty, University of Wisconsin, Jan. 2012

EDUCATION

Ph.D. Economics, Maxwell School of Citizenship and Public Affairs, Syracuse University, Jun. 2007
M.A. Economics (terminal), Graduate School of Arts and Science, New York University, Jan. 2003
B.A. Economics (Henry Rutgers Scholar, dual Honors), Rutgers College, Rutgers University, May 2000

CITIZENSHIP

Canada and the United States of America (dual)

PUBLICATIONS

Academic Journal Articles

"First to $15: Alberta's Minimum Wage Policy on Employment by Wages, Ages, and Places," Fossati, S., Marchand, J.

Industrial and Labor Relations (ILR) Review, forthcoming. [link]

"Loss of Life and Labour Productivity: The Canadian Opioid Crisis," Cheung, A., Marchand, J., Mark, P.

[honorable mention for the 2023 Doug Purvis Memorial Prize]

Annals of the American Academy of Political and Social Science, 2022, 703(1), 303-323. [link]

"How Local Economic Conditions Affect School Finances, Teacher Quality, and Student Achievement: Evidence from the Texas Shale Boom," Marchand, J., Weber, J.

Journal of Policy Analysis and Management, 2020, 39(1), 36-63. [link]

"Local Labor Markets and Natural Resources: A Synthesis of the Literature," Marchand, J., Weber, J.

Journal of Economic Surveys, 2018, 32(2), 469-490. [link]

"The Distributional Impacts of an Energy Boom in Western Canada," Marchand, J.

Canadian Journal of Economics, 2015, 48(2), 714-735. [link]

"Does the Retirement Consumption Puzzle Differ Across the Distribution?," Fisher, J., Marchand, J.

Journal of Economic Inequality, 2014, 12(2), 279-296. [link]

"New Casinos and Local Labor Markets: Evidence from Canada," Humphreys, B., Marchand, J.

Labour Economics, 2013, 24, 151-160. [link]

"The Supply and Demand Factors Behind the Relative Earnings Increases in Urban China at the Turn of the 21st Century," Gao, H., Marchand, J., Song, T.

Comparative Economic Studies, 2013, 55(1), 121-143. [link]

"The U.S. Gender Gap Through the Great Recession Using an Alternative Approach to Cyclicality," Marchand, J., Olfert, S.

Applied Economics Letters, 2013, 20(3), 276-281. [link]

"Local Labor Market Impacts of Energy Boom-Bust-Boom in Western Canada," Marchand, J.

Journal of Urban Economics, 2012, 71(1), 165-174. [link]

"Identifying the Poorest Older Americans," Fisher, J., Johnson, D., Marchand, J., Smeeding, T., Torrey, B.

Journals of Gerontology, 2009, 64B(6), 758-766. [link]

"The Retirement Consumption Conundrum: Evidence from a Consumption Survey," Fisher, J., Johnson, D., Marchand, J., Smeeding, T., Torrey, B.

Economics Letters, 2008, 99(3), 482-485. [link]

"Ranking Inequality: Applications of Multivariate Subset Selection," Horrace, W., Marchand, J., Smeeding, T.

Journal of Economic Inequality, 2008, 6(1), 5-32. [link]

"No Place like Home: Older Adults and Their Housing," Fisher, J., Johnson, D., Marchand, J., Smeeding, T., Torrey, B.

Journals of Gerontology, 2007, 62B(2), 120-128. [link]

Books

Labour Economics: Principles in Practice, Canadian Edition, McLaughlin, K., Marchand, J.

Oxford University Press, expected 2023, under contract, 592 pages. [link]

Chapters in Handbooks

"Poverty and Aging," Marchand, J., Smeeding, T.

In Piggott, J., Woodland, A. (eds.),

Handbook of the Economics of Population Aging, 2016, Volume 1B, Elsevier, 905-950. [link]

Chapters in Other Books

"The Distributional Impacts of an Energy Boom in Western Canada," Marchand, J.

In Green, D., Riddell, C., St-Hilaire, F. (eds.),

[winner of the 2017 Doug Purvis Memorial Prize]

Income Inequality: The Canadian Story, 2016, Institute for Research on Public Policy, 239-247. [link]

"Retirement and Financial Security: Two Economists Think Out Loud," Marchand, J., Smeeding, T.

In Wilmoth, J., Ferraro, K. (eds.),

Gerontology: Perspectives and Issues, 2013, 4th Edition, Springer, 173-197. [link]

"Family Time and Public Policy in the United States," Smeeding, T., Marchand, J.

In Bittman, M., Folbre, N. (eds.),

Family Time: The Social Organization of Care, 2004, Routledge, 25-47. [link]

Trade Journal Articles

"Don't It Make My Brown Jobs Green? What Renewable Energy Means for Jobs and Job Quality," Marchand, J.,

Perspectives on Work, 2017, 21, 24-29. [link]

Research Reports

"Report of the Minimum Wage Expert Panel," Marchand, J. (chair), Sen, A., von Schellwitz, M., Braun-Pollon, M., Stanton, J., Culo, B., Borger, D., Donnelly, R., Lycklama, N.,

Government of Alberta, 2023, Ministry of Jobs, Economy and Northern Development. [link]

"Thinking about Minimum Wage Increases in Alberta: Theoretically, Empirically, and Regionally," Marchand, J.,

C.D. Howe Institute Commentary No. 491, 2017, C.D. Howe Institute. [link]

"Albertan Labour in the Previous Energy Boom," Marchand, J., Song, T.,

An Examination of Alberta Labour Markets, 2013, Institute for Public Economics, 10-24. [link]

"Inequality and Civic Engagement," Marchand, J., Mettler, S., Smeeding, T., Stonecash, J.

Maxwell Poll on Civic Engagement and Inequality, 2006, Campbell Public Affairs Institute, 4-17. [link]

Other Publications

"Over Two-Thirds of Opioid Overdose Victims in Canada were Employed Before They Died," Cheung, A., Marchand, J., Mark, P.,

Population Health Research Brief Series, 2023, Lerner Center for Health Promotion, Mar. [link]

"Final Call to Release Alberta's Minimum Wage Expert Panel Report," Marchand, J.,

C.D. Howe Institute Intelligence Memo, 2023, C.D. Howe Institute, Feb. [link]

"A Reality Check on Alberta's Job Numbers," Marchand, J.,

Edmonton Journal, 2019, Editorial, A7, Apr. [link]

"Is a $15 Minimum Wage Worth It? Here's What the Numbers Say," Green, D., Marchand, J.

Globe and Mail, 2018, Report on Business, B4, Oct. [link]

Reprinted in Mankiw, G., Kneebone, R., McKenzie. K., *Principles of Microeconomics, 8th Edition*, 2020, Nelson, 528 pages. [link]

"Alberta's Minimum Wage Should Move with Increases in Labour Demand (i.e. Energy Prices)," Marchand, J.,

C.D. Howe Institute Intelligence Memo, 2016, C.D. Howe Institute, Sep. [link]

"Economic Windfall from Western Energy Boom May Have the Power to 'Lift All Boats', But Not Evenly," Marchand, J.,

Labour Market Matters, 2014, Canadian Labour and Skills Researcher Network, 6(7), Jul. [link]

PAPERS

"Work, Health, and Mortality: The Case of WLEMMAs in the Shale Boom and Bust," Marchand, J., Milligan, K.

"Routine Tasks were Demanded from Workers During an Energy Boom," Marchand, J.

University of Alberta, Department of Economics, Working Paper 2020-08. [link]

"Local Labor Market Effects of Environmental Regulations: Evidence from Canada Wide Standards," Andersen, D., Marchand, J.

"The College Age Spike in Poverty: Emergence, Expansion, Endurance," Marchand, J.

GRANTS

Market Modifier Funds ($10,000), PI, Department of Economics, University of Alberta, 2022 – 2025

Signature Area Team Grant ($5,000), PI, KIAS, University of Alberta, 2022 – 2024

Market Modifier Funds ($5,000), PI, Faculty of Arts, University of Alberta, 2021 – 2024

Future Energy Systems ($250,000), PI, Canada First Research Excellence Fund, 2018 – 2023

Market Modifier Funds ($15,000), PI, Department of Economics, University of Alberta, 2019 – 2020

Knowledge Synthesis Grant ($25,000), PI, Social Sciences and Humanities Research Council, 2015 – 2016

SSHRC Application Grant ($1,500), PI, Department of Economics, University of Alberta, 2015 – 2016

Academic Study Grant ($60,000), Co-PI, Institute for Public Economics, 2012 – 2013

Research Mobility Fund ($3,000), PI, Worldwide Universities Network, 2011 – 2012

Small Research Grant ($4,000), PI, School of Business, University of Alberta, 2008 – 2010

SSHRC Application Grant ($1,500), PI, Department of Economics, University of Alberta, 2008 – 2009

Capital Recruitment Fund ($9,000), PI, Faculty of Arts, University of Alberta, 2007 – 2008

Dissertation Fellowship, Center for Retirement Research, Boston College, 2006 – 2007

Fellow, 2nd Lindau Meeting of Nobel Laureates, National Science Foundation, 2006

TALKS

Speaker

2024: Allied Social Sciences Association (LERA) (scheduled),
Universite du Quebec a Montreal (Econ) (scheduled)

2023: Canadian Economic Association, Eastern Economic Association, University of Alberta (IPE)

2022: Allied Social Sciences Association (LERA), Canadian Economics Association,
Canadian Labour Economics Forum, Economics Society of Northern Alberta,
Society of Labor Economists, University of Pennsylvania

2021: Association for Public Policy Analysis and Management (postponed to 2022),
Atlantic Canada Economics Association, Canadian Economics Association,
Economics Society of Northern Alberta, Labor and Employment Relations Association,
Lancaster House, Royal Economic Society, Society of Labor Economists, University of Alberta (PI)

2020: Labor and Employment Relations Association, National Bureau of Economic Research (SI),
(Joint) Society of Labor Economists and European Association of Labor Economists

2019: Association for Public Policy Analysis and Management, Canadian Economics Association,
London School of Economics (GRI), National Bureau of Economic Research,
Southern Economic Association, University of Alberta (Econ)

2018: Allied Social Sciences Association (AERE),
Association for Public Policy Analysis and Management, Canadian Economics Association,
MacEwan University (Econ), Society of Labor Economists, University of Alberta (FES),

University of Alberta (IPE), University of Saskatchewan (Econ), Western Economic Association

2017: Eastern Economic Association, Economics Society of Northern Alberta, Lancaster House, Midwest Economics Association (SOLE), Senate of Canada, Syracuse University (CPR)

2016: Canadian Economics Association, International Association for Research in Income and Wealth, Restaurants Canada, Ryerson University (Econ), Social Sciences and Humanities Research Council, University of Calgary (SPP), University of Pittsburgh (GSPIA)

2015: Canadian Economics Association, Canadian Research Data Centre Network, Economics Society of Northern Alberta, Social Sciences and Humanities Research Council, (Joint) Society of Labor Economists and European Association of Labor Economists, University of Toronto (Econ)

2014: Allied Social Sciences Association (LERA), Society of Labor Economists

2013: Canadian Economics Association, Empirical Methods in Energy Economics, Harvard University (SPH), University of Alberta (IPE)

2012: International Association for Research in Income and Wealth, North American Regional Science Council, University of Alberta (GRI), University of Alberta (IPE), University of Wisconsin – Madison (IRP)

2011: Canadian Research Data Centre Network, Society of Labor Economists, University of Alberta (Econ)

2010: Canadian Economics Association, Eastern Economic Association, University of Alberta (Econ)

2009: (Joint) USA/Canadian Research Data Centre Network

2007: Federal Reserve Bank of Kansas City, National Bureau of Economic Research (SI), University of Alberta (Econ) (offer), University of Illinois – Urbana/Champaign (ACE) (offer), US Department of Labor, US Department of the Treasury, Urban Institute

2006: International Association for Research in Income and Wealth, Syracuse University (Econ)

Chair, Discussant, and/or Organizer

2023: Canadian Economics Association, Eastern Economic Association, Economics Society of Northern Alberta (scheduled)

2022: Allied Social Sciences Association (LERA), Canadian Economics Association, Economics Society of Northern Alberta, Society of Labor Economics

2021: Canadian Economics Association, Labor and Employment Relations Association

2020: Association for Public Policy Analysis and Management, Canadian Economics Association (canceled)

2019: Association for Public Policy Analysis and Management, Canadian Economics Association, Southern Economic Association

2018: Canadian Economics Association, Society of Labor Economists, Western Economic Association

2017: Canadian Economics Association, Midwest Economics Association (SOLE)

2016: Canadian Economics Association, International Association for Research in Income and Wealth

2015: Canadian Economics Association

2014: Institute for Research on Public Policy

2013: Canadian Economics Association

2012: International Association for Research in Income and Wealth, University of Alberta (IPE)

2006: International Association for Research in Income and Wealth

TEACHING

Graduate

Directed Research Project (ECON 999): Spring 2021 (4.6)

Graduate Research Project (ECON 900): Winter / Spring 2011

Graduate Research Workshop (ECON 591): Winter 2023, Winter 2022, Winter 2021, Winter 2020, Winter 2019, Winter 2018, Winter 2017, Winter 2014, Winter 2013

Labor Economics I (ECON 531): Winter 2018, Winter 2017, Fall 2014, Fall 2013, Fall 2012 (4.6), Fall 2011, Winter 2011 (4.7), Fall 2009, Winter 2009, Fall 2007

Blended

Labor Economics / Labor Economics I (ECON 431/531): Winter 2023 (4.9), Winter 2022, Winter 2021 (4.5), Winter 2020

Undergraduate

Labor Economics (ECON 431): Fall 2018 (4.8), Fall 2017 (4.8, 4.6), Fall 2016 (4.6, 4.5), Winter 2015 (4.5, 4.3), Fall 2014 (4.8), Winter 2014 (4.3), Fall 2013 (4.7), Fall 2012 (4.4), Fall 2011 (4.8), Winter 2011 (4.7), Winter 2010 (4.8)

Labor Economics (ECON 331): Fall 2018 (4.2), Fall 2012 (4.7), Fall 2010 (4.7)

Intermediate Microeconomic Theory I (ECON 281): Fall 2011 (4.5), Winter 2010 (4.3), Fall 2009 (4.5), Winter 2009 (4.6), Fall 2008 (4.3), Winter 2008 (4.2, 4.2)

ADVISING

Doctorate

Supervisor: Yuhan Wang; in progress

Co-Supervisor: Hanxiao Li, Nov. 2015

Committee Member: Zi Fang, in progress; Kyle Phong, in progress; Liyuan Xuan, in progress; Himani Pandey, Jul. 2021; Philip Akude, Apr. 2020

Arm's Length Examiner: Filmer Chu, Apr. 2019

Exam Chair: Boris Ortega Moreno, Oct. 2019; Ning Cao, Aug. 2017; Waleem Alausa, Aug. 2012

Masters

Main Advisor: Jing Tian, incomplete; Jennifer Fisher, Nov. 2010; Hang Gao, Sep. 2010; Sam Pok Man Lee, Mar. 2010; Salman Tajammul, Feb. 2009; Moses Wakooli, Apr. 2008

Second Reader: Ziyu Zheng, Jun. 2022; Kelvin Karkoh-Ampomah, Jun. 2020; Ziqi Bai, Jun. 2019; Kyle Phong, Jun. 2018; Boya Wang, Ziwei Li, Jun. 2017; Cong Yin, Jun. 2016; Matthew Walshe, Jun. 2015; Rayan Bou Farraj, Jun. 2014; Janm Mehta, Jun. 2013; Jiayi Luo, Jun. 2012; Lina Ng, Apr. 2012; Sara Olfert, Tao Song, Jun. 2011; Joey Yi Zuo, Sep. 2007

Arm's Length Examiner: Xiongwei Ying, Sep. 2013

Coordinator: Fei Ni, Jun. 2011; James Carver, Sheena Francisco, Deqian Li, Di Ma, John Turvey, Wenqin Xu, Shuhua Zhou, Apr. 2011; Lei Chang, Feb. 2011

Bachelors

Supervisor: Alexander Cheung, Aug. 2019

Co-Supervisor: Jordan Reader, Apr. 2023

SERVICE

Affiliation

American Economic Association, Canadian Economics Association,
Labor and Employment Relations Association, Society of Labor Economists

Referee

Ageing and Society, American Economic Journal: Applied Economics,
American Economic Journal: Economic Policy, American Journal of Agricultural Economics,
Applied Economics Letters, Canadian Journal of Economics, Canadian Public Policy, Cities,
Contemporary Economic Policy, Economic Journal, Economics Bulletin, Economics of Education Review,
Empirical Economics, Environment and Development Economics, European Economic Review,
Extractive Industries and Society, Food Policy, Industrial and Labor Relations (ILR) Review,
IZA World of Labor, Journal of Economic Geography, Journal of Economic Inequality,
Journal of Economics and Business, Journal of Environmental Economics and Management,
Journal of Forest Economics, Journals of Gerontology, Journal of Human Resources,
Journal of Labor Economics, Journal of Labor Research, Journal of Policy Analysis and Management,
Labour Economics, McGraw-Hill Ryerson, Mitacs Accelerate, Nature Sustainability,
Regional Science and Urban Economics, Resource and Energy Economics, Resources Policy,
Review of Economics and Statistics, Review of Economics of the Household, Review of Income and Wealth,

Social Science Quarterly, Social Sciences and Humanities Research Council, Southern Economic Journal

Profession

Editor, Announcement Service, New Economics Papers (NEP), Labour Economics (LAB), 2015 – present

Editor, Announcement Service, New Economics Papers (NEP), Labor Markets (LMA), 2013 – present

Government

Chair, Minimum Wage Expert Panel, Labour and Immigration, Government of Alberta, 2019 – 2020

Expert Witness, Standing Senate Committee on National Finance, Senate of Canada, 2017

University

Member, Employment Survey Advisory Committee, Career Centre, University of Alberta, 2021 – present

RePEc Coordinator, University of Alberta Labor Economists (UALE), University of Alberta, 2020 – present

Principal Investigator, System Wide, Future Energy Systems, University of Alberta, 2018 – 2023

Researcher, Energy Systems, Signature Areas Initiative, University of Alberta, 2018 – present

RePEc Coordinator, University of Alberta Economists (UAE), University of Alberta, 2014 – present

Faculty

Co-Director (with Andrew Leach), Institute for Public Economics, Faculty of Arts, 2023 – present

Director, WELM-Arts (Work, Employment, and Labour Markets), Faculty of Arts, 2020 – present

Member, Faculty Evaluation Committee, Faculty of Arts, 2020 – 2023

Member, Research Committee, Faculty of Arts, 2018 – 2021

Member, Dean's Advisory Selection (Hiring) Committee, Sociology, Faculty of Arts, 2016 – 2017

Member, Bridging Program Committee, Faculty of Arts, 2014 – 2015

Department

Board Member, Economics Society of Northern Alberta, 2022 – present

Editor, Department Working Paper Series, Department of Economics, 2009 – present

Head, Professional Outreach, Department of Economics, 2008 – present

Member, Advisory Council, Institute for Public Economics (IPE), Economics, 2019 – 2020

Library Coordinator, Department of Economics, 2017 – 2020

Alternate, Advisory Staff Selection (Hiring) Committee, Department of Economics, 2017 – 2018

Chair, Research Committee, Department of Economics, 2014 – 2015

Member, University of Alberta Economists (UAE) Committee, Economics, 2014 – 2015

Member, Visiting Speakers and Faculty Seminar/Workshop Committee, Economics, 2013 – 2014

Member, Course Caps Committee, Department of Economics, 2012 – 2013

Member, Newsletter/Web Presence Committee, Department of Economics, 2010 – 2013

Member, Undergraduate Curriculum Committee, Department of Economics, 2009 – 2010

Member, Scholarships and Awards Committee, Department of Economics, 2007 – 2008

Media

630 CHED Radio, 770 CHQR Radio, Bloomberg, Calgary Herald, CBC News, CBC Radio, City News, CTV News, Daily Oil Bulletin, Edmonton Journal, Edmonton Sun, Eyeopener, Financial Post, Folio, Francopresse, Gateway, Global News, Globe and Mail, Medium, National Post, Next Avenue, Radio Canada, Real Talk with Ryan Jespersen, Regina Leader-Post, Spruce Grove Examiner, Star Metro, Toronto Star, VICE, Yahoo Finance

updated September 2023

Institution	Title	Department	First Name	Last Name	h-index	citations
University of Alberta	Professor	Economics	Joseph	Marchand	15	1,151
University of Alberta	Professor	Economics	Vera	Brencic	11	352
University of Alberta	Professor	Economics	Haifang	Huang	26	4,549
University of Alberta	Professor	Business	Runjuan	Liu	11	1,017
University of Alberta	Professor	Economics	Beyza	Ural Marchand	10	768
University of Alberta	Associate Professor	Economics	Dana	Andersen	4	172
University of Alberta	Associate Professor	Economics	Heather	Eckert	.	.
University of Alberta	Associate Professor	Economics	Sebastian	Fossati	6	118
University of Alberta	Associate Professor	Economics	Pinar	Gunes	.	.
University of Alberta	Associate Professor	Economics	Dmytro	Hryshko	11	564
University of Alberta	Associate Professor	Economics	Xingfei	Liu	8	254
University of Alberta	Associate Professor	Economics	Andrew	McGee	9	569
University of Alberta	Associate Professor	Economics	Jeffrey	Penney	5	86
University of Alberta	Associate Professor	Economics	Ashantha	Ranasinghe	.	.
University of Alberta	Assistant Professor	Economics	Brendon	Andrews	.	.
University of Alberta	Assistant Professor	Economics	Benjamin	Milner	.	.
University of Alberta	Assistant Professor	Economics	Laurel	Wheeler	2	50
University of Alberta	Assistant Professor	Economics	Jiatong	Zhong	.	.
University of Calgary	Professor	Economics	Trevor	Tombe	14	1,852
University of Calgary	Associate Professor	Economics	Jean-William	Laliberte	8	382
University of Calgary	Associate Professor	Business	Chad	Saunders	9	944
University of Calgary	Associate Professor	Economics	Stefan	Staubli	15	1,423
University of Calgary	Associate Professor	Economics	Alexander	Whalley	12	1,048
University of Calgary	Assistant Professor	Economics	Leonard	Goff	7	528
University of Lethbridge	Professor	Political Sci	Lars	Hallstrom	17	2,494
University of Lethbridge	Professor	Economics	Richard	Mueller	23	1,978
University of Lethbridge	Professor	Geography	Ivan	Townshend	.	.
Athabasca University	Associate Professor	Economics	Hussein	Al-Zyoud	4	77
Mount Royal University	Professor	Business	David	Finch	15	1,627
				TOTAL	242	22,003

Alberta Centre for Labour Market Research (ACLMR)	5 Year					Future
REVENUES (Annual Totals)	**2023-2024**	**2024-2025**	**2025-2026**	**2026-2027**	**2027-2028**	**2028-20xx**
All Funding Sources						
Government of Alberta - ACLMR Research Grant (RES0063386)	$400,000	$400,000	$400,000	.	.	.
Government of Alberta - ACLMR Research Grant (*new funds*)	.	.	.	$200,000	$200,000	$200,000
Prairies Economic Development Canada - Grant (*new funds*)	.	.	$250,000	$250,000	$250,000	$250,000
Established Endowment (principle of $300,000) (interest flow)	.	.	.	$11,038	$11,038	$11,038
Carry Forward From Previous Fiscal Year	.	$160,000	$133,000	$46,000	$70,038	$94,076
Total Revenue	$400,000	$560,000	$783,000	$507,038	$531,076	$555,114
EXPENSES (Annual Totals)	**2023-2024**	**2024-2025**	**2025-2026**	**2026-2027**	**2027-2028**	**2028-20xx**
Research Investment						
Establishing Endowment (principle of $300,000)	.	.	$300,000	.	.	.
Research Creation						
Home Institution (propsed as UofA) (students, data, etc.)	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000
Partner Institutions (UofC, UofL, AU, MRU) (students, data, etc.)	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000
Research Linkages						
Events (conferences, meetings, social events, workshops)	.	$50,000	$50,000	$50,000	$50,000	$50,000
Travel (capped at $10,000 per GoA rules)	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000
Promotion (sponsorships)	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000
Research Administration						
Director (two teaching buyouts at $11,000 and $7,000 bump)	$29,000	$29,000	$29,000	$29,000	$29,000	$29,000
Project Coordinator (salary and then benefits at 18%)	.	$72,000	$72,000	$72,000	$72,000	$72,000
Website (initial creation, hosting, tweaking)	.	$50,000	$10,000	$10,000	$10,000	$10,000
Office hardware and operations	.	$15,000	$15,000	$15,000	$15,000	$15,000
Space (2,500 square feet x $20 per square foot)	.	.	$50,000	$50,000	$50,000	$50,000
Total Expenses	$240,000	$427,000	$737,000	$437,000	$437,000	$437,000
REVENUES - EXPENSES (Annual Totals)	**2023-2024**	**2024-2025**	**2025-2026**	**2026-2027**	**2027-2028**	**2028-20xx**
Remaining Funds	$160,000	$133,000	$46,000	$70,038	$94,076	$118,114

Alberta Centre for Labour Market Research (ACLMR)

Letters of Support List

1. Suzanne Harbottle, Assistant Deputy Minister, Labour and Workforce Strategies, Government of Alberta

2. Marvin Washington, Dean and Professor, College of Social Sciences and Humanities, University of Alberta

3. Robert Wood, Dean and Professor, Faculty of Arts, University of Alberta

4. Valentina Galvani, Chair and Professor, Department of Economics, University of Alberta

5. Andrew Leach, Co-Director, Institute for Public Economics, University of Alberta

6. Robert Oxoby, Head and Professor, Department of Economics, University of Calgary

7. Trevor Tombe, Research Fellow, School of Public Policy, University of Calgary

8. Lars Hallstrom, Director, Prentice Institute, University of Lethbridge

9. David Finch, Chair and Professor, LearningCITY Collective and Mount Royal University

Alberta Jobs, Economy and Trade

Office of the Assistant Deputy Minister
9th Floor, Labour Building
10808 – 99 Avenue
Edmonton, AB T5K 0G5
Telephone: 780-643-1348

84703

October 13, 2023

To Whom It May Concern:

We are pleased to inform you that Dr. Joseph Marchand and his team has been selected to lead the Alberta Centre for Labour Market Research (ACLMR).

Dr. Marchand's proposal has been thoroughly reviewed by an internal and external review committee of subject matter experts, and we believe he and his team are well-suited for this role.

Alberta at Work is a provincial investment of over $700 million, empowering Albertans to develop new skills and advance their careers. It strengthens the education system, supports training and career development, facilitates workforce re-entry, and promotes the advantages of living and working in Alberta. Under Dr. Marchand's leadership, the ACLMR will play a crucial role in this initiative by providing robust labour market information to promote informed decision-making and contribute to economic growth. To underscore our commitment to the establishment of the ACLMR, we are pleased to confirm our support for the first three years, with an allocated budget of $1.2 million over this period.

We kindly request your assistance in setting up the ACLMR at your institution and working closely with Dr. Marchand and his team for its success.

Thank you for your cooperation and support.

Sincerely,

Suzanne Harbottle
Assistant Deputy Minister
Labour and Workforce Strategies

UNIVERSITY OF ALBERTA

COLLEGE OF SOCIAL SCIENCES & HUMANITIES

Office of the Dean
2-10 University Terrace
University of Alberta
Edmonton, Alberta, T6G 2T4
Telephone:780.492.0415
www.ualberta.ca/social-sciences-humanities

January 2, 2024

To whom it may concern,

Re: ACLMR Letter of Support

I am delighted to offer my support for the Alberta Centre for Labour Market Research (ACLMR). Not only does the ACLMR offer the potential for highlighting the amazing expertise of scholars at the University of Alberta, but through coordination from scholars at the U of A, reach scholars throughout Western Canada. Due to its cross faculty nature, it is also perfectly suited to take advantage of the College Structure and to be the first center that is located in the College of Social Sciences and Humanities. Given the newly created College Structure as well as the Vice President Research and Innovation (VPRI) Task Force Report on Centers and Institutes, we feel that placing the ACLMR at the College of Social Sciences and Humanities is in line with the goals of centers as outlined by the VPRI office. More broadly, I support the ACLMR as it is squarely aligned with SHAPE (Research and Engage with Purpose). Specifically, by coordinating labor market research across a variety of scholars, faculties and universities, ACLMR scholars will be able to support the call for an increase in the number of large-scale, multidisciplinary research initiatives that stimulate community-engaged research.

As College Dean and Vice-Provost for the College of Social Sciences and Humanities, I am excited to support ACLMR in its efforts to become a center.

Sincerely,

Marvin Washington
College Dean and Vice-Provost
College of Social Science and Humanities

UNIVERSITY OF ALBERTA

October 11, 2023

Dean's Letter of Support for the Establishment of the Alberta Centre for Labour Market Research

As Dean of the Faculty of Arts, I am pleased to write in support of the formal establishment of the Alberta Centre for Labour Market Research (ACLMR) as an academic centre under the UAPPOL Centres and Institutes Policy.

ACLMR draws on the existing research excellence in labour market research in the Faculty of Arts, and particularly the Faculty of Arts Signature Area of Research on Work, Employment, and Labour Markets (WELM). It is built on its members' demonstrated capacity to deliver impactful research on labour economics and successful training of highly qualified personnel (HQP). Through its research and HQP training, ACLMR will provide a major addition to the capacity of the Province of Alberta, and its constituent municipalities and employers to undertake evidence-informed decision and policy making. It will also increase the communication and coordination of labour market information across Alberta-based scholars and experts.

Thus, we are in full support of the establishment of ACLMR, and would like to confirm our support for the plan to make Faculty of Arts the intellectual, administrative, and budgetary home of the Centre.

Sincerely,

Robert Wood, PhD
Dean

Faculty of Arts
Office of the Dean
6-33 Humanities Centre, Edmonton AB Canada T6G 2E5

T 780.492.ARTS
artsawards@ualberta.ca
ualberta.ca/arts

Leading with Purpose.

UNIVERSITY OF ALBERTA

October 11, 2023

From: Dr. Valentina Galvani
H.M. Tory Building
University of Alberta

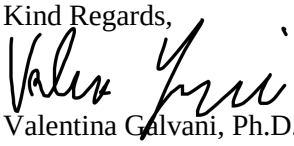
To: Those Involved in Approving the Creation of the Alberta Centre for Labour Market Research

As a Chair of the Economics Department at the University of Alberta, I express the strongest support for the creation of the Alberta Centre for Labour Market Research (ACLMR) and for its affiliation with this Department.

The Department of Economics is fortunate to count among its ranks many of the experts that the Centre needs to flourish, starting from Professor Joseph Marchand, a nationally and internationally recognized scholar in Labour economics. Further, over the years, we have carefully planned our hires to achieve a substantial concentration of high-level competencies at all academic ranks in Labour Economics and related fields. This deep "bench" assures the longevity of the academic support needed to make the Centre a point of reference for Labour Market analysis for Albertans for many years to come. Moreover, our Labour Market economists can draw from the experience of their colleagues in Energy and Public Economics in the Department in collaborations that will allow discussing all facets of the dynamics of the Albertan economy to the obvious benefit of the impact of the Centre. Our in-house capacity is further expanded by our strong and deliberate outreach to every labour economist in the Province at the University of Calgary, University of Lethbridge, Athabasca University, and Mount Royal University.

The Department is eager to support Albertans and its policymakers with high-quality research in Labour and related fields. I cannot imagine a better fit for the ACLMR than the UofA Economics Department due to the perfect match between the goals the Centre and the Economics Department strive to achieve.

Kind Regards,



Valentina Galvani, Ph.D. (She/Her)
Professor and Chair
Department of Economics
H.M. Tory Building Rm. 8-14
University of Alberta
vgalvani@ualberta.ca

Andrew Leach
Professor of Economics and Law

407 Law Centre or 728 Tory Building
University of Alberta
Edmonton, Alberta T6G 2T6
Email: andrew.leach@ualberta.ca

October 14, 2023

University of Alberta
Board of Governors
3-04 South Academic Building (SAB)
University of Alberta
Edmonton, Alberta T6G 2G7

Dear Board Members,

It is my pleasure to provide my full support for the proposal to create the Alberta Centre for Labour (ACLMR) Market Research at the University of Alberta, as proposed by Professor Joseph Marchand in the Faculty of Arts (Economics).

The ACLMR is a collaborative venture between researchers located in each of the four research universities in Alberta, along with researchers in professional organizations, and industry. It brings together researchers from various disciplines, advancing the interdisciplinary research goals of the University of Alberta's College of Social Science and Humanities. It is already well-funded, with over $1 million offered through 2026 in an agreement with the provincial government, and this can grow substantially once the basic infrastructure is established. And, the leader of the ACLMR has a proven track record of stellar academic and public-facing scholarship and impact on government policy.

The addition of the ACLMR as a University of Alberta Centre will present opportunities for collaboration, but no conflicts that I can foresee with the Institute for Public Economics (IPE) for which Professor Marchand and I currently serve as Co-Directors. Labour policy is a subset of public economics and labour policies have been and will continue to be part of the focus of the IPE, but they are just that: a part of the focus. The IPE serves to link applied research in fields of economics with a public aspect (fiscal policy, environment, energy, labour, and monetary economics). By contrast, the ACLMR focusses broadly on labour research, of which only a subset is anchored in economics and which thus has a small intersection with topics of interest to the IPE. On the other hand, the current funding proposal for the ACLMR would swamp by orders of magnitude the funding for public economics research in the IPE. Any consideration of combining the two initiatives would have the effect of crowding out other research initiatives and priorities of the IPE and offer no material advantages.

The goal of the ACLMR is to advance labour research with an Alberta focus, continuing the mission of an Arts Signature Area of Research and Collaboration already underway. The six goals expressed in the principal grant application include measures that speak to many of the major priorities in the recently-completed University Strategic Plan, which states our goals for research with impact. The Plan calls for "an increased number of large-scale, multidisciplinary research initiatives that stimulate community-engaged research," and this is exactly what the ACLMR will do. Its research roster includes scholars with a focus on Indigenous engagement, gender inequalities in labour market outcomes, and lower-income individuals' interactions with social policy. These are researchers working directly to, to again

quote from the University Strategic Plan, “improve the quality of life for millions of people in communities across Alberta, Canada and the world.”

I urge you to provide your full support to this initiative.

Best,

Andrew Leach, Professor of Economics and Law
Co-Director of the Institute for Public Economics

Robert Oxoby
Professor and
Department Head

Department of Economics
2500 University Drive NW
Calgary, AB, Canada T2N 1N4
Phone: (403) 220-2586 • Fax: (403) 282-5262
oxoby@ucalgary.ca

October 11, 2023

Hello,

The Department of Economics at the University of Calgary wholeheartedly endorses the establishment of the Alberta Centre for Labour Market Research. This initiative will serve as a unifying platform, bringing together labor researchers from all four Comprehensive Academic and Research Universities, policy researchers, and industry researchers. By consolidating and democratizing access to cutting-edge labor market research specific to our province, this endeavor promises to catalyze enhanced collaboration, agility, and the overall impact of research outcomes. With increased synergy and a more influential collective voice, all stakeholders within the labor market ecosystem will reap substantial benefits. The University of Alberta, as the host institution for this Center, will ensure that it remains an inclusive resource, open to all researchers engaged in the study of labor market dynamics within our province.

This solution addresses the pressing need for a coordinated and harmonized approach to labor market information across the scholarly and expert community in Alberta. The proposed coordination and harmonization are expected to yield several tangible benefits:

1. Facilitation of high-quality, rigorous, and unbiased research.
2. Streamlined and more targeted access to top-tier labor market information.
3. Increased public engagement through expanded outreach, including collaboration with media and various dissemination channels.
4. Enhanced capacity to influence policy formulation at all levels of government, with the proximity to the provincial government serving as a strategic asset.
5. Demonstrated prowess in securing external funding from reputable sources, with minimal constraints on the direction of research outputs.
6. Implementation of a program designed to augment Alberta's expertise in labor market research.

The Department of Economics at the University of Calgary extends its full support to this initiative, recognizing the transformative potential it holds for labor market research and its pivotal role in shaping the future of our province's labor dynamics.

Sincerely,

Dr. Robert Oxoby
Professor and Department Head
Department of Economics
University of Calgary

UNIVERSITY OF CALGARY

FACULTY OF ARTS

DEPARTMENT OF ECONOMICS
2500 University Drive NW
Calgary, AB, Canada T2N 1N4
Email: econgrad@ucalgary.ca
Homepage: http://econ.ucalgary.ca

October 11, 2023

RE: Alberta Centre for Labour Market Research

To Whom It May Concern,

I am pleased to provide this letter to those involved in approving the creation of the Alberta Centre for Labour Market Research ("the Centre") in strong support of its creation and to outline potential synergies with leading scholars at the University of Calgary, the Department of Economics, and the School of Public Policy. Given the increasing significance and complexities of Alberta's labour market dynamics, there is a pressing need for an initiative dedicated to unbiased, high-quality research that can guide policymakers, employers, and other stakeholders. I am confident the Centre will do just that.

By coordinating and leveraging frontier research among researchers and policy practitioners across the province, the Centre provides a unique opportunity to enhance these collaborations and, ultimately, the quality and impact of the research outcomes. This is particularly valuable for Alberta, which faces unique labour market challenges and opportunities, both in the short- and the long-term. The ambitious goals proposed by the Centre, from delivering rigorous research and enhancing public engagement to informing policy development, reflect a comprehensive and thoughtful approach to addressing the province's labour market challenges.

I am particularly excited to support the holistic, multi-disciplinary, and multi-institution approach proposed by the Centre. As a Research Fellow at the School of Public Policy, with ongoing and increasingly active contributions through the School's Fiscal and Economic Policy Area, I believe the Centre aligns well with School activities and existing relationships. This can involve joint research projects and publications, including with myself and several other scholars in related areas; data sharing and analysis; workshops and training programs, for both students and members of the broader community; public engagement and outreach activities; and so much more. I will work towards ensuring these activities are a success.

In short, I am strongly supportive of and excited by the potential to work collaboratively with the Centre to produce and mobilize insights that are critical to Alberta's evolving needs in this space. Please do not hesitate to contact me if you have any questions or concerns.

Sincerely,

Trevor Tombe
Professor and Graduate Program Director, Department of Economics
Research Fellow, School of Public Policy
University of Calgary
Email: ttombe@ucalgary.ca
Phone: 403-220-8068

the Prentice Institute
for Global Population and Economy

Suite L1184, 4401 University Drive W., Lethbridge, Alberta T1K 3M4

University of Lethbridge

October 10, 2023

Re: The University of Alberta award for the Alberta Centre for Labour Market Research

ATTN: Vice-President, Research Office, University of Alberta

ATTN: Parties engaged in the review, approval, and establishment of the Alberta Centre for Labour Market Research

To whom it may concern:

I am pleased to write this letter of support and endorsement for the establishment of a University of Alberta-affiliated research centre tied to the funding of the Alberta Centre for Labour Market Research. As per the proposal submitted by Dr. Joseph Marchand, the Centre will provide a significant hub for provincially-specific and innovative research that will have direct implications and ties to the labor, employment, and economic future of this province. As a result, it is imperative that this award be structured and housed in a fashion that facilitates inter-institutional collaboration, multidisciplinary research, and opportunities for the training of highly qualified personnel across the four participating institutions. As the proposal submitted by Dr. Marchand notes, there is not only a wealth of established research expertise across these institutions, but also a unique opportunity for those faculty members and their students to collaborate on questions of immediate relevance to the future of the province. Housing the Centre at the University of Alberta is a natural decision, given not only the research and administrative capacity of that university, but also its history, and demonstrated ability to host and support research centres and institutes with significant resources, profile and funding across numerous faculties and disciplines.

As the former Director of the Alberta Centre for Sustainable Rural Communities at the University of Alberta from 2009 to the end of 2020, I have first-hand experience in the capacity of the University to support such an undertaking. Specifically, the ACSRC was able to leverage dozens of externally awarded grants during this period, which led to the completion of over 70 projects at both employment and training opportunities for over 150 students from undergraduate and upward. Such centers benefit from established policies and procedures that provide supports for both faculty-specific and affiliated centres and institutes. For example, the Institute for Continuing Care, Education and Research was a comparable network of institutions and faculty that collaborated with the ACSRC on a number of rurally-focused projects and grants with considerable success. That kind of relationship, and the connections that such affiliated centres and institutes can generate, takes clear advantage of both institutional capacity and strengths, as well as presenting exceptional opportunities for innovative collaboration, the leveraging of additional research funds (for example, from federal funders, such as the Tri Agency). It also provides a structure that supports a network of public policy-oriented research, knowledge synthesis, and targeted knowledge dissemination. Doing so positions research, expertise and collaboration as a corner stone of evidence informed public policy within the province.

As Alberta continues to face challenges in terms of economic adaptation, growing populations, urbanization, technological readiness, and inter-generational dynamics within the workplace and workforce, this centre presents a significant opportunity for the research and policy communities to engage, collaborate, and take advantage of a policy sciences model that places expertise “on tap” as opposed to “on top”. This model is resonant with a role for applied social sciences within public policy, and as a support for public decision making and planning at both local and provincial levels. As per the University’s Centres and Institute Policies, the evolution and funding of the Centre does indeed align with the creation of an affiliate-status entity with governance provided across the partner institutions, leadership provided by a

small executive (most likely from the University of Alberta and other partners), and the performance assessed as per the metrics and indicators outlined in the original proposal to the Government of Alberta.

There is, as noted above, not only precedent for the establishment of such a center, but also for the governance bodies that are typically required. In other cases, and at other institutions where comparable centres and institutes have been created, authority over budgets and reporting, as well as strategic planning, must rest with a Director, and potentially 1 to 2 Associate Directors. These individuals, which would likely include Dr. Marchand, function as the principal investigators driving the operations and activities of the centre. Conventionally, they are supported by a Steering Committee, drawn from the member institutions or network. This committee is commonly charged with the following:

- setting strategic direction and plans
- providing a forum to deal with emerging issues that impact the Centre and its members
- recommending the most accountable partner for specific functions and activities
- evaluating and monitoring outcomes and results
- reviewing budgets and financial reports and providing advice related to funding and budgetary allocations and changes
- acting as advocates and champions for the Centre.

In addition to this leadership structure, it is not uncommon for centres or institutes to convene an advisory body, typically from the public, public policy, or relevant service sectors to complement the academic direction of the centre as it conducts research and knowledge mobilization. Such a body is not a necessary step, but may provide additional validity, or priorities, as the centre undertakes and supports specific projects. Given the relatively short duration of this award (three years), and the already detailed program of research included in the original proposal, such a body may not be necessary in the short term.

To conclude, I am obviously supportive of this initiative, and keen to see ways that the Prentice Institute can partner with this Centre. The Institute has already undertaken significant work related to migration, automation, and employer readiness for technological change, as well as the implications for employees and labour supply. Similarly, we are currently working on initiatives related to employment and employability both at the municipal level, and within specific sectors such as education. We are also well aware of growing interest within the provincial government regarding issues of demographic change, population, scale, scenarios, and the implications for both revenue and expenditure sides of provincial budgets. As noted above, this interest is driven by the same reality that likely sparked the decision to fund the Alberta Centre for Labour Market Research - an interest is both politically and socially-motivated, but is also directly concerned with the economic future of this province. As a result, the four partner institutions are presented with a timely and somewhat unprecedented opportunity to collaborate, conduct and disseminate cutting-edge research, and to connect that research with the policy-making context of the Province of Alberta. The creation of an affiliated centre at the University of Alberta is a necessary step in taking advantage of that opportunity, and one that I encourage the University to take as quickly, and efficiently, as possible. As a partner in this undertaking, I am extremely optimistic as to the potential benefits the Centre and subsequent collaboration will generate across all partners, and the capacity of the Centre to support public policy guiding the economic future of this province.

Sincerely yours,

DocuSigned by:

85DF987CE15349D...

Lars K. Hallström
Director, Prentice Institute for Global Population and Economy
Professor of Political Science
University of Lethbridge

October 13, 2023

Those Involved in Approving the Creation of the Centre:

Alberta is facing revolutionary changes to how its people live, work, and learn. Confronting this challenge extends beyond the capacity of any single level of government, educational institution, or employer. Rather, it demands all stakeholders in the provincial learning-employment ecosystem collaborate and align to meet the dynamic skill demands facing the province.

In 2019, the LearningCITY Collective was established as an independent collaboration of organizations and individuals engaged in Calgary's diverse learning-employment ecosystem, including employers, educators, scholars, policymakers, and learners. During the past four-year period, the LearningCITY Collective completed numerous studies and consultations, culminating in releasing Calgary's Skills Development Framework as a guide to empower Calgarians to embrace an emerging labour market defined by adaptive capacity.

During this time, the researchers involved in the LearningCITY Collective, found many deficiencies in accessing timely data critical to key decisions associated with Alberta's learning – employment ecosystem. Consequently, when the Government of Alberta announced a grant to establish the Alberta Centre for Labour Market Research (ACLMR), my colleagues and I were excited by the opportunity to collaborate with peers across the province, led by Dr. Joseph Marchand from the University of Alberta, in establishing the ACLMR.

The ACLMR is designed to close the data, service, and related research gaps that we, and other researchers, identified over the past decade. Examples of current gaps include:

1. What are the characteristics and impacts across chronically under/unemployed Albertans, including younger citizens, Indigenous peoples, rural and urban unemployed, and those with low educational attainment?
2. What are the effects, and responses to, emerging technologies and automation?
3. How will the asymmetrical role of the energy industry impact or compound employment issues as the sector adapts to global, political, and economic pressures?
4. What are the necessary and sufficient conditions to ensure the development of a skilled and adaptive workforce across all sectors of the economy?
5. How can the province manage the effects of meeting labour demand with workers from outside the province (whether from within Canada or internationally), particularly as key sectors rise and fall over time?

6. How can the changing nature of work itself (whether driven by technological, social and/or economic factors) be accounted for in economic and related policy domains?

In 2023, the LearningCITY Collective, launched our Open Learning Lab to identify and pilot approaches to talent development through increased collaboration between employers, educators, scholars, policymakers, and learners. To rapidly expand the culture of collaboration and innovation, the lab is developing partnerships with employers, skills developers, policymakers, and researchers. We anticipate collaborating closely with the ACLMR given our shared goals.

In summary, as both a practitioner and scholar in issues related to labour market dynamics and employability, the ACLMR will become an essential tool for employers, educators, scholars, policymakers, and learners.

Regards,

David J. Finch, PhD

Chair | LearningCITY Collective

Professor & Senior Fellow | Institute for Community Prosperity | Mount Royal University

Notifications

Keeping Alberta Affordable: Eligible seniors and families with children under 18 can apply for $600 affordability payments. Learn more and apply now

Alberta.ca

Alberta Centre for Labour Market Research grant

Funding for post-secondary researchers to operate the Alberta Centre for Labour Market Research.

On this page:

Important dates

- April 21, 2023 – Deadline to submit questions
- April 28, 2023 – Deadline to submit proposal
- May 1 to May 19, 2023 – Evaluation of proposals
- June 12, 2023 – Written notice to successful proponent

Overview

Under Alberta at Work, the Alberta government is working to improve the labour market information available to students, employees and employers. As part of this enhancement, we are awarding a grant to support the establishment and research activities of an Alberta Centre for Labour Market Research at a post-secondary institution in Alberta.

The centre's mandate is to provide Albertans with balanced, independent, and credible research and analysis on labour market issues affecting the province. This will be done by:

- developing and implementing a coordinated research agenda
- building and maintaining a network that may include researchers at other post-secondary institutions with a focus on labour market issues in Alberta

Funding

The Alberta government will provide the centre with a grant of up to $400,000 a year, for 2 years. The allocation of funding will be renewed on an annual basis.

Read the grant template for public bodies (PDF, 77 KB) to learn about the terms and conditions of the grant.

Eligibility

Principal applicants may submit a proposal only if they are based at an Alberta comprehensive academic and research university (CARU), which includes:

- University of Alberta
- University of Calgary
- University of Lethbridge
- Athabasca University

Interested researchers at undergraduate universities, comprehensive community colleges, or other publicly-funded bodies are recommended to partner with applicants based at an Alberta CARU.

Learn more about the types of publicly funded post-secondary institutions in Alberta.

Applications must be submitted at the department level, with principal and co-applicants identified. Only one application per department will be accepted. We recommend that you partner with a network of researchers across departments at your institution to strengthen the application.

Submit a proposal

1. Download and read the Alberta at Work – Alberta Centre for Labour Market Research Grant Application Guidelines (PDF, 662 KB)
2. Prepare your proposal, including:
    - signed Application for Grant form (DOCX, 53 KB)
    - Project Application form (DOCX, 58 KB)
    - Budget template (XLSX, 15 KB)
    - supporting documents, as applicable:
        - resume or CV for the principal applicant
        - resume or CV for each co-applicant
        - proposed research agenda
3. Email your proposal to jend.lmegrants@gov.ab.ca before April 28, 2023.

Proposal evaluation

Our evaluation will be based on how the overall proposal package addresses the following selection criteria:

- project need
- project description
- activities and outputs
- ability to deliver
- governance
- risk management
- budget

Contact

Connect with us if you have questions or need more information:
Email: jend.lmegrants@gov.ab.ca

Signed Application for Grant Form

Application for Grant

The personal information you provide on this form is being collected by Alberta Jobs, Economy and Northern Development under the authorization of section 33(c) of the *Freedom of Information and Protection of Privacy Act* (FOIP) and is managed in accordance with Part 2 of FOIP. Your personal information will be used by Alberta Jobs, Economy and Northern Development for the purposes of determining and verifying your eligibility for a grant. If you have any questions about the collection, use, or disclosure of your personal information or should you need to make corrections to your personal information, please contact:

Simrat Slade, Manager, Labour Economics and Statistics

jend.lmegrants@gov.ab.ca

Instructions:

Please ensure you:

- Read the Grant Agreement template (attached). This includes the terms and conditions you would be subject to if you are awarded a grant.
- Complete applicable information fields below.
- Complete and attach the Project Application form, which clearly defines the scope of the program, service or project.
- Include a budget in the proposal indicating all sources of funding.
- Sign the application and submit the original and attachments for consideration.
- Retain a copy of the application for your records.

Organization Name

The Governors of the University of Alberta

Organization Address *street address*	*city/town*	*postal code*
1-560 Enterprise Square, 10230 Jasper Avenue NW	Edmonton, Alberta	T5J 4P6

If **incorporated**, which Act(s) is the organization regulated by:

- [X] *Business Corporations Act*
- [ ] *Companies Act*
- [ ] *Societies Act*
- [ ] Other (explain)

If **not incorporated**, please check one of the following:

- [ ] Individual
- [ ] Other (explain)

Dollar value of the Grant applied for: $

Purpose of the organization or occupation of individual:

Post Secondary Institution - University

An Authorized Signing Officer such as: A CEO, President, Principal or a Senior Individual with delegated authority.

Authorized Signing Officer/Applicant's Name (Please print)	Title	Phone Number
Martine Desrochers/Joseph Marchand	Research Facilitator/Professor Economics	780-492-1575

Martine Desrochers / J.J. Marchand

Authorized Signing Officer/Applicant's Signature

April 28, 2023

Date of Application (yyyy/mm/dd)

JEND 0126 (2023-02)

Alberta Jobs, Economy and Northern Development Use Only

Type of grant:

- ☐ Non-Program
- ☐ Program

Purpose of grant:

Profit Center	Cost Center	Work Breakdown Structure	Internal Order	GL Account

Grant Amount	Period Covered
$	**to**

Comments:

Payment Details:	Lump Sum	Instalments
	$	$

Recommended by:

Name and Position _____ Signature _____ Date (yyyy/mm/dd) _____

Non-Program Grants Review/Approval

Reviewed by:

Division Head _____ Date (yyyy/mm/dd) _____

Financial Services _____ Date (yyyy/mm/dd) _____

Approved by:

Deputy Minister _____ Date (yyyy/mm/dd) _____

Project Application Form

Alberta

2023-2024 Project Application
Alberta Centre for Labour Market Research

FOIP NOTICE

The personal information you provide on this form is being collected by Alberta Jobs, Economy and Northern Development under the authorization of section 33(c) of the *Freedom of Information and Protection of Privacy Act* (FOIP) and is managed in accordance with Part 2 of FOIP. Your personal information will be used by Alberta Jobs, Economy and Northern Development for the purposes of determining and verifying your eligibility for a grant. If you have any questions about the collection, use, or disclosure of your personal information or should you need to make corrections to your personal information, please contact: JEND.LMEgrants@gov.ab.ca

APPLICATION PACKAGE

Grant applications must be received electronically by 11:59 p.m. MDT on April 28, 2023. Only complete applications will be considered. A complete application consists of ALL of the following mandatory components:

- Signed Application for Grant Form
- Project Application Form
- Budget Template
- Supporting Documents, as applicable:
    - Resume or C.V. for the principal applicant
    - Resumes or C.V. for each co-applicant
    - Proposed Research Agenda

Hard copies will not be accepted.

CONTACT INFORMATION

All correspondence including application submissions are to be directed to JEND.LMEgrants@gov.ab.ca.

Refer to the 2023 Alberta Centre for Labour Market Research Grant: Application Guidelines for information on completing this form.

GRANT APPLICATION FORM

A. APPLICANT INFORMATION

Institution legal name:
University of Alberta
Principal applicant (name, title, department, faculty):
Joseph Marchand, Professor, Department of Economics, Faculty of Arts, University of Alberta
Co-applicants (name, title, department, faculty): *Separate names with semi-colon*
(co-applicants listed in alphabetical order of last name) Hussein Al-Zyoud, Associate Professor, Department of Economics, Faculty of Business, Athabasca University; Vera Brencic, Associate Professor (Professor as of July 1, 2023), Department of Economics, Faculty of Arts, University of Alberta; David Finch, Professor, Bissett School of Business, Mount Royal University; Sebastian Fossati, Associate Professor, Department of Economics, Faculty of Arts, University of Alberta; Leonard Goff, Assistant Professor, Department of Economics, Faculty of Arts, University of Calgary; Pinar Gunes, Associate Professor, Department of Economics, Faculty of Arts, University of Alberta; Lars Hallstrom, Professor, Department of Political Science, Faculty of Arts and Science, University of Lethbridge; Dmytro Hryshko, Associate Professor, Department of Economics, Faculty of Arts, University of Alberta; Haifang Huang, Professor, Department of Economics, Faculty of Arts, University of Alberta; Jean-William Laliberte, Assistant Professor, Department of Economics, Faculty of Arts, University of Calgary;

Xingfei Liu, Associate Professor, Department of Economics, Faculty of Arts, University of Alberta;

Andrew McGee, Associate Professor, Department of Economics, Faculty of Arts, University of Alberta;

Benjamin Milner, Assistant Professor, Department of Economics, Faculty of Arts, University of Alberta;

Richard Mueller, Professor, Department of Economics, Faculty of Arts and Science, University of Lethbridge;

Jeffrey Penney, Associate Professor, Department of Economics, Faculty of Arts, University of Alberta;

Ashantha Ranasinghe, Associate Professor, Department of Economics, University of Alberta;

Chad Saunders, Associate Professor, Haskayne School of Business, University of Calgary;

Stefan Staubli, Associate Professor, Department of Economics, Faculty of Arts, University of Calgary;

Trevor Tombe, Professor, Department of Economics, Faculty of Arts, University of Calgary;

Ivan Townshend, Professor, Department of Geography, Faculty of Arts and Science, University of Lethbridge;

Beyza Ural Marchand, Professor, Department of Economics, Faculty of Arts, University of Alberta;

Alexander Whalley, Associate Professor, Department of Economics, Faculty of Arts, University of Calgary;

Laurel Wheeler, Assistant Professor, Department of Economics, Faculty of Arts, University of Alberta;

Project start date (YYYY-MM-DD):	**Project end date (YYYY-MM-DD):**
2023-07-01	2025-06-30
Government of Alberta funding requested ($):	**Other funding, if applicable ($)[1]:**
$800,000 = $400,000 per year x 2 years	$1,592,546 (see Additional Funds)
Total project cost ($):	
$864,232 = $432,116 per year x 2 years (see Budget Template)	

[1] Indicate in section 5. Budget sources of additional funding, if funding has been received or is pending review, and who on the project team holds the funding.

B. PROJECT NEED

Labour market issues
Identify gaps in labour market information or labour issues relevant for Albertans or employers in Alberta. At a high-level, discuss how these issues will be addressed by your proposed research goals. Use labour market information and/or other qualitative information to support the project need as required.

The Increasing Importance of Alberta Labour Market Information

Labour markets involve the direct interactions between individuals as workers (who supply their labour) and firms as employers (who demand their labour), with indirect roles for multiple levels of government, non-governmental organizations (NGOs), and unions, helping to regulate and shape how these interactions take place. Thus, each of the parties directly or indirectly involved relies on access to high quality labour market information to make evidence-based decisions.

In an Alberta context, the cyclical nature of the provincial economy, coupled with vulnerability to exogenous shocks, means that the province faces a number of consistent and/or recurring challenges in terms of labour. These challenges include dynamics on both the supply and demand side, and are compounded by a number of related issues, including historical patterns of employment and compensation that are less and less applicable, challenges with the development and retention of skilled labour (geographically, temporally, and sectorally), demographic changes that correspond to gaps in labour supply, as noted by Howery 2019, the significant economic presence of the energy sector, coupled with an increasing impact of technology and automation, as well as increasing variation in both the nature of work, and the expectations/experiences of those engaged in the workforce.

The above factors demand stakeholders ranging from policymakers to employers have access to high-quality real-time labour market information. However, today, access to public information on labour markets is often not readily available or of good enough quantity and quality to guide the best decisions. This information can also be clouded by the competing biases of some of the parties involved, looking to extend their influence by exhausting resources to actively advocate on their own behalf. For example, some firms may have monopsony (or buying of labour) power over workers and some unions may have monopoly (or selling of labour) power over firms, so they may flood the public with misleading information, making it difficult to gauge what is true. When such misinformation or disinformation is further tied to specific ideologies and gathered without the necessary training to understand and properly explain the observed outcomes, the situation becomes more problematic.

The Role of the Alberta Centre for Labour Marketing Research

<u>Background</u>

The solution to the above challenges is the establishment of the Alberta Centre for Labour Market Research as defined in this call. Through this Centre, labour researchers housed across all four comprehensive academic and research universities (CARUs), policy researchers (e.g., economic development agencies), and industry researchers (e.g., industry and professional associations) will have efficient access to the leading labour market research. The centralizing and opening-up access to province-specific labour market research will contribute to enhance collaboration, agility, and the impact of outcomes. With greater collaboration and a more amplified voice, all parties involved in labour markets will benefit. The proposed Centre will be hosted by the University of Alberta and be open to all researchers studying labour market dynamics in the province.

The preliminary steps to establish and fund this Centre had begun even before this call from the provincial government through a University of Alberta Faculty of Arts Signature Area of Research and Creative Collaboration known as WELM-Arts (Work, Employment, and Labour Markets). The principal

applicant, Joseph Marchand, is also the director of that initiative, which was proposed and then approved by the Faculty of Arts in 2020 and extends to 2025. It brought together all researchers at the University of Alberta on the subjects of work and labour markets, which was comprised of about a dozen economists (all included here) and a half a dozen sociologists (Note: those sociologists were invited but declined to participate in this proposal).

The Goals

Stemming from the foundation of WELM-Arts, the solution the current labour market information challenge is increasing the coordination and harmonization of labour market information across Alberta-based scholars and other experts. This enhanced coordination and harmonization will:

1. Deliver high-quality, rigorous, and unbiased research.
2. Provide more efficient and targeted access to high quality labour market information.
3. Enhance public engagement through greater outreach with the media and other channels of dissemination.
4. An ability to inform policy at all levels of government, with proximity to the provincial government as an asset.
5. Proven capacity to raise external funding from respected sources, with little stipulation as to the direction of our output.
6. Deliver a program designed to expand Alberta expertise in labour market research.

Integrating Real-time Data

The proposed Centre will have a robust digital presence designed to increase the knowledge of the current labour market by displaying real-time labour market information from both Statistics Canada and Vicinity. The Statistics Canada variables, which will be based on data from the Labour Force Survey and the Job Vacancy and Wage Survey, would include aggregate information on Alberta's labour market, such as population, employment, unemployment, labour force participation, and the employment and unemployment rates. The Vicinity variables, which will be based instead on job postings, may include total job postings, hire targets, top skills in demand, and top employers.

In addition, we will increase the credibility and visibility of our research and researchers by displaying up-to-date statistics about them from a research aggregator, such as Clarivate (Web of Science), Google Scholar, or Scopus. These statistics for our research would include article citations and the impact factor for the journal that the article is published in, while the statistics for the researchers may include h-indices and total citation counts. A search box would allow various ways to find our research and researchers.

Bridging the Gaps

Today, there remain significant labour market intelligence gaps in the province. These can be clustered into three research areas:

Drivers of Labour Disruption

1. What are the drivers and effects of long-term structural unemployment in the province?
2. What are the effects, and responses to, emerging technologies and automation?
3. How will the asymmetrical role of the energy industry impact or compound employment issues as the sector adapts to global, political, and economic pressures?
4. How can the changing nature of work itself (whether driven by technological, social and/or economic factors) be accounted for in economic and related policy domains?

5. What will be the impact of decarbonisation on household earnings and career trajectories?

Labour Market Capacity Building

1. What skills provide the labour force the capacity to adapt to meet dynamic demands?
2. Does Alberta possess the capacity to meet future skill development demand?
3. How can the province manage the long-term effects of meeting labour market demand through domestic and international channels?
4. How can the province respond to the very different labour market challenges facing urban and rural Alberta?

Labour Market Equity, Diversity, Inclusivity, and Accessibility

1. What are the pathways to unlock the capacity of chronically under/unemployed Albertans, including youth, immigrants, indigenous, women, and people with disabilities?
2. What is the current demography and distribution of labour supply, including factors such as age, gender, race, and geography, and what is it projected to be in the future?
3. What are the impacts of specific public policies that target various sub-populations, including the minimum wage for young workers, child care policies for women and other parents, pensions for the old, and welfare on single men?

To answer these questions, this proposal includes a diverse team of two dozen scholars from five Alberta universities including, the University of Calgary, University of Lethbridge, Mount Royal University, and Athabasca University. These researchers are often supported by related university-based centres, institutes, and schools, including the Calgary School of Public Policy, the Prentice Institute for Global Population and Economy, the Institute for Public Economics, Institute for Community Prosperity, and the Online Open Data Centre for Alberta Urban Real Estate.

Research contribution
Describe how your research goals will make a significant contribution to the understanding of Alberta's labour market.

This network of researchers, coordinated and supported by the proposed Centre, will provide a major addition to the capacity of the Province, and its constituent municipalities and employers, to undertake evidence-informed decision and policy making. The network draws upon a demonstrated capacity to deliver high-quality (peer-reviewed) research across a range of relevant disciplines and subject matter, with training and educational opportunities for Highly Qualified Personnel (HQP) often at the heart of such work. This research capacity is complemented by extensive research and policy networks to relevant stakeholders in the province, including the Chambers of Commerce, municipal associations such as the AUMA and RMA, economic developers, regional economic development alliances, and sectoral bodies. Taken in combination with a proven capacity to deliver knowledge mobilization-based events (such as workshops, training sessions and conferences), and in a number of cases a previous history of working with Provincial ministries and staff (including, for example, Alberta Parks, Agriculture and Rural Development (now Agriculture and Forestry), and Alberta Health, this network and Centre represent the core of labour-oriented research capacity within the provincial post-secondaries.

As noted above, the research agenda, themes, and priorities noted above reflect a concern with both supply and demand sides of labour-related questions in Alberta. In addition, these questions reflect a research design that includes more distal factors (such as historical path dependencies) within the contemporary policy environment of (more generally) depressed energy prices and subsequent labour and economic effects since 2010. Although recent events have led to an economic resurgence for the

province, the duration of that resurgence is unknown (but unlikely to be permanent). As a result, there are a number of key research and policy goals that are supported by this work:

1) Using research to identify the pathways and barriers to more stable employment patterns within the province, including the reduction of both unemployment (particularly for key populations) and employment vacancies;

2) Identifying the key vulnerabilities and high-leverage areas for intervention in terms of education, skills, employment and labour provision;

3) Assessing the labour implications of market-relevant policies and interventions, including those in sectors outside economic development and employment;

4) Supporting both policy makers and employers through the provision of cross-sectional and (potentially) longitudinal data for both public and public policy use, complemented with rigorous analyses and knowledge mobilization;

5) Creating venues and opportunities for communication, collaboration, capacity-building and engagement across a broad range of relevant stakeholders including, but not limited to, the Province of Alberta.

As a result, this initiative makes a number of contributions to the state of knowledge relevant to Alberta's labour market:

1) It increases knowledge of the scope, scale and effects of current and recent labour-relevant events (policies, shocks, changes) across a number of relevant sectors;

2) It increases knowledge of the research and policy gaps at both provincial and national scales regarding labour, education, and mobility;

3) It increases both the volume and granularity (specificity) of knowledge within, and on, the Albertan case across a range of research themes and questions;

4) It increases and supports both the knowledge networks and policy networks relevant to labour and employment, as well as increasing the points of intersection between those networks;

5) It increases (through the training and inclusion of HQP) the research and decision-support capacity within the province;

6) It provides an efficient and effective, centre of excellence within the province for research and knowledge mobilization related to the themes noted above, whether for provincial authorities, local governments and economic actors;

7) It leverages the research capacity and experience of a broad range of scholars at different institutions across the province under a discrete agenda, while also capitalizing upon the extant capacity of the participating post-secondary institutions (through community relations, centres and institutes, research events, and collaborative funding opportunities)

C. PROJECT DESCRIPTION

Research priorities
Describe the focus of your research priorities. Identify target populations, occupations, or sectors, as needed, and align those to the project needs discussed in A.

Each of the twenty-four labour market researchers associated with this Centre brings with them their own expertise to help address the current and future research priorities of the province of Alberta. Our team has categorized the research needs which we wish to address into three particular areas: drivers of labour disruption, labour market capacity building, and labour market equity, diversity, inclusivity, and accessibility.

In order to display what our researchers may produce in the future, we highlight, under each area, several examples of previous and current research papers which have previously addressed these needs. Each of these examples serve as indications of what our research products will look like, in terms of methodology and form of output, as well as where they have been previously published. For brevity, we only highlight a handful of examples per research priority. For the citations to the particular studies referenced in this section, please see the attached Proposed Research Agenda attachment.

<u>Drivers of Labour Disruption</u>

The accelerating transformation of the global energy market and the structural impact of the pandemic contributed to seismic economic and social change in the province of Alberta. Therefore, it is imperative that the province have insight on emerging trends and their potential impact the labour market.

The cyclical nature of energy boom and bust is of no surprise to most Albertans, as the energy extraction sector maintains its outsized role on our economy and labour market. Our research has currently and previously examined how these local labor demand shocks can generate various types of responses (for an overview, see Marchand and Weber 2018 JES). These responses include impacts on labour markets, such as in employment and earnings (Marchand 2012 JUE; Marchand 2020 WP), distributional responses, such as in inequality and poverty (Marchand 2015 CJE), educational responses, such as in student test scores and teacher quality (Marchand and Weber 2020 JPAM), and health outcomes, such as in disability and mortality (Marchand and Milligan 2023 WP).

Some of these findings for Western Canada in particular include that: for every ten energy extraction jobs created during a boom period, approximately three construction jobs, two retail jobs, and four and a half service jobs were created (Marchand 2012 JUE), low income poverty was drastically reduced due to the boom-induced earnings gains in the bottom of distribution (Marchand 2015 CJE), and energy booms increased the employment demand for routine and manual task content in the middle of the occupational distribution (Marchand 2020 WP).

With regard to the implications of technology on Alberta labour market dynamics, artificial intelligence will likely play a key role. Brencic (2021 IZA-WoL) provides a review of the literature on the incidence and implications of employers' use of this technology when recruiting. The review includes findings related to the use of technology for the dissemination of information about available jobs and reliance on AI for applicant screening, as well as findings regarding aggregate labor market implications of access to and improvements in search technology.

The Albertan economy is susceptible to automation because of the high concentration of the workforce in resource extraction. Within the province, many rural communities have strong economic connections to both conventional economic activities (agriculture, retail, services) and resource extraction, and may be particularly vulnerable to shifts in technology. As a result, it provides a strong foundation for an examination of automation in rural communities. The results of Haugen et al. (2021) are organized around three key themes in the automation literature that speaks to the preparedness of businesses for technological disruption: (1) employee skills sets; (2) business relationships with educational institutions; and (3) the localized impacts of technological implementation on business operations. Specifically, it was found that businesses in the study community: (1) are largely orientated to the status quo, (2) have varying understandings and orientations towards automation, and (3) anticipate only modest changes (if any) to their business as a result of new, automated technologies. These results are aligned with the existing literature, and suggest that rural places may not be prepared for, nor have the necessary skills to address coming challenges related to the introduction of automated technologies. These results are also reflected in an innovation assessment of the local business community, which also finds a strong trend toward small-scale, localized change.

Labour Market Capacity Building

To thrive in the face of accelerating change, Alberta must be defined by the capacity of its labour market to adapt. At the root of adaptation is learning. To become a province that adapts, Albertans must establish a learning system that is as dynamic as our province. This learning system must foster an Albertans specific skills needed to succeed in various professional fields. It must also support the broader skillset that helps us cultivate our adaptive capacity in the face of several demands: shifting societal, technological, economic, and environmental forces.

Finch (2022) provides a most timely audit of the Calgary learning system, with a methodology which was designed with the intent to scale to other jurisdictions to allow communities to compare the labour market demand, supply, and existing capacity to bridge the gap between them. This audit project comprises three separate, but complementary studies: a Skill Demand Audit that analyzes 12-months of Calgary-based hiring data (N=13,510) to isolate current and emerging priority skills, a Skill Supply Audit that analyzes the most recent Statistics Canada data on Calgary's existing base of skills, including postsecondary completion rates and fields of study, and a Learning System Capacity Audit that analyzes existing certified and non-certified programming capacity currently offered by Calgary's learning system and whether it is optimized to deliver on the identified skill gaps.

Some key insights of this audit include that, first, learning and skill development is largely a municipal challenge, with over 90 percent of the 3,063 organizations delivering skills program are outside of provincial jurisdiction. Second, Calgary's current skill profile and its skill development system have been optimized for oil and gas; the result is a labour force and system that has limited adaptive capacity. Third, the data identifies 90 percent of skill demand by Calgary employers are either enabling (transversal) or functional skills, with less than ten percent associated with sectoral expertise. Fourth, eighty percent of current skill programming in Calgary provides no path to certification or verification; as a result, its capacity is largely underutilized. Fifth, incumbent certified skills developments (e.g., universities and colleges) have been granted significant structural advantages. This market dominance has significantly limited innovation in the skills development system.

The recommendations of this audit include that the learning system must be harmonized to unlock current underutilized capacity. In order to unlock skill development capacity, the system should decouple skills certification and assessment from skill development pathways, and it must introduce purpose-based learning, empowering learners to define their own continuous learning pathways. To maximize adaptive capacity, the system must prioritize developing and certifying enabling skills.

Laliberte (2021 AEJ:EP) evaluates the role of primary and secondary schools as key drivers of educational attainment. All of the analyses are carried using data from Montreal. It estimates the long-term impact of growing up in better neighborhoods and attending better schools on educational attainment. First, it uses a spatial regression-discontinuity design to estimate school effects. Second, it studies students who move across neighborhoods in Montreal during childhood to estimate the causal effect of growing up in a better area (total exposure effects). It finds large effects for both dimensions. Combining both research designs in a decomposition framework, and under key assumptions, the paper estimates that 50–70 percent of the benefits of moving to a better area on educational attainment are due to access to better schools.

All Albertans pay taxes to support the provinces research universities, yet only some Albertans attend them. Do all Albertan's benefit from spending on research universities? Should governments be spending tax dollars to support university research as a local economic development strategy? While many point to the role of Stanford University has played in Silicon Valley to say yes, Silicon Valley has many other advantages that have led to success. How do we sort out the role of university spending from all these other factors? Or to put it another way, do research universities follow economic success or cause it? In Kantor and Whalley (2014) we take on this chicken and egg challenge to policy evaluation using a new research design that exploits spending windfalls of research universities from the stock market. We show that wages for all local workers increase after research universities expand. These reflect local knowledge spillovers from research universities where local firms learn about new ideas and new technologies that make them more productive. Taxpayers who never set foot on campus do benefit from university research. This research paper has been cited over 200 times and led to the Brookings Institution in Washington DC to commission a report for policy makers to understand the studies implications. The research has also been discussed in the New York Times.

In two recent working papers, Brencic and McGee develop novel measures of skill demands from online job ads (Brencic and McGee 2023 IZA, 2023 WP). This expertise will be employed in the project to facilitate the analysis of skill demands in Alberta using the Vicinity Job ads data. In other published studies on the subject, Brencic et al. (2020 CPP) evaluated implications of the Connecting Canadians with available jobs Initiative that improved email notifications informing subscribers of available job openings. A measure of mismatch between workers and jobs has also been used to assess the extent to which these mismatches are driven by firm attributes (e.g., employers' costs of keeping vacancies unfilled and export status) (Brencic 2009 LE; Brencic and Pahor 2019 WE). And Brencic (2014 JEP, 2016 IZA-JLE) document how extensive search for information about available jobs and CVs is online using data on employment websites that host job boards and resume banks in the U.S. They further evaluate the extent to which competition between employment websites affects the role they play in matching workers to jobs.

Labour mobility across provinces is a critical driver of labour market dynamics in Alberta. But it is costly for those involved -- with impediments including explicit restrictions, transport costs, professional certification hurdles, and so on. The ALMRC proposes to investigate the size, scope, and consequences of barriers to the movement of labour between regions, with a particular focus on Alberta. We will specifically build on recent work of Tombe and Winter (2021) and Tombe and Schwanen (2020), which provide new methods to estimate the economic implications of labour mobility and connect these movements to international trade flows and federal fiscal policy. Building on these tools, we will estimate: (1) the magnitude, pattern, and evolution of migration costs of workers into Alberta; (2) the effect of policy reforms aimed at reducing these barriers, including recently adopted reforms to certification processes in Alberta; and (3) the impact of such mobility on provincial productivity, including the effect across individual sectors and occupations. This insight will help

improve not only our understanding of Alberta's labour market but will provide an invaluable guide to government policymakers, who are increasingly seeking options to better attract and retain talent in the province.

Labour Market Equity, Diversity, Inclusivity, and Accessibility

Unlocking labour market capacity demands that the entire labour market, from capacity building to recruitment must embed diverse cultural approaches and understandings. They must adapt their employee experience and workplace culture to support the success of diverse employees. Similarly, institutions responsible for capacity building must offer equitable access to information and a skills development network of informal and formal learning opportunities that further reduces barriers, opens doors, and inspires lifelong learning habits that create a more resilient and empowered workforce.

Muehlenbachs and Wheeler (2023) presents evidence that oil has been drained away from First Nations reserves in Alberta and Saskatchewan by wells drilled adjacent to the reserve. For decades, levels of production from wells on and near First Nations reserves coincided until diverging in the mid-1980s. In the late 1980s and early 1990s, production from off-reserve wells dominated production from on-reserve wells. We find that this divergence is, in part, driven by wells drilled close enough to the reserve border to drain subsurface common pool resources from beneath the First Nations reserves. Using a panel of well-level production data, we plot oil production by distance to the border, and we observe a discontinuous increase in cumulative and average monthly production from wells drilled off reserve but within 400 meters of the reserve border. This drainage represents not only inequitable production of oil but also an unrecoverable loss of resources for First Nations communities.

Gender inequality in earnings and wage rates remains substantial in Canada. For example, in 2018 female employees in still earned 15 percent less per hour than their male counterparts. Recent studies document that childbirth has long-lasting negative earnings and employment impacts on women relative to men (e.g., Javdani and McGee 2019). To date, evidence is lacking whether the arrival of children can explain the remaining gender inequality in Canada. Moreover, since a substantial amount of child care is provided informally by grandparents, children may also affect labour market careers of grandparents. Understanding whether they are malleable by public policies, such as universal child care, is of fundamental importance. Karademir, Laliberte, and Staubli (2023 IZA) combines unique data from Statistics Canada to study the labor market impact of children on (grand)parents and whether universal child care can lessen the earnings and employment impacts of (grand)children. Our project has three main findings. First, the arrival of the first (grand)child significantly reduces the employment and earnings of mothers and grandmothers but has smaller impacts on fathers and grandfathers. Second, studying the implementation of universal child care in Quebec, we find that formal childcare significantly increases the employment rates of mothers and grandmothers. Third, examining the heterogeneity of the program's impact across Canadian census divisions, we find larger effects on mothers' employment in places where grandmothers provide more informal childcare. From a policy perspective, our findings suggest that universal childcare is an effective policy tool to boost (grand)mothers labour supply.

Al-Zyoud et al. (2018 LI) examined the trends in earnings of males and females in Alberta by investigating the impact of differences in productivity, education, age, and industry on the gender wage gap using linear regression to determine the impact on the gender wage gap. Results suggested that the gender wage gap increases due to differing productivity levels and increases in relation to changes in employment participation of females aged 25–44 years. Two interesting results were identified from the data of this study. Specifically, an increase of women's employment in the goods-producing industry reduced the gender wage gap. In contrast, an increase of women in the service industry resulted in an increase of the gender wage gap. The primary reason for this discrepancy appears to be

the result of a difference in the primary employment industry. Alberta is unique due to the high rate of remuneration and opportunity in the goods-producing industry. The majority of women in Alberta are employed in the service industry, which offers less employment protection, less productivity, and lower rates of remuneration. These findings are significant for understanding how legislation regarding wages, work week, and social benefits impact the gender wage gap.

Public sector compensation relative to that of the private sector is a perennial topic of interest in Alberta and across the country. The public sector in Canada is an important employer of women accounting for about 30 percent of total female employment compared to only about 17 percent for men. As such, the gender wage gap (GWG) in the public sector is an important determinant of the overall gender wage gap. Mueller (2022) uses Statistics Canada's Labour Force Survey (LFS) and finds that there is a GWG in the public sector, it is smaller than that in the private sector. Within the public sector women tend to have higher wage premium than males when compared to the private sector. This suggests that this sector is important in closing the overall GWG and that changes to compensation in the public sector will disproportionately affect women. Another important finding is that among those employed in public administration, the wage premium is dependent on the choice of comparator industry. When a high wage industry (such as natural resource extraction) is the comparator, wages in the public sector tend to be lower. This comparison is especially important for Alberta given the size and importance of the resource industry.

More specific to Alberta, Mueller (2021) uses the same LFS data and compares public and private sector wages to the other "Big 3" Canadian provinces: British Columbia, Ontario, and Quebec, and breaks down public sector wage premiums by the 96 largest public sector occupations. The results indicate that overall wages in these occupations tend to be higher in the public sector in Alberta relative to the other three provinces, but so do private sector wages, and the public sector premium in Alberta is not out of line with that in the other provinces and in the case of many occupations it is lower. These results have implications for the GWG, given the importance of this sector as a source of employment for women, but also in terms of the attraction and retention of talent in Alberta's public sector.

Hansen and Liu (2015 CJE) estimate an economic model of labour supply and welfare participation using data on single men from Quebec drawn from the 1986 Canadian Census. Detailed budget sets for each work-welfare combination—accounting for income taxes, tax credits and welfare benefit rules—are derived using a micro-simulation model. We show that predicted reactions to a welfare reform that took place in 1989 replicate actual changes in labour supply and welfare participation. We also illustrate the advantage of having estimated a structural model by showing how labour supply and welfare participation change when income taxes and benefit levels change.

D. ACTIVITIES AND OUTPUTS

Communications plan
Outline the centre's communications plan. The plan should detail how the centre will be promoted, and how research and analysis will be made available to the general public.

The communication and knowledge mobilization plan for the centre is multi-faceted, as it speaks to multiple audiences, and includes a range of knowledge products that are both evidence-based in their design, and customized to facilitate uptake by those different audiences. In addition to the direct work of the Centre's plan, the professional activities of the network members themselves (which by default includes knowledge mobilization and engagement with the academic community through participation and presentation at conferences, workshops and peer-reviewed publications) provides an additional, secondary space for dissemination and quality assurance.

Housed at the University of Alberta, the Centre will be ideally positioned to take advantage of both the physical proximity and established relationships between the University and provincial government. This includes not only a wide range of extant relationships and collaborations across different faculties and departments, but also engagement and dissemination through institutional, as well as sub-institutional channels. Each university has significant communications capacity both within the institution itself, but also outward to alumni, community partners, national and international collaborators, and donor populations.

Specific to the Centre itself, communications will hinge upon a range of knowledge products (each driven by a theme, priority and research question) that reflect the different audiences being engaged. Such products will range from 1 and 3 page research briefs (that are historically targeted toward executive decision-making, eg. At the ministerial or deputy ministerial level), 25 page project reports (that provide an accessible but more detailed presentation of methods, results, analyses and implications, working papers (pre-publication results and analysis of 30-50 pages), Green papers (propositions or position papers of 20-40 pages released to encourage consideration and deliberation of different elements or aspects of a policy issue), peer-reviewed publications (which may range from 3,500 words for a policy or review essay, to 8000 words for an article based upon primary research), and thesis-based work by graduate students (typically of 80-125 pages for an MA, and 200-300+ pages for a PhD).

This work will be open access and available via the Centre's website and affiliated newsletter, but will also be released through a structured distribution plan that includes both provincial officials (in accordance with the Alberta Lobbyist Act as applicable), as well as the different audiences and users described below. Given the distribution of the research network, communications will be largely digital, but will be complemented with a series of targeted and thematically-oriented events (whether digitally or in-person) in order to convene the results and implications of different projects as part of a more coherent whole. This will also include an annual event hosted by the Centre and a partner institution to provide a "single point of engagement" between the work of the Centre and its network, and those audiences noted below.

A critical goal of the Centre will be to increase the province-wide capacity of labour market researchers, both within and outside of academia. Therefore, both the Centre's research processes, and knowledge mobilization strategies will be designed to provide both timely and relevant data and evidence to guide decision-making, while concurrently expanding provincial labour market research capacity (e.g., current students, young professionals). For example, to deliver this, the Centre will host an annual event to bridge the diverse labour market stakeholders listed below. This annual event will have two objectives. (1) It will be a venue to disseminate and debate labour market insights and their implications; (2) It will incorporate professional development programming to expand Alberta's labour market research capacity.

The Centre website will provide a key asset for communication and engagement, include the possibility of sectoral and policy-driven inquiries (see, for example, the Yaffle App at the Harris Centre in NFLD). In addition, the website will become a key portal for data related to the key themes of the Centre (an employment and labour market data dashboard) as well as the knowledge products of the Centre itself. Similarly, the Centre website is anticipated to have the capacity to "real-time" labour data from across the province, including vacancy and employment opportunity data scraped from online job postings from Vicinity, as well as labour market and vacancy data from Statistics Canada.

Audiences and end users

Identify key academic and non-academic audiences, as well as potential end users of the research results. If you indicated collaboration with potential end-users in this application, list them in this section. Describe how this project will transfer knowledge to Albertans and the research community. (This knowledge transfer can happen during the active grant period or after it concludes.)

Academic Audiences:

- Associations (eg. Canadian Economics Association, Canadian Industrial Relations Association, Canadian Political Science Association, Society of Labour Economists, etc.)
- Relevant institutes/centres in Alberta (Institute for Public Economics, Online Open Data Centre for Alberta Urban Real Estate, Prentice Institute for Global Population and Economy, and the School of Public Policy)
- Emerging scholars and researchers

Policy-based/NGO Audiences:

- Province of Alberta (List Ministries)
- Municipal governments (via AUMA and RMA)
- Regional Economic Development Alliances (REDAs)
- Economic Developers Alberta (EDA)
- Labour Market Information Council (LMIC)
- Business Council of Alberta

Private Sector Audiences:

Industry and professional associations across key sectors and occupations
Construction, energy, finance, insurance, technology, agriculture, other

Knowledge mobilization (see above)

E. ABILITY TO DELIVER

Years of experience in conducting labour market research:	**Area(s) of expertise**
Collective experience of 328 years across 24 people, where years of experience is equal to years since Ph.D. was obtained: Al-Zyoud (21 years) Brencic (18 years) Finch (13 years) Fossati (13 years) Goff (2 years) Gunes (9 years) Hallstrom (22 years) Hryshko (17 years) Huang (14 years) Laliberte (5 years) Liu (11 years) Marchand (16 years) McGee (13 years) Milner (3 years) Mueller (26 years) Penney (8 years) Ranasinghe (10 years) Saunders (17 years) Staubli (14 years) Tombe (12 years) Townshend (27 years) Ural (16 years) Whalley (17 years) Wheeler (4 years) **TOTAL = 328 experience years across 24 people**	**Economics (primary):** - Labour economics (primary) - Public economics - Education - International Trade - Econometrics **Public policy (secondary):** - Policy analysis (secondary) - Economic development - Community development - Education and skills development - Fiscal policy - Municipal/regional policy and governance - Land use

History conducting research
Identify how the principal and co-applicants, department(s) and post-secondary institution are leaders in labour market research. Provide evidence of a history of conducting peer-reviewed, balanced and credible research in labour and economic issues for Alberta.

The principal applicant, Joseph Marchand, like most of the co-applicants, primarily conducts research within the field of labour economics. He currently serves as Principal Investigator for a generous grant from the Canada First Research Excellence Fund, examining what the future of energy means for labour markets, which is part of the Future Energy Systems initiative at the University of Alberta. He also recently served as Chair of the Minimum Wage Expert Panel for the Government of Alberta, to assess the impacts of the province's $15 minimum wage and the elimination of the liquor server differential. In addition, Joseph is currently writing a textbook on labour economics, which will be the first Canadian edition of Labor Economics: Principles in Practice and only the second current textbook on the subject for the Canadian market. This textbook is the result of previous and current teaching in his field of labour economics, at both the undergraduate and graduate levels. Joseph also continues to

serve as editor of his department's working paper series and as editor of the weekly New Economics Papers reports in the areas of labour economics and labor markets – supply, demand, and wages.

In terms of the quantity and quality of the research produced by the principal and co-applicants, the network that has been convened for this application draws upon many years of peer-reviewed research funding, publications, and student supervision at a number of different institutions. As faculty, they are evaluated and promoted on the combination of teaching, research and service, which can include the generation of both primary research and knowledge syntheses for academic, policy and service-provider audiences, the generation of research funding to support both projects and student staff though competitive institutional, provincial, national and international funding opportunities, and the publication of reports, peer-reviewed articles and books. This team is not only well-published, but also well-cited. One way to quantify the quality and reach of our research is to sum our H-indices, where *h* papers cited at least *h* times, and our citation counts, all according to Google Scholar.

Summations of our H-indices and citations of our work (according to Google Scholar) are 208 and 18,672 across 19 of 24 people, where:

Al-Zyoud (H-index 3; citations 70)
Brencic (H-index 11; citations 339)
Finch (H-index 14; citations 1,482)
Fossati (H-index 6; citations 113)
Goff (H-index 6; citations 471)
Gunes (N/A)
Hallstrom (H-index 16; citations 2,365)
Hryshko (H-index 11; citations 546)
Huang (H-index 26; citations 4,343)
Laliberte (H-index 8; citations 344)
Liu (H-index 7; citations 230)
Marchand (H-index 15; citations 1,097)
McGee (H-index 9; citations 535)
Milner (N/A)
Mueller (H-index 23; citations 1,926)
Penney (H-index 5; citations 76)
Ranasinghe (N/A)
Saunders (H-index 9; citations 913)
Staubli (H-index 15; citations 1,361)
Tombe (H-index 13; citations 1,683)
Townshend (N/A)
Ural (H-index 10; citations 744)
Whalley (N/A)
Wheeler (H-index 1; citations 34)

TOTAL = H-index of 208 and 18,672 citations across 19 of 24 people

Research studies
Identify how the principal and co-applicants, department(s), and post-secondary institution will produce at least four unique research outputs under this agreement. Provide details on the use of undergraduate or graduate students and/or the intention to seek publication in academic journals.

Assuming the principal and co-applicants each produce at least one high-quality research working paper per year, this would amount to at least 24 papers per year when aggregated across the 24 individuals, which is well above the minimum threshold of four unique research outputs per year. That said, not every research working paper will be specifically about the labour markets of Alberta, so the research briefs produced by our funded undergraduate and graduate students will incorporate it.

These separate research outputs produced by our students will either synthesis an Alberta-specific research paper to 1-3 pages or will take a research paper that is not specifically about Alberta and tailor its findings to be relevant to the Alberta labour market, again in 1-3 pages. This will make the research output much more accessible to a general audience and put it more in line to possibly influencing decision makers, while at the same time allowing faculty to publish in academic journals.

F. GOVERNANCE

Governance Describe what an effective governance structure would look like, and the role of government, industry and/or labour organizations to provide input to the research agenda.
Given that the proposed Alberta Centre for Labour Market Research will be housed within the University of Alberta, it must be created as an affiliated centre in accordance with the Centres and Institutes policies of that institution. As such, there are procedures in place for the establishment, legal and risk review, annual reporting and declarations, and (if applicable) termination of the Centre (https://policiesonline.ualberta.ca/policiesprocedures/policies/centres-and-institutes-policy.pdf). This governance could follow something similar to the Alberta Gambling Research Institute, for example. Institutes and centres typically follow a conventional governance structure, which includes a Director (and potential Associate Director(s)), a Steering Committee (usually drawn from a combination of academic partners and institutional leadership (eg. Relevant Deans or VPs), and an Advisory Committee (that draws from non-university-based stakeholders including government, industry, NGOs, and similar bodies, possibly including labour organizations). Members of the Steering Committee are often members of the Advisory Committee *ex officio*. The frequency of these proposed meetings will vary, but given the short two-year duration of this grant, they will likely take place quarterly.

G. RISK MANAGEMENT

Risks Identify at least five project risks. Indicate the likelihood of the risk occurring, the impact it will have on the success of the project and the strategy to mitigate the risk.			
Risk	**Occurrence likelihood**	**Project impact**	**Mitigation strategy**
Failure to generate research outputs	**Possible**	**Moderate**	**Director or Executive Director would contact researchers in advance of each quarter to ensure a steady flow of research outputs.**
Financial management (over/underspend)	**Possible**	**Moderate**	**Funds could be moved across expense categories as necessary; overall fund levels in year one could be rolled over or taken from year two as needed.**
Regulatory compliance (ethics, finance, etc.)	**Possible**	**Moderate**	**Director or Executive Director would meet with administrators within the U of A to ensure compliance.**
Failure for inclusion of graduate PDFs	**Possible**	**Moderate**	**Director or Executive Director would contact advisors in advance of each quarter to ensure a steady flow of research outputs.**
Lack of policy / stakeholder engagement	**Possible**	**Moderate**	**Director or Executive Director would reengage with any and all interested parties on the network to ensure engagement.**

H. BUDGET

Submit a complete **Budget Template** as part of your Grant Application. The **Grant Application Guidelines** outline eligible and ineligible expenses for the Grant Application.

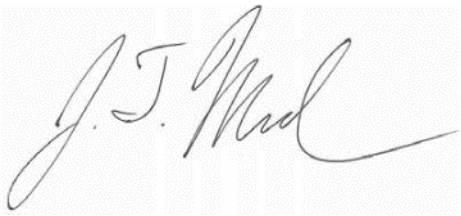
Additional sources of funding If you have applied for additional research funding, identify the funding sources, if the funding has been received or is pending review, and who on the project team holds the funding.
(please see the attached Budget Template) **(please see the attached Additional Funds)**

I. PROJECT SIGNATORIES

By signing and dating below, I, the undersigned, agree that I have read this proposal and am certifying that the statements contained within it are true, complete and accurate, to the best of my knowledge.

I have read and agree with the terms and conditions of the Alberta Centre for Labour Market Research Grant Agreement and have consulted with the appropriate advisors within my organization (e.g. research services office or equivalent).

I have read and agree with the terms and conditions of the Alberta Centre for Labour Market Research Grant Agreement and the Government of Alberta Open Information and Open Data Policy.



X _____

Principal Applicant

Martina Desrochers

X _____

Institution Signature

SUBMISSION INSTRUCTIONS

Important:

1. Grant applications must be received electronically by 11:59 p.m. MDT on April 28, 2023. Only complete applications will be considered. A complete application consists of ALL of the following mandatory components:
    8) Signed Application for Grant Form
    9) Project Application
    10) Budget Template
    11) Supporting Documents, as applicable:
        a. Resume or C.V. for the principal applicant
        b. Resume or C.V. for each co-applicant
        c. Proposed research agenda
2. Save this document as **[Your Institution] [Your Department] [Your Name] Grant Application**
3. Title the subject line as **[Your Institution] [Your Department] [Your Name] Grant Application Package**
4. An automatic reply will be received when the Government of Alberta servers has received your email.

All correspondence including application submissions are to be directed to JEND.LMEgrants@gov.ab.ca.

Thank you for your interest in the Alberta Centre for Labour Market Research Grant Call for Applications.

Budget Template

Alberta at Work - Alberta Centre for Labour Market Research

Budget Template

Category E.g. Personel (salaries and benefits), supplies, travel, permanent equipment, etc	Description	Projected expense ($)	Funds provided by applicant, if any ($)	Funds provided by others, if any ($)	Funds requested from Government of Alberta ($)	**Total ($)**
Personnel	Executive Director salary	$ 100,000.00			$ 100,000.00	$ 100,000.00
Personnel	Administrative assistant salary	$ 50,000.00			$ 50,000.00	$ 50,000.00
Personnel	Undergraduate Research Assistants	$ 10,500.00			$ 10,500.00	$ 10,500.00
Personnel	Graduate Research Assistants	$ 82,000.00			$ 82,000.00	$ 82,000.00
Data	Vicinity Jobs data	$ 105,900.00		$ 30,257.00	$ 75,643.00	$ 75,643.00
Data	Statistics Canada Research Data Centre fees	$ 30,000.00			$ 30,000.00	$ 30,000.00
Professional services	Vicinity Jobs technical support	$ 3,829.00		$ 1,914.00	$ 1,915.00	$ 1,915.00
Professional services	Website design	$ 30,000.00			$ 30,000.00	$ 30,000.00
Hardware	ThinkSystem SR850 V2 Mission-Critical Server	$ 9,887.00			$ 9,887.00	$ 9,887.00
Events	Stakeholder conference	$ 10,000.00			$ 10,000.00	$ 10,000.00
Total ($)		$ 432,116.00		$ 32,171.00	$ 399,945.00	$ 399,945.00

Costs should be reasonable and realistic.
Total annual travel costs cannot exceed 2.5% of the total budget, or $10,000, whichever is lower. Travel costs must reflect Government of Alberta travel rates.
The sum of permanent equipment costs cannot exceed 2.5% of the total budget, or $10,000, whichever is lower.

Minimum financial reporting requirements:
$100,000 or less: certificate signed by appropriate officers (for an agency, the president and treasurer/VP finance) confirming the funds were only used in accordance with the purpose of the grant.
$100,000.01 to $250,000: A Review Engagement Report prepared by an organization registered with the Chartered Professional Accountants of Alberta, accompanying financial statements showing the grant income and expenditures and the return of any unused funds. Must be provided within 90 days of the organization's fiscal year end.
Over $250,000.01: An audited financial statement (within 90 days of the organization's fiscal year end); 2) a certificate signed by the organization's CEO and CFO (or equivalent officers), confirming the funds were utilized in accordance with the grant agreement; and 3) a report stating what was accomplished with the grant and/or results achieved.

Additional Funds

First name	Last Name	Institution	Funding source	Amount
Leonard	Goff	University of Calgary	UGA	15000
Leonard	Goff	University of Calgary	RSF	46732
Leonard	Goff	University of Calgary	Urban Institute	126232
Haifang	Huang	University of Alberta	Alberta Real Estate Foundation	304000
Jean-William	Laliberte	University of Calgary	SSHRC Insight Development	57713
Jean-William	Laliberte	University of Calgary	Internal	46000
Joseph	Marchand	University of Alberta	Future Energy Systems	250000
Andrew	McGee	University of Alberta	CRDCN/GRI	22300
Benjamin	Milner	University of Alberta	SSHRC Insight Development	29265
Beyza	Ural	University of Alberta	SSHRC Insight	183304
Alex	Whalley	University of Calgary	SSHRC Insight	89000
Alex	Whalley	University of Calgary	NSERC CREATE	30000
Alex	Whalley	University of Calgary	SSHRC Partnership	40000
Alex	Whalley	University of Calgary	Alberta Major Innovation Fund	100000
Laurel	Wheeler	University of Alberta	SSRHC IG	70000
Laurel	Wheeler	University of Alberta	IGC	23000
Laurel	Wheeler	University of Alberta	AGRI	20000
Laurel	Wheeler	University of Alberta	IGC	73000
Laurel	Wheeler	University of Alberta	Future Energy Systems	67000
			TOTAL	1592546

Principal Applicant CV

Co-Applicant CVs

Proposed Research Agenda

Proposed Research Agenda

In order to display what our researchers may produce in the future, we highlighted several examples of previous and current research papers which have previously addressed these needs, under each research priority, in the Project Application. Each example serves as an indicator of what our research products will look like, in terms of methodology and form of output, as well as where they have been previously published. For brevity, we only highlighted a handful of examples per research priority in the Project Application itself. Here, however, we include the full citations for those examples and many other relevant labour market studies from each of our twenty-four researchers associated with the Centre. These citations are listed below in alphabetical order, with the most recent publications appearing first and the names of each ACLMR team member in bold.

Al-Zyoud, H., Leblanc, C. (2019). Understood through a Story: A Time Series Analysis of Male and Female Employment Equity. *Canadian Journal of Native Studies*, Brandon University, 39(1), 1-24.

Al-Zyoud, H., Musila, J., Islam, M., Leblanc, C. (2018). Trends and Dynamics of Inequality in Alberta. *Labour and Industry: A Journal of the Social and Economic Relations of Work*.

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Brenčič, V. (2021). Interaction between Technology and Recruiting, *IZA World of Labor*: 485.

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Finch, D., Levallet, N., **Saunders, C.**, Field, E., Raby, S., Roberts, M., Uzoka, M., McIntyre, S. (2023). A Dynamic Capabilities View of Career Adaptation: An Exploratory Study. *Education + Training*. [In-Press].

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Finch, D., Falkenberg, L., McLaren, P. G., Rondeau, K. V., O'Reilly, N. (2018). The Rigour–Relevance Gap in Professional Programmes: Bridging the 'Unbridgeable' Between Higher Education and Practice. *Industry and Higher Education*, 32(3), 152-168.

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Gregson, G., **Saunders, C.** (2022). GEM Canada National Report 2021, https://www.gemconsortium.org.

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Townshend, I., MacLachlan, I., O'Donoghue, D. (2004). Integrated Dis-Integration: Employment Structure of First Nations Communities on the Prairies in Relation to their Local Regions. *Canadian Journal of Native Studies* 24 (1): 91-127.

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UNIVERSITY OF ALBERTA

Joseph Marchand <jmarchan@ualberta.ca>

Congratulations! Alberta Centre for Labour Market Research Grant

1 message

Simrat Slade <Simrat.Slade@gov.ab.ca> Thu, Aug 24, 2023 at 9:07 AM
To: Joseph Marchand <jmarchan@ualberta.ca>
Cc: Mary Ann Sosa <Maryann.Sosa@gov.ab.ca>, Editha Alido <editha.alido@gov.ab.ca>

Good afternoon Dr. Marchand,

Once again I wanted to extend my congratulations to your team on your excellent proposal for a grant to operate the Alberta Centre for Labour Market Research. We are very excited about the Alberta-specific research you identified in the proposal. As indicated in a previous email, we have now received approval to award the grant. As the lead proponent following an evaluation by an internal and external SME review committee, your proposal was selected to proceed with a grant award process.

See attached a draft grant agreement for your consideration. While much of the template reflects the boilerplate grant agreement required by the Government of Alberta, Schedule A comprises of the grant proposal, Schedule B outlines the payment terms of this specific grant agreement, and Schedule C outlines requirements for reporting on this grant. The start date and reporting dates are flexible and for discussion. Please review, and provide any comments in tracked changes.

The Alberta Centre for Labour Market Research grant is renewable on an annual basis up to $400,000 per year for an additional two years (for a total of $1.2 million between 2023/24 and 2025/26). Our decision to renew the grant annually will be based on an assessment of the performance measures that were included in the grant application guidelines - which I've attached here for reference - and the availability of funding.

Please let me know if you have any questions, or would like to discuss further. The next steps as we see them are:

1. Grant agreement finalization
2. Sign grant agreement (we use an electronic signature software)
3. Award grant
4. Department social media/tentative news release
5. Kick-off meeting

Thanks,

Simrat Slade (she/her)

Manager, Labour Economics and Statistics

Jobs, Economy and Trade

C: 587-357-9563

Classification: Protected A

2 attachments

ACLRM-GrantAgreement-2023-08.docx
67K

PerformanceMeasures.xlsx
14K

PUBLIC BODIES

THIS AGREEMENT MADE EFFECTIVE THE 01 DAY OF SEPTEMBER, 2023.

BETWEEN:

HIS MAJESTY THE KING IN RIGHT OF ALBERTA

as represented by the Minister of Jobs, Economy and Trade

(the "Minister")

and

The Governors of the University of Alberta

(the "Recipient")

WHEREAS the Recipient has submitted a proposal for a grant to the Minister;

WHEREAS the Minister is authorized to make grants in accordance with the *Ministerial Grants Regulation* ("Grant Regulation"), as amended;

AND WHEREAS the Minister has agreed to make a grant subject to the terms and conditions of this Agreement;

The Minister and the Recipient therefore agree as follows:

1. DEFINITIONS

1.1 In this Agreement, the following expressions have the following meanings:

"Agreement" means this document, Schedule A, Schedule B, and Schedule C;

"*FOIP Act*" means the *Freedom of Information and Protection of Privacy Act*, as amended;

"Grant" means the proposed grant described in Section 2;

"Grant Proceeds" means all amounts paid to the Recipient under this Agreement, and includes all interest and other income earned from investment of these amounts;

"Intellectual Property" means a product of the intellect including, without limitation, works in the form of scientific discoveries, inventions or discoveries with or without patent possibilities, designs, patents, trade-marks, copyrighted materials, computer software, trade secrets and know-how;

"Project" means the project described in the Proposal, including any modifications approved by the Minister in writing;

"Proposal" means the Recipient's proposal attached as Schedule A; and

"Term" means the period from the date at the beginning of this Agreement to and including August 31, 2024 and includes any extension agreed to by the Minister.

2. THE GRANT

2.1 Subject to the Legislature of Alberta appropriating sufficient money for the purposes of this Agreement, and subject to the terms and conditions of this Agreement and the Recipient's compliance therewith, the Minister will provide a grant of up to $399,945.00 to the Recipient for the purpose of the Project according to Schedule B.

2.2 The Recipient shall use the Grant Proceeds solely for the Project.

2.3 Nothing in this Agreement in any way relieves the Recipient from strict compliance with the Grant Regulation, or otherwise impacts the interpretation or application of the Grant Regulation.

3. REPORTS, RECORDS AND MONITORING

3.1 The Recipient shall submit reports to the Minister according to Schedule C.

3.2 During the Term and for a period of two (2) years afterwards, the Recipient shall maintain or cause to be maintained full, accurate and complete records of the activities conducted in furtherance of, and the results achieved through the conduct of, the Project.

3.3 During the Term and for a period of two (2) years afterwards, the Recipient shall maintain or cause to be maintained full, accurate and complete financial records relating to the receipt and expenditure of the Grant Proceeds and other funds received and expended for the purposes of the Project.

3.4 The Recipient, during the Term and for a period of two (2) years afterwards, shall produce on demand to any representatives of the Minister, or the Auditor General of Alberta, any of the records referred to in section 3.2 and 3.3 and shall permit those representatives to examine and audit these records and take copies and extracts of them.

3.5 The Recipient acknowledges that this Agreement, including the name of the Recipient, and the terms and conditions of the Grant under this Agreement, may be subject to disclosure pursuant to the *FOIP Act*. The Recipient further acknowledges that the Minister is a public body under the *FOIP Act*, and that information in the custody or under the control of the Minister relating to this Agreement shall be managed in accordance with the *FOIP Act* and any other applicable laws.

4. INTELLECTUAL PROPERTY

4.1 The Recipient acknowledges and agrees that any Intellectual Property that may be generated through the Project be used for the benefit of Alberta and Albertans. Ownership of any Intellectual Property developed through the Project will follow the policies and practices of the Recipient and agreements to which the Recipient is a party.

4.2 Ownership of any reports provided by the Recipient under this Agreement, regardless of form, and all intellectual property rights therein, vests in the Minister.

5. CONFLICT OF INTEREST

5.1 The Recipient shall ensure that the Recipient and its employees, directors, officers,

contractors and agents:

(a) conduct their duties related to this Agreement with impartiality and shall disqualify themselves from dealing with anyone with whom a relationship could bring their impartiality into question;

(b) not influence, seek to influence, or otherwise take part in a decision of the Minister, knowing that the decision might further their private interests;

(c) not accept any commission, discount, allowance, payment, gift or other benefit that is connected, directly or indirectly, with the performance of their duties related to this Agreement, that causes, or would appear to cause, a conflict of interest; and

(d) have no financial interest in the business of a third party that causes, or would appear to cause, a conflict of interest in connection with the performance of their duties related to this Agreement.

5.2 The Recipient shall promptly disclose to the Minister any conflict of interest or apparent conflict of interest arising under section 5.1.

6. TERMINATION OR COMPLETION

6.1 The parties by mutual written agreement may terminate this Agreement at any time.

6.2 The Minister may terminate this Agreement without cause on thirty (30) days written notice to the Recipient. This Agreement is terminated as of the date given in the termination notice.

6.3 Notwithstanding anything contained herein to the contrary, the Minister may request, and the Recipient shall refund forthwith, all or part of the Grant Proceeds to the Minister should the Recipient fail to fulfill any term or condition of this Agreement and the Minister shall have absolute discretion in determining whether a term or condition is fulfilled.

7. GENERAL PROVISIONS

7.1 In the event of any inconsistency or conflict between Schedule A and the rest of this Agreement, including the body of this Agreement, Schedule B and Schedule C, the rest of this Agreement shall govern.

7.2 The parties may, by mutual agreement in writing, add to, delete or amend any term or condition of this Agreement.

7.3 This Agreement shall not be assigned by the Recipient without the prior written consent of the Minister.

7.4 This Agreement is binding upon the parties' successors and assignees.

7.5 This Agreement is the entire agreement between the Minister and the Recipient with respect to the Project and the Grant and supersedes all previous agreements, negotiations and understandings. There are no agreements, representations, warranties, terms, conditions or commitments except as expressed in this Agreement.

7.6 No waiver of any provision of this Agreement is effective unless made in writing,

and any such waiver has effect only in respect of the particular provision or circumstance stated in the waiver. No representation by either of the parties with respect to the performance of any obligation under this Agreement is capable of giving rise to an estoppel unless the representation is made in writing.

7.7 The Minister's responsibility pursuant to this Agreement is limited solely to the provision of financial assistance in accordance with the terms and conditions set out herein.

7.8 Nothing in this Agreement makes, or shall be construed to make the Recipient or any of its employees, directors, officers, contractors or agents an agent of the Minister. Nothing in this Agreement creates, or shall be construed to create an agency, partnership, joint venture or employment relationship between the Minister and the Recipient or any of its employees, directors, officers, contractors or agents.

7.9 The Recipient shall not incur any expenses or debts on behalf of, nor make any commitments for the Minister.

7.10 The Minister may, in the Minister's sole and absolute discretion, delegate any duties, powers or functions relating to the provisions of this Agreement.

7.11 All notices, approvals, consents and other communication under this Agreement shall be in writing and will be effective when delivered in person, by mail, e-mail, couriered or faxed to the following respective addresses:

Minister's Representative
Name: Mary Ann Sosa
Position: Director, Labour Market Evidence
Branch: Evidence, Policy and Governance
Division: Labour and Workforce Strategies
Alberta Jobs, Economy and Trade
Address: 10808 99 Avenue, Edmonton, AB T5K 0G5
Telephone Number: 780-422-7264
Email Address: Maryann.Sosa@gov.ab.ca

and

Recipient's Representative
Name: Martine Desrochers
Position: Research Facilitator, Vice-President Research Innovation
Contractor's Address: 1-560 Enterprise Square, 10230 Jasper Avenue NW, Edmonton, AB T5J 4P6
Telephone Number: 780-492-1575
Email Address: martined@ualberta.ca

Each party shall give the other party notice in writing of any change in address.

7.12 The Recipient shall comply with all statutes, regulations, orders, licenses and permits applicable to the Recipient in carrying out the Project.

7.13 This Agreement is governed by and is to be construed in accordance with the laws of the Province of Alberta. The parties to this Agreement hereby irrevocably and unconditionally attorn to the exclusive jurisdiction of the courts of the Province of Alberta.

7.14 Time is of the essence of this Agreement.

7.15 All section headings in this Agreement have been included for convenience only and shall not be considered in interpreting the text of this Agreement.

7.16 In this Agreement, words in the singular will be construed to include the plural, words in the plural will be construed to include the singular, and words, regardless of the gender in which they are used, will be construed to include the masculine, feminine, or body corporate, as the context may require.

7.17 Notwithstanding any other provisions of this Agreement, sections 3, 4, 5, and Schedule C shall survive this Agreement and shall continue to bind the parties.

7.18 Unless executed using an electronic signature approved by the Minister, this Agreement may be executed in counterparts, in which case the counterparts together shall constitute one agreement, and in which case communication of execution by emailed PDF will constitute good delivery. Execution of this Agreement must occur in accordance with the policies and procedures established by the Minister as may be made available to the Recipient.

The Parties' authorized representatives make this Agreement.

HIS MAJESTY THE KING IN RIGHT OF ALBERTA, as represented by the Minister of Jobs, Economy and Trade

Per:

_____
Signature

_____
Print Name

_____
Title

_____
Date

Martine Desrochers, Vice-President Research Innovation
The Governors of the University of Alberta

Per:

_____
Signature

_____
Print Name

_____
Title

_____
Date

SCHEDULE A – PROPOSAL

1. The proposal will be attached as Appendix A.

SCHEDULE B – PAYMENT

1. The Grant shall be paid to the Recipient in the following manner:

one lump sum payment of up to $ 399,945.00 to be paid within a reasonable time following the signing of this Agreement.

SCHEDULE C – REPORTS AND RETURN OF FUNDS

1. All reports must contain the information and be in a format specified by or acceptable to the Minister.

2. The Recipient shall submit to the Minister interim reports which shall include an assessment of the progress of the Project according to the following schedule:

Reporting Period	Submission Deadline
from the date at the beginning of this Agreement to November 30, 2023	December 15, 2023
from December 1, 2023 to February 29, 2024	March 15, 2024
from March 1, 2024 to May 31, 2024	June 21, 2024
from June 1, 2023 to August 31, 2024	September 30, 2024

2. Upon the expiry of the Term or earlier termination of this Agreement in accordance with sections 6.1 or 6.2, the Recipient shall, within ninety (90) days or within another timeframe as directed by the Minister:

   (a) return to the Minister any funds advanced under this Agreement, except for the payment of expenses which have actually accrued as a result of this Agreement;

   (b) submit to the Minister an audited financial statement and a certificate signed by the organization's CEO and CFO (or equivalent), confirming that the Grant Proceeds were used solely for the Project; and

   (c) report to the Minister on the results achieved through the conduct of the Project.

FINAL ITEM NO. 7

Decision ☒ Discussion ☐ Information ☐

ITEM OBJECTIVE: To approve the creation of the new Institute for **SM**art **A**ugmentative and **R**estorative **T**echnologies and Health Innovations (iSMART) in the Faculty of Medicine and Dentistry.

DATE	10 January, 2024
TO	GFC Academic Planning Committee
RESPONSIBLE PORTFOLIO	Vice-President (Research and Innovation)

MOTION: That the GFC Academic Planning Committee approve, with delegated authority from General Faculties Council, the creation of the Institute for SMart Augmentative and Restorative Technologies and Health Innovations (iSMART), effective upon approval.

EXECUTIVE SUMMARY:

Background

iSMART intends to build and expand upon the University of Alberta Sensory Motor Adaptive Rehabilitation Technology Network (SMART Network). It will focus on health innovations that **prevent** injury, **restore** function, and provide advanced technologically based solutions that **enhance** the well-being of persons with diverse abilities. This field of research has a strong record of accomplishment at the University of Alberta and the members of iSMART are internationally renowned for their breakthrough discoveries and innovations.

iSMART's mission is to develop innovative and accessible interventions for preventing injury, enhancing quality of care, and improving people's functional, psychosocial and quality of life outcomes, through interdisciplinary collaborations that engage the full spectrum of research, healthcare, consumer needs, and industry.

Analysis / Discussion

iSMART will provide applications and technology translation for researchers across multiple areas including, but not limited to, medicine, rehabilitation, human ecology, social sciences, arts, computer science, chemistry, biological sciences and all areas of engineering (mechanical, electrical and computer, chemical and materials, civil). It will provide the health innovation ecosystem in the province with a unique platform for advancing technologies from concept to validation while also upskilling industry-based HQP. As evidenced by the 38 letters of support from internal partners as well as government, health and industry partners externally, this network of leading researchers has partnerships locally, nationally and internationally and has strong support.

The proposal has clearly outlined the benefits to the university including multifaceted research, education and training programs, outreach and community engagement and industry partnerships. iSMART will support the objectives of the University Strategic Plan and the Strategic Plan for Research and Innovation and will directly contribute to the objectives of the

ITEM NO. 7

University's Indigenous Strategic Plan and the Strategic Plan for Equity, Diversity and Inclusion. The proposal highlights iSMART members' existing connections to Indigenous Peoples, built on an understanding of the histories, traditions, culture and celebrations of Indigenous Peoples, as well as the plans to strengthen those relationships and activities.

Staff in the Office of the Vice-President (Research and Innovation) have worked with the proponents of the proposal, primarily Dr. Vivian Mushahwar, for a number of months during the development of the proposal. Members of the Centres and Institutes Committee (CIC) provided feedback to Dr. Mushahwar. The role of the CIC is to work with individuals intending to bring proposals forward for the establishment of Centres or Institutes, to review and comment on drafts of the proposed Centre or Institute, and, when satisfied with the proposal, to recommend approval of the proposal to APC. As such, the CIC is recommending that APC approve the establishment of the Institute for SMart Augmentative and Restorative Technologies and Health Innovations (iSMART) as an academic institute.

Where applicable, list the legislation that is being relied upon
Post-Secondary Learning Act (PSLA)
UAPPOL Centres and Institutes Policy
UAPPOL Academic Centres and Institutes Establishment Procedure
UAPPOL Academic Centres and Institutes Operation Procedure
GFC Academic Planning Committee Terms of Reference

Next Steps
Once approval for the Centre has been received, the appointment of the Director (Dr. Vivian Mushahwar) and the six Vice-Directors will be confirmed.
The governance structure will be formalized and populated, and other operational plans will be initiated.
Work will begin in each of the areas described in the proposal including research, education and training programs, outreach and community engagement and industry partnerships.
Major funding opportunities will be pursued.

Supporting Materials:
Proposal for the establishment of the Institute for SMart Augmentative and Restorative Technologies and Health Innovations (iSMART) (145 pages)

***See Schedule A for additional items to include if needed.**

SCHEDULE A:

Engagement and Routing

Consultation and Stakeholder Participation / Approval Route (parties who have seen the proposal and in what capacity) <*Governance Resources Section Student Participation Protocol*>

*Those who are actively **participating**:*

- Members of the Centres and Institutes Committee (CIC)
- Dr. Vivian Mushahwar, Professor, Department of Medicine, FoMD

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*Those who have been **consulted include**:*
● Centres and Institutes Committee (CIC)
● Those listed as signatories of the 38 letters of support (listed on page 20 of the enclosed proposal) including:
  ○ The Colleges of Health Sciences, Natural and Applied Sciences, and Social Sciences and Humanities
  ○ The Faculty of Medicine & Dentistry and five other U of A faculties.
  ○ Other Institutes including AMII and WCHRI.
  ○ External partners including Alberta Health Services, industry partners, and other post-secondary institutions.

*Those who have been **informed**:* ●
Approval Route: Centres and Institutes Committee - Recommendation to APC for approval APC - For final approval

Supplementary Notes / Context:

Prepared by John Bell, Office of the Vice-President (Research and Innovation), john.bell@ualberta.ca

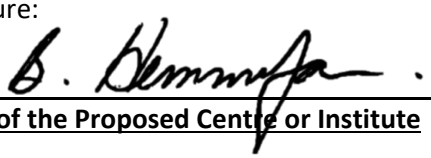
University of Alberta Template for Proposals to Establish New Academic Centres and Institutes

Proposers will complete and submit this template to the Office of the Provost for approval in accordance with UAPPOL Policy. This template may be used in two ways:

1) **As a cover document attached to a completed proposal which has already been approved by the University for submission for external funding. In this case, the template must present the academic arguments for establishing an academic centre or institute, and provide required information that is absent from the original proposal.**
2) **As an expandable template to be completed. In this case, the completed template may be up to 8 to 10 pages in length (not including letters of support or other appendices relevant to the proposal).**

Before developing a proposal and completing this template, please contact the Office of the Provost to discuss the scope of the proposed initiative and to discuss steps for review under the UAPPOL Centres and Institutes Policy, as well as associated procedures for academic centres and institutes – www.uappol.ualberta.ca .

1. **Faculty Dean Signature**

Signature:	Date:
	Nov 10, 2023

2. **Name of the Proposed Centre or Institute**

Institute for **SM**art **A**ugmentative and **R**estorative **T**echnologies and Health Innovations **(iSMART)**

NOTE: Following consultation with Legal at the University through Dr. John Bell, we will trademark the name iSMART to protect its use for the University of Alberta Institute for Smart Augmentative and Restorative Technologies and Health Innovations.

3. **Academic Justification for Establishment of a Centre or Institute**

- Define the vision and purpose of the proposed unit
- Demonstrate that the proposed Centre/Institute does not duplicate other efforts at the University
- Document the emerging or established excellence of the group of faculty involved, and describe how the proposed Centre or Institute will position the University of Alberta as a national and international leader

Vision: A future with enhanced capabilities and life experiences for people with diverse abilities.

Purpose: To empower and improve the health and well-being of persons with diverse abilities.

Mission: Develop innovative and accessible interventions for preventing injury, enhancing quality of care, and improving people's functional, psychosocial and quality of life outcomes, through interdisciplinary collaborations that engage the full spectrum of research, healthcare, consumer needs, and industry.

iSMART, which builds on and expands upon the University of Alberta Sensory Motor Adaptive Rehabilitation Technology Network (SMART Network), represents an exceptional area of scholarly activities supported by a large group of researchers who currently have no formal representation at the University. iSMART focuses on health innovations that **prevent** injury, **restore** function, and provide advanced technologically-based solutions that **enhance** the well-being of persons with diverse abilities. This field has

had a storied history at the University of Alberta, and not only continues to flourish beyond the original SMART Network, but members of iSMART are internationally renowned for their breakthrough discoveries and innovations. The activities of iSMART are focused on achieving maximum levels of independence and autonomy for people who experience inequities due to societal barriers. iSMART earnestly needs to be represented as an Institute if we are to sustain this exponential growth and success. Without support and recognition as a University Institute, the currently highly prominent SMART Network runs the risk of diminishing.

iSMART ***does not duplicate*** other efforts at the University. Instead, it will be a flagship Institute that will also enhance the activities of other flagship University Institutes such as the Women and Children's Health Research Institute (WCHRI) and the Alberta Machine Intelligence Institute (AMII), by providing new pathways to apply and implement their discoveries, and new knowledge and technologies to support further innovation. Note that members of iSMART are members of a variety of institutes including WCHRI, AMII, the Institute of Textile Science, and the Neuroscience and Mental Health Institute (NMHI). iSMART has always operated under the principles of inclusivity and the value of partnerships. Very uniquely at the University of Alberta, iSMART provides the applications and technology translation environment for researchers in areas including, but not limited to, medicine, rehabilitation, human ecology, social sciences, arts, computer science, chemistry, biological sciences and all areas of engineering (mechanical, electrical and computer, chemical and materials, civil). There is no other institute on campus that brings these wide ranging disciplines together to target vexing health issues. In this way, iSMART is complimentary to and adds value to every entity with whom we partner. Evidence for these partnerships can be found in the grants and donations currently held and applied for by members of iSMART. While NMHI lists the SMART Network under their Research Groups and Centers, this is an inaccurate portrayal of the relationship between NMHI and iSMART, and a request has been sent to NMHI to correct this error.

Importantly, the specialized equipment, skills, resources and expertise at iSMART provide a university-wide platform for training highly qualified personnel (HQP) from a wide range of disciplines at all stages of post-secondary education. Specifically, iSMART provides a unique and applied experience for learners from across the entire University; from medicine to arts; from rehabilitation to business; from engineering to science; and from humanities to textiles. By integrating disciplines from across campus, iSMART provides a true convergence of knowledge and scientific activities, and creates a model that aligns very well with the One University initiative.

Moreover, iSMART provides the health innovation ecosystem in the Province of Alberta with a unique platform for advancing technologies from concept to validation while also upskilling industry-based HQP. iSMART is thus contributing to upward mobility and the diversification of the economy in Alberta. Through its business unit, Smart Technology Innovations (ST Innovations), iSMART attracts extensive collaborations with industry and provides services that readily facilitate private-public interactions in the area of health innovations. This in turn positions the University as a key player in advancing the health and wealth of Albertans. ST Innovation is a University of Alberta entity working under the policies and procedures of the University; coordinating with relevant offices e.g., Technology Transfer, VPRI, Research Administrative Services, etc.

The uniqueness of iSMART and its lack of duplication of other efforts on campus are also exemplified by the support and partnerships it has garnered and the diversity of funding it attracts, which are not readily seen in any other University Institute. At the University level, support and enthusiasm for iSMART have been provided by College Deans as well as Deans of collaborating Faculties. Partnerships are also in place with the Northern Alberta Institute of Technology Centre for Advanced Medical Simulations, the newly established Alberta Health Services/University of Alberta Digital Health Unit, the Glenrose Rehabilitation Hospital, the Glenrose Rehabilitation Hospital Foundation, the Alberta Health Services Neuroscience,

Rehabilitation and Vision Strategic Clinical Network, the Knowledge Innovation Talent Everywhere (KITE) Research Institute in Toronto, the Institute of Biomedical Engineering at the University of New Brunswick, numerous international societies and a multitude of entities in the private sector. Letters of partnership and support for establishing iSMART can be found in *Appendix 1*. Additional partnerships will be established with international institutes including the Functional Restoration Institute at Case Western Reserve University, the Center for Neurotechnology at the University of Washington, the German Aerospace Institute in Germany, and Fuji Health University in Japan, as well as with multinational enterprises. Such partnerships will expand our research collaborations, opportunities for training, commercialization activities, and the capacity to perform validation and clinical trials associated with our innovations.

With regards to diversity and sustainability of funding, iSMART currently holds funds for its operations from the Brain Canada Foundation "Platform Support" program, the Alberta Innovates "Ecosystem Development Partnerships" program, the PrairiesCan "Regional Economic Growth through Innovation" program, and in collaboration with Campus Alberta Neuroscience, holds funds from PrairiesCan "Jobs and Growth Fund in Western Canada" program. Since the establishment of the SMART Network in 2009, the entity has been fully sustainable and has not needed financial assistance from any Faculty on campus. iSMART intends to continue to be financially sustainable, and has charted plans for funding from various grant opportunities, philanthropy and industry relationships for the next nearly 15 years.

Members of iSMART are recognized leaders in the foundational science research that is the cornerstone of health innovation, and are among the most world-renowned investigators in applying this research to developing intelligent medical devices and health innovations, with a proven track-record of translating them to global impact. Since May 2019, iSMART researchers secured ~$80M in grant funding, contributed more than 975 unique research outputs, and each year trained around 200 HQP. Our principal investigators are frequently invited as plenary and keynote speakers at the top national and international conferences and centers in advanced health technologies and innovations across multiple disciplines. These include the Materials Research Society, the International Society for Prosthetics and Orthotics, the International Functional Electrical Stimulation Society, the International Consortium for Rehabilitation Robotics, the Shirley Ryan AbilityLab, the InterfaceRice Conference, the International Society for Medical Robotics, the Neural Interfaces Conference, the Canadian Association for Physical Medicine and Rehabilitation, the Myoelectric Controls Symposium, the American Academy of Rehabilitation Medicine, the Canadian Institute for Military and Veterans Health Research Forum, the American Academy of Orthotists and Prosthetists, and the Institute of Electrical and Electronics Engineers Neural Engineering Conference and Engineering in Medicine and Biology Conference, to name a few.

Moreover, our trainees have been very successful in attracting highly competitive awards (e.g., Vanier Graduate Scholarships, Alberta Innovates and Tri-Agency Post-doctoral Fellowships, Royal Bank of Canada Scholarships and numerous international fellowships) and have secured outstanding positions in academia (e.g., University of Calgary, University of Toronto; University of Ottawa; University of California, Davis; Wright University; Cleveland Clinic; Carlton University; University of Edinburgh; Queen Margaret University in Edinburgh; Dalian University of Technology in Liaoning, China), the private industry (e.g., Medtronic; Advanced Bionics; Davey Textile Solutions; Arjo Huntleigh; True Angle Medical; Intel; Canadian Nuclear Laboratories; Adobe; Psyonics; Siemens; Kinova Robotics; MacDonald, Dettwiler and Associates), and healthcare (e.g., Alberta Health Services, King Fahed Medical City in Riyadh).

Our Team was the first to bring the revolutionary targeted muscle reinnervation surgery to Canada under the direction of Dr. J. Hebert for improving the neural control and sensorimotor integration of artificial limbs in persons with upper limb amputation, as well as osseointegration bone-anchored prostheses for persons with lower or upper limb amputation. Our team is a world leader in developing intelligent control

strategies for a wide range of medical robotics that allow seamless human-machine-interactions including surgical robotics, upper and lower limb exoskeletons, prosthetic limbs, assistive robotics, implanted neural prostheses and brain-computer interfaces. We have led innovations in neuroinflammation, materials science and protective textiles, wearable digital devices, eHealth and mHealth technologies, biosensors, soft exoskeletons, power harvesting technologies and batteries, biomechanics, arts-based research, accessibility and inclusion, remote care, and virtual reality. With these capabilities, iSMART is on par with the Massachusetts Institute of Technology Design Lab, Robarts Research Institute in London, Cleveland Clinic and the Shirley Ryan AbilityLab in Chicago.

Moreover, our principal investigators have a very strong history of successfully translating our work to industry and the clinic, and creating numerous spin-off ventures. Over the years, our interventions have helped thousands of people worldwide. Examples of our innovations that are now market products include the Walkaide™ for preventing foot-drop in persons with stroke, multiple sclerosis or spinal cord injury developed in the lab of the late Dr. R. B. Stein; ReJoyce™ for arm rehabilitation after stroke or spinal cord injury developed in the lab of Dr. A. Prochazka; the C-Leg™ intelligent artificial limb for persons with above the knee leg amputation developed by Mr. K. James in collaboration with Dr. Stein; and Smart-e-Pants™ (renamed Prelivia and secured FDA approval in 2021) for preventing pressure injuries developed in the lab of Dr. V. Mushahwar. Dr. M. Ferguson-Pell's lab, in collaboration with Alberta Health Services, Kinestisense Inc. and Pantala Tech, has translated its ProMote tele-rehabilitation platform to 19 healthcare and continuing care facilities across Alberta, and the CogPro team supported MyViva Inc. in developing a mental health and wellness avatar (YARO) utilizing conversational artificial intelligence. The graphene-based end-of-life sensor for fire protective fabrics developed in Dr. P. Dolez and Dr. H-J Chung's labs, is now in scale-up phase with Davey Textile Solutions.

Having grown into a value generating entity with proven sustainability, now is the perfect time for iSMART to evolve into a recognized University Institute. As an Institute, iSMART's stature nationally and internationally will be enhanced substantially, overcoming the lack of understanding of its current vague status as a "Network." Partnering opportunities with national and international institutes will be considerably facilitated with Institute status, and large grant funding opportunities as well as philanthropic uptake will be markedly strengthened. As an Institute, iSMART will achieve its maximal national and international impact, and become the hub where the best minds from across the globe coalesce to develop accessible augmentative and restorative innovations for injury prevention, functional restoration, and enhanced capabilities. As a "Network," we are at a tipping point, having reached our maximal development capacity. By not transforming to Institute status, we will soon reach stagnation, which will lead to eventual deterioration and an inability to maintain our current productivity or potential for growth.

By becoming an Institute, the extensive growth in national and international stature and the resulting networking activities facilitated by iSMART will make the University of Alberta the undisputed leader in the field of accessible augmentative and restorative innovations. This will further increase the chances of success in large team grants and continued sustainable funding for staff and support personnel. Technologies developed in iSMART will further increase the opportunities for forming spin-off companies and provide major potential benefits to the healthcare system.

iSMART's partnerships (e.g., letters of support in *Appendix 1*) will allow it to provide an exceptional interdisciplinary and inter-sectoral training environment that will not only attract the best talent to the University, but will also entice the trainees to think in unconventional ways and prepare them to become the innovators and leaders of tomorrow. With current funding from provincial and federal sources, iSMART will continue to open its extensive infrastructure, resources and skills to provincial, national and international users, which will vastly enhance the University of Alberta's reputation and strengthen its position as a national and international leader.

As an Institute, iSMART will also be able to vastly expand its contributions to the health innovation ecosystem in the Province through ST Innovations, the SMART Network's well-established business arm. The Institute status will substantially increase our partnerships with small and medium-sized enterprises (SMEs), as well as increase opportunities for partnership with, and investment attraction from, multi-national enterprises (MNEs). As an Institute, iSMART will also be well-positioned to attract major philanthropic investments.

Recognition as an Institute is vital to sustaining the high level of engagement and academic excellence that have been achieved over the past 14 years. Without representation as an Institute, the University is likely to continue to miss out on its ability to lead large funding opportunities in iSMART's area of scholarly excellence that rely on evidence of formal interdisciplinary academic platforms such as institutes and centres. A most notable recent example is the awarding of leadership in the Government of Alberta "Major Innovation Fund" themes in Medical Device Innovations and in eHealth and mHealth to the University of Calgary. This was counterintuitive given that the SMART Network is the well-established medical device and digital health innovations entity in the Province, funded through multiple federal and provincial grants and is already providing national leadership. Without the SMART Network's extensive contributions and guidance to colleagues leading these themes in Calgary, those applications would not have been successful. This is an example where the University of Alberta should have been the leader of both themes, and could have reaped substantial advantages and recognition locally and nationally in the area of medical devices and digital health innovations. By recognizing iSMART as one of the University of Alberta's flagship institutes we will ensure similar opportunities are not lost in the future.

Without representation as an Institute, researchers and learners in iSMART's area of scholarly excellence are not formally recognized through their Faculty Evaluation Committees nor are they receiving the necessary support at the University, College and Faculty level. A case in point is the absence of medical device innovations and digital health in the University's recently circulated draft Strategic Plan for Research and Innovation. This omission risks the loss of outstanding professors and trainees to other universities, and reduces our chances at recruiting the best and brightest trainees and leaders in the field to the University of Alberta. Very importantly, sustainability of leadership in this area of excellence as a "SMART Network" cannot be secured without Institute status. As an Institute, iSMART will provide necessary succession planning and continuity, thus ensuring sustained viability and growth.

4. **Provide a statement of the priority of the proposed centre or institute within the overall priorities of the Faculty and/or the University of Alberta. Include a statement of benefits the University of Alberta could expect to receive through creation of the proposed centre or institute, including benefits to students.**

iSMART prevents injury, restores function and enhances abilities through the development of augmentative and restorative technologies and health innovations. iSMART is achieving world-class excellence in key priority areas of research and innovation:

- Robotics and wearables (exoskeletons, prosthetic limbs, and other intelligent body-machine interfaces)
- Sensors (biosensors, smart textiles, and diagnostics)
- Neural interfaces (neuroinflammation, optogenetics, implantable microsystems, and neuromodulation)
- Virtual systems (digital health, telehealth, and remote care)
- Knowledge translation and implementation research

Cross cutting themes across the research and innovation priority areas are biomaterials, biomechanics, artificial intelligence, machine learning, control systems, social justice, societal impact, and rehabilitation.

iSMART's community of outstanding researchers will continue to grow and expand these areas of excellence, and ensure that our innovations are accessible and inclusive. As such, iSMART's goals are to (a) continue to build multi/transdisciplinary capacity to catalyze innovation, and facilitate excellence in research activities; (b) build healthier and more just communities through innovation and technologies to enhance inclusion, diversity, equity, access and quality of life; and (c) provide training to future researchers, innovators, entrepreneurs, and others. These goals are met through a number of ***priorities that reflect iSMART's values,*** and are focused on the development and advancement of accessible health innovations that improve the capabilities and life experiences of persons with diverse abilities.

These priorities are:

1) Excellence in research and development in accessible augmentative and restorative innovations for injury prevention, functional restoration and enhanced capabilities
2) Excellence in skilling and upskilling of trainees and other HQP who will continue to advance the development and translation of accessible augmentative and restorative innovations locally and globally
3) Excellence in knowledge dissemination through public outreach, including rural and remote communities, Indigenous Peoples and other underserved populations
4) Effective collaborations and partnerships with consumers, healthcare, industry and government to facilitate equitable and inclusive translation of augmentative and restorative innovations
5) Responsible practices with regard to the environment, social justice and societal impact, and good governance

Collectively, iSMART's priorities are well-aligned with several University priorities, focused on research, teaching, service and justice. Of particular note is iSMART's track record and demonstrated commitment to the University's areas of strength in Precision Health and AI4Society, the Truth and Reconciliation priority as well as the Healthy University and Campus Sustainability priorities. iSMART is also heavily focused on training the next generation of well-rounded and conscientious scientists who will become game changers in accessible health innovations nationally and internationally. iSMART's strong tradition of multidisciplinary and multi-sector interactions in research, teaching, service and justice through the engagement of 7 different faculties at the University of Alberta have set it apart as a living model of the One University initiative.

Benefits to the University are multifaceted, and will be realized across our four pillars of activities detailed below. We will enhance **multi-faculty research** collaborations and augment external funding success through our research activities, bringing additional research dollars and raising the scientific excellence of the University. We will expand access to **training programs** in iSMART's specialized areas of knowledge for graduate and undergraduate students through value-added workshops and educational activities that draw additional national and international students and community partners to the University of Alberta. We will promote iSMART and the University through **outreach and community engagement** to bring in donors and community partners. We will expand and formalize **industry partnerships** that benefit iSMART and the University through enhanced entrepreneurship projects.

Through its cutting-edge scientific advances and its pillars of activities, iSMART, as an Institute, is poised to increase the University's national and international rankings, helping to position it among the top 50 globally. The direct applicability of iSMART's innovations to health, engineering and social justice will increase fund raising through donations from a diversified philanthropy pool. iSMART's convergence of

knowledge through its vast interdisciplinary interactions will enhance success in Tri-Agency funding, and attract the best researchers to the University. Moreover, with the global interest in the field of medical device innovations and digital health, iSMART will play a key role in enhancing the enrolment of national and international trainees at the undergraduate, graduate and post-doctoral levels, placing the University among the top desired destinations for post-secondary education.

Planned activities of iSMART

1. ***Research: collaboration and advancing knowledge***

Success in research excellence is closely tied to bringing in external grant funding, which is becoming increasingly difficult to secure. Crucial to grant success is the need to clearly identify gaps and research priorities, and bringing together a cohesive team with a track record of success specific to the research area. iSMART will focus on further improving the success of external grant applications for its members by assisting with large team grant proposals, and facilitating critical internal peer review of grant applications prior to submission. Currently, the onus of large team grant applications falls on a few individuals, and memory and improvement of applications from year to year can be lost. iSMART will build a team environment where members of the Institute at different stages of their career are actively recruited to participate in the preparation of the applications for specific funding opportunities relevant to augmentative and restorative technologies, health innovations and the foundational research that underlies these advances, with support from seasoned iSMART personnel. In addition, strategic seed funds will be set aside to support new projects that allow for preliminary data to establish a track record in new areas of work or for supporting existing teams.

A second area in which iSMART will accelerate the advancement of research and the creation of knowledge is by streamlining research processes within the Institute. For example, iSMART will further facilitate access to research equipment across the various member labs to improve efficiency of research operations. We will put additional processes in place that consider liability and insurance for shared equipment to be used by other students/researchers and community partners. We will work with clinical and community organizations (such as the Glenrose Rehabilitation Hospital, University of Alberta Hospital, Royal Alexandra Hospital) to facilitate access to potential research participants and to streamline the recruitment and research processes. Importantly, we will prioritize giving a voice to underrepresented groups (including Indigenous groups) in the research operations to ensure diverse and equitable processes are being implemented across the spectrum of research activities. In facilitating access to research equipment, iSMART has and will continue to work under the provisions of the University of Alberta Contract Review and Signing Authority Policy, and ensure that agreements of use of facilities are in place for all activities.

iSMART will also facilitate knowledge transfer and translation activities. These will include organizing and promoting iSMART talks by members of the Institute and inviting external speakers, bringing internationally recognized research symposia and conferences to the University of Alberta, and organizing workshops in international conferences to promote iSMART's work and activities. Through these activities, the University will receive its rightful reputation for being at the forefront of technological innovation and research excellence in this area, and an engine for ecosystem enhancement leading to increasing the health and wealth of Albertans and Canadians in general.

2. ***Education and training: expanding access***

At its inception, iSMART will not be a degree-offering program. Instead, graduate trainees in iSMART will obtain their degrees from the home departments and faculties of their supervisors. However, iSMART's education initiatives will enhance the trainees' experience, elevate the reputation of the home programs and the University of Alberta as a whole, and increase enrolment of quality trainees from Canada and beyond.

Education initiatives in iSMART will be focused on providing meaningful training that incorporates the principles of justice, equity, diversity, inclusion and accessibility (JEDIA) with specific initiatives to increase access to training for underrepresented groups. We will train future leaders in iSMART technologies and health innovations grounded in principles of JEDIA. We will partner with existing organizations such as Women in Scholarship, Engineering, Science and Technology (WISEST), Experiential Learning in Innovation, Technology, and Entrepreneurship (ELITE) for Black Youth, Indigenous-led and culturally-relevant programming in STEM/STEAM to support a better future for Indigenous youth in Science, Technology, Engineering, Arts/Architecture/Agriculture and Mathematics (IndigiSTEAM), and the University of Alberta Accessibility Work Experience Program to engage underrepresented students in iSMART research early in the students' training stage to support the identified needs of these programs. Funding will be set aside for trainee research awards and scholarships.

We will host trainee research days and research challenges to engage students across the Institute and provide the opportunity for cross discipline collaboration. Enhanced training opportunities in iSMART will be offered by formalizing our SMART NSERC CREATE training workshops which include Knowledge and Skills workshops, Foundational workshops, and Entrepreneurship workshops. These workshops will bring together students from various Faculties and training stages to expose them to core and essential knowledge of emerging equitable technology development. The workshops will also be expanded to be offered to other institutions and universities, as well as industry and community partners. Specifically, we will work to make the workshops and internships self-sustainable through certification programs, fees, and industry partner matching funds for students. We will also formalize an internship process for graduate students looking to expand their skills and experiences in industry or at other academic or public institutions. This program will assist graduate students with career planning and job readiness. Collectively, iSMART provides a robust and unique training environment for undergraduate and graduate students from a variety of degree programs, and we are exploring the potential to develop revenue generating certificate programs in innovative rehabilitation technologies.

3. ***Outreach and community engagement: promotion and expansion***

iSMART will further elevate the national and international profile of the research done at the University of Alberta by sharing research results with stakeholders, persons with diverse abilities, the community, and the government. We will organize an annual open house for the Institute and participate in existing open house activities already happening at the University. We will organize public-friendly outreach events including research talks in lay language, and be a voice for the research performed by the various members of iSMART, by, for example, organizing lab tours for the public and researchers. We will create a regular newsletter to feature iSMART members and their research and innovations, which will be marketed and distributed to stakeholders in order to promote stakeholder engagement and demonstrate iSMART research and technologies to the broader community.

Importantly, in alignment with the latest draft of the University's Strategic Plan for Research and Innovation, our outreach efforts will actively engage underserved and underrepresented communities in the Institute's activities. We will offer community activities, workshops, seminars and training based on needs assessment from existing organizations such as ELITE and IndigiSTEAM. We will create research summer schools and open our workshops to enhance the capacity to address equitable learning and access. Social innovation hubs will be developed to effectively promote and understand meaningful community engagement with a diverse group of stakeholders (e.g., Indigenous communities, visible minorities, persons experiencing disability) to accelerate innovation implementation by prototyping solutions and identifying research questions and processes that allow participation in all aspects of research.

Through these activities, iSMART will proactively advocate for health research programs and policies that augment the abilities and promote the needs of people with diverse abilities, act as a national voice and advocate for research on iSMART technologies and innovations, support equitable access and inclusion to advanced training and research opportunities, and ensure translation of the outcomes of knowledge and technologies developed by iSMART researchers.

4. ***Industry partnerships: leveraging economic development***

We will continue and expand our industry partnerships through ST Innovations and targeted training programs. ST Innovations was established in 2019 to offer health innovation companies, entrepreneurs, and innovators in Alberta and Canada customized preclinical, engineering and validation services as well as connection to University researchers and clinical expertise. We aim to remove barriers inherent in the health technology development process and allow for early innovations to be better positioned for commercialization stages of development and entering the marketplace. ST Innovations empowers innovators by providing them the research and development environment of iSMART, which is very well-equipped with specialized state-of-the-art equipment, and offers skills, resources and expertise that are generally not easily attainable by SMEs. By providing comprehensive, multi-disciplinary technical services, ST Innovations assists innovators in advancing their technologies from concept to validation, positioning them well for investment and market uptake.

From the perspective of targeted training programs, we are already working with industry partners on hosting graduate trainee internships, and will continue to expand this program beyond the SMART NSERC CREATE trainees, offering it to all trainees in iSMART. The internship program will directly benefit both the students (for expanding job skills, experience and improving job readiness) as well as iSMART by increasing industry's knowledge about our training programs and trainee qualifications. We will host annual events with industry, iSMART principal investigators and trainees for a fluid knowledge exchange on the needs of the industry and to develop earlier stage partnerships in research and development. We will also expand the workshops developed as part of the SMART NSERC CREATE program to HQP in industry, providing upskilling that results in increased job opportunities and upward mobility. Our partnerships with industry through ST Innovations and targeted training will provide a revenue stream for iSMART, contributing to sustainability and expansion of research and educational programs.

Metrics for Success

iSMART's key performance indicators will include the following:

1. *Success in Research* will be measured by funding from Tri-Agency and other prestigious external and international agencies; leadership and success in large team grants; books, book chapters and peer-reviewed publications in impactful journals within the various fields of iSMART; plenary, keynote and invited presentations at prominent institutions and national and international conferences; and symposia and workshops chaired and/or sponsored.
2. *Success in Education and Training* will be measured by the number of trainees at all levels (undergraduate, graduate, post-doctoral and other HQP) attracted to iSMART; success of trainees upon graduation; scholarships and awards secured by trainees; presentations given by trainees at national and international conferences; training opportunities for students from underserved communities; internships in the private or public sectors completed; and strategically designed workshops and training resources for targeted groups.
3. *Success in Outreach* will be measured by the number of partnerships and memoranda of understanding secured with similar national and international institutes and not-for-profit organizations; number of community engagement activities and lay talks; number of attendees at open houses; number of subscribers to the iSMART newsletter; donations raised from various philanthropic

groups; attraction of trainees from underserved groups to iSMART programs; and projects completed by WISEST, ELITE, IndigiSTEAM and Accessibility Work Experience students.

4. *Success in Industry Partnerships* will be measured by the number of disclosures, copyrights, patents filed and patents issued for technologies stemming from iSMART activities; number of start-up and spin-off companies incorporated; number of SME-based contracts and projects completed; number of companies utilizing iSMART equipment, resources and skills; number of partnerships within the health innovation ecosystem in Alberta; number of partnerships with MNEs; and funding secured from innovation-based agencies such as PrairiesCan and Alberta Innovates.

Alignment with the University of Alberta Strategic Plans:

Members of iSMART have existing bridges to Indigenous Peoples that will be maintained and strengthened. These existing relationships have an understanding of the history, traditions, culture and celebrations of the communities with which they engage. Our goal is to maintain and strengthen these relationships and do so under the guidance of the Vice Provost, Indigenous Programming and Research, Dr. Florence Glanfield, to ensure that we are opening this to all First Peoples of Canada in a coordinated and respectful way. These relationships will be aligned with the Braiding Past Present and Future Indigenous Strategic Plan at the University of Alberta. The activities continue to focus on empowering the present, acknowledging the past, and imaging the future. Further alignment with Braiding Past, Present and Future is apparent in our training programs, especially the SMART NSERC CREATE program that incorporates training and integration of EDI and Indigeneity at the foundational level as well as the areas of research related to Indigenous Peoples that various members of iSMART are engaging in. Moreover, iSMART will continue and further advance its commitment to understanding and opening dialogue around Truth and Reconciliation, transforming thought and practice related to Indigenous ways of knowledge and pursuing research activities that build on Indigenous strengths and address existing gaps, particularly in healthcare.

With the ways of knowing of Indigenous Peoples iSMART's priorities are open to all peoples and recognize First Nations, Inuit and Metis rights under the constitution of Canada. By recently naming an Interim Vice-Director, Justice, Equity, Diversity, Inclusion and Access (JEDIA), we will also succinctly provide a welcoming environment for learning that supports the education of those attending our programs, and continuing to establish stronger understanding of Indigenous Peoples and cultures.

Importantly, all members of iSMART, including faculty, support staff and trainees, will continue to complete the existing and future University of Alberta EDI training modules, allowing for continued evaluation of barriers and gaps. EDI policies will be included in the recruitment and promotion practices, as well as annual reports, student milestone achievements and making opportunities. Collectively, our focus on EDI aligns well with the University of Alberta Strategic Plan, Shape; the Strategic Plan for Research and Innovation (SPRI); and the Indigenous Strategic Plan, Braiding Past, Present and Future.

Further alignment with Shape is apparent in the primary areas of focus for iSMART, which are teaching, research and adding value to the community. These are the same focus of areas in Shape. Further alignment with SPRI is also apparent in the excellent facilities iSMART provides for supporting breaking ground research; serving as a University-wide model of cohesive interdisciplinary research with great impact; and enhancing the University's reputation nationally and internationally.

5. **Provide a description of the proposed centre/institute governance structure/reporting lines. <u>Include a diagram of organizational structure</u>.**

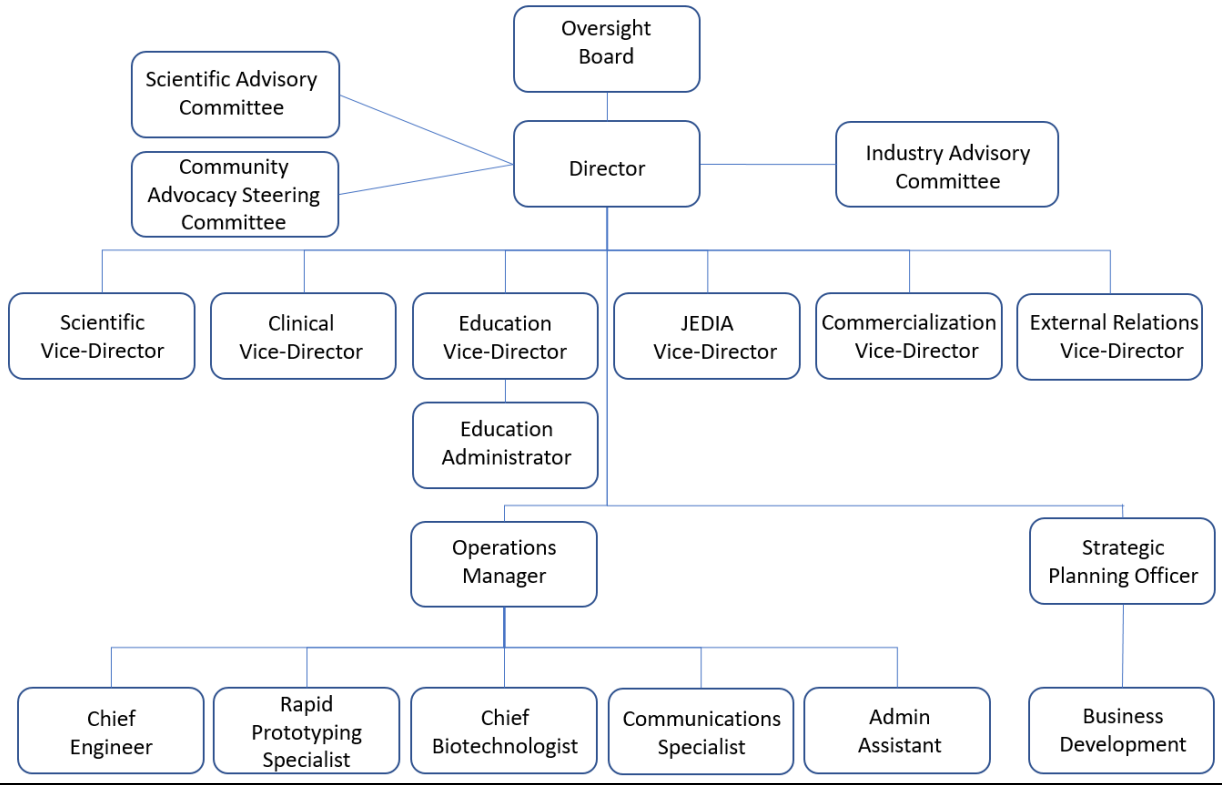
The organizational chart for iSMART is shown below, and mainly reflects the current governance structure of the SMART Network, with the exception of reporting to an Oversight Board. As an Institute, the Director of iSMART will report to an Oversight Board (led by the home Faculty Dean) composed of the College Deans, Deans of the iSMART member Faculties, and prominent opinion leaders in the areas of iSMART

priorities. The Director will be responsible for the vision, purpose and mission of the Institute, and will oversee the Institute's overall operations and activities, ensuring that iSMART is meeting its core values, strategic priorities, and sustainability plans. The Vice-Directors are responsible for establishing and guiding the implementation of iSMART's scientific, clinical, educational, JEDIA (justice, equity, diversity, inclusion, access), commercialization and external relations priorities and initiatives.

Advising the Director and Vice-Directors are the Scientific Advisory Committee, the Community Advocacy Steering Committee and the Industry Advisor Committee.

Supporting the scientific and business operations of iSMART are an Operations Manager and a Strategic Planning Officer, respectively. The Operations Manager oversees the day-to-day operations of iSMART and is the primary liaison between the academic/clinical and industry partners of the Institute. The Operations Manager oversees the activities of a Chief Engineer, a Chief Biotechnologist, a Rapid Prototyping Specialist, a Communications and Marketing Specialist and an administrative assistant. The Chief Engineering and the Rapid Prototyping Specialist will be assisted by Engineering Technologists (not shown on chart, initially one individual with the intention to increase capacity as iSMART and ST Innovations continue to expand). Supporting the educational activities of iSMART is an Educational Administrator who serves as the Program Director for the SMART NSERC CREATE program under the direction of the Education Vice-Director.

The Strategic Planning Officer is responsible for establishing partnerships with SMEs, MNEs, foundations, and charitable organizations. This Officer is also responsible for identifying and preparing grant applications to provincial and federal agencies focused on diversifying the economy and enhancing the health innovation ecosystem, and provides advice on communications with leadership in the Government of Alberta. The Strategic Planning Officer oversees the activities of the Business Development Manager, whose responsibilities include attracting SME-based projects to iSMART, establishing and managing client relationships, and providing a concierge service to SMEs to remove barriers that have traditionally impeded private-public partnerships and collaborations.



6. **Provide a statement of the role and qualifications of the centre/institute lead of the proposed centre or institute.**

iSMART is composed of an academic and a business arm, both University of Alberta entities. The academic arm of iSMART is led by the Director and 6 Vice-Directors. Upon the establishment of iSMART, the Interim Director and Vice-Directors of the Institute will comprise the current members of the SMART Network's Executive Committee, chosen as per policies established at the creation of the SMART Network in 2009. The Interim Director will be Dr. Vivian Mushahwar (Professor, Faculty of Medicine and Dentistry), and the Vice-Directors will be:

- Dr. Mahdi Tavakoli (Professor; Faculty of Engineering; Scientific Vice-Director)
- Dr. Nizam Ahmed (Professor, Faculty of Medicine and Dentistry; Clinical Vice-Director)
- Dr. Jacqueline Hebert (Professor, Faculty of Medicine and Dentistry; Education Vice-Director)
- Dr. Patricia Dolez (Associate Professor, Faculty of Agricultural, Life and Environmental Sciences; Commercialization Vice-Director)
- Dr. Martin Ferguson-Pell (Professor, Faculty of Rehabilitation Medicine; External Relations Vice-Director)
- Mr. Tim Ira (Strategic Officer, Indigenous Initiatives & Equity, Diversity and Inclusion, College of Social Sciences & Humanities; Justice, Equity, Diversity, Inclusion and Access Vice-Director)

The Director of iSMART will be appointed through a search and selection process as per Faculty of Medicine & Dentistry procedures that align with University of Alberta policy, and will serve for a 5-year term, renewable once. The Vice-Directors will be elected by the members of iSMART and will serve for a 3-year term, renewable twice.

The business arm of iSMART, ST Innovations, was established in 2019. It will be led by the Director of the academic arm along with the Commercialization or External Relations Vice-Directors, iSMART's Operations Manager who will serve as the liaison between the academic and business arms of iSMART, a Business Strategist, a Business Development Manager and iSMART's Communications and Marketing Specialist. At the establishment of the Institute, these positions will be filled by the current Executive Committee members of ST Innovations. These will be:

- Dr. Vivian Mushahwar, iSMART Interim Director (Professor, Faculty of Medicine & Dentistry)
- Dr. Martin Ferguson-Pell (Professor, Faculty of Rehabilitation Medicine)
- Ms. Michelle Whaling (Operations Manager)
- Mr. Farid Foroud (Business Strategist)
- Mr. Jonathan Butterworth (Business Development Manager)
- Ms. Noi Kareerat (Communications and Marketing Specialist)

The Directors and Vice-Directors of iSMART will constitute the Executive Committee of iSMART. They are global leaders in their scientific fields and bring exceptional experience in leading large programs and managing multimillion-dollar initiatives. The Operations Manager and Business Strategist have years of experience working with the SMART Network, and have established outstanding relationships on and off campus. The support staff bring exceptional experience in technical and administrative support, and are highly knowledgeable and skilled in managing the day-to-day operations of iSMART. The Communications and Marketing Specialist is a new hire who brings a wealth of experience in news releases, government reporting, event organization and all aspects of social media. Collectively, the leadership and key support personnel in iSMART are fully prepared to manage the Institute and advance it towards a vast national and international impact. Abbreviated biosketches for iSMART leadership can be found in *Appendix 2*.

Draft Terms-of-Reference for the Oversight Board and three supporting committees can be found in

Appendix 4. These Terms-of-Reference will be reviewed and voted on by members of iSMART. The Oversight Board will review the Terms-of-Reference suggested by iSMART before ratification

iSMART members with voting rights are full-time faculty members of the University of Alberta who have also been approved to be members of iSMART by iSMART's Executive Committee. iSMART's Executive Committee is composed of the Director and Vice-Directors and is chaired by the Director. Faculty members of iSMART bring expertise in vast areas related to smart augmentative and restorative technologies and health innovations, ranging from rehabilitation and various areas of medicine, to neuroscience, cell biology and chemistry, to all areas of engineering, to social science, human ecology and critical disability.

7. **Employees**

a) Provide a statement of the employment status of employees (i.e., are they University of Alberta employees?)
b) Specific source(s) of any "University funding" must be identified
c) Personnel expenditures must include adequate provisions for benefit costs, salary settlements, and other escalating factors.

The Interim Director and Vice-Directors of iSMART's academic and business arms are faculty members at the University of Alberta, and their salaries are covered by the University and Alberta Health Services where applicable.

At its inception, iSMART will support 10 administrative, business and technical support staff, all of whom are currently employees of the SMART Network and ST Innovations. Eight of the staff members are soft-funded employees of the University and 2 are subcontractors. Salaries are currently paid through funds secured by the SMART Network, ST Innovations and the SMART NSERC CREATE program. The table below provides the names of the staff members, their base salary, benefits, type of position and the grant RES number from which they are paid. Individual labs whose PIs are members of the SMART Network also employ a wide range of soft-funded employees who support activities that will directly contribute to the Institute, including extensive administrative support that will contribute to iSMART's operations.

Name	Employment Type	Title	Salary	Benefits (30%)	Salary level/ Range	Funding
Michelle Whaling	Employee	Research Associate (Operations Manager)	$90,222.00	$27,066.60	Level 2C (74,084 - 101,888)	RES0054011
Farid Foroud	Contractor	Business Strategist	$100,000.00			RES0054011
Jonathan Butterworth	Contractor	Business Development Manager	$130,000.00			RES0054011
Noi Kareerat	Employee	Communications & Marketing				
Michel Gauthier	Employee	Research Associate (Chief Engineer)	$101,888.00	$30,566.40	Level 2C (74,084 - 101,888)	RES0054011
Don Wilson	Employee	Prototyping Specialist	$76,816.32	$23,044.90	Grade 8 Step 8.5 (40hr/wk)	RES0054011

Rod Gramlich	Employee	Neurophysiology & Biomechanics Specialist (Chief Biotechnologist)	$50,072.76	$15,021.83	Grade 11 step 9 (0.5 FTE)	RES0047579/RES0048313
Neil Tyreman	Employee	Biotechnologist	$74,751.12	$22,425.34	Grade 9 step 9 (30hr/wk)	RES0047579/RES0048314
Avery Nosen	Employee	Engineering Technologist	$63,401.28	$19,020.38	Grade Step 7 (37.5 hr/wk)	RES0061321
Mahdieh Khoshniat	Employee	SMART CREATE Program Coordinator	$58,443.96	$17,533.19	Grade Step 7 (35hr/wk)	RES0059981

8. **Financial Plan**

a) Include key sources of operating funds, and include revenue sources and expenditures for [ideally] 5 years projected.
b) State specific source(s) of any "University funding"
c) Provide a plan for the sustainable funding of the operation of the centre or institute (salaries, equipment and maintenance, IT support [data management, web design, etc.)
d) Escalation factors must be built into expenditure projections (i.e. escalation due to inflation, future salary settlements, etc.)
e) If in-kind support is identified, the specifics of that support must be listed separately.

The SMART Network has been a self-sustaining entity since its establishment as the Project SMART Team in 2009, and as a University of Alberta Institute it is expected to continue to be self-sustaining. A spreadsheet of iSMART's anticipated income from various sources over the next 14 years, expenditures and revenue to be used for attracting the best and brightest trainees as well as support labs of iSMART members is provided in *Appendix 3*. Specific responses to the questions above are below.

a) Excluding research operating funds held by iSMART Principal Investigators, iSMART currently holds $3,840,000 for running its operations over the next 3 years (through May 2026). These funds have been secured from the Brain Canada Foundation, Alberta Innovates, and PrairiesCan. The anticipated expenditures over the next 3 years are $3,738,440, which cover salaries of administrative, business and technical support staff, small equipment and maintenance of iSMART major equipment, and marketing and fundraising activities. We anticipate to secure additional funding in subsequent years from various sources including a PrairiesCan grant to be held jointly by iSMART, nanoFab and Innotech Alberta; industry-based projects secured by ST Innovations; fundraising from philanthropic sources and partnerships with MNEs; President-enabled opportunities; user fees of the iSMART facilities; and revenue from workshops, symposia and conferences sponsored by iSMART. iSMART will also be competing for a Canada Fund for Innovation (CFI) Major Science Initiative grant upon the next rollout of this funding opportunity.

b) The various Faculties comprising iSMART's membership have committed in-kind support in the form of assistance with communications and marketing, administrative assistance with iSMART-sponsored symposia and workshops, assistance with hiring and with recruiting outstanding trainees, and use of space at no cost to iSMART.

c) For sustainable funding of operations, please refer to the spreadsheet in *Appendix 3*. Our current sustainability plan extends to the year 2038 and takes into consideration iSMART's expenditures which include salaries of administrative, business and technical support staff, maintenance of major equipment and the purchase of small equipment.

d) Escalation factors have been included in the projected expenditures in two ways. The first was by including a year-over-year increase of 4% for salaries of administrative, business and technical support staff, maintenance of major equipment and the purchase of small equipment. The second is based on securing major, relatively long-term funding such as the CFI Major Science Initiative funding as well as increased income from President-enabled opportunities, user fees and iSMART-sponsored symposia and workshops.

e) In-kind support has been committed by the Faculties making up the membership of iSMART in the following areas:

- Championing iSMART within their Faculty, at the University and outside the University.
- Covering rental of spaces occupied by iSMART in their Faculty.
- Providing administrative support for iSMART-sponsored symposia and workshops including assistance with venues, housing, meals, etc.
- Assisting with the communications and marketing activities of iSMART.
- Identifying trainees from the University that can benefit from knowledge and skills workshops developed by iSMART.
- Directing highly qualified personnel in industry for upskilling training in iSMART.
- Identifying University entrepreneurs whose innovations could benefit from the infrastructure, resources, equipment and skills available at iSMART.
- Identifying clients from the private sector who could be supported in advancing their innovations through iSMART.

9. **Space Requirements.**

Space required? Yes☐ No☒

If "No" selected, where is current space? __Common iSMART space housing specialized equipment and offices exists on the 5th floor of the Katz building (~16,000 sq. ft.) and 2nd floor of ECHA (~2,600 sq. ft.). Members of iSMART also have access to more than 55 individual labs across 7 Faculties on campus that make up the current membership of the Institute. __

If "Yes" selected, complete the following:

☐ On-site at the University of Alberta
☐ Awaiting allocation
☐ Rent/lease required

If rent/lease is required, has this been budgeted for? Yes☐ No☒**(Not applicable)**

Is funding required? Yes☐ No☒ Reasons: ___Funding already exists to support iSMART operations, and a sustainability plan is in place to reduce the likelihood of dependence on funding from Deans of Faculties associated with iSMART____

Address the following questions:

a) If rent/lease or license is required, what is the University of Alberta's commitment?
b) If new space or modifications to existing space are required, has Facilities and Operations been contacted and has this been included in the budget?

Not applicable

10. **Potential Risks to the University of Alberta**

a) State any reputational, financial, and/or operational risks to the University of Alberta.
b) Outline plans to mitigate/manage those risks.
c) Risk Management Services may be consulted.

Potential risks of iSMART to the University of Alberta could be reputational, financial, operational, and personal advancement. However, these risks are very limited compared with the risks associated with iSMART not becoming an Institute.

There is very little, if any, risk in establishing iSMART and in its ability to carry out its institutional mandate and operations. iSMART already exists as the SMART Network and has a governance structure that has allowed it to carry out its mandate successfully. We are now advancing the SMART Network to the next level of becoming a recognized University Institute. Changes to the governance will basically include the inclusion of an Oversight Board and re-engaging the Scientific Advisory Committee and establishing a Community Advocacy Steering Committee. Moreover, there is no financial risk because the faculty members already have their salaries paid by the University and most support staff are trust funded.

However, should iSMART fail in the future, there will be reputational, financial, operational and personal advancement risks as outlined below.

- *Reputational:* Because the SMART Network has garnered a national and international reputation since its inception as the Project SMART Team in 2009, failure of iSMART will have strong reputational ramifications to the University. The University could lose an area of expertise that is at the forefront of an exceptionally exciting and fast-evolving global area of research. This could cause the loss of outstanding faculty members and difficulty in attracting new faculty, as well as the inability to recruit the best and brightest trainees in augmentative and restorative health technologies and innovations. Failure of iSMART would also cause the loss of lucrative funding opportunities, loss of intellectual property, and loss of partnerships with the private sector. It could also result in the loss of partnerships with hospitals where iSMART health innovations are currently tested and/or implemented; thus, jeopardizing the program for people living with a disability. This will collectively lead to the loss of the University's national and international leadership in the field as well as its impact on the health innovation ecosystem in the Province of Alberta.

  Nonetheless, failure of iSMART is highly unlikely given the successes, growth and accomplishments of the SMART Network to date. An Institute status will further elevate the reputation of the University, and as iSMART, it will be able to partner with other institutes nationally and internationally on an equal footing. This will result in opening up additional avenues of funding and partnership with the private industry and health care. The University can play a very important role in the success of iSMART by advocating for the Institute provincially, nationally and internationally. iSMART leadership will also ensure that the successes and accomplishments of the members of iSMART are well recognized locally, nationally and internationally through an active communications and outreach strategy.

- *Financial:* Since 2009, the SMART Network has been completely self-sustaining; therefore, a financial risk for iSMART is not anticipated. Other than the salary of the faculty members in the SMART Network, the University has not provided any financial support for any of the support staff, operations, maintenance or major equipment purchase for the Network. iSMART's leadership and members will pursue all meaningful funding opportunities to support the administrative, technical

and business activities of iSMART as well as to maintain iSMART's specialized equipment and purchasing new equipment as needed. Collectively, these established revenue streams will ensure that iSMART remains almost entirely financially independent from the University.

- *Operational:* Failure of iSMART will lead to the loss of the incredible administrative, technical and business support staff who currently provide the day-to-day management of the SMART Network. This loss will have a serious negative impact on the capacity of iSMART to provide the very rich environment that currently supports the work of more than 350 professors, support staff and learners. Nonetheless, the SMART Network and its business arm, ST Innovations, have been very successful in securing funding that has allowed us to support our personnel for many years. We anticipate that adequate funding through provincial and federal grants, fundraising, user fees, contracts with the private sector and support from President-enabled opportunities will continue to provide the needed finances to support our administrative, technical and business staff.

- *Personal Advancement:* Failure of iSMART could result in the loss of multidisciplinary and multi-sector collaborations facilitated by iSMART, resources for specialized research and teaching activities, loss of team funds and retraction of global scientific engagements. Collectively, these can impede advancement of investigator research programs and increasing the pressure on researchers to seek opportunities individually, thus increasing the administrative redundancy. Such additional pressures can greatly distract researchers from their trainees and their overall scientific endeavors, leading to reduced morale, personal drive and interest in contributing to the University as a whole.

In its role in contributing to the success of iSMART, we urge the University to implement policies that actively support iSMART and other entities on campus that fully embody the One University initiative. Examples of such policies include:

- Equitable acknowledgement of all Faculties associated with iSMART with regards to funding secured, accomplishments achieved, and partnerships established. Attribution of such successes to only a single Faculty, and a single faculty member, directly hinders the meaningful adoption of the One University concept.
- Acknowledgement of each faculty member's contributions to iSMART at their respective Faculty Evaluation Committees. These highly valuable contributions are exactly what makes an institute successful, and deserve to be acknowledged and credited.
- Larger University support for major grant applications that are prepared for submission by institutes.
- Collaboration between the philanthropic efforts of central administration as well as the Institute's partner Faculties
- Assistance with developing new workshops as well as micro-credentialed courses offered by iSMART to ensure that learners gain exposure and knowledge in the interdisciplinary breadth of iSMART.

11. **Annual Reporting and Strategic Review: In accordance with UAPPOL Policy**

a) State a provision for annual reporting to the Reporting Dean
b) State a provision for annual reporting to the Office of the Provost
c) State a provision for strategic and operational review by the Reporting Dean (or delegate) at no less frequency than every five years.

Data on the progress of iSMART will be collected quarterly and a report will be provided to the Oversight Board, Reporting Dean and the Office of the Vice President, Research and Innovation on an annual basis.

	The annual report will be shared with partners and stakeholders, and will be available for public viewing on iSMART's website. Highlights of the report will be communicated via social medial. Strategic and operational review will be performed every 5 years by the Reporting Dean as per University of Alberta policies (https://policiesonline.ualberta.ca/PoliciesProcedures/Procedures/Academic-Centres-and-Institutes-Operation-Procedure.pdf). Outcomes of these reviews will be discussed with the Oversight Board and members of iSMART during an annual retreat, and actions will be taken to incorporate feedback into our operations. Strategic priorities will also be updated to continuously reflect iSMART's values, vision, purpose and mission.
12.	**Intellectual Property (IP) and Copyright** a) Will any copyright or patentable IP be created, and if so, how will it be handled? b) How will ownership and commercialization of IP be handled? In line with what has been observed since the SMART Network started its activities in 2009 as the Project SMART Team, we expect that the activities of iSMART will generate copyright and patentable IP. These will be handled through the policies outlined in the Patent Policy and Commercialization of Patentable Intellectual Property Procedure provided by UAPPOL.
13.	**Termination Plan/Provisions** a) Exigency plan for termination: If physical and/or financial resources will remain upon termination, a plan for consultation with donors or agencies associated with the centre or institute must be included in the dissolution plan. Should a decision be made to terminate iSMART, the procedures as laid out in the UAPPOL policy *Academic Centres and Institutes Termination Procedure* will be followed. Since project grant and other funding is managed through RSO agreements which a Principal Investigator is responsible for, the termination of individual agreements will be in accordance with those agreements. Good fiscal management of grants held by Principal Investigators also requires them to manage the costs of closing out project activities including implications for personnel and contracts held. Philanthropic funds directed to iSMART will be the responsibility of the iSMART Director. The Director, in consultation with iSMART's Oversight Board, will work with the President's Office of Advancement to ensure that measures are put in place to continue to honor the terms of the relevant gift agreements.
14.	**Letters of Support**: Attach letters from relevant on- and off-campus sources The letters of support are provided in *Appendix 1*.
15.	Provide, if applicable, any **agreements and/or memoranda of understanding between the University of Alberta and its partner(s)** to establish, fund and operate the proposed academic centre or institute. Upon its establishment, iSMART will be embarking on memoranda of understanding with a number of external partners including the Glenrose Hospital Foundation; the University of Alberta Hospital Foundation; the Knowledge, Innovation, Talent, Everywhere (KITE) Institute in Toronto; the University of New Brunswick Institute of Biomedical Engineering; the Functional Restoration Institute at Case Western Reserve University; the Center for Neurotechnology at the University of Washington; the German

	Aerospace Institute; and Fuji Health University in Japan, as well as with multinational enterprises such as Becton Dickenson and others. The proper signing authority has been obtained for current MOUs. We will continue to do the same for all other relations that iSMART establishes with entities outside the University of Alberta.

Institute for Smart Augmentative and Restorative Technologies and Health Innovations (iSMART)

Appendix 1: Letters of Support

1. Faculty of Medicine and Dentistry, University of Alberta
2. Alberta Bone and Joint Health Institute
3. Alberta Health Services Special Projects
4. Alberta Machine Intelligence Institute (AMII)
5. Becton Dickinson
6. BioAlberta
7. Biohubx Inc.
8. BioStream Inc.
9. Bone and Joint Health Strategic Clinical Network, Alberta Health Service
10. Cleveland Center for Functional Electrical Stimulation
11. College of Health Sciences, University of Alberta
12. College of Natural and Applied Sciences, University of Alberta
13. College of Social Sciences and Humanities, University of Alberta
14. University of Alberta/Alberta Health Services Digital Health Unit
15. ELIXR
16. Faculty of Agriculture, Life and Environmental Science, University of Alberta
17. Faculty of Engineering, University of Alberta
18. Faculty of Kinesiology, Sport & Recreation, University of Alberta
19. Faculty of Rehabilitation Medicine, University of Alberta
20. Faculty of Science, University of Alberta
21. Glenrose Rehabilitation Hospital
22. Global Public Affairs
23. Health Cities
24. Health Gauge Inc.
25. International Consortium for Rehabilitation Robotics
26. Institute of Textile Science
27. Kinetisense Inc.
28. MyViva Inc.
29. Northern Alberta Institute of Technology (NAIT)
30. Neuraura Inc.
31. Neuroscience, Rehabilitation and Vision Strategic Clinical Network, Alberta Health Services
32. Rice Neuroengineering Initiative
33. Technical Committee for Rehabilitation and Assistive Robotics
34. Technical Committee for Telerobotics
35. Technology Transfer Services, University of Alberta
36. University of New Brunswick Institute of Biomedical Engineering
37. Women and Child Health Research Centre, University of Alberta
38. YEG Scientific Inc.

July 28, 2023

Dr. Vivian Mushahwar
Director, SMART Network
Professor, Department of Medicine
University of Alberta

RE: Support for Establishment of iSMART as a UAlberta Academic Institute

Dear Dr. Mushahwar,

I submit this letter as Dean of the Faculty of Medicine & Dentistry (FoMD) to express the FoMD's strong support for establishment of iSMART as a UAlberta Academic Institute. The FoMD is eager to continue to support the SMART Network's transition to iSMART through in-kind and governance, as the SMART Network and iSMART's reporting Faculty.

The SMART Network has brought together key stakeholders in healthcare, science, engineering, humanities, and industry, and is keen to move to the next step in the execution of their goals. We strongly believe that iSMART will play a complementary role to the other UAlberta Institutes.

The FoMD has robust governance processes in place for its reporting Institutes and Centres. Each FoMD Institute has an Oversight Board led by the Dean, which meets every 6-8 months (administrative support by the Dean's Office). Each FoMD institute submits an annual report in April alongside the *Annual Declaration to the Provost*. These materials are reviewed by the Vice-Deans of Research and Dean. An in-person meeting follows, and each Institute Director is provided with written feedback. The Faculty also has a written procedure for *Academic Institutes Director Selection & Reappointment.* The procedure aligns with UAPPOL policy and provides additional instruction to ensure fairness and transparency in director recruitment and reappointment. The FoMD is committed to providing oversight for iSMART and overseeing and organizing the *5-year Strategic & Operational Review* as per UAPPOL policy.

The FoMD has two committees which support the efforts of all our Institutes. The *Institute Steering Committee* meets every two months and is led by the Vice-Dean Research (Basic). This committee provides Institute Directors a forum to discuss avenues of collaboration and shared interest, and identifies how the Faculty can support and facilitate their efforts. The FoMD Institute Operations Directors (n=7) and Director, Strategic Initiatives & Special Projects, FoMD also meet monthly as the *Institute Operations Committee*. This committee provides a forum for Institute operational discussions, and has the same goals as the Institute Steering Committee. The Faculty provides oversight and administrative support for both of these committees.

Our Faculty will encourage our Development, Communications, Finance, Research, and Human Resources Partners to support iSMART with their ambitious goals. Additionally, we are committed to supporting iSMART's academic arm by providing use of space and helping iSMART meet its philanthropic fundraising goal of $300K in year 3.

UNIVERSITY OF ALBERTA

iSMART will provide new pathways to apply and implement discoveries and will develop health innovations that prevent injury, restore function, and provide advanced technologically-based solutions that will undoubtedly enhance the well-being of persons with diverse abilities.

We look forward to supporting iSMART's next exciting steps forward.

Sincerely,

Brenda Hemmelgarn MD PhD
Dean, Faculty of Medicine & Dentistry

ALBERTA BONE & JOINT HEALTH INSTITUTE

Dr. Martin Ferguson-Pell
Professor, Faculty of Rehabilitation Medicine, University of Alberta
6-126F Clinical Sciences Building 8440-112 Street
Edmonton, AB T6G 2B7

June 26, 2023

Dear Dr. Ferguson-Pell

RE: Support for SMART Network

The Alberta Bone and Joint Health Institute (ABJHI) is very pleased to provide this letter of support for the SMART network in their desire to establish Institute status. For over 15 years, ABJHI has been a trusted partner in health care – researching health systems delivery, analyzing data, and supporting implementation to improve health outcomes for Albertans with bone and joint conditions. ABJHI partners closely with Alberta Health Services Bone and Joint Health Strategic Clinical Network (BJH SCN) on quality improvement initiatives tied to improving patient outcomes and patient satisfaction for hip and knee arthroplasty in Alberta.

As the Director of Operations (Administrative) for the Alberta Bone & Joint Health Institute (ABJHI), I am pleased to provide this letter of support for the SMART Networks' desire to establish Institute status. ABJHI has worked closely with the McCaig Institute for over a decade and through this collaboration we have been able to work with a multi-disciplinary ecosystem within the University of Calgary to expand research opportunities and identify new opportunities to improve the outcomes for Albertans with bone and joint conditions across the province. It is our feeling that by the SMART Network establishing Institute status that this will afford us the same opportunities with the University of Alberta to expand our reach and knowledge.

ABJHI would support the establishment of an Institute for SMART by facilitating access to our bone and joint health data repository that integrates information from multiple sources (e.g., acute care clinical systems, clinic electronic medical record, and patient self-report surveys) to provide a comprehensive picture of the patient experience. Our partnerships with Alberta Health Services, independent physicians and researchers enables us to act as a trusted, unbiased evaluator and advisor. We welcome the opportunity to collaborate with the many researchers, clinicians, professors and students at the University of Alberta.

Wishing you success with your path forward to become an Institute.

Sincerely,

Liz Rowan
Director of Operations (Administrative)
Alberta Bone & Joint Health Institute (ABJHI)

May 21, 2023

Isabel Henderson
Executive Director, Special Projects

Alberta Health Services
Seventh Street Plaza
#126, 11th Floor, South Tower
10030 107 Street
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Canada T5J 3E4
Office: +1.780.951.6480
Fax: +1.780.342.2060
E-mail: Isabel.Henderson@ahs.ca

To Whom It May Concern:

Letter of Support: To establish the SMART Network as a University of Alberta Institute named iSMART (Institute for Smart Augmentative and Restorative Technologies and Health Innovations).

I am writing to offer my wholehearted support for the creation of the proposed iSMART Institute at the University of Alberta (U of A). For almost 15 years, the highly acclaimed SMART Network has functioned as a state-of-the-art centre for researchers and clinicians from Medicine, Engineering, Neuroscience, Rehabilitation, Computer Science, and Social Sciences to come together to generate knowledge in neural injury and disease and to translate that knowledge into intelligent medical devices and innovative rehabilitation interventions. The SMART Network is well known and highly regarded provincially, nationally and internationally and as such is viewed as an acclaimed leader across multiple realms – clinical, education and research in their key areas of device innovations, digital health and rehabilitation, and their focus on preventing injury, restoring function and enhancing the capabilities of persons with diverse abilities. The proposed new initiative (elevating the Network to an Institute status at the U of A with renaming to iSMART) will more appropriately reflect the scope and impact of this outstanding team and properly recognize their significant accomplishments on the international stage.

The focus of the SMART Network has been primarily on the impacts of NonCommunicable Diseases – we know that Noncommunicable Diseases (NCDs) kill 41 million people each year, equivalent to 74% of all deaths globally (World Health Organization September 2022). As populations age and chronic health problems become increasingly prevalent across Alberta and beyond, more and more people are living with multi-morbidity and disability. Rehabilitation innovations are essential to optimizing independence, participating in education and work, and fulfilling meaningful roles in life. As such, the potential impacts of the SMART Network's activities are poised to become even more significant, both locally and globally.

My personal experience with the SMART Network relates primarily to my affiliation with the Glenrose Rehabilitation Hospital (GRH) where I was the Senior Operating Officer prior to my "retirement" from this role in 2019 and with subsequent new roles I've taken on for Alberta Health Services (AHS) since this time (e.g., Core Committee of the AHS Neurosciences Rehabilitation and Vision Strategic Clinical Network, AHS Allied Health and Rehabilitation Executive Committee, Board Chair of the Institute for Reconstructive Sciences in Medicine (iRSM), Board Chair Capital Care Advisory Committee (CCAC)). I also see the impacts of the SMART Network from other perspectives in my professional life: as an

Adjunct Assistant Professor with the Faculty of Rehabilitation Medicine (U of A) and on national/international assignments as a Healthcare Surveyor with Accreditation Canada.

Here are a few pertinent observations:

- Since their genesis in 2009, the achievements of the SMART Network have been commendable! Working with multiple stakeholders, the SMART Network has played a pivotal role at the GRH in particular – collaborating to change the landscape of rehabilitation research and innovation by allowing investigators and clinicians to share new knowledge and technology interventions to improve and enhance lives that have been affected by disability and age. Since its launch, the SMART Network Director Dr. Vivian Mushawhar and her team have expanded the focus and support for rehabilitation research and innovation, partnering with the University of Alberta and the GRH Foundation, engaging local GRH Researchers/Research Affiliates, and participating in allocating grant research funding.
- The SMART Network also works with other Allied Health clinicians across all AHS zones – their recent innovative Tele-robotics initiative is focused on improving access to respiratory rehabilitation services in rural areas across Alberta, including patients impacted by long COVID. Members of the SMART Network work closely with frontline clinicians to build confidence and skill development around new technology advancements for improved diagnosis, treatment, and patient engagement. Their comprehensive involvement of clinical colleagues crosses multiple domains/topics (e.g., Spinal Cord Injury, Stroke, Epilepsy, Neurodegenerative Disorders, Amputation, Complex Trauma, Wearable Devices, Virtual Reality, Robotics, FES/Exoskeletons, Neuroplasticity, Injury Biomechanics/Injury In Athletes, Osseointegration Bone-Anchored Prostheses, Robotics, Virtual Reality, Wearable Sensor Technology, Serious Gaming, Therapeutic App Development, Simulation and Telemedicine/Virtual Health) has been remarkable.
- Many of the SMART Network team have been appointed as Research Affiliates at the GRH. As well, as a standing member of the AHS FES Interest Group, in 2016 Dr. Mushawhar was appointed as Special Advisor, Functional Electrical Stimulation Technologies at GRH. Her significant international profile, expertise and accomplishments in developing best healthcare clinical teaching practices and education curriculums using vanguard technologies bring opportunities to build capacity in the area of FES technologies in rehabilitation across multiple programs within AHS and in community settings across Alberta.
- The SMART Network was a founding player in the launch of the Glenrose Rehabilitation Research Innovation Technology (GRRIT) Hub which was officially launched in 2016 by the Hon. Bardish Chagger, Federal Minister of Small Business and Tourism. GRRIT seeks to directly develop innovative ideas into meaningful improvements in the quality of life for people with physical and cognitive impairment in both the clinical and community environments. In addition, GRRIT assists in developing new opportunities for industrial and academic collaborators that will create economic benefits for AHS and the wider community. Commercialization activity has progressed significantly since the launch of GRRIT – projects have advanced to prototype development through GRRIT assistance; as well, GRRIT has provided microfinancing to multiple different companies/groups to support prototype development, specialized technical support, student employment, testing of products and clinical expertise.
- The SMART Network has played a pivotal role in in formalizing multiple important enterprises/collaborations with significant stakeholders (e.g., GRH Foundation, University of Alberta, Northern Alberta Institute of Technology, Government of Canada Ministry of Defence) to advance rehabilitation research and technologies. Moving to an Institute status will further enhance this activity.

- In my national/international assignments as a Surveyor with Accreditation Canada, I have had the opportunity to review rehabilitation innovations across Canada and beyond and have observed that the strong collaborations of the SMART Network with the health system in Alberta to be truly unique.

The SMART Network has successfully and aggressively transitioned from the world of academia to the clinical arena. You can see by the above examples how this team has been instrumental in advancing rehabilitation research and technology development and in driving a greater understanding and awareness of the need for continued rehabilitation innovation. In acknowledgement of their exemplary achievements and their outstanding leadership, in view of the breadth of their activities and achievements, their commitment to meaningfully engage with patients/families in this journey, their track record for developing innovative rehabilitation interventions and intelligent medical devices for improving quality of care, functional outcomes and quality of life through interdisciplinary collaborations that cover the full spectrum of research, healthcare and industry, and their recognition of the importance of preparing the next generation of rehabilitation innovators, in my view the SMART Network is most deserving to become a new Institute (iSMART). I am happy to wholeheartedly support this recommendation and can provide further information as necessary.

Sincerely,

Isabel Henderson

Executive Director, AHS Special Projects
Chair, Institute for Reconstructive Sciences in Medicine (iRSM) Board of Directors
Chair, Capital Care Advisory Committee (CCAC)

UNIVERSITY OF ALBERTA

Thursday, June 1, 2023

Adam White
Department of Computing Science
University of Alberta
(780) 908 5499
amw8@ualberta.ca

To whom it may concern:

As the incoming director of the Alberta Machine Intelligence Institute (Amii) at the University of Alberta, I am pleased to write this letter in support of the SMART (Sensory Motor Adaptive Rehabilitation Technology) Network's application to become a University institute. Existing jointly as an on campus institute and as a not-for-profit corporation with more than 100 full-time staff, Amii is one of Canada's preeminent centres for artificial intelligence (AI) expertise, with a unique role bridging world-leading research and industry; we cultivate scientific excellence, develop talent, and coach businesses on AI adoption.

UofA is a world-leader in AI with a key role in the federally established Pan-Canadian AI strategy. I believe the SMART Network plays an important and complementary role to that of our other institutes on campus, especially in the application of advanced computing technologies and AI to practical problems facing the users of rehabilitation and assistive technology. Specifically, the proposed Institute for Smart Augmentative and Restorative Technologies (iSMART) has great potential as a focus for cross-campus collaboration and breaking down boundaries between areas of excellence in fields that can greatly benefit from core AI technology research and development, and industry interaction. A number of Amii Fellows (including Drs. Russ Greiner, Patrick Pilarski, & Rich Sutton) are members of the existing SMART Network, and through further interaction and increased capacity of iSMART, we have even more potential to engage the general public, AI-adjacent researchers at UofA and other institutions globally, and especially to interact more tightly with healthcare practitioners, policy makers, and companies. We see significant opportunity to showcase the Edmonton region as a pioneering location for cross-sector robotics, biotechnology, wearables, sensors, neural interfaces, digital health, and machine intelligence research and development.

Amii operates under the vision of AI for good and for all. As incoming Director, I believe iSMART aligns with my vision for Amii's part in making this vision a reality, and for the wider community coming together to create a future where advanced technology truly uplifts society as whole. Please let me know if you would like any further insight into the areas of alignment and synergy between Amii and the iSMART proposal.

Sincerely yours,

Adam White

Adam White is an Assistant Professor at the University of Alberta. He is a fellow of the Alberta Machine Intelligence Institute and a Principle Investigator with the Reinforcement Learning and Artificial Intelligence group at the University of Alberta. Adam is a Canada CIFAR Chair in Artificial Intelligence. His work has been published in top conferences in ML and AI, including NeurIPS, ICLR, AAAI, IJCAI, and AAMAS. In particular, his work on off-policy learning and predictive knowledge representations is used by several major research groups as a foundation for their AI research.

1 Becton Drive,
Franklin Lakes, New Jersey 07417
USA
Mobile: +1 919.279.5108
bd.com

May 8, 2023.

RE: Supporting SMART Network's status change to becoming an Institute at University of Alberta

Dear Dr. Mushahwar,

Thank you for involving BD in this exciting opportunity, supporting the transition of the SMART Network into the Institute for SMart Augmentive and Restorative Technologies and Health Innovations: An Institute called iSMART, at the University of Alberta.

The new state-of-the-art facility's main objective will consist of facilitating multidisciplinary research and innovation that does not exist anywhere else. The infrastructure, specialized equipment, unique resources and available skills and expertise, will truly make it a one-of-a-kind establishment.

The business arm of iSMART (ST Innovations), has been critically instrumental in supporting our company with uncovering the rich expertise at the University of Alberta in areas of interest for BD, including preclinical models, preclinical researchers, and world-class technologists in human-machine interfaces that impact vascular health and related therapeutic areas. They have also connected my corporate innovation teams with the University of Alberta's innovation ecosystem, including health economists, clinicians, and data scientists whom we and other multinational enterprises (MNEs) need to move towards commercialization and demonstrating the value of new innovations.

ST Innovations role is to support innovators in moving their ideas from concept to validation, and eventually translating them to the marketplace. The international recognition that Institute status will bring will further allow them to share their resources and expertise with a broader community, including MNEs like BD.

As background, BD is a leading global medical technology company with more than 75,000 employees worldwide. We partner with health care providers in more than 190 countries, across all care settings, by focusing on patient care solutions that improve clinical and economic outcomes in our Medical, Interventional, and Life Sciences segments. BD produces more than 45 billion devices annually with unmatched scale and global reach to address healthcare's most pressing challenges towards advancing the world of health, in partnership with existing world-class institutions with the same calibre of what would be iSmart.

We are greatly looking forward to our continued partnership with the SMART Network once it becomes iSMART. If you have any questions or concerns, please feel free to contact me.

In service,

Eric D. Agdeppa, PhD, MTM
Worldwide Director, Innovation, R&D

May 24, 2023

Dr. Vivian Mushahwar
ST Innovations
University of Alberta
5-005B Katz Group Center
Edmonton, AB T6G 2E1

Dear Dr. Mushahwar:

Letter of Support for SMART Network's status change to becoming an Institute at the University of Alberta

BioAlberta is proud to formally provide its support to the transition of the SMART Network into the Institute for Smart Augmentive and Restorative Technologies and Health Innovations: an Institute called iSMART, at the University of Alberta.

BioAlberta is the largest life sciences organization in Alberta, representing more than 200 members, championing a thriving and competitive industry. We provide a network for emerging medical device and health companies at all levels to engage with founders and entrepreneurs to help them grow their businesses, from the researcher at the bench to the largest multinational companies. Our efforts to support Alberta SMEs align strongly with the objectives of the SMART Network and ST Innovations.

ST Innovations supports innovators, star-ups and SME's by providing resources aimed at facilitating the innovation journey. Achieving Institute status would enable iSMART to make a more significant impact, ultimately driving innovation and economic growth in our Alberta life sciences cluster and the broader life sciences community. Attaining Institute status grants SMART Network additional credibility and opens up opportunities for a wider range of collaboration and partnerships.

We look forward to continued collaboration with the SMART Network as it transitions to iSMART.

Sincerely,

Robb Stoddard
President & CEO

(780) 425-3804
www.bioalberta.com
10055 106 St #202,
Edmonton, AB T5J 2Y2

May 18, 2023

Dear Dr. Mushahwar,

We would like to express our support for the SMART network's status to be changed to Institute. As you know, Biohubx is a not for profit supporting life sciences companies in the growth and scale up stage. We have identified the SMART network, and its business unit, Smart Technology Innovations, as a critical partner in the Alberta innovation ecosystem that is uniquely positioned to provide a comprehensive approach for innovators in creating health innovations from concept to prototype and validation.

We had the privilege of touring their state-of-the-art facility, and were impressed by the capability and the technical expertise that is offered. The propose iSMART will contribute to upward mobility and diversification in the economy of Alberta, and iSMART will attract extensive collaborations with industry and provide services that readily facilitate private-public interactions.

To summarize, Biohubx has a collaborative and complementary working relationship with the SMART network, and we support the proposal for the SMART network to change to an Institute as our offerings and goals to serve the innovators align in many aspects.

Should you have any questions please do not hesitate to contact me.

Sincerely,

Elisa Park Kim
Director of Business Development
Biohubx

9650-20 Ave. NW. Unit 113
Edmonton, AB, T6N 1G1 Canada
780.800.1900
bio-stream.ca

Vivian K. Mushahwar, PhD
Professor, Department of Medicine
5020E Katz Group-Rexall Centre for Pharmacy and Health Research
Faculty of Medicine and Dentistry
University of Alberta
Edmonton, AB T6G 2E1

March 13th, 2023

Dear Dr. Mushahwar,

RE: Supporting SMART Network's status change to becoming an Institute at University of Alberta

It is with great pleasure and excitement that Bio-Steam supports this SMART status change to an Institute at the UofA. I see this helping fill the gap to enable intelligent medical devices move through the technical validation stage, while driven by the clinical utility of an application. For Bio-Stream Diagnostic Inc this further support our direction, in bringing positive outcome to our customers.

We are grateful that with direct support from ST Innovation, we at Bio-Stream now have a world class SMU (source measurement unit). Supported by state-of-the-art semiconductors, our advanced transistor reading device is currently being manufactured in low volumes at the University of Alberta.

Building cutting edge technology is only useful when applied to practical applications, and in our case, we apply it for point of care detection. In fact, our devices have now been tested in Cambridge UK in the use of brainwave signal detection. As our Edmonton based company advances our devices, we need interdisciplinary collaborations. For example, we benefit from being directed by those measuring brainwaves and those interpreting the signals and even the materials engineers who are advancing the semi conductors to support new transistor for 'in field' and point of use measurements. We are grateful for introductions, made by ST Innovations to multiple labs at the UofA, we appreciate the flexibility offered as we experienced extended product development schedules and funding challenges – all of which prove that their team understands the practical challenges of industry while engaging with more ridge structure of an Institute - well done!

I see the practical value that the Institute for SMart Augmentative and Restorative Technologies, will bring forth as they foster collaborations, facilitate access to specialized talent, all on an industry friendly schedule. It's fantastic that, iSmart will continue offering these strategic advantages to Bio-Stream and to many more up and coming companies here in Alberta.

Sincerely,

John Murphy
CEO
Bio-Stream Diagnostics Inc

Alberta Health Services
Bone & Joint Health Strategic Clinical Network™

May 17th 2023

Martin Ferguson-Pell, PhD, C.Phys. FRSA
Professor, University of Alberta
Faculty of Rehabilitation Medicine
University of Alberta

Dear Dr Ferguson-Pell,

RE: BJH SCN support for Institute Status for the SMART Network.

We are pleased to provide a letter of support for your application for Institute Status for the SMART Network at the University of Alberta. The SMART network has a national and international reputation as leaders in rehabilitative technology research. The research outputs of the network have been laudable with over 52.5 million dollars in research funding awarded over the last three years and over 637 research outputs from over 300 active members and 30 support staff.

The Bone and Joint Health Strategic Clinical Network (BJH SCN) is centered on a vision to "Keep Albertans Moving", which is highly aligned with the mission and vision for the SMART network. The BJH SCN works to help bring innovation into the healthcare system, and in this role we work closely with investigators and health system innovators, including those from the SMART network. A recent example is the highly successful CIHR THINC Implementation grant led by Drs. Lauren Beaupre and yourself in collaboration with SMART and SCN members provincially. The grant proposed a digital solution to mitigate challenges for rural Albertans to accessing care using digital TeleRehab 2.0. The work proposes a hub and spoke clinical model co-designed by patients, clinicians, and scientists to support timely access to shoulder screening, care and optimized referral for surgery when needed. This is one recent example of collaboration between the SCN and your members which will have a timely and meaningful impact on the care for Albertans. The SCN is committed to supporting spread and scale of this important work.

The BJH SCN's Scientific Office has recently partnered with the McCaig institute at the University of Calgary in the last year to further support innovation in the health system. We held a Translational Impact Grant competition to support research teams in the province who had some affiliation to the McCaig Institute. The aim of the competition was to foster the development of new translational research programs in the early steps of the AHS innovation pipeline, with the ultimate objective of generating data for future opportunities including the PRIHS competitions provincially. With Institute status, the SMART network could participate more fully in such opportunities which we intend to hold annually. We would also welcome other opportunities to promote collaboration with your network.

The BJH SCN is well positioned to interface with the various stakeholders in the health care system, as well as other stakeholders and patient groups to help implement the findings of SMART member's work as rapidly as possible. Our mandate is to facilitate uptake and implement system-wide interventions and innovation which will lead to system transformation. We are confident that your bid for Institute status, if successful, will only strengthen the work and outputs of your already highly successful network. We endeavour to continue to develop relationships

with network members and support their work as we work towards our shared goals of improving the health and lives of Albertans.

With best regards,

Claire E.H. Barber MD PhD FRCPC
Scientific Director
Bone & Joint Health Strategic Clinical Network

CASE WESTERN RESERVE UNIVERSITY

July 26, 2023

Recommendation for establishing the University of Alberta Institute for Smart Augmentative and Restorative Technologies (iSMART)

I am writing to give my unqualified and enthusiastic support for transforming the existing Sensory Motor Adaptive Rehabilitation Technology Network (SMART Network) into the University of Alberta Institute for Smart Augmentative and Restorative Technologies (iSMART).

To provide context for my recommendation, I have been the Executive Director of the Cleveland Functional Electrical Stimulation Center (FES Center), a consortium of the Department of Veterans Affairs, Case Western Reserve University, Cleveland Clinic, MetroHealth Medical Center, and University Hospitals of Cleveland, for more than 12 years. The FES Center has many attributes in common with iSMART in terms of mission (restorative technologies), scope (discovery, development, clinical deployment), and membership (scientists, engineers, physicians, administrators). The FES Center has developed neural prostheses for individuals with spinal cord injury for hand and arm function, for seated posture, for standing and walking, for bladder function, and for respiration. We also have extensive activities in pain mitigation, autonomic functions, and brain health (stroke, Parkinson's disease, epilepsy, and others). In addition, we work closely with multiple translational research groups to facilitate commercialization and clinical dissemination. The FES Center is a national leader in rehabilitation and neural prostheses in the United States, and has maintained this status for over 30 years through excellence in research, training of several generations of researchers that populate research and academic institutions nationwide and internationally, contributing significantly to national strategic planning, and providing stability over time through leadership development and succession planning. iSMART will (and has) provided similar value.

There is significant global interest in smart augmentative and restorative technologies, and the establishment of iSMART as a prominent player in this field is natural. The University of Alberta has a long and eminent history of research and development in this area, including prominent researchers such as Richard Stein, Arthur Prochazka, Dejan B. Popovic, and others. These activities have been elaborated into the state-of-the-art iSMART, led by Vivian Mushahwar. iSMART brings together a team with a wide range of diverse disciplines for this area of work under one powerful umbrella. It is highly multidisciplinary, encompassing investigators from biology, neuroscience, computing science, engineering, rehabilitation, surgery, critical care, and nursing who are internationally prominent in their respective fields. These collaborations greatly facilitate scientific discovery, engineering and product development, and clinical applications. Smart Technology (ST) Innovations further enhances impact by supporting the translation of lab discoveries and clinical feasibility demonstrations into commercial products.

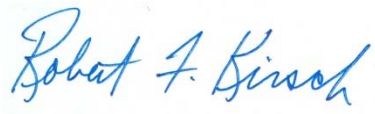
The work of the SMART Network has produced breakthrough innovation in neural prostheses such as the use of intraspinal microstimulation to restore the ability to stand in people with spinal cord injury, reducing spasticity in people following stroke or spinal cord injury, promoting long term biological plasticity following neural injury, early detection and prevention

or pressure ulcers - among other applications. The research and development activities of the SMART network are internationally respected and they are leaders in the field. The potential for additional discovery, technology transfer, and clinical impact on individuals with a wide range of neurological conditions is enormous. The proposed University of Alberta Institute for Smart Augmentative and Restorative Technologies (iSMART) would significantly facilitate the realization of this potential.

iSMART would establish and maintain the stable, long-term institutional collaborations needed for success in such multidisciplinary activities. Institutes and Centers (1) establish standards of excellence that provide national and international credibility that attracts top research talent and funding, (2) provide access to expertise and facilities that are not typically available to individual researchers, (3) enable fruitful collaborations with a wide range of other institutes, universities, and companies, and (4) provide a genuine melting pot for researchers from a wide spectrum of disciplines interested in the higher goal of restorative and augmentative technology. I see many parallels between the FES Center and the proposed iSMART. Indeed, there have been informal interactions between our groups for many years. We would welcome the opportunity to establish more formal collaborations with iSMART!

In closing, I reiterate my sincere and strong support of iSMART. Its establishment will build upon decades of research excellence in smart restorative and augmentative technology development through ongoing discovery, new emerging technologies, and thoughtful clinical applications.

Best regards,



Robert F. Kirsch, Ph.D.
Executive Director
Cleveland Center for Functional Electrical Stimulation

Allen H. and Constance T. Ford Professor
Chair, Department of Biomedical Engineering
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UNIVERSITY OF ALBERTA

COLLEGE OF HEALTH SCIENCES

FACULTIES

Kinesiology, Sport & Recreation
Medicine & Dentistry
Nursing
Pharmacy & Pharmaceutical Sciences
Public Health
Rehabilitation Medicine

June 13, 2023

On behalf of the College of Health Sciences (CHS), I am writing to express our excitement and support for the application of the SMART (Sensory Motor Adaptive Rehabilitation Technology) Network to become the University of Alberta Institute for Smart Augmentative and Restorative Technologies (iSMART). The vision, purpose and mission of iSMART are very well aligned with those of CHS, and focus on transformative applications to health that will improve care, increase accessibility to impactful health innovations, and enhance equity, diversity, inclusivity and social justice.

iSMART's focus on preventing injury, restoring function and enhancing the capabilities of persons with diverse abilities applies to a wide spectrum of our society, ranging from supporting persons with medical needs through intelligent adaptive and personalized health innovations, to effective remote care in underserved communities, to protecting people in the workforce from injury through smart protective technologies. These goals are a priority to CHS, and iSMART is uniquely suited to achieving them through its exceptional inter- and transdisciplinary make up spanning seven Faculties and all Colleges at the University of Alberta. Since its inception in 2009, the SMART Network has embodied the One University concept, converging University-wide knowledge to deliver impactful solutions to social needs and advancing the health technology ecosystem in Alberta.

The SMART Network has demonstrated exceptional successes since its inception, and has operated as an institute in many aspects. Its transformation to a University Institute is necessary to ensure the sustainability of its leadership and activities as well as its continued success. An Institute status will be instrumental in enhancing its national and international reputation and status as a leading-edge centre of excellence for accessible intelligent health innovations. Recognition of iSMART in this fast, globally growing area of excellence will result in substantial returns to CHS and the University of Alberta as a whole, including improved international rankings, attraction and retention of the best and brightest faculty members, increased enrollment of national and international undergraduate and graduate trainees, and enhanced partnerships with healthcare and the health technology sector.

iSMART's innovations are needed for addressing numerous gaps in healthcare. These include providing intelligent assistive devices for older adults that allow them to age safely at home; wearable technologies for versatile remote health monitoring that engage users in their own healthcare; implantable technologies that improve neuromuscular and musculoskeletal health; robotics and exoskeletons that improve rehabilitation, mobility and independence; brain-computer-interfaces that improve learning and participation in play for children with developmental disorders; and intelligent biomaterials, sensors and exoskeletons for injury prevention at work.

…/2

With 55% of iSMART membership coming from Faculties in CHS, the College is keenly interested in supporting and further enhancing the success, reach and capabilities of this new University Institute. CHS will provide administrative support as needed to iSMART symposia, conferences and community outreach activities, champion iSMART at the University and beyond, and assist with iSMART's communications initiatives. CHS will work with iSMART to further enhance its partnerships with healthcare and various communities and stakeholders that can benefit from iSMART's innovations. CHS will also assist iSMART in establishing micro-credentialled workshops that provide students in the College access to an outstanding interdisciplinary training environment that is rich in resources, skills and expertise. These workshops will also be offered to healthcare professionals for further upskilling that will advance healthcare and provide a means for personal upward mobility.

iSMART will not only elevate an exceptional area of excellence at the University, but it will also enhance other institutes in CHS such as the Neuroscience and Mental Health Institute, the Women and Child Health Research Institute and the Cardiovascular Research Institute by providing new and innovative applications to their discovery research. iSMART will also provide innovative applications to institutes outside CHS including the Alberta Machine Intelligence Institute, advancing its reach into the realm of predictive and adaptive wearable and implantable technologies that provide personalized assistance and care.

iSMART clearly has the potential to catalyze an extraordinary collaboration—uniting health researchers and healthcare practitioners, science, engineering and humanities researchers, and healthcare industry—to unlock life-saving benefits that can be achieved through the integration and fusion of cutting-edge technologies into healthcare. iSMART harnesses the power of technology to enhance people's capabilities and enrich their life experiences. On behalf of CHS, I strongly support iSMART's application to become a University Institute.

Sincerely,

Greta Cummings

Greta G. Cummings RN PhD FCAHS FAAN FCAN
Interim College Dean & Vice Provost
College of Health Sciences
Principal, *CLEAR Outcomes* Research Program

UNIVERSITY OF ALBERTA

11 June 2023

Dr. Vivian Mushahwar
Canada Research Chair in Functional Restoration
Professor, Department of Medicine and Neuroscience & Mental Health Institute
Director, Sensory Motor Adaptive Rehabilitation Technology (SMART) Network

Re: Letter of support iSMART at the University of Alberta

Dear Prof. Mushahwar:

I am pleased to submit this letter, on behalf of the College of Natural and Applied Sciences (CNAS), in strong support for your application to establish the SMART (Sensory Motor Adaptive Rehabilitation Technology) Network as a University of Alberta Institute named iSMART (Institute for Smart Augmentative and Restorative Technologies and Health Innovations). The SMART Network, established in 2009, has been a state-of-the-art center for researchers from medicine, engineering, neuroscience, rehabilitation, computer science, and social science who have come together to generate knowledge in neural injury and disease, and translate that knowledge into intelligent medical devices and innovative rehabilitation interventions. This application elevates the Network to an Institute to better capture the breadth of the activities and to ensure sustainability of the activities.

As you know, the Colleges were formed as a way to break down silos to encourage inter, and transdisciplinary work to solve many of the grand challenges we are facing. I have continued to argue that the SMART Network is an excellent example of what we can do through this approach. The Network currently has 56 PIs at the University of Alberta and almost half of them (43%) have their primary appointment in CNAS. CNAS plays a critical role in iSMART and provides key computing science and engineering solutions to a wide variety of medical and rehabilitation issues. I see this interdisciplinary work only growing through the institute, especially as CIFAR AI Chairs extend beyond CNAS into CHS, and as programs in Engineering including mechatronics, and work in Biomedical Engineering and Electrical and Computer Engineering continues to intersect with problem solving that are key to iSMART. I expect that as we continue to think about intersections there will be other connections including in the continued development of sensors for a multitude of applications.

The case for iSMART is strong and, as I have advocated for the SMART Network, I will continue to do the following in support of iSMART as I see it as an exemplar of One University in that it draws from disciplines that spans Faculties and Colleges. I think that iSMART should be considered as an Institute that sits at the College of Health Sciences as it clearly spans Faculties that include FoMD and Rehabilitation Medicine in CHS and Science and Engineering in CNAS. The plan to include the social sciences will make this pan institutional and a great example of how we should be working together to advance

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the mission of the University of Alberta. In this case through both applications to strategic areas of importance that include improving health outcomes and applications of AI to improve peoples lives.

I, and CNAS, will support iSMART through the following actions:

- Championing iSMART within the College of Natural and Applied Sciences and across Colleges and stand alone faculties. I am regularly in discussions with deans about ways of working across the University of Alberta and will continue to consider the impact of iSMART across the institution.
- Championing iSMART outside of the University of Alberta. I serve on two Boards of Directors (Alberta Machine Intelligence Institute and Telus World of Science) where the work of iSMART has direct connections and I will continue to advocate for the work to increase impact.
- Assisting with the communications and marketing activities of iSMART. We will do this through our ER partners that connect directly with the College and into the Faculties of Science and Engineering, as well as into FoMD an FRM.
- Identifying trainees from the University that can benefit from knowledge and skills workshops developed by iSMART. A main benefit I can provide is in speaking with student groups.
- Directing highly qualified personnel in industry for upskilling training in iSMART.
- Identifying University entrepreneurs whose innovations could benefit from the infrastructure, resources, equipment and skills available at iSMART.
- Identifying clients from the private sector who could be supported in advancing their innovations through iSMART.

I wish you luck with your application and thank you for all of your leadership in Directing the SMART Network to this point in its evolution where it is now time to transform into iSMART. This is an exciting time at the University and I look forward to championing and highlighting iSMART as a model for a One University institute. Beyond this application, please let me know how CNAS can continue to support the great work being done under your leadership.

Sincerely,

Matina Kalcounis-Rueppell
College Dean and Vice Provost

UNIVERSITY OF ALBERTA

COLLEGE OF SOCIAL SCIENCES & HUMANITIES

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September 25, 2023

Dr. Vivian Mushahwar
Canada Research Chair in Functional Restoration
Professor, Department of Medicine and Neuroscience & Mental Health Institute Director,
Sensory Motor Adaptive Rehabilitation Technology (SMART) Network

Re: Letter of support iSMART at the University of Alberta

I am pleased to submit this letter, on behalf of the College of Social Sciences & Humanities, in strong support for your application to establish the SMART (Sensory Motor Adaptive Rehabilitation Technology) Network as a University of Alberta Institute named iSMART (Institute for Smart Augmentative and Restorative Technologies and Health Innovations).

iSMART focuses on health innovations that prevent injury, restore function, and provide advanced technologically-based solutions that enhance the well-being of persons with diverse abilities.

I, and CSSH, will support iSMART by providing support, in the form of assistance from our Equity, Diversity, and Inclusion office, to help ensure that iSMART is thoughtful and reflective of all people that could benefit from the technologies that are commercialized through iSMART.

In addition, similar to the support from Matina Kalcounis-Rueppell who is the College Dean and Vice-Provost at the College of Natural and Applied Sciences, I will also provide support by championing iSMART outside of the University of Alberta through my community networks and inside of the university through my connection to our School of Business colleagues to mobilize engagement via entrepreneur networks, institutes, and faculty members. Working with the Office of Research and Research Partner Network, we also will explore research and collaboration opportunities for iSMART with teams in the social sciences, humanities and creative arts.

Sincerely,

Marvin Washington, PhD
College Dean and Vice-Provost
College of Social Sciences and Humanities
University of Alberta

UNIVERSITY OF ALBERTA

Giovanni Ferrara, MD

May 29, 2023

Dear Dr. Mushahwar,

RE: Supporting SMART Network's status change to becoming an Institute at University of Alberta

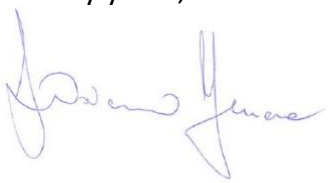
Thank you for involving myself and the Digital Health Unit in this exciting opportunity, supporting the transition of the SMART Network into the **I**nstitute for **SM**art **A**ugmentive and **R**estorative **T**echnologies and Health Innovations (iSMART) at the University of Alberta. The business arm of iSMART (ST Innovations), has been critically instrumental in supporting our activities in digital health and has been a major stakeholder in developing the concept of a Digital Health Unit within the Clinical Trial Unit of the University of Alberta. This Unit will continue to collaborate closely with ST-Innovations to facilitate testing of new digital technologies in clinical trials.

The new state-of-the-art facility's main objective will consist of facilitating multidisciplinary research and innovation that does not exist anywhere else. The infrastructure, specialized equipment, unique resources and available skills and expertise, will truly make it a one-of-a-kind establishment.

ST Innovations role is to support innovators in moving their ideas from concept to validation, and eventually translating them to the market place. The Digital Health Unit will cobtinue to support this goal, and will continue to collaborate with ST Innovations and SMART Network.

The international recognition that Institute status will bring to the SMART Network will further allow them to share their resources and expertise with a broader community. I look forward to our continued partnership with the SMART Network once it becomes iSMART, and therefore I want to express my sincerest support for this initiative.

Sincerely yours,



Giovanni Ferrara, MD PhD
Medical Lead, Digital Health Unit,
Faculty of Medicine and Dentistry,
University of Alberta
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ELIXR SIMULATIONS
at the heart of it all

ELIXR Simulations
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March 07, 2023

Dear Dr. Mushahwar

I am writing in support of the SMART Network's application to become an Institute at the University of Alberta. ELIXR Simulations Association is Edmonton based not-for-profit consisting of 11 Alberta post-secondary institutions, including the UofA, that bring together the best minds in education, industry, and government to pioneer the development of Extended Reality (XR) simulations to enhance training and learning. ELIXR focuses on increasing access to XR simulations so that learners can develop and practice skills in immersive and interactive XR environments that complement traditional class, laboratory, and field working settings.

Without the support of the SMART Network, and its business arm ST Innovations, ELIXR would not be where it is today. ELIXR received its initial funding through ST Innovations. ELIXR has leveraged that small initial investment to grow to its current 11 post secondary stakeholders. ELIXR has also recently been funded through Alberta Innovates and PrairiesCan. This funding will launch ELIXR on a path towards sustainability and would not have been possible without the early support and belief shown by the SMART Network.

One concrete example of that early belief is the ELIXR Protégé Program. The Protégé Program takes a small cohort of recent graduates from an variety of undergraduate programs and brings them together to form a team to work on an Extended Reality application that is intended to have a social impact. It not only provide experience in developing an XR application but provides deliberate training in team work and other soft skills so that the Protégés come out of the program ready to take on roles in industry. Our initial Protégé cohort was funded by ST Innovations. In collaboration with the City of Edmonton, they developed an XR experience to help individuals learn how to intervene in a sexual harassment scenario that takes place in an Edmonton LRT station. We call the experience Change Reality. ELIXR and the City are currently developing a business plan and model to make Change Reality widely available and incorporate other socially relevant scenarios in the experience. All of this was made possible by the investment and belief of the SMART Network and ST Innovations.

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The SMART Network has been a very important partner and supported of ELIXR. Without their help, ELIXR would note have launched and be poised for the impact we believe we will have in the years to come. We wholly support their application to become an Institute at the University of Alberta.

Sincerely,

Chris Haugen, Ph D, P Eng
Executive Director
ELIXR

UNIVERSITY OF ALBERTA

June 9, 2023

Dr. Vivian Mushahwar
Director, Sensory Motor Adaptive Rehabilitation Technology (SMART) Network
University of Alberta

Dear Dr. Mushahwar,

It is with great pleasure that I provide the support of the Faculty of Agriculture, Life, and Environmental Science (ALES) for the creation of the Institute for Smart Augmentative and Restorative Technologies (iSMART).

The achievements of the Sensory Motor Adaptive Rehabilitation Technology (SMART) Network are impressive. Over the years since it was formed, it has built a community of engaged researchers aimed at developing innovative rehabilitation interventions and intelligent medical devices for improving the quality of care, functional outcomes and quality of life of people with neural injuries and diseases. This community spans over many Faculties, including ALES where three of our Faculty members, Drs. Patricia Dolez, Carla Parado and Richard Uwiera, and a large number of students are actively involved in the activities of the SMART Network.

The SMART Network has also formed strong partnerships with a long list of organizations, both private and public, in the healthcare sector: becoming an institute is critical for the SMART Network to further increase its national and international outreach.

We only see benefits in the creation of iSMART. It will strengthen the position of the University of Alberta as a leader in innovation in health, technology, and social justice with multi-faculty research, new training programs, increased community engagement, and stronger industry partnerships.

Their objectives perfectly align with ALES' mission: Solving global problems together. ALES will provide the following in-kind support to iSMART:

- Assistance in organizing symposia and community outreach activities
- Assistance in communications and advancement activities
- Access to space at no charge to iSMART

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- Access to equipment, resources and expertise at a cost-recovery rate
- Assistance with developing micro-credentialed workshops for skilling and upskilling highly qualified personnel
- Highlighting iSMART accomplishments on ALES' website and reporting activities

We fully support this initiative and we look forward to collaborating with iSMART.

Sincerely,

Stanford F. Blade, PhD, P.Ag
Dean, Faculty of Agricultural, Life & Environmental Sciences

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June 8, 2023

Centre and Institutes Committee
University of Alberta
Edmonton, Alberta

Re: Support for iSMART Institute

Dear Committee Members,

I am writing on behalf of the Faculty of Engineering to express our excitement and full support for establishing the Institute for Smart Augmentative and Restorative Technologies and Health Innovations (iSMART) at the University of Alberta. By developing intelligent medical devices and innovative technology-based rehabilitation interventions, iSMART will help empower individuals with diverse abilities by improving their quality of care, functional abilities, and overall quality of life. I am very excited about what an increased integration of various engineering fields – from exoskeletons, robots, augmented reality, bio-signal processing, and artificial intelligence to much more – within iSMART's initiatives can do to unlock new scientific possibilities and propel advancements that positively impact our society.

Since its establishment in 2009, the SMART Network has developed into a world-recognized centre of excellence in sensory motor adaptive rehabilitation technologies and intelligent medical devices and interventions. I am very proud of the supporting role that the Faculty of Engineering has played in the SMART Network. We continue to be a primary driver for the research, education, and service activities of the network, with 29% of principal investigators currently associated with the network holding primary appointments in our faculty. We also remain a critical partner in the SMART NSERC CREATE program, and we continue to provide SMART access to several engineering-managed facilities and equipment.

We believe the establishment of iSMART is critical for the continued sustainability of the SMART Network. Establishing iSMART will greatly facilitate the development and expansion of research, philanthropic, and collaborative partnerships with academic institutions, industries, and other stakeholders. In turn, this will further expand the national and international reputation of the University of Alberta.

In addition to institutional-level benefits, we also foresee several benefits to the Faculty of Engineering. As an institute, iSMART will become an excellent resource for the Department of Biomedical Engineering, whose expansion and growth have become a strategic priority for the Faculty of Engineering. The business arm of iSMART will play a critical role in removing barriers to industry-based collaborations and advancing innovations from concept to market. The expansion

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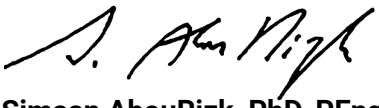
of the network through its advancement to an institute will provide a more diverse training environment with an expanded set of state-of-the-art equipment for rapid prototyping, testing, and validation of innovations for trainees in the Faculty of Engineering. Importantly, as an institute, iSMART will create new opportunities for collaborative research with our engineering faculty in the areas of robotics, intelligent control systems, biomaterials, biosensors, and biomechanics.

With our strong contingent of researchers and facilities focused on various areas of biomedical technology development and AI-enabled computing for healthcare applications, the Faculty of Engineering is more than well-positioned to partner with and support the activities of iSMART, especially when it leads to benefits for our society. In support of establishing iSMART, the Faculty of Engineering will provide the following in-kind contributions:

- Providing iSMART members with access to engineering-managed facilities and equipment exceeding $1.0M in value,
- Championing iSMART within the Faculty of Engineering, the University of Alberta, and to our larger communities of practice, and
- Supporting iSMART, through our faculty members engaged with iSMART, in identifying potential trainees, entrepreneurs, clients, and other highly-qualified personnel that may benefit from the infrastructure, resources, equipment, and training environment available at iSMART.

I believe that the tremendous momentum and success of the SMART Network may not be sustainable if advancement to institute status is not approved. As a fully sustainable network that has been organizationally operating as an institute, I have absolutely no reservation in supporting the establishment of iSMART at the University of Alberta.

Sincerely,



Simaan AbouRizk, PhD, PEng
Dean, Faculty of Engineering

Leading with Purpose.

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June 12, 2023

Centre and Institutes Committee
University of Alberta
Edmonton, Alberta

RE: support for iSMART institute

Dear Committee Members,

I am writing on behalf of the Faculty of Kinesiology, Sport, and Recreation (KSR) to express our enthusiasm and full support for establishing the Institute for Smart Augmentative and Restorative Technologies and Health Innovations (iSmart) at the University of Alberta. By developing innovative rehabilitation and capacity enhancing innovations iSMART will empower and reduce boundaries for individuals with diverse abilities improving quality of life and expanding limits of human performance.

I am excited by many aspects of involvement with KSR, including our researchers and trainees in neuroscience, adapted physical activity and the sociology of physical activity and disability. Since its establishment the SMART network has made great strides in securing funding and advancing research and education. Three KSR faculty members have been heavily involved in the network. I support the position that establishment iSMART is important for i) increasing visibility to facilitate securing additional funding, ii) increasing membership and attracting talent to the U of A and iii) ensuring the stability in leadership necessary to grow and sustain the import work begun as a network. This will further the reputation, impact and funding potential of the University of Alberta. I also foresee benefits to KSR specifically through enhancing collaborative opportunities, increasing visibility of research and access to infrastructure.

KSR can provide the following in-kind contributions:

- Championing iSMART within the Faculty of KSR, the University of Alberta and through the Steadward Center for Personal and Physical Achievement

- Promoting iSMART Institute events to our faculty

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- Through the membership of several faculty members (expected to grow beyond the current three) who will bring research expertise and trainees to their iSMART institute affiliated projects

I believe that the impressive progress made by the SMART network will be best sustained, and of the most benefit to the University of Alberta if granted Institute status.

Sincerely,

Kyra Pyke
Dean, Faculty of Kinesiology, Sport, and Recreation
University of Alberta

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1 June 2023

Dr. Vivian Mushahwar
Director, Sensory Motor Adaptive Rehabilitation Technology (SMART) Network
5005C Katz Group-Rexall Centre for Pharmacy and Health Research
Faculty of Medicine and Dentistry
University of Alberta
Edmonton, AB T6G 2R3

Dear Dr. Mushahwar,

The Faculty of Rehabilitation Medicine is pleased to provide support for the establishment of the Institute for SMart Augmentative and Restorative Technologies and Health Innovations (iSMART). We have reviewed the application and are excited to back this innovative initiative that will support the development of technologies to support the restoration of function across a broad spectrum of populations.

iSMART builds from the history and success of the Sensory Motor Adaptive Rehabilitation Technology (SMART) Network. As such, iSMART is building from a platform of established excellence recognized nationally and internationally for its innovative solutions to improve the lives of individuals with diverse abilities. SMART, with its interdisciplinary approach to developing technologies with real-world application, is at the forefront of translating knowledge into the next generation of health technologies. It is essential that SMART evolve to become iSMART to leverage opportunities for financial investment, industry partnerships and integration with governmental and community systems and structures.

The creation of iSMART will present opportunities for students in the Faculty of Rehabilitation to participate in the interdisciplinary and experiential learning opportunities that will emerge. Assistive technologies support the clinical outcomes for Speech Language Pathologists, Occupational Therapists and Physical Therapists, improving function, and thereby impacting accessibility, inclusivity and the quality of life for people with diverse abilities. Cutting edge knowledge and expertise, supported through iSMART, will enrich the learning experience for students training in the professional practice programs. In addition, students in our Rehabilitation Sciences MSc and PhD programs, as well as postdoctoral scholars, will have access and opportunity to bring their research and creative ideas to an interdisciplinary training environment where real-world solutions to clinically-driven challenges can be developed, researched and implemented. The richness of such an opportunity will attract top talent across disciplines and professional backgrounds to our programs from across the country and internationally as the

University of Alberta will be recognized, through iSMART, as the destination for anyone wishing to be part of the rapidly advancing field of healthcare technology for rehabilitation.

The link between the Faculty of Rehabilitation and the development of healthcare technologies for rehabilitation is inherent and strong. It is, therefore, compelling for the Faculty to support this initiative and support the academic interests of the many members of our staff whose work aligns with the objectives and goals of iSMART, including Martin Ferguson-Pell, Greg Kawchuk, Antonio Miguel-Cruz, Adriana Rios Rincon, Daniel Aalto, William Hodgetts, Jana Rieger, and Keith Fenrich. Moreover, iSMART will be attractive to top scholars seeking to be at the forefront of healthcare technology innovation and will therefore facilitate the recruitment of additional leading academics to our Faculty in the future.

To demonstrate our commitment to the iSMART initiative, the Faculty of Rehabilitation Medicine will continue the in-kind contribution of facilities, specifically ECHA 2-545 and 2-555 (referred to as the Rehabilitation Robotics Lab), while that space is used by our staff affiliated with iSMART. In addition, we commit that the contributions of faculty members to the activities of iSMART will be acknowledged in the annual performance review processes of the Faculty. We will also commit to supporting the governance of iSMART through active participation in the Oversight Committee.

With regard to strategic alignment with the University of Alberta's Indigenous Strategic Plan, *Braiding Past, Present and Future*, please consult with the Office of the Vice-Provost (Indigenous Programming and Research led by Dr. Florence Glanfield) to explore ways to incorporate Indigenous Ways of Knowing, content and perspectives into the iSMART initiative (e.g., student and trainee recruitment, faculty recruitment, knowledge application through partnership with Indigenous communities). Relatedly, Equity, Diversity and Inclusivity are priorities for the University of Alberta and we highly recommend consultation on how to ensure iSMART is focused on these values, explicitly, in all aspects of its strategy and operations.

We look forward to our future partnership in this exciting new initiative.

Kind Regards,

Tammy Hopper, PhD
Dean

John Misiaszek, PhD
Vice Dean, Research

UNIVERSITY OF ALBERTA

June 23, 2023

Centres and Institutes Committee
Office of the Vice President (Research & Innovation)
University of Alberta
Edmonton, Alberta

Re: Support for Proposed iSMART Institute

Dear Committee Members:

I am writing this letter on behalf of the Faculty of Science in strong support of the application being put forward by Professor Vivian Mushahwar and colleagues to establish the Institute for SMart Augmentative and Restorative Technologies (iSMART). We see this highly interdisciplinary initiative as broadly important for the University of Alberta, with significant benefits to our Faculty as well as many others across the University.

The current SMART Network has compiled an amazing record of success in research results and funding. Formed about 14 years ago, this group has brought in multiple major grants for both research projects and HQP training. A strong interdisciplinary group of PI's combines a large, campuswide collection of individual lab spaces with a significant shared space. This research space houses a wide range of unique pieces of equipment and instrumentation, offering Network members access to state-of-the-art tools.

Among the current Network members are several high-profile researchers based in the Faculty of Science (Boulanger, Greiner, Sutton). As the team proceeds to form the planned institute, we expect there to be great interest from other groups, especially in Biological Sciences, Computing Science and Psychology. As a result, we anticipate that the iSMART initiative will provide significant benefits to researchers in Science. Moreover, in the spirit of One University, the continued success and increased public profile of this highly collaborative collective will elevate the University as a whole.

The network's success to date gives me confidence that there will be no issues around sustainability of the proposed institute. However, Science is prepared to work closely with iSMART through the in-kind contributions listed below, which we hope indicates our commitment to the success of iSMART.

- Institute members will be given access to select Faculty of Science facilities at internal rates in cases where these facilities have available capacity.

College of Natural and Applied Sciences
Faculty of Science
Office of the Dean

6-189 Centennial Centre for
Interdisciplinary Science (CCIS)
Edmonton, AB, Canada T6G 2E1

info@ualberta.ca
T 780.492.4757 **F** 780.492.9434
ualberta.ca/science

UNIVERSITY OF ALBERTA

The Faculty of Science will work closely with iSMART leadership to identify new collaborative partners within Science.

The Faculty of Science Development team will assist in philanthropic fundraising campaigns that are connected with work involving our researchers.

The Faculty of Science can participate in the oversight committee of the institute via either the Dean or a suitable delegate.

As noted previously, we are impressed with the shining record of success compiled by the iSMART team. The Faculty of Science is invested in the success of the proposed institute, and strongly endorses its creation.

Sincerely,

Frederick West
Interim Dean of Science

June 16, 2023

Dr. Vivian Mushahwar
Professor
Director of SMART Network
Division of Physical Medicine Rehabilitation
Department of Medicine
Faculty of Medicine and Dentistry
University of Alberta
Katz Group Centre for Pharmacy and Health Research
87 Ave and 114 St
Edmonton, AB T6G 1G7

Dear Dr. Mushahwar:

RE: Letter of support for iSMART

It is my pleasure to write this letter in support of the development of the SMART Network into the Institute for Smart Augmentative and Restorative Technologies and Health Innovations (iSMART). The Glenrose Rehabilitation Hospital (GRH) is the largest free-standing rehabilitation facility in Western Canada, providing tertiary rehabilitation services for a range of patient populations that are closely relevant to the research and innovation that comes from the SMART Network. The GRH has had long-standing collaborations with the SMART Network, and we are very excited by this proposed development of iSMART that can further align our work more closely together for mutual successes.

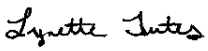
The Glenrose Rehabilitation Hospital has a number of clinicians and researchers who are already members and leaders of the SMART Network (e.g. Drs. Jacqueline Hebert, Adalberto Loyola-Sanchez, Chester Ho, Ming Chan, Martin Ferguson-Pell, Hossein Rouhani, etc). For example, the Smart E-pants is a medical device developed for prevention of pressure injuries in a close collaboration between the GRH and the SMART Network and clinically tested in close collaboration with the GRH. Apart from existing collaborations, there are many more clinical and research collaborative opportunities including brain-computer interfaces, rehabilitation robotics and exoskeletons for our pediatric patients; assistive technologies and sensor systems for our older adults; state-of-the-art rehabilitation interventions to promote neurorecovery and novel clinical pathway development for our spinal cord injury patients; leading edge therapeutics and extended reality technologies for our stroke and brain injury patients; and world-leading osseointegration technologies for our patients who have lost limbs. The portfolio of iSMART strongly complements the patient populations at the GRH. We are excited to be a major teaching hospital that will be the home for rehabilitation research and innovation with iSMART.

As GRH is re-designing its rehabilitation research and innovation strategy to enhance our capacity and output, this is the perfect time to co-develop our research strategy with iSMART. This is especially exciting for the leadership team at GRH, because we have not previously had the opportunity to work closely with

any institute at the University of Alberta to develop rehabilitation research. We see the development of iSMART as a unique and exceptional opportunity for us to do so. We look forward to expanding the accessibility of cutting-edge therapeutics and management tools for our inpatient and outpatient populations, providing all of our patients with the opportunity to test and evaluate these innovations within a co-development framework. We also look forward to enable our clinicians and therapists to be increasingly exposed to the research and innovation process that iSMART can offer. Moreover, GRH will provide a special and rich educational environment for trainees from iSMART, so researchers, trainees, clinicians and patients will interact and learn directly from one another. We plan to develop dedicated infrastructure to bring research, training and outreach activities to the GRH site that can be offered in-kind to researchers and trainees that will directly benefit iSMART.

The development of iSMART is key to bridging the world-class research that the University of Alberta offers into the GRH to give our patients the best possible rehabilitation care. Establishing a formal partnership with iSMART will enhance the enrollment of national and international trainees in rehabilitation-related fields by offering the opportunity to have hands-on experience at a tertiary rehabilitation hospital. We are grateful for the opportunity to be a major teaching hospital partner with iSMART and we wish you all the very best with your application.

Yours sincerely,



Lynette Lutes
Senior Operating Officer
Glenrose Rehabilitation Hospital

Chester Ho
Professor and Spinal Cord Injury Research Chair
Division of Physical Medicine & Rehabilitation
Department of Medicine, Faculty of Medicine & Dentistry
University of Alberta, Edmonton, Alberta
Facility Medical Director, Glenrose Rehabilitation Hospital
Senior Medical Director, AHS Neurosciences, Rehabilitation & Vision
Strategic Clinical Network (NRV SCN)

GLOBAL PUBLIC AFFAIRS
FROM INSIGHT TO IMPACT

May 18, 2023

RE: Supporting SMART Network's status change to becoming an Institute at University of Alberta

Dear Dr. Mushahwar,

Global Public Affairs (GPA) is excited to support the transition of the SMART Network into the Institute for SMart Augmentive and Restorative Technologies and Health Innovations: an Institute called iSMART, at the University of Alberta.

The new state-of-the-art facility's main objective will consist of facilitating multidisciplinary research and innovation that does not exist anywhere else. The infrastructure, specialized equipment, unique resources and available skills and expertise, will truly make it a one-of-a-kind establishment.

Within the Alberta setting, we truly have a gap to show case the talent and expertise that exist at the intersection of Biomedical engineering and advanced emerging technology sectors. The creation of iSMART Institute within the University of Alberta will further realize the potential of this opportunity within provincial, national and international stages. The iSMART institute will further enhance the existing SMART Technologies Innovations (ST Innovations) role to support commercialization and further driving investments and strategic partnerships to the University.

Global Public Affairs (GPA) Western Canadian health practice works with novel innovations to test, validate, generate evidence, and market access within the Western Canadian provinces. Having iSMART in combination with ST Innovations will allow for many health technology industries to collaborate and build synergistic health technology development projects with iSMART and ST Innovations to further develop and enhance medical technologies from discovery to the validation stage.

Regards,

Farid Foroud
Associate Vice President
Health and Life Sciences – Western Canada
Global Public Affairs.

Health City

May 10, 2023

Dear Dr. Mushahwar,

RE: Supporting SMART Network's status change to becoming an Institute at University of Alberta

Health Cities is excited to support the transition of the SMART Network into the Institute for SMart Augmentive and Restorative Technologies and Health Innovations: an Institute called iSMART, at the University of Alberta.

The new state-of-the-art facility's main objective will consist of facilitating multidisciplinary research and innovation that does not exist anywhere else. The infrastructure, specialized equipment, unique resources and available skills and expertise, will truly make it a one-of-a-kind establishment.

In Alberta we have world-class research in health along with companies that have global appeal. To scale these companies, they need support. One key area is to develop their product ideas into viable solutions that impact healthcare. ST Innovations role is to support innovators in moving their ideas from concept to validation, and eventually translating them to the marketplace. The business arm of iSMART (ST Innovations) is already supporting companies in this regard and are poised to do much much. more.

Health Cities works with novel innovations to test, validate, and scale-in live clinical settings. A key requirement (and gap in our region) is the speed which companies can develop viable products that are ready for the clinical environment. We believe that STI will be able to support several companies that we work with to assist in getting their minimal viable product to clinic quicker.

The international recognition that Institute status will bring will further allow them to share their resources and expertise with a broader community. We are greatly looking forward to our continued partnership with the SMART Network once it becomes iSMART.

Sincerely,

Reg Joseph
CEO

healthcities.ca

1200, 10405 Jasper Ave, Edmonton, Alberta, Canada, T5J 3N4
Phone: 780.628.3101 | **Toll Free**: 1.844.628.3101 | **Email**: admin@healthcities.ca

Randy Duguay, CEO
Health Gauge Inc.
Suite 1320, 10130 – 103 Street
Edmonton, AB T5J 3N9

March 15, 2023

Dr Vivien Mushahwar
Director, ST Innovations, University of Alberta
5-005B Katz Group Centre
Edmonton, Alberta, Canada, T6G 2E1

RE: Supporting SMART Network's status change to becoming an Institute at University of Alberta

Thank you for involving Health Gauge in this exciting opportunity, supporting the transition of the SMART Network into the Institute for SMart Augmentive and Restorative Technologies and Health Innovations: an Institute called iSMART, at the University of Alberta.

The new state-of-the-art facility's main objective will consist of facilitating multidisciplinary research and innovation that does not exist anywhere else. The infrastructure, specialized equipment, unique resources and available skills and expertise, will truly make it a one-of-a-kind establishment.

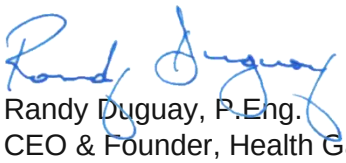
Health Gauge is a company that has been conducting leading edge research, development, and commercializing of solutions in digital health technologies. We have been focusing our R&D and software development skills in addressing the fast-growing area of AI/ML development into non-invasive methods of blood pressure, blood glucose, and AI-based analysis of large data sets using latest generation sensors and applications. Notably, we have secured a very specialized patent titled "Wearable health monitors and methods of monitoring health" (USPTO Patent # 11183303) all of which was based on work conducted in Alberta. All our core software development, commercialization and AI/ML research and development, as well as device prototyping has been conducted within Alberta and is gaining increasing interest internationally.

Over the past 2 years the business arm of iSMART (ST Innovations), has been critically instrumental in supporting our company with a validation study for our existing device, as well as prototyping a novel device for blood glucose monitoring. They have also connected us with the regulatory assistance we need to move towards commercialization. ST Innovations role is to support innovators in moving their ideas from concept to validation, and eventually translating them to the market place. The international recognition that Institute status will bring will further allow them to share their resources and expertise with a broader community.

As a final note, we have existing and new projects coming up that we expect will also yield more positive outcomes and support our commercialization objectives, and we are planning to continue to engage and work with the iSMART team in assisting in our commercialization activities.

We are greatly looking forward to our continued partnership with the SMART Network once it becomes iSMART. Should you have any questions, please do not hesitate to contact me (780) 913-0460.

Yours sincerely,



Randy Duguay, P.Eng.
CEO & Founder, Health Gauge Inc.
CEO, AI/ML Innovations Inc.

Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Prof. Dr. Dr. h.c. Robert Riener
Sensory-Motor Systems Lab

Institute of Robotics and Intelligent Systems IRIS
Department of Health Sciences and Technology
ETH Zurich, TAN E4
Tannenstrasse 1, CH-8092 Zurich
Phone +41-44-632 66 79
riener@hest.ethz.ch
http://www.sms.hest.ethz.ch

Spinal Cord Injury Center
Balgrist University Hospital
BAA, Lengghalde 5, CH-8008 Zurich

Zurich, May 6, 2023

Letter to Support the SMART Network for Becoming an Institute at University of Alberta

To whom it may concern:

This letter is written in support of the application by the Sensory Motor Adaptive Rehabilitation Technology (SMART) Network for becoming an Institute at the University of Alberta. The SMART Network is a state-of-the-art research hub located at the University of Alberta for researchers from disciplines in medicine, engineering, neuroscience, rehabilitation, computer science, and social science who have come together to generate knowledge related to neural injuries and disease. The SMART Network translates this knowledge to design and develop intelligent medical devices and innovative rehabilitation interventions.

The International Consortium for Rehabilitation Robotics (ICORR) is a non-profit organization set up to contribute to and promote collaborative research in the areas of healthcare robotics and advanced technologies for rehabilitation, therapy, and functional independence. ICORR achieves this by organizing the ICORR conference, workshops, and other events with a focus on rehabilitation and associated technologies, by knowledge dissemination and research promotion and advocacy, and by establishing relations with other similar associations.

One of the biggest potentials of robotics and other assistive technologies such as those developed by the SMART Network researchers is in helping with the restoration of body mobility following injury or disease, which is most prevalent among the elderly population. The elderly population in Canada has already grown by 84 percent from 3.99 million in 2002 to 7.34 million in 2022. By 2042, there will be almost 11 million Canadians aged 65 and older, i.e., a further increase of almost 50 percent over the next 20 years. The SMART Network's developments of and research with smart and AI-enabled robots, exoskeletons, walkers, augmented reality tools and other assistive technologies as well as its work in sensorimotor integration are extremely important in the context of the increasing societal challenges and current trends in rehabilitation. Therefore, such activities require and deserve significant attention and resources. Researchers in the SMART Network are tackling critical bottlenecks in the widespread use of these technologies and their embodiment by users. For instance, making these assistive wearable technologies lightweight (with smaller batteries and actuators), smart (controlled through sensing, data processing and computing), and responsive/adaptable to the environment (including the user's body), are some of the ultimate challenges in the field which the SMART Network researchers are working on.

With over 350 members including researchers, support staff and trainees, and with the strong connections the Network has developed since its inception in 2009 together with the healthcare

sector and private industry, the new *Institute* for Smart Augmentative and Restorative Technologies (iSMART) is poised to act as a major player for the improvement of the abilities and life experiences of patients, people with disabilities as well as healthy individuals and the non-disabled. The extensive collaborations within iSMART provides a well-resourced and comprehensive, interdisciplinary, and multi-sector environment to foster innovation and create solutions that improve patient outcomes and quality of life while minimizing costs. The mission of the iSMART to develop intelligent medical devices and innovative rehabilitation interventions for improving quality of care, functional outcomes, and quality of life through interdisciplinary collaborations will contribute in significant ways to a future with augmented capabilities and enhanced life experiences for people with diverse abilities.

ICORR fully supports the creation of the Institute for Smart Augmentative and Restorative Technologies iSMART and looks forward to collaborating with it in the future, for instance in the frame of the planning of ICORR conferences with its many sessions and keynote speakers, and the organization of workshops, educational programs, and prize competitions.

Yours sincerely

Prof. Dr. Dr. h.c. Robert Riener
ICORR President

The Institute of Textile Science
Incorporated, Canada 1956

Dr. Vivian Mushahwar
Director, Sensory Motor Adaptive Rehabilitation Technology (SMART) Network
University of Alberta

March 15, 2023

Dear Dr. Mushahwar,

On behalf of the Board of Directors of the Institute of Textile Science (ITS), it is my pleasure to offer our support to the Sensory Motor Adaptive Rehabilitation Technology (SMART) Network in their application to become an Institute at the University of Alberta.

The Institute of Textile Science is a Canadian non-profit organization established in 1956. Its mission is to promote research in textiles and textile-related material science. Our membership comprises individuals from the industrial, academic and research communities across Canada.

Several ITS members are members of the SMART Network, including our President, Dr. Patricia Dolez. The activities of the SMART Network also have a strong connection to textiles. Many of their projects involve textile researchers and/or are conducted in partnership with textile companies. Indeed, textiles and clothing constitute an ideal platform for the technologies they develop.

Becoming an Institute will increase the national and international outreach of the SMART Network. It will strongly benefit the ITS members and the entire textile community.

Therefore, we fully support the creation of Institute for Smart Adaptive and Restorative Technologies (iSMART). We look forward to collaborating with iSMART.

Sincerely,

M. Forest

Martin Forest, M.Env, Chemist
Vice-President, Institute of Textile Science
Continuous Improvement Coordinator, FilSpec Inc., Sherbrooke, Québec

23 May 2023

Martin Ferguson-Pell
2-545 Edmonton Clinic Health Academy
11405 87 Ave NW, Edmonton, AB T6G 1C9

Dear Martin

Letter of Support for the SMART Network

The Kinetisense team would like to provide their full support for the SMART Network which I understand is applying for Institute status at the University of Alberta. The collaboration that we have established with your team has been very valuable to Kinetisense. As a Medicine Hat-based SME we have been able to participate in a substantial Alberta Innovates funded project that has enabled us to expand our reach to a wider range of clinical professionals and also to enable the adoption of our markerless motion capture system by Alberta Health Services. The work we have done with your team has supported the co-development of a number of software modules that have expanded our international market. Most importantly has been the opportunity to use your laboratory facilities to validate our measurement systems against the gold standard capabilities you have in place that has built trust in our products.

Going forward we see continuing opportunities to collaborate with you and your colleagues in the SMART Network. Achieving Institute status will bring well-earned credibility to you and your colleagues' efforts in supporting emerging Alberta companies such as ours. It will also be a vote of confidence in the contributions that you make. Institute status will help secure a stable future for the expertise, talented students and facilities that companies like ours relies on as we continue to diversify Alberta's economy and capitalize on the highly talented workforce that the UofA continues to create.

Ryan Comeau
Founding President and Executive Director of Kinetisense Inc.

Tuesday, May 23, 2023

Martin Ferguson-Pell Ph.D.
6-126F Clinical Sciences Building
8440-112 Street
Edmonton, Alberta
Canada T6G 2B7

Dear Martin

SMART Network – Application for Institute Status

On behalf of My Viva Inc. I would like to add my full support for the application the SMART Network is putting forward to establish institute status at University of Alberta. For over 4 years our company has been working closely with you and your colleagues in the SMART Network. In the process you have enabled us to transform our company in several important ways. Working with you and your team we have been able to incorporate cutting edge augmented reality technologies to increase engagement with our wellness programs. This has not only helped our company's growth but also raised our profile internationally. Now in collaboration with you and the SMART Network we are competing for ITEA funding in excess of $20million. We have formed a collaboration with 4 European countries for a bid intended to bring more coherence to wearables and mobile apps intended to promote wellness. My Viva Inc. is leading this initiative both for Canada and for the international consortium. This is opportunity that would not have arisen without the collaboration and full-on participation of your team.

We have been particularly pleased to have enabled a number of students to participate in the work we have undertaken together. The interdisciplinary culture that the SMART Network has promoted has been particularly productive given the nature of the work we do, which includes contributions from computing scientists, digital artists and subject matter experts in healthcare and wellness.

I believe given these accomplishments and opportunities to work together in the future, that having Institute status for the SMART Network will be important in emphasizing the unique capabilities available to a company like ours. Having an institute backing proposals such as our ITEA bid will increase our competitiveness and emphasize the coherence of the resources we can bring to bear.

Wishing you and the SMART Network every success with your application.

Loreen Wales

Loreen Wales
Founder and CEO
My Viva Inc.

NAIT

CENTRE FOR ADVANCED
MEDICAL SIMULATION

March 6, 2023

Dr. Vivian Mushahwar
5005C Katz Group Centre for Research
11315 – 87 Ave NW
Edmonton, Alberta
T6G 2H5

RE: Supporting SMART Network's status change to becoming an Institute at University of Alberta

Dear Dr. Mushahwar,

Thank you for involving the Centre for Advanced Medical Simulation (CAMS) in this exciting opportunity to provide support for the transition of the SMART Network into the **I**nstitute for **SM**art **A**ugmentive and **R**estorative **T**echnologies and Health Innovations: an Institute called **iSMART**, at the University of Alberta.

The new state-of-the-art facility's main objective will consist of facilitating multidisciplinary research and innovation that does not exist anywhere else. The infrastructure, specialized equipment, unique resources and available skills and expertise, will truly make it a one-of-a-kind establishment.

The business arm of iSMART (ST Innovations) and CAMS have solidified their relationship with a memorandum of understanding (MOU) and has been a great asset supporting our Centre with networking and knowledge sharing.

ST Innovations role is to support innovators in moving their ideas from concept to validation, and eventually translating them to the market place. The international recognition that Institute status will bring will further allow them to share their resources and expertise with a broader community.

We are greatly looking forward to our continued partnership with the SMART Network once it becomes iSMART.

Sincerely,

Kerri Oshust
Director, Centre for Advanced Medical Simulation
P 780.491.5439 **E** kerrio@nait.ca
https://www.nait.ca/centre-for-advanced-medical-simulation

Neuraura Biotech Inc.,
61 Tuscany Ridge Mews NW
Calgary AB T3L 3B7
Canada

5th March 2023

Re: **Letter of Support for SMART Network**

Dear Sir or Madam,

I am delighted to provide this letter of support for the SMART Network in relation to its transition into the Institute for SMart Augmentive and Restorative Technologies and Health Innovations (iSMART) at the University of Alberta.

By way of introduction, Neuraura Biotech Inc., (Neuraura) is a seed-stage medical technology company that was formed as a spin-out from the Hotchkiss Brain Institute at the University of Calgary. Neuraura is principally engaged in the design, development and commercialization of its proprietary micro-electrode technology for a range of pre-clinical and clinical applications.

Within my role as CEO, I am responsible for the achievement of our vision through the effective stewardship of our financial, human and other assets. A key part of my role is to identify and engage with potential strategic partners for the purpose of accelerating and de-risking our technology and commercialization roadmaps.

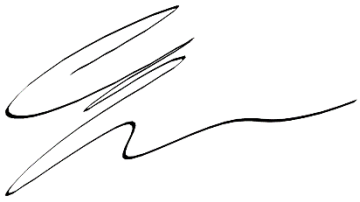
I initially engaged with ST Innovations and broader SMART Network team as part of the application process for the 2021 Innovation Challenge and have continued to benefit from the team's expertise, guidance and networks since then. Over this period, we have engaged with Jonathan Butterworth and other team members on numerous occasions, including two in-person visits to Edmonton.

I believe that the SMART Network's multidisciplinary approach to translating research into products that respond to unmet clinical needs is exactly what is needed to close the gap between academic research and real-world impact. This approach is implemented in a centralized facility that brings together highly specialized equipment that is accessible through a range of delivery models and a broad range of relevant services and skillsets. The team's open, collaborative approach to fostering innovation has been demonstrated on multiple occasions as they contributed their expertise and opened their network to respond to our needs.

The transition to Institute status will consolidate the SMART Network's position as a hub for medtech innovation and recognize the contribution the organization is already making in the Alberta community.

Please do not hesitate to contact me at claire@neuraura.com or +1.403.305.0082 if I can provide any further information.

Yours faithfully,



Claire Dixon MEng MBA
CEO and Co-founder

June 16 2023

Healthy Albertans.
Healthy Communities.
Together.

Vivian K. Mushahwar, PhD, AIMBE Fellow, CAHS Fellow
Canada Research Chair in Functional Restoration
Professor, Department of Medicine and Neuroscience & Mental Health Institute
Interim Director, Physical Medicine & Rehabilitation
Director, Sensory Motor Adaptive Rehabilitation Technology (SMART) Network
Director, Smart Technology (ST) Innovations
5005C Katz Group-Rexall Centre for Pharmacy and Health Research
Faculty of Medicine & Dentistry
University of Alberta
Edmonton, AB T6G 2R3
Tel: 780-492-4519
Email: vmushahw@ualberta.ca

Dear Dr. Mushahwar,

RE: Support to Establish the SMART Network as a University of Alberta Institute named iSMART (Institute for Smart Augmentative and Restorative Technologies and Health Innovations)

As the Senior Provincial Director (B. Mann), Senior Medical Director (C. Ho) and Scientific Director (E. Papathanassoglou), respectively, of the Alberta Health Services Neurosciences, Rehabilitation & Vision Strategic Clinical Network™ (NRV SCN), it is our pleasure to write you this letter in support of the establishment of the proposed iSMART Institute at the University of Alberta. We believe that with Institute status, the NRV SCN and the iSMART Institute will have further synergies and capacities to advance patient-centred, evidence-informed innovation in the health system especially in the neurosciences and rehabilitation sectors.

The goals of iSMART are to prevent injury, restore function, and enhance the capabilities of persons with diverse abilities. These goals align very well with the aim of the NRV SCN, which is to build and strengthen existing relationships and partnerships across the healthcare system to address the growing need for innovative and coordinated approaches in three health care areas: neurosciences, rehabilitation and vision. iSMART brings technologies and health innovations that increase access and improve functional recovery by providing a pathway for impactful personalized care that intelligently adapts to the evolving needs of persons with neurological conditions. iSMART's deep inter- and transdisciplinary nature allows for an extensive convergence of knowledge that is critically needed for the successful development, implementation and adoption of new health innovations.

The NRV SCN has been collaborating with the SMART Network for several years, and there are questions regarding the absence of a sustainable leadership mechanism to ensure that the fruitful collaborations with the SCN are retained. The transformation of the SMART Network to a University Institute is a necessary step in ensuring the sustainability of the iSMART leadership, providing confidence in the long-term retention and viability of our partnership. iSMART will be a critical partner in modernizing rehabilitation, bringing smart technologies for enhancing functional capacity, increasing the level of daily activity, reducing the rate of rehospitalization due to secondary complications, increasing independence in daily activities, facilitating aging safely at home, and reducing the burden of care on an already highly stressed health care system. System-wide, iSMART will represent a critical stakeholder in the co-design of research to advance care quality and impact to meet the needs of patients, clinicians, and system leaders.

The NRV SCN seeks to improve how Albertans see, think and live. The NRV SCN catalyzes improvements in equity of health care delivery, health system performance, patient outcomes, and the provincial implementation of innovations and research into practice. Additionally, as part of our Transformational Roadmap 2023-2027, we identified three key strategic directions: co-design transformation in care through evidence; harness innovation to drive care excellence across the continuum; and enhance equitable access to quality care. iSMART can be a key collaborator in realizing these strategic goals. In addition, the NRV SCN seeks to promote capacity building and trainee support; another synergy with iSMART.

We anticipate that iSMART and NRV SCN will have specific opportunities to collaborate including the following:

1) The NRV SCN will provide access to and training for patient and family advisors that will allow iSMART to push patient-centeredness as a focal drive for the design, development and evaluation of our health innovations and technologies (i.e. patient perspectives will help identify innovation and technology gaps).
2) The NRV SCN will assist with knowledge mobilization efforts, including information sharing with NRV SCN membership and seeking opportunities to spread the learnings of this work provincially.
3) The NRV SCN will assist with implementation of health innovations and technologies developed by iSMART, as appropriate.
4) The NRV SCN will collaborate on iSMART drafting of grant applications, such as the Partnership for Research in the Health System (PRIHS) and similar provincial and national funding opportunities.
5) iSMART will include the NRV SCN in scientific symposia and conferences to ensure advance knowledge sharing.
6) iSMART and the NRV SCN will explore opportunities to collaborate in building capacity for trainees, in the space of awards and opportunities.
7) iSMART and the NRV SCN will collaborate to identify areas of opportunity from a clinical and operational lens (i.e., understanding where there are current gaps in the system that iSMART can help to close through innovation).

The NRV SCN looks forward to collaborating with iSMART upon its creation. On behalf of the NRV SCN, we strongly support iSMART's application to become an University Institute.

Wishing you every success with your proposal,

Sincerely,

Dr. Chester Ho
Senior Medical Director
Neurosciences, Rehabilitation & Vision
Strategic Clinical Network™

Balraj Mann
Senior Provincial Director
Neurosciences, Rehabilitation & Vision
Diabetes, Obesity & Nutrition
Strategic Clinical Network™

Elisavet Papathanassoglou
Scientific Director
Neurosciences, Rehabilitation & Vision
Strategic Clinical Network™

Alberta Health Services

Behnaam Aazhang
Director, Rice Neuroengineering Initiative
J.S. Abercrombie Professor, Electrical & Computer Engineering

To Whom It May Concern:

I am writing this letter to express support for the Sensory Motor Adaptive Rehabilitation Technology (SMART) Network's drive to be recognized as an Institute at the University of Alberta. I am J.S. Abercrombie Professor of Electrical and Computer Engineering at Rice University. I am also the Director of Rice NeuroEngineering Initiative (NEI), which is a collaborative multidisciplinary program that brings together the brightest minds in neuroscience, engineering, and related fields to improve lives by restoring and extending the capabilities of the human brain. In 2019, the Rice NEI opened its doors with 25,000+ continuous square feet of new laboratories and experimental spaces within the BioScience Research Collaborative (BRC) across from the Rice University campus. Our home at the BRC places our labs directly across from the Texas Medical Center - the largest medical center in the world. We work closely with clinicians and their patients to study neural function and not only devise new technologies for interacting with the brain, but also create new ways to diagnose, treat, and even prevent diseases and disorders ranging from Alzheimer's, epilepsy and Parkinson's to chronic pain and depression.

The SMART Network is renowned as a cutting-edge research center that brings together experts from various fields, including medicine, engineering, neuroscience, rehabilitation, computer science, and social science. The Network's collaborative efforts aim to advance our understanding of neural injuries and diseases followed by the application of this knowledge to create intelligent medical devices and novel rehabilitation approaches. What is a fact is that strong collaborative research is crucial to shaping a future where individuals with disabilities are empowered to unlock their full potential and embrace life in exciting and transformative ways. The proposed Institute for Smart Augmentative and Restorative Technologies (iSMART) holds immense potential given its member network to significantly enhance the capabilities and well-being of individuals with disabilities. Through the facilitation of interdisciplinary collaboration and the utilization of state-of-the-art technology, iSMART is well-positioned to elevate the standard of care, functional outcomes, and overall quality of life for individuals with diverse abilities.

Intending to help foster innovation and facilitate solutions that can significantly enhance patient outcomes and quality of life, I am pleased to support the establishment of the Institute for Smart Augmentative and Restorative Technologies and look forward to fruitful collaborations between Rice NEI and U. Alberta iSMART. If you need any additional information, please do not hesitate to contact me via e-mail at aaz@rice.edu .

With warmest regards

Behnaam Aazhang,

Email aaz@rice.edu • Office 713-348-4749
Rice Neuroengineering Initiative, 6500 Main Street, MS-656, Houston, TX 77030 • neuroengineering.rice.edu

TECHNICAL COMMITTEE FOR
REHABILITATION AND ASSISTIVE ROBOTICS

May 11, 2023

Professor Mahdi Tavakoli
Electrical & Computer Engineering Department, University of Alberta

Letter of Support

The purpose of this letter is to endorse the application made by the Sensory Motor Adaptive Rehabilitation Technology (SMART) Network to establish itself as an Institute at the University of Alberta. This endorsement is made on behalf of the IEEE Robotics and Automation Society (RAS) / Technical Committee (TC) on Rehabilitation and Assistive Robotics. The goal of this RAS TC is to support research into the application of robotics in motor therapy procedures for recovering motor control and motor capabilities in persons with impairment following such diseases as stroke, as well as research to develop robotic and mechatronic technical aids for independent living for disabled and elderly people.

The growing interest in this area of research is shown worldwide by the success of focused publications and events such as the ICORR conference (International Conference on Rehabilitation Robotics), the various events supported by the IEEE Robotics and Automation Society (RAS) jointly with the IEEE Engineering in Medicine and Biology Society (EMBS), and the BioRob Conference (International Conference on Biomedical Robotics and Biomechatronics), which all explicitly include rehabilitation and assistive technologies among their main topics.

Robotics and other assistive technologies hold tremendous potential in restoring body mobility, particularly among the elderly population, who are most susceptible to injury or disease. The SMART Network has proven to be very successful in doing this type of research. It brings together researchers from various fields to study neural injuries and disease who then collaborate to create advanced medical equipment and rehabilitation techniques. The research conducted by the SMART Network members on intelligent and AI-assisted robots, exoskeletons, walkers, and other assistive technologies, including augmented reality tools for rehabilitation and assistance purposes, is of great significance.

The proposed Institute for Smart Augmentative and Restorative Technologies (iSMART) has the potential to make a significant impact in enhancing the abilities and quality of life for both individuals with disabilities and healthy individuals alike. By fostering interdisciplinary collaboration and leveraging cutting-edge technology, iSMART's goal is to improve the quality of care, functional outcomes, and overall quality of life for individuals with diverse abilities. Groundbreaking research is needed for a future where individuals with disabilities are empowered to achieve their full potential and experience life in exciting new ways and allowing the iSMART to bring researchers together in a right step in that direction. The abundant collaborations within iSMART will foster a comprehensive, interdisciplinary, and multi-sector environment that is well-equipped to nurture innovation and develop solutions aimed at improving patient outcomes and quality of life.

We strongly endorse the establishment of the Institute for Smart Augmentative and Restorative Technologies and eagerly anticipate the opportunity to collaborate with it in the future.

On behalf of the IEEE/RAS TC on Rehabilitation and Assistive Robotics

Yasuhisa Hirata
Professor
Graduate School of Engineering, Department of Robotics
Tohoku University
Co-chairs of IEEE/RAS TC on Rehabilitation and Assistive Robotics
6-6-01, Aoba, Aramaki, Aoba-ku, Sendai 980-8579, Japan
E-mail : hirata at srd.mech.tohoku.ac.jp

IEEE RAS Technical Committee for Telerobotics Letter of Support

To whom it may concern,

On behalf of the IEEE Robotics and Automation Society's Technical Committee for Telerobotics, this letter supports the application made for recognition as a University of Alberta Institute by the Sensory Motor Adaptive Rehabilitation Technology (SMART) Network at the University of Alberta. The Technical Committee for Telerobotics supports and promotes new activities in areas including telerobotic/telepresence/telexistence systems and their various applications including those in the healthcare sector. As far as the focus of the SMART Network researchers is concerned, one area of overlap concerns using robotic, wearable, and mixed-reality technologies for enabling remote assessment, assistance, and rehabilitation for seniors or individuals with disabling conditions.

Digital and cloud-based telehealth solutions that can facilitate the remote delivery of assessment and physical rehabilitation services using telerobotic systems have a big potential to enable more effective and safer rehabilitation from, assistance for, and assessment of neuromusculoskeletal conditions. Telerobots can enable kinesthetic interaction between an in-home patient and in-clinic therapies for rehabilitation exercises of patients suffering from stroke, spinal cord injury and similar disabilities. This technology enables remote therapists to interact with patients through a variety of channels, including kinesthetic and haptic interaction, which is crucial for rehabilitation. Patients can benefit from supervised motor assessment and rehabilitation from the comfort of their own homes, with an immersive telerehabilitation experience and interpersonal interaction with their therapist.

The proposed Institute for Smart Augmentative and Restorative Technologies (iSMART) has the potential initiate a world-class collaboration among the general public, researchers, healthcare practitioners, healthcare industry, and policymakers regarding the tangible, practical, and potentially life-saving advantages that can be attained in the near future through the integration and amalgamation of current healthcare technologies such as robotics, telerobotics, wearables, and mixed-reality technologies. In the context of augmenting and restoring the function of seniors and individuals with disabilities, iSMART will be key to accelerating research into a multitude of pressing challenges such as how remote access of patients to rehabilitation, assessment and assistance and leveraging telemedicine can maximize access to healthcare and remove the geographical barrier. This presents an opportunity to achieve equitable access to healthcare services, which is a significant global necessity.

We fully support the creation of the Institute for Smart Augmentative and Restorative Technologies and look forward to impactful initiatives it will lead in the future.

This letter is from the committee members of the TC on Telerobotics:
Keehoon Kim, Associate Professor, Pohang University of Science and Technology, Korea
Jie Ying Wu, Assistant Professor, Vanderbilt University, USA
Seok Chang Ryu, Assistant Professor, Ewha Womans University, Korea
Alireza Mohammadi, Assistant Professor, University of Michigan, USA
S. Farokh Atashzar, Assistant Professor, New York University, USA

Sincerely,

Keehoon Kim

UNIVERSITY OF ALBERTA

TECHNOLOGY TRANSFER SERVICES

1-560 Enterprise Square
10230 Jasper Avenue
Edmonton, Alberta T5J 4P6
uab.ca/TTS

June 23, 2023

Centres and Institutes Committee
Office of the Vice President (Research & Innovation)
University of Alberta
Edmonton, Alberta

Dear Committee Members,

It is a pleasure to write this letter in support of the SMART Network application for status as a University of Alberta Institute.

University of Alberta Technology Transfer Services (TTS) is part of the Vice President (Research and Innovation) Portfolio. We help researchers, postdoctoral fellows, staff and students transform innovations and discoveries into products and services - moving them out of the university to benefit society, the economy, the world. We work closely with researchers across campus to commercialize innovation arising from UofA research, including many SMART Network members.

The Smart Network has grown to become a nexus for the excellent interdisciplinary rehabilitation research underway at the University of Alberta. The 4 smart network cores represent a unique intersection of engineering, physiology, artificial intelligence/computing and clinical care, making the SMART Network a world leader in motor control, neural interfaces, neuro-inflammation, machine learning, prosthetic interventions, and remote care.

Smart Network researchers have a strong history as prolific innovators. Since April 1, 2013, researchers now affiliated with the Smart Network have submitted 98 reports of invention for new potentially patentable technologies, resulting in dozens of industry licenses and seven spinoff companies, with another spinoff company currently in the formation stages.

The University's first cross-institutional Strategic Plan for Research and Innovation lists Health and Wellness as a priority area for building and supporting talent to strengthen university impact. Institutes are instrumental in attracting resources and recognition for key areas of focus, and the elevation of the SMART Network to

institute status will be an important step in enhancing the reputation of this group as global leaders.

On behalf of Technology Transfer Services, I confirm our commitment to providing the SMART Network researchers and the new institute with commercialization support including intellectual property assessment, commercialization strategies, coverage of early patent filing costs where applicable, partnering identification and outreach, negotiation of commercialization agreements, spinoff company support, and connection to external resources and investment.

I would like to reiterate my strong support for the accreditation of the SMART Network as a University of Alberta Institute.

Sincerely,

DocuSigned by:
Joanna Preston
BFBE5E48E6E74EA...

Joanna Preston
Associate Director, Licensing

UNB EST. 1785 UNIVERSITY OF NEW BRUNSWICK | Institute of Biomedical Engineering

2023.05.19

Vivian K. Mushahwar, PhD
Professor, Department of Medicine
Director, Sensory Motor Adaptive Rehabilitation Technology (SMART) Network
Director, Smart Technology (ST) Innovations
5005C Katz Group-Rexall Centre for Pharmacy and Health Research

Faculty of Medicine and Dentistry
University of Alberta
Edmonton, AB T6G 2R3

Dear Dr. Mushawar,

I write this letter in support of the application made for recognition of the Sensory Motor Adaptive Rehabilitation Technology (SMART) Network as an Institute at the University of Alberta. As the Director of the Institute of Biomedical Engineering (IBME) at the University of New Brunswick, I can attest that with increased support compared with networks, Biomedical Institutes are critical to providing the substantive cohesion necessary to have sustained impact in this area.

Our Institute was founded in 1965 and has evolved to become a world renowned, multi-disciplinary research unit involved in a broad spectrum of activities. We are UNB's flagship institute and a stable hub of research that gives people identity and security while enabling interdisciplinary research, and none of this would have been possible without the stable sense of support, space, and allocated administration time that are associated with being an institute. We have recently unveiled a new Centre for Adaptive Rehabilitation Engineering (CARE), with state-of-the-art equipment and facilities to provide research and clinical care for efficient, personalized rehabilitation. This centre was only possible because of the tight-knit ecosystem we've created within our institute – it is more than a collection of siloes knitted together on paper – staff, space, and equipment are freely shared at the institute to the betterment of each of the principal investigators associated with the institute; the faculties affiliated with the institute, and the university as a whole.

The SMART Network has several areas of overlap with the IBME and CARE and it is accordingly easy to envision its easy transition to an institute. The SMART Network has created a well-equipped and comprehensive interdisciplinary, multi-sector environment that fosters innovation and creates solutions that improve patient outcomes and quality of life. The proposed Institute for Smart Augmentative and Restorative Technologies (iSMART) has the potential to expand this success to create a world-class collaborative facility that attracts top researchers and trainees, while creating a more impactful translation of intelligent medical devices and innovative rehabilitation interventions. The creation of a SMART Institute at the University of Alberta would undoubtably create additional growth and visibility by allowing collaboration and competition with other world-class institutes. The known strength of the researchers and trainees at the SMART Network and the existing infrastructure and support provides a fertile ground for expansion into an Institute, and will lead to impactful initiatives across research, healthcare and industry.

UNB EST. 1785 UNIVERSITY OF NEW BRUNSWICK | Institute of Biomedical Engineering

I have enjoyed collaborating with several members of the SMART network, but it has not been apparent from the outside that the group was stronger than the individual members (who are amazing researchers as individuals) – and this makes sense for a network. However, looking at the way being an institute changes our administration structure; the efficiency of our processes; the team spirit that we can engender in our students; the increased opportunities for students to interact on a daily basis with interdisciplinary perspectives; the way each of our passions on topics from EDI to Indigenous co-led research to statistics and many others reaches not just our own students but all of the students for whom our institute is their academic home; the way our collective branding is broader and more impactful than any one of us – when I look at all of these benefits of being an institute, and when I consider the members of the SMART network who already have the capacity to achieve these elements, then it becomes very exciting for me as a biomedical researcher and collaborator to consider the increased impact for UofA and our field if the network is able to become an institute.

In short, I feel that such an institute would be a great opportunity to raise the profile of the network and the University to world-class status. Our institute already have a series of large grant proposals in which we've been considering which universities we should add as collaborators, and the SMART network has been high on our list – but to be honest, if it was an institute, it would be the clear winner. I can accordingly strongly attest that we would love to collaborate with a SMART institute and that we would fully support the creation of the Institute for Smart Augmentative and Restorative Technologies.

Sincerely,

Jon Sensinger, PhD., PEng
Director, Institute of Biomedical Engineering
Professor, Department of Electrical and Computer Engineering

j.sensinger@unb.ca
506.458.7094

women & children's health research institute

October 17, 2023

Dr. Vivian Mushahwar
Professor, Department of Medicine
Director, SMART Technology Innovations
University of Alberta
5005C Katz Group Centre For Research
11315 - 87 Ave NW
Edmonton, AB T6G 2H5

Re: iSMART – the SMART Network's transformation to a University Institute

Dear Dr. Mushahwar,

I am pleased to write this letter in support of the SMART Network's application to become the University of Alberta Institute for Augmentative and Restorative Technologies and Health Innovations (iSMART). As the Executive Director of the Women and Children's Health Research Institute (WCHRI), I believe that iSMART brings important complementary expertise to WCHRI, allowing for extensive collaborations between the two institutes in the future.

WCHRI supports research excellence dedicated to improving the health and lives of women and children. It is based on a unique trans-disciplinary model that encompasses a broad range of medical and non-medical disciplines, each of which adds value to the innovative nature of research. Moreover, WCHRI operates to serve the needs of the community and aims to establish partnerships with health agencies and policy makers with the objective of improving women and children's health.

The establishment of iSMART will provide needed expertise in translating WCHRI's discoveries into innovative medical devices where applicable. Capitalizing on the impressive skills, resources and expertise in iSMART, a partnership between iSMART and WCHRI can enable us to expand our reach by developing accessible and affordable technologies that can enhance the health and wellbeing of women and children.

I enthusiastically support the establishment of iSMART and strongly believe that it will impactfully contribute to the advancement of smart technologies and health innovations at the University of Alberta and beyond.

Sincerely,

Sandra Davidge, PhD, FCAHS, FRSC
Executive Director
Women and Children's Health Research Institute

UNIVERSITY OF ALBERTA
Alberta Health Services
STOLLERY CHILDREN'S HOSPITAL FOUNDATION
AWHF alberta women's health foundation

YEG Scientific Inc.
17544 58 ST NW
Edmonton, Alberta
Canada, T5Y 0T7

June 27, 2023

Re: Letter of Support for the SMART Network

Dear SMART Network,

It is our great pleasure to provide a letter of support towards your application towards becoming a research institute and the continued assistance you provide to the local innovation ecosystem.

YEG Scientific is a University of Alberta spinoff co-founded in 2021 by Dr. Keith Fenrich from the Faculty of Rehabilitation Medicine. Based in Edmonton, we are a provider of animal training equipment designed to enable high-throughput training and assessment of rodents in routine tasks useful in neuroscience research. Our product is on the market and we already have sales both in the US and Canada.

The success YEG Scientific has achieved was only possible through the strong collaborations we have built with the SMART Network and in particular, with ST Innovations. Our product is based on an early prototype developed by Dr. Fenrich, which was useful but required substantial refinement towards a commercial product. Using a combination of 3D printing and CNC machining, we developed a number of iterative prototypes. The 3D printing services and engineering expertise within ST Innovations was critical when we developed our first commercial prototype and it continues to be important as we prototype future improvements. We have worked with other local service providers throughout our product development phase and in comparison, our experience with ST Innovations has been far superior.

For these reasons, we look forward to continuing our relationship with ST Innovations as we develop new products and fully support any initiatives that will allow them to maintain and expand their service offerings.

Sincerely,

Bang Thai
Corporate Executive Officer

Institute for Smart Augmentative and Restorative Technologies and Health Innovations (iSMART)

Appendix 2: Biosketches of iSMART Leadership

1. Vivian K. Mushahwar, PhD, Interim Director (FoMD)
2. Mahdi Tavakoli, PhD, Interim Scientific Vice -Director (FoE)
3. Jacqueline Hebert, MD, Interim Education Vice -Director (FoMD)
4. Nizam Ahmed, MD, Interim Clinical Vice -Director (FoMD)
5. Patricia Dolez, PhD, Interim Commercialization Vice-Director (ALES)
6. Martin Ferguson-Pell, PhD, Interim External Relations Vice-Director (FRM)
7. Timothy Ira, Interim Justice, Equity, Diversity, Inclusion and Access Associate Director (CSSH)

BIOGRAPHICAL SKETCH
(maximum 5 pages)

NAME: Mushahwar, Vivian K.

POSITION TITLE: Professor and Canada Research Chair

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include doctoral, postdoctoral, and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
Brigham Young University, Provo, Utah, USA	BSc	6/1991	Electrical & Computer Engineering
University of Utah, Salt Lake City, Utah, USA	PhD	9/1996	Bioengineeing
Emory University, Atlanta, Georgia, USA	Post-doc	9/1998	Rehabilitation Science
University of Alberta, Edmonton, Alberta, Canada	Post-doc	9/2001	Neuroscience

A. Personal Statement

I am a Professor of Medicine, Neuroscience and Rehabilitation Medicine at the University of Alberta and Canada Research Chair in Functional Restoration. I am also the Director of the Sensory Motor Adaptive Rehabilitation Technology Network (SMART Network) and its business arm, Smart Technology Innovations (ST Innovations). Trained in electrical and biomedical engineering, rehabilitation science and neuroscience, I combine these fields to develop innovative solutions to persons experiencing spinal cord injury. My work focuses on developing intelligent implantable and wearable neural prostheses that restore mobility and prevent secondary complications. I also focus on developing creative rehabilitation interventions that are both efficacious and cost-saving. My lab pioneered the development of micro-implants for activating locomotor-related networks in the lumbosacral spinal cord to restore standing and walking after severe spinal cord injury. My lab also invented Smart-e-Pants and the SOCC, two smart wearable garments for preventing pressure injuries and deep vein thrombosis, respectively. I collaborate extensively with investigators from a wide range of disciplines and sectors.

As the proposed Interim Director of the University of Alberta Institute for Smart Augmentative and Restorative Technologies and Health Innovations (iSMART), I bring extensive experience in leading multidisciplinary groups and transdisciplinary research initiatives. I chaired/sat on the advisory committees of centres and institutes at national and international institutions as well as on the advisory committees of startup for-profit and not-for-profit companies. I also sat on the board of directors of a local charity and served on numerous national and international steering committees. I am experienced in attracting funding from a diverse range of agencies and have cultivated excellent relationships with government, industry and healthcare. I work exceptionally well with iSMART's interim Co-Director and believe that collectively, we very well prepared to set iSMART on a successful path as a University of Alberta institute while a new Director is identified through a Search and Selection process, and new Co-Directors are voted in by iSMART's members.

B. Positions and Honours

07/2021 Fellow, Canadian Academy of Health Sciences
03/2021 Fellow, American Institute for Medical and Biological Engineering
03/2021 - Member, Advisory Board, Grapheton Inc., San Diego
11/2020 - Mentorship Officer, Executive Board, Canadian SCI Rehabilitation Association

10/2020 - Member, Advisory Board, Max Planck Center for Neural Science and Technology, University of Toronto
05/2020 - Member, IEEE Awards Program, IEEE Biomedical Engineering Committee
07/2019 Killam Annual Professorship Award, Killam Trustees, University of Alberta
01/2019 - Member, Editorial Board, Journal of Neural Engineering
10/2018 - Canada Research Chair (Tier 1) in Functional Restoration, Canada Research Chairs Program, The Government of Canada
01/2018 - Chair, Scientific Advisory Board, Center for Neurotechnology, University of Washington, Seattle, Washington, USA
11/2017 Innovation Awards – Patent Award, Flexible-base Electrode Array and Surrogate Neural Tissue, US Patent 9,433,787, TEC Edmonton, Alberta
03/2017 - Special Advisor on Functional Electrical Stimulation Technologies, Glenrose Rehabilitation Hospital, Edmonton, Alberta
10/2015 Innovation Makes Sense – Patent Award, Mitigation of Pressure Ulcers using Electrical Stimulation, US Patent 8,874,223, TEC Edmonton, Alberta
07/2015 - Vice-Chair, Advisory Council, Glenrose Rehabilitation, Research Innovation and Technology (GRRIT), Glenrose Rehabilitation Hospital
06/2015 Translational Research Award, Department of Medicine, University of Alberta
04/2015 2015 Watch List of Top 10 New and Emerging Health Technologies, Smart-e-Pants for the Prevention of Pressure Ulcers, Canadian Agency for Drugs and Technologies in Health
01/2015 Visiting Scholar Award (Sabbatical), University of Washington, Seattle
07/2014 - Professor, Department of Medicine, Division of Physical Medicine and Rehabilitation, University of Alberta
04/2014 - Director, Sensory Motor Adaptive Rehabilitation Technology (SMART) Network, University of Alberta
01/2014 - Member, Advisory Board, Center for Sensorimotor Neural Engineering, an NSF Engineering Center of Excellence, University of Washington, Seattle
07/2013 - Member, Editorial Board, Neuromodulation (Official Journal of the International Neuromodulation Society)
11/2012 "Woman of Vision," Lesley McDonald Program, Global TV
09/2012 Medal of Honor, Alberta Medical Association
04/2011 Best Publication Award over 3 years (between 2008 and 2011), Institute of Electrical and Electronics Engineers – Biomedical Circuits and Systems (IEEE BioCAS)
01/2011 Elected Society Secretary, International Functional Electrical Stimulation Society
04/2009 Leader, Project SMART (Sensory Motor Adaptive Rehabilitation Technology) Pan-Alberta Interdisciplinary Team, Alberta Heritage Foundation for Medical Research
01/2009 Elected Board Member, International Functional Electrical Stimulation Society
07/2008 Associate Professor, Department of Cell Biology, University of Alberta
04/2008 Co-recipient, Best Canadian Institutes of Health Research grant related to spinal cord injury (co-recipient), Barbara Turnbull Foundation for Spinal Cord Research, Toronto, Ontario, Canada
07/2007 Senior Scholar Award, Alberta Heritage Foundation for Medical Research (AHFMR), Edmonton, Alberta, Canada
11/2006 Distinguished Women in Neural Engineering Award, University of Wisconsin, Madison, Wisconsin, USA
09/2006 Joint Appointment – Research Affiliate, Glenrose Rehabilitation Hospital, Edmonton, Alberta, Canada
06/2006 - Director, Human Rehabilitation Engineering Laboratory & SCITCS FES Research Facility, University of Alberta
01/2006 - Honorary Member, Spinal Cord Injury Treatment Centre Society (SCITCS) Board of Directors, Edmonton, Alberta

01/2006 Elected Board Member, International Functional Electrical Stimulation Society
07/2005 Adjunct Professor, Department of Physical Therapy, Faculty of Rehabilitation Medicine, University of Alberta
04/2004 Researcher of the Month, Canadians for Health Research (CHR), Westmount, Quebec, Canada
07/2002 Scholar Award, Alberta Heritage Foundation for Medical Research, Edmonton, Alberta, Canada
09/2002 Adjunct Professor, Centre for Neuroscience (now Neuroscience & Mental Health Institute), University of Alberta
09/2001 Assistant Professor, Department of Biomedical Engineering, University of Alberta

C. Contributions to Science.
Underlined names are my trainees; undernamed and italicized names are graduate trainees visiting my lab from other institutions.

1) **The cervical networks in the spinal cord play an important role in the rehabilitation of walking after incomplete spinal cord injury**
   - R. Zhou, B. Parhizi, L. Alvarado, R. Ogilvie, S. L. Chong, O. Shaw and **V. K. Mushahwar,** "Non-Gait Specific Intervention for the Rehabilitation of Walking after SCI: Role of the Arms," *J Neurophysiol,* 119: 2194–2211, 2018.
   - R. Zhou, J. Assh, L. Alvarado, S. L. Chong and **V. K. Mushahwar,** "The Effect of Cervico-lumbar Coupling on Spinal Reflexes during Cycling after Incomplete Spinal Cord Injury," *J Neurophysiol,* 120(6):3172-3186, 2018.
   - R. Zhou, L. Alvarado, S. Kim, S. L. Chong and **V. K. Mushahwar,** "Modulation of Corticospinal Input to the Legs by Arm and Leg Cycling after Incomplete Spinal Cord Injury," *J Neurophysiol,* 118(4):2507-2519, 2017.

2) **Transcutaneous spinal cord stimulation (tSCS) modulates the activity of neural networks across multiple segments throughout the spinal cord**
   - T. S. Barss, B. Parhizi, J. Porter and **V. K. Mushahwar,** "Neural Substrates of Transcutaneous Spinal Cord Stimulation: Neuromodulation across Multiple Segments of the Spinal Cord," *J Clin Med,* 11(3): 639, 2022.
   - B. Parhizi,* T. S. Barss* and **V. K. Mushahwar,** "Simultaneous cervical and lumbar spinal cord stimulation provides facilitation of both spinal and corticospinal circuitry in the human upper limb," *Front Neurosci,* 15:615103, 2021 (*equal contribution to first authorship).
   - T. S. Barss,* B. Parhizi* and **V. K. Mushahwar,** "Transcutaneous spinal cord stimulation of the cervical cord modulates lumbar networks," *J Neurophysiol,* 123(1):158-166, 2020. (*equal contribution to first authorship).

3) **An intraspinal micro-implant in the lumbosacral spinal cord for restoring long durations of stable standing and long distances of over-ground walking after severe spinal cord injury**
   - A. Toossi, B. Bergin, M. Marefatallah, B. Parhizi, N. Tyreman, D. G. Everaert, S. Rezaei, P. Seres, J. C. Gatenby, S. I. Perlmutter and **V. K. Mushahwar,** "Comparative Neuroanatomy of the Lumbosacral Spinal Cord of the Rat, Cat, Pig, Monkey, and Human," *Scientific Reports,* 11(1):1955, 2021. *[Top 100 out of 3,460 papers of Scientific Reports papers downloaded in 2021]*
   - Toossi, D. G. Everaert, S. Perlmutter and **V. K. Mushahwar,** "Functional Organization of the Motoneuron Pools in the Lumbosacral Spinal Cord of Non-human Primates," *Scientific Reports,* 9(1):13539, 2019.
   - J. A. Bamford, R. M. Lebel, K. Parseyan and **V. K. Mushahwar,** "The Fabrication, Implantation and Stability of Intraspinal Microwire Arrays in the Rat and Cat Spinal Cord," *IEEE Trans Neural Syst Rehab Eng,* 25(3):287-296, 2017.

- Toossi, D. G. Everaert, A. Azar, C. Dennison and **V. K. Mushahwar,** "Mechanically Stable Intraspinal Microstimulation Implants for Human Translation," *Annals Biomed Eng,* 45(3):681-694, 2017.

4) **Intelligent feedback and feedforward, biologically-inspired, control strategies for intraspinal microstimulation**
   - A. N. Dalrymple, D. Roszko, R. Sutton and **V. K. Mushahwar,** "Pavlovian Control of Intraspinal Microstimulation to Produce Over-Ground Walking," *J Neural Eng,* 17(3):036002, 2020.
   - N. Dalrymple, D. G. Everaert, D. S. Hu and **V. K. Mushahwar,** "A Speed-Adaptive Intraspinal Microstimulation Controller to Restore Walking in a Spinal Cord Hemisection Model," *J Neural Eng,* 15(5):056023, 2018.
   - Holinski, *K. Mazurek,* D. Everaert, A. Toossi, A. Lucas-Osma, P. Troyk, R. Etienne-Cummings, R. B. Stein and **V. K. Mushahwar,** "Intraspinal Microstimulation Produces Over-ground Walking in Anesthetized Cats," *J Neural Eng,* 13(5): 056016, 2016.
   - *K. A. Mazurek,* B. J. Holinski, D. G. Everaert, R. B. Stein, **V. K. Mushahwar** and R. Etienne-Cummings, "A Mixed-Signal VLSI System for Producing Temporally Adapting Intraspinal Microstimulation Patterns for Locomotion," *IEEE Trans Biomed Circ Syst,* 10(4):902-911, 2016.

5) **Novel 3D cell cultures for high throughput testing of micro-implants in the central nervous system**
   - K. M. Koss, M. A. Churchward, A. F. Jeffrey, **V. K. Mushahwar,** A. L. Elias and K. G. Todd, "Improved 3D hydrogel cultures of primary glial cells for *in vitro* modelling of neuroinflammation," *J Vis Exo (JoVE),* 130, 2017.
   - S. Sridar, M. A. Churchward, **V. K. Mushahwar,** K. G. Todd and A. L. Elias, "Peptide Modification of Polyimide-Insulated Microwires: Towards Improved Biocompatibility through Reduced Glial Scarring," *Acta Biomaterialia,* 60:154-166, 2017.
   - A. Jeffery, M. A. Churchward, **V. K. Mushahwar,** K. G. Todd, A. L. Elias, "A Hyaluronic Acid-Based 3D Culture Model for In vitro Testing of Electrode Biocompatibility," *Biomacromolecules,* 15(6): 2157-65, 2014.

6) A wearable, dynamically-active system for preventing the formation of pressure injuries, particularly pressure injuries originating at deep bone-muscle interfaces
   - H. Moghadas, and **V. K. Mushahwar,** "Microwave Sensor for Detection of Deep Tissue Lesions,' *Sensors Actuators B: Chemical,* 277: 69–77, 2018.
   - Kane, R. Warwaruk-Rogers, C. Ho, M. Chan, R.B. Stein, **V. K. Mushahwar** and S. Dukelow, "A feasibility study of Intermittent electrical stimulation to prevent deep tissue injury in the ICU," *Adv Wound Care (New Rochelle),* 6(4):115-124, 2017.
   - Ahmetovic, **V. K. Mushahwar,** R. Sommer, D. Schnepf, L. Kawasaki, R. Warwaruk-Rogers, T. Barlott, S. L. Chong, G. Isaacson, S. Kim, M. Ferguson-Pell, R. B. Stein, C. Ho, S. Dukelow and K. M. Chan, "Safety and feasibility of intermittent electrical stimulation for the prevention of deep tissue injury," *Adv Wound Care (New Rochelle),* 4(3):192-201, 2015.
   - L. Solis, E. Twist, P. Seres, R. B. Thompson and **V. K. Mushahwar,** "Long-term effectiveness of Intermittent Electrical Stimulation in the Prevention of Deep Tissue Injury in Pigs," *J Appl Physiol,* 114(2): 286-96, 2013.

A complete list of peer-reviewed publications can be found at:
- https://scholar.google.com/citations?user=YyhZhucAAAAJ&hl=en and https://www.ncbi.nlm.nih.gov/pubmed/?term=mushahwar+v

D. Mentoring Contributions

To date, I have trained in my laboratory:
- 66 undergraduate students from several faculties including the Faculties of Medicine & Dentistry, Engineering, Science, Rehabilitation Medicine, Nursing

- 44 graduate students (MSc and PhD) from several disciplines including neuroscience, engineering, rehabilitation medicine, cell biology and biomedical engineering
- 9 post-doctoral fellows

My trainees have collectively secured *$2,648,233 in awards and honors* since 2002 ($126,103/year), signifying their outstanding caliber and the excellence of the training environment I have set up**.** All trainees from my laboratory have successfully secured advanced training positions or lucrative positions in academia, healthcare or the private sector.

E. Other Contributions

- 140 Invitations for plenary, keynote, symposia and panel talks at international conferences and international institutions (17 countries); 57 invitations for talks at national and provincial venues
- 7 issued patents; 1 pending patent application
- 1 technology secured FDA approval for sales in the USA

F. Active Grant Support

- SMART Platform for Foundational and Translational Neuroscience
  Mushahwar (PI), Ferguson-Pell (Co-Director); 02/15/2023 – 02/14/2026
  Agency: Alberta Innovates Ecosystem Development Partnerships Program
- SMART Platform for Foundational and Translational Neuroscience
  Mushahwar (Director), Ahmed, Dolez, Ferguson-Pell, Hebert, Tavakoli (Co-Directors); 01/11/2022 – 30/11/2025
  Agency: Brain Canada Foundation – Platform Support Grants
- Spinal Micro-implant for Restoring Walking after Spinal Cord Injury
  Mushahwar (PI); 01/02/2022 – 30/09/2025
  Agency: University of Alberta Hospital Foundation – Open Operating Grant Program
- NSERC CREATE in Sensory-Motor Adaptive Rehabilitation Technologies (SMART)
  Hebert (PI); Mushahwar and 9 others (Co-Is); 01/05/2021 – 30/04/2027
  Agency: Natural Science and Engineering Research Council of Canada – Collaborative Research and Training Experience program
- Spinal Neuromodulation for Restoring Function after Neural Injury or Disease
  Mushahwar (PI), Fox, Thompson, Todd, Uwiera (co-Is); 01/04/2021 – 30/03/2026
  Agency: Canadian Institutes of Health Research – Project Scheme
- Advancing Health & Life Sciences Medical Prototyping Capacity in Western Canada
  Mushahwar (PI) on behalf of the SMART Network and ST Innovations; 01/02/2021 – 31/12/2023
  Agency: Western Economic Diversification – Regional Innovation Ecosystems Program
- Innovative Reactivation of Spinal Networks after Spinal Cord Injury
  Mushahwar (PI), Uwiera, Todd, Harkema, Boakye, Sherwood (co-Is); 01/01/2021 – 31/12/2023 + 1 year no cost extension
  Agency: Craig Neilsen Foundation – SCIRTS Senior Research Grants
- Pre-clinical Testing of Intraspinal Microstimulation for Restoring Walking after Severe SCI
  Mushahwar (PI), Uwiera, Todd, Troyk, Konrad and Jackson (co-Is); 01/10/2020 – 30/09/2023 + 1 year no cost extension
  Agency: DoD CDMRP SCIRP – Translational Research Awards
- Patterned Activation of the Arms and Legs to Improve Walking after Neural Injuries
  Mushahwar (PI), Ho, Barss (co-Is); 01/10/2019 – 30/09/2024
  Agency: Canadian Institutes of Health Research – Project Scheme

BIOGRAPHICAL SKETCH

Mahdi Tavakoli, Professor of Electrical and Computer Engineering

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	Completion Date	FIELD OF STUDY
Ferdowsi University, Iran	BSc	09/1996	Electrical Engineering
K.N. Toosi University of Technology, Iran	MSc	06/1999	Electrical Engineering
University of Western Ontario, Canada	PhD	12/2005	Elec. & Comp. Eng.
Canadian Surgical Technologies & Advanced Robotics	Postdoc	12/2006	Medical Robotics
Harvard University	Postdoc	08/2008	Medical Robotics

A. Personal Statement

I specialize in developing robots and telerobots for various medical/biomedical applications including surgery, therapy, rehabilitation, telehealth and telemedicine. My group has three laboratories:

- CREATE Lab focusing on Collaborative, Rehabilitation, and Assistive Robotics research
- HANDS Lab focusing on Haptics AND Surgery research
- SIMULAT-OR Lab as a Simulated Operating Room featuring a da Vinci Surgical System

Overall, my robotics, telerobotics and biorobotics research aims to

- Develop new technologies for robot-assisted surgery, therapy, and rehabilitation
- Develop human-robot interfaces that provide the sense of touch for the human
- Develop image-guided robotic systems that guide tools inside a patient with superhuman precision
- Develop machine intelligence based solutions for medicine.

These robotic and artificial intelligence technologies will make medical interventions more efficient and less traumatic and will also reduce the burden on the healthcare system.

In the area of analysis and design of haptics-enabled robotic systems, I have worked extensively on understanding and mitigating through control synthesis the adverse effects of various practical non-idealities in a haptic teleoperation system on the system's stability and performance. My group has also worked extensively on developing haptics-based robotic/telerobotic rehabilitation technologies. In the area of robotics-assisted therapy, we have studied various problems in needle insertion research including needle-tissue interaction modelling, closed-loop observation and control of needles, and the design of surgeon-assist robots. In the context of intelligent robotic systems for beating-heart surgery, we have worked on a robotic system that moves the surgical tools in synchrony with the target tissue while the heart beats so that the surgeon can perform the procedure as if the heart were stationary. I will serve as a technical consultant for this project to help TopMed LLC team to implement the teleoperation feature of the robot.

Some relevant peer-reviewed publications are:

a) M Sharifi, S Behzadipour, H Salarieh, and **M Tavakoli**, "Assist-as-needed policy for movement therapy using telerobotics-mediated therapist supervision", Control Engineering Practice 101, 104481, 2020.
b) M Najafi, C Rossa, K Adams, and **M Tavakoli**, "Using Potential Field Function with a Velocity Field Controller to Learn and reproduce the Therapist's Assistance in Robotic-Assisted Rehabilitation", EEE/ASME Transactions on Mechatronics, 25(3), 2020.
c) C Martinez, and **M Tavakoli**, "Learning and Reproduction of Therapist's Semi-Periodic Motions during Robotic Rehabilitation., Robotica 38 (2), 337-349
d) J Fong, C Martinez, **M Tavakoli**, "Ways to Learn a Therapist's Patient-specific Intervention: Robotics-vs Telerobotics-mediated Hands-on Teaching", 2019 International Conference on Robotics and Automation (ICRA), 870-876, 2019.

B. Positions and Recognitions/Awards

POSITIONS:

2017/7 Professor, Electrical and Computer Engineering, University of Alberta
2014/7 - 2017/6 Associate Professor, Electrical and Computer Engineering, University of Alberta
2013/7 - 2017/6 Director of Electrical Engineering, Electrical and Computer Engineering, University of Alberta
2010/3 - 2015/2 Research Affiliate, Glenrose Rehabilitation Hospital
2008/9 - 2014/6 Assistant Professor, Electrical and Computer Engineering, University of Alberta
2009/2 - 2012/1 Adjunct Research Professor, Electrical and Computer Engineering, Western University
2010/6 - 2010/9 Visiting Professor (AMPERE Lab), INSA) de Lyon, France

RECOGNITIONS/AWARDS:

2019/2 2019 Great Supervisor Award, University of Alberta
2014/5 Faculty of Engineering Undergraduate Teaching Award, University of Alberta
2010/6 Visiting Professorship at INSA de Lyon Centre national de la recherche scientifique Prize / Award
2007/1 Postdoctoral Fellowship, Natural Sciences and Engineering Research Council of Canada (NSERC)

C. Scholarly/Professional Organizations Membership and Activities

Senior Member, Institute of Electrical and Electronics Engineers (IEEE)
Co-Chair, IEEE RAS Technical Committee for Telerobotics

Healthy Communities Project Co-Leader, Autonomous Systems Initiative
Scientific Co-Director, SMART Network
Associate Editor, IEEE Robotics and Automation Letters; Journal of Medical Robotics Research; IET Control Theory & Applications; Mechatronics

D. Contributions to Science and Scholarly Output (No. of Journal Papers: 157; No. of Conference Papers: 108)

1. Robot-assisted rehabilitation and assessment & Multimodal haptic teleoperation systems

- Original contributions in the assessment of a patient's motor function, haptics-based robotic rehabilitation, and home-based rehabilitation based on haptic telepresence.
- Investigated the fidelity of teleoperation systems and the effects of multimodal haptics.
- Studied the usefulness of haptic and visual feedback to human's task performance in surgical tasks.
- Studied the effect of delayed force feedback (e.g., in telesurgery and telerehabilitation) on users' task performance.
- Studied the effects of practical non-idealities including robot flexibility, model uncertainty, external disturbances, actuator switching, and actuator saturation on teleoperation system stability and performance and ways to mitigate them.

a) C M Martinez, J Fong, S F Atashzar, and **M Tavakoli**," Semi-autonomous robot-assisted cooperative therapy exercises for a therapist's interaction with a patient, 7th IEEE Global Conference on Signal and Information Processing, GlobalSIP 2019.
b) J Fong, R Ocampo, DP Gros, and **M Tavakoli**, "A Robot with an Augmented-Reality Display for Functional Capacity Evaluation and Rehabilitation of Injured Workers", 2019 IEEE 16th International Conference on Rehabilitation Robotics (ICORR), pp 181-186, 2019.
c) R Ocampo, and **M Tavakoli**, "Improving User Performance in Haptics-Based Rehabilitation Exercises by Colocation of User's Visual and Motor Axes via a Three-Dimensional Augmented-Reality Display", IEEE Robotics and Automation Letters 4 (2), 438-444, 2019.
d) J Fong, H Rouhani, and **M Tavakoli**, "A therapist-taught robotic system for assistance during gait therapy targeting foot drop", IEEE Robotics and Automation Letters 4 (2), 407-413, 2019.

2. Robot-assisted prostate and breast brachytherapy

- Highly original and novel contributions in needle/tissue interaction modelling, real-time estimation of needle tip deflection, image-based needle shape estimation, and image-based needle/prostate visualization.
- Filed a patent on a new technology for prostate brachytherapy.
- The last author on over 35 peer-reviewed papers on this topic published since Sep. 2015.

a) J Carriere, J Fong, T Meyer, R Sloboda, S Husain, N Usmani, **M Tavakoli**, "An Admittance-Controlled Robotic Assistant for Semi-Autonomous Breast Ultrasound Scanning", 2019 International Symposium on Medical Robotics (ISMR), 2019.
b) M F Jamaluddin, S Ghosh, MP Waine, **M Tavakoli**, J Amanie, A D Murtha, D Yee, and N Usmani, "Intraoperative factors associated with stranded source placement accuracy in low-dose-rate prostate brachytherapy", Brachytherapy, 16(3), pp 497-502, 2017.
c) M F Jamaluddin, S Ghosh, M P Waine, R S Sloboda, **M Tavakoli**, J Amanie, A D Murtha, D Yee, and N Usmani, "Quantifying 125I placement accuracy in prostate brachytherapy using postimplant transrectal ltrasound images", Brachytherapy, 16(2), pp 306-312, 2017.
d) R Tao, **M Tavakoli**, R Sloboda, N Usmani, A comparison of US-versus MR-based 3-D prostate shapes using radial basis function interpolation and statistical shape models, IEEE Journal of Biomedical and Health Informatics 19 (2), 623-634, 2014.

3. Robot-assisted minimally invasive surgery

- Invented a haptic teleoperation system for minimally invasive surgery encompassing a sensorized endoscopic instrument and a force-reflective dexterous user interface for key-hole surgery.
- Studied the design and control of robotic systems for image-guided robot-assisted surgery on the beating heart.
- The first author of "Haptics for Teleoperated Surgical Robotic Systems" (World Scientific, 2008).

a) L Cheng, and **M Tavakoli**, "A multilateral impedance-controlled system for haptics-enabled surgical training and cooperation in beating-heart surgery", International Journal of Intelligent Robotics and Applications 3 (3), 314-325, 2019.
b) L Cheng, and **M Tavakoli**, "Control of a mechatronics-assisted system for surgeries using flexible tools", 2019 IEEE 15th International Conference on Automation Science and Engineering, pp 1768-1773, 2019.
c) M Khadem, C Rossa, N Usmani, RS Sloboda, and **M Tavakoli**, "Geometric control of 3D needle steering in soft-tissue", Automatica 101, 36-43, 2019.
d) C Rossa, R Sloboda, N Usmani, and **M Tavakoli**, "Hand-held device and computer-implemented system and method for assisted steering of a percutaneously inserted needle", US Patent App. 15/978,996

4. Setting up a world-class medical multi-arm robot workcell facility at Univ. Alberta

- The sole investigator in 3 federal and provincial grants (CFI LOF for $446,806, CFI JELF for $211,981 and NSERC RTI for $68,719). The lead investigator in a federal grant (NSERC RTI for $150,000).
- This facility supports research on improving the existing technologies and developing new technologies for robotics- and telerobotics-assisted surgery, therapy, and rehabilitation. These technologies will ultimately reduce the burden

on the healthcare system by making medical interventions more efficient, accurate and accessible.

E. Research Support (Total number: 22, Ongoing: 7, Completed: 15)

Ongoing Research Support

Enhanced tumour localization, visualization, resection and radiotherapy in computer-aided surgery: Assisting surgeons via robotics and augmented-reality image-overlay technologies, 2022/2 – 2024/2, Funding Sources: Natural Sciences and Engineering Research Council of Canada (NSERC); Alberta Innovates, Role: Principal Investigator, Total funding - 300,000

An interdisciplinary training program for sensory-motor adaptive rehabilitation technologies (SMART), 2021/9 - 2027/8, Funding Sources: Natural Sciences and Engineering Research Council of Canada (NSERC), Role: Co-investigator, Total Funding - 1,650,000, Principal Investigator : Jacqueline Hebert

Centre for Autonomous Systems in Strengthening Future Communities, 2018/5 - 2024/3, Funding Sources: Alberta Economic Development and Trade, Role: Co-investigator, Major Initiatives Fund, Total Funding - 7,141,000, Principal Applicant : Zhi-Jun Qiu

Advantages of reconfigurable and variable-impedance haptic user interfaces, 2019/4 - 2024/3, Funding Sources: Natural Sciences and Engineering Research Council of Canada (NSERC) Discovery, Role: Principal Investigator, Total Funding - 275,000

Facility for robot-assisted rehabilitation, therapy and surgery, 2018/9 - 2023/8, Funding Sources: Canada Foundation for Innovation (CFI), Role: Principal Investigator, Infrastructure Operating Fund, Total Funding - 21,198

Computer-Integrated Ultrasound Guidance and Mechatronics Assistance for Breast Brachytherapy, 2018/4 - 2022/3, Funding Sources: Canadian Institutes of Health Research (CIHR); Collaborative Health Research Projects (NSERC partnered), Role: Principal Investigator, Total Funding - 495,000

Recently Completed Research Support

Lower-limb exoskeleton with functional electrical stimulation for studying walking and balance, 2018/3 – 2020/3, Funding Sources: Natural Sciences and Engineering Research Council of Canada (NSERC), Role: Principal Applicant, Total Funding - 150,000

*A novel neurosurgery-specific haptic hand-controller for robot-assisted surgical systems, 2*015/4 - 2020/3, Funding Sources: Canadian Institutes of Health Research (CIHR); Collaborative Health Research Project, Role: Co-investigator, Total Funding - 468,500, Principal Investigator: Garnette Sutherland

Facility for robot-assisted rehabilitation, therapy, and surgery, 2017/5 - 2019/9, Funding Sources: Canada Foundation for Innovation (CFI); John R. Evans Leaders Fund (JELF), Role: Principal Investigator, Total Funding - 84,793

Haptic Telerobotic Control Systems: Analysis and Design for High-Fidelity Interaction, 2014/4 - 2019/3, Funding Sources: Natural Sciences and Engineering Research Council of Canada (NSERC), Role: Principal Investigator, Total Funding - 155,000

Robotic Interface with Haptic Guidance and Artificial Intelligence for People with Disabilities, 2014/4 - 2019/3, Funding Sources: Canadian Institutes of Health Research (CIHR); Collaborative Health Research Projects (CHRP), Role: Co-investigator, Total Funding - 333,000, Principal Investigator: Kim Adams

F. Teaching Evaluations

Course[1]	*Term*	*No. of students*	*USRI median*	*Course*	*Term*	*No. of students*	*USRI median*[2]
ECE 464 LEC B1	Winter 2021	23	4.8	EE 464 LEC A2	Fall 2013	18	4.7
ECE 360 LEC A1	Fall 2019	27	5.0	ECE 561 LEC A1	Fall 2013	6	N/A
ECE 464 LEC A1	Fall 2017	24	5.0	ECE 362 LEC B1	Winter 2013	33	4.6
ECE 561 LEC A1	Fall 2017	12	4.9	ECE 464 LEC A1	Fall 2012	24	4.9
ECE 464 LEC A1	Fall 2016	27	4.8	ECE 561 LEC A1	Fall 2012	5	N/A
ECE 561 LEC A1	Fall 2016	14	4.8	EE 462 LEC B2	Winter 2012	33	4.8
ECE 464 LEC A1	Fall 2015	47	4.9	EE 464 LEC A1	Fall 2011	25	4.9
ECE 561 LEC A1	Fall 2015	10	4.8	ECE 561 LEC A3	Fall 2011	6	N/A
ECE 360 LEC B1	Winter 2015	111	4.9	EE 462 LEC B1	Winter 2011	43	4.9
EE 464 LEC A1	Fall 2014	26	4.8	EE 464 LEC A1	Fall 2010	24	4.8
ECE 760	Fall 2014	2	N/A	EE 462 LEC B1	Winter 2010	21	4.8
				EE 462 LEC B1	Winter 2009	44	4.5

[1] EE/ECE 464 LEC A1/A2/B1: Medical Robotics and Computer-Integrated Intervention; ECE 360 LEC A1/B1: Control Systems I; ECE 561 LEC A1/B1: Nonlinear Control Systems; ECE 760: Special Topics in Control (Theory of Robot Control); ECE 362 LEC B1: Fundamentals of Control Systems Engineering.

[2] Reference data for the USRI question 221 in all courses taught in the Department of Electrical and Computer Engineering are as follows: 25th percentile = 4.1, 50th percentile = 4.4, and 75th percentile = 4.7. By definition, twenty-five percent of the USRI scores across all ECE courses are above the 75th percentile and twenty-five percent of the USRI scores across all ECE courses are below the 25th percentile. The USRI data is available for courses with at least 10 participants. The USRI data is not reported by the University of Alberta for Winter 2020 and Fall 2021 terms.

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors. Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Jacqueline S. Hebert

eRA COMMONS USER NAME (credential, e.g., agency login): jacquihebert

POSITION TITLE: Professor, University of Alberta

EDUCATION/TRAINING:

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
Dalhousie University, Halifax Canada	BSc	1992	Kinesiology
University of Calgary, Canada	MD	1995	Medicine
University of Alberta, Canada	FRCPC (Postgrad)	2000	Physical Medicine and Rehabilitation

A. Personal Statement

As a clinical investigator, my research goal is to facilitate the understanding and implementation of sound evidence-based mechanisms to assist with clinical decision making, and to maximize function and quality of life after limb amputation. I have extensive experience in building and leading interdisciplinary collaborative teams in research and clinical realms. My research has focused on advanced upper limb myoelectric prostheses, and I have developed advanced scientifically based outcome metrics that are sensitive to the impacts of advanced control and sensation within prosthetic systems. My research has provided insight and expertise on interdisciplinary collaborative work and training. I have also developed a Collaborative Research and Training Experience (CREATE) graduate training program that exposes graduate students to the interdisciplinary breadth of knowledge required to succeed in rehabilitation research, and with focus on incorporating concepts of justice, equity, diversion and inclusion into all aspects of training and research. I will apply my experience in developing this multi-faculty training program as the Education co-director of the iSMART. As Education co-director, I aim to transition the graduate training program so it is a sustainable certificate program within iSMART, while at the same time being flexible and responsive to meet the training needs of the iSMART members and trainees.

B. Positions and Honors

ACADEMIC APPOINTMENTS – PRIMARY (UNIVERSITY OF ALBERTA, EDMONTON, CANADA)

2002–2009 Assistant Professor, Division of Physical Medicine & Rehabilitation, Faculty of Medicine
2009–2020 Associate Professor, Division of Physical Medicine & Rehabilitation, Department of Medicine, Faculty of Medicine and Dentistry
2012–current Associate Research Chair in Clinical Rehabilitation, Faculty of Rehabilitation Medicine
2020–current Professor, Division of Physical Medicine & Rehabilitation, Department of Medicine, Faculty of Medicine and Dentistry

ACADEMIC APPOINTMENTS – ADJUNCT (UNIVERSITY OF ALBERTA, EDMONTON, CANADA)

2011–current Associate Adjunct Professor, Division of Orthopaedic Surgery, Department of Surgery
2013–current Associate Adjunct Professor, Department of Mechanical Engineering
2015–current Associate Adjunct Professor, Department of Biomedical Engineering

OTHER APPOINTMENTS

2000–2022 Medical Lead, Adult Amputee Rehabilitation Program, Glenrose Rehabilitation Hospital, Alberta Health Services, Edmonton, Canada
2008–2010 Chair of the Examination Board, Physical Medicine and Rehabilitation, Royal College of Physicians and Surgeons of Canada
2012–2015 Physiatry Consultant, Canadian Forces Base Edmonton, Canada
2015–current Member, Sensory Motor Adaptive Rehabilitation Technology (SMART) Network, University of Alberta
2019–current Research Affiliate, Research, Innovation and Technology Development Department, Glenrose Rehabilitation Hospital, Edmonton, Alberta

AWARDS AND HONORS (LAST 10 YEARS)

2012 Peer-adjudicated National Research Award: Major Sir Frederick Banting Award for Military Health Research. "For the presentation at the Canadian Military and Veteran Health Research Forum of greatest overall value to military health."
2013 Glenrose Rehabilitation Hospital Clinical Research Award
2017 Excellence in Leadership Award, University of Alberta
2019 Faculty of Medicine & Dentistry's Tier I Clinical Science Award for Excellence in Mentoring, University of Alberta

C. Contributions to Science

1. Sensory feedback for upper limb prostheses

Sensory reinnervation techniques: I led the team that introduced a novel targeted reinnervation surgical and rehabilitation technique to Canada to restore functionally relevant tactile sensations after upper limb amputation (*Hebert et al., 2014, TNSRE*). This work was the foundation of my research program, and it positioned my lab at the forefront of advanced sensory-motor integration approaches in North America. I documented sensory outcomes in these cases and summarized existing sensory reinnervation techniques (see citations below). This early work started our research in sensory reinnervation and brought international recognition.

Restoration of kinesthetic (movement) and touch sensation in upper limb prostheses: I was a co-investigator / site PI for a 4-year NIH Director's Transformative R01 Research Award (prime award P. Marasco, Cleveland Clinic). Our investigations culminated in a landmark publication in *Science Translational Medicine* (*Marasco et al., 2018*) for which I was a co-senior (second) author. These collaborative investigations continued with a Department of Defense (DoD) Congressionally Directed Medical Research Program (CDMRP) Research Award in 2015. We have produced foundational publications on sensory-motor integration that have direct applications to improving prosthesis function (*Shehata et al., 2020*). We combined kinesthetic and tactile sensation in a wearable prosthesis and demonstrated through our novel outcome metrics the impact on prosthetic function, cognitive integration, and visuomotor behaviour (*Marasco et al., 2021, Science Robotics*)

Relevant citations:

a. Hebert JS, Olson JL, Morhart MJ, Dawson MR, Marasco PD, Kuiken TA, & Chan KM. Novel targeted sensory reinnervation technique to restore functional hand sensation after transhumeral amputation. *IEEE Trans Neur Sys Rehab Eng*. 2014; 22(4):765–773.
b. Marasco PD, Hebert JS, Sensinger JW, Shell CE, Schofield JS, Thumser ZC, Nataraj R, Beckler DT, Dawson MR, Blustein DH, Gill S, Mensh BD, Granja-Vazquez R, Newcomb MD, Carey JP, & Orzell BM. Illusory movement perception improves motor control for prosthetic hands. *Sci Transl Med*. 2018; 10(432):eaao6990.
c. Shehata AW, Rehani M, Jassat ZE, & Hebert JS. Mechanotactile Sensory Feedback Improves Embodiment of a Prosthetic Hand During Active Use. *Front Neuro*. 2020; 14: 263.
d. Keri M-I, Shehata AW, Marasco PD, Hebert JS, & Vette AH. A Cost-Effective Inertial Measurement System for Tracking Movement and Triggering Kinesthetic Feedback in Lower-Limb Prosthesis Users. *Sensors*. 2021; 21(5):1844. DOI: https://doi.org/10.3390/s21051844

e. Marasco PD, Hebert JS, Sensinger JW, Beckler DT, Thumser ZC, Shehata AW, Williams HE, Wilson K. (2021). Neurorobotic fusion of prosthetic touch, kinesthesia, and movement in bionic upper limbs promotes intrinsic brain behaviors. *Sci Rob*. 6(58): eabf3368.
f. Wells ED, Shehata AW, Dawson MR, Carey JP, & Hebert JS. (2022). Preliminary Evaluation of the Effect of Mechanotactile Feedback Location on Myoelectric Prosthesis Performance Using a Sensorized Prosthetic Hand. *Sensors*. 22, 3892. https://doi.org/10.3390/s22103892.
g. Hebert, J. S., & Marasco, P. D. (2021). Chapter 7: Targeted reinnervation for somatosensory feedback. In B. Güçlü (Ed.), *Somatosensory Feedback for Neuroprosthetics* (pp. 245–263). Academic Press. [Book Chapter]

2. New outcome metrics for advanced sensory motor prostheses

Development of a Gaze and Movement Assessment (GaMA) metric: A significant barrier to translating discoveries to the clinic has been a lack of standardized metrics for evaluating advanced prostheses. I addressed this gap as site PI under a Defense Advanced Research Projects Agency grant for the *Hand Proprioception & Touch Interfaces (HAPTIX)* program. The project resulted in the development of a new testing protocol using synchronized motion and eye tracking to quantify human visual-motor behavior during goal-directed reaching tasks. The work has characterized the visuomotor behavior of prosthesis users and shown sensitivity to detecting change with sensory feedback and advanced motor control. Our metric was translated to other US centers for collaborative use in clinical trials under subsequent NIH and CDMRP funded grant awards.

Relevant citations:

a. Boser QA, Valevicius AM, Lavoie EB, Chapman CS, Pilarski PM, Hebert JS, Vette AH. Cluster-Based Upper Body Marker Models for Three-Dimensional Kinematic Analysis: Comparison with an Anatomical Model and Reliability Analysis. *J Biomech*. 2018, Apr; 72: 228–34.
b. Valevicius AM, Boser QA, Lavoie EB, Murgatroyd G, Chapman CS, Pilarski PM, Vette AH, Hebert JS. Characterization of normative hand movements during two functional upper limb tasks. *PLoS ONE*. 2018, Jun; 13(6): e0199549.
c. Lavoie EB, Valevicius AM, Boser QA, Kovic O, Vette AH, Pilarski PM, Hebert JS, Chapman CS. Using synchronized eye and motion tracking to determine high-precision eye movement patterns during object interaction tasks. *J Vis*. 2018, Jun; 18(6): 1–20.
d. Valevicius AM, Boser QA, Lavoie EB, Chapman CS, Pilarski PM, Hebert JS, & Vette AH. Characterization of normative angular joint kinematics during two functional upper limb tasks. *Gait & Posture*. 2019; 69(2019):176–186.
e. Williams HE, Chapman CS, Pilarski PM, Vette AH, Hebert JS. Gaze and Movement Assessment (GaMA): Inter-site Validation of a Visuomotor Upper Limb Functional Protocol. *PLoS One*. 2019; 14(12): e0219333.
f. Valevicius AM, Boser QA, Chapman CS, Pilarski PM, Vette AH, Hebert JS. Compensatory strategies of body-powered prosthesis users reveal primary reliance on trunk motion and relation to skill level. *Clin Biomech.* 2020; 72:122-129.
g. Hebert JS, Boser QA, Valevicius AM, Tanikawa H, Lavoie EB, Vette AH, Pilarski PM, & Chapman CS. Quantitative gaze and movement differences in visuomotor adaptations of upper extremity prosthesis users to varying task demands. *JAMA Net Open*. 2019; 2(9): e1911197.
h. Williams HE, Chapman CS, Pilarski PM, Vette AH, & Hebert JS. Myoelectric prosthesis users and non-disabled individuals wearing a simulated prosthesis exhibit similar compensatory movement strategies. *J NeuroEng Rehabil.* 2021; 18(72). DOI: https://doi.org/10.1186/s12984-021-00855-x
i. Stone SA, Boser QA, Dawson TR, Vette AH, Hebert JS, Pilarski PM, & Chapman CS. (2022). Generating accurate 3D gaze vectors using synchronized eye tracking and motion capture. *BioRxiv*, 2021.10.22.465332. https://doi.org/10.1101/2021.10.22.465332
j. Cheng K, Rehani M, Hebert JS. Applications of Eye Tracking to Assess Upper Limb Prosthetic Behaviour: A Scoping Review. *J NeuroEng Rehabil*. 2023, Apr; 20, 49.

3. Dissemination of research platforms and technology to end users

Prosthetic socket development: We have established clinical translation parameters for incorporating feedback systems into wearable prostheses for functional testing (*Schoepp et al., 2018*) and designed modular testing sockets for evaluation (*Hallworth et al., 2020*). We have disseminated new socket designs that improve upon standard clinical practices and are now being used for patient care (*Schofield et al., 2019*). By integrating rehabilitation clinicians into the research team, we have been able to transition the discoveries in the lab to help patients function better with their prosthetic limbs.

Relevant citations:

a. Schoepp KR, Dawson MR, Schofield JS, Carey JP, & Hebert JS. Design and integration of an inexpensive wearable mechanotactile feedback system for myoelectric prostheses. *IEEE J Transl Eng Health Med*. 2018; 6(2018):2100711.
b. Schofield JS, Schoepp KR, Stobbe M, Marasco PD, & Hebert JS. Fabrication and application of an adjustable myoelectric transhumeral prosthetic socket. *Prost Orthot Int*. 2019; 43 (5): 564–567.
c. Hallworth BW, Austin JA, Williams HE, Rehani M, Shehata AW, & Hebert JS. A Modular Adjustable Transhumeral Prosthetic Socket for Evaluating Myoelectric Control. *IEEE J Transl Eng Health Med*. vol. 8, pp. 1-10, 2020, Art no. 0700210, doi: 10.1109/JTEHM.2020.3006416.
d. Hallworth BW, Shehata AW, Dawson MR, Sperle F, Connan M, Friedl W, Vodermayer B, Castellini C, Hebert JS, Pilarksi PM. A transradial modular adaptable platform for evaluating prosthetic feedback and control strategies. *Proc MEC '22* August 2022.

Robotic arm platform: We developed a robotic training and assessment platform including use and training protocols and facilitated the translation to end users. This robotic arm platform is used for investigations on myoelectric control training strategies (*Shehata et al., 2021*). It is routinely used for clinical training in our rehabilitation hospital and internationally (Prince of Wales Hospital, Australia). The robotic platform has been translated to collaborators at the German Aerospace Center (DLR, Germany) and is released open source through our development website (https://blincdev.ca).

Relevant citations:

e. Shehata AW, Williams HE, Hebert JS, Pilarski PM. (2021). Machine Learning for Electromyographic Signal-driven Control of Prosthetic Hands. IEEE Sig Proc Mag. 38: 46-53.
f. Dawson, M. R., Murgatroyd, G. S., Hebert, J. S., Pilarski, P. M. (2021). Myoelectric Control Training using a Flexible Physical and Virtual System. *ISPO World Congress*, November 2021. [Conference proceedings]
g. Williams H, Shehata AW, Dawson M, Scheme E, Hebert JS, Pilarski P. Recurrent Convolutional Neural Networks as an Approach to Position-Aware Myoelectric Prosthesis Control. IEEE Trans Biomed Eng. 2022 Jul;69(7):2243-2255. doi: 10.1109/TBME.2022.3140269. Epub 2022 Jun 17. PMID: 34986093.

D. Mentoring Contributions

I have developed a **comprehensive interdisciplinary training program for graduate students**. Since 2012, I have supervised over 40 post-doctoral fellows, graduate and undergraduate students from a variety of disciplines (biomedical, mechanical and mechatronics engineering, medicine, kinesiology, neuroscience and rehabilitation sciences). Due to the collaborative cross-disciplinary nature of my research, many of my trainees are from other faculties, and I often share co-senior authorship with a collaborating supervisor, and support more junior colleagues. My trainees have secured more than $750,000 in scholarships, including NSERC's *Postgraduate Doctoral Scholarship*, *Alexander Graham Bell Canada Graduate Scholarship-Master's*, Undergraduate Student Research Awards, *NSERC Science, Action! Award*, and a CIHR Postdoctoral Fellowship.

A unique feature of my lab is the focus on learning interdisciplinary research skills. In 2017 I received an Excellence in Leadership Award based on my lab leadership skills. In 2019, I received the Faculty of Medicine and Dentistry's *Tier I Clinical Science Award for Excellence in Mentoring*, in recognition of outstanding mentoring capabilities and commitment to providing the best possible learning

environment for students. I am now the Program Director (PI) for a $1.65 million 6-year Natural Sciences and Engineering Research Council of Canada (NSERC) Collaborative Research and Training Experience in Sensory-Motor Adaptive Rehabilitation Technologies (SMART), to establish an interdisciplinary training program for graduate students to better prepare them for careers in industry.

E. Other Contributions

I have established the Alberta Limb Osseointegration Program, one of the first Bone-Anchored Prostheses programs in Canada. I secured the funding and brought together a multi-disciplinary surgical and rehabilitation team to assist persons with amputation to undergo insertion of a titanium implant into the remaining bone with a percutaneous extension, allowing direct connection of the prosthesis to the bone. I have developed a comprehensive research program around this new procedure, including evaluation of functional outcomes, changes in mobility and gait, qualitative evaluation of changes in quality of life and health related conditions. This program will merge with my upper limb sensory motor program of research with my newly awarded CDMRP grant for transhumeral OI / TMR (*see active grant support*)

a. Hebert JS, Rehani M, Stiegelmar RS. Osseointegration for lower limb amputation: a systematic review of published outcomes. *JBJS Reviews*. 2017; 5(10):e10.

b. Ravari R, Rehani M, Hebert JS. Biomechanical Characteristics of Osseointegrated Transfemoral Prosthetic Gait: A Systematic Review. *Prost Orthot Int*. 2023. (Accepted January 18, 2023).

C. Ravari R, Lewicke J, Vette AH, Hebert JS. Differences in angular kinematics when using thigh, femoral, or medial knee markers in osseointegrated transfemoral prosthetic gait. *Clin Biomech* (short communication). 2023. Accepted.

F. Active Grant Support (current)

- Natural Sciences and Engineering Research Council (NSERC) Discovery Grant, *Improving human-robotic control using kinesthetic feedback*, 2019–2025, CAD 165,000
- Congressionally Directed Medical Research Programs (CDMRP) Orthotics and Prosthetics Outcomes Research Program (OPORP) Clinical Trial Award (CTRA), *The Functional Importance of Powered Wrist Flexion for Transradial Prosthetic Users*, 2019–2024, USD 121,784
- University Hospital Foundation Grant, *Tracking outcomes of lower limb osseointegration*, 2019–2025, CAD 1,000,000
- Glenrose Rehabilitation Hospital Foundation Grant, *Patient perspectives on the rehabilitation journey and the impact of receiving an osseointegrated prosthesis*, 2020–2025, CAD 80,000
- CDMRP Defense Medical Research and Development Program (DMRDP) Restoring Warfighters with Neuromusculoskeletal Injuries Research Award (RESTORE) – Research Level 2 Pilot Clinical Trial, *A Patient-Driven Augmented Reality-Based Rehabilitation System to Improve Upper Limb Amputee Outcomes*, 2020–2023, USD 395,637
- National Institute of Health (NIH) National Institute of Biomedical Imaging and Bioengineering (NIBIB) Research Project Cooperative Agreements (U01), *Sonomyographic Upper Limb Prosthetics: A New Paradigm*, 2020–2025, USD 80,004
- Peer Reviewed Orthopaedic Research Program (PRORP) Clinical Translational Research Award (CTRA), *An Innovative Approach for Non-Invasive Evaluation of Stability at the Implant-Bone Interface for Transfemoral Osseointegrated Implants*, 2021–2025, USD 1,159,616
- NSERC Collaborative Research and Training Experience (CREATE), 2021–2027, CAD 1,650,000
- Mitacs Accelerate, *Gaze and Movement Assessment in Virtual and Augmented Reality Environments*, 2022–2024, CAD 40,000
- CDMRP PRORP CTRA, *Optimizing Transhumeral Osseointegration Prosthesis Control*, 2023–2027, USD 1,499,950

CURRICULUM VITAE
S. Nizam Ahmed, M.B.B.S., F.R.C.P. (C)

Current Appointment: Professor
University of Alberta, Faculty of Medicine and Dentistry

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Edmonton, Alberta T6G 2G3
Phone: (780) 248 - 1803
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Citizenship: Canadian

Education and Training:

1986-1992 M.B.B.S, Dow Medical College, Karachi, Pakistan
1992-1993 Rotating Internship Surgery/Medicine, Civil Hospital, Karachi, Pakistan
1993-1994 Resident Internal Medicine, Lincoln Medical Center an affiliate of New York Medical College, USA
1994-1997 Resident in Neurology, Medical College Wisconsin, USA
1996-1997 Chief Resident in Neurology, Medical College of Wisconsin, USA
1997-1999 Fellowship in Epilepsy, Yale University School of Medicine, USA

Licensure and Certification:

1992-Present License, Pakistan Medical and Dental Council
1994-2006 License, State of Wisconsin, USA
1998-Present Diplomate, American Board of Psychiatry and Neurology with recertification in 2009
1999-2002 License, College of Physicians and Surgeons of Manitoba
2000-Present Diplomate American Board of Clinical Neurophysiology with recertification in 2011.
2001-Present Fellow of the Royal College of Physicians and Surgeons of Canada, Neurology
2002-Present License, College of Physicians and Surgeons of Alberta
2002-Present Certification in EEG Interpretation by the Canadian Society of Clinical Neurophysiology
2003-Present Licentiate of the Medical Council of Canada
2013-Present Diplomate in Epilepsy by the American Board of Psychiatry and Neurology

Academic Appointments:

1999-2002 Assistant Professor of Medicine, University of Manitoba, Canada
2002-2008 Assistant Professor of Medicine, University of Alberta, Edmonton, Canada
2006-2007 Visiting Professor, Department of Neuroscience, School of Medicine, St George's University, Grenada
2008-2016 Associate Professor of Medicine, University of Alberta, Edmonton, Canada
2016 – present Professor of Medicine, University of Alberta
2011-Present Visiting Faculty, Dow University of Health Sciences, Karachi, Pakistan

Hospital Appointments:

1999-2002 Attending Physician and Full-time Medical Staff, Winnipeg Regional Health Authority, Health Sciences Center, Winnipeg, Manitoba
2002-Present Attending Physician and Full-time Medical Staff, Alberta Health Services, University of Alberta Hospital, Edmonton, Canada
2002-2004 Director, Comprehensive Adult Epilepsy Program, University of Alberta Hospital, Edmonton, Canada
2004-Present Medical Director, Clinical Neurophysiology Laboratory, University of Alberta Hospital, Edmonton, Canada

Leaves:

February 12, 2014 – March 25, 2014 Medical Leave

Awards/Honors:

1989 Fourth standing in the Second Professional M.B.B.S Examinations with distinction in Pharmacology
1990 Gold Medalist (highest ranked student) in the Third Professional M.B.B.S Exams, Dow Medical College, Karachi, Pakistan
1992 Gold Medalist (highest ranked student) in the Final Professional M.B.B.S Exams, Dow Medical College, Karachi, Pakistan with distinctions in Ophthalmology, ENT and Surgery
1996 Annual Frances M. Forster Award: Wisconsin Neurological Society for the best resident paper, Milwaukee, USA
1997 National Epilepsy Fellow Travel Award to the American Epilepsy Society Annual Meeting, USA
1998 Ortho-McNeil Top Scholar Fellow Award, USA
2005 Neurology Teacher of the Year, Division of Neurology, University of Alberta, Canada
2006 REACH award (**R**ecognition of **E**xcellence and **A**chievement in **C**apital **H**ealth) in the category of Clinical Innovation (Telemedicine Program) Edmonton, Canada
2006 Nominated for Regional REACH Award

Awards/Honors (continued):

2008	A.B Baker Award by the American Academy of Neurology for excellence in Medical Education. Chicago, USA
2011	Travel Grant by the American Academy of Neurology for the Donald M. Palatucci Advocacy Leadership Forum (Advisor), San Diego USA.
2013	CLAE Epilepsy Fellowship in the amount of $60,000 awarded to my Clinical Fellow Dr. Maria Siddiqi
2014	Champion of Care, University Hospital Foundation. The Champions of Care Program recognizes and supports excellence in patient care at the University of Alberta Hospital, the Mazankowski Alberta Heart Institute and the Kaye Edmonton Clinic, Edmonton, Canada

Clinical Contributions:

Current Clinical Service (University of Alberta Hospital):

2020	Outpatient EEG Interpretations: One half days per week
2020	Outpatient and Inpatient Evoked Potentials (EPs): I am the only neurologist since my recruitment who routinely interprets all adult EPs at the University of Alberta Hospital from Monday to Friday. These include all urgent EPs requested from the Intensive Care Units for prognosis of functional recovery after anoxic brain injury
2020	Outpatient Epilepsy Clinic: 3 half days a week
2020	Outpatient Epilepsy Telemedicine Clinic: 1 half day a week. Through this clinic I provide service to patients across the province of Alberta, patients in Northern BC, Saskatchewan and Nunavut.
2020	In-Hospital Neurology General Service: 3 weeks
2020	In-Hospital Neurology Triage/Consult Service: 3 weeks
2020	In-Hospital Video EEG monitoring: 5 months

Clinical Innovations:

2005-Present	Established the First Full Time Epilepsy Telemedicine Program in Canada: Through a Clinical Research Grant from Capital Health Authority I conducted the first feasibility study in Canada on the use of telemedicine in Epilepsy Care. This work was published in a major medical journal in 2008, Epilepsia 49(4):573-85 and lead to an ongoing nursing support of the telemedicine program by the Alberta Health Services. This program provides service to more than 200 patients in a radius of more than 1000 km. There are three epilepsy specialists at the University of Alberta who routinely employ this service.

Clinical Innovation (continued):

2006-2008 Helped Establish the First Epilepsy Surgery Program In Pakistan: Pakistan is a third world country with a population of 182 million people and an estimated 1.8 million people with epilepsy. In collaboration with Aga Khan University in Pakistan I established a telemedicine program with Pakistan from 2006 to 2008. I provided advice and consultation for the medically refractory epilepsy patients, helped select surgical candidates and in 2008 with the help of an epilepsy surgeon from USA conducted 3 epilepsy surgeries in Pakistan. Our work was published in the CJNS 2009:36:582-586. This successful clinical initiative was recognized by the department of medicine by the Clinical Innovation Award.

2009-2014 Partnering Epilepsy Centers of America: Based on my experience with setting up an epilepsy surgery program in Pakistan and my experience with Telemedicine I was invited to join the education committee of the International League Against epilepsy (ILAE). One of the tasks at hand was to help provide epilepsy education in South America and the Caribbean. It was my suggestion to help foster one-on-one partnerships between established epilepsy programs in Canada and North America with centers in South America and Caribbean. This has been a very successful program and to date leading to 40 visiting Professorships and subsequent collaborations.

2010-Present Established the First Ambulatory EEG Program in the Edmonton Zone: Patients with suspected epilepsy who do not have an established diagnosis frequently visit emergency rooms and utilize acute health care beds. These patients may benefit from an inpatient video EEG monitoring, but unfortunately long wait times result in significant delay in establishing diagnosis. In collaboration with Alberta Health Services and Department of Medicine I started the Ambulatory EEG Program in 2010. This service has reduced the wait times for VEEG by 6 months and has served more than 200 patients since its inception.

Patient Advocacy:

2008-2009 Open Listing Status for Keppra: Levetiracetam (Keppra) is an important antiepileptic drug (AED) that has been available since 2002 but its use was very restricted and not available to patients unless they failed three other AEDs. Through my advocacy efforts with Alberta Blue Cross I was able to establish that this medication had significant benefits to patients who were at risk of drug interactions and liver dysfunction. Based on my single handed efforts with Alberta Blue Cross Keppra was granted an open listing status.

Professional Memberships and Administrative Activities:

Organizations:

1994-Present Member, American Academy of Neurology
2002-Present Member, American Epilepsy Society
2002-Present Member, Edmonton Epilepsy Association
2002-Present Member, Canadian League against Epilepsy

Institutional and Regional Committee/Board Memberships:

2002 – 2004 Director, Comprehensive Adult Epilepsy Program
2002-Present Neurology CME advisory committee
2004-2006 Mortality and Morbidity committee, Division of Neurology
2004-Present Medical Director, Clinical Neurophysiology laboratory at the University of Alberta Hospital, Edmonton, Canada
2005-2006 Division of Neurology, Clinical Practice committee
2011-Present Advisory Committee on Clinical Neurophysiology, College of Physicians and Surgeons of Alberta
2005-2010 Division of Neurology educational subcommittee

National/International Committee/Board Membership:

2014-Present Board of Directors, Canadian League against Epilepsy
2012-2014 President, Canadian League against Epilepsy
2011-2013 Advisor, Donald M Palatucci Advocacy Leadership Forum of the American Academy of Neurology
2011-2012 President Elect, Canadian League against Epilepsy
2008-2012 Director of Education, Canadian League against Epilepsy
2004-2012 Examination Board of the Canadian Society of Clinical Neurophysiology
2008-2010 Resident and Student Education Subcommittee of the American Epilepsy Society
2008-2012 Chair of the organizing and scientific committee for the biennial meetings of the Canadian League against Epilepsy
2006-2008 Chair, Telemedicine Taskforce of the Canadian League against Epilepsy
2010-2011 Chair, Canadian Neuroscience Federation Annual Epilepsy Course

Grant Reviews:

2008-2012 Chair, Canadian League against Epilepsy research awards
2010-2012 Chair, Canadian League Against Epilepsy fellowship award
2010-2011 External Reviewer for the New Investigator Establishment Grant Competition offered by Saskatchewan Health Research Foundation

Editorial Activities:

2002-Present As hoc reviewer: Journal of Clinical Neurophysiology, Canadian Medical Association Journal, Pakistan Journal of Neurological Sciences, Canadian Journal of Neurological Sciences, Epilepsia, Epilepsy Research and Treatment, CNS drugs, Diabetes Care, Adis Drug Evaluation

Teaching Innovations:

2011-Present YouTube Based Tutorials: Since 2011 I have created 40 YouTube based brief tutorials focusing on EEG, Epilepsy and General Neurology. These tutorials have been viewed from more than 160 countries with total views exceeding 365,000. There are more than 2200 active subscribers on my YouTube channel

2011-Present EEGucation: In collaboration with one of my summer students I have created a unique web-based interactive EEG learning application. This application is actively used by neurology residents, fellows, EEG technologists and research scientists from around the world. The application can be viewed at eeg.neurophysiology.ca

Teaching Contributions and Mentorship:

Graduate and PostGraduate Students

2006-2007 Moustafa Mourad, University of Alberta, BSc Honors in Bioinformatics Thesis Project, Co-Supervisor). "Predicting Brainstorms: Signal Processing of Electroencephalography Data". Current position: Surgeon in New York, USA.

2011-2016 Yue Lee, Masters Student (Electrical Engineering, co-supervisor). Fully automated segmentation of corpus callosum in midsaggital brain MRIs. Initial work published in IEEE conference proceedings 2013.

2011-2013 Jakub Limonowka, MSc completed in 2013 (Electrical Engineering, Collaborator). Automated computer-based application to detect high frequency oscillations in intracranial EEGs.

2013 – 2018 Huiquan Wang, PhD defended in 2018 (Computer Engineering, Co-supervisor). Research topic: Computer-aided detection of epileptogenic lesions in brain MRI using machine learning methods.

Neurology and Internal Medicine Residents (leading to a published manuscript):

2004-2006 Shazam Hussain, Neurology Resident, University of Alberta. Manuscript published in Pakistan Journal of Neurological Sciences and Canadian Journal of Neurological Sciences. Current position: Director Stroke Program, Cleveland Clinic Foundation.

2005-2007 Taim Muayqil, Neurology Resident. Manuscript published in Epileptic Disorders.

Current position: Consultant Neurologist King Saud University, Riyadh, Saudi Arabia.

2005 Michelle Shapiro, Neurology Resident. Poster presented at the Annual meeting of the American Epilepsy Society. Current position: Assistant Professor in Neurology at McMaster University.

2006 Mohammad Al Mansouri, Internal Medicine resident. Manuscripts published in CMAJ and Seizure. Current position: Consultant Cardiologist, University of Dammam, Saudi Arabia.

2007 James Scozzafava, Neurology Resident. Images in Medicine published in New England Journal of Medicine. Current position: Neurologist in private practice.

2008 Yaser Alladin. Resident in Neurology. Manuscripts published in Neurology. Current Position: Consultant Neurologist in Saudi Arabia

2009 Glen Jickling, Neurology resident. Manuscipt published in Epileptic Disorders.

Current position: Assistant Professor of Neurology at UC Davis, USA.

2009 Dulka Manawadu, Fellow in Neurology. Manuscript published in Canadian Medical Association Journal. Current Position: Stroke and General Medicine Consultant. Kings College Hospital, United Kingdom.

Epilepsy and EEG Fellows (I was the primary fellowship supervisor):

2003-2004 Sadiq Ijaz, Epilepsy Fellow. Poster Presentation at the Canadian Congress of Neurological Sciences. Current position: Neurologist in private practice in Regina.

2006 Yahya Mousali, Current position: Consultant Neurologist, National Guards Hospital, Jeddah, Saudi Arabia

2007-2008 Nail Al Azwary, Manuscript published in the Journal of Neurosurgery. Current Position: Consultant Neurologist, Security Forces Hospital, Riyadh, Saudi Arabia.

2009-2010 Mashael Alkahtani, Current position: Consultant Neurologist, Security Forces Hospital, Riyadh, Saudi Arabia.

2011-2014 Maria Siddiqi, Dr Siddqi was the recipient of the ILAE travel award, the CLAE Fellowship award and the ACNS travel award for the research on the utility of ambulatory EEG. Current position: In transition to private practice.

Summer Students:

2007 Abhaya Prasad, Undergraduate Student, Funded by Alberta Health Services STEP Program. Summer Research Project: Collection of normative data for Visual Evoked Potentials. Current position: Clinical Quality Metrics Consultant at Alberta Health Services.

2010 Simon Cristal, Electrical Engineering Student, Funded by Alberta Health Services STEP Program. He conducted a research project on Digital EEG Signal processing.

2011 Brian Thai, Summer Student funded by Alberta Health Services STEP Program. Together we developed an interactive EEG Teaching application. Current position: Front End Web Developer at Excel with Business, London, UK

International Medical Graduates (Observerships in clinics, wards, EEG laboratory, research projects and one-on-one mentoring):

2002 Dr Khalida Tariq. She is in private practice as a family physician.

2005 Dr Amir Ilyas. He is a clinical faculty at University of British Columbia in Prince George, Canada

2006 Asifa Riaz, Family Medicine Resident. Manuscript published in the New Zealand Medical Journal. Current position: Private practice in Edmonton Alberta.

2007 Quadri Syed. Research Officer at Aga Khan University, Karachi, Pakistan

Dr Sana Ishaq

Atif Zafar. Resident in Neurology at University of Iowa, USA

2010 Dr Suqlain Khan

Omer Naeem, currently Research fellow at McMaster University, Canada

2014 Dr Ehsanullah

2015 Dr Samina Hossein

Dr Zahra Hasanabad

International Mentorship (Assigned by the American Academy of Neurology):

2011 Dr Abdullahi Ibraheem. Nigeria

Dr Thomas Swanson, Montana, USA

Dr Aunali Khaku, Florida, USA

2013 Dr Arasho Belachew Degefe, Addis Abbaba, Ethiopia

Dr Mambakkam Sivakumar, Chenai, India

Dr Mahi Jasinarachchi, Victoria, Australia

Classroom Instructions

2002-2006 MED 546

2004–Present DMED 524/ DDS 507 Neuroscience Block,

Residents and PGME Instructions

2002 Evaluating Epilepsy Patients in the Emergency Room. Neurology Residents teaching half day. University of Alberta Hospital, Edmonton, Canada

2006 "Neurological Examination Skills". Internal Medicine Residents Teaching Half Day.

2008 "Therapy for Seizures – A Case Based Approach". Internal Medicine Academic Half Day. University of Alberta.

2009 "Seizures and Epilepsy". University of Alberta, Internal Medicine Academic Half day.

2011 "Practical Issues in Using Antiepileptic Drugs". Neurology Residents Academic Half Day.

2015 "Managing patients with PNES". Neurology Residents Academic Half Day.

CME Instructions

2002 Annual Neurology Update: "Visual Analysis of Seizures", Division of Neurology.

2002 Vascular Days: "Transient Neurological Deficits", Division of Neurology.

2003 Vascular days: "Transient Neurological Deficits", Division of Neurology

2003 Workshop on "Neurological Examination Skills". Annual Neurology Update, Telus Center, University of Alberta

CME Instructions (Continued):

2003 "Outcomes after Frontal Lobe Epilepsy Surgery". Neuroscience Grand Rounds, Division of Neurology, Edmonton, Canada

2003 Annual Neurology Update: "Screening Neurological Examination", Division of Neurology

2004 Annual Neurology Update: "Selecting Antiepileptic Drugs", Division of Neurology. Co-course Director

2004 Annual Neurology Update: Workshop, "Different Faces of Epilepsy", Division of Neurology. Co Course Director, Edmonton, Canada Sept. 11, 2004

2004 "Cognitive Changes Associated with Epilepsy and its Treatment". Psychiatry Rounds at Royal Alexandra Hospital. November 1, 2004. Edmonton, Canada

2005 Annual Neurology Update: "Managing women with epilepsy", Division of Neurology.

Role: Course Director of this CME program.

2005 Annual Neurology Update: Workshop, "Screening Neurological Examination", Division of Neurology.

2005 Vascular Days: Workshop, " Examination of Vertigo and Facial Weakness – Is it central or peripheral? Division of Neurology.

2005 11th Annual Internal Medicine for Primary care Physicians: Workshop, "Neurological Examination". Department of Medicine.

2006 Annual Neurology Update: Workshop, Epilepsy. Division of Neurology. Role: Director of this CME program.

2006 "Evidence Based Approach to Seizures and Epilepsy". 5th Annual Therapeutics Update: Kelowna British Columbia, August 5, 2006

2006 "Screening Neurological Examination". University of Alberta, Family Medicine CME Program. January 18, 2006

2007 Department of Family Medicine CPL Program: "Classification of Seizures through Video-EEG Monitoring".

2008 Annual Neurology Update: Workshop, "Screening Neurological examination", Division of Neurology. Role: Course Director of this CME program.

CME Instructions (Continued):

2008 Regional Conference Queen Elizabeth II Hospital Grand Praire: "New Drugs for Epilepsy". Department of Family Medicine.

2008 "Classification of Seizures through Video Monitoring". Family Medicine CME Event, University of Alberta

2009 Neurology Update for Primary Care Providers: "Borderlands of Seizures and Syncope", Division of Neurology. I was the Course Director of this CME program.

2010 University of Alberta Video Conference Program: "Visual Analysis of Seizures".

Provincial and National Examinations

2004-2012	Invited Examiner at the Canadian National EEG Examination
2006-Present	Invited Examiner at the Alberta International Medical Graduates Examination
2008-Present	Invited Examiner at the Medical Council of Canada OSCE Examinations

Research Grants:

2002-2005 Title: "Cost of Epilepsy Management at a Tertiary Care Epilepsy Center"
Role: Principal Investigator
Agency: Medical Services Delivery Innovative Fund, Edmonton, Canada
Total Budget: CAN$: 204,412

2004-2006 Title: "Feasibility of Telemedicine in Conducting Epilepsy Follow up".
Role: Principal Investigator
Agency: Capital Health Regional Telemedicine Program, Edmonton, Canada
Total Budget: CAN$: 9,400

2006-2008 Title: "Telemedicine in Epilepsy Care"
Role: Principal Investigator
Agency: Capital Health Regional Telemedicine Program, Edmonton, Canada
Total Budget: CAN$: 94,000

2008-2010 Title: "Out-patient EEG-Telemetry monitoring in the diagnosis of epilepsy"
Role: Principal Investigator
Agency: Jointly funded by Capital Health and Department of Medicine, Innovation Committee, University of Alberta, Canada
Total Budget: CAN$: 137,000

Research Grants (Continued):

2012- 2014 Title: "Use of Web-Based application EEGucation in teaching electroencephalography"
Role: Principal Investigator
Agency: Department of Medicine, University of Alberta, Canada
Total Budget: CAN$: 5,000

Clinical Trials:

Title: "Double-blind Randomized Trial of Cognitive Effects of Lamotrigine versus Topiramate in Epilepsy"
Role: Principal site investigator
Agency: GlaxoSmithKline group

Title: "Pregabalin Open-Label Add-On Trial: An Open-Label, Multicenter Follow-On Study to Determine Long-Term Safety and Efficacy in Patients with Partial Seizures"
Role: Principal site investigator
Agency: Warner-Lambert Company

Title: "Pregabalin BID Add-On Trial: A Randomized, Double-Blind, Parallel-Group, Placebo- and Lamotigine-Controlled, Multicenter Study in Patients with Partial Seizures"
Role: Principal site investigator
Agency: Warner-Lambert Company

Title: "METTLE Study. A multinational Study Investigating the deep brain stimulation as a treatment for epilepsy"
Role: Principal site investigator
Agency: Hotchkiss Brain Institute

Publications:

Peer-Reviewed Original Research (trainees directly supervised by me are underlined):

1. **Ahmed, S.N**, Spencer S.S. An approach to evaluating patients for seizures and epilepsy. (Review article). Wisconsin Medical Journal 2004. Volume 103, No. 1. 49-55.

2. Sinclair DB, Aronyk K, Snyder T, McKean JD, Wheatley M, Gross D, Bastos A, **Ahmed S.N**, Hao, C and Colmers W. Extratemporal resection for childhood epilepsy. Pediatric Neurology. Volume 30, Issue 3, March 2004, 177-185.

Publications (Continued):

3. Siddiqi ZA, Holt A, **Ahmed SN**. Effects of plasma exchange on Carbamazepine levels in a patient with Myasthenia Gravis and Epilepsy. Epilepsia, 46(11): 1841-1842, 2005

4. **Ahmed SN**, Rashid Y. Anticraving effects of Topiramate in a diabetic patient (case report). Diabetes Care 28:1837-8, 2005

5. Sinclair DB, Wheatley M, Snyder T, Gross D and **Ahmed N**. Posterior resection for childhood epilepsy. Pediatr Neurol 2005; 32:257-263.

6. **Ahmed SN,** Quigley D, Siddiqi Z. Smoking Cessation a Byproduct of EEG Telemetry Monitoring. Epilepsia, 46(4): 597-598, 2005

7. Bonnett M, Mulcare J, Mathews T, Gupta S, **Ahmed N**, Yeragani V. Heart Rate and QT Variability in Multiple Sclerosis: Evidence for decreased sympathetic activity. Journal of Neurological Sciences [Turkish] 23(4)#9;248-256, 2006

8. Hussain M.S and **Ahmed SN**. Epilepsy and Crohn's Disease. Pakistan Journal of Neurological Sciences. 2006;1(3):132-5.

9. Scozzafava J, Hussain MS, **Ahmed SN** and Khan K. Recurrent strokes in a 46-year-old woman: rapidly progressive nonbacterial thrombotic endocarditis. CMAJ 2006 175 (9): p. 1055-1056

10. Block H, Scozzafava J , **Ahmed SN**, Kalra S. Uncontrollable Movements in a Patient with Diabetes Mellitus. CMAJ 2006 175 (8): p. 871-872

11. Al-Mansori M, Ijaz, M and **Ahmed SN**. Cerebral Arrhythmia Influencing Cardiac Rhythm: A Case of Ictal Bradycardia. Seizure (2006) 15, 459-461.

12. **Ahmed SN** and Siddiqi ZA. Antiepileptic drugs and liver disease (Review Article). Seizure, 2006 15, 156-164

13. **Ahmed SN**, Riaz A, Shuaib A and Siddiqi Z. Foville's syndrome masquerading as Wernicke's encephalopathy (case report and discussion). New Zealand Med J. April 21 2006, Vol 119 No 1232. Pages 90-95.

14. **Ahmed SN**, Unterman J, McCloskey B and Sinclair DB. Clinical significance of photic stimulation during routine EEG's of adult patients. American Journal of Electroneurodiagnostic Technologists 2006:46:356-362.

15. Sinclair D. B**,** Jurasek L, Wheatley M, Datta A, Gross D, **Ahmed N**, Quigley D, Snyder T, Aronyk K, and McKean J. Discontinuation of antiepileptic drugs after pediatric epilepsy surgery (2007). Pediatr Neurol, 37(3): 200-2.

16. Muayqil T, Rowe B and **Ahmed SN**. Treatment Adherence & Outcomes in The Management Of Convulsive Status Epilepticus In The Emergency Room. Epileptic Disorders. March 2007. Vol. 9:1;43-50.

17. Al Mansori M and **Ahmed SN**. CT Findings in Methanol Intoxication.(Clinical Vistas). Canadian Medical Association Journal (Clinical Vistas) CMAJ 2007 176 (5): p. 620.

18. **Ahmed SN,** Scozzafava J**.** Meningioma. Illustrations in Clinical Medicine. New England Journal of Medicine 356;16. April 2007.

19. Siddiqi ZA, Nasir A and **Ahmed SN**. The Fourth Dorsal Interosseus Pedis Muscle: A Useful Muscle in Routine Electromyography. Journal of Clinical Neurophysiology. 2007:24(6), 444-449.

20. Aladdin Y, Siddiqi ZA, Khan K and **Ahmed SN**. Hypoglossal Vertebral entrapment syndrome (Neuroimages). Neurology 2008 Aug 5;71(6):461

21. ALAzwary N, Muayqil T, Siddiqi ZA and **Ahmed SN.** Oculogyric Crisis Masquerading as VP Shunt dysfunction. Journal Of Neurosurgery:109; 944-945, November 2008

22. Almansori M, Naik S and **Ahmed SN**. Magnetic Susceptibility in Patient with a Metallic Heart Valve. PJNS. Vol. 3(1) Jan. – Mar. 2008.

23. Aladdin Y, Snyder TJ, **Ahmed SN**. Pearls & Oy-sters: selective postictal aphasia:cerebral language organization in bilingual patients. Neurology. 2008 Aug 12;71(7)

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31. Datta AN, Snyder TJ, Wheatley BM, Jurasek L, **Ahmed SN**, Gross DW and Sinclair DB. Intelligence Quotient is not affected by epilepsy surgery in childhood. Pediatric Neurology 2011;44(2): 117-121

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33. Tahir MZ, Sobani ZA, Quadri SA, **Ahmed SN**, Sheerani M , Siddiqui F, Boling W, and Enam SA. Establishment of a Comprehensive Epilepsy Center in Pakistan: Initial Experiences, Results, and Reflections. Epilepsy Research and Treatment Volume 2012 (2012), Article ID 547382, 6 pages

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Invited Reviews and Editorials:

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2. Schellenberg KL and **Ahmed SN**. Seizure Disorders (Review Article). Parkhurst Exchange, July 2006
3. **Ahmed S. N**. First Western Canadian Epilepsy Telemedicine Clinic. LUMINA – Quarterly Newsletter of Epilepsy Canada. 2006.
4. **Ahmed SN.** Seizures and Epilepsy: An Evidence Based Approach (Review Article). The Canadian Journal of Diagnosis. January 2007.

Letters to the Editor:

1. **Ahmed SN**. Medical Council of Canada Evaluating Examination and the International Medical Graduate. (Letter). CMAJ; Nov. 2003;169:1146.
2. **Ahmed SN**. Hyperventilation and Epileptic Seizures (Letter). Epilepsia 2004; 45:12. 1651.
3. **Ahmed SN**. Epileptic Seizures and Epilepsy (letter). Epilepsia, 46(10):1-1, 2005
4. **Ahmed SN,** Siddiqi ZA, Khan KA. Side effects of Phenobarbital and Carbamazepine in Childhood Epilepsy. Rapid response section. BMJ 2007;334:1207
5. **Ahmed SN**. Antiepileptic drugs and warfarin. CMAJ. Jan. 1, 2008:178(1) page 65
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Book Chapters:

Ahmed, S. N. EEG in Other Neurological Disorders. (2010) In: Practical Guide on Electrodiagnosis. G. Akyuz and D. Turkdogan (eds). Gunes Publishing Co. Ltd, Ankara, Turkey).

Web-Based Teaching Tutorials on YouTube:

2011 Wallenburg Syndrome: Posted on YouTube. Viewed 20,719 times.

2011 Stage I Sleep: Posted on YouTube. Viewed 2784 times.

2011 EEG Tutorial: Posted on YouTube. Viewed 29,717 times.

2011 EEG Localization: Posted on YouTube. Viewed 9456 times.

Web-Based Teaching Tutorials on YouTube (Continued):

2011 EEG 101: Posted on YouTube. Viewed 53,321 times.

2011 Medial Medullary Syndrome: Posted on YouTube. Viewed 7488 times.

2011 Weber Syndrome: Posted on YouTube. Viewed 8473 times.

2011 Triphasic Waves: Posted on YouTube. Viewed 4573 times.

2011 Temporal Lobe Seizures VS. Absence Seizures: Posted on YouTube. Viewed 4595 times.

2011 Stage II Sleep: Posted on YouTube. Viewed 3102 times.

2011 Temporal Lobe Seizures: Posted on YouTube. Viewed 7340 times.

2011 Anterior Inferior Cerebellar Artery Syndrome: Posted on YouTube. 1740 views.

2011 EEG: Posted on YouTube. 7430 views.

2011 Alpha Coma: Posted on YouTube. 2579 views.

2011 The International 10-20 System: Posted on YouTube. 12,196 views.

2012 EEG in Frontal Lobe Epilepsy: Posted on YouTube. 23,353 views.

2012 Burst Suppression: Posted on YouTube. 7941 views.

2012 Motor Pathway: Posted on YouTube. 3935 views.

2012 EEG Artifacts: Posted on YouTube. 6738 views.

2012 Focal EEG Abnormalities 1: Posted on YouTube. 13,681 views.

2012 Focal EEG abnormalities 2: Posted on YouTube. 3781 views.

2012 Subclavian Steal Syndrome: Posted on YouTube. 40,947 views.

2012 Sampling rate of an EEG: Posted on YouTube. 1465 views.

2012 BIPLEDS: Posted on YouTube. 2917 views.

2012 Extraocular movements: Posted on YouTube. 2609 views.

2012 Lennox-Gastaut Syndrome: Posted on YouTube. 4010 views.

Web-Based Teaching Tutorials on YouTube (Continued):

2012 EEG in Epilepsy: Posted on YouTube. 8676 views.

2013 Benign EEG Variants: Posted on YouTube. 1919 views.

2013 EEG and Epilepsy quiz: Posted on YouTube. 2954 views.

2013 Code Blue: Posted on YouTube. 697 views.

2013 Mu Rhythm: Posted on YouTube. 1846 views.

2013 EEG OSCE: Posted on YouTube. 1180 views.

2013 Intracranial Depth Electrode Recording: Posted on YouTube. 878 views.

2013 Generalized EEG abnormalities: Posted on YouTube. 3362 views.

2014 Episodic amnesia: Posted on YouTube. 958 views.

2014 Status Epilepticus: Posted on YouTube. 518 views.

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Abstracts:

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2.) **Ahmed, S.N.,** Testa, F., Novotny, E.J., Levy, S. Usefulness of Inpatient Video EEG Monitor recording in Pervasive Developmental Disorder (abstract). Epilepsia. 39 Supplement 6:156, 1998. Presented at the Annual Meeting of the American Epilepsy Society.

3.) **Ahmed, S.N,** Ebersole, J.E. Correlation between scalp and intracranial electroencephalographic recordings in patients with non-mesial temporal epilepsy.(Abstract). Journal of Clinical Neurophysiology. 17(5):523, September 2000. Presented at the Annual Meeting of the American Society of Clinical Neurophysiology.

4.) Sinclair B, Snyder T, Berg M, Gross D, **Ahmed SN**, et al. Corticosteroid treatment in Landau-Kleffner syndrome (abstract). American Epilepsy Society Meeting, 2002. Seattle, Washington.

Abstracts (Continued):

5.) Gross DW, Ashworth N, Quigley D. **Ahmed SN**. Prevalence of and reasons for marijuana use in patients with epilepsy. The Canadian Journal of Neurological Sciences (Abstract). 2003; 30, Supplement 2. Presented at the Annual Meeting of Canadian Congress of Neurological Sciences.

6.) Gross DW, Hoskinson M, MacGuire C, **Ahmed SN**, Quigley D. Subtraction ictal SPECT coregistered onto MRI (SISCOM) provides clinically important information in epilepsy patients being investigated as candidates for surgery. The Canadian Journal of Neurological Sciences (Abstract). 2003 ; 30, Suppl.2 – S50.

7.) **Ahmed SN**, Quigley D, Siddiqi ZA. Cessation of smoking a byproduct of EEG telemetry monitoring. The Canadian Journal of Neurological Sciences (Abstract). 2003 ; 30, Suppl.2 – S 50. Presented at the 38th annual meeting of the Canadian Congress of Neurological Sciences, Quebec City, Canada.

8.) Siddiqi ZA, **Ahmed SN**. Isolated bilateral phrenic neuropathies – a rare presentation of neuralgic amyotrophy (Abstract). 2003; 30, Suppl. 2 – S70.

9.) **Ahmed SN**, et al. Topiramate is better tolerated than carbamazepine and phenytoin in a subset of patients. Presented at the Annual Meeting of the American Epilepsy Society, December 5-10, 2003. Boston, USA.

10.) **Ahmed SN**, Unterman J. et al. The role of routine photic stimulation in the EEGs of adult patients (abstract). Canadian Journal of Neurological Sciences. Suppl. 1 – S45. Volume 31, May 2004.

11.) Hussain MS, **Ahmed SN**. Epilepsy and Crohn's disease: searching for a genetic link (abstract). Canadian Journal of Neurological Sciences. Suppl. 1 – S49. Volume 31, May 2004.

12.) Ijaz M, **Ahmed SN**. Asymptomatic Ictal bradycardia (abstract). Canadian Journal of Neurological Sciences. Suppl. 1 – S49. Volume 31, May 2004

13.) Soderstrom J, Gross DW, **Ahmed SN**. Assessment of educational program for women with epilepsy (abs). Canadian Journal of Neurological Sciences. Suppl. 1– S54. Vol 31, May 2004.

14.) Sankar T, Wheatley BM, Gross DW, **Ahmed SN**. A comparison of sevoflurane and methohexital for activation of epileptiform activity during intraoperative electrocorticography (EcoG) during epilepsy surgery (abstract). Canadian Journal of Neurological Sciences. Suppl. 1 – S22. Volume 31, May 2004.

Abstracts (Continued):

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16.) **Ahmed SN,** Heck K, Soderstrom J, Lari H and Rowe B. The Direct Cost of Epilepsy at a tertiary care Canadian Hospital. The Canadian Journal of Neurological Sciences 2005: 32 (Suppl. 1), S36.

17.) Muaygil T and **Ahmed SN**. Management of Status Epilepticus in a tertiary care emergency room. The Canadian Journal of Neurological Sciences 2005:32(Suppl. 1) S14.

18.) Siddiqi Z, Holt A and **Ahmed SN**. Myasthenia Gravis and Epilepsy: effect of plasma exchange on carbamazepine levels. The Canadian Journal of Neurological Sciences 2005: 32 (Suppl. 1), S 40.

19.) Siddiqi Z, Sawa M and **Ahmed SN**. Cervical syrinx presenting with acute and episodic symptoms resembling transient ischemic attacks. The Canadian Journal of Neurological Sciences 2005: 32 (Suppl. 1), S 62.

20.) Jurasek LL, Sinclair DB, Berg M, Gross D, **Ahmed SN**, Quigley D, Snyder T and Wheatley BM. Discontinuation of Antiepileptic Drugs Following Pediatric Epilepsy Surgery. Epilepsia, Vol. 46, Suppl. 8, 2005

21.) Shapiro MJ, Sinclair DB and **Ahmed SN**. Clinical Significance of Photic Stimulation During Routine Electroencephalographs in Pediatric Patients. Epilepsia, Vol. 46, Suppl. 8, 2005

22.) Snyder TJ, Sinclair DB, Wheatley BM, Aronyk K, McKean J, **Ahmed SN** and Gross D. Developmental Changes in Verbal Memory and Strategic Organization after Epilepsy Surgery in Childhood: A Longitudinal Study. Epilepsia, Vol. 46, Suppl. 8, 2005

23.) Quigley D, **Ahmed SN**, Hoskinson M, Murland K and Gross DW. Timing of Ictal Single Photon Emission Computed Tomography Injection with Pre-Loaded Radioisotope is Comparable to Injections Performed with a Nurse at the Bedside. Epilepsia, Vol. 46, Suppl. 8, 2005

24.) Scozzafava J, Jickling G, Hussain M, **Ahmed S**, Saqqur M, Jeerakathil T and Khan K. Nonbacterial thrombotic endocarditis in stroke. The Canadian Journal of Neurological Sciences 2006. Volume 33 Suppl.1 - S82

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Abstracts (Continued):

26.) Datta A, Wheatley BM, Snyder T, **Ahmed SN**, Gross D, and Sinclair DB. Outcome of Selective Amygdalohippocampectomy in Children Versus Adults: Surgical Experience at the University of Alberta. Annual Meeting of American Epilepsy Society, San Diego. December 2006.

27.) Jurasek L, Quigley D, Sinclair DB, **Ahmed SN** and Gross D. Development and Implementation of a Nurse-Led Pediatric to Adult Epilepsy transition Clinic. Annual Meeting of American Epilepsy Society, San Diego. December 2006.

28.) Snyder TJ, Sinclair DB, Wheatley BM, **Ahmed SN** et al. Parent-Rated Deficits of Executive Function in Children and Adolescents with Epilepsy. Annual Meeting of American Epilepsy Society, San Diego. December 2006.

29.) Siddiqi ZA, Nasir A and **Ahmed SN.** The Fourth Dorsal Interosseus Pedis Muscle: An unchartered territory in electromyography. 53rd Annual Meeting of AANEM. October 11-14, 2006. Washington DC.

30.) Johnson ES, Wheatley BM and **Ahmed SN.** Medically refractory seizures caused by Epidermoid cyst of the temporal lobe. Presented at the annual meeting of the Canadian Association of Neuropathologists, September 10 – 15, 2006. San Francesco California, USA.

31.) Datta A, Sinclair D, Wheatley M, Gross D and **Ahmed SN**. Selective Amygdalohippocampectomy in children versus adults: experience at the University of Alberta. (Abstract). The Canadian Journal of Neurological Sciences. Volume 34 (Supplement 2) May 2007

32.) Aladdin Y, Snyder TJ and **Ahmed SN**. Selective Postictal Aphasia in Bilinguals: Two Cases with Implications for Cerebral Language Organization. Annual Meeting of the Canadian League Against Epilepsy, October 2007, Vancouver British Columbia.

33.) Snyder TJ, Sinclair DB, Wheatley BM, Aronyk K, Edgerton J, **Ahmed SN**, Gross D, McKean J. Developmental Changes in Strategies for Learning Words and a Complex Figure in Children and Adolescents with Focal Epilepsy and Other Disorders. 61st Annual Meeting of American Epilepsy Society. 2007. Philadelphia, USA

34.) Quigley D, Jurasek L, Sinclair DB, **Ahmed SN**, Gross DW. Development of an Educational/Resource Binder for Adolescents with Epilepsy Transitioning from Pediatric to Adult Care. 61st Annual Meeting of American Epilepsy Society. 2007. Philadelphia, USA

35.) Datta A, Snyder T, **Ahmed SN**, Gross D, Jurasek L, Quigley D, Wheatley M, Sinclair B. IQ is not affected by Epilepsy Surgery in Childhood. 61st Annual Meeting of AES. 2007. Phil., USA

Abstracts (Continued):

36.) Heino A, Mann C, Quigley D, Gross D and **Ahmed SN**. A Nurse-Led Orientation Clinic for Adults newly referred to an Epilepsy Program – A pilot Study. (Poster presentation). 62^{t} Annual Meeting of American Epilepsy Society. 2008. Seattle, USA

37.) **Ahmed SN**, Mann C, Siddiqui F, Sheerani M, Syed NA, Enam A, Boling W and Snyder T. Experiences from an International Tele-Epilepsy Collaboration. 62 Annual Meeting of American Epilepsy Society. 2008. Seattle, USA

38.) Zafar A, Quadri SA, Siddiqui F, Sheerani M, Enam SA, **Ahmed SN**. Prevalence of Temporal Lobe Epilepsy and Mesial Temporal Sclerosis in a tertiary care hospital in Pakistan. Canadian Journal of Neurological Sciences, 2009. Suppl. 1-S66.

39.) Wheatley MB, Gross D, Sinclair BD and **Ahmed SN**. Safety and efficacy of depth electrode recording (SEEG) in epilepsy surgery: a five year review. Canadian Journal of Neurological Sciences, 2010.Suppl. 1 1-S3

40.) Jirsch J, **Ahmed SN**, Gross D. The diagnosis of non-epileptic seizures on EEG Telemetry reduces acute health care utilization. Sixty fourth Annual Meeting of American Epilepsy Society. 2010. San Antonio, USA.

41.) Davies M, Sandhu J, Starky M, Ahmed SN, Jirsch J, Snyder T and Gross D. Screening for depression in a tertiary adult epilepsy clinic using the neurological disorders depression inventory for epilepsy. Sixty fourth Annual Meeting of American Epilepsy Society. 2010. San Antonio, USA.

42.) McCombe J, Davies M, Rieckmann J, Starky M, Jirsch J, **Ahmed SN** and Gross D. Depression screening in a tertiary care epilepsy clinic. Sixty fifth Annual Meeting of the American Epilepsy Society. 2011. Baltimore, USA.

43.) Wiebe S, Kiss Z, **Ahmed SN** et al. Medical VS Electrical Therapy for Mesial Temporal Lobe Epilepsy: A Multicenter Randomized Trial. Sixty sixth Annual Meeting of the American Epilepsy Society. 2012. San Diego, USA.

44.) Mortada A, Jirsch J, **Ahmed SN** and Gross D. Clinical Yield of Routine EEG in Adult Patients. Sixty sixth Annual Meeting of the American Epilepsy Society. 2012. San Diego, USA.

45.) Snyder TJ, Wong C, **Ahmed SN** et al. Attention in People with Epilepsy: Factor Structure of the Conner's CPT. Sixty sixth Annual Meeting of the American Epilepsy Society. 2012. San Diego, USA.

Abstracts (Continued):

46.) Nowacki T, Gross D, Wheatley B, **Ahmed SN** and Jirsch J. The Location of Fast Ripples is Stationary as Focal Seizures Evolve. Presented at the European Congress of Epilepsy, September 2012.

47.) Siddiqi M, Jirsch J and **Ahmed SN**. Epilepsy and Autoimmunity. Presented at the Biennial Meeting of the Canadian League Against Epilepsy in Calgary, October 2012.

48.) Siddiqi M, Jirsch J and **Ahmed SN**. Yield of Ambulatory EEG: Not Beyond 13 Hours. Presented at the Annual Meeting of the American Clinical Neurophysiology Society, Atlanta Georgia, Feb. 2014.

Invited International Scientific Presentations:

2005 Workshop on Electroencephalography and Epilepsy. Aga Khan University, Pakistan. July 30, 2005

2005 "Presurgical Evaluation for Epilepsy". Neuroscience Rounds, Aga Khan University, Pakistan. July 29, 2005

2008 "Treatment Options for Women with Epilepsy". Epilepsy Mini Fellowship, Karachi Pakistan. July 12, 2008

2009 "Womens Issues in Epilepsy". The 17th Saudi Neuroscience Symposium, Madinah, Saudi Arabia

2009 "Evidence Based Management of Epilepsy". The 17th Saudi Neuroscience Symposium, Madinah, Saudi Arabia

2009 "Anatomy of a Juicy Spike". The 17th Saudi Neuroscience Symposium, Madinah, Saudi Arabia

2010 "Surgical Evaluation of Epilepsy". Epilepsy Symposium at Aga Khan University, Karachi Pakistan.

2013 "Telemedicine for Epilepsy care". Medicine Grand Rounds at King Fahd Specialist Hospital in Dammam, Saudi Arabia.

2013 "The Concept of Mesial temporal Lobe Epilepsy". 7th Annual Eastern Province Epilepsy Symposium, Dammam Saudi Arabia. I was the moderator and speaker.

Invited International Scientific Presentations (Continued):

2013 "Epileptic Seizures or not: does video provide the final answer?", 30th International Epilepsy Congress, Montreal, Canada.

2013 "Investigating and counseling the first unprovoked adult seizure – what is too little and too much?", 30th International Epilepsy Congress, Montreal, Canada.

2015 "Management of Psychogenic Non-Epileptic Seizures". Annual Meeting of the American Academy of Neurology. Washington DC, USA

Invited National Scientific Presentations:

2007 "Anatomy of a Juicy Spike": Presented at the Annual Meeting of the Canadian Association of Electroneurodiagnostic Technologists, Edmonton Alberta. June 20, 2007

2008 "Whats New in Epilepsy". Annual Meeting of the Canadian Neurological Science Federation. June 20, 2008

2009 "New Antiepileptic Drugs in the Pipeline": Biennial Meeting of the Canadian League Against Epilepsy, Saskatoon, Canada (Speaker and Moderator).

2011 "Telemedicine in Epilepsy Care – A Global Health Initiative": 46th Annual Congress of the Canadian Neurological Sciences Federation, Vancouver, Canada.

2012 "Presidential Lecture – Epilepsy and Unemployment": Biennial Meeting of the Canadian League against Epilepsy, Calgary, Alberta.

2014 "Telehealth Services in Epilepsy Management": 2nd BC Epilepsy Symposium, Vancouver, Canada.

Invited Local/Regional and CME Presentations

2007 "Telemedicine in Epilepsy Care". Alberta Telehealth Clinical Forum 2007 – 'Advancing the Vision'. June 1, 2007.

2007 "Demystifying the Brain Waves". The Canadian medical hall of Fame/Pfizer Canada Discovery day in Health Sciences. Edmonton, Canada April 18, 2007

2008 "Treatment Options for Epilepsy". Patient Education Forum by Aga Khan University, Karachi Pakistan. July 11, 2008.

2013 "Smart Use of Antiepileptic Drugs". Edmonton Epilepsy Association Education Day.

Invited Local/Regional and CME Presentations

2015 "What Would be a Good Death?" Panelist at the National Ethics Week with discussions around euthanasia for terminally ill patients. March 8, 2015. Anglical Parish of Christ Church, Edmonton, Canada

BIOGRAPHICAL SKETCH
(maximum 5 pages)

NAME: Patricia Dolez

POSITION TITLE: Associate Professor

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include doctoral, postdoctoral, and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	COMPLETION DATE MM/YYYY	FIELD OF STUDY
Institut national polytechnique de Grenoble, France	Bachelor's	07/1993	Electrochemistry and Electrometallurgy Engineering
Université de Grenoble I - Joseph Fourier, France	Master's Equivalent	09/1993	Materials Science
Sherbrooke University, QC	PhD	04/1998	Physics
Virginia Polytechnic Institute and State University, VA	Postdoc	03/2002	Materials Science and Engineering

A. Personal Statement

I am an Associate Professor in Textile Science in the Department of Human Ecology at the University of Alberta and the SMART Network Commercialization Co-Director. I am especially interested in the application of nanotechnologies, smart textiles, natural fibres, and recycled materials in personal protective equipment and other textile-based products as well as in the aging behavior of protective materials. I have authored more than 150 articles in books, scientific and technical journals, and conference proceedings. I am also the editor of a book entitled “Nanoengineering: Global Approaches to Health & Safety Issues” published in 2015 by Elsevier, and co-editor of a book entitled "Advanced Characterization and Testing of Textiles" published in 2017 also by Elsevier.

My background in Materials Engineering and my experience in Textile Science are a perfect fit for the I-SMART research platform as they complement the expertise of the other members of the team. Examples of my research relevant to the I-SMART themes include smart garments for rehabilitation following jaw reconstruction [1] in collaboration with colleagues in Chemical and Materials Engineering and in Rehabilitation Medicine; graphene-based end-of-life sensors for high-performance fabrics [2] in partnership with five companies; and protocols of graphene conductive tracks on fabrics and the effect of water immersion, repeated launderings, and abrasion cycles on their electrical conductivity [3]. These realizations can inform the development of textile-based strategies to mitigate mobility impairments resulting from neurological pathologies.

In addition to multidisciplinary collaborations with researchers in Science and Engineering, Health and Social Sciences, I have a strong connection with the Canadian textile industry, which partners in many of my research projects. I am the President of the Institute of Textile Science, whose “mission is to promote scientific collaboration, encourage knowledge sharing, and stimulate research and development in Canadian sectors involved in textiles, textile-based and related material science” [4]. Developing new materials, designs, and devices, new test methods, and new knowledge through interdisciplinary collaborations and in partnership with the industry has been my focus over the last 15 years.

B. Positions and Honours

04/2002 – 08/2002: Director of Product Development / Research Scientist, KensaGroup, LLC (Ithaca, NY)

11/2004 - 09/2005: Research Associate, Department of Mechanical Engineering, École Polytechnique de Montréal, QC

11/2004 - 03/2006: Technical Patent Analyst, Gestion Sympalys Inc., QC

09/2005 - 12/2011: Research Associate, then Researcher, Department of Mechanical Engineering, École de technologie supérieure, QC

02/2012 - 05/2017: Researcher, CTT Group - College of St-Hyacinthe, QC

06/2017: Adjunct Professor, Department of Mechanical Engineering, École de technologie supérieure, QC

07/2017: Assistant Professor, then Associate Professor, Department of Human Ecology, University of Alberta, AB

Leadership roles
President, Institute of Textile Science
Chair, Canadian Mirror Committee, ISO TC 94 SC 13 on Protective Clothing
Commercialization Co-Director, SMART Network

C. Contributions to Science

My Ph.D. research aimed at developing a calorimetric method for the measurement of AC losses in high critical temperature superconducting tapes. The project was a partnership between the University of Sherbrooke and the Research Institute of Hydro-Quebec (through a NSERC CRD industry partnership grant). It was the first attempt at that time to use a calorimetric method to perform such measurements on high Tc superconductors. The results obtained generated a large interest in the applied superconductivity research community. It led several other laboratories to develop measurement techniques based on the calorimetric principles. I was also the first to observe experimentally the reduction in AC losses resulting from the combination of a DC current with the AC current. The results obtained during my PhD led to six peer-reviewed papers published in scientific journals, e.g. [5,6], and nine presentations at international conferences.

During my postdoctoral fellowship at Virginia Tech, one of the projects I worked on dealt with the development of photopolymerizable resins for underwater use. It was initially a project with the US Office of Naval Research. It also included the design of underwater light sources and chemical solutions for dissolving the marine organisms' calcified residues. This project led to three patent disclosures and a patent application, four papers in peer-reviewed scientific journals, e.g. [7,8], a book chapter, and several presentations at international conferences. These resins also proved to have an interesting potential for biomedical applications, in particular for blood-vessel prostheses and securing articular prostheses [9]. At the end of my postoc in 2002, I was hired as the Director of Product Development by the company KensaGroup, LLC as they launched a start-up company North Sea Resins™ to commercialize these photopolymerizable resins for application for underwater repairs and as biomaterials for in-situ formation of custom prostheses.

My most significant research contribution while working as a researcher at École de technologie supérieure (ÉTS, 2005-2011) was setting up a research theme on personal protective equipment against nanoparticles, a first in North America at that time, and the second in the world. With my team at ÉTS and a network of collaborators, we developed a measurement method of the penetration of nanoparticles through glove and protective clothing materials, which allows simulating conditions of use at the workplace. We were able to generate unique knowledge on nanoparticle penetration mechanisms through polymer and textile membranes as well as on the

resistance to penetration offered by several types of gloves and protective clothing, e.g. [10,11]. This work received a financial support from NSERC, IRSST, NanoQuébec, ANSES (France) and ADEME (France) and led to the development of international partnerships with the Laboratory of nanomaterials chemistry and safety at CEA-Grenoble in France and the Harvard School of Public Heath in the US. My research was also instrumental in the drafting of the ASTM F2878-10 standard test method on the resistance of protective materials to needle puncture [12] and significant progress was made in the development of fundamental and applied knowledge on protective materials, for example on the aging of materials used in firefighting suits [13] and on the effect of exposure to solvents and chemical contaminants on protective materials.

During my time as a researcher at CTT Group (2012-2017), a college research center specialized in technical textiles, I was instrumental in the major increase observed in CTT Group's applied research, both in terms of funding and output, especially in its Geosynthetics and Building Materials Division. Under my lead, 15 new research projects involving various industrial partners (e.g. Soprema, Solmax, Texel, Cosella-Dörken, Stedfast, Logistik Unicorp, Vintex) were set up with the financial support of NSERC, the Quebec Province, and PRIMA Quebec. The subjects of these different projects include geocomposites, geotextiles, geomembranes, building envelopes, drains, perm-selective membranes, recycled resins, smart textiles, natural fibers, nanocomposites, and high performance yarns. In particular, I led the work on the development of electrically conductive geocomposites (eGCP) for mine tailings dewatering in collaboration with Afitex-Texel, a Quebec manufacturer of drainage geocomposites, and COSIA, Canada's Oil Sands Innovation Alliance. The proof-of-concept was successfully established with mature fine tailings (MFT) provided by oil sands operators [14]. The project led to the development of a laboratory scale dewatering device developed to simulate the entire path of water taking place in a real tailings disposal area [15]; a setup designed to investigate the geotextiles / oil sands tailings filtration compatibility; and a synthetic formulation of MFT allowing controlling their composition.

Since joining the University of Alberta in 2017, I have been able to initiate a number of innovative research projects in the area of protective clothing with several industry partners from Canada and abroad thanks to funding from NSERC Discovery, Engage and Strategic grant programs, MITACS fellowship grants, and DND IDEaS program. Subjects include the aging of fire-protective fabrics [16], the development of graphene-based end-of-life sensors for fabrics [17], test methods for smart textiles [18], arc rated fabrics made of recycled aramid fibers [19], self-decontaminating fabrics against bacteria and viruses [20], and nanocomposite nanofibrous membranes for chemical and biological protection [21]. My most significant recent research contribution has been a breakthrough finding regarding the sensitivity of certain types of fire-protective fabrics to hydrothermal aging conditions, with the identification of residual sulfur from PBI fiber spinning process as the cause of the accelerated loss in mechanical performance of PBI-containing fire-resistant fabrics used in firefighter protective clothing [22]. These results are of major importance, as they will allow manufacturers of fire-resistant fibers, yarns, and fabrics to improve manufacturing processes and fiber blends and produce more durable products for the increased safety of firefighters.

D. Mentoring Contributions

I have been taking a very active part in the supervision of highly qualified personnel (HQP) in my research activities since 1999. This includes College and undergraduate trainees (more than 60), graduate students (22 Master (thesis- and course-based) and 24 PhD), and postdoctoral fellows (PDF) (7). My group currently comprises seven Master students, five PhD students, and two PDF; some of them are co-supervised with colleagues in Human Ecology and Engineering: J. Batcheller in Human Ecology, H.-J. Chung and J. Nychka in Chemical and Materials Engineering, J. Hogan in Mechanical Engineering, J. Harynuk in Chemistry, K. Golovin in Mechanical & Industrial

Engineering (UofT), and A. Milani in the School of Engineering (UBC).

I put a lot of attention into giving my students/postdocs access to a multidisciplinary environment through collaborations with researchers in complementary fields and allowing them to acquire a good autonomy in research and innovation. When the project permits, I involve them in my interactions with industry partners and give them the opportunity to present their contribution to the work accomplished. Many of my students/PDF hold Clothing & Textiles, NSERC, and/or MITACS scholarships. Some of my students also won conference prizes and travel awards.

Equity, diversity and inclusiveness are core values that I promote in my research environment. This includes collaborations with researchers in other disciplines and the recruitment of students with a variety of backgrounds (e.g. textile, materials engineering, etc.), ethnical origins and family status. In addition, I was able to recruit a large number of women as HQP in areas where they are underrepresented, e.g. in civil engineering. My current team is a vibrant multicultural group and includes members from visible minorities and/or with families.

My success in sharing my passion for research and innovation with my students/postdocs can be measured by the number of college trainees who went to study at the university (13/17), undergraduate trainees who did a Master's degree at the end of their program (7/21 over the last 6 years), and graduate students who remained in research. Several HQPs I supervised have also been entrusted with design or management responsibilities in the industry. Their active involvement in high quality and original research contributed to building the strengths on which they can rely for an exciting career and a significant impact in their field.

E. Other Contributions

Four patent applications between 2020 and 2022

F. Active Grant Support

Currently PI on 15 projects and a coapplicant on 7 others, for a total of $12.5M, including:

- NSERC Alliance grant, Development of Advanced Add-On Vehicle Armor: Failure Mechanism Studies, Multi-scale Modelling & Simulations, and Collaborative Design, 2021-2026, $3,195,000
- Brain Canada, The SMART Platform for Advancing Foundational and Translational Neuroscience, 2022-2025, $3,060,000
- IDEaS Advanced Materials Micro-nets, Comfort-optimized materials for operational resilience, thermal-transport, and survivability (COMFORTS), 2019-2025, $1,500,000
- NSERC Discovery grant, Aging of fire protective textile materials in service, 2019-2025, $165,120
- NSERC Alliance Grants/Alberta Innovates, Additive Manufacturing of metamaterial templates for IR tunable materials, 2021-2023, $200,000
- CFI John R. Evans Leaders Fund/Government of Alberta, Weathering chamber for textiles, polymers and composites, 2021-2023, $213,012
- Donation, Optimization of N-halamine-based self-decontaminating solution as fabric finish and filter media, 2021-2023, $50,000;
- NSERC Strategic Partnership Grants for Projects, Graphene-based end-of-life sensors for fire protective fabrics, 2018-2023, $602,860
- MITACS Accelerate Cluster, Thermal comfort, athletic apparel, and high solar protection, 2023-2025, $450,000
- MITACS Accelerate Cluster, Process optimization for the production of fire protective clothing using recycled aramid fibres, 2022-2025, $345,000

- MITACS Accelerate Cluster, Scale-up and field-testing of graphene-based end-of-life sensors for fire-protective fabrics, 2022-2025, $180,000

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[19] Dolez P.I., Breton H., Paskaluk S., Batcheller J., Predicting the Arc Rating of Fire-Resistant Fabrics Containing Recycled Aramid Fibers. Fiber Society Conference, Hong Kong, May 21-23, 2019.

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[21] Kaviannasab, E, Hoque, M S, Munevar-Ortiz, L, Dolez P I. Protective Clothing against Chemical and Biological Agents using Nanocomposite Nanofibrous Membranes. Canadian Society for Mechanical Engineering (CSME) Congress. Edmonton, AB, Canada, June 5-8, 2022.

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OMB No. 0925-0001 and 0925-0002 (Rev. 10/2021 Approved Through 09/30/2024)

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Martin Ferguson-Pell

eRA COMMONS USER NAME (credential, e.g., agency login):

POSITION TITLE: Professor

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
Doctorate University of Strathclyde Bachelor's University of Exeter		1977/8 1973/6	Biomedical Engineering, , Physics

A. Personal Statement

Martin Ferguson-Pell completed a BSc in physics (1973) at Exeter University in UK and then a PhD in biomedical engineering at the University of Strathclyde (1977), where he subsequently was appointed lecturer for 5 years. In 1982 he was appointed as a Research Scientist in Rehabilitation Engineering at Helen Hayes Hospital. He was appointed in 1995 Founding ASPIRE Chair in Neuromuscular Restoration and Rehabilitation (Disability and Technology) at University College London, Institute of Orthopaedics. In 2007 he was appointed Dean of the Faculty of Rehabilitation Medicine at University of Alberta in Canada. Since 2016 he has also led the Alberta Bone and Joint Health Institute as Executive Director. From 2011 -2018 he held a range of senior administrative positions at University of Alberta and has now resumed his research and academic interests. He has dedicated his academic career to the application of technologies for people with physical disabilities and chronic musculoskeletal conditions.

He designed and developed the Rehabilitation Robotics Laboratory at University of Alberta where he uses virtual and augmented reality systems to simulate and study a wide range of healthcare-related applications, including speech-language, MSK, mental health and wellness and use of these tools to enhance learning. His research team is bring to scale in the Alberta healthcare system advanced methods for delivering assessments and treatments using tele-rehabilitation, extending the scope of care that can be delivered remotely using advanced IT systems and advanced, easy to use sensor systems.

B. Positions, Scientific Appointments, and Honors

1980/1 Chartered Physicist, Institute of Physics
2003/1 Registered Clinical Scientist, Health Professions Council
2016/11 Honorary Member of Golden Key International Society
Golden Key International Society
2017/4 Fellow Royal Society of Arts (UK)
2018/4 Winner (first place) of City of Edmonton Health Hack Competition
City of Edmonton Alberta Canada

2015/8 - Present Executive Director Alberta Bone and Joint Health Institute
2007/10-Present Professor Rehabilitation Sciences, Faculty of Rehabilitation Medicine, University of Alberta
2015/7 - 2018/6 Vice Principal, Peter Lougheed Leadership College Office of President, University of Alberta
2015/7 - 2018/6 Vice Provost (Strategic Initiatives) Office of Provost, Office of Provost, University of Alberta
2014/2 - 2014/12 Senior Advisor to President Office of President, Office of President, University of Alberta
2012/7 - 2014/1 Acting Provost, Vice President Academic, Office of Provost, Office of Provost, University of Alberta
2007/10 - 2014/1 Dean, Faculty of Rehabilitation Medicine, University of Alberta
2010/2 - 2012/7 Chair Health Sciences Council, Office of Provost, Office of Provost, University of Alberta
2006/1 - 2007/11 Director, Stanmore Clinical Research Facility, Institute of Orthopaedics and Musculoskeletal Sciences, University of London - University College London
1995/12 - 2007/10 Founding ASPIRE Chair, Professor in Neuromuscular Restoration and Rehabilitation ASPIRE Centre for Disability Sciences, Institute of Orthopaedics and Musculoskeletal Science, Institute of Orthopaedics and Musculoskeletal Sciences, University College London
1999/6 - 2007/9 Research Director Royal National Orthopaedic Hospital
1993/2 - 1995/12 Associate Professor Clinical Bioengineering, Clinical Sciences, Columbia University
1987/9 - 1995/12 Adjunct Associate Professor Bio-medical Engineering, Faculty of Engineering, Rensselaer Polytechnic Institute
1987/6 - 1995/12 Director and Founder Center for Rehabilitation Technology Center for Rehabilitation Technology, Helen Hayes Hospital
1985/6 - 1992/12 Associate Research Scientist Columbia University
1982/4 - 1987/6 Chief, Rehabilitation Engineering Unit Helen Hayes Hospital
1978/6 - 1982/4 Lecturer University of Strathclyde
1976/10 - 1978/6 Temporary Lecturer University of Strathclyde

C. Contributions to Science

Research Funding Current Awarded

2022/4-23/3 Principal Applicant **Increasing access to advanced falls risk assessments for seniors living in supportive living settings using the ProMote.** Funding Sources: National Research Council of Canada AGEWELL Total Funding - $49,902.00 Funding Competitive?: Yes.

2022/1- 2022/12 Principal Applicant Implementation of Virtual Care Technologies for Patients with Long COVID Funding Sources: Alberta Health Services. Total Funding - $40,200 Funding Competitive?: No.

2022/1 – 2024/30 Nowrouzi-Kia,B Durand-Moreau,Q Gross,D Dennett,L Hagtvedt,R Tsuyuki,R Ferguson-Pell,M Vandermeer,B. Overview of telehealth treatments of psychological disorders. Funding Sources: Workers Compensation Board, WCB Research Program,Total Funding - $40,009 Funding Competitive?: Yes Principal Applicant : Sebastian Straube

2021/6 - 2023/5 Co-Applicant Yaro v2: Your Smart Conversational Health Buddy Funding Sources: National Research Council of Canada iRAP Total Funding - $133,956.03 Funding Competitive?: Yes Principal Applicant : Loreen Wales

2021/9 - 2027/8 Co-applicant NSERC CREATE in Sensory Motor Adaptive Rehabilitation Technology (SMART) Funding Sources: Natural Sciences and Engineering Research Council of Canada (NSERC) CREATE Total Funding - 1,350,000 Funding Competitive?: Yes Principal Applicant : Jaqueline Hebert
2021/4 - 2024/3 Co-applicant REDI@Home Funding Sources: Arthritis Society (The) Program Grant Total Funding - 300,000 Funding Competitive?: Yes Principal Applicant : Lauren Beaupre
2022/1 - 2024/1 Co-applicant The FAST Walk (Functional Assessment for Surgery by a Timed Walk) Study: A Multi-centre Prospective Cohort Study of the Six-Minute Walk Test For Improving Preoperative Risk Stratification for Major Non Cardiac Surgery. Funding Sources: Canadian Institutes of Health Research (CIHR) Program Grant Total Funding - 2,095,000 Funding Competitive?: Yes Principal Applicant : Duminda Wijeysundera
2021/7 - 2023/6 Principal Applicant A platform for developing and adopting virtual health technologies to support patients who need complex assessments while remaining in rural communities Funding Sources: Alberta Innovates Validate Total Funding - 299,500 Funding Competitive?: Yes
2021/2 - 2023/2 Co-applicant Veteran-Friendly Campuses in Alberta: Supporting Veteran Military to Civilian Transition through Post-Secondary Education and Training Funding Sources: Government of Alberta Advanced Education Total Funding - 714,000 Funding Competitive?: No Principal Applicant : Suzette Bremault-Phillips
2020/3 - 2023/2 Principal Applicant GlenxRose: xR Simulations to increase patient compliance for rehabilitation Funding Sources: Alberta Innovates XR Head Total Funding - 249,000 Funding Competitive?: Yes
2022/1 - 2023/1 Co-applicant Using of a Novel Digital Nutrition, Physical Activity and Mindfulness Platform for Cancer Prevention Funding Sources: Canadian Cancer Society Research Institute (CCSRI) Action Grant Total Funding - 200,000 Funding Competitive?: Yes Principal Applicant : Carla Prado
2020/11 - 2022/11 Co-applicant Competency based health workforce education to support family caregivers in the COVID-19 pandemic Funding Sources: Alberta Health Labor and Immigration Total Funding - 388,000 Funding Competitive?: Yes Principal Applicant : Suzette Bremault-Phillips
2020/9 - 2022/8
Principal Applicant Virtual Reality Treatment for People with Anxiety Disorder: Preparing for the Group Therapy Session Funding Sources: University of Alberta Seed Fund Total Funding - 30,000 Funding Competitive?: Yes
2021/7 - 2022/7 Principal Applicant Determining levels of enhanced function associated with the Permobil SmartDrive Manual Wheelchair Power Assist Funding Sources: Permobil Inc Clinical Study Total Funding - 46,410 Funding Competitive?: No
2021/5 - 2022/4 Co-applicant Preoperative e-Health to prepare for elective total joint replacement surgery: The Prep@Home Randomized Feasibility Trial Funding Sources: Canadian Institutes of Health Research (CIHR) Bridging Total Funding - 100,000 Funding Competitive?: Yes Principal Applicant : Lauren Beaupre
2019/4 - 2022/10
Co-applicant SMART Technology Innovation Program Funding Sources: Government of Alberta Economic Development and Trade Total Funding - 2,300,000 Funding Competitive?: No. Principal Applicant : Vivian Mushahwar

Publications **Journal Articles Last 5 Years**

1. Findlay, K, Armstrong, A, Ferguson-Pell, M (2022). Assessment and Diagnosis of Shoulder Pathologies Using Virtual Health Technologies: A Scoping Review. International Journal of Telemedicine and Applications. Review.
2. Rajab, O, Armstrong, E, Ferguson-Pell, M (2022). Development of Pressure Sensors to Help Support Community Lymphedema Monitoring: A Scoping Review. Rehabilitation Oncology. Review.

3. Osuji, E, Armstrong, E, Loyola-Sanchez, A, Ferguson-Pell, M (2022). Overcoming The Limitations of the Berg Balance Scale (BBS). Arch. Phys. Med. Rehab. Review.
4. MacDuff, H, Armstrong, E, Ferguson-Pell, M (2022). Technologies Measuring Manual Wheelchair Propulsion Metrics: A Scoping Review. Assistive Technology, TBD. TBD, https://doi.org/10.1080/10400435.2022.2075488 In Press.
5. Ferguson-Pell,M, Armstrong,E (2021). Patient and clinician reported outcomes and experience following advanced Tele-Rehabilitation assessments conducted in rural Alberta.. Arch. Phys. Med. Rehab., 102, 10. 10, https://doi.org/10.1016/j.apmr.2021.07.419
6. Maeda, N, Wales,L Ferguson-Pell,M (2021). Verbal augmented reality journaling app: retention. Arch. Phys. Med. Rehab., 102, 10. 73, https://doi.org/10.1016/j.apmr.2021.07.689
7. Valevicius, A Ferguson-Pell, M, Kershaw,C, Vette A (2021). Lessons learned from transitioning to Telerehabilitation during COVID-19 in Alberta Canada. Arch. Phys. Med. Rehab., 102, 10. 68, doi: 10.1016/j.apmr.2021.07.673
8. Qi,L, Li, S, Guan, Z, Liu, H-L, Su, C-K , Ferguson-Pell, M (2021). The Effect of Fatigue on Wheelchair Users' Upper Limb Muscle Coordination Patterns in Time-Frequency and Principal Component Analysis. IEEE Trans Neural Syst Rehabil Eng . , 29. 2096-2102, DOI: 10.1109/TNSRE.2021.3119359
9. Salimi Z Ferguson-Pell M. (2021). Motion sickness and sense of presence in a virtual reality environment developed for manual wheelchair users, with three different approaches.PLOS ONE. 16(8): 1-22.
10. Jones, C., Miguel Cruz, A., Smith-MacDonald, L., Cruikshank, E., Baghooi, D., Chohan, A., Laidlaw, A.,White, A., Cao, B., Agyapong, V., Winkler, O., Burback, L., Heber, A., Sevigny, PR., Dennett, L., Ferguson-Pell, M., Greenshaw, AJ, Br mault-Phillips, S. (2020). VirtualTrauma-Focused Therapy for Military Members, Veterans, and Public SafetyPersonnel with Post-Traumatic Stress Injury: A Systematic Scoping Review.Journal of Medical Internet Research.8(9): 1-20. In Press
11. Daniel Gillespie Crystal McLellan Martin Ferguson-Pell Andrea Taeger Patricia J Manns. (2020). Balancing Access with Technology: Validating the Remote Assessment of the Berg Balance Scale in Stroke Survivors Using in Home Telerehabilitation Technology vs. In-Person Assessment.Physiotherapy Canada. 1(1): 1-2.
12. Salimi Z Ferguson-Pell M. (2019). Investigating the reliability and validity of three novel virtual reality environments with different approaches to simulate wheelchair manoeuvres.IEE Trans. Neural Systems and Rehabilitation Engineering. 27(3): 514-522.
13. Liu LQ Ferguson-Pell MW. (2019). Blood perfusion changes during sacral nerve root stimulation versus surface gluteal electrical stimulation in seated spinal cord injury.Assistive Technology. 31(1): 1-8.
14. Liping QI Martin Ferguson-Pell Longtau YU. (2019). The effect of manual wheelchair propulsion speed on users' shoulder muscle coordination patterns in time-frequency and principal component analysis. Transactions on Neural Systems & Rehabilitation Engineering. 28: 1-8.
15. Zohreh Salimi Martin Ferguson-Pell. (2019). Investigating the reliability and validity of three novel virtual reality environments with different approaches to simulate wheelchair maneuvers.IEEE Transactions on Neural Systems and Rehabilitation Engineering. 28: 1-10.
16. Salimi, Z. Ferguson-Pell M. (2018). Development of Three Versions of a Wheelchair Ergometer for Curvilinear Manual Wheelchair Propulsion Using Virtual Reality.IEEE Trans. Neural Systems & Rehabilitation Engineering.26(6): 1215-1222.
17. Zohreh Salimi Martin Ferguson-Pell. (2017). Physical environment: how to measure it. Academic Journal of Science. 3(1): 75-80.

Conference Publications

1. Czarnecka Z, Badran C, Armstrong E, Ferguson-Pell M.Tele-Rehabilitation 2.0: Making Rehabilitation Accessible for Remote Albertan Communities.eHealth Conference, Vancouver,
2. Kevin A Hernandez-Ossa . Arnaldo Leal Junior . Anselmo Frizera Kim Adams Martin Ferguson-Pell. Haptic
Feedback for Remote Clinical Palpation Examination.International Workshop on Assistive Technology., Vitoria-ES, Brazil
3. Maeda N Ferguson-Pell M Wales L. Verbal Augmented Reality Journaling App: Retention. Annual Conference Rehabilitation Medicine, Virtual, United States
Conference Date: 2021/9
4. A da Valevicius, Christine Kershaw, Albert Vette, Martin Ferguson-Pell. Lessons learned from transitioning
to tele-rehabilitation during COVID-19 in Alberta, Canada. Annual Conference Rehabilitation Medicine, Virtual, United States
5. Ferguson-Pell M Armstrong E. Patient and Clinician Reported Outcomes and Experiences Following Advanced Tele-Rehabilitation Assessments Conducts in Alberta. Annual Conference Rehabilitation Medicine, Virtual, United States

Intellectual Property- Patents

1. Automatically recommending changes to wheelchair settings based on usage data.Canada. NA. 2017/11/14. Patent Status: Pending
2. Systems and methods for monitoring the activity of wheelchair users. United States. PCT/CA2016/051160.
2015/10/06. Patent Status: Pending

Licenses

1. Computer algorithms to create an adaptive neural network that gathers data from a web-based dashboard
or wheelchair activity monitoring App on a mobile device to recommend optimal wheelchair setup.
Granted Date Issued: 2016/10
Filing Date: 2016/10/21
2. Systems and Methods for Monitoring the Activity of Wheelchair Users
Granted Date Issued: 2016/7 Filing Date: 2016/07/07

Disclosures

1. Redliner Goes to Town Date Issued: 2018/5 Filing Date: 2018/04/04

Knowledge and Technology Translation

2018/4 - 2020/12 Founder, Business Innovation
Activity Description: This start up was an outcome of our research on wheelchair propulsion biomechanics and our focus on reducing second complications of disability, in this case over user injuries to the shoulders associated with accessing difficult built environments.
2015/8 - 2019/5 Inventor, Business Innovation
Activity Description: License for the development of this technology for wheelchair users, possibly integrated into new wheelchair wheel designs.
2012/3 - 2017/4 Principal Investigator, Policy/Regulation Development
Activity Description: This program was designed to implement best practices for two priorities in spinal cord injury management: prevention of pressure ulcers pain management

Student/Postdoctoral Supervision Last 5 Years

Bachelors

2018/9 - 2019/8 Principal Supervisor Kaitlyn Sosnowski, University of Alberta
Thesis/Project Title: Developing a machine learning algorithm to detect muscle fatigue in real time. Present Position: Physical Therapist

Masters

2022/1 - 2023/12 Academic Advisor Valerie Nadeu, University of Alberta Thesis/Project Title: Design and validation of a wearable sensor to expand upon the traditional Ashworth Scale (MAS) and Modified Tardieu Scale (MTS) for assessment of spasticity following stroke. Present Position: Graduate Student

2020/3 - 2021/6
Principal Supervisor Manirul Islam, University of Alberta Thesis/Project Title: Development of a lean algorithm and implementation in a wearable sensor for detection of muscle fatigue in real time. Present Position: Academic Instructor

2019/1 - 2022/1 Principal Supervisor Emmanuella Osuji, University of Alberta Thesis/Project Title: Validation of a marker less motion capture system for clinical assessment of patients in rural communities using Tele-Rehabilitation. Present Position: Graduate Student

2018/9 - 2022/8 Principal Supervisor John C Johnson, University of Alberta Thesis/Project Title: Comparison of bio mechanics of wheelchair maneuverability in real world and a virtual reality wheelchair simulator. Present Position: Medical Student

2018/8 - 2020/7 Principal Supervisor Sydney Hampshire, University of Alberta Thesis/Project Title: Comparison of elite wheelchair athlete performance in real world and a virtual world indoor track virtual reality simulator Present Position: Research Associate

Ph.D.

2019/1 - 2022/6 Co-Supervisor Daniel Gillespie, University of Alberta Thesis/Project Title: Comparison of stroke rehabilitation outcomes between tele-rehabilitation and in-person assessment Present Position: Graduate Student

2018/11 - 2021/9 Co-Supervisor Chelsea Jones, University of Alberta Thesis/Project Title: Technology assessment and evaluation of Cognitive Assessments for Canadian Armed Forces Members with a mild traumatic brain injury. Present Position: Post Doc

2012/1 - 2018/3 Principal Supervisor Zohreh Salimi, University of Alberta Thesis/Project Title: Can an ergometer based virtual reality environment reproduce typical real-world wheelchair maneuvering? Present Position: Consultant engineer

2018/9 - 2021/12

Post-Doc.

Nathanial Maeda, University of Alberta Project Title: Development and evaluation of virtual and augmented reality learning objects in healthcare training and education. Present Position: Research Associate

Timothy Ira
Strategic Initiatives Officer - Indigenous Initiatives & Equity, Diversity and Inclusion, College of Social Sciences & Humanities - Dean's Office

Tim Ira (he/him) is a queer, racialized Settler working, living and researching in amiskwaciwaskahikan, which is colonially known as Edmonton. He has lived with asthma since childhood and also experiences hypertension and type 2 diabetes. He works as the Strategic Initiatives Officer for Indigenous Initiatives & Equity, Diversity and Inclusion in the College of Social Sciences and Humanities. He provides strategic support to college initiatives and is working with the faculties of Arts, Business, Education and Law on a college-specific approach to fulfilling the commitments in the Indigenous Strategic Plans and EDI Action Plan. He is also a graduate student in Social Justice and International Studies in Education where his research interests include how institutional inclusion discourse intersects with technical parchments and microcredentials.

Beginning his post-secondary career in student affairs, the positive experience and well-being of end users is foundational to the approach of his work. Fostering collaborative relationships and covnersations to support initiatives like sexual violence prevention, mental health outreach, and new student orientation. Prior to re-joining the University of Alberta in 2023, Tim worked at NAIT since 2015 where he became the polytechnics's inaugural professional specialist focused on EDI. In this portfolio, Tim co-authored NAIT's first EDI Strategy and EDI Lens resource, advised on initiatives for women and gender-diverse folks in the technologies and skilled trades, coordinated 2SLGBTQIA+ interprofessional education in NAIT's School of Health Sciences, and provided insights to executives during iterations of issue management.

Privately and in his personal time, Tim has provided services to University of Alberta Students' Union, the Office of the Dean of Students, Lakeland College, the Student Association at NorQuest College, and the AHS Community Helper Program. He has served on the boards of the Edmonton Pride Festival Society and the Karilagan Dance Society (Filipino folk dancing).

Institute for Smart Augmentative and Restorative Technologies and Health Innovations (iSMART)

Appendix 3: iSMART Projected Budget

iSMART Projected Budget

		Year 1 2022-2023	Year 2 2023-2024	Year 3 2024-2025	Year 4 2025-2026	Year 5 2026-2027	Year 6 2027-2028	Year 7 2028-2029	Year 8 2029-2030	Year 9 2030-2031	Year 10 2031-2032	Year 11 2032-2033	Year 12 2033-2034	Year 13 2034-2035	Year 14 2035-2036
Grants from Public Sources	PrairiesCan (ST Innovations)	100,000													
	PrairiesCan_Amendment	330,000													
	Brain Canada Platform Support P	510,000	510,000	510,000											
	Alberta Innovates Ecosystem Development Partnership Program		620,000	620,000	620,000										
	PrairiesCan (Campus Alberta Neuroscience - ST Innovations)	213,334	213,333	213,333											
	PrairiesCan (SMART Network/nanoFab/InnoTech)		250,000	250,000	250,000										
	CFI Major Science Initiatives								2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000
ST Innovations	Industry projects					500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000
Donations, Fundraising and Enabling Innovations	Donations/Fundraising activities			350,000	350,000	350,000	400,000	400,000	400,000	450,000	450,000	450,000	500,000	500,000	500,000
	President Enabled Opportunities			1,000,000	1,000,000	1,000,000	2,000,000	2,000,000	2,000,000	2,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000
User and Training Fees	Facility User Fees	20,000	35,000	50,000	75,000	100,000	125,000	150,000	156,000	162,240	168,730	175,479	182,498	189,798	197,390
	Training Exteranl HQP (Industry HQP, Healthcare HQP, Arts-based Research, Medical Illustration, Summer Camp - SMART Health, etc.)			45,000	60,000	75,000	90,000	120,000	150,000	180,000	240,000	300,000	360,000	420,000	480,000
Workshops & Symposia	NSERC CREATE Workshops					20,000	35,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
	Symposia			10,000		30,000		50,000		50,000		50,000		50,000	
	International Conferences							85,000			120,000			200,000	
TOTAL Annual Income		1,173,334	1,628,333	3,048,333	2,355,000	2,075,000	3,150,000	3,355,000	5,256,000	5,392,240	6,528,730	6,525,479	6,592,498	6,909,798	6,727,390
Currently secured funds		1,153,334	1,343,333	1,343,333											
Annual Expenditures	personnel	900,000	936,000	1,273,440	1,324,378	1,377,353	1,632,447	1,697,745	1,765,654	1,836,281	2,109,732	2,194,121	2,281,886	2,373,161	2,468,088
	maintenance & small euipment	100,000	100,000	204,000	212,160	220,646	329,472	342,651	356,357	370,611	485,436	504,853	525,048	546,049	567,891
	marketing and fundraising	70,000	70,000	85,000	85,000	85,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000
TOTAL Annual Expenditures		1,070,000	1,106,000	1,562,440	1,621,538	1,682,999	2,061,919	2,140,396	2,222,012	2,306,892	2,695,168	2,798,975	2,906,934	3,019,211	3,135,979
Annual Revenue		103,334	522,333	1,485,893	733,462	392,001	1,088,081	1,214,604	3,033,988	3,085,348	3,833,562	3,726,504	3,685,564	3,890,587	3,591,410
Use of Revenue	Lab Sustainability Fund & Seed Grants	31,000	156,700	445,768	220,039	117,600	326,424	364,381	910,197	925,604	1,150,069	1,117,951	1,105,669	1,167,176	1,077,423
	Trainee Scholarships / Fellowships	62,000	313,400	891,536	440,077	235,201	652,849	728,763	1,820,393	1,851,209	2,300,137	2,235,903	2,211,339	2,334,352	2,154,846
	Knowledge Dissemination	10,333	52,233	148,589	73,346	39,200	108,808	121,460	303,399	308,535	383,356	372,650	368,556	389,059	359,141

Institute for Smart Augmentative and Restorative Technologies and Health Innovations (iSMART)

Appendix 4: Draft Terms of Reference

1. iSMART Oversight Board
2. Scientific Advisory Committee
3. Industry Advisory Board
4. Community Advocacy Steering Committee

TERMS OF REFERENCE - DRAFT
Oversight Board
Institute for Smart Augmentative and Restorative Technologies and Health Innovations (iSMART), University of Alberta
Improving Human Function – Improving Human Life

UAlberta Institute Policy
Each academic centre or institute will report to a Dean, except in exceptional circumstances and at the discretion of the Provost when an academic centre or institute may report directly to a Vice-President (UAPPOL Centres & Institutes Policy).

Introduction
The Institute for Augmentative and Restorative Technologies and Health Innovations (iSMART) is a pan-University of Alberta Institute for developing innovative and accessible interventions for preventing injury, enhancing quality of care, and improving people's functional, psychosocial and quality of life outcomes, through interdisciplinary collaborations that engage the full spectrum of research, healthcare, consumer needs, and industry. iSMART provides a state-of-the-art platform for innovations that integrates and build upon existing strengths, fosters collaborations and supports research excellence. It enhances the University's translational science capabilities and competitiveness, leading to new breakthroughs that improve health care outcomes and delivery while reducing health care costs. iSMART's innovations in injury prevention and functional augmentation empower and improve the health and well-being of persons with diverse abilities, diversify Alberta's economy and bring honor and prestige to the University.

Purpose
The Oversight Board is constructed to allow key stakeholder input into iSMART's strategy.

Roles and Responsibilities
- Provide strategic advice and guidance to the iSMART Director
- Provide fiscal oversight and recommendations to the budget
- Work with the Director to identify fund raising opportunities
- Foster research collaborations and partnerships across the academic, healthcare system and health technology ecosystem
- Ensure that there is alignment between the strategic plans and initiatives of iSMART, member faculties and departments, and the University
- Advance iSMART through effective advocacy at all intra- and extramural opportunities
- Resolve disputes if they arise

Membership
- Dean, Faculty of Medicine and Dentistry (Chair)
- Dean, Faculty of Engineering (Co-Chair)
- Dean, College of Health Sciences
- Dean, College of Natural and Applied Sciences

- Dean, College of Social Sciences and Humanities
- Dean, Faculty of Rehabilitation Medicine
- Dean, Faculty of Science
- Dean, Faculty of Kinesiology, Sport and Recreation
- Dean, Faculty of Agricultural, Life and Environmental Sciences
- Dean, Faculty of Art
- Scientific Advisory Committee Member
- Industry Advisory Board Member
- Community Advocacy Steering Committee Member
- Representative from the Office of the Vice-President, Research and Innovation
- Representative from the Office of the Vice-Provost, Indigenous Programming and Research
- Representative from the Office of the Vice-Provost, Equity Diversity and Inclusion
- Community Leader(s)
- Business Leader(s)
- iSMART and ST Innovations Director (ex officio)
- iSMART Operations Manager (ex officio)
- ST Innovations Business Strategy Officer (ex officio)

Members of the Board will serve a term of 3 years, with the option of an additional term.

Members of the Board may send delegates to Board meetings.

Reporting and Authority Limits

iSMART is under the direction of the Dean, FoMD. The Director of iSMART may recommend to the Dean, FoMD Community and Business Leaders for appointment to the Board.

Meetings

The Oversight Board will meet at least once a year (preferably once every 8 months) with the tentative date of the next meeting identified at each meeting.

Quorum is a majority of members (50% + 1).

Decision will be made on a majority basis.

The FoMD will provide administrative support to the Board and the Institute will hold the official records of the Board's deliberations.

Decision Making

The Dean of FoMD will consider the advice and recommendations of the Oversight Board members; however, final decision-making authority resides with the Dean.

Leadership

The oversight board meetings are chaired by the Dean of FoMD or delegate.

TERMS OF REFERENCE - DRAFT

Scientific Advisory Committee – Institute for Smart Augmentative and Restorative Technologies and Health Innovations (iSMART), University of Alberta

Improving Human Function – Improving Human Life

A. PURPOSE

The purpose of the Scientific Advisory Committee (SAC) is to provide advice to the Director regarding local, national, and international factors that may help direct or impact the activities of the Institute of Smart Augmentative and Restorative Technologies and Health Innovations (iSMART).

B. SAC DUTIES

SAC duties include:

a. Provide advice in the form of information about societal needs and external trends that may influence iSMART's strategic priorities and goals.
b. Contribute to the development and implementation of programs and activities that support research, innovation, training, and knowledge exchange.
c. Recommendations on any issues referred to the SAC by the Director, including new opportunities and challenges that require independent consideration.
d. Identify and recommend opportunities that support and enhance the capabilities of iSMART.
e. Create opportunities for knowledge user consultations across a variety of sectors such as academic, healthcare, education, environment, and industry.
f. Enable the engagement of provincial, national, and international partners and potential sources of support to accomplish priority projects and large multi-centre initiatives.
g. Formation and oversight of time-limited working groups to evaluate and make recommendations on specific issues and initiatives referred to SAC by the Director.
h. Recommendations to the Director regarding SAC Membership appointments.

At all times, the SAC shall abide by and uphold iSMART and the University of Alberta policies, procedures and guiding principles.

C. SAC MEMBERSHIP

a. SAC members represent a broad cross-section of external (non-University of Alberta) experts that offer a diverse range of perspectives.
b. The SAC membership is limited to 9 persons, excluding the Chair and Vice-Chair.
c. SAC members are appointed by the Director for a single three-year term, with the option of one additional term, to an overall maximum of six consecutive years of membership. Former SAC members may be reappointed after a break in service of at least two calendar years.
d. In extraordinary circumstances, a Member's appointment may be terminated, upon due consideration of all pertinent facts, by majority vote of the SAC membership.
e. All SAC members have one vote, except for the Chair, who will vote twice in the event of a tie.
f. The SAC Chair and Vice-Chair are appointed by the Director based on the advice and recommendation of the SAC.

D. SAC CHAIR

The SAC Chair serves for a single term of three years, with the option of an additional term, to a maximum of six consecutive years. The responsibilities of the Chair include:

- Ensuring integrity of all SAC processes.
- Maintaining a positive working relationship with all SAC members and ensuring that all new members receive appropriate orientation to the SAC.
- Promoting positive relationships between the SAC, iSMART, the University of Alberta, other national and international institutes, and national and international funding agencies.
- Reporting to the Director on SAC meetings and, if requested, on specific issues.
- Acting as an 'ambassador' for the SAC at external functions related to Research, Innovation and Technology Development.

E. OPERATIONAL PROTOCOL

a. The SAC meets at least once per year virtually or in person, with additional meetings scheduled at the call of the Chair.
b. The Chair, in consultation with the Director, determines the time, duration, and location of SAC meetings.
c. A list of future agenda items is maintained on an ongoing basis, with the list populated by SAC members and the Director. SAC meeting agendas are jointly set by the Chair and Director.
d. Agenda and associated documentation are provided to SAC members no later than five working days in advance of SAC meetings.
e. SAC members are encouraged to reach consensus regarding advice to the Director, but consensus is not required, with all opinions and perspectives being respected.
f. When voting is appropriate, a simple majority (50% of voting members present plus one) shall constitute the SAC position.
g. Substitutes of SAC members are not allowed.
h. With the concurrence of the Chair and Director, visitors may be invited to attend specific agenda items.
i. Administrative support for the SAC is provided by iSMART's staff.
j. SAC members are obliged to maintain confidentiality regarding all SAC business, discussions, attributions, documentation, communications and to sign a CDA.

G. DOCUMENTATION PROTOCOL

a. Draft Minutes are provided to SAC members no later than four (4) weeks after meetings.
b. Minutes and all other SAC business documentation are confidential unless expressly indicated otherwise by the Chair or Director.
c. Any document or highlights provided to the Director by the SAC must be approved by the Chair and Director prior to external release to ensure completeness and accuracy.
d. All media communications are subject to the University of Alberta regulations and policies.

H. EVALUATION PROTOCOL

The SAC must review its performance, terms of reference, and membership annually and report the results to the Director. The report must include any resulting recommendations for changes to the terms of reference, activities, processes, and membership.

TERMS OF REFERENCE - DRAFT

Industry Advisory Board – Smart Technology (ST) Innovations, University of Alberta

Empowering Health Innovators

A. PURPOSE

The purpose of the Industry Advisory Board (IAB) is to provide advice to the Director on the processes and support mechanisms that facilitate effective interactions between these entities: the Institute of Smart Augmentative and Restorative Technologies and Health Innovations (iSMART), private industry, health organizations, academic institutions and funding agencies.

Such advice strengthens the ability of ST Innovations and iSMART to build collaborative relationships that contribute to enhanced patient outcomes and people's well-being.

B. IAB DUTIES

IAB duties include:

a. Provision of advice to the Director in the form of guidance and assistance with the enhancement of strategies, processes and support mechanisms that strengthen the organization's reach capabilities.
b. Support and promote iSMART's resources and expertise to facilitate new development opportunities in health innovation technologies.
c. Recommendations on any issues referred to the IAB by the Director, including new opportunities and challenges that require independent consideration.
d. Identify and recommend opportunities that support and enhance the capabilities of ST Innovations'.
e. Formation and oversight of time-limited working groups to evaluate and make recommendations on specific issues and initiatives referred to IAB by the Director.
f. Recommendations to the Director regarding IAB Membership appointments.

At all times, the IAB shall abide by and uphold ST Innovations, iSMART, and the University of Alberta policies, procedures and guiding principles.

C. IAB MEMBERSHIP

a. IAB members represent key innovative health technology research, companies and entrepreneurial expertise.
b. The IAB membership is limited to 6 persons, excluding the Chair.
c. IAB members are appointed by the Director for a single three-year term, with the option of one additional term, to an overall maximum of six consecutive years of membership. Former IAB members may be reappointed after a break in service of at least two calendar years.
d. In extraordinary circumstances, a Member's appointment may be terminated, upon due consideration of all pertinent facts, by majority vote of the IAB membership.
e. All IAB members have one vote, except for the Chair, who will vote twice in the event of a tie.
f. The IAB Chair is appointed by the Director based on the advice and recommendation of the IAB.

D. IAB CHAIR

The IAB Chair serves for a single term of three years, with the option of an additional term, to a maximum of six consecutive years. The responsibilities of the Chair include:

- Ensuring integrity of all IAB processes;
- Maintaining a positive working relationship with all IAB members and ensuring that all new members receive appropriate orientation to the IAB;
- Promoting positive relationships between the IAB, ST Innovations, iSMART, the University of Alberta and the health industry;
- Reporting to the Director on IAB meetings and, if requested, on specific issues;
- Acting as an 'ambassador' for the IAB at external functions related to Research, Innovation and Technology Development.

E. OPERATIONAL PROTOCOL

a. The IAB meets at least twice per year virtually or in person, with additional meetings scheduled at the call of the Chair.
b. The Chair, in consultation with the Director, determines the time, duration, and location of IAB meetings.
c. A list of future agenda items is maintained on an ongoing basis, with the list populated by IAB members and the Director. IAB meeting agendas are jointly set by the Chair and Director.
d. Agenda and associated documentation are provided to IAB members no later than five working days in advance of IAB meetings.
e. IAB members are encouraged to reach consensus regarding advice to the Director, but consensus is not required, with all opinions and perspectives being respected.
f. When voting is appropriate, a simple majority (50% of voting members present plus one) shall constitute the IaB position.
g. Substitutes of IAB members are not allowed.
h. With the concurrence of the Chair and Director, visitors may be invited to attend specific agenda items.
i. Administrative support for the IAB is provided by ST Innovations' staff.
j. IAB members are obliged to maintain confidentiality regarding all IAB business, discussions, attributions, documentation, communications and to sign a CDA.

G. DOCUMENTATION PROTOCOL

a. Draft Minutes are provided to IAB members no later than four (4) weeks after Board meetings.
b. Minutes and all other IAB business documentation are confidential unless expressly indicated otherwise by the Chair or Director.
c. Any document or highlights provided to the Director by the IAB must be approved by the Chair and Director prior to external release to ensure completeness and accuracy.
d. All media communications are subject to the University of Alberta regulations and policies.

H. EVALUATION PROTOCOL

The IAB must review its performance, terms of reference, and membership annually and report the results to the Director.

The report must include any resulting recommendations for changes to the terms of reference, activities, processes, and membership.

The IAB Chair is responsible for ensuring that the annual reviews and reports are submitted by March 31 starting in 2021.

The inaugural IAB meeting is set for March 26, 2020.

I. CURRENT IAB MEMBERSHIP

Nominations were solicited by the Director from the following sectors to establish the inaugural IAB membership:

1. **Eric Agdeppa**, Chair (GM & Executive Director, Innovation at Hill-Rom, Cincinnati)
2. **Randy Duguay** (CEO, Health Gauge, Edmonton)
3. **John Walmsley** (Executive VP, Strategic Relationships, StarFish Medical, Victoria)
4. **Karen Wichuk** (CEO, Edmonton Metropolitan Region Board, Edmonton)
5. **Jennifer Hamilton**, Observer (Senior Director, New Ventures Canada, Johnson & Johnson Innovation, Vancouver)

TERMS OF REFERENCE - DRAFT

Community Advocacy Steering Committee – Institute for Smart Augmentative and Restorative Technologies and Health Innovations (iSMART), University of Alberta

Improving Human Function – Improving Human Life

A. PURPOSE

The vision of the Institute of Smart Augmentative and Restorative Technologies and Health Innovations (iSMART) is a future with enhanced capabilities and life experiences for people with diverse abilities. The Community Advocacy Steering Committee (CASC) provides iSMART with advice on issues relevant to iSMART's vision from the perspectives of those using the technologies and innovations developed by iSMART.

B. CASC DUTIES

CASC duties include:

a. Help iSMART understand how its technologies and innovations will impact end users, families, and communities, and raise awareness of the needs of all of those who experience impaired physical abilities, especially the vulnerable and disadvantaged.
b. Provide advice on approaches to enhance the transparency of iSMART processes and their performance.
c. Provide end user and public perspectives to iSMART in the development of initiatives to improve the appropriate use of devices across the life cycle of health technologies.
d. Provide guidance on initiatives to strengthen engagement with end users, families, and communities across all of iSMART programs.
e. Provide input into iSMART strategic plans and annual business plans.
f. Participate in internal and external evaluations of iSMART activities.
g. Provide recommendations on any issues referred to the CASC by the Director, including new opportunities and challenges that require independent consideration.
h. Recommendations to the Director regarding CASC Membership appointments.

At all times, the CASC shall abide by and uphold iSMART and the University of Alberta policies, procedures and guiding principles.

C. CASC MEMBERSHIP

CASC membership shall be composed of individuals and not groups.

a. Members do not represent a specific constituency and are expected to bring views based on their range of experience.
b. Core competencies for members include:
    i. extensive lived experience engaging with health technologies and treatments
    ii. the ability to use personal experiences constructively
    iii. familiarity with issues in health care in Canada (at the community, regional, or national levels)
    iv. the ability to provide specific perspectives identified in strategic plan
    v. the ability to offer a unique perspective that contributes to the diversity of perspectives of CASC members

vi. awareness of others' experiences and views within a specific community or disease area; for example, experience as a patient organization board member, staff member, or volunteer
vii. the ability to act with integrity, independent of specific interests
viii. the ability to work constructively as a member of a team
ix. interest in empowering end users, families, and communities to participate in health technology assessments
x. the availability to participate in meetings

b. The CASC membership is limited to 11 persons, excluding the Chair and Vice-Chair.
c. CASC members are appointed by the Director for a single three-year term, with the option of one additional term, to an overall maximum of six consecutive years of membership. Former CASC members may be reappointed after a break in service of at least two calendar years.
d. In extraordinary circumstances, a Member's appointment may be terminated, upon due consideration of all pertinent facts, by majority vote of the CASC membership.
e. All CASC members have one vote, except for the Chair, who will vote twice in the event of a tie.
f. The CASC Chair and Vice-Chair are appointed by the Director based on the advice and recommendation of the CASC.

D. CASC CHAIR

The CASC Chair serves for a single term of three years, with the option of an additional term, to a maximum of six consecutive years. The responsibilities of the Chair include:

- Ensuring integrity of all CASC processes.
- Maintaining a positive working relationship with all CASC members and ensuring that all new members receive appropriate orientation to the CASC.
- Promoting positive relationships between the CASC, iSMART, the University of Alberta, other national and international stakeholders, and national and international charities, foundations and funding agencies.
- Reporting to the Director on CASC meetings and, if requested, on specific issues.
- Acting as an 'ambassador' for the CASC at external functions related to Research, Innovation and Technology Development.

E. OPERATIONAL PROTOCOL

a. The CASC meets at least twice per year virtually or in person, with additional meetings scheduled at the call of the Chair.
b. The Chair, in consultation with the Director, determines the time, duration, and location of CASC meetings.
c. A list of future agenda items is maintained on an ongoing basis, with the list populated by CASC members and the Director. CASC meeting agendas are jointly set by the Chair and Director.
d. Agenda and associated documentation are provided to CASC members no later than five working days in advance of CASC meetings.
e. CASC members are encouraged to reach consensus regarding advice to the Director, but consensus is not required, with all opinions and perspectives being respected.
f. When voting is appropriate, a simple majority (50% of voting members present plus one) shall constitute the CASC position.
g. Substitutes of CASC members are allowed after the expressed permission of the Chair and

Director.

h. With the concurrence of the Chair and Director, visitors may be invited to attend specific agenda items.
i. Administrative support for the CASC is provided by iSMART's staff.
j. CASC members are obliged to maintain confidentiality regarding all CASC business, discussions, attributions, documentation, communications and to sign a CDA.

G. DOCUMENTATION PROTOCOL

a. Draft Minutes are provided to CASC members no later than four (4) weeks after committee meetings.
b. Minutes and all other CASC documentation are confidential unless expressly indicated otherwise by the Chair or Director.
c. Any document or highlights provided to the Director by the CASC must be approved by the Chair and Director prior to external release to ensure completeness and accuracy.
d. All media communications are subject to the University of Alberta regulations and policies.

H. EVALUATION PROTOCOL

The CASC must review its performance, terms of reference, and membership annually and report the results to the Director. The report must include any resulting recommendations for changes to the terms of reference, activities, processes, and membership.