

SCIENCE

# contours

FACULTY OF SCIENCE ALUMNI MAGAZINE

VOLUME 26, No 1, SUMMER 2012



[www.science.ualberta.ca](http://www.science.ualberta.ca)

## FROM SCIENCE TO SONG

Maria Dunn

## THE OPPOSITE OF RETIREMENT

Larry Wang

## THE LIFE AQUATIC

with Bill Donahue

# Water matters

A woman with dark hair, wearing a red short-sleeved shirt and black waders, stands in a river. She is holding a white plastic water sample bottle with both hands, wearing white gloves. The background shows a bridge structure and a line of trees under a cloudy sky.

## ▶ message from the dean

As is true with many things that are commanding my time recently, this column is the last I will contribute to *Science Contours* as Dean. Perhaps not surprisingly, this has me reflecting on the past. My reflection has aroused a number of emotions. I suspect this might be true for many as you read the interesting stories that appear in these pages. Many of us see our time at university as formative and it doesn't take a great deal of thought to connect something from our lives today back to experiences we had while we studied, worked, or played on a

university campus.

As I reflect back on the many stories I have read in *Science Contours* or heard directly from our alumni, I am struck by how many might be told in the years ahead by the graduates of 2012. Perhaps it is a story about a student who immigrated to Canada with \$20 sewn into the lining of their jacket; or a student who found the opportunity to break the mold of a lifetime moving from foster home to foster home. Perhaps it is a story about a student moving to a big city and discovering someone else who

was struggling with a sense of fear and isolation. The joy of discovery is certainly a common theme. Many of us first discovered a world without limits and the incredible power of the human mind on a university campus. Many of us met our life-long companions as well.

And then there are the stories of achievement made possible by the hard work and sleepless nights that accompany an advanced education in science; achievements reflected in our youngest of graduates right through to those who discovered a new passion after retirement and launched upon an endeavor that would reshape their lives. Scientists are people who seem to keep learning and contributing throughout their lives. They do so in the halls of science, in industries that seek to change our world, in sports arenas, government halls, in their local communities, or in communities desperate for help.

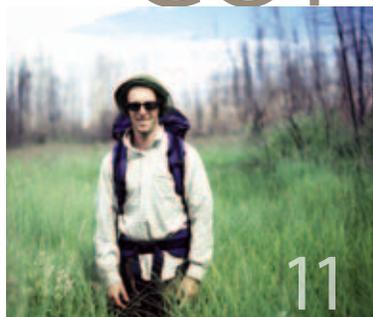
When I read *Science Contours* I am often moved by the stories of people who recently discovered the joy of giving, or have just made the gift of a lifetime. On behalf of all our students and staff, I want to say thank you one more time to all of you who have supported the Faculty of Science and its people through your gifts of time, insight, and resources. I am humbled by your generosity and can assure you it serves as source of inspiration on campus. You helped us build scholarships, launch academic programs, ensure the ongoing success of our lab and field experiences, address new research challenges, and build the *Centennial Centre for Interdisciplinary Science*.

As I write this, I think about attending my last convocation as Dean. It too will be an emotional day. When the last student crosses that stage I am sure my thoughts will turn to the new world that has welcomed some 12,000 (approximately 9,800 undergraduate and ~2300 graduate) students that obtained their letters during my term as Dean. It has been an enlightening and humbling experience. There are so many to thank.

**Gregory Taylor**  
Dean of Science



# contents



## SCIENCE contours

Science Contours is published twice a year by the Faculty of Science Office to provide current information on the many activities of Faculty and alumni. The magazine is distributed to alumni and friends of the faculty.

### Dean of Science

Gregory Taylor

### Editor

Wanda Vivequin

### Graphic Design

Studio X Design

### Contributing writers

Justin Bell, Caitlin Crawshaw, Michael Brown, Lucas Habib, Brian Murphy, Julie Naylor, Scott Rollans, Wanda Vivequin

### Photography

Richard Siemens, Infocus Imagery, Gord McKenna; courtesy BGC Engineering, MCoPl Dany Veillette, Rideau Hall © 2012 Office of the Secretary to the Governor General of Canada, Cover Photo - Steph Neufeld, courtesy of EPCOR, Tegan McMartin

### Send your comments to:

The Editor, Science Contours  
Faculty of Science  
6-197 CCIS, University of Alberta  
Edmonton, AB, Canada T6G 2E9  
Tel: 780.492.6226  
Fax: 780.492.9434  
Toll-free: 800.358.8314  
E-mail: contours.science@ualberta.ca  
Website: www.science.ualberta.ca

Publications Mail Agreement No:  
40063605

find us on facebook

[www.facebook.com/UofAScience](http://www.facebook.com/UofAScience)



## science bases

- 4 Science in the News**  
From a winning chemistry team to smarty plants, researchers from the Faculty of Science stay in the headlines.

## features

- 7 Planning program**  
response to community demand
- 8 Writing on water**  
– Hanneke Brooymans
- 10 The law aquatic**  
– Bill Donahue
- 12 The opposite of retirement**  
– Larry Wang
- 14 Superstar swimmers**  
– superstar students
- 16 Boreal currents**
- 17 Helping heal Alberta's watersheds**  
– Steph Neufeld
- 18 Water on the brain**  
– Greg Goss
- 20 Love your lake**  
– Jesse Hitchcock
- 21 From Science to song** – Maria Dunn
- 22 Come celebrate**  
with EAS
- 23 Gregory Taylor**  
– in retrospect





## NEW BOOK ON POLAR BEARS BY U OF A INTERNATIONALLY-RENOUNDED RESEARCHER

Andy Derocher (Biological Sciences) has produced a new book, *Polar Bears: A Complete Guide to Their Biology and Behavior* (Johns Hopkins University Press) – a product of almost 30 years of Arctic field work.

Derocher's insights are accompanied by 153 photos taken by his long-time colleague and internationally renowned wildlife photographer Wayne Lynch.

Despite the already well-publicized fact global warming could drive polar bears to extinction, Derocher says the book is not a "eulogy" for the species, but a "celebration of its uniqueness."

When talking about the polar bear's Arctic world, Derocher said keeping the tone of the book positive was a challenge.

"We have to talk about global warming and the disappearance of the sea ice because that ice is key to the polar bear's existence," he said.

Canada has a special responsibility for the polar bear's future, according to Derocher. There are 19 polar-bear populations across the Arctic, and 13 of them are in Canadian territory. "If the polar bear can hang on until the end of the century, there's hope we can get the global temperature turned down."

Derocher hopes his fascination with polar bears rubs off on some readers.

"It seems we only care about things we know about, so hopefully the book will engage readers and more people will commit to ensuring the polar bear has a future."

## CHEMISTRY TEAM WINS CANADA'S TOP INTERDISCIPLINARY RESEARCH PRIZE

David Bundle, Todd Lowary and John Klassen (Chemistry) are members of a research team recently awarded the prestigious Brockhouse Canada Prize for Interdisciplinary Research in Science and Engineering- the first time that the honour has been awarded to a research group from Alberta.

The trio, who are senior members of the Alberta Glycomics Centre, were recognized for their collaborative contributions to novel strategies in combating infectious diseases such as *E. coli*, tuberculosis and *Clostridium difficile*, a major killer in hospitals.

The Brockhouse Canada Prize recognizes outstanding Canadian teams of researchers from different disciplines who have combined their expertise to produce achievements of outstanding international significance in the natural sciences and engineering in the last six years.

"We are extremely honoured and proud to receive NSERC's premier award for interdisciplinary research. The award validates the support and investment of the University and province of Alberta in creating the Alberta Glycomics Centre", said Dr. Bundle, founding Director of the Centre.

The Brockhouse Canada prize includes a \$250,000 team research grant.



MCPI/DANYVELLETTE, RIDEAU HALL, C. 2012, OFFICE OF THE SECRETARY TO THE GOVERNOR GENERAL OF CANADA

## SMARTY PLANTS

J.C. Cahill (Biological Sciences) was the lead scientist in a one-hour episode of the long-running CBC science series, *The Nature of Things*. In *Smarty Plants: Uncovering the Secret World of Plant Behaviour* in March.

Cahill believes the plant world is one of coded messages and skull-duggery. For instance, scientists have found that when attacked by a plant-feeding insect, many plants can emit a chemical that summons the predator of the attacking insect.

"As a result, the plant is defended, and the predator summoned by the chemical gets

to eat lunch," said Cahill.

Cahill spent about 20 days introducing filmmakers to the complex communications networks of plants and trees at locations throughout North America. The episode can be viewed online in Canada only @ <http://bit.ly/ThNatureOfThings>



## U OF A PROFESSOR JOINS THE RANKS OF HILLARY, ARMSTRONG AND PEARY

The search for dinosaur bones has taken paleontologist Philip Currie (Biological Sciences) to both poles and many spots in between, and now his travels and many scientific accomplishments have been recognized by the Explorers Club of New York City.

Currie says he was shocked by news of the award, because historically the Explorers Club Medal recognized travel to remote, unexplored territories of the world. "There's not too many unexplored areas left in the world," said Currie. "For university researchers, the award means their particular field of study is opening up new territories of science."

For 108 years the Explorers Club Medal has been handed out to people like Admiral Robert Peary for his expedition to the North Pole and astronaut Neil Armstrong for walking on the Moon. While Currie hasn't left the planet in search of dinosaurs, he has been to the Arctic and Antarctic.

When he's not digging in Alberta's Badlands, or further afield in places like Argentina, China, Mongolia, Antarctica or Madagascar, Currie is busy supervising paleontology students, or he's writing scientific articles and books, or adding to his list of more than 1,200 media interviews on the subject of dinosaurs. The Explorers Club took all of Currie's work into consideration for this award.



## TURNING THE TIDE IN THE FIGHT AGAINST INVASIVE WATER-BORNE CREATURES

Mark Lewis (Mathematical and Statistical Sciences/Biological Sciences) - a leader in the field of mathematical modeling - received one of seven national 2012 Killam Research Fellowships, which will allow him to focus on the ongoing war in the water against harmful invasive animals like the zebra mussel.

The prestigious recognition comes with a prize of \$70,000 a year for two years that enables recipients to get out of the classroom.

"It's a great honour, and it gives me

time to focus on my research," said Lewis. His specialty is making mathematical models that account for every step in an invasive species' takeover of a body of water. "We assign numerical values to everything from the tainted ballast water in a ship that carries an invasive species, to the cost of fighting the problem," said Lewis.

Lewis cited the zebra mussel that spread from Europe to Canada's Great Lakes as a costly invasive species. Zebra mussels were introduced to the lakes, likely by commercial vessels, and quickly edged out native species in those lakes to the extent that they were blanketing

open surfaces and even clogging drainage pipes.

Lewis will be working closely with Fisheries and Oceans Canada and said he looks forward to the challenge. "We're hoping to come up with a predictive model for invasive species that will give us the ability to respond quickly when a new invasive species is found in a Canadian waterway," said Lewis. "Speedy decision-making is vital to controlling an invasive species and we need to build that capacity even before we know who the next invader is."



## MAKING MEMORIES MORE PERMANENT

Clayton Dickson (Psychology) and his research team have established that the brain's ability to rehearse or repeat electrical impulses may be critical in making a newly acquired memory more permanent.

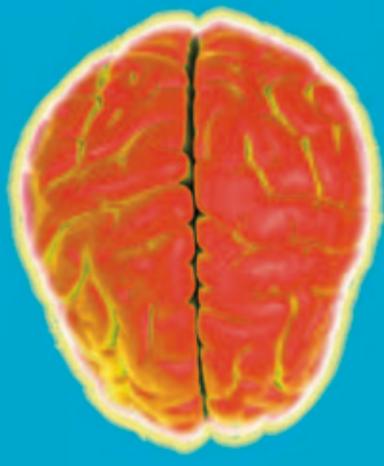
Dickson likened the process to someone trying to permanently memorize a phone number: "We repeat the number several times to ourselves, so hopefully we can automatically recall it when needed."

Dickson, the lead researcher on the project, says that neurons likely rehearse the process for recalling newly installed memories by using the brain's downtime to send and resend signals back and forth, establishing well practiced synaptic connections.

"Those connections allow the brain to retrieve the memories, and rehearsal ensures that they last for a long time," said Dickson. "It was previously thought that only biochemical processes, like protein synthesis, were important for solidifying memories."

Dickson says this work could lead to beneficial results. "Further investigation of this process could be used to improve an individual's memory and possibly as a tool to delete negative or post traumatic memories."

A paper outlining the research by graduate student Arjun Sharma, and U of A colleagues Dickson and Frank Nargang, was published Feb. 14 in *The Journal of Neuroscience*.



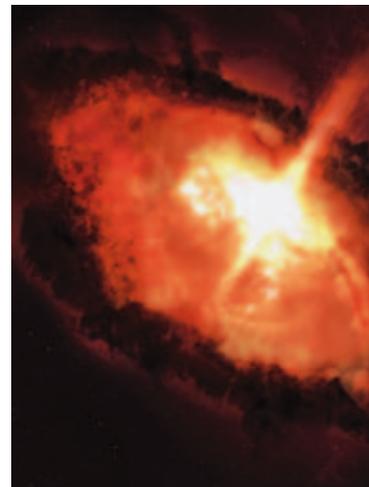
## THE BIG BURP THEORY

Forget the Big Bang theory on the origins of the universe, Gregory Sivakoff (Physics) is looking to find the secrets of the Big Burp theory.

Using land-based observation stations and the RXTE satellite (which specializes in observing high-energy events), Sivakoff and a team of researchers were able to predict a black hole's giant plasma belch to within a day of the event. The belch is actually a bipolar jet of plasma (ionized gas) that discharges particles from the centre of an accretion disc (a structure that moves material toward its centre – in this case, the black hole). This galactic belch ejects particles, scattering them amongst stars and planets, and may also affect magnetic fields in the galaxy.

Sivakoff says that by exploring their sample black hole, H1743-322, he and his team hope to explain why the black hole launches gas jets and explain their relation to the accretion discs. They hope to clarify some of the jets' effects on the formation and development of the galaxies in our universe. This particular black hole is optimal for study because it launches gas jets about every eight months. Understanding this object's digestive troubles may help answer questions about these incidents.

"We understand that these black holes are 'burping' this material out," Sivakoff says. "We want to understand how it's related to their meal and what they're eating, and to understand what the effects of this 'burp' are on the environment around them."



## NEW ONE-OF-A-KIND IMAGING DEVICE FOR SCIENCE

Geologist Ben Rivard (Earth and Atmospheric Sciences) is hoping a one-of-a-kind imaging system will satisfy two needs of oilsands producers: to find more energy and to return mining sites to a natural state.

Rivard is adapting the new Finnish-made device to analyze drilling core samples taken from the oilsands region of northern Alberta.

"This device is like no other," says Rivard. "It measures the reflective light given off by mineral samples, and the data could help us not only determine the presence of bitumen, but the ease or difficulty of getting at it."

Rivard also hopes the technology can help oilsands producers reclaim land by monitoring the densification process of tailings ponds. Oil producers are required to return old tailings ponds to forest eventually, but the challenge is getting the moisture out of the ground so it can

support equipment for final reclamation and re-vegetation.

"With this technology, we aim to tell if the levels of clay and other minerals in the soft muds are conducive to drying at a rate consistent with plans to replant with trees and other vegetation," says Rivard.

"We're working with the resource industry to make sure we're identifying the same minerals and other indicators of bitumen that core-sample analysts rely on to make their findings," says Rivard. "We hope to have the oilsands-related imaging potential of this equipment perfected and up and running within three years."



# Planning program response to community demand

Economic development in Alberta recently received a boost from the University of Alberta via its newly-approved undergraduate community planning program that will help to fill a critical need in the province, while building a better future for Albertans.

Earth and Atmospheric Sciences professor Robert J. Summers - acting director of the Community Planning Program - says the program (accessible through the faculties of arts and science) will produce outstanding planners to work in Canada and throughout the world.

The program will help address the current shortage of professional planners in Alberta. Summers says the scarcity of planners stymies development and can result in projects that fail to achieve their full potential of improving quality of life for Albertans.

He says only a few planners are currently being trained in Alberta and this means high demand for these professionals is now being met by bringing in people from elsewhere in Canada and the world.

"New planners tend to come to Alberta where we have a lot of economic growth and development going on, they work here for two or three years. They get experience and then return home," he says.

"The shortage of experienced planners

"We hope that the new U of A program can help communities here achieve those goals."

slows the pace of development and impacts the overall quality of the developments that are completed. If you have a better planning process, you end up with better developments. This is good for developers, it's good for communities and it's good for Alberta's sustainability and the quality of life."

He says that, in some areas, developments are taking up to three years just to get through the planning stage. The delays frustrate developers. "That's bad because developers may consider options in other

places because development costs go up while they wait," he says.

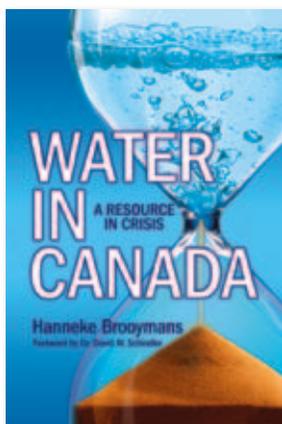
Summers says cities around the world have recognized that to be competitive in a global market, they need to provide outstanding quality, a necessity for attracting innovative professionals. "Ensuring a good quality of life and an amazing urban environment that's vibrant, enjoyable and pleasant is key to

economic growth," he says.

"Cities are not simply machines for living. People are much more complex; we need a good quality of life, and so when we talk about planning, we're talking about quality of life, sustainability and competitiveness. We hope that the new U of A program can help communities here achieve those goals."



# Writing on water



The U of A is home to some of the planet's top experts in water issues—and, with the projected launch of a new water initiative, it's poised to attract many more. Hanneke Brooymans, on the other hand, used her U of A science degree to explore the subject outside the walls of academe.

At the time she finished her degree, with a specialization in environmental biology, Brooymans wasn't sure where it would take her. "I didn't really know what I would do next," she recalls. "I decided to take a year off to do some fieldwork, to figure out what I wanted to do."

During that year, Brooymans found herself in Australia, where she did some volunteer work at a botanical garden. They put her up in a trailer park, where she spent the evenings pretty much on her own. "I'd be kicking around. I had a lot of time to think. One night, I thought, it would be fun to share what I know about

environmental issues by writing about them." The seemingly casual thought felt distinctly like an epiphany. "I figured I would go into journalism."

When she returned to Edmonton, Brooymans signed up at Grant MacEwan for a two-year journalism diploma. Later, she landed a one-year internship at the *Edmonton Journal*.

Brooymans showed up, chomping at the bit to set her environmental journalism dream in motion, only to get a reality check. "Shock of all shocks, I ended up doing general assignment reporting," she laughs. She bided her time, covering a variety of local stories while taking every opportunity to pitch environmental ideas.

Before long, her patience paid off. "When the environment beat came up, in late 2001, I applied for it and got it. I was thrilled. So, I clung tenaciously to that beat for ten years.

As the go-to journalist for environmental



Hanneke  
Brooymans

GORD MCKENNA

news, Brooymans found herself regularly immersed (pardon the pun) in water issues—from general stories on conservation and drinking water quality to front-page events like the 2005 train derailment and oil spill at Lake Wabamun.

Eventually, her work attracted the attention of Lone Pine Publishing, who asked Brooymans if she would be interested in writing a book on water. “I jumped at it,” she says. “It was a great opportunity.”

She relished the opportunity to expand her scope. “When you’re working for a daily paper, you’re mostly writing shorter pieces—apart from the occasional feature story for ‘Sunday Reader,’” she explains. “But this was an opportunity to write something much more extensive, more in depth.”

Published in early 2011, *Water in Canada: A Resource in Crisis* has been well received, even if it failed to dominate the bestseller

lists. (“I definitely didn’t write it for the money,” Brooymans jokes.) Brooymans was pleased that an Alberta publisher saw water issues as a fit subject for a mass-market book project.

Brooymans was also honoured when a hero from her U of A days agreed to write the book’s foreword. “I had a lot of really great professors,

“If scientists are able to speak with journalists, decision making in Alberta and everywhere else benefits.”

but David Schindler probably had the most impact on me,” she says. Later, during her time as a journalist, she learned to appreciate Schindler’s openness and accessibility. “It’s difficult sometimes for academics to see it,

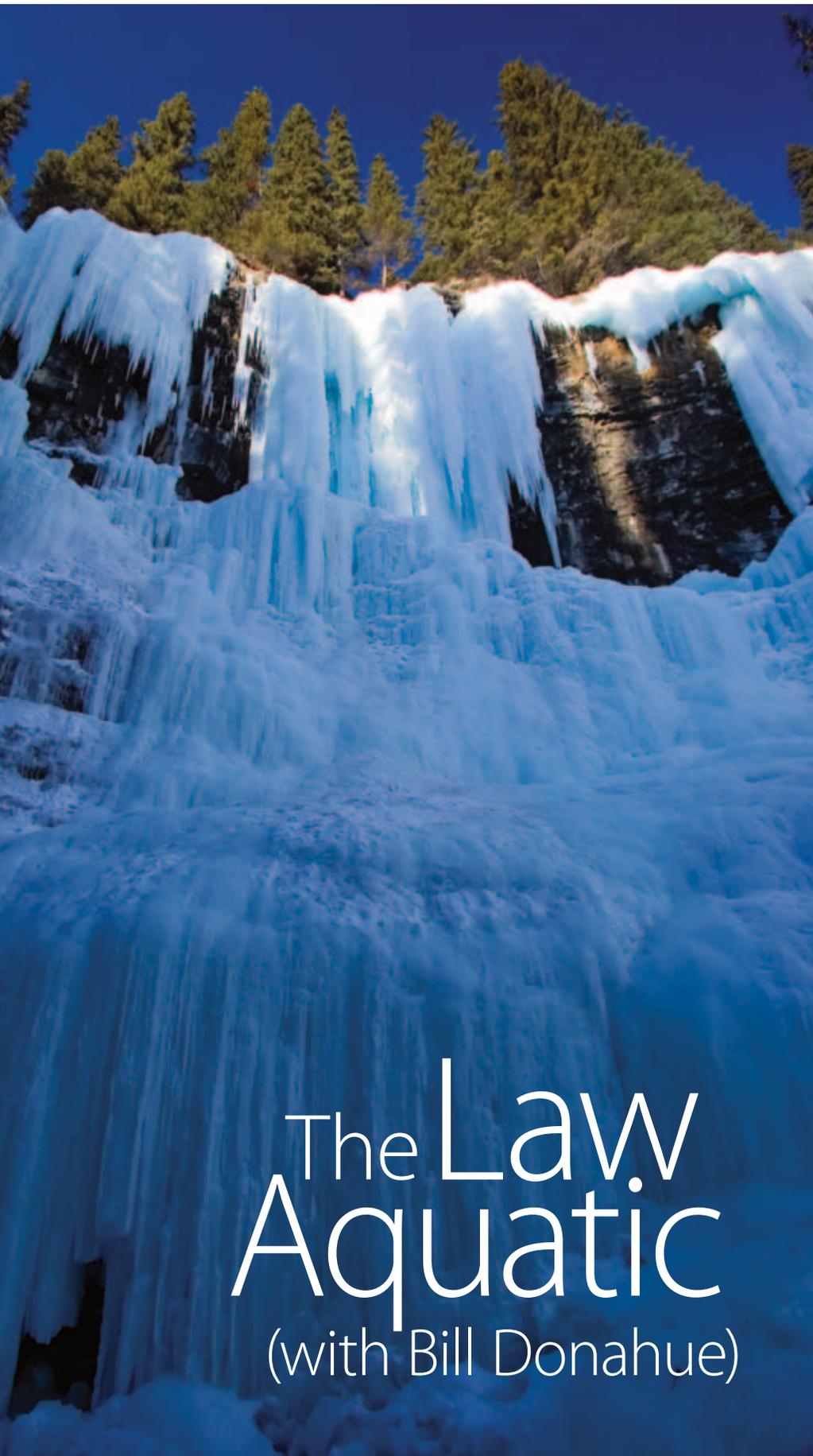
but I think it’s really important that they share what they know with the general public,” she observes. “If scientists are able to speak with journalists, decision making in Alberta and everywhere else benefits.”

These days, Brooymans works for the Alberta government as an environmental

investigations liaison, teaming with investigators and special prosecutors who tackle environmental cases.

Although her journalist days are behind her, Brooymans is determined to continue spreading the envi-

ronmental message. “I’ve always had a passion for those issues. And if I can help other people learn more about the natural environment, and what the limitations are, and how we impact that environment, then I’m happy.”



# The Law Aquatic (with Bill Donahue)

Canada: a land of ice and water. That's a common characterization, anyway. But large areas of the prairies are already facing potential water restrictions

– a problem which is likely to grow as climate change increasingly affects Alberta's glaciers. As water shortages loom, a unique Faculty of Science grad and the environmental organization with which he works, are trying to improve Alberta's water use quota system to benefit both conservation and water consumers.

Bill Donahue has followed an unusual academic and career path. After completing a B.Sc. in physics and biology at the U of A, he went into the field of neurophysiology. "I chose that because it was a combination of my favourite subjects. But then I realized that I would be spending all of my time in a dark room, wrapping tinfoil around electrical connectors!" he recalls with a laugh, saying that he wanted to spend more time outside. That fall he needed an extra course to finish his second B.Sc., and a limnology class was offered in which Professor David Schindler provided several guest lectures; Donahue signed up and realized water science was the perfect combination of physics, chemistry, and biology he had been looking for. After an interlude as a medical associate officer with the Canadian Armed Forces, he returned to the Faculty of Science for a Ph.D. with Schindler.

Shortly after graduating in 2000, he put his water policy expertise to use in the regulatory arena. Donahue appeared as an expert witness at hearings into the expansion of coal-fired power plants on Lake Wabamun, providing evidence regarding accumulation of heavy metals and organic contaminants. At the hearings, his eyes were opened to some surprising facts. "Not a lot of people involved in the regulatory hearing process actually know much about science," he realized. "And I certainly didn't know anything about the law, which was what the decisions actually seemed to be based on." Consequently, he decided that he had better learn a bit about the legal system, and returned to the U of A for a law degree. "I wasn't really interested in practicing law, but I wanted to understand how decisions were made," he says.

Donahue has put his knowledge of water science to use helping a variety of people

INFOCUS IMAGERY INC.



and organizations. While industrial clients and governments can afford high consulting fees, other organizations cannot. The high demand for Donahue's expertise allowed him to spend around 700 hours per year working on his own field research or performing pro-bono data analyses, reviews, or presentations for community or environmental groups on water contamination and supply issues. But now with a law degree in his back pocket he found his capabilities were increasingly sought out by both the industrial and charitable sectors. He recently signed on as Director of Science and Policy with Water Matters, a Canmore-based organization dedicated to protecting Alberta's watersheds (see sidebar).

At present, one of Donahue's main interests is how water rights are allocated and managed in Alberta. The province currently doles out

water based on a century-old system called "First-In-Time First-In-Right" – a fancy name for what is essentially "first come, first served". Essentially, it means that organizations that have been around for a long time (such as cities, municipalities, irrigation districts, and some major companies) get first dibs on water. More recent water licensees only get their share once the 'seniors' have taken their allotment. In practice, what this means is in water-limited areas such as the Bow River Basin and small towns may be subject to the water use decisions of big cities and irrigation districts. During low-water years (which are increasingly prevalent due to climate change and more water-intensive industry and agricultural activities), small towns may run short and have to either cap their water use or find new sources, usually from other more senior

licensees. "Under the current system, there's no incentive for big water users to practice conservation in a way that improves or protects watershed health," states Donahue. "Conserved water also is generally considered available to expand operations or growth rather than being returned to rivers, including those in the south that have already been over-allocated. Without protecting the health of our rivers, the benefits we gain from them are also under threat."

While the Alberta Government recently announced a major program to review the province's water allocations policy, movement on that promise has been slow, according to Donahue. "Decisions keep getting put back; usually that's an indication that someone doesn't like what they're hearing," says Donahue. "There is a major deviation between management, politics, and science, and it's past time for a public, adult conversation about how best to manage our water use and rivers in a future with less water." Armed with his cross-disciplinary degrees, Donahue is in the perfect position to bridge that disconnect and fight for the rights of both water users and the ecosystem.

"... it's past time for a public, adult conversation about how best to manage our water use and rivers in a future with less water."



## Water Matters

In 2003, the non-governmental organization Bow Riverkeeper was founded with a goal of protecting the Bow watershed in southern Alberta. By 2007, it had morphed into Water Matters, a group with a broader mandate of defending all of Alberta's watersheds and raising public awareness of water issues. Recently, Water Matters has been advocating for the replacement of the century-old "First-In-Time

First-In-Right" water allocation system (see article). In addition to their work on water trading and transfers of water between river basins, the group has also been deeply involved in training a critical eye on water quality in the oil sands region. In the last few years, they have examined risks to the water table from in situ oil sands development and assessed the federal monitoring

program for water quality on the Athabasca River downstream of the oil sands – a program whose overhaul has just been officially announced. Water Matters also works to engage Albertans in land use planning, promote water conservation at the consumer level, and build capacity for citizens and communities to deal with the water-related challenges they face.



Larry Wang

# The opposite of retirement

Like the Yangtze River he's helping to rehabilitate, Dr. Larry Wang's life has been filled with twists and turns – and he has no plans to slow down.

There was a time when Larry Wang's father doubted he'd finish high school. Born in China and raised in Taiwan, he spent his teenage years playing sports, especially soccer. His class work came second. "I was a solid B student," Wang laughs.

Not only did he graduate, but he pursued academia, earning a PhD in biology at Cornell University in the U.S. before launching a

successful academic career at the University of Alberta.

For decades, he researched the physiology of cold, with a particular interest in hypothermia and mammalian hibernation. His research on ground squirrel hibernation led him to better understand how human metabolism can be boosted to help the body tolerate cold temperatures. Wang saw the

“People say, ‘What are you doing? You should be retired! You should play golf every day!’”

commercial potential of his research, so he approached the Research Office in 1988. “I said, ‘I’m just a dumb scientist. I have no idea how to commercialize this.’”

Delighted with Wang’s offer, the U of A bought the Assignment of Patent Rights from Wang for \$1 (his idea) and attempted to partner with a local company in order to create a product based on the technology. Unfortunately, the U of A lacked the technology-transfer infrastructure it has today, and the project was ultimately licensed back to Wang.

While he and his wife had no business knowledge, they decided to use their lifesavings and try to commercialize the invention themselves. After many fits and starts, Wang created the Canadian Cold Buster Bar (now the Access Bar). The functional food was originally designed to help soldiers avoid hypothermia, but he eventually realized it was a better fit for athletes who needed a source of quick energy that would also allow them to burn body fat. Since signing a deal with US wholesaler Malaleuca in 1993, 130 million bars have been sold in 14 countries.

In spite of his busy academic and business careers, Wang considered retirement in the mid-1990s, when provincial cutbacks motivated the university to offer bonuses to professors who retired early. “I thought, ‘I’ve done everything. I’ve climbed all the mountains. What else do I want?’” On top of publishing countless papers and books, and launching the company, he’d also been elected as a member of the Royal Society of Canada in 1993.

But instead of rubber-stamping his retirement application, administrators sent it up the line – all the way to President Rod Fraser, who asked Wang to stay on as his advisor for international affairs. Wang liked the challenge and said yes and soon discovered he was good at helping Fraser build relationships with government bodies and universities in Asia, where the university was especially keen to build ties. Nine years later aged 65 it was finally

time for Wang to retire - at least, on paper.

Years before, an elementary school friend – Sam Chao – asked Wang if he’d be interested in transforming his life savings (about \$1 million) into a project to rehabilitate the ailing Yangtze River in China. Wang agreed and worked with the U of A to create a non-profit organization, the Ecological Conservancy Fund (ECO Fund), which conducts environmental rehabilitation along the Upper Yangtze River drainage with help from volunteer scientists.

So, when Wang stepped away from the lab bench in 2005, he only increased his travels to China, where he supervised about a dozen ECO projects. The largest project involved planting 150,000 mulberry bushes in farmer’s fields along the sensitive slopes. The goal was to stabilize the bank with the plants’ roots, while preventing soil run-off (which is bad for farmers and the ecosystem) and boosting the economic livelihood of farmers. Mulberry

leaves can be harvested in order to grow silkworms, which feed on them. “A farmer’s income is now 12-14 times greater than before. They don’t need any more assistance from us,” says Wang. “They have now sustainable income for new buildings, new houses, new everything and sending kids to school.”

That project has finished but ECO has other smaller projects on the go right now, thanks to funding from other donors. Wang visits China three to four times a year to check on the work. “People say, ‘What are you doing? You should be retired! You should play golf every day!’” Wang laughs. But even though he’s well into his 70s, he finds too much satisfaction in the work to give it up. “This is something I’ll do until I’m physically incapable.”

*In 2011, Wang was honored by the U of A with an Honorary Doctor of Science for his work on the Yangtze.*



Larry Wang



# Superstar swimmers

Kayla Voyteck and Joe Byram share their joy and addiction to life in the water.

Kayla Voyteck describes her relationship with water in terms even those people who don't swim will understand. The competitive swimmer is so familiar with the pool that she likens it to home.

"The pool is pretty much a second home. When you are in it, you forget about everything else. It's a place of comfort now," said Voyteck.

She's been swimming full-time for the past six years, so it should come as no surprise that she feels so at ease when gliding through the water. Voyteck is also a member of the Pandas' swim team, garnering a bronze medal in the Canada West 400-metre medley relay last year. She also qualified for the Canadian Interuniversity Sport national championships that same year.

And, while she's a proficient swimmer, Voyteck also has a more academic connection to water. She's a fourth-year science student and biology major, where water becomes a huge issue.

Water conservation is important to someone so connected to it on both an emotional and academic level.

"Water is what's getting us our scholarships. It is what allows us to go to school here. It's important in that sense," said Voyteck. "It's important to not take advantage of water, using what you need it for or using it for what you love to do in it."

Being an athlete and an academic has proven dually important for Voyteck. She was named an Academic All-Canadian last year, an award handed out every year to student athletes from across the country who can maintain an 80 per cent average, equivalent to an A-.

Being both a high-performing athlete and an academically-focused student

can be difficult. Regular practices combined with the travelling required to compete — this year's national meet was held in Montreal at the end of March — means there is a lot for student athletes to juggle.

But, it has been swimming that has taught Voyteck so much about time management and making sure she keeps her focus on what is important.

"You learn how to prioritize things. You learn how to balance things. It's difficult, but it's a life skill."

"Water is what is getting us our scholarships. It is what allows us to go to school here."

Kayla Voyteck

# — superstar students

“Water is life. Swimming takes your life. It is your life.”

Joe Byram describes his relationship to water in very simple terms. The Golden Bears swimmer has been comfortable in the water since an early age. He’s been swimming full-time for six years now, and has come to appreciate how he interacts with water with such a long career in the pool.

Byram’s close relationship with the water has translated into success in the pool. He was named the Golden Bears’ top rookie of the year, beating out male athletes on 12 teams for the honour. He

“It . . . showed how much U of A has done for me, even in the short period of time.”

was also named the Canadian Interuniversity Sport Rookie of the Year.

The CIS award was big for Byram and the Golden Bears team.

The university isn’t normally a big player in swimming, a field dominated by schools like the University of Toronto or the University of Calgary.

“It sort of showed how much U of A has done for me, even in the short period of time,” said Byram. “For me to win rookie of the year from a school that doesn’t have any national money is big.”

Byram’s accolades are in part due to a long career in the pool. He has been swimming since the age of 10, when his cousins got him interested in competitive swimming. Byram began swimming full time in 2006, and was a member of the Canadian Youth National Team in 2010.

As a first-year student, Byram doesn’t need to declare his major for another year. But he’s already leaning towards human biology. That specialization gives him an interest in water conservation water issues. Keeping hydrated in the pool is important, and the human body is made up of as much as 65 per cent water.

“The image that comes to my mind when you say water conservation is dumping raw sewage into a river, into a stream, into a lake,” said Byram. “(I think of) not doing that. Not using water for reasons you don’t have to.”

Water conservation is double important to a biologist and competitive swimmer. As he puts it, “Water is essential to life, and is essential to our lives.”



Joe Byram



# Boreal currents

(L to R): Kevin Devito and Carl Mendoza.

An “essential primer” for oil sands mining reclamation developed by U of A researchers Kevin Devito (Biological Sciences) and Carl Mendoza (Earth and Atmospheric Sciences) will go a long way towards assisting government and industry to better manage ecological and environmental risks associated with developing the North.

Fifteen years of research into water movement on the boreal plains of Northern Alberta - supported by a range of stake holders from government, including core funding from NSERC, industry and Ducks Unlimited Canada - has been synthesized into a manual the duo agree fills a notable gap in reclamation literature.

“The pace and scale of development in this province right now makes it a perfect time to be releasing this information to industry and interested groups,” said Mendoza.

Devito and Mendoza – both hydrology experts – worked with Clara Qualizza, and supported by Syncrude to put together the “how to” manual for industry and government.

The manual goes through in largely non-technical terms, the key concepts and controls of water movement in the boreal plains region in which the oils sands are located.

“The document we produced fills a gap in how to apply what we have learned through

“The pace and scale of development in this province right now makes it a perfect time to be releasing this information . . .”

our studies of water on the boreal plains to the reclamation process,” said Mendoza.

“I would say what we have produced is an essential primer for those people initially planning and designing forest and wetland reclamation in this part of Canada,” said Devito

Support to create the manual came from Syncrude, which recognized the need and opportunity to bring the U of A research into the public sphere in a user-friendly format. The aim is to produce something for a non-hydrology expert that is accessible and meaningful in their planning process.

Much of their research work was carried out in the Utikuma Lake region in northeastern Alberta. The project gathered information about the relationships between hydrology, ecology, and disturbance in the boreal forest.

The varied landscapes of Alberta are made up of a mosaic of wetlands and forest lands that have different influences on the water cycle, storing water or produce runoff depending on where they are in the landscape and within a climate cycle.

Devito and Mendoza said there are many things to consider when designing a landscape to sustain ecosystems in Alberta through the predominantly dry cycles, and then redistribute water and store it during the very wet cycles.

# Helping heal Alberta's watersheds

Steph Neufeld is all about water.

When she's not working as a watershed specialist for EPCOR, she's probably volunteering her time as president of the Alberta Lake Management Society promoting comprehensive management of Alberta's water bodies. And, if she's not doing that, there's a very good chance you'll find her at one of Edmonton's pools, swimming end to end for hours, perfecting her stroke. She's immersed in water – literally and figuratively – for half of every day.

When she was an undergraduate in the Faculty of Science, Neufeld got a summer job as a technician working at the Utikuma Lake wetlands in northern Alberta. At the time, she was interested in landscape-level forest ecology. But, that summer, in the marshes during the tranquility of dusk and dawn she had an epiphany.

"I realized that water and land are wholly interconnected and we need to study them as one unit, rather than segregating them into two different disciplines." Returning to U of A to do her M.Sc. with David Schindler she initially had plans to focus on "nice clean forest streams" but got diverted into studying slow-moving wetland streams near Lac La Biche.

"In that area, there is a lot of land that's been converted to agricultural uses," says Neufeld, "It's an area where the soil is generally marginal for agricultural uses to begin with." And, as she waded through the wetlands daily, her thoughts drifted to wondering: what are

the ecological costs of that agricultural land conversion and how can I measure it?

After finishing at U of A, Neufeld worked as a consultant with Mainstream Aquatics, and then moved on to EPCOR.

"My role as EPCOR's watershed specialist had largely been filled by engineers in the past," she says. "Their focus was different and they generally looked at water quality from a drinking water treatment perspective rather than an ecological perspective."

As an ecologist-biologist in the job, though, Neufeld was able to bring a holistic perspective to water treatment. "Often we think we're managing for the output of 'clean water', but I don't think that's true. We're managing an entire ecosystem that includes water. If we take care of the ecosystem, the water will take care of itself."

She notes that it's far more fiscally and environmentally responsible to stop contaminants such as sediment, pesticides and pharmaceuticals from getting into the water in the first place, rather than trying to treat it afterwards.

Always an avid athlete and cyclist, in recent years, Neufeld has taken up long-distance running which has flowed into her becoming a triathlete. But ironically, despite the countless hours spent in hip waders, there was one discipline she always

struggled with:

"I found swimming pretty boring, so I never got into it" she says. "But swimming in a lake is amazing – you can see the algae and zooplankton right in front of you! There are grebes swimming along beside you!"

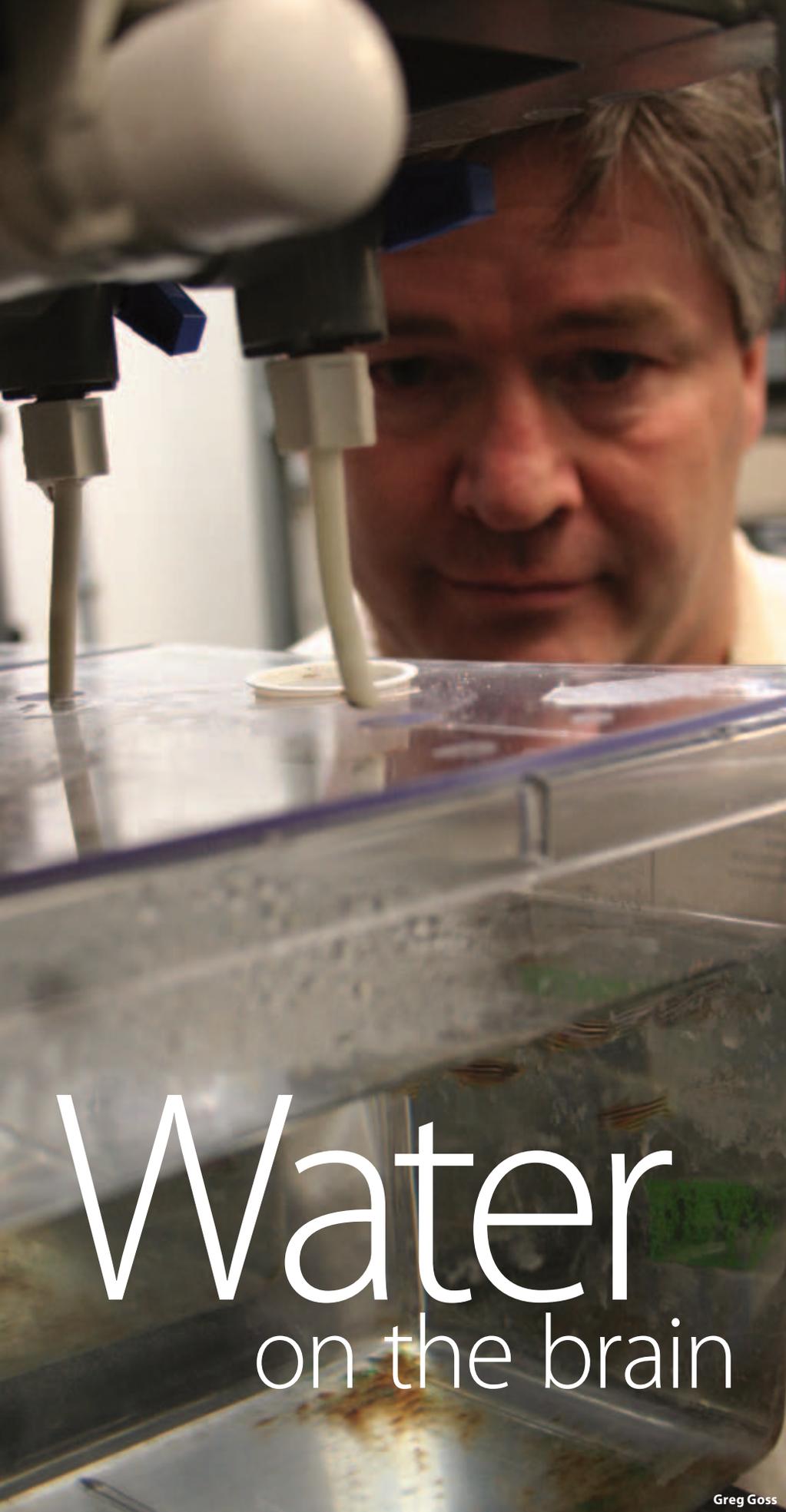
Neufeld says triathletes are often concerned about seemingly-poor water quality – but that's usually because they don't understand lake ecosystems. "People often scream because of the weeds or the fish or because the water is so green!" she laughs.

Always the optimist, Neufeld sees a role for the athletic community in influencing water quality: "triathletes tend to be wealthier individuals – maybe they can help put pressure on governments and industry to recognize the importance of watershed preservation."

She laments that she often has to travel far to find lakes to swim in because many lakes in Alberta suffer from eutrophication, a process by which lakes become overloaded with nutrients, leading to heavy algae growth and fish kills. By combining her work, volunteerism, and athletic passions, Neufeld hopes that she can help heal Alberta's watersheds and continue spending her life surrounded by clean, crisp prairie water.



"I realized that water and land are wholly interconnected and we need to study them as one unit, rather than segregating them into two different disciplines."



# Water on the brain

Greg Goss

Judging by superficial appearances, renowned water researcher and educator Greg Goss seems to have come down in the world.

He has been consigned to a barren room hidden away in the southwest corner of the Biological Sciences building, containing little more than a few desks and chairs.

Fortunately, it won't be empty for long. The room is slated to become the nerve centre for the U of A's emerging (if yet unnamed) water initiative. The project aims to develop a multi-disciplinary approach to research and teaching of water issues, and Goss is excited to be its executive director (and one of four scientific leads)—even if his new digs are something of a blank slate. “We may be getting phones installed one of these days,” he jokes.

For Goss, the job represents the newest phase in a life and career that has always revolved around water. “I grew up in Northern Ontario, in a town called Kenora, which is surrounded by water,” he explains. In high school, he was heartbroken and outraged when news broke that the Wabigoon-English River system had been massively contaminated by mercury from industrial dumping. The scandal cemented his goal to become a biologist.

At McMaster University, Goss studied under Chris Wood, one of Canada's leading researchers on environmental toxins and their effects on fish. Later, while completing his PhD at the University of Ottawa, Goss worked with Steve Perry, himself a former student of Wood's. Goss credits both men for instilling an appreciation for the value of hands-on mentorship. “They taught me that you need to keep close to your lab, to understand what's going on.”

He has also tried to embody the same ideal. “I come from a family of ten kids, and I have fourteen people in my lab. I treat them just like my family. I berate them if I need to, but I also protect them and support them as much as possible.” It appears to be working—Goss received this year's (student-nominated) Faculty of Science Mentoring Award.

Goss's research at the U of A has been eclectic, but consistently centred on water. His main specialty is toxicology—wastewater management, hormones and chemicals in municipal effluent, and

launch on March 1). "She asked a big question: why do we flush our toilets with drinking water?

"We provide 330 litres of drinking water a day per person, when we only need 30

"I need water for my soul . . . it helps me concentrate, and it helps me with my students, because I work side by side with them."

potential new sources of contamination such as nanomaterials. This being Alberta, he has also been involved in work involving tailings ponds and their remediation.

And, during the summers, he has developed a strategy for getting out of the office and onto the water. "I have a marine biology research program out on Vancouver Island, looking at how fish survive different environmental conditions—low salinity, high salinity, low oxygen.

"I need water for my soul," he says. "It helps me concentrate, and it helps me with my students, because I work side by side with them."

His new role with the water initiative may leave him with less time for his own research, but Goss has chosen to embrace this broader perspective. "I have been collaborating with people in chemistry, I have been collaborating with industry, I have been collaborating with engineers," he observes. "Last year, I had a law student in my lab."

Already, he's finding himself looking at water issues in new ways. For example, he was particularly struck by India's Sunita Narain (who received an honorary doctorate at the U of A water initiative's unofficial

litres to shower and drink," Goss marvels. "It doesn't make sense."

As executive director of the water initiative, Goss is thrilled to be at the threshold of what could prove a significant new academic movement at the U of A. "You have to think about your legacy," he says.

His office—and new job—may be a blank slate, but you get the feeling it doesn't bother him one bit.



Water may be fundamental to all life on our planet, but no other university has taken a comprehensive and multidisciplinary approach to water issues.

"This is pretty well unique in the world," declares Greg Goss, executive director of the U of A's new water initiative.

Oil and gas may dominate Alberta's perceptual landscape, but the province also represents the perfect place to study water, Goss says. "Alberta is faced with all the world's water problems. We have climate change, which is changing our water and water flow patterns; we have increasing urbanization; we have resource extraction; we have changes in groundwater capabilities; we have a very large agricultural sector that uses a lot of water. We have water policy that's different than anywhere else in the world. We even have de facto market pricing on water, because of water shortages in the south."

The initiative hopes to bring all of these perspectives under one roof, explains Goss. "We will train people to better understand each other's fields—hydrologists, lawyers, policy analysts, economists, sociologists, public health professionals, risk assessors, engineers and others. If we can broaden their knowledge, they'll be better equipped to work together to solve these bigger issues."

Explained that way, it seems like an obvious strategy. But, Goss says, it's not the way most academics think. "We need to train people out of their silo mentalities. Universities traditionally don't do a good job of that."

The U of A is also blessed with an administration willing to embrace such a grand vision, and to invest the needed resources. "It's not an inexpensive program," observes Goss.

For its first year, the water initiative's objectives include safe water supply for remote communities, and environmental concerns and strategies around resource extraction.

For information on the water initiative, visit [www.water.ualberta.ca](http://www.water.ualberta.ca).

# Love your lake

Alumna Jesse Hitchcock coordinates a grassroots program that protects sensitive aquatic habitats by educating residents.

As a child growing up in Victoria, BC, Jesse Hitchcock spent a lot of time by the ocean, where she delighted in examining the shore life: seaweed, plants, bugs, even rocks. It didn't take long for the young naturalist to become concerned about environmental protection. "I remember being young and giving my Mom heck for not recycling," she says.

As an adult, Hitchcock came to the University of Alberta to complete a Bachelor of Science degree with a specialization in evolutionary biology. Since graduating in 2011, she's put her education and passion for the environment to work as a program coordinator at Nature Alberta, a non-governmental organization focused on protecting the province's natural spaces. Hitchcock leads the Living by Water program, which educates shoreline property owners

about the consequences of human activities to local ecology.

"There's a disconnect between what we know in the natural sciences and what people outside of academia know," says Hitchcock. Often, residents aren't aware that their daily activities affect the aquatic ecosystems nearby and are unknowingly using chemicals that disrupt the natural balance of the lake. For instance, phosphates – found in many clothing detergents and lawn fertilizers– can trigger algae blooms which can kill off plant and animal life in lakes.

A little education goes a long way. Living By Water consults with communities near lakes to educate residents about the impacts of their behaviour on the lake and how they can better care for their local ecosystems. Each summer, the program hires students with biology backgrounds to communicate the science to community members. Before being hired

as the program's coordinator, Hitchcock was one of these summer students. "People trust you if you can prove that scientifically, you're credible," she says.

While passionate about public outreach, Hitchcock has set her sights on academia. This September, she begins a master's degree at the University of Prince Edward Island. Her focus: freshwater marine conservation, which appeals both to her upbringing and training with U of A professor Richard Palmer. As an undergraduate, Hitchcock assisted with Palmer's research on the asymmetrical morphology (body shape) of crayfish.

"Working for Nature Alberta has helped me recognize the gap between what we know as biologists and what the public knows," she says. "Whatever I do with my research, I want it to inform policy or, in some way, get out to the community."

"Working for Nature Alberta has helped me recognize the gap between what we know as biologists and what the public knows."



Jesse Hitchcock



Maria Dunn

# From Science to Song

Looking back at her science degree, Maria Dunn has no regrets. That said, music fans are grateful that she chose not to pursue science as a long-term career.

The acclaimed singer-songwriter, poised to release her fifth solo album, has become a beloved fixture on the Canadian folk scene. It's hard to picture her in a lab coat—but that's where she found herself in the fall of 1983, after enrolling in chemistry at the U of A.

Although music had always been part of her life, a musical career seemed an unrealistic goal at the time. "I just figured I should do something practical," she explains.

Before long, though, she realized a chemistry career was equally unrealistic. "I was doing much better in just about everything else," she laughs. "It was a tough year, but it was

important in terms of learning what I was and was not good at. By the end of my second year I had decided to aim for a BSc in psychology."

After graduating—BSc (Honours) Psychology '87—Dunn continued in a series of research assistant jobs, with time off for travelling. She also began hosting a folk music

"I got to work with some great people—people I really respected, and who were passionate about what they did."

program at CJSR, which gave her a chance to immerse herself in the local scene. Gradually, she found herself spending more and more time with her guitar, and less time in traditional workplaces.

One final job—a one-year, flexible position with Rehabilitation Medicine professor Johanna Darrah—gave Dunn the opportunity to finally make the jump. "I was able to start making a living as a musician without having to quit cold turkey from a regular paycheck."

Since then, of course, Dunn has developed into one of Western Canada's most respected and consistent folk performers. Many of her finest songs explore historical themes, often through poignant first-person ballads—a talent that bodes well for her upcoming album, scheduled for release this summer. Entitled *Piece by Piece*, it tells the stories of immigrant women who worked at Edmonton's GWG garment factory between 1911 and its closing in 2004.

The album began as the soundtrack of a musical multimedia piece, a collaboration between Dunn and Edmonton videographer Don Bouzek, based on interviews primarily conducted by historian Catherine C. Cole. Before writing any music, Dunn sat in on many of Cole's interviews and viewed videotape or read transcripts of others.

For the CD, Dunn's long-time producer Shannon Johnson suggested she flesh out the songs to stand on their own. "In some cases, I had to go back and add another verse, to replace the narration you'd see in the live show," Dunn explains.

And she's clearly excited with the result. "This is a real concept album. It gave me the chance to write songs about a whole bunch of different issues—women's work experience, their immigration experience, their hopes for their children."

Although her science background no longer puts food on the table, Dunn looks back at her earlier career with gratitude. "I got to work with some great people—people I really respected, and who were passionate about what they did." Their example prompted Dunn to seek out a similar passion in her own life. "And I knew that I wasn't that passionate about psychology. I was passionate about music."

For performance dates, information, and extensive musical samples, visit [mariadunn.com](http://mariadunn.com).



# Come celebrate 100 years of EARTH AND ATMOSPHERIC SCIENCES at the University of Alberta

The Department of Earth and Atmospheric Sciences (EAS) marks its centennial in 2012, celebrating the achievements of men and women whose passion for discovery and innovation contributed to the international reputation the department enjoys today. EAS evolved from the merger of the Departments of Geology and Geography and reflects a collaborative interdisciplinary approach to the study of the earth sciences with unparalleled opportunities for leading edge research and study.

The Department of Geology was founded in 1912 with the appointment of John A. Allan. Allan was charged with establishing and heading a Department of Geology at the University of Alberta. In 1914, Allan was joined by Alan E. Cameron (geology lecturer), followed by the appointments of Percival S. Warren (paleontologist /stratigrapher) in 1920 and Ralph L. Rutherford (mineralogist/petrologist) in 1923. These individuals made up the entire staff complement until after the Second World War and this small cohort trained the generation of geologists who discovered gold at Yellowknife in 1936 and oil at Leduc in 1947. Post Leduc #1 the number of faculty members grew to eight in response to a dramatic increase in undergraduate enrollment and rapidly-developing energy and resource sectors in Alberta. These numbers had doubled again by the mid-1990s.

The Department of Geography was founded in 1957 with the appointment of William C Wonders who served as Chair for the first ten years. The Departments of Geology and Geography merged in 1995 creating the EAS Department as it is today.

The EAS Department at the U of A is now the largest of its kind in Canada and its alumni are employed across the globe achieving prominence in the geosciences, scientific and industrial communities. By the time the official centennial ceremonies kick off in September 2012, EAS will have 52 faculty, 35 support staff, 300 honours and specialization students and 180 graduate students.

The department today houses state-of-the-art facilities such as the Arctic Resources

Analytical Laboratory, the De Beers Laboratory for Diamond Research, the Radiogenic Isotope Facility and the Earth Observation Systems Laboratory.

The Department is home to the Canadian Centre for Isotopic Microanalysis and the University Centre for Earth Observation Sciences. In addition EAS houses and curates 9 distinct collections and two museums, the Mineralogy/Petrology Museum and the Paleontology Museum. The collections include the second largest meteorite collection in Canada. The collections and the museums are a legacy of Dr J.A. Allen. He established the first museum at the UofA and although it was officially opened to the public in 1935, students and the public were able to view the collections from the beginning. This commitment to outreach continues today; both museums are open to the public daily and are free of admission. EAS maintains a research quality weather station on top of the HM Tory Building with webcam updates on local weather and the William C Wonders Map Collections resides in University Libraries. The latest addition to our outreach and teaching resources is the Geosciences Garden which runs the width of campus from Alumni House to the HMC Tory building along Saskatchewan Drive. Its official opening is September 22, 2012.

To celebrate our centennial EAS has organized the 2012-2013 Centennial Lecture Series and the Centennial Seminar Series to be and are inviting a select number of our notable alumni to present. Two highlights will be:

The awarding of an Honorary Doctorate of Science to Donald B Dingwell, (Director of the Department of Earth and Environmental Sciences, Ludwig-Maximilians-University, Munich and Secretary General of the European Research Council, ERC) on June 6, 2012

A lecture by Professor Sir Keith O'Nions, FRS, (Rector of the Imperial College London and former Director General of the Research Councils, U.K.) at the Royal Alberta Museum Alumni Weekend, September 22, 2012.

The Centennial celebrations continue throughout 2012-2013. We want to connect with our alumni and friends and ask that you contact us.

#### For more information on any of the events below please see:

<http://easweb.eas.ualberta.ca/>  
or contact Shyra.craig@ualberta.ca  
780-492-3265

#### Earth and Atmospheric Sciences Department Staff & Alumni Dinner

Faculty Club  
6:00 pm, September 21, 2012

#### Earth and Atmospheric Sciences Geoscience Garden Grand Opening

University of Alberta Campus Earth and  
Atmospheric Sciences Building  
11:00 am, September 22, 2012

#### Earth and Atmospheric Sciences Centennial Beer Gardens, Geoscience Garden Tours and Activities

University of Alberta Campus Earth and  
Atmospheric Sciences Building  
12:00 pm to 4:00 pm, September 22, 2012

#### Earth and Atmospheric Sciences Centennial Celebration with Distinguished Speaker at the Royal Alberta Museum

7:00 pm to 12:00 am, September 22, 2012

#### Earth and Atmospheric Sciences Centennial BBQ, Alumni Weekend Wrap-Up and Activities

12:00 pm to 5:00 pm, September 23, 2012

#### Earth and Atmospheric Sciences Department Centennial Student Seminar Series

Speaker: Claude Labine (Campbell Scientific  
(Canada) Corporation)  
Tory 3-36  
12:00 pm, September 26, 2012

#### Earth and Atmospheric Sciences Department Centennial Scientific Lecture Series

Speaker series will start in September 2012 and  
run once a month until April 2013

#### Earth and Atmospheric Sciences Department Centennial Student Seminar Series

Speaker: Melissa Bowerman (Royal Alberta  
Museum)  
Tory 3-36  
12:00 pm, November 2012

IN RETROSPECT

# Gregory Taylor

## Dean of Science



After almost 10 years as the Dean of Science, Gregory Taylor is stepping down, transitioning back to his research and teaching in the Department of Biological Sciences. During his time at the Faculty's helm, Dean Taylor was the driving force behind major initiatives that propelled the Faculty of Science to be one of the top science faculties in the country. While there are far too many successes to highlight from the last 10 years, some standouts include:

- The growth of the undergraduate science population by 20%, with the 2011-12 class topping out at just under 6500, and an international population of undergrads and graduates that grew 83 and 39 percent respectively.
- An increase in international research and education partnerships that includes the Helmholtz Association in Germany; University of Oslo in Norway; Gifu University in Japan; University of Camerino in Italy; the University of Minas Gerais and Uni Montes in Brazil; and the University of Hong Kong.
- The establishment of several institutes and centres of excellence including the Alberta Innovates Centre for Machine Learning, the Alberta Glycomics Centre, the Canadian Centre for Isotopic Microanalysis, the Alberta Centre for Earth Observation Sciences and the Institute for Space Science, Exploration, and Technology.
- An increase in the number of publications in the world's most prestigious, high-impact journals (Science, Nature, PNAS) by more than four-fold since 2002.
- Fund development activities that resulted in the creation of the Institute for Land Use Innovation and the Encana Chair in Water Resource Sciences, and philanthropic donations made by friends of science that resulted in

several named spaces in CCIS, including the PCL Lounge, ConocoPhillips Canada Lecture Theatre, Fred and Melanie Johannesen Student Common, Gilead Lecture Hall, Fischer Scientific Research Support Facility, Jack L R Williams Meeting Room, Reuben B. Sandin Meeting Room, Davis Plaza and the Dr. Josephine M. Mitchell Environmental and Industrial Fluid Dynamics Laboratory.

- New programs aimed at undergraduates, including Science 100 - a one full year course that explores and teaches the concepts and foundations of seven scientific disciplines in a unified and integrated manner which won the President's Achievement Award; and the BSc Specialization/BA degree in Planning that will help to fill a critical need in the province, while building a better future for Albertans.
- Faculty recruitment that saw more than 100 new faculty members hired between 2002 and 2011; 45 faculty awarded chairs; and research funding that increased from about \$56 million in 2002 to a high of \$108 million in 2010.
- Dean Taylor was appointed to an international panel that is assisting in the creation of a world-class environmental monitoring system for Alberta's oil sands.
- The opening of the \$430 million Centennial Centre for Interdisciplinary Science, a world class teaching and research facility that has provided space for the increase in students and researchers, with 2,200 new lecture theatre seats, 648 lab seats and 230 computing lab seats and research space for 1,100 faculty and staff.
- Over 12,000 graduates who joined the Faculty of Science alumni family.

All the best to Dean Taylor.



# TAKE A TRIP DOWN MEMORY LANE AND ENJOY ALL SCIENCE HAS TO OFFER AT:



Join us in the Tuck Shop tent to find out about everything we have on offer this year including:

**FANTASTIC FOSSILS AND  
 MAGNIFICENT MINERALS**

Watch the Skies—Visit the **Astronomical Observatory**

What's New in the **Chemistry Centre?**

**BUG BONANZA!**

Birds of a Feather: **The Ornithology Collection**

**Dinosaurs in the Dungeon**

**Diamonds and Killer Whales:**  
 Everyday Research in EAS

*Dating the Earth*

For more information check the Alumni Weekend website@  
<http://www.alumni.ualberta.ca/en/Celebrate/AlumniWeekend.aspx>