Alumna shares Nobel nod

Ruth Mitchell, BA’01, BSc’01
Message from the dean

Dear alumni and friends,

In the Faculty of Science, we have been working diligently towards realizing our bold new vision and mission, and we’ve continued our momentum since the fall 2017 launch of Curiosity Sparks Discovery, our strategic plan. Our mission is to work together to advance research, scholarship and innovation, create authentic learning experiences, and inspire careers of the future. In this issue, I am excited to share stories of strong partnerships and collaborations that are further building community, championing research and fostering innovation.

We believe that, by working together, we will generate curiosity-driven discovery and contribute solutions to societal challenges. By connecting with our community, we are able to play an integral role in, and learn from, the cultural fabric of Calgary and the communities we impact.

Within these pages, you will learn more about our partnerships with other institutions and how they are sparking discovery that is leading to recommendations towards more sustainable practices and new policies. One such partnership, with the provincial government, looks at ways to ensure the protection and sustainability of rainbow trout in the Bow River and Calgary’s reputation as a world-famous recreational-fishing destination.

The launch of 2019 saw several changes in leadership at the University of Calgary, with a strong showing from this faculty. Science is proud that Dr. Ed McCauley, PhD, formerly of the Department of Biological Sciences, has been named our ninth president and vice-chancellor.

Also from the Department of Biological Sciences, Dr. Andre Buret, MSc’88, PhD’91, has been appointed interim vice-president (research). In addition, Dr. Robert Thompson, PhD, professor and former head of the Department of Physics and Astronomy, has been appointed associate vice-president (research) and director of research services.

We are a faculty of innovators, inventors and entrepreneurs. We are also surrounded by an engaged community, supporting the future of curiosity-driven learning. By nurturing our curiosities, we often realize previously unimaginated opportunities. In this issue, zoology alumna Dr. Ruth Mitchell, MAV, BSc’80, shares her story of the unconventional path that led her to be named a Nobel Peace Prize winner, an advocate for gender equality, a promoter of indigenous rights and so much more.

There are many ways for you to discover the great things that are happening here and to get involved. I encourage you to visit science.ucalgary.ca/connections/alumni for a full listing of the exciting things to come, and consider some of the opportunities included on page 16 of this issue.

Continue to share your stories and stay involved — we love to hear from our alumni.

Enjoy the issue!
Lesley Rigg
Dean, Faculty of Science

New leadership at UCalgary

Dr. Ed McCauley named president and vice-chancellor of the University of Calgary

The Board of Governors of the University of Calgary has selected Dr. Ed McCauley, PhD, as the university’s ninth president and vice-chancellor. Currently the university’s vice-president (research), McCauley moved into the role on Jan. 1, 2019, succeeding Dr. Elizabeth Cannon, PhD.

“Dr. McCauley is an inspirational leader who truly embodies the special energy of our university and our city,” says Jill Wyatt, chair of UCalgary’s Board of Governors and the Presidential Search Committee.

“He is a passionate visionary, an internationally recognized scholar, and a leader with an exceptional track record of building excellence in student experience, research and innovation, entrepreneurial thinking, and collaborative partnerships. We are confident that he will continue the tremendous momentum and success that President Cannon has driven through the Eyes High strategy. This work is creating long-lasting, meaningful impact at the local, provincial, national and international levels.”

McCauley’s selection follows a rigorous national and international search that began earlier this year and was led by a Presidential Search Committee comprised of board, student, faculty, staff, and alumni representatives. The search process included input from the campus and broader community on the attributes of the next president and the university’s priorities. After a thorough assessment of candidates from around the world, the committee recommended Dr. McCauley to the Board of Governors.

“I am honoured to be named the University of Calgary’s next president and vice-chancellor,” says McCauley. “I have been part of the UCalgary family for many years and I believe deeply in our vision to be recognized as one of Canada’s top universities. Under the unparalleled leadership of Elizabeth Cannon, and with tremendous support from our community, we have set ambitious goals. Our momentum is strong and our priorities are well defined. Our students, faculty and staff are driven every day to make a difference by seeking and sharing answers to society’s greatest challenges. I am grateful for the opportunity to work with them to nurture and grow this great institution.”

McCauley is one of the world’s foremost scholars in the field of population ecology. Originally from Ottawa, he arrived at the University of Calgary in 1985, serving as a professor in biological sciences and Tier 1 Canada Research Chair until 2009. He then relocated to the University of California, Santa Barbara (UCSB) to take on a professorship in ecology and evolutionary biology, and the role of director of the National Center for Ecological Analysis and Synthesis. McCauley returned to UCalgary in 2011 as vice-president (research), guiding strategic research initiatives and creating support systems to enable the university to progress quickly on the national and international stage.

“Ed and I have worked closely together for many years at the University of Calgary,” says Cannon. “I value his expertise and collegiality greatly and wish to be one of the first to congratulate him on this next step in his career. The university will be in exceptionally good hands with Ed at the helm.”

McCauley earned his BSc and MSc from the University of Ottawa, his PhD from McGill University, and was a postdoctoral fellow at UCSB. A fellow of the Royal Society of Canada, he has been a board member for Mitacs, TRIUMF, the Pacific Institute for Mathematical Sciences, and Compute Canada. Most recently, McCauley served on the Leadership Council for Digital Research Infrastructure and the Research Council for the Canadian Institute for Advanced Research.
New program in Data Science and Analytics

UCalgary launches graduate-level certificate and diploma program in two fast-growing fields

The economic landscape is changing rapidly across our province, our country, and the world — work environments are now characterized by exponential innovation, much of it in the application and use of technology. As organizations manage this shift, people who can interpret, analyze, and apply the findings are becoming essential to nearly every industry. The challenge is now to ensure that people are able to develop and update the right skills and knowledge throughout their careers in order to succeed.

The University of Calgary took steps towards meeting the challenges of our data-driven world by launching two new short-term graduate-level offerings in the Fall of 2018 that will prepare students — many of them mid-career professionals — to succeed in the fast-growing areas of data science and business analytics.

Students will work with real data sets, and build skills that are transferrable across sectors such as business, retail, e-commerce, advertising, and healthcare.

“These programs are for creative and critical thinkers,” says Lesley Rigg, dean of the Faculty of Science. “Students with data science skills across all sectors and industries will remain relevant — and employed — in an environment continually impacted by technological change.”

The Fundamental Data Science and Analytics certificate program consists of four courses that will provide students with a graduate-level credential. Should they choose to continue their studies, the certificate will also count toward the Data Science and Analytics diploma program (four additional courses), where students may choose to specialize in Business Analytics, Data Science, or Health Data Science and Biostatistics.

“As more and more digital data becomes available, new ways to analyze and use it to improve patient outcomes are being developed,” says Dr. Marcello Tonelli, MD, senior associate dean of clinical research at the CSM. “These programs will train students on how to turn data into usable information that allows earlier detection of illness, more precise diagnoses and tailored treatments for patients.”

Haskayne professor Dr. Ray Patterson, PhD, describes the diploma specialization in business analytics as cross-disciplinary, drawing upon the unique strengths of each discipline. He expects this program to be among the top graduate programs in North America.

“Professionals from many walks of life will find this training invaluable, including accounting, finance, marketing, operations, supply chain, information systems, risk and assurance, and many others,” says Patterson. “The cross-functionality of the training ranges from computer science to statistics to business analytics — this is what makes this program special.”

“Graduates are expected to be in very high demand in the job market, and this training can transform careers. We believe that, in time, this program has the potential to become a substantial economic driver for Calgary, Alberta and Canada.”

The Data Science and Analytics program offers students hands-on experience and a deep dive into the world of “big data” through its certificate and diploma offerings:

- If you’re interested in applying to either the certificate or diploma program, visit: ucalgary.ca/future-students/graduate/apply
- The deadline to apply for the Fall 2019 admission cycle is February 1, 2019 for international students, and April 15, 2019 for Canadian/Permanent Residents.
- These new credentials for working professionals are part of a broader expansion of our technology program offerings that also include the new minor in data science for undergraduate students, and a concentration in business analytics for Bachelor of Commerce students.
SEEL LUNCHEON

Shell Canada funding gives students hands-on experience outside the classroom

The classroom is not the only place where learning happens. In fact, according to this year’s Shell Experiential Energy Learning (SEEL) Program participants, real-world, hands-on learning experiences are often the most impactful part of their university career.

“With support from the SEEL Program, our geology field school group was able to take a helicopter tour over an active volcano eruption in Hawaii,” says Matthew Busby, BSc’19. “We saw firsthand the size and scale of the devastation and were able to make observations that otherwise wouldn’t have been possible due to evacuation measures in place on the ground.”

Sponsored by Shell since 2007, the SEEL Program emphasizes the importance of engaging students across the university in experiential learning opportunities focused on sustainable energy, environment, and economy.

“The SEEL Program is very much in alignment with our corporate ambition and purpose, which is to fuel a sustainable future,” says Andrea Brecka, general manager, retail at Shell Canada.

“Shell is proud to sponsor this program and to work alongside the University of Calgary to provide students with experiential learning opportunities as we work to solve the problems of the future.”

During this year’s annual luncheon held on Nov. 27, faculty, staff and representatives from Shell heard from student recipients who benefitted firsthand from the program. Funding was used for a range of activities including participating in field schools, studying abroad, attending conferences and participating in international competitions.

“The SEEL Program is helping us realize our goal of enhancing opportunities for students to gain hands-on experience in their chosen fields of study,” says Florentine Strzelczyk, deputy provost at the University of Calgary.

“More than 3,000 of our undergraduate students have benefitted from experiential learning opportunities made possible by SEEL funding. Shell’s commitment to the program demonstrates their dedication to our longstanding partnership and to cultivating the next generation of leaders and innovators.”

For more information about the program please visit the provost’s SEEL Program website.

Groundwater
a limited resource

UCalgary researcher gives a glimpse into a growing environmental issue

Masaki Hayashi’s lifelong interest in and research about groundwater has led him to help the Government of Alberta implement policy and regulations that affect how Albertans manage the use of groundwater.

What are the rules around the use of something as naturally occurring as groundwater?

Groundwater is a limited resource, one that should be top-of-mind for everyone. Hayashi has dedicated his 21-year career at the University of Calgary as a field-based researcher to understanding its impacts.

For more information about the program please visit the provost’s SEEL Program website.
In December 2017, Ruth Mitchell, BA’01, BSc’01, received the Nobel Peace Prize for her work as part of the International Campaign to Abolish Nuclear Weapons (ICAN), in part thanks to an unexpected email she received during her medical training.

Ruth Mitchell’s journey has been filled with unexpected turns, but she credits her parent’s global mindsets, as well as her Bachelor of Science in zoology and her Bachelor of Arts in political science from the University of Calgary, for helping her prepare for a wild ride.

“My parents are huge global citizens,” Mitchell explains. “Through my dad’s employment as an Indigenous languages specialist and my mom’s work as a pastor, I lived in Peru, Scotland and Ecuador up until my late teens — always fostering a curiosity and a respect for various cultures.”

When Mitchell was 17, her family settled in Calgary in time to start her formal academic university education. At UCalgary, Mitchell enrolled in the zoology program to pursue her fascination for the structures and functions of the natural world. Soon into the program, she realized that her personal and academic interests also lay within the realm of political science, so she enthusiastically pursued a joint degree.

“I have many fond memories of my time as a student at UCalgary, and I’m incredibly grateful for the start it gave me academically and personally — even if that experience came with its share of challenges,” Mitchell says.

After graduating from UCalgary, the inquisitive 23-year-old ventured to Slovakia to work for a Canadian International Development Agency-funded project dedicated to providing social support to children and youth in a rural Romany community. Energized by the impact she could have on the lives of others, she returned to Canada where she worked for Calgary’s Envirs Wilderness School, providing support to local youth in need.

“Those experiences opened my eyes to how valourizing it can be to dedicate your life to helping those in need. I also recognized the extent to which medicine and promoting health would be the pathway to do so,” Mitchell says.

Mitchell was poised to fulfill her newfound vision and decided to apply to med school in Australia, where she was admitted to Flinders University in Adelaide.

“Early in med school, I concluded that I wanted to become a surgeon,” she says. “The operating room was where I felt most at home. More specifically, I fell in love with studying the brain and admiring how beautiful it is. Those med school experiences resonated with the comparative anatomy and physiology classes I had so enjoyed at the University of Calgary.”

As her medical specialization in neuroscience took shape in the classroom, Mitchell’s career took an unexpected turn when she received an unsolicited email for an opportunity to attend the International Physicians for the Prevention of Nuclear War Congress in Beijing in 2004.

“When I received that email, it was like a lightning bolt had hit my keyboard! I couldn’t respond fast enough!” she recalls. “It just seemed like the perfect fit between my international interests and my passion for making an impact on global health issues. It was only after joining this inspiring group that I became aware of the extent at which nuclear weapons are fundamentally a huge health risk.”

In 2007, Mitchell’s involvement in the cause for the prevention of nuclear war significantly expanded when the Australia-based movement she helped to found merged with other global initiatives to become the International Campaign to Abolish Nuclear Weapons (ICAN), of which she is current Australian board chair.

Ten years later, the international team’s efforts would be rewarded when the group received the Nobel Peace Prize for its work to draw attention to the catastrophic humanitarian consequences of any use of nuclear weapons, and for its ground breaking efforts to achieve a treaty-based prohibition of such weapons.

“It was an extremely honouring and motivating moment to receive the prize in late 2017,” says Mitchell. “It’s been very gratifying to see our initiative reach a global scale and to receive the prize as recognition for our impact. It still feels surreal to see where my involvement with this group has taken me!”

Since winning one of the planet’s most esteemed prizes, Mitchell hasn’t sat on her laurels. On a personal level, she’s continued to be an advocate for gender equality in her profession, has promoted Indigenous rights, and has acted as a medical volunteer at motorsport events. She also received the John Corboy Medal from the Royal Australasian College of Surgeons in recognition of exceptional service by a trainee, and received an award for Best Research Presentation at the Melbourne Brain Centre Symposium.

As if that wasn’t enough, she’s embarked on her PhD in structural biology, which she hopes to complete this year at the University of Melbourne and Walter and Eliza Hall Institute. Her current goal: to become a leading neurosurgeon-scientist.

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“I am passionate about caring for neurological patients and carrying out research which deepens our understanding of neurological diseases, particularly harnessing the tools of structural biology to improve outcomes in malignant brain tumours,” she says. “I committed to advocating for my patients and my colleagues, to excellent medical education and to good governance. I look forward to incorporating teaching, training and leadership into my career.”

Fueled by a relentless drive and genuine desire to make a significant impact in the lives of others, there’s no stopping this UCalgary alumna.

“Whenever a door opens, I go through it!” she says. “I’m grateful for the educational foundation I received while at the University of Calgary, and it gives me great confidence moving ahead. I’ve learned so much from the many unique experiences I’ve had and I look forward to embracing more exciting opportunities in the future.”

How has volunteering impacted your life? Share your stories of volunteering with us at scialumni@ucalgary.ca
Understanding how silver kills bacteria

Faculty of Science researchers identify genes, biological pathways involved in microbes’ toxicity and resistance to the metal

Silver has been used for centuries as an antimicrobial to kill harmful bacteria. Ancient civilizations applied the metal to open wounds. Ship captains tossed silver coins into storage barrels to keep drinking water fresh. In hospitals today, silver is used in bandages to treat burn victims, destroy pathogenic microbes on catheters, and combat dangerous ‘superbugs’ that have grown resistant to traditional antibiotic drugs. But the molecular mechanisms of how silver kills bacteria, and how resistance to silver develops in these microorganisms, are not fully understood.

Now a new study, led by Faculty of Science biologists, helps enhance understanding of silver’s antibacterial properties. The research team performed a chemical genetic screen on ‘library’ of 4,000 mutant strains of the bacterium Escherichia coli (E. coli), in which a unique gene in each strain has been “knocked out,” or deleted.

The team identified the genes in all these strains that showed either resistance or sensitivity when exposed to silver, producing the first genetic map of the genes that contribute to either silver resistance or toxicity in E. coli. “Our study is the first of its kind to evaluate the genetic response in cells allowed to grow in the presence of silver,” says Dr. Raymond Turner, BSc’85, PhD’90, professor of biochemistry in the Department of Biological Sciences.

Natalie Gugala, BSc-H’15, a PhD student of Turner’s, mapped all 225 genes that were either resistant or sensitive to their corresponding biological pathways. These cellular mechanisms included transporting metals through the cell wall, energy producing, regulating the cell and other processes.

“We’ve shown that there are many different genes that are likely affected and several different pathways,” says Gugala, lead author of the team’s scientific paper. “It is likely that silver acts in multiple ways on bacteria,” says Dr. Gordon Chua, associate professor of integrative cell biology in the Department of Biological Sciences. “Our study identified new genes and molecular mechanisms involved in silver toxicity as well as resistance.”

The team’s paper, “Using a Chemical Genetic Screen to Enhance Our Understanding of the Antibacterial Properties of Silver,” is published in the journal Genes. E. coli is just one of many microorganisms that can cause illness and life-threatening infections. Many bacteria and other microbes are becoming increasingly resistant to traditional antibiotics. The team’s research fits well with the Faculty of Science’s “Grand Challenges.” Specifically, “Personalized Health at the Molecular Level” prioritizes research aimed at minimizing antibiotic resistance, and understanding the role molecules have in our health.

“Determining at the molecular level how silver and other metals, such as copper and gallium, are able to kill bacteria could lead to improved medical therapies. Some research shows adding a metal to a traditional antibiotic that doesn’t work anymore makes the drug effective again, Turner notes. “I foresee us using custom-designed metal antimicrobials along with antibiotics.”

“This personalized health approach, using studies like ours, leads to identifying a set of marker genes that could be used to select specific metal-antimicrobial therapies tailored to combat bacterial infections in individual patients,” he adds.

Silver’s popularity as a bacteria killer has led to companies embedding tiny, nano-sized silver particles in running shirts, underwear, socks, shoe insoles, food cutting boards, toothbrushes and an expanding array of other ‘antibacterial’ consumer goods. Some research shows adding a metal to a traditional antibiotic that doesn’t work anymore makes the drug effective again, Turner notes. “I foresee us using custom-designed metal antimicrobials along with antibiotics.”

“Personalized Health at the Molecular Level” prioritizes research aimed at minimizing antibiotic resistance, and understanding the role molecules have in our health.

“We need to understand how silver works if we’re going to continue using it and before we develop more silver-based antimicrobials,” Turner says.

The study is the first of its kind to evaluate the genetic response in cells allowed to grow in the presence of silver.
Students use Lego to turn difficult class into ‘child’s play’

Pilot project aims to use plastic blocks to help students learn quantum chemistry

A simple toy is helping undergraduate students understand the strange, mathematical world of quantum chemistry.

“I thought it was a really cool idea to use Lego,” says Emily-Claire Docking, one of about 80 students taking Chem 373. “It worked really well and it was a lot of fun.”

As part of a pilot project that began in September, students have been using the plastic blocks in much the same way as is done by children — to playfully tell stories. “The students put the bricks together in their own way, and they make up their own metaphors for what the bricks could mean,” says instructor Dr. Belinda Heyne, PhD, an associate professor in the Department of Chemistry in the Faculty of Science.

Although it’s a level or so down from the quantum mechanics of Schrödinger’s Cat fame, quantum chemistry is still perceived to be a difficult subject. “Students are coming to this course like, ‘Oh my God, this is the course where I am going to fail,’” says Heyne.

They must learn abstract equations that describe such things as how electrons form chemical bonds between atoms. Although the bonds bring together the molecules in the everyday objects people can see, touch or taste, reality behaves very differently at the unbelievably tiny, subatomic scale of an electron.

“Let’s say you are shooting a gun,” says Heyne. “If you know the velocity and the angle, you can exactly see where the bullet is going. If you are thinking about your car keys, you know they are in your jacket pocket. They’re in a very precise location. But an electron’s location is not precise like that — it behaves like a wave, so its ‘location’ is spread out.”

Such uncertainty is part of things such as atomic orbitals, which by their nature cannot be observed experimentally. Unlike the orbit of the moon around the Earth, an orbital is something that mathematically describes the probability of finding an electron in any given area around an atom’s nucleus.

“There’s a lot of very abstract thought in quantum chemistry, and thinking about things that you can’t see and you can’t interact with,” says Docking. “And I’m not very good at math.”

Heyne says students often have a particularly hard time understanding the concept behind an operator, which refers to a key part of the math of quantum chemistry. It can be used as a kind of tool, she says, pointing to the example of someone in the everyday world who is trying to figure out the length of a wall.

“You are going to take your ruler, you are going to measure the wall and you are going to obtain a number, which will correspond to the length,” she says.

“Now, in my course, we want to know what the energy of an electron in an orbital is, and what students have to do is use the operator. They have a really hard time understanding that the operator is a tool that is going to do a measurement, and that the output is going to be a number.”

“One student used the plastic blocks to build a figure of a person holding a scanner, which was being used to read the side of an airplane, says Heyne. “He got the flight number out of that, and so he really understood the concept,” she says.

Especially when scientific concepts are abstract and difficult to envision, “models are excellent tools for building our own understanding of science and helping us communicate these ideas to others,” says Dr. Wendy Benoit, PhD’07, associate dean of teaching, learning and student engagement at the Faculty of Science.

“Having Lego as a physical tool can spark discussion and get students to ask questions about normally inaccessible abstract ideas,” she says. “With students asking questions and enjoying their experiences with course content, we have a much greater chance of them taking ownership of the material and striving to learn more deeply.”

The intrinsic simplicity, yet versatility, of Lego allows it to express as many metaphors as students can imagine, says Heyne, adding that while the actual math stays the same for everyone, the way each person visualizes it can be as individual as they are.

“Lego can help you conceptualize or model abstract concepts, but another thing is that you might model it completely differently than someone else and that might help you get a better understanding,” she says. “You can be creative — you can make a new world.”

As part of the pilot project, a study will use student questionnaires to examine the effectiveness of Lego as a teaching method, says Heyne, adding the plastic blocks are used about once a week as part of what she calls “Lego Tuesday, like an ad on the radio.”

Compared to the previous year, “the students are doing much better, although I don’t really know if it’s really because of the methodology,” says Heyne, laughing. “I’m hoping so, but at least I think that now, they are coming to this class and it’s not like, ‘Oh, it’s a horrible, dry class.’ It’s a class where they can have fun because they play.”
The population of adult rainbow trout in the Bow River has declined dramatically in recent years, a trend that puts at risk the world-famous recreational fishery. University of Calgary scientists have found.

In a study led by fisheries biologists in the Faculty of Science and which included provincial government biologists, a research team found the population in the lower Bow River fell by 43 to 50 per cent between 2003 and 2013.

Rainbow trout were introduced many decades ago into the Bow, considered to be a ‘blue ribbon’ fishery and prime tourist attraction worth an estimated $24.5 million a year. Because the fish aren’t a native species in the river, they don’t qualify for assessment and protection under the federal Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

But if the rainbow trout were native to the Bow, “COSEWIC could recommend them as threatened under the Species At Risk Act based on our trend estimates,” says Chris Cahill, a PhD student in the Department of Biological Sciences and lead author on the study.

The researchers were unable, given provincial fish-monitoring data available during the 10-year period, to link the decline to a specific cause or causes. However, they noted that the Bow River fishery is affected by multiple stressors, including one of the highest angling efforts for inland fisheries in North America, notable floods and whirling disease (caused by a parasite that impairs the nervous system, especially in juvenile trout).

“We likely have multiple causes and monitoring data that’s not of the sort that you need to clearly disentangle these causes,” says Dr. John Post, professor of ecology and evolutionary biology in the Department of Biological Sciences, a study co-author along with one of his post-docs and four graduate students.

The research team built three different quantitative models to clearly identify and account for uncertainties in the data, such as various fish-sampling sites. All three models consistently showed the steep population decline.

Their study, “Multiple challenges confront a high-effort inland recreational fishery in decline,” is published in the peer-reviewed Canadian Journal of Fisheries and Aquatic Sciences.

Regulations require rainbow trout in the lower Bow to be caught and released. But so many anglers use the river, some fish are likely being caught and released a half-dozen times or more per year, he says. Even if the catch-and-release mortality rate is only three per cent each time a fish is caught, the cumulative deaths add up.

“Resource management is all about tradeoffs,” Cahill says. “If you want a high-quality rainbow trout fishery in a place like Calgary where there are lots of anglers and additional stressors that managers can’t control, you might have to consider limiting angling effort, perhaps through a lottery system.”

A lottery is now used in Alberta to provide a limited harvest in some high-effort walleye fisheries which had previously collapsed. In past years, the province also has temporarily closed fisheries during conditions of high temperature and low water flow.

Earlier this year, provincial biologists proposed five-year closures in certain rivers in Alberta’s eastern slopes, to help recovery of threatened and endangered native trout species. But after some complaints in the angling community, Alberta Environment and Parks Minister Shannon Phillips backed away from the plan, saying the science wasn’t strong enough to warrant the closures.

“Our paper shows there’s a realistic threat in the Bow River trout fishery,” Cahill notes. “We have no reason to believe it’s any different for the eastern slopes fisheries.”

This fall, Cahill and another of Post’s graduate students, joined provincial biologists in electro-fishing at sampling sites along the Bow River, to gather new data on the rainbow trout population. It will take six to eight months to analyze and model the data.

Fish monitoring programs can be designed, and used with lotteries, temporary closures and other management techniques, to provide better information about a fishery — including testing potential causes of a population decline, Cahill says.

His PhD focuses on using such an “adaptive management” approach in high-angling effort inland fisheries. “This learning by doing approach requires more time, more money, and it’s a heck of a lot harder to implement,” Cahill says.

“Although the information isn’t perfect, some would argue that adaptive management is the only way forward that’s has any chance of improving things,” Post says. “The status quo is the worst option.”

“Alberta Environment and Parks fisheries biologists are pleased to be working collaboratively with the university’s Faculty of Science staff and students to better understand Bow River fish populations and threats, and proactively identify management solutions to ensure this high-profile fishery is managed sustainably into the future,” says Paul Christensen, senior fisheries biologist for the Bow District and a co-author on the study. The UCalgary study was supported by the Natural Sciences and Engineering Research Council of Canada, and Cahill holds a Vanier Canada Graduate Scholarship.
April 25, 2019

Giving Day is back April 25!

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Our focus in Science is on innovation — converting ideas into real-world solutions as we engage with our community.

We are dedicated to enriching the education and experiential learning of our students and the exceptional research of our faculty members.

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June 1, 2019

Soapbox Science

Soapbox Science is an international program promoting the visibility of women in science who take to real soapboxes for short, fun, interactive and informative talks about their research.

Join us June 1, 2019, at the Calgary Zoo! Visit science.ucalgary.ca/connections/outreach/soapbox-science for more information.