

SPECIAL ISSUE

The alumni magazine of the Faculty of Agricultural, Life & Environmental Sciences

# GREEN HOUSE

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## INNOVATING CHANGE

Research collaboration  
takes tech to  
another level **P. 29**

## GROWING GREEN & GOLD

Shirley Ross is one in  
a million **P. 43**

## UNIVERSAL APPEAL

Making mobility  
garments matter **P. 33**

# A WHOLE NEW VIEW

HOW THE FACULTY IS  
MOVING FORWARD

**P. 4**



UNIVERSITY OF ALBERTA  
FACULTY OF AGRICULTURAL,  
LIFE & ENVIRONMENTAL SCIENCES

# CONTENTS

This issue is a special edition highlighting the ways the faculty exemplifies the priorities of the 2017–2021 strategic plan. To learn more, go to [strategic.ales.ualberta.ca](http://strategic.ales.ualberta.ca).

## WHERE WE EXCEL

16

### **A TRANSFORMATIVE GIFT**

More than \$25 million dollars given to the University of Alberta's Botanic Garden will make a deep cultural connection

18

### **BUILDING A NEW FUTURE**

After almost four decades, one of the faculty's dearest memories for many, the Ag-For atrium, gets a new look and a new lease on life.

24

### **GLOBALLY APPEALING ATTIRE**

One young alumnus is taking the fashion world by storm, thanks to inspiration from his roots and the lessons learned through his practicum experience.

28

### **GROWTH OPPORTUNITY**

How one scientific partnership pays dividends for science, discovery and the common good.

33

### **GETTING OUT THERE**

Individuals with mobility issues now have a new lease on outdoor life, thanks to Megan Strickfaden.





## HOW WE BUILD

4

### WHAT'S NEXT?

The ALES strategic planning group reflects on the last 15 months of strategic planning, where it's gotten us and where it's going to take us.

7-15

### WE'RE MAKING IT HAPPEN

Read how ALES is turning science into solutions for the public good, connecting to our communities and enhancing the student experience.



## WHEN WE ENGAGE

38

### TWO DECADES OF SUPPORT

One season at a time, the Environmental & Conservation Sciences and Forestry Spring Field School has benefited from a partnership with Portage College.

41

### LEADING BY EXAMPLE

Professor, scientist, academic and administrative leader: just some words to describe Anne Naeth. But what inspires her?

43

### GROWING HER COMMUNITY

Alumna Shirley Ross shows how connecting back builds success

45

### IN MEMORIAM

The Faculty of ALES notes with regret the passing of its following alumni

46

### AFTERGRAD

Food scientist Mandi Hoke explains how ALES impacted her career trajectory

# GREENHOUSE

**GREENHOUSE** is published twice a year by the Faculty of Agricultural, Life & Environmental Sciences. It is distributed to alumni and friends of the faculty.

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**UNIVERSITY OF ALBERTA**  
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LIFE & ENVIRONMENTAL SCIENCES



ALES Dean Stan Blade

## WHAT'S NEXT?

The ALES strategic planning group reflects on the last 15 months of strategic planning, where it's gotten us and where it's going to take us

BY CAROLINE BARLOTT

**Strategic plans** tend to be lengthy documents full of buzz words and information that's difficult to understand from an outside perspective. But the recent Faculty of Agricultural, Life and Environmental Sciences' strategic plan fits on a double-sided laminated sheet of paper with clear points, objectives, targets and dates for when goals are to be started and completed over the next five years.

Creating that document was not, however, a short and straight-forward process.

Instead, it involved a lengthy commitment by the 11 participants who spent hours determining what would be best for a faculty that has more than 2,000 graduate and undergraduate students, 110 faculty members and annual average of \$40 million in external research funding.

The diverse team consisted of the Stan Blade, the dean; Vic Adamowicz,

vice-dean; John Bell, assistant dean (administration); Rehana Bennett, executive assistant to the dean; Jillian Pratt, recruiting specialist for the faculty, as well as the chairs of the four departments and a representative of student programs—all of whom have unique perspectives of different aspects of the faculty.

"Over the course of almost two years, this group of people who are representative of this faculty brought their opinions to bear for something that is deeply profound—it is how we will move our faculty forward, together," says Blade. "This process has been lengthy; it has been demanding, but this group has continued to push towards the goal of where we are now—with firm goals in mind—and with a view to the future of what we will achieve."

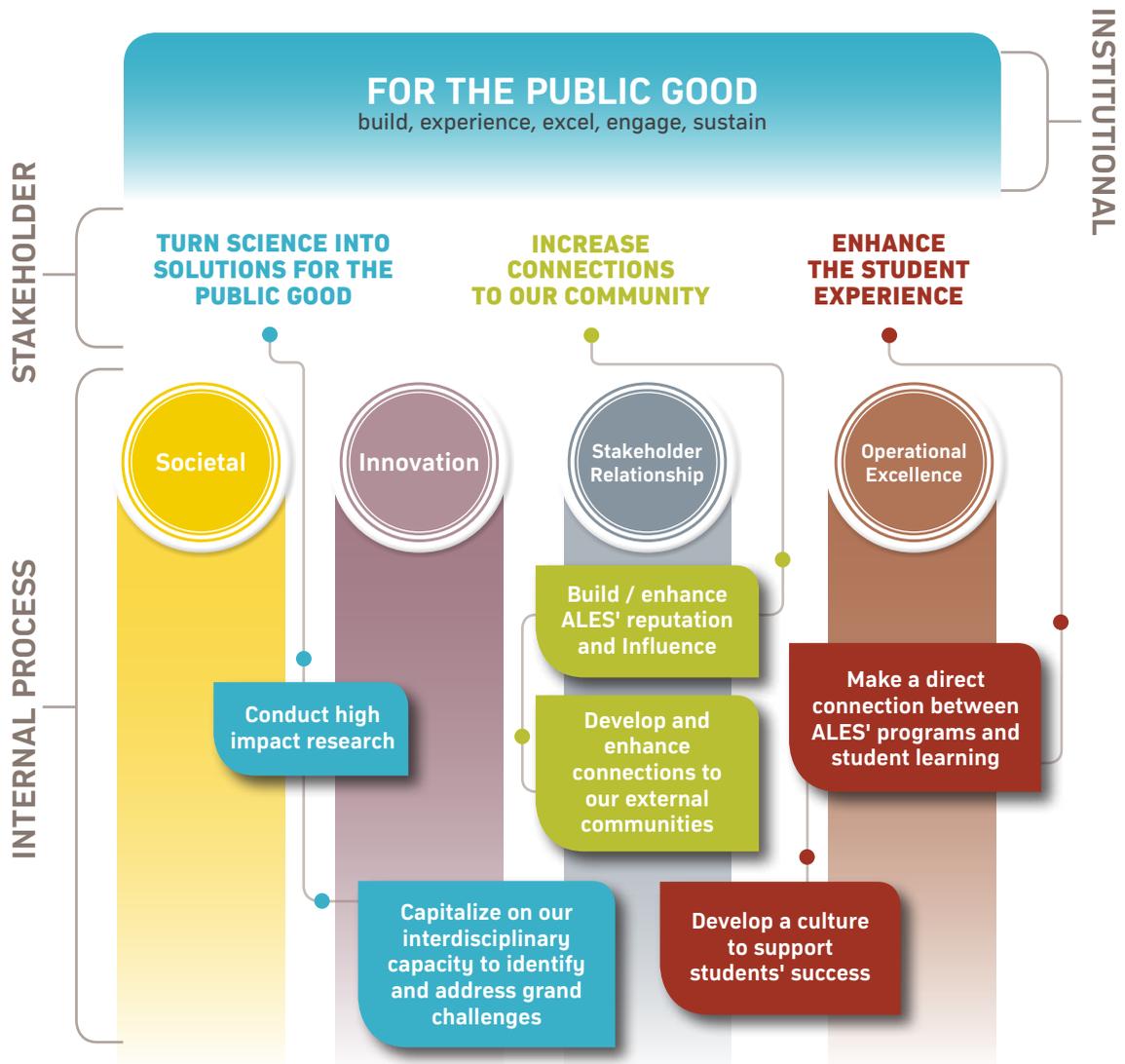
This process began in December 2015, when a series of questions about resource allocation developed

into a larger conversation around solidifying the faculty's identity, direction, stakeholder engagement and effectiveness, says Adamowicz, who is both vice-dean and a professor in the Department of Resource Economics and Environmental Sociology.

These team members met over the course of 16 months and were guided through strategic planning activities led by Alan Day, senior advisor for transformational change at the U of A. The goal, he says, was to bring the team together and "shift the emphasis from a result in the plan to the process."

Day, who works across the university campus as a member of Organizational Health & Effectiveness, wanted to ensure that the plan did not follow the typical path people may expect. Rather than just having people meet for a couple of weekends, he wanted to have the process extend over up to 16 months

# SOLVING GLOBAL PROBLEMS TOGETHER



## VALUES

### FAMILY / TEAM / BELONGING

- Nurturing close and loyal relationships with one's family and/or co-worker.

### RIGHTS / RESPECT

- Recognizing the worth, accomplishments and property of others.

### RESPONSIBILITY

- Being accountable and in charge of a specific area or project.

### COMMUNICATION / INFORMATION

- Transmitting ideas and factual data between people and components of an organization.

### COMPETENCE / CONFIDENCE

- Having assurance in one's skills to achieve and make a positive contribution at work.

### HUMAN DIGNITY

- Promoting an organizational environment where all people are respected and have their basic needs met so they can develop their full potential.

### CREATIVITY

- Sharing and applying new and original ideas and thoughts.

with over 25 meetings. Keeping momentum is always a challenge, says Day, and that “the other part is making sure all the work is connected while maintaining continuity throughout the process.”

Each time they met, team members actively took part in an activity; gatherings were akin to workshops rather than traditional meetings where only one person would speak. In this way, each team member was continuously contributing and seeing how their thoughts were making an impact. The key was really to engage team members and have them see results, says Day.

“There were actual tangible outcomes that we could use,” says Pratt, citing one of the workshops where the team determined issues such as emerging trends in faculty, along with who the stakeholders are and issues of importance to them.

“It’s kind of like participatory action research in that you’re getting information from each other, but you’re checking back with the community to see: ‘Is this making

where more than 50 faculty members discussed their top priorities over the next five years, and there was a faculty-wide session in August 2016. Including the ideas of people outside of the strategic plan team was a big part of the process that proved to be integral to the result, according to Day.

“The first session provided an opportunity for staff and faculty to learn and interact,” says Adamowicz. “And at the second meeting, we talked about issues where we can work together and how to best support each other.”

Deanna Williamson, chair of the Department of Human Ecology and a strategic planning team member, liked the idea of taking time to develop bite-sized bits of information. There were far more steps than she had typically seen in a strategic planning process, but she says she was impressed how well orchestrated they were, leading them to the end goals.

The team was left with the goals of turning science into solutions for the public good, increasing connections with the community and enhancing

the student population so that their degrees are even more useful, and the students “don’t just feel like they are consumers of a product.”

The team learned that work experience opportunities, practicum experiences, and co-ops result in better outcomes for students, so the faculty plans on including more of those in degree programs. Ideas for events have also been proposed, such as a series of TED-like talks, whereby students and faculty could learn about each other’s work.

Day says the ALES strategic plan is one of the best he’s been involved with due to the total dedication of those involved and the guidance and information provided by external voices. “The team’s commitment was outstanding—at any point things could have fallen off, by they didn’t. And they really wanted the process to be stakeholder driven; it was about asking rather than telling people what will happen after the fact.”

So what’s next?

Over the next five years, the faculty will develop, execute and measure

## TURN SCIENCE INTO SOLUTIONS FOR THE PUBLIC GOOD

# Increase connections to our community

## ENHANCE THE STUDENT EXPERIENCE

sense to you as well?” says Pratt. “We wanted to make sure those voices didn’t get lost.”

The strategic planning team wanted external stakeholders to have a say in how the faculty moves forward, so a survey was created that asked about the allocation of resources, how the faculty should improve and how they could enhance the student experience. Running from late June to mid July 2016, the survey garnered 430 responses from external stakeholders and, later in the process, 220 responses from internal faculty and staff.

There was also a faculty meeting

the student experience. While they may seem broad, the team also has some specific ways to make these into tangible realities including creating a list of grand challenges, publishing a community engagement report, facilitating structured events to connect staff and students and increasing ALES acknowledgement of achievements.

“We’re not just going to go on anecdotally about what we think is a good idea; the strategic plan gives us a concrete starting point for improving our services,” says Pratt. She says she is particularly excited about the plans to engage

activities that support the three overarching pillars, says Blade. “This special edition of *Greenhouse* is meant to showcase how our faculty is already turning science into solutions for the public good, increasing connections with the community and enhancing the student experience—and, through the superb work being done, we will continue to build on those goals to solve global problems together.”

*For more information on the strategic planning process and where we are going, go to [strategic.ales.ualberta.ca](http://strategic.ales.ualberta.ca). To provide feedback on the strategic plan, please email [ales.strategic@ualberta.ca](mailto:ales.strategic@ualberta.ca).* ■

# Home on the rangeland

An AltaLink gift supports University of Alberta research to protect special ecosystems

BY MIFI PURVIS



■ **Alberta's rangeland** rolls out from the eastern slopes of the Rocky Mountains and makes up 43 per cent of the province's agricultural base. The varied grassy ecosystems that form the rangeland help keep Albertans fed. It is forage for livestock, a rich habitat for wild animals and a natural "carbon sink" that cleans the air and water. But you don't need to tell John Buckley that.

Buckley is a third-generation rancher, a partner in the Quarter Circle X Ranch and a University of Alberta graduate ('82 BSc). He's also a keen steward of the rangeland, which he says is under threat. "Cows, crops, wildlife, country residential development, urban sprawl, recreation and people demand their time and space," Buckley says. Other threats, he says, include industry, invasive species and climate change. To find out what's impacting the rangeland and how, Buckley works with students from the University of Alberta, advocating for more research, which in turn leads to

better land management.

That's where AltaLink has stepped forward. The company is Alberta's largest regulated electricity transmission company, working with landowners across Alberta to power homes, farms, businesses and industries. AltaLink has donated \$655,000 to the University of Alberta's Rangeland Research Institute (RRI) to support the creation of the AltaLink Master's Scholarship in Rangeland Disturbance Ecology, which will advance research that will protect Alberta's rangelands.

"Alberta's rangelands are vital to our communities and our economy, and this research will give us the evidence we need to make important decisions about how to sustain them," says Stan Blade, the dean of the Faculty of Agricultural, Life and Environmental Sciences.

"Funding from this gift supports research; it helps rangeland users better manage their activities," says Edward Bork, director of the RRI. "We work with ranchers across Alberta so

that all Canadians benefit from our rangelands."

Through the Rangeland Research Institute, 17 graduate students currently conduct their research on the 12,000-acre Mattheis Research Ranch near Duchess in southern Alberta, and another 10 at the 12,000-acre Kinsella Ranch on the Aspen Parkland southeast of Edmonton. These two locations provide more than 1,100 days of field work on a variety of research including identifying optimal grazing systems, new reclamation techniques following industrial activities, the development of superior drought adaptation strategies, and even promoting alternate business models to help diversify ranching incomes.

"Investment in studying rangelands will help ranchers like me manage them," says Buckley. "We can take what we already know and combine it with science to make sure we are good stewards of this land, and that we work with all our partners to keep it usable for our children." 🌱

INCREASE CONNECTIONS TO OUR COMMUNITY

# SAME EXPERIENCE, NEW NAME

Popular botanic garden reaffirms connection to the university

BY HELEN METELLA

**It's now known** by another name, but its roses smell just as sweet.

The Devonian Botanic Garden has officially become the University of Alberta Botanic Garden, a change that reflects both its history and its importance as an remarkable educational resource in the province.

"We're always evolving," says Lee Foote, the garden's director.

"After more than 40 years under the garden's previous name, it will soon be time to refresh both our buildings and our site, so it seems appropriate to start any renewal with an accurate name."

Since the garden plays a significant role as a research site, hosts adult and child classes year-round, and is one of Alberta's top visitor attractions, it's relevant to remind the public of its strong ties to the University of Alberta, where it is part of the Faculty of Agricultural, Life & Environmental Sciences, says Foote.

The 240-acre property, located 15 minutes southwest of Edmonton, is the province's largest botanic garden. It was established in 1959, as the Botanic Garden and Field Laboratory,

in the then-Department at the U of A.

Following floods that severely damaged the grounds, in the 1970s it received a donation from the Devonian Foundation and funds from the Friends of the Garden. That support helped the garden expand with new land, a system of canals and ponds, and a headquarters building. In recognition of the support, its name was changed to the Devonian Botanic Garden, with a 25-year commitment to maintain the name.

Since then, several misconceptions have sprung up. Some people thought the old name was a reference to the Devonian geologic period, to the nearby town of Devon, or to an indoor garden in a Calgary office tower called The Devonian Garden.

None of that is true, and the name change is an opportunity to gently but elegantly correct the record,

while also reminding Albertans of the previous benefactors' generosity. The Devonian Foundation was a philanthropic organization—started by the family of oilman Eric Harvie in the 1950s—which funded many projects in Alberta and beyond until it ceased operations in 2000.

"As a site for learning, research, recreation and the appreciation of beauty, the garden embodies the promise of the University of Alberta of being for the public good," says Stan Blade, dean of the Faculty of Agricultural, Life and Environmental Sciences, of which the garden is part. "This exciting time of change is the perfect time to affirm, through its name, that the garden is an important part of the faculty and the university." 🌿



FROM TOP RIGHT: Kurimoto Japanese Garden; Kurimoto Japanese Garden iris pagoda; Alpine Garden entrance terrace (left).

PHOTOGRAPHY BY PAUL SWANSON

## ALES range team hauls home top awards

Wins include first place at national plant identification exam

BY HELEN METELLA

■ In a fitting tribute to his more than three decades of ensuring that ALES students always excel at this competition, ALES' Range Team coach Barry Irving received the Society for Range Management W.R. Chapline Land Stewardship Award for his outstanding contribution to promoting this science this spring.

And, in his last season as coach of the ALES Range Team, its members did him proud by continuing a dominant run at an international competition that tests university students' knowledge of both plants and range management.

Among this year's triumphs, the team won first place in the Plant Identification Test portion of the competition, propelled by a first place individual score by conservation biology student Ryan James. The event took place at the Society for Range Management's annual conference in Utah in early February.

The Plant ID test is just what it sounds like, but harder—participants must identify 100 different species of plants from samples as tiny as a seed or root, with only one minute of viewing per sample. To master it, students learn a possible 200 species of plants grown on North American rangelands.

The ALES team also won third

place in the written portion of the competition, the Undergraduate Range Management Exam or URME. It's a demanding test of all the information an undergraduate might have encountered over the four years of a typical degree in range management, and features both multiple-choice questions and problems that require interpretation.

"The written test is definitely harder for me," says James, noting that the highest-ranking ALES student in the URME was Kale Scarff, who placed fourth. "You have to do 100 questions in two hours and some of those questions require a number of calculations."

Irving is one of the most accomplished undergraduate range team coaches within the society. During his tenure, the ALES Range Team has won more than 160 award placements, including 35 first-place finishes for either an individual or the team.

To make the team, members must enrol in Irving's 400-level class in Environmental Conservation Science from September to December.

The class itself is tough, since Irving challenges students to be competitive in both portions of the contest, unlike some of the schools that concentrate on either Plant ID or the URME. Students also devote eight to 12 extra hours a week of their own time, studying plants and reviewing problem types, and peer coaching each other, and after they finish the semester they keep working through January, bumping up weekly practice tests from one to two.

One of the study techniques that Irving promotes is that the class helps each other compete against him in regular exams.

"This helps keep the class performing as a team and prepares them for the eventual competition exams," says Irving. ■

Plants like the *Sporobolus cryptandrus* are one of hundreds the range team is expected to memorize for the annual competition.

ENHANCE THE STUDENT EXPERIENCE



# Fictitious scenarios give way to real life with capstone project changes

Land reclamation students consult with First Nations, industry ‘clients’

BY HELEN METELLA

■ **Nobody expected** wild dogs.

But that’s the beauty of taking a capstone project out of the classroom and into the working world: real-life problems materialize that demand real solutions.

The dogs showed up when land reclamation students working on their capstone course re-examined a community waste site on the Enoch Cree First Nation for which they were creating a land reclamation plan, which includes contaminant remediation, soil building and revegetation.

“So we made sure that everyone had a rabies shot before they (next) came on site,” says fourth-year student Shanon McConnell, one of the project’s co-managers. Then they factored fencing into their reclamation plan.

It’s unlikely that McConnell’s team would even have known about these types of issues that can arise if instructor Anne Naeth hadn’t made a substantial change to this capstone course this year. Instead of creating

hypothetical situations in which land reclamation is required, Naeth connected them with actual “clients” for whom they essentially provided professional consulting services.

Capstone courses in the Faculty of Agricultural, Life and Environmental Sciences allow students to apply studies in their major to a practical project, and are a mandatory element of their degree program.

While one of her classroom teams worked on the Enoch project, which includes two oil well sites as well as the waste site, other students tackled the decommissioning of the Northlands racetrack and associated areas, and a third group worked on reclaiming a portion of the Genesee coal mine west of Edmonton.

The clients aren’t obliged to use the reclamation plans, but they certainly could, says Naeth, because the students applied themselves as intensely as they would at a paid job.

“They worked in teams to create a high-quality technical document that

can stand up to scrutiny by policy enforcers and government,” she says.

This year, their work also included a twist not introduced before: creating recommendations for a client with unique feelings and connections to the land, the Enoch Cree First Nation.

The students on that team began by preparing themselves culturally for a round table discussion with Chief William Morin IV and four of Enoch’s council members. McConnell asked Aboriginal Student Services on campus for advice on terms preferred by First Nations, and for instruction on preparing pouches of gift tobacco that traditionally signify love and open minds before a meeting. The campus service also held a smudging ceremony so the students could symbolically cleanse.

All the teams were observers during the round table, while the team assigned to Enoch also diligently read the Indian Act, and asked for clarification on such questions as whether the reserve has internal bylaws. ♣

# GETTING INTO THE THICK OF THINGS

Animal science students toil alongside farmers during new, mini internships

BY HELEN METELLA



Three burgeoning animal scientists participated in a new mini-internship that gets students building their experiences on local area farms. They are (left to right) Erika Cornand, Alyssa Chrapko and Rayden Saunders.



Who says egg sorting is boring? Erika Cornand (foreground) make light work of her mini-internship at a local farm during the 2016 fall Reading Week.



Rayden Saunders carefully inspects egg yolk integrity during this mini-internship.

■ **DAY 1:** *Today we moved the broiler-breeders to their new housing area. We managed to move all the birds in a few hours, when it usually takes them two days! ... (Then) we trained the chickens to use the new drinking system. That was a tough one as they seem to run in every direction except towards the water!*

That exuberant email update is one of several from animal science student Jo Ann Chew, who spent three very full days knee-deep in chickens during the fall 2016 Reading Week. The occasion was a new mini-internship program on a working farm, designed to immerse students in experience.

With the mini-internship “they get their hands dirty and feet dirty,” says Frank Robinson, a professor of poultry production and physiology in the Department of Agricultural, Food and Nutritional Science. “They are actually doing the work. It’s not a spectator sport.”

Robinson launched the pilot project because the animal science program attracts a wide variety of students, including city kids and transferees from the science faculty, and many have zero experience on farms.

The 15 students, who were deployed in small groups to either nearby commercial farms or one of the University of Alberta’s operations

on South Campus, performed such tasks as inseminating swine, milking cows and vaccinating birds. The farmers taught them their techniques and shared their real-world problems and solutions.

“The incentive is they can help build the next generation of people they’re going to be working with,” says Robinson. “They could be the people that sell them their feed, lend them the money to buy a farm, are specialists in research telling them how to manage their animals or advising on food safety and biosecurity, or they could even be the people who buy their farm from them.”

## Nutrition students rave about new food theory course

Lessons in how to culturally adapt meals, safely handle foods, considered invaluable.

BY HELEN METELLA

■ **Over and over**, students call it the best course they've ever taken.

"It ended up being my favourite class of the year," says Heather Chappell, who is in her first year of Dietetics Specialization. "These skills can be applied to real life and to helping people."

So what is it?

"A hands-on course held in a lab that's like a kitchen," says Anna Farmer, who developed the new Applied Foods Theory NUFSS 250 course, which teaches everything from how to safely handle raw meat to how to make panna cotta (an elegant Italian dessert of sweetened cream and gelatin).

The course is one of several new requirements for the new Dietetics Specialization program, which comprehensively trains students to be registered

dietitians. The course is also open to students in the general stream of the Nutrition and Food Science program.

"It brings to life a piece that was missing," says Farmer, a nutrition professor and academic lead for the Dietetics Specialization. "We were teaching a lot about nutrition and metabolism, but we eat food, not nutrients. So it helps to have an understanding of the social and cultural details of eating."

At 28, Chappell has been cooking her own meals for years, but the course constantly surprised her, whether she was learning what's inside convenience foods, how to build meals from a food bank hamper, or how to make tasty meatballs from dried vegetable protein.

"This class forced me to use new ingredients and learn how they work in terms of science." 🍴

## DIET CHANGES ALONE CAN REAP BIG REWARDS FOR PEOPLE WITH DIABETES

New study shows significant decrease in blood glucose with a few practical adjustments

BY HELEN METELLA

■ **The most recent** news for people with Type 2 diabetes is darn good—it takes just a few realistic adjustments to their diet, without an overt focus on weight loss, to reduce the risk of developing the disease's serious long-term complications.

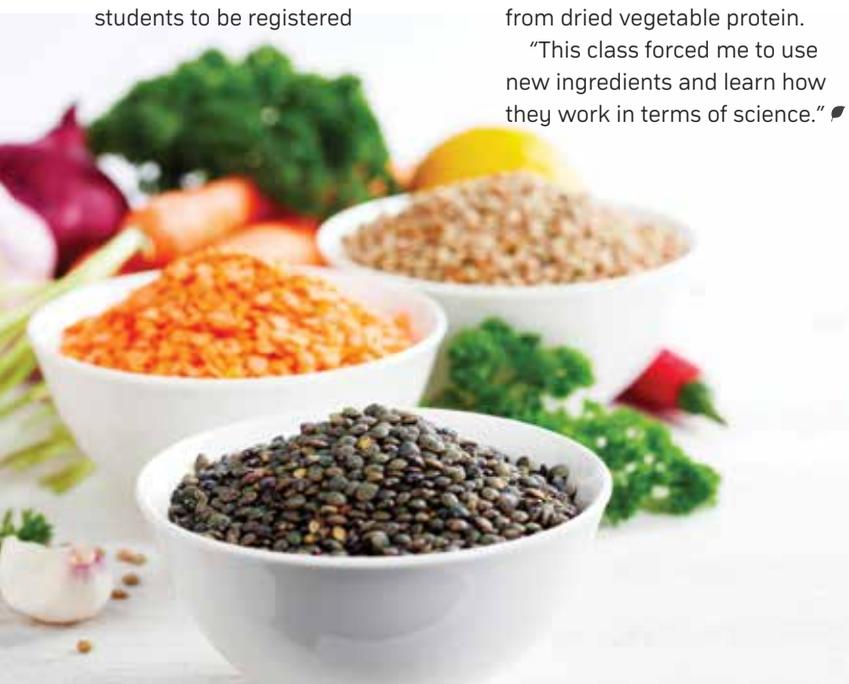
"Our primary outcome was that hemoglobin A1c, which is a measure of how well-controlled blood glucose is in the past three months, decreased 0.7 per cent," says Catherine Chan, a professor of nutrition and physiology in the Department of Agricultural, Food and Nutritional Science.

"A decrease of .5 per cent is considered clinically relevant. That person could be expected to have a lower risk of complications if they're able to maintain that number."

Study participants also reduced their sodium intake from by about 570 milligrams per day from over 3,000 mg. That's close to the "upper tolerable limit" indicated by Health Canada and certainly much better than the 3,500 mg most Canadians consume, says Chan.

There was only a marginal decrease in overall body mass index, but while weight loss is definitely encouraged as a diabetes management tool, the weight results send an important message, she says.

"Even with a small change in weight you can get improvement in your health. I think people have the idea that you've got to get into a size 4 in order to be a success, but in terms of managing diabetes that is not the case." 🍴



# COPING WITH CLIMATE CHANGE

Evidence for convergent evolution published in *Science* surprises researchers

BY HELEN METELLA AND MATTHEW PYPER

■ **Even after evolving** independently for 140 million years, local populations of lodgepole pine and interior spruce use a high proportion of shared genes to adapt to the climate in which they live.

These findings, published in the journal *Science*, suggest that trees may not be able to adapt to climate change as well as expected.

“It was unexpected to discover that the underlying genetics are not all that complex and that the two different species of trees share many of the same genes responsible for adaptation to climate,” says Andreas Hamann, a professor of forest genetics and global change biology in the Department of Renewable Resources and co-author of the study.

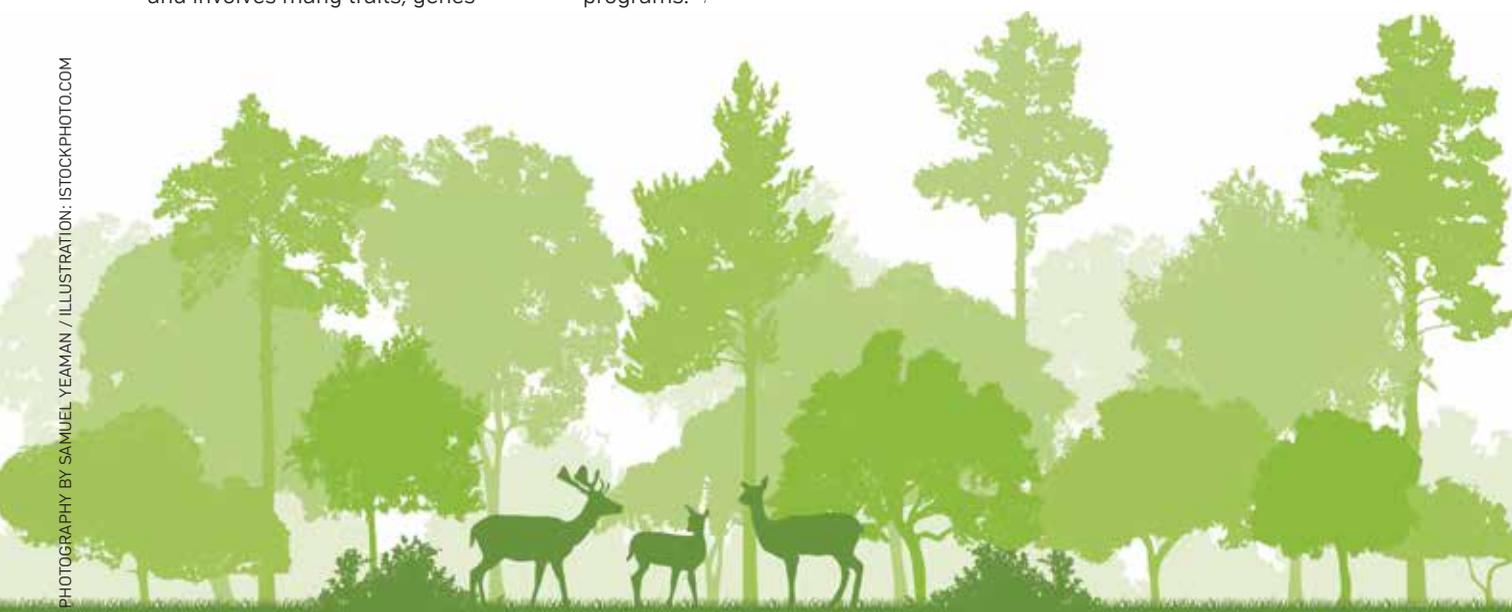
Genetic variation within wide-ranging species is critical for helping organisms adapt to local climate conditions. Scientists often believe that adaptation to climate is complex and involves many traits, genes

and gene variants, which should allow evolution to find a great variety of ways for trees to thrive under various environmental conditions.

“The lack of different genetic solutions in species that have independently gone through many ice age cycles also implies that trees may be fundamentally limited to evolve new ways to cope with future climate change,” says Hamann. “If a limited set of variable genes is responsible for climate adaptation, then we can quickly and relatively inexpensively screen natural populations for relevant genetic differences, and match them to the right planting environments in reforestation programs.”



Local lodgepole pine (on left) and interior spruce (right) use a high proportion of shared genes in order to adapt to their climate, says Andreas Hamann, co-author of a new study published in the prestigious journal *Science*.



TURN SCIENCE INTO SOLUTIONS FOR THE PUBLIC GOOD

# Rangeland scientists gain access to two important new study areas

Onefour and Stavely Research Ranches will test conversation, biodiversity

BY HELEN METELLA

Two historic research ranches in southern Alberta have officially changed hands, and that’s giving scientists from the University of Alberta assured access to study two large rangelands.

The land areas are the Onefour and Stavely Research Ranches, located in the southeastern corner of the province and southwest of Nanton, respectively. Established by the Canadian government in 1927 and 1947, they were dedicated to ranch and livestock fieldwork until Agriculture Canada decided three years ago to close them.

Now, a memorandum of understanding between the University of Alberta and Alberta Environment and Parks will allow these working landscapes to be managed by the province of Alberta and be reborn as centres concentrating on improving rangeland management, promoting long-term rangeland economic and environmental sustainability, and conserving biodiversity.

“Having reliable access to large-scale rangeland landscapes is critical to improve our fundamental understanding of rangeland ecology and function, and ultimately identify beneficial management practices for those relying on and using these areas,” says Edward Bork, Mattheis Chair in Rangeland Ecology and Director of the Rangeland Research Institute.

The institute already conducts studies at the Kinsella and Mattheis Research Ranches in central and southern Alberta, but adding the new ranches vastly enriches the scope of its work. As well as being a venue for

rangeland and native grassland research, these lands will simultaneously provide grazing opportunities for local ranchers, and provide for more effective technology transfer back to the ranching community. There is sufficient space to do both because the Onefour Research Ranch encompasses more than 40,000 acres and the Stavely site occupies 960 acres.

“While Mattheis and Kinsella are exemplars of the mixed-grass and parkland regions respectively, they do not represent the most arid prairie regions of Alberta (as Onefour does), nor the more humid and biodiverse

grasslands of southwestern Alberta (Stavely), where climate, soils, and associated vegetation are unique,” says Bork.

“As a faculty, one of our priorities is providing space where our students and faculty can explore how to turn science into solutions,” says Stan Blade, dean of the Faculty of Agricultural, Life and Environmental Sciences. “Access to the lands at Stavely and Onefour assure that we will continue to use the best tools for rangeland and grazing research, which will benefit Albertans for generations to come.”



The rangelands of Stavely/OneFour are integral to the successful research being done in ALES.

MIKE ALEXANDER (GOVERNMENT OF ALBERTA)

# GENOMICS SPUR NEW STUDIES

Three different ALES projects seek fixes by examining how genes work together

BY HELEN METELLA



HENRY AN



DEBRA DAVIDSON



NADIR ERBILGIN



ELLEN GODDARD



PAUL STOTHARD



BARB THOMAS



JOHN WOLODKO

■ **Researchers in the** Faculty of ALES are applying the power of genomics as they hunt down solutions to three quite different problems posing dangers to the environment.

For forest researchers Barb Thomas and Nadir Erbilgin in the Department of Renewable Resources, studying the genotypes (heritable genetic variants) and chemotypes (chemically distinct genotypes) of selected parent trees and progeny in white spruce and lodgepole pine will generate far more insight than merely measuring physical characteristics, such as height and volume, in predicting the performance of our future forests.

“Knowing how the genotypes vary relative to their phenotypes (physical characteristics) in individuals, can help identify very early on which trees are better adapted to drought, which show insect resistance, which exhibit desirable wood quality traits, and which have identifiable metabolic and chemical responses,” says Thomas. She and Erbilgin, along with other team members, will then use that information to predict which parent trees should be used to produce the next generation of seedlings for reforestation.

In a component of work attached to this study, sociologist Debra Davidson, of the Department of Resource Economics and Environmental Sociology, will assess lessons learned in other jurisdictions that have applied this genomics-assisted species migration technology.

“We’ll also assess the state of expert knowledge and uncertainty

on the technology, the likely sources of support and opposition for it in the political sphere and the development of best practices in science-policy communication,” says Davidson.

Her colleague Henry An, an agricultural economist working in the same department, will generate estimates of the economic value of these improved tree varieties—under various market, climate change and pest infestation scenarios—in order to help guide policy and investment decisions in the forest sector.

Meanwhile, in a second major project, bioresource researcher John Wolodko, the Alberta Innovates-Technology Futures Strategic Chair in Bio and Industrial Materials in the Department of Agricultural, Food and Nutritional Science, is co-leading a study to predict and prevent microbial influenced corrosion.

MIC, as it’s known, is the activity of bacteria and other microbes in water and soil that makes metal more corrosive. Wolodko’s team will use genomics to understand

how the thousands of different microbial populations are interacting with one another. Corrosion of steel infrastructure is estimated to cost the oil and gas industry in the range of \$3 billion to \$7 billion each year in maintenance, repairs and replacement. Microbiologically influenced corrosion is responsible for at least 20 per cent of that cost.

In the third major project, molecular biologist Paul Stothard and agricultural economist Ellen Goddard are part of a team tackling chronic wasting disease (CWD) in cervids (the collective name for deer, elk, moose and caribou). Stothard hopes that genomics will reveal gene expression changes associated with the onset of this disease, which is caused by infectious prion proteins that can cause normal proteins to transform into malformed prions, which fatally attack the brains of infected animals.

All three projects are part of a \$26.4 million Large-Scale Applied Research Program of Genome Canada announced in December 2016. 🍀

The Aga Khan Garden:

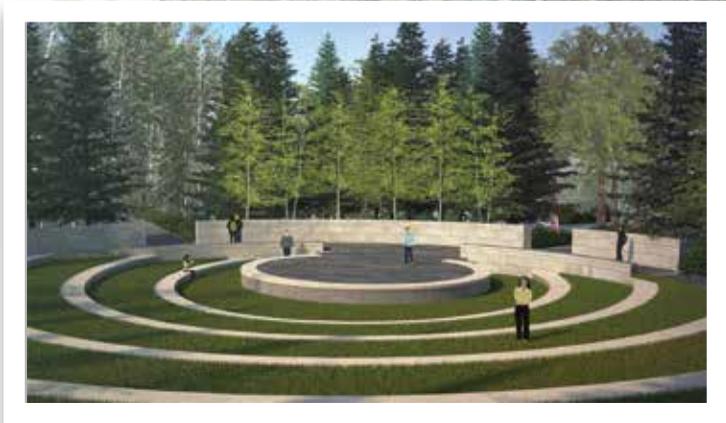
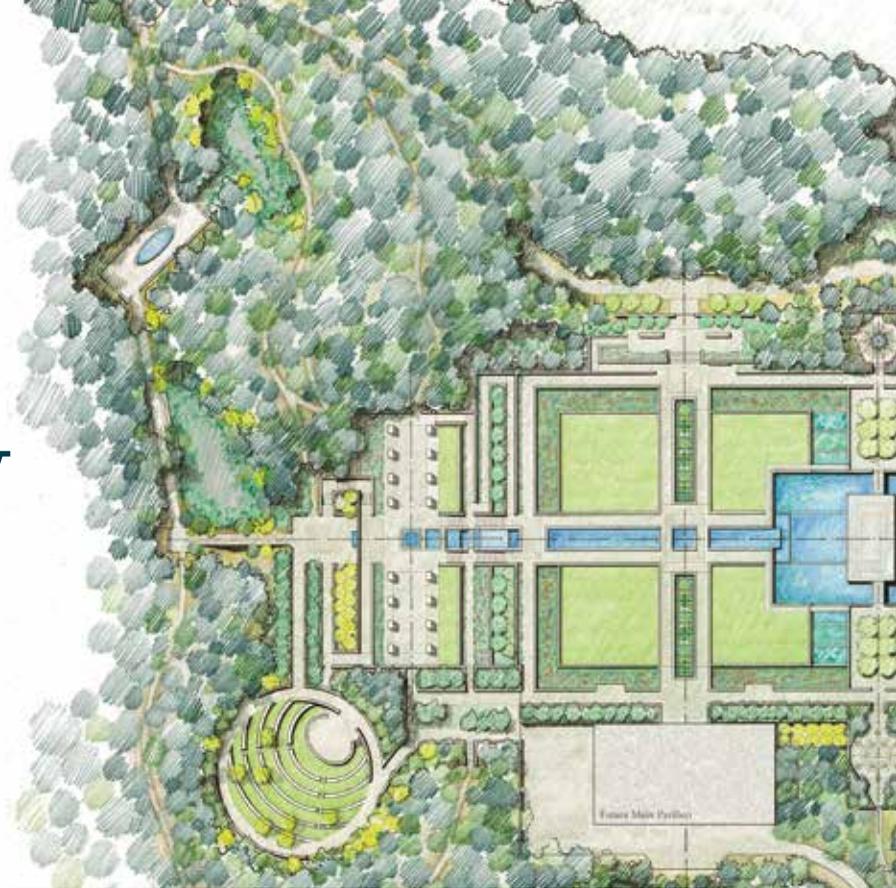
# A preview of things to come

BY SHEILA GRAHAM

**U**ntil the reveal of the design of the Aga Khan Garden at the University of Alberta Botanic Garden, the idea of a traditional Islamic garden had, for me, conjured images of a lush oasis in a desert. The reality has changed my perspective—and that’s the entire point of the new feature garden made possible by a gift in excess of \$25 million from His Highness the Aga Khan.

The fact of the garden was not a surprise. His Highness referenced the gift when he received an honorary degree from the university in 2009. Construction has begun. But what exactly would it look like? What elements or special features would it have? And how do you reconcile traditional Middle Eastern garden plants like pomegranate, olive or date with a windswept prairie site buried under snow half of the year?

Turns out it’s possible, and it’s going to be spectacular. The presentation by Thomas Woltz of Nelson, Byrd, Woltz Landscape Architects at the April 7 event described a very deliberate integration of existing plants and trees with the two main parts of a



(Top) A natural opening in the woods provides an opportunity for the amphitheatre, a special learning and entertainment space in the Aga Khan Garden. (Above) The geometric structure of the Chahar Bagh, or Central Courtyard, acts as a framework for the local wetlands and reflects the geometry of Islamic traditions.

RENDERINGS BY NELSON BYRD WOLTZ LANDSCAPE ARCHITECTS



Secluded forest paths open to wide, stepped terraces that adapt with the seasons. Geometric water features stream into wetlands and a spectacular orchard surrounding the revitalized Calla Pond.

open pavilions, which provide shelter from the rain and shade from the sun. The terraces also provide a great view of the waterfalls, which spill down through the formal garden to the existing Calla Pond. The open Chahar Bagh, or four-sectioned central courtyard, is the formal, central part of the garden and pays homage to the geometric traditions of Islam. Beyond lies the Bustan (orchard) of pears, crab apples and cherry trees.

The University of Alberta Botanic Garden is a unit within the Faculty of Agricultural, Life & Environmental Sciences. As such, this is also the site of learning, teaching and research. The Learning Dock at the end of the pond will also be used by the more than 17,000 local children who come to the garden's educational programs each year. It is connected to its local community through geographic proximity, but it is also connected to its community of educators, learners and visitors as a site of beauty and education. Now, as well, a site of reflection and communing.

I don't know what motivated His Highness, while standing on the hill overlooking the Calla Pond, to decide it was a great site for the gift of a garden—a gift to celebrate the collaboration between his organizations and the University of Alberta. But I do know that as a result, the partnership has created a fabulous new space that honours the traditions of old Islamic gardens, integrates with the existing plants and trees on the site and celebrates the four seasons of Northern Alberta.

The Aga Khan Garden will open in 2018. I'm excited to watch it bloom and grow throughout the seasons—not just in the next year, but in the decades to come. *For more information, including the overview video tour and concept illustrations, visit [uab.ca/jakg](http://uab.ca/jakg).*

## Based on 1,200 years of tradition and a tour of some of the most spectacular sites around the world, the designers focused on three important components—water, geometry and food production.

traditional Islamic garden landscape: a formal, structured centre historically surrounded by fields used for growing food. Based on 1,200 years of tradition and a tour of some of the most spectacular sites around the world, the designers focused on three important components—water, geometry and food production.

As a result, the Aga Khan Garden begins in the existing woods. Formally titled the Woodland Bagh (garden), a visitor follows one of several paths through the trees.

If you've ever been for a hike in an old growth forest you'll recognize it as an immersive and effective way to

encourage calm and contemplation.

In a natural opening in the trees, rainwater held in a fountain in the shape of a bowl reflects the sky. Another opening has been turned into an amphitheatre to host speakers, concerts and other community events. Overall, and this space is a big part of that, the Aga Khan Garden will boost the profile of the University of Alberta Botanic Garden internationally with the potential to increase the number of visitors from the current average of about 75,000 a year to more than 160,000 a year.

Coming out of the woods, a visitor rises up through the terraces to the



# A NEW *history*

The ALES atrium's redesign looks to the past, present and future for inspiration.

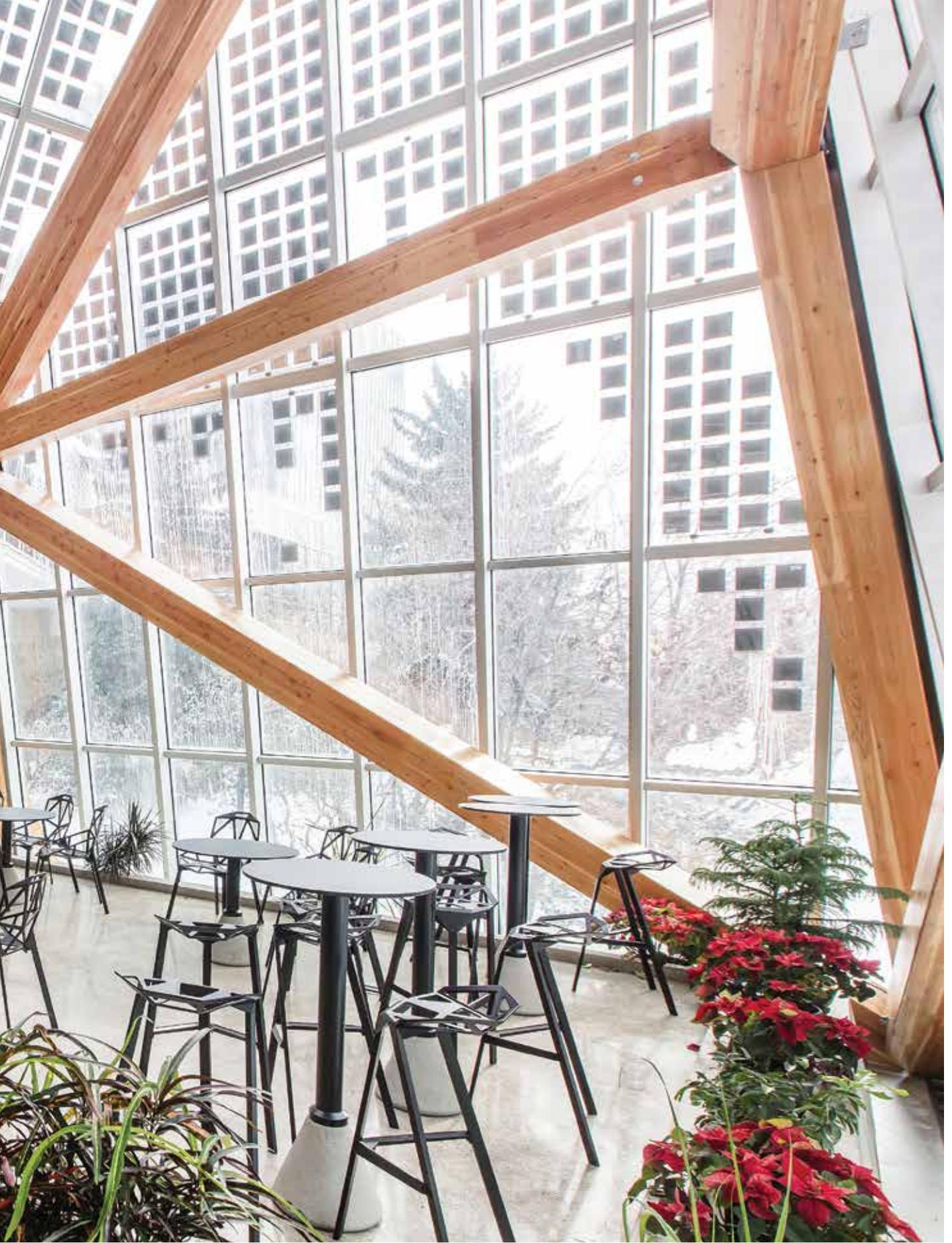
BY HELEN METELLA  
PHOTOGRAPHY BY CURTIS COMEAU

**P**eople from across campus used to love popping in to the old ALES atrium in the winter because of its abundant greenery and humidity, but it definitely had, uh ... issues.

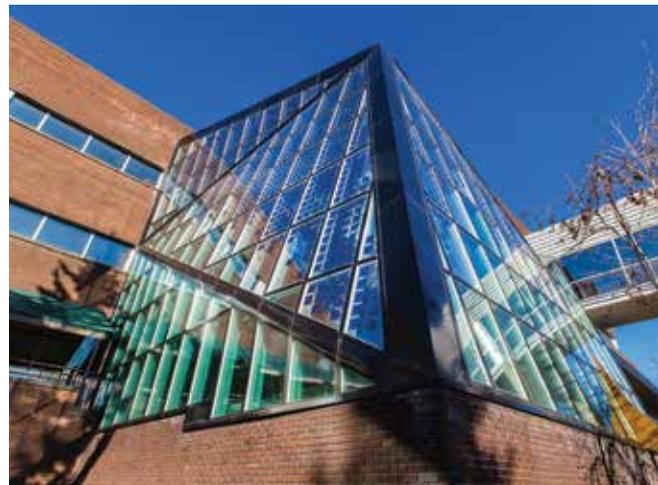
“There were canaries,” says John Bell, assistant dean of administration for the Faculty of Agricultural, Life & Environmental Sciences and an ALES alumnus (’03, PhD, Animal Science).

At some point, someone well-meaning released the birds into the public greenhouse, which had been designed to house tropical plants when the Agriculture Forestry Building opened in 1981.

“So then we started feeding them because no one wanted them to die, and that attracted mice,” he says, shaking his head at the memory.



The old atrium's shed-roof design is replaced by a soaring, angular space made of large panes of glass framed and supported by massive beams of Douglas fir, both fundamental materials that speak to ALES' studies in soils and forests.





All that's been dispatched, along with the water leakage, structural deterioration and poor snow-load-bearing capability that caused the two-storey-high space attached to the south of the Ag-For Building to be closed in 2012.

With the use of deferred maintenance funds, the atrium has been gorgeously reimagined as a multi-purpose, flexibly sized space teeming with jewel-like details that are also clever references to the Faculty of ALES' many facets.

Most significantly, the old atrium's shed-roof design is replaced by a soaring, angular space made of large panes of glass framed and supported by massive beams of Douglas fir, both fundamental materials that speak to ALES' studies in soils and forests.

"The original building was shaped like a trapezoid but they were having trouble with water leaks where it attached along

the brick," says project architect Greg Freer, of Newstudio Architecture.

So with the help of Western ArchRib, the company that manufactured the engineered wood beams, the designers added several new connection points and then "pushed and pulled" the new planes those created, so that they would direct water away from the building and also make what Freer calls "a grand gesture."

The space's arresting new shape is reminiscent of crystalline geometry, although sections of glass wall set on odd planes break symmetry and produce unexpected changes in the view. Even more fun is what happens overhead.

The highest glass panels contain a liberal scattering of photovoltaic panes, which will collect solar energy to help power the building. But unlike older-generation PV panels, >>





which are completely opaque, this treatment features squares within the glass panels that are connected by wires, and that allows some direct light to descend.

“The original vision was of standing under an oak tree and seeing light trickle through the leaves,” says Freer. “It creates a very dynamic lighting situation in the space.”

Inside the atrium, terraces of polished concrete embedded with terrazzo also allude to the faculty’s studies in soils. There’s now a much better designed air envelope and heating system, too.

While metal stools and chairs in sharply contemporary shapes position both the atrium and ALES as places where modern minds gather to study, network and share scientific discoveries, a centrepiece art wall infuses the atrium with history (and replaces a defunct waterfall).

The mixed-media mosaic by Burn Design Collective (a.k.a. Edmonton artists Alayne Spafford and Howard Pruden) is laid out like crops in a farmer’s field as viewed from the air, but it just as easily evokes a crazy quilt like those found in the Rosenberg Quilt Collection, which is housed in the faculty’s Department of Human Ecology.

Either way, each of the piece’s 84 squares contains objects chosen by faculty members that represent part of ALES’

101-year-old story, from an antique bovine ear tag to new building insulation made of canola oil byproduct. Red and yellow blocks of colour represent two important areas of study in ALES, canola and beef, while a blue line denotes a stylized river that references the faculty’s environmental and conservation studies.

Recent history is also acknowledged in the atrium, with the hemlock wood accent wall to the right of the entry’s sliding doors. Pre-treated with fire in a Japanese technique called *shou sugi ban*, it commemorates the Fort McMurray fire of 2016, an event which will inform a plethora of studies in ALES for decades to come.

Several vestiges of the former atrium remain, including three round windows overlooking the space from the Office of the Dean, and the circular stairway that provides access to the third floor.

This renovation was undertaken as a way to provide refurbished space where students, faculty and staff can mingle and enjoy a space that is a truly collaborative environment.

“That’s half the reason why we have the sliding glass door at the front,” says Freer. “It can be closed for a private event but left completely open at all other times. People should just be chillin’ in there.”

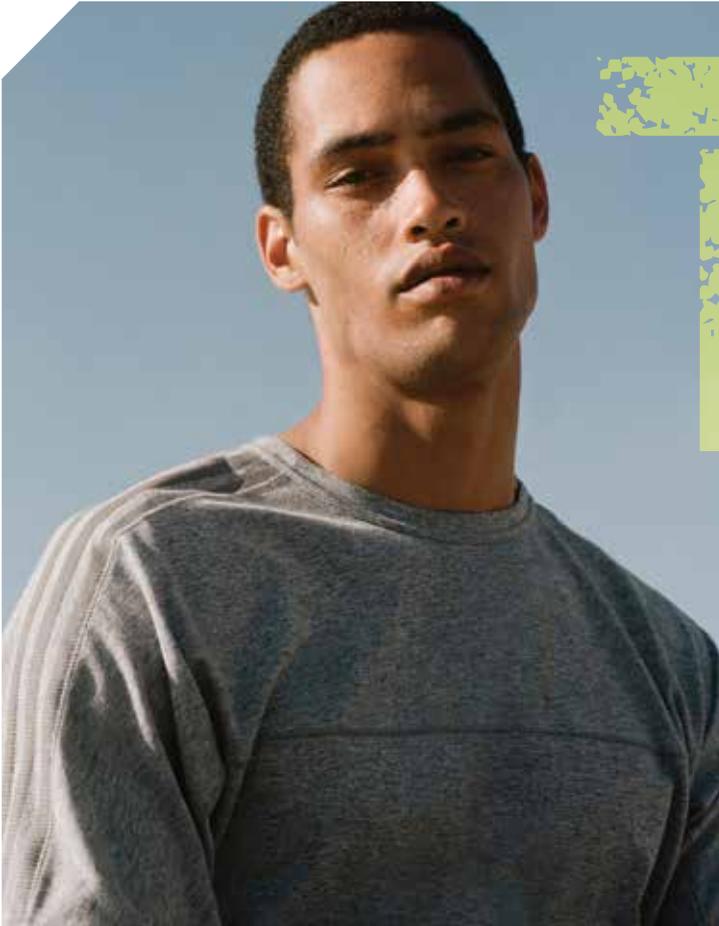
# GLOBALLY APPEALING ATTIRE

BRAND GIANTS EMBRACE  
ALUM'S SIMPLY SOPHISTICATED DESIGNS

BY HELEN METELLA

PHOTOGRAPHS COURTESY WINGS+HORNS





Tung Vo's appreciation for classically cut, functional clothing trimmed with subtle hints of swagger was established long before his career path was set.

"I wanted a pair of Levi's jeans when I was probably about eight years old, but at that point we couldn't find a pair my size," says Vo, '05 BSc Human Ecology (Clothing, Textiles and Material Culture).

"So my Dad took a pair of his jeans, took off the pocket with the red Levi's tag and stuck it on mine."

The story from there to where he is now—overseeing design at two leading-edge menswear labels that have landed collaborations with international sportswear giants Adidas and New Balance—illustrates Vo's refined ability to marry quality and the cool factor.

It's prominent in the lines of finely fabricated T-shirts, sweaters, jackets, trousers and accessories produced by hip Vancouver-based clothing brands wings+horns and Reigning Champ. Both are owned by CYC Design Corporation, where Vo has been the creative director since 2014.

Wings+horns is a contemporary casual-wear label that turns out minimalist designs in muted colours, constructed with nifty details (knee darts, insulation and double-stitched seams, to name a few). Whether produced in knitwear, woven materials or outerwear, the clothes feature comfy, top-shelf fabrics that are CYC founder Craig Atkinson's hallmark. Reigning Champ is an upscale athletic-wear brand with the same sensibilities.

Each label has recently collaborated with international brands on projects that saw Vo's design direction lend a fresh and modern edge to legacy items. For instance, the iconic Adidas Gazelle 85 sneakers, with their low profile and three stripes, were interpreted by wings+horns with hairy-suede uppers, and the classic sweatshirt was reborn using seamless technology.

The partnership with Adidas Athletics is ongoing, and there are others with two famed Canadian names—outerwear maker Canada Goose and footwear brand Viberg. Across North America, top-tier boutiques and department stores such as Haven, Bloomingdale's and

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Tung Vo, '05 BSc Human Ecology  
(Clothing, Textiles and Material Culture)



Nordstrom carry the labels, as do Asia's big retailer United Arrows and Europe's online giant Mr. Porter.

"They want our point of view," says Vo. "We've been fortunate to be recognized as strong, quality brands."

That quality is founded on stellar fabric blends—CYC began in 1996 as a fabric developer and Vo and Atkinson still work closely with fabric mills on new blends—but it pays off in Vo's constant quest to add valuable detail without compromising his simple silhouettes.

"Does it feel robust, soft, elevated? It's premium but it can't feel precious," he says. "It can't be silky or drapey. It still needs to look and feel masculine."

That precise balance has made the two independent labels hot commodities.

"Not only have we seen healthy revenues from our Adidas collaborations but we have seen a very healthy growth in both wings+orns and Reigning Champ since Tung has joined us," says Atkinson.

In April 2016, wings+orns won the 2016 Menswear Designer of the Year Award from the Canadian Arts & Fashion Awards. The award recognizes an outstanding Canadian menswear designer who has made a significant creative impact in the Canadian fashion industry. Last

August, Vo received the North American Polartec Apex Award for his Reigning Champ Ripstop Insulated Bomber Jacket. The award singles out designers who use Polartec fabrics to push design boundaries.

To ensure his name is synonymous with invention as well as quality, Vo also draws on a deep knowledge of how clothes are built. One signature technique that separates his clothes from his competitors' is a flat-lock stitch that sits flush against the skin for a clean, streamlined look, unlike the faster, more popular method of serging and cover stitches, which adds bulk.

"It's a very vintage approach to sweatshirt-making that now is used mostly in technical shirts (made for sport performance)," says Vo.

Vo learned to respect great clothing construction as teenager in Calgary, when he repurposed military clothing from second-hand stores because he couldn't afford name brands.

He had plans to be a visual artist, but when his practical streak prompted him to apply his artistic skills to clothing design he wanted to learn about its foundations. He was drawn to the University of Alberta's program major in clothing, textiles and material culture and its courses in textile analysis, apparel design and product development.

"The approach felt no-nonsense," says Vo. "I also liked a lot of the surfacing courses, from tie-dyeing to batik, where there's lots of technique involved."

The program's mandatory 200-hour practicum in a professional environment was also a vital asset. An instructor secured a place for Vo at Michael Kaye Couture in New York City, where observing the design of high-society gowns taught him important information.

"Michael gave me insight into the business side of it. I saw the passion that's required to be a successful designer, but how to make a living at it, too," Vo says.

The practicum is designed as a stepping-stone to help students transition from school to the workplace, says Deanna Williamson, chair of the Department of Human Ecology.

"But, it's much more," she says. "The students have an opportunity to work with inspiring field supervisors in a safe and supportive environment. They can explore their abilities and passions and come to understand them far better."

The practicum component of the degree Vo obtained is part of the faculty's overarching strategy of putting students into their field of



study before they graduate, enhancing their experiences and giving them valuable career tools prior to completion of their degree.

After graduation, Vo designed for two Canadian brands producing durable apparel: Mark's, the iconic clothing and footwear retailer formerly known as Mark's Work Wearhouse, and Arc'teryx, internationally renowned for its outdoor wear.

Working with such utility-minded firms reinforced his discipline. "A good designer is a problem-solver and can unpack the tasks at hand," says Vo. "You have to deliver what the customer wants."

These days, it seems customers want more of Vo' designs. In addition to wings+horns' mid-Vancouver production studio and retail store, there's a Reigning Champ store in the city's Kitsilano district, two in Toronto, and one opening in Los Angeles this summer.

It's his dream job come true, he says, but Vo doesn't call himself a fashion success story.

"I'm an apparel designer, not a fashion designer," he says. "It's about making quality clothes. With fashion, there's a lot of fluff. What we do is make great product that guys want to wear, and it's product that lasts." ■

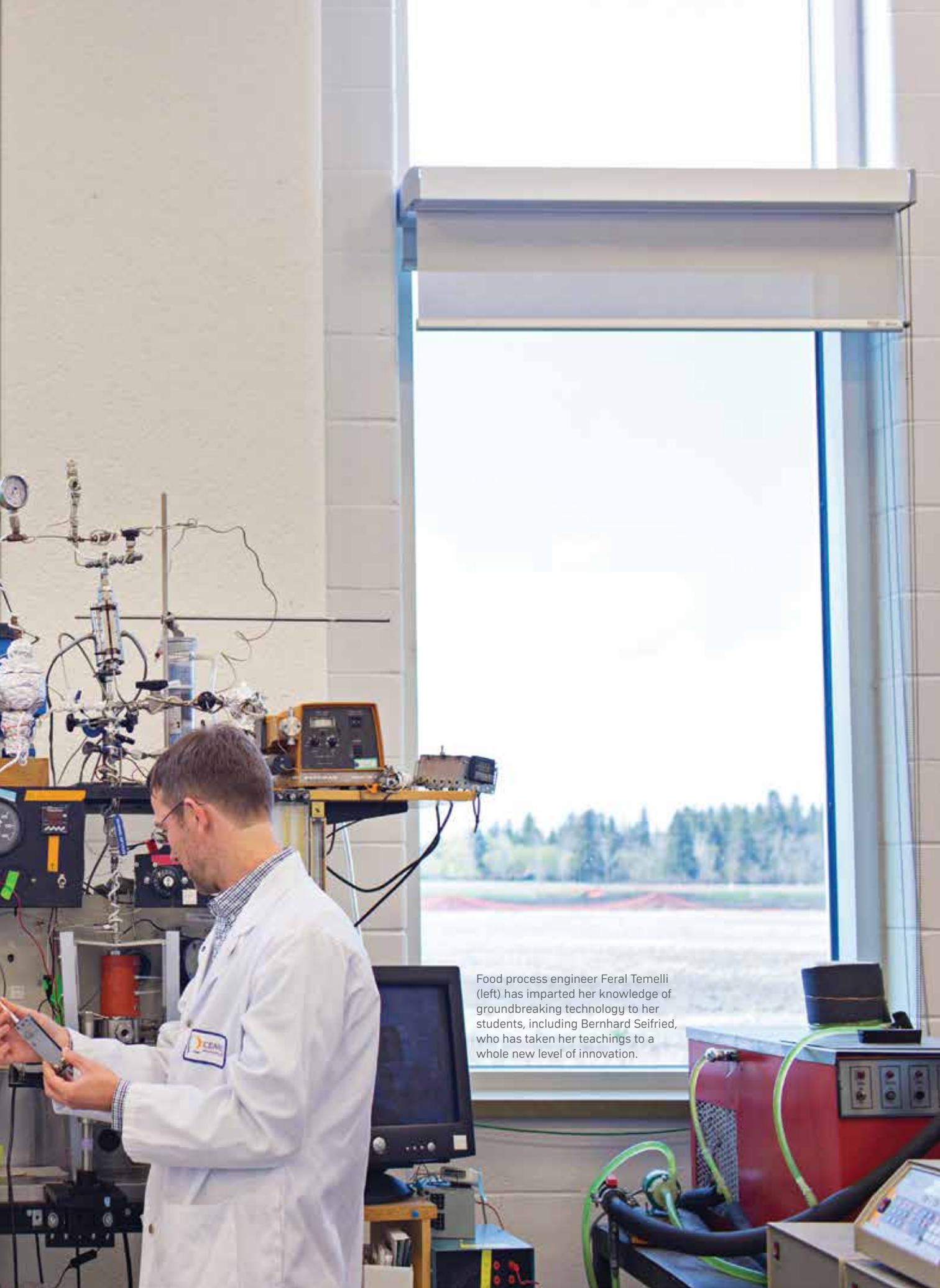
# solving global problems together

INGREDIENT-DRYING  
TECHNOLOGY INVENTED  
IN ALES HAS LIMITLESS USES

BY HELEN METELLA

PHOTOGRAPHY BY JESSICA FERN FACETTE





Food process engineer Feral Temelli (left) has imparted her knowledge of groundbreaking technology to her students, including Bernhard Seifried, who has taken her teachings to a whole new level of innovation.

# Scientists

**Scientists are a careful** bunch when talking about new results in a lab—usually such discoveries bring science “one step closer,” or “add to evidence.”

So it’s noteworthy how Paul Moquin, director of research and development at biotechnology firm Ceapro, reacted to a technology co-invented by University of Alberta food process engineer Feral Temelli and her former PhD student Bernhard Seifried, when he heard about it at Seifried’s 2010 thesis defence.

“I remember going home and I was totally ecstatic,” says Moquin, who had earned his own PhD under Temelli two years earlier.

“It dawned on me that probably this was going to change the way we process ingredients in the future. Initially, you’d dry with fire, then with steam. Now, we’re basically at another frontier.”

Since then, Edmonton-based Ceapro has in-licensed (licensed something still in development) exclusive worldwide rights to the discovery, which is called PGX, or Pressurized Gas Expanded Liquid Technology.

PGX allows active ingredients that are extracted from plants as viscous liquids to be dried to a powder form, something that wasn’t possible previously without degrading those health-promoting ingredients. The process also vastly increases the powder’s surface area, and that means it can be impregnated with other active ingredients that are hard to deliver otherwise.

Ceapro’s big international clients, which include such brand names as Jergens, Dove, Coppertone, Neutrogena, Aveeno and other skin-care companies, are eager to employ it with new products. More importantly, Ceapro plans to expand beyond the cosmetics and health-care market into nutraceuticals and functional foods by using PGX, potentially building what is now a \$100 million market capitalization company into one dramatically larger.

“The applications are limitless,” says Seifried, who is now Ceapro’s senior research scientist.

Beyond drinks and foods, he sees uses for it in remediating waste water, reinforcing plastic composites and in 3D printing. Even Temelli, an understated scientist with more than 30 years’ experience in the slow progress of trial and error, says there are reasons to be excited. “Usually, you publish results and others build on your work. But this is new technology leading to new products, and eventually to the benefit of the public, because the delivery forms might be effective in fighting diseases, like diabetes,” says Temelli. “It’s very rewarding; it’s very satisfying.”

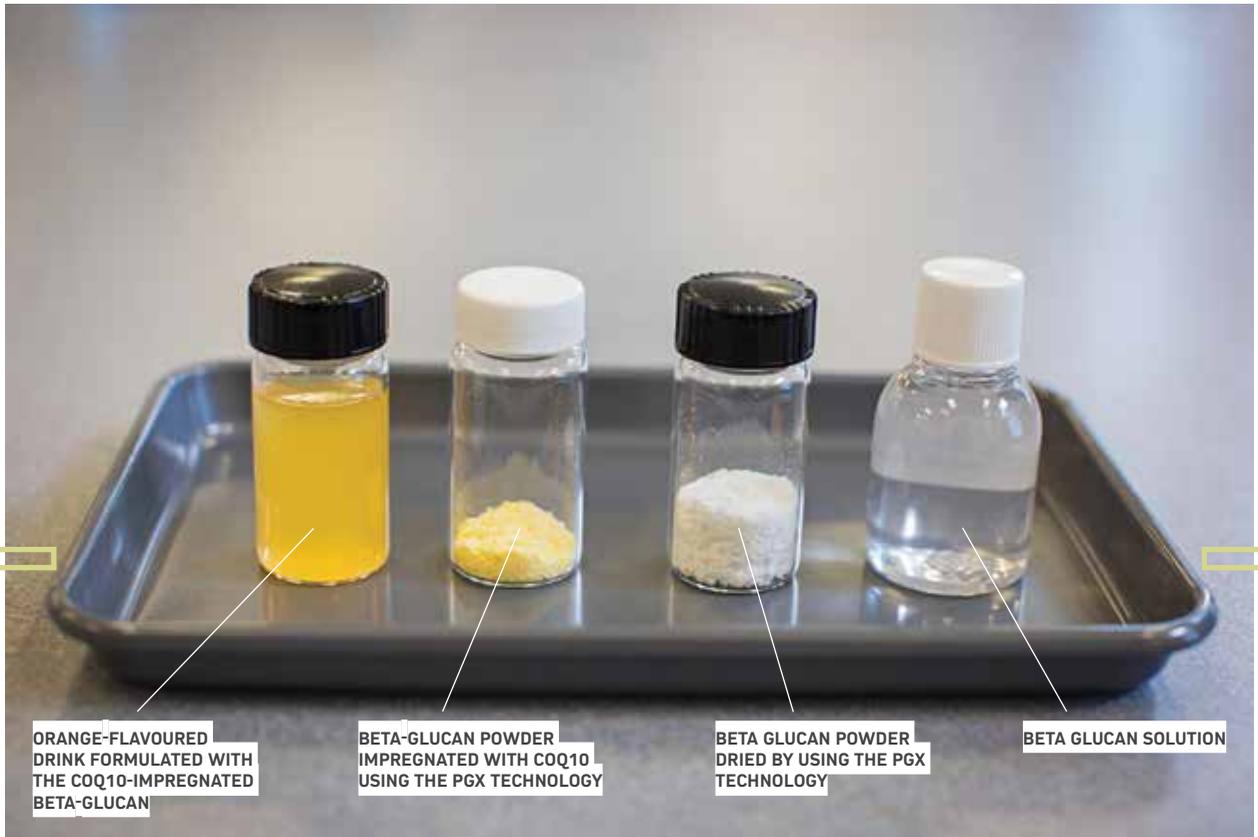
The successful collaboration between this teacher and student is rooted in a little serendipity.

Temelli earned her PhD at the University of Florida by using orange peel oil to experiment with supercritical carbon dioxide technology. Supercritical fluids fascinated her because they have properties between those of a liquid and a gas, and can be manipulated multiple ways to extract or convert the active ingredients of plants. Using CO<sub>2</sub> meant Temelli could avoid petroleum-based solvents.

When she moved to the University of Alberta where she became a professor in the Department of Agricultural, Food, and Nutritional Science, she needed to replace orange peel oil with something far more available locally. She decided

Feral Temelli in her lab at the Agri-Food Discovery Place on South Campus.





“USUALLY, YOU PUBLISH RESULTS AND OTHERS BUILD ON YOUR WORK. BUT THIS IS NEW TECHNOLOGY LEADING TO NEW PRODUCTS.”

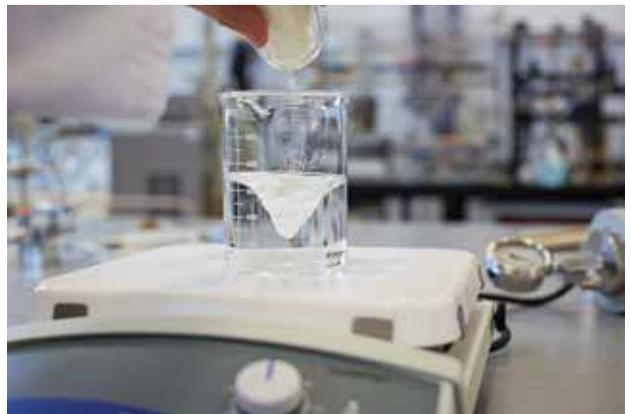
– FERAL TEMELLI

on canola oil. Then she landed the first of several Discovery Grants from the Natural Sciences and Engineering Research Council of Canada (NSERC) allowing her to experiment with canola and supercritical CO<sub>2</sub>.

“I first started doing extractions from it, and from that I went on to fractionation and reactions, and converting it to other things,” she says. “In the last 10 years, I’ve been focusing on the particle formation and delivery systems, and doing things very differently than they do it with conventional technology.”

Since she was now working with grains, not citrus, Temelli also started a parallel project, isolating the beta glucan from oats and barley. Independent of her research, Ceapro’s scientists were developing another technology for extracting this active ingredient from oats, but had only converted it to a biopolymer solution—that viscous liquid. Although it’s now in use in creams that relieve itching or reduce inflammation, the liquid form limits many other uses that manufacturers have in mind.

Bernhard Seifried adds the beta-glucan powder to liquid as it is agitated, assuring a smooth transition into a beta-glucan solution.



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“EVERY TIME YOU BUILD SOMETHING NEW, THERE’S A RISK IT WILL FAIL. THIS IS THE DIFFERENCE: FERAL LIKES TO EXPLORE NEW THINGS.” – BERNHARD SEIFRIED



Former PhD student Bernhard Seifried is now senior research scientist at Ceapro, where he is leading product development using PGX technology.

#### HELPING THE HEART

Already, Temelli and Seifried have completed one phase of a new project with Ceapro, using PGX technology. It’s a beverage that delivers an anti-oxidant called co-enzyme Q10 (CoQ10), which helps our cells produce energy and is beneficial for heart health. people stop producing enough of it in vital organs around the middle of life, says Moquin, so the drink could be a welcome supplement.

“The challenge with CoQ10 is that it’s in a crystalline form, so the bio-availability is very low,” says Temelli. “By using PGX, we created tiny, tiny nanoparticles of CoQ10, which are impregnated on to the beta glucan powder. I hope this is going to be a great example of translational research from lab to market.”

Enter Seifried, in 2005.

“He was looking at making microscopic capsules of fish oils using CO<sub>2</sub> technology, but as we studied that, we realized he needed a coating,” says Temelli.

They turned to beta glucan because it’s a naturally occurring polysaccharide and a soluble dietary fibre that is not digested by the body. But they needed to dry it to a powder. And voila—at their fingertips was Temelli’s deep knowledge of supercritical CO<sub>2</sub>.

That, plus her willingness to let Seifried modify existing equipment, design and build new custom-made equipment, and explore different processing mixtures, led him to find a combination of polymer, CO<sub>2</sub> and organic food-grade solvent that dried the material into very fine powders and fibrils (slender fibres much finer than the diameter of a human hair), at very low temperatures, avoiding thermal degradation. Temelli also supported Seifried as he built the equipment they needed, but couldn’t afford, to carry out his experiments.

“She encourages students very much to be creative,” says Seifried. “I’ve heard stories about labs where you are not encouraged to play, because there’s a risk. Every time you build something new, there’s a risk it will fail. This is the difference: Feral likes to explore new things.”

Business incubator TEC Edmonton agreed to help with the very long process of applying for a patent for PGX, but asked the scientists to find a commercial partner. Former student Paul Moquin was the natural choice to convince Ceapro’s top management to implement this successful university-industry partnership.

After graduation, Seifried joined Ceapro and has been designing the equipment and modifications required to scale up PGX for commercial applications. Canadian and U.S. patents for the technology were issued in 2016, and a European patent is pending.

“It’s incredible,” says Temelli, as she ticks off the joys she feels seeing three decades of effort in her lab about to make an impact outside of it.

“It’s turning science into solutions,” she says. “Other former students are also working at Ceapro, and my current team members are looking up to them and being inspired, too.”



Danny Wein (seated) enjoys his new-found freedom of outdoor exploration with his father Ross (standing), thanks to the clothing system designed by human ecology professor Megan Strickfaden.

# A CLEVER CONCEPTION

Human Ecology professor shows collaboration solves multiple problems for people with mobility issues

BY HELEN METELLA | PHOTOGRAPHY BY JESSICA FERN FACETTE

**D**anny Wein is an avid outdoorsman with a witty sense of humour who immerses himself in nature often and enthusiastically. Alberta’s winters have never squelched his love of outdoor excursions—what has, is the lack of appropriate clothing to keep his extremities warm.

In 1998, after graduating from the University of Alberta, Wein was in a motorcycle accident in South America that injured his lower brain stem and took away his mobility. He still enjoys getting into nature by using a TrailRider (a backwoods-access

wheelchair pulled by helpers), but that is only comfortable in warm months or during very short winter outings, because poor circulation in his extremities means he gets cold very quickly.

“Until now, there have been no clothing options for people with mobility challenges when it comes to doing winter outdoor activities, let alone activities that verge on extreme, such as sit-skiing, sit-skating or TrailRiding,” says Megan Strickfaden, an associate professor of design studies and material culture in the Department of Human Ecology.

“The most elegant option is a

poncho, and even then it has many design flaws.”

So when Xioakun Yu, an expert in flat pattern design from Donghua University (China’s leading university for textile and apparel studies), asked if she could work with Strickfaden during her sabbatical year, Strickfaden decided they’d develop a prototype for an idea she’d been researching for years.

The two-part clothing system consists of a high-tech poncho with fitted shoulders and hood, plus a leg cover that fits snugly at the chest. The leg cover has additional ease at the back so it doesn’t slide down, and darts >>



The two-part clothing system designed by Strickfaden is meant to help the user and their caregiver and employs easy-to-use straps, buttons and handles to support ease of movement.

to create a curved sitting position. An optional third garment (for use on warmer days or for activities such as sit-skiing, or for people who have some ability to move their legs), is a bifurcated leg cover that resembles snow pants.

The leg cover attaches and detaches from the poncho, and every zipper has three sliders so users can open it wherever needed for access or venting. The poncho hood is cut far enough back from the face that the wearer has

excellent peripheral vision, and has zippered openings for one or two arms to be extended outside when it's warmer.

As constructed by Edmonton manufacturers Apparel Solutions Inc. and Winner Garment Industries Ltd., the system's stylish prototypes are made of waterproof polyester with quilted fill, in solid colours or a jaunty camouflage print.

The system meets all but one of the 60 design criteria collected when Strickfaden observed people from the

Canadian Paraplegic Association Alberta (now Spinal Cord Injury Alberta) and Alberta Abilities Lodges Society, during trail rides from 2011 to 2015.

These include full body coverage that keeps their extremities warm but fits comfortably over their own indoor or limited outdoor clothing, and a system that's easy for caregivers to fasten on, while also accommodating such needs as breathing or feeding tubes. Also, with its shaped silhouette, the clothing is fashionable and sporty looking.

Strickfaden and Yu added clever details like a one-sized front panel bordered by two zippers, which can be completely removed for washing but which fits any size of the leg cover. This extra option means that if a community activity centre purchases several of these systems in different sizes, anyone can reassemble the leg covers easily, to fit any size of individual.

With the design well in hand, an important next step for Strickfaden was to bring her idea into the classroom. Or, the field.

"With my HECOL 469/569 Material Culture in Practice class, we went



"Issues around complex human problems are essential for developing meaningful design solutions that can be applied in the real world." — Meagan Strickfaden, below with Danny Wein.



on a field trip for the release of the product," she says. "The students were involved in trailriding with a few people with mobility challenges and they also got to try out the trailrider and the clothing system. We used the release as a small 'research training' session, exposure to a research project—which I elaborated upon earlier and afterwards—and exposure to people with different abilities.

"Following the event we had discussions about ethics in doing human research, various techniques to collect data, and further elaboration on the research project."

Exposing her students to the product, and the people who will benefit from it, is critical for students understanding the real-world applications of the design, says Strickfaden, whose work begins with conception but carries through to completion.

"Scientific curiosity and reliable methodologies to find out about stakeholders (e.g., users, manufacturers, policies) and issues around complex human problems—such as how to keep people warm when they have limited mobility during winter activities—are

essential for developing meaningful design solutions, including products and services, which can be applied in the real world," she says. "As a design anthropologist who focuses on creating designed interventions for complex societal issues or specialized users, I consistently engage in putting scientific research to work as a means to developing practical everyday solutions that improve (and sometimes even act as a kind of therapy) the lives of people."

Without functional and comfortable winter clothing, people in wheelchairs or with limited mobility simply won't go outdoors for extended periods in all temperatures, says Strickfaden.

Danny's parents, Ross and Eleanor Wein, saw this firsthand. Now retired from teaching and research positions at the U of A in the departments of renewable resources and home economics, they and friends helped their son reconnect with the outdoors by founding the Alberta Abilities Lodges Society and opening Coyote Lake Lodge. The woodsy retreat allows people with disabilities expanded access to nature through a range of outdoor adapted equipment and by

offering them multi-day vacations with their families.

In 2010, the society purchased several TrailRiders, which allowed people like Danny to move across all kinds of previously out-of-reach terrain in Kananaskis.

Now, with purpose-designed, cold-weather clothing, Danny and others will be able to participate in many activities year-round. This winter, he and other visitors to Coyote Lake Lodge tested the prototype clothing systems while sit-skiing, sit-skating and TrailRiding. This connection to the community decreases the sense of isolation and depression that Strickfaden says can be a byproduct of not being able to get outdoors in cold or inclement weather.

The ultimate goal is to refine the design and mass produce the clothing for the global market, a market that could include seniors who lose mobility through aging, and children with disabilities.

"It was like having a new person," says Ross of the confidence and joy access to the outdoors has restored to his son.

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## Recognized for greatness

In December 2016, Megan Strickfaden received the Excellence in Teaching Award from the Premier's Council on the Status of Persons with Disabilities, thanks to her work designing objects and devised solutions to make lives easier for people with disabilities. She has rigorously trained her students to do the same, and she has promoted making communities inclusive through a bevy of ingenious projects in Canada and abroad.

"She has a capacity to come up with creative, innovative design solutions; she's committed to high quality solutions and she works very well in a collaborative way," says Deanna Williamson, chair of the Department of Human Ecology, where Strickfaden teaches.

"As a key part of her work, whether she's working with people who are visually or mobility challenged, she looks for them to guide the solutions. She really draws on the expertise of the people with challenges." 🍂



The boreal forest is the location of choice for the annual Environmental & Conservation Sciences and Forestry Spring Field School.



## OUTSTANDING IN THE FIELD

### SPRING FIELD SCHOOL CELEBRATES 20-YEAR PARTNERSHIP WITH PORTAGE COLLEGE

BY CAIT WILLIS

#### It's hot.

It's dusty, and it's halfway through three intense weeks for 84 environmental conservation science (ENCS) and forestry students.

The Environmental & Conservation Sciences and Forestry Field School, informally known as spring field school, is a required part of their undergraduate program that is run every spring in the boreal forest about 200 kilometres north of Edmonton and is an important part of the students' curriculum.

It's an invaluable hands-on introduction to what they will face in their respective careers.

Also invaluable is the support for this annual event provided by Portage College, the local post-secondary institution just south of the field school sites in Lac La Biche. On May 5 the students, faculty and staff from ALES, as well as members of the community of Lac La Biche and of Portage College, gathered together to celebrate 20 years of the partnership that allows the students the infrastructure support needed to concentrate on their studies during spring field school.

"Being in the spring field school gives me the foundation to test the concepts I've learned in the

classroom," says ENCS student Sean Bishop. "Portage College has provided us students with a place to relax and enjoy our time in Lac La Biche, which has been a wonderful community that has really embraced our group."

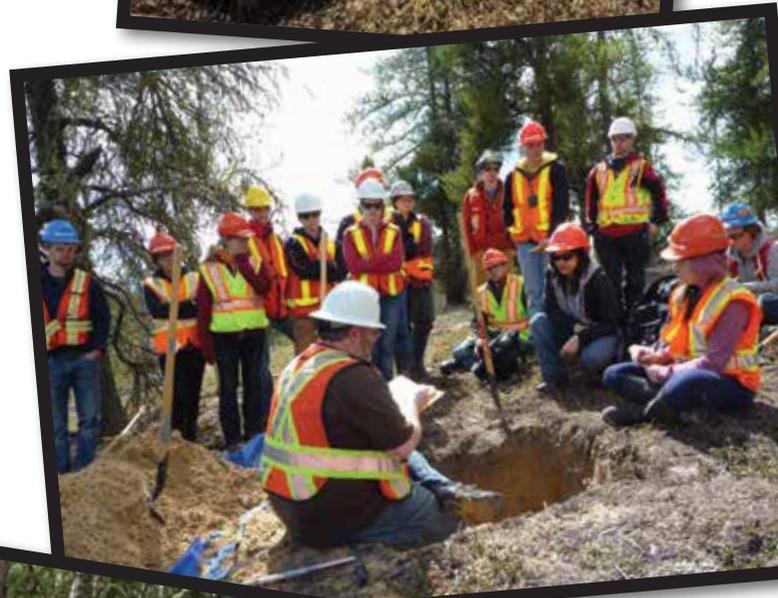
"We have been lucky to have a relationship like the one that exists to support the Environmental & Conservation Sciences and Forestry Field School," says Stan Blade, dean of the Faculty of Agricultural, Life and Environmental Sciences. "Knowing that we have such great support from





“BEING IN THE SPRING FIELD SCHOOL GIVES ME THE FOUNDATION TO TEST THE CONCEPTS I’VE LEARNED IN THE CLASSROOM.”

– Sean Bishop, ENCS student



The Environmental & Conservation Sciences and Forestry Spring Field School, or spring field school as it’s informally known, is an opportunity for students to learn topics that will be applicable to their careers, including soil analysis, plant identification and other in-the-field subjects.

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"THE SPRING FIELD SCHOOL' IS AN INTEGRAL PART OF PREPARING OUR STUDENTS IN FORESTRY AND ENVIRONMENTAL AND CONSERVATION SCIENCES FOR THEIR CAREERS."

- Ellen Macdonald  
Chair, Department of Renewable Resources



Over the last 20-plus years, the spring field school has grown to include almost 100 participants, all of whom need to be fed, housed and cared for during their three weeks in the field. Above, dean Stan Blade visits the 2017 spring field school students during their soil analysis unit.



one of our northern academic partner institutions reassures me that our students are well taken care of when they're in the field."

"The spring field school' is an integral part of preparing our students in forestry and environmental and conservation sciences for their careers," says Ellen Macdonald, chair of the Department of Renewable Resources in the faculty. "The skills they learn in the classroom build upon those learned in the field and the support that Portage College provides every year to our 100-plus students and academics is immeasurable.

"We are very grateful to the college and the community of Lac La Biche."

The ALES students arrive at the end of April and stay in Lac La Biche for almost a month, with only 2 days off. A total of 20 instructors come and go throughout this period.

Trent Keough, president and CEO of Portage College, says, "We pride ourselves in our supporting other institutions. We strive to provide exceptional learning experiences for students. We're very appreciative of the enthusiasm the students of the U of A brings to our campus and community." ♣



# TEACH WHAT YOU KNOW

PROFESSOR ANNE NAETH DISCUSSES HOW HER TEACHING STYLE HAS EVOLVED AND WHAT THE STRATEGIC PLAN MEANS FOR ALES STUDENTS' SUCCESS.

BY CAIT WILLIS | PHOTOGRAPHY BY RICHARD SIEMENS

**As this special issue** of *Greenhouse* was prepared, we wanted to pay homage to the regular feature “20 questions”. In doing so, we asked ourselves, who is an academic that can really look at the way the strategic plan's development has evolved, and show us how it can be applied to enhance the student experience?

Pretty simple: Anne Naeth.

Naeth is an alumna of the faculty ('76 BSc, '85 MSc, '88 PhD) and known as a dedicated and passionate academic leader, professor and scientist. In 1997, she was awarded the National 3M Teaching Fellowship, Canada's highest award for excellence in undergraduate university teaching. In 2011 and 2014 she was the ALES Teacher of the Year and she is currently the associate dean (research and graduate studies). Read more for her perspective on how we can help students achieve success.

**1. Can you name a person who has had a tremendous impact on you as a leader?**

My Grade One teacher.

**2. How did this person impact your life?**

She taught me to write because I knew how to print; she taught me higher math because I knew the Grade One stuff; she let me read library books when the other students were learning to read. She saved me from being bored in school and opened an exciting world of discovery. She taught outside the rule book, showed me there are always ways to do what you need to do, and led by example.

**3. What are the most important decisions you make as a leader in the faculty?**

Helping decide the direction and focus in research initiatives and programs; policy decisions that impact our graduate students; ways to make sure we are at the table in important university initiatives and discussions.

**Anne Naeth**, PAg, PBIol, FCSST, FSTLHE  
 • Professor, Land Reclamation and Restoration Ecology  
 • Associate Dean Research and Graduate Studies (ALES)  
 • Director, Land Reclamation International Graduate School (LRIGS)  
 • Vargo Distinguished Teaching Chair



# WHAT IS ONE CHARACTERISTIC THAT YOU BELIEVE EVERY ACADEMIC LEADER SHOULD POSSESS?

## PASSION.

**4. As an organization gets larger there can be a tendency for the “institution” to dampen the “inspiration.” How do you keep this from happening?**

Finding ways to uplift the visions of importance in what we do as a faculty; nurturing inspiration and creativity at all levels; setting targets and celebrating their successes as a team.

**5. How do you encourage creative thinking with your students?**

Coaching them to gain confidence in their ability to envision and share ideas; asking tough questions and expecting answers; giving big challenges that cannot be addressed by doing the same thing in the same way. Teams come up with solutions because they are empowered to do so.

**6. How do great ideas emerge in your classroom?**

Listening to my students, seeing the light in their eyes and drawing out what emerges; making my classroom is a safe place to express themselves.

**7. How do you find ways to inspire your students?**

Telling them about my successes, failures and dreams; challenging and nurturing their growth; helping

them understand that if they are not a little afraid they are not pushing themselves hard enough.

**8. How do you encourage other faculty members to support the “core values” of the faculty?**

Presenting a vision of those core values in a way they can see themselves as important participants and recipients.

**9. How do you ensure your work within the faculty is aligned with your own “core values”?**

Listening to my inner voice and gut feel and connecting that to a vision of where we need to go as a faculty.

**10. What is one characteristic that you believe every academic leader should possess?**

Passion. Vision and energy and commitment to drive that passion. Open mindedness to evolve the vision. I know that is more than one characteristic, but they are the triumvirate phrases.

**11. What is the biggest challenge facing academics today?**

Finding how they can do their best work without letting the system and its metrics be the only drivers.

**12. Can you explain how the faculty’s strategic planning process impacted your day-to-day activities?**

The most interesting part was, and is, trying to envision where we need to go to meet our goals and defining the steps we need to get there. As the strategic plan was evolving it was interesting to see core values emerging and my interpretations of those values.

**13. What are a few resources you would recommend to someone looking to gain insight into becoming a better academic leader?**

Read about leadership and leaders; become a better speaker; study leadership styles of peers to see what works and why; get feedback on your leadership; build relationships and genuine connections with those you serve and those you lead with.

**14. What advice would you give someone going into an academic leadership position for the first time?**

Find your voice; trust your instincts; be authentic; offer the best of yourself.

**15. What are you doing to ensure you continue to grow and develop as an academic leader?**

Learning to balance vision and open mindedness; pushing myself out of my comfort zone to learn new skills. 🍌

# GROWING HER COMMUNITY

## ALUMNA SHIRLEY ROSS SHOWS HOW CONNECTING BACK BUILDS SUCCESS

BY BEV BETKOWSKI | PHOTOGRAPHY BY RICHARD SIEMENS

**When asked** why she loves to garden, Shirley Ross quotes the late Lois Hole, Alberta's most beloved green thumb.

"Caring is the soul of gardening ... We take risks and place our trust in factors beyond our control. Yet in the end, we are almost always rewarded with a beautiful harvest ...".

As a long-time volunteer at the University of Alberta's Green & Gold Community Garden, Ross feels those gentle, wise words sum up her experience working alongside others to make the two-acre patch of land on South Campus the bountiful,

giving place it has become.

"It rings true for me regarding the wonderful, caring group of people who volunteer at the garden. And although we have contended at times with drought, flooding and snow, we have usually been rewarded with a bounty of vegetables."

Since its beginnings in 2009, the Green & Gold Garden has been grown and harvested by a community of volunteers, including Ross, a retired ALES crop scientist. The fresh produce sold each year funds support for female victims of violence a world away in Rwanda.

Ross devotes much of her retirement to working year-round for the garden, and was honoured May 15 with a Community Connections Award for her dedication. The 2017 winner of the UAlberta Advocate Award, Ross is recognized for sharing her time, expertise and passion to plan the garden each year.

Growing up on a dairy farm close to Alberta's scenic Battle River Valley, Ross has always been rooted in gardening. There was a big vegetable patch that fed the family, along with flowers to make things pretty, and she remembers exploring the

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## "I LOVE SEEING THINGS GROW. YOU PLANT SOME SEEDS AND IT'S MAGIC."

- Shirley Ross

countryside's natural beauty. "From a young age I would go wandering in the woods and along the railroad track looking at the wildflowers."

Today, she's still enjoying "green therapy" as she calls it, by overseeing certain aspects of the garden, which boasts more than 50 varieties of vegetables, herbs, flowers and fruit—and most recently, a new orchard. She not only takes on the mundane yet important spadework of writing grant proposals and budgeting for the garden, but also puts her scientific know-how to work too.

"Shirley is a driving force behind the garden," says Susan Cleary, one of several garden volunteers who nominated Ross for the award. "She plays a year-round role and it's a full-time commitment. She's always the

person who is there before everyone else and after everybody else leaves for the day."

Ross spends her winters planning for the new growing season, sourcing seeds, plotting out crop rotations and brainstorming with other volunteers on how to improve the garden each season. As spring approaches, she can be found in a campus greenhouse, carefully watching over tender new plants that make their way into the garden.

"For me, volunteering in the garden is a fortunate matching of my interests with an opportunity that is very rewarding. And I love seeing things grow. You plant some seeds and it's magic," says Ross.

"It doesn't seem to make a difference how busy we might be with customers, if someone asks for a cabbage and there's not one available, I can run and find Shirley and she knows right away where there's a cabbage or when it will be ready," says Cleary, adding that Ross is a pillar of calm in the hustle and bustle of market season, and knows every inch of the garden.

That says, Ross considers the U of A award to be a team honour, shared with the small army of more than 100 volunteers who collectively tend the garden each season. In its eight years of existence, the garden has raised \$198,000 for Tubahumurize—which means "to console and give hope" in Rwandan—including more than \$35,000 last year alone. The money is used to help women and their children receive trauma counselling, vocational training, micro-loans and support for those living with HIV/AIDS.

"Our volunteers take on a lot of responsibility, and I see us as a community being recognized for our outreach," Ross says. "The Green & Gold Garden really represents some of the best of what the U of A is. It's building on agricultural traditions on South Campus and it provides the people of Edmonton with a beautiful green space. At the same time, it's providing for people on the other side of the world."

She and her fellow volunteers also reap the benefits of what they sow, she added.

"People seem to get a lot of pleasure out of the whole thing. Some volunteers bring their friends to the garden and it becomes a place where there's a social aspect. Customers who visit sometimes come back the next week with their kids or grandparents." A Syrian refugee who'd farmed his own land visited the garden last year and it was easy to see how he enjoyed it, Ross says. "It was good for him to walk around and look at the vegetables."

Even with the challenge of Alberta's growing season, when some years are better than others and the results are important for the vulnerable people who rely on the profits of a good Green & Gold harvest, Ross is a "glass is half-full" kind of person, Cleary says.

"Even though we could be wallowing in mud and the crops are flooded, she'll think of something positive about it."

"You can wake up to snow on the ground, like we did last year," Ross says. "But our philosophy is, something has to grow. Something will fail, but you've got enough of other things to cover the loss."

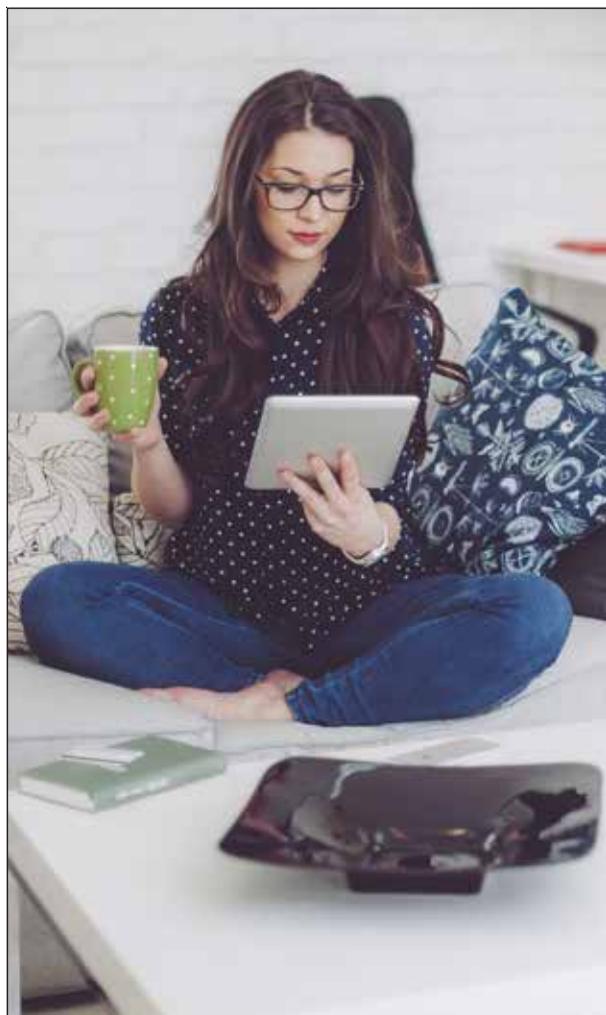
"You can never know everything about gardening. What's great is you are always learning." ■



# IN MEMORIAM

The Faculty of ALES notes with regret the passing of its following alumni:

- '30 **Violet Wilberta Plester** (Latam), BSc(HEc)
- '42 **Ruth Margaret Beckner** (Rostrup), BSc(HEc), of Salmon Arm, BC, in January 2017
- '43 **Sheila Jean Gainer** (Murray), BSc(HEc), of Edmonton, AB, in October 2016
- '44 **Eva Margolus**, BSc(HEc), of Edmonton, AB
- '46 **Jean Isabel Smith** (Black), BSc(HEc), of Calgary, AB, in February 2017
- '49 **Robert J. Faunt**, BSc(Ag), of Calgary, AB, in November 2016
- '49 **Samuel George Klumph**, BSc(Ag), of Claresholm, AB, in December 2015
- '49 **Mary Alice Morrison**, BSc(HEc), of Ithaca, NY, in January 2017
- '49 **Steve Pyrcz**, BSc(Ag), of Edmonton, AB, in January 2017
- '52 **Josephine Thomas Neelands** (Penman), BSc(HEc), of Nanaimo, BC, in February 2017
- '53 **Katherine Ann Feyrer**, BSc(HEc), of Victoria, BC, in January 2017
- '54 **Bruce Kimura**, BSc(Ag), of Calgary, AB, in February 2017
- '54 **Sherwood R Miller**, BSc(Ag), '56 MSc, of Brighton, ON, in November 2016
- '69 **Lorne F Weeks**, BSc(Ag), of Lloydminster, SK, in October 2015
- '72 **Martin Ritzema**, BSc(Ag), of Parkland County, AB, in February 2017
- '76 **Richard James Haigh**, BA(Spec), '78 MSc, '82 PhD, of Sidney, BC, in February 2017
- '77 **Terrance Gordon Smyrl**, PhD, in November 2016
- '78 **Wendy Jill Allen**, BSc(HEc), of Edmonton, AB, in November 2016
- '78 **Audry Marie Gustafson**, BSc(Forest), of Beaverlodge, AB, in January 2015
- '79 **Keith Brian Lyon**, BSc(Ag), of Lethbridge, AB, in July 2016
- '80 **Kock Eric Aloysius De**, BSc(Ag), of Edmonton, AB, in November 2016
- '82 **Ratnajothi Hoover**, PhD, of St John's, NL, in August 2016
- '93 **Roderick William Negrave**, MSc, in November 2016



## eResources

ALES grads can gain free access to over 5,000 scholarly journals, magazines and trade publications through the University Libraries online system.

[uab.ca/eResources](http://uab.ca/eResources)

UNIVERSITY OF ALBERTA  
**ALUMNI**

# PURE PRODUCTION

## FOOD SCIENCE ALUMNA TAKES HER SPECIALIZATION TO A NEW LEVEL

BY HELEN METELLA | PHOTOGRAPHY BY ANDREA REIRA (LINDISFARNE PRODUCTIONS)



Food scientist Mandi Hoke has taken her education and grown into a career that feeds millions of people healthy, nutritious food.

### Mandi Hoke, '12 MSc Food Science & Technology

**CURRENT POSITION:**

Product development technologist at Kitchen Partners, a custom prepared food provider that supplies entrees, sauces, salad dressings, soups, dips and other stirred foods to Canadian chain restaurants, grocery store delis and large-scale catering operations.

**WHAT SHE DOES**

Hoke provides customers with tailored menu solutions: she matches and improves existing products, and creates original on-trend and traditional recipes. Her role includes interviewing clients on their needs, recipe invention and improvement, nutritional breakdowns, food presentations, trial runs and perfecting scale-up for mass production.

“We focus on using fresh ingredients and minimizing the use of preservatives wherever possible,”

she says. Her overarching challenge is to create appealing prepared dishes that are consistent in taste and quality at every location they’re sold.

**HOW SHE GOT HERE**

After specializing in food microbiology, Hoke worked as a research scientist at Ceapro, using proprietary microbiology-based procedures to increase beta glucan in oats, and tested the microbial activity of plant extracts from different feed stocks. Her solid base of food science knowledge combined with professional lab experience was an ideal foundation for product development.

**HOW ALES PREPARED HER**

Studying food from so many perspectives at once—including, food fundamentals and quality, sensory

science, meat science, food microbiology and food product development—was empowering, says Hoke. So was the constant rigour of giving presentations, both in class and for industry professionals. In short, the faculty’s practical approach fostered her success.

“It wasn’t just memorizing and regurgitating things in exams,” says Hoke. “It was, “we taught you this, now how would you apply it in this situation?””

**WHY A FOOD SCIENCE CAREER ROCKS**

“If you’re scientifically minded, food science is fascinating. Food scientists can do quality assurance, develop packaging, make food safe, make it better quality, make it taste better. Potentially, they can make food much better.”



# A Gift of Connection and Transformation

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A stunning new outdoor garden will bloom in 2018 at the University of Alberta Botanic Garden. The Aga Khan Garden, Alberta, is a symbol of the ongoing partnership between the University of Alberta and the Aga Khan Development Network — a collaboration that has fostered intellectual, cultural and educational exchange for over a decade.

Unique to Edmonton's northern climate and inspired by Islamic landscape architecture, the garden will offer a space for connection, contemplation and education, enabling cultural understanding to flourish. This is just the second Islamic garden in North America and the northernmost in the world. It will join a network of Islamic gardens built or restored by the Aga Khan Trust for Culture around the globe.

With secluded forest paths, wide, stepped terraces that adapt to the seasons, geometric water features that stream into wetlands, and a spectacular orchard of local plants, the Aga Khan Garden will transform the landscape and perspective of visitors alike.

The University of Alberta is grateful to His Highness the Aga Khan for a gift in excess of \$25 million for the new garden. The Aga Khan Garden embodies extensive research, creative design and broad thinking to enhance the visitor experience.

Learn more at [uab.ca/akg](http://uab.ca/akg) and at [akdn.org](http://akdn.org)





# GREEN HOUSE

2-06 Agriculture/Forestry Centre  
University of Alberta  
Edmonton, AB, Canada T6G 2P5