



# SHAPING ALBERTA

The Impact of the Faculty of Agricultural,  
Life & Environmental Sciences (ALES)



UNIVERSITY  
OF ALBERTA



The University of Alberta respectfully acknowledges that we are located on Treaty 6 territory, a traditional gathering place for diverse Indigenous peoples including the Cree, Blackfoot, Métis, Nakota Sioux, Iroquois, Dene, Ojibway/Saulteaux/Anishinaabe, Inuit, and many others whose histories, languages, and cultures continue to influence our vibrant community.

# The Impact of ALES

“ I’m privileged to connect with people, companies, communities, academic partners, governments and research organizations in Alberta and beyond. Our faculty’s direct link to the agriculture, food, forestry, energy, environment and social sectors means rarely do I land somewhere that isn’t connected to the network and outcomes of ALES.

We’ve been integral to Alberta since our earliest faculty members helped clear the land for the University of Alberta in 1915. Our impact on daily lives is evident, with our researchers covering every aspect of your home, inside and out. We are relevant to our province, country and the rest of the world — addressing issues like what we eat and wear to the power, water and natural environment we rely on.

Investments in the university create generational change. Our students learn important technical knowledge, but also acquire skills to become better citizens who will make huge impacts for decades to come. The research within ALES triggers innovations that continuously improve sustainability, profitability, resilience and better outcomes for all.

Thank you for being part of the ALES community. We are proud of our donors, the diverse work of our research community and our dedicated faculty members and staff — efforts that collectively better our local and global communities.

## Stanford F. Blade

Dean, Faculty of Agricultural,  
Life & Environmental Sciences  
College of Natural and Applied Sciences  
University of Alberta

Stan Blade was awarded the Queen Elizabeth II’s Platinum Jubilee Medal in 2023, recognizing his significant contributions to Alberta’s agricultural innovation and advocacy through his service to the faculty.

# The Faculty of ALES

17,500+ alumni

Over 60% living in Alberta

1,700

undergraduates represent all 10 provinces, 2 territories and 30+ countries

1/4

of students are from a rural community of under 10,000 people

\$700,000

is available to 1,500 students – the largest award pool to student ratio!

\$240M in active research funding

\$48M in external research funding annually

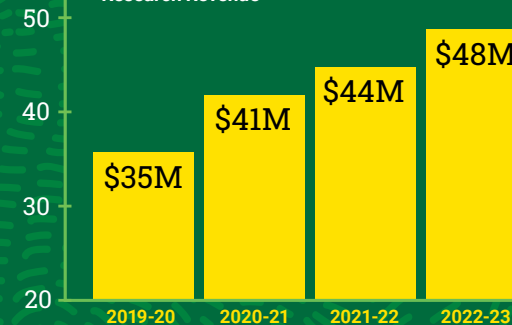
- ◆ Ratio of annual external research funds to Principal Investigator (PI): \$425,000+
- ◆ Over the last 5 years, our research has engaged 320 sponsors and 72 private sector partners

U of A ranked 7th in the world for impact on sustainability and 2nd in both Canada and the world for UN Sustainable Development Goal #2: Zero Hunger

The Anne Lambert Clothing and Textiles Collection houses more than 23,000 clothing and textile-related artifacts spanning over 350 years of history

## Increasing annual external research funding

Research Revenue



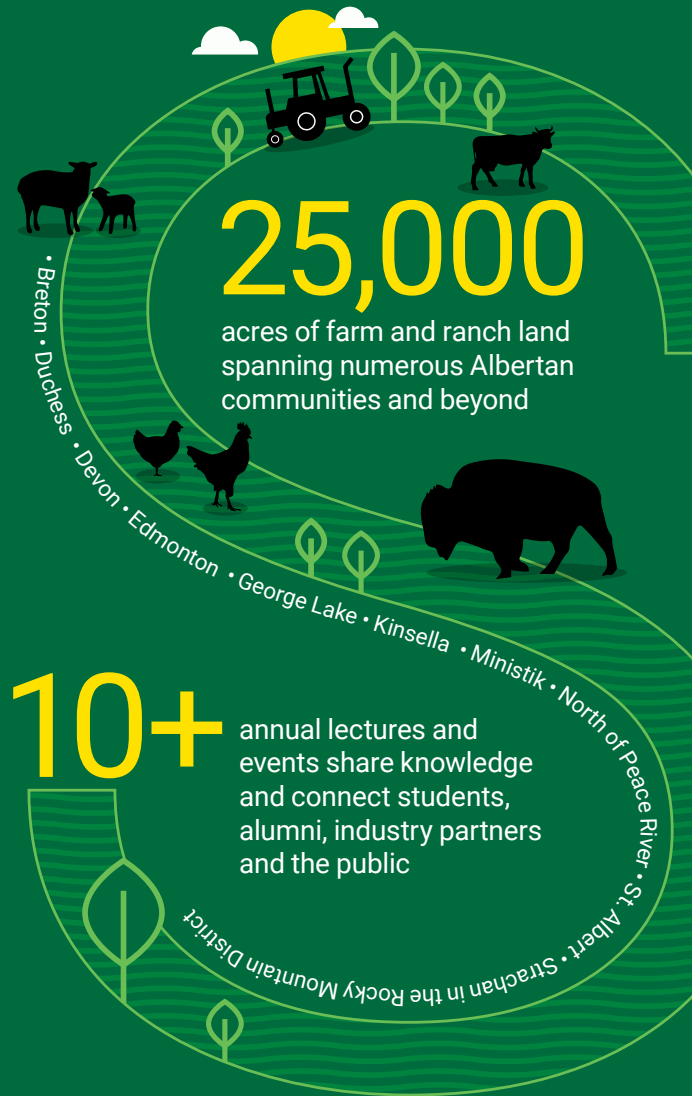
^^ Y axis is millions of dollars (\$20M to \$50M)

25,000

acres of farm and ranch land spanning numerous Albertan communities and beyond

10+

annual lectures and events share knowledge and connect students, alumni, industry partners and the public



# ALES

## Economics

- Resource economics and environmental sociology

## Society

- Human ecology
- Food science and technology

## Environment

- Agricultural sciences
- Environmental and conservation sciences
- Forest ecology and management

### Focus areas and specialties

- Economics of agriculture, food & agribusiness
- Bioresource and agri-food technology
- Global project portfolio

### Focus areas and specialties

- Children, youth and families, as well as aging
- Nutrition, dietetics and community health
- Material culture and textile and apparel science
- Northern, rural and Indigenous communities

### Focus areas and specialties

- Conservation biology
- Forest ecology and management
- Animal, plant and soil science
  - Sustainability
  - Water conservation and management
  - Land reclamation & restoration ecology
    - Wildland fire



# Transforming the Way We Work

Our faculty and researchers are actively reshaping industries and driving local economic growth. Early-career faculty members bring forward new ideas and challenging concepts, improving our province and beyond. By leveraging our university's innovation network, they take emerging technology from discovery to commercialization — realizing advancements where they're needed most. Digital agriculture and forestry and artificial intelligence and machine learning tackle problems in proactive ways, like helping us predict the paths of wildfires.

## Critical connections

We maintain strong, long-term ties between research and application by convening knowledge at annual events led by our faculty. The Banff Pork Seminar has attracted pork industry representatives for over 50 years and is now North America's premier pork educational event. Similar conferences connect other industry members, like the Western Canadian Dairy Seminar and the Forest Industry Lecture Series.

Did you know ALES leads all University of Alberta faculties in royalty generation from its commercialized discoveries?



One industry's waste is another's fuel. Bioresource scientist **David Bressler** works to turn organic waste (like restaurant grease and rendering industry tallow) into jet fuel. His patented technology, used by U of A spinoff Forge Hydrocarbons, supports Edmonton International Airport's proposed biojet fuel facility.



# Canola

## The little seed making a big mark

Alberta's canola exports contributed \$4 billion to Canada's economy – nearly a third of the entire country! But this reality was uncertain in the 1990s, when blackleg disease threatened to destroy it all. U of A researchers rose to the challenge and created the blackleg-resistant Quantum canola strain, helping to not only save the industry but also propel canola as Canada's most valuable crop.

Today, canola producers face clubroot disease, which stunts root growth and can remain in the soil for 20 growing seasons. Researchers and graduate students are once again at the forefront of research to protect and boost canola production, and proactively address new strains of diseases.

Even if you're not one of the 207,000 Canadians who work with canola, it's in your home as heart-healthy canola oil and part of common paints, adhesives or plastics!



The **Human Nutrition Research Unit** advances cutting-edge clinical research and technology for human nutrition, with clinical services available to those who can benefit now. Their Whole Body Calorimetry Unit is one of only two units in Canada!

## The future of food

Food unites us all as a basic human right, yet current processes won't be able to feed the world's growing population. Researchers are dedicated to designing a more sustainable agriculture and agri-food sector that can grow to meet evolving needs and resiliently adapt to emerging challenges. Here's how:



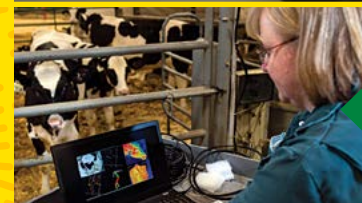
Tackling food insecurity by ensuring everyone has physical, social and economic access to nutritious food, despite rising costs of food and pandemic-related supply chain issues.



Testing new agricultural practices to improve harvests. Agri-voltaics involves covering plants with solar panels to protect crops and produce solar energy.



Exploring the emerging field of cellular agriculture to create solutions for resilient food systems – merging developments in biochemistry, synthetic biology, and precision fermentation with perennial crops.



Modernizing the beef industry through our strong teaching and research capacity in the areas of genomics and genetics, animal health, range management, and meat science.



Enhancing our understanding of human health and well-being by investigating the intricate connections between nutrition, health and disease.

## ALES, next gen

You will find our alumni throughout government, business and non-profit organizations. With more than 25 undergraduate study programs – from agriculture and nutrition to material culture and environmental and conservation sciences – we create high employability outcomes. Graduates quickly enter in-demand careers, with accreditations like Professional Agrologist, Professional Human Ecologist and Registered Professional Forester. Many of our well-rounded, industry-ready graduates become leaders in their field, positively impacting local communities to international markets.

Small class sizes build lasting relationships and strong networks that continue into the workforce.

Work-integrated learning is integral to our undergraduate programs, with on-location experiences required for most degrees. Coursework incorporates real-life examples from current events or industry challenges. The ALES Mini-Internship program is a popular option that takes students for agricultural or food-based workplace visits, bridging urban and rural perspectives.



**Meghan Lim's** resource economics degree will drive better environmental policies in Canada and beyond. Her passion for crunching numbers helped assess the effectiveness of programs and policies aimed at solving environmental challenges.



# Transforming the World Around Us

ALES is home to some of the most integrated agricultural and environmental research and teaching facilities in the world.

- The **Agri-Food Discovery Place** in Edmonton drives food safety, as well as value-added processing and bio-refining of food and industrial products.
- The **Breton Plots** have been propelling agricultural and soil science research for over 90 years! Exploration includes higher yields, greenhouse gas emissions, nitrogen fertilizers, nutrient balances, crop rotation and carbon sequestration.

We house environment experts and advocates who both educate and serve.

- The **Sustainability Council** is an academic team sparking learning, discovery and citizenship across all faculties, centralizing the university-wide work contributing to the United Nations' Sustainable Development Goals.
- The **Alberta Land Institute** helps our province make better land use decisions, focusing on protecting the agricultural sector through water and natural areas.



South Campus in Edmonton



## Protecting the world's natural resources

More than beauty and recreation, forests are diverse ecosystems that capture carbon and serve the timber industry. Several projects are addressing deforestation, wildfires and the longevity of precious resources.

- The **Ecosystem Management Emulating Natural Disturbance (EMEND) Project** is a large-scale variable retention harvest experiment in a northern Alberta boreal mixedwood forest. It's designed to test the effects of residual forest structure on ecosystem integrity and forest regeneration at the forest stand level.
- The **Resilient Forests (RES-FOR) Project** focuses on the health of Alberta's forests. Led by forestry researchers Barb Thomas and Nadir Erbilgin, the work integrates genomic, metabolomic and phenotypic data into selection models to address changes in climate and climate-induced insect outbreaks.

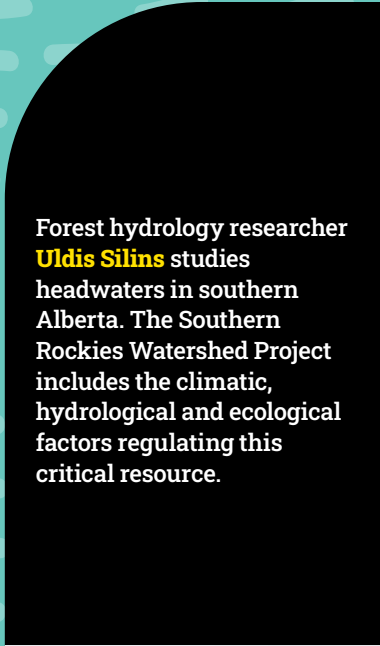
## Interdisciplinary impact

Diverse areas of expertise in one faculty allows for crossover collaborations – creating holistic approaches to complex environmental problems!

- We support new environmental and community projects with best practices in land management. Part of that is addressing previous disturbances through land reclamation, supported by experts from water management, conservation biology, forestry, and policy and economics.
  - E.g. Improving the viability of oil sands tailings ponds to restore natural ecosystems
- The world's changing climate impacts the soil beneath our feet, the plants and trees growing from it, and the people and wildlife among it. Our researchers are advancing conservation and biodiversity, the economics of renewable energy, and more resilient crops.
  - E.g. Leverage natural systems like rangelands and forests as natural forms of carbon sequestration
- We are driving toward net-zero targets through renewable resources, while protecting our natural environments and considering the human impact of adopting these new technologies.



Can cattle become more climate resilient? Beef researcher **Gleise M Silva** is helping producers prepare for extreme temperature swings by exploring if feed-efficient cattle (those that eat less than expected but still gain the same weight as other cows) can burn less energy to stay warm or cool.



Forest hydrology researcher **Uldis Silins** studies headwaters in southern Alberta. The Southern Rockies Watershed Project includes the climatic, hydrological and ecological factors regulating this critical resource.



As part of his PhD research, **Muhammad Zubair** studied how chemically modified chicken feathers can effectively filter water decontaminates, with potential for clearing heavy metals from water.

# Transforming the Way We Live

We equip experts with world-class facilities to learn how to improve our daily lives.

- What protects those who protect us? Textile scientist **Patricia Dolez** uses nanotechnology to develop fabrics for first responders and at-risk workers. Collaboration ensures these innovations quickly get to those who need it most.
- **Carla Prado**, one of the Top 100 of Canada's Most Powerful Women in 2022, studies the relationship between nutrition and disease. Her team created an award-winning cookbook to help cancer patients increase their protein intake, and thus, muscle mass. She was even elected into the Canadian Academy of Health Sciences in 2023 – a distinguished honour for researchers in health sciences.



- The environmental impact of textiles isn't sustainable, but textile scientist **Rachel McQueen** is on it! Her research group is exploring energy reduction by laundering naturally, decreasing fast fashion waste and increasing garment longevity through repair and recycling.
- Relationship researcher **Matthew Johnson** is a co-investigator of the Edmonton Transitions Study, a unique longitudinal study that surveyed over 900 Edmontonians eight times from ages 18 to 50. Covering decades of life provides insight into relationship and family dynamics at different stages, allowing human ecology researchers to recommend strategies to improve well-being.

The U of A was awarded its first UNESCO World Chair for the **Ärramät project**, which supports Indigenous research on biodiversity, health and well-being. Uniting over 150 Indigenous organizations globally, with researchers across 19 Canadian universities, two colleges, and 14 international universities, the chair position is shared by **Brenda Parlee**, Mariam Wallet Aboubakrine and Danika Billie Littlechild.



Bacteria, mould and yeast impact the safety and quality of the meal on our plate. That's why food microbiologist **Michael Gänzle** and his team are exploring novel fermentation microbes for bread, pasta and plant-based cheeses to create safer, healthier and more sustainable meals. He was recognized as a Fellow of the Royal Society of Canada for his contributions to food science.

## Teaching and learning excellence

- Our Forestry program and research are Top 100 and Top 5 in the World, respectively
- The Food Science + Technology program ranks 49th globally and 2nd in Canada
- The Agricultural Science program ranks 40th globally and 2nd in Canada
- Undergraduate to graduate, thesis or course-based masters, and PhD level graduate programs
- Only Dietetics Specialization program accredited by the Alberta College of Dietitians in Alberta
- Students learn alongside experts in specialized teaching and research clusters:
  - Alberta School of Forest Science & Management
  - Land Reclamation International Graduate School

## Memorable student experiences

Students travel from around the world to join us on Treaty 6 territory, where they learn with and from one another in our welcoming faculty. Curiosity leads, and with hands-on learning, new perspectives follow. South Campus houses agriculture facilities right in the city of Edmonton, including poultry, swine and dairy research centres. Supported by donors, our students explore the world through international exchanges and study abroad programs, including northern Canada tours in partnership with Yukon University. Our engaged student body participates in clubs that give back, such as the Ag Club's fundraising for STARS Air Ambulance and the Forest Society's annual Christmas Tree Sale – fostering a community of thoughtful, contributing citizens.

**Did you know?  
One in three ALES  
students receives  
a scholarship!**



# Transforming the Future. Together.

What began as a Faculty of Agriculture in 1915 with two faculty members and 16 students has flourished into an international community of innovators and influencers... and we aren't finished yet.

The generous, ongoing commitment of our partners and donors has helped us establish a foundation that fosters growth and community impact. We plan to be the most sought-after source of continual learning for life and environmental science professionals in Alberta.

With the support of ALES, we believe in 15 years or less:

- Alberta will double its agri-food exports from \$10 to \$20 billion
- Industry will realize net-zero energy goals
- More Albertans and Canadians will become food secure
- Response to the 94 calls to action made by the Government of Canada's Truth & Reconciliation Committee will progress
- Canada's forest industry will continue to lead sustainable forest management
- Alberta will solve issues outlined in the 17 UN Sustainable Development Goals
- Science-informed policy for sustainable land use and renewable resources will be introduced

**Will you  
help us  
make it  
happen?**



# Leading with Purpose.



**UNIVERSITY  
OF ALBERTA**

**Agricultural, Life & Environmental  
Sciences (ALES)**

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