FOR CONSULTATION

Strategic Plan for Research and Innovation

For Consultation
April to May 2023

UNIVERSITY OF ALBERTA
Building on a Legacy of Great Discovery

For many decades, research, innovation and creative activities have been a cornerstone of the University of Alberta's mission and identity. The dedicated researchers and innovators at our institution consistently produce knowledge that has enhanced our society, economy, and environment.

Our University was the site of the first successful open-heart surgery and home to Canada’s first organ transplant research group. We have been instrumental in giving rise to entirely new economic sectors by developing ways to separate oil from sand and through our work at the foundations and forefront of artificial intelligence and machine learning. Our inventiveness in using research outcomes to address key local and global challenges has made our University a hub for discourse on Indigeneity, food security, and social disparities.

To build upon our leadership in these areas of strength and in emerging directions, we must be bold, deliberate, and focused in how we plan, organize and support our research and innovation ecosystem. The Strategic Plan for Research and Innovation is our five-year blueprint to do this.

Rooted in our deep history of knowledge generation and mobilization, the Strategic Plan for Research and Innovation structures our work in research and innovation to meet the realities of today and launch into future possibilities. It outlines how we will leverage our existing strengths and assets – and identifies clear choices to reinforce our ecosystem – to capitalize on major opportunities and ensure our talented researchers are enabled by the right tools, processes and culture to pursue their passions.

In so doing, the Strategic Plan for Research and Innovation helps us craft the next chapter in our University’s great legacy of discovery and impact.
Taking Stock of our Opportunities

Built through collaboration and consultation, the Strategic Plan for Research and Innovation envisions the future of research and innovation at the University of Alberta while remaining sensitive to the current needs of our ecosystem. This has enabled us to understand how to best pivot, invest, and focus to enhance our performance and achieve our collective ambitions.

In taking stock of our position, some key strengths and observations emerge:

• **Unique perspectives with a rich tradition.**
  As the geographically northernmost U15 institution, our University offers a unique perspective in connection with a complex, biodiverse land and interconnected Peoples. Our location enables us to learn from and include the rich traditions of First Nations, Métis, Inuit, and all First Peoples of this place now called Canada.

• **Strong commitment to equity, diversity, inclusion, and decolonisation.**
  Our University commits to centring principles of equity, diversity, inclusion, and decolonisation to maximize cultural safety and embrace diverse ways of knowing and learning. By embedding these principles in our day-to-day operations, we will stand out even further as a modern and inclusive university dedicated to bringing more people along.

• **Significant international connections.**
  Over many decades, our University has expanded touchpoints with post-secondary institutions, research institutes, industry, and social innovation groups across the globe. We have a worldwide network of alumni and each year we welcome thousands more research students and trainees from around the world.

• **Established uniqueness and strength in key areas.**
  Our University boasts global leadership and emerging strengths in several research areas – such as the transition to net-zero energy solutions, artificial intelligence and machine learning, virology and disease prevention, sustainable agriculture, Indigenous research, and transformative approaches to addressing social disparities. These areas of leadership offer a unique value proposition to potential research partners, funders, and those in diverse communities who benefit from our work.

• **New structures foster greater collaboration.**
  The new Colleges and Faculties at our University offer great potential for identifying, nurturing, and seizing opportunities for enhanced multi-disciplinary collaboration – collaborations crossing traditional knowledge and disciplinary boundaries and exploring creative methodologies. The work of the Centres of Expertise in the Office of the Vice President (Research and Innovation) stands to be key in these efforts, through their provision of planning, pre-award, post-award, technology transfer, and general research-related support services.
Mobilizing for Maximum Impact

The Strategic Plan for Research and Innovation brings greater focus and alignment to our research, innovation and creative activities. Through it, we seek to maximize our impact on the world around us.

We do this through deliberate investments and efforts – across all disciplines and domains – to enhance key drivers of a great research and innovation ecosystem. The Plan provides a roadmap to:

- focus on people and building talent;
- support researchers with tools and infrastructure;
- strengthen our research culture and broaden our impact; and
- enhance our reputation as a global research and innovation leader.

The result will be a prevailing climate that is highly supportive of modern researchers and contemporary research: one that fosters multi-disciplinary engagement; provides safety in the pursuit of various lines of inquiry; integrates principles of equity, diversity, inclusion, decolonisation, and reconciliation; and centres collaboration in the generation and dissemination of knowledge.

Ultimately, our University's researchers and innovators will be even better positioned to generate new discoveries and solutions that enhance our society, economy, and environment. Over time, the University of Alberta will solidify its international reputation of leading with purpose and addressing the major questions, challenges, and inquiries of our time.
Guiding Principles

Our guiding principles underpin everything we do, including the work laid out in this Strategic Plan for Research and Innovation. These principles are the foundation on which we operate:

• The University of Alberta is committed to academic freedom, where individual researchers determine their own research area, focus, and pursuits, which in turn are supported at the faculty, college and institutional level.

• Research and creative activity are the core focus and foundation of our university. They are the drivers of new knowledge and understanding that fuel applications, innovation, knowledge mobilization, technology transfer, and broad societal impact.

• Our research excellence is underpinned by the principle of equity and the practices of inclusion and decolonisation. By remaining accountable to these principles and practices, we strive to build a culture where diversity flourishes. We work in partnership to challenge the status quo with ethical integrity and social responsibility while upholding the primacy of academic freedom.

• We support Indigenous initiatives, knowledges, communities, and research engagement, and take steps to deliver on the Truth and Reconciliation Commission of Canada’s Calls to Action.

• We are committed to safe, responsible research, creative work, social and technological innovation, and commercialization activities, regardless of disciplines and our partners’ geographic locations.
Strategic Research and Innovation Goals

The Strategic Plan for Research and Innovation brings forward four goals, each underpinned by tangible objectives, tactics, and indicators. Together, they articulate how we will further focus, align, and enhance our research and innovation ecosystem to maximize our University’s impact on the world.

1. Focus on People and Building Talent

The pursuit of high-calibre research depends on our University welcoming and including high-calibre researchers, including students and other research trainees. To do so, we will create conditions that enable us to attract and support leading researchers, while also developing the leaders and innovators of tomorrow. This includes energizing our commitment to Indigeneity and equity, diversity, and inclusion through meaningful and sustained action and investments. We will nurture a research and innovation ecosystem that is more equitable and better positioned to explore issues from a wider range of lenses.

Objective #1

Support, attract and retain exceptional researchers to build on the research strengths of the University and contribute to a research ecosystem that leads with purpose.

**TACTICS**

1. Strategically orient the Canada Research Chair, Canada Excellence Research Chair, and other chair and research professorship programs to attract and retain world-class researchers in targeted areas of research strength and build institutional clusters of researchers.

2. Encourage and enhance inclusion of undergraduate and graduate students, post-docs, and other research trainees to develop exceptional researchers of tomorrow.

3. Promote the research strengths of the institution to targeted external researcher demographic groups, including equity-denied groups.

4. Encourage, create and sustain clusters of researchers in high-impact, funded research initiatives through collaboration among faculties, colleges and research institutes and centres.

**KEY INDICATORS**

1. Increase the number of Canada Research Chair and Canada Excellence Research Chair allocations to the institution per cycle by 40% from 15 to 21 by 2028.

2. Establish at least two clusters of researchers in high-impact collaborative, funded research initiatives per annum by 2028.
## Objective #2

Enable our research ecosystem to support the representation of researchers from equity-denied groups proportional to the Canadian population, including Indigenous, women, Black, LGBTQ2S+, visible minorities or persons with disabilities or who identify as disabled.

### TACTICS

1. Expand collaboration among the Office of the Vice-President (Research and Innovation), the Office of the Provost, faculties and colleges to create a funded pipeline of trainees and early career researchers from equity-denied groups to increase researcher and faculty diversity.

2. Engage programs such as Indigenous-STEAM Pathways, the ELITE Program for Black Youth, and WISEST, and create other similar programs to expand research and training communities for equity-denied groups.

3. Create strategically designed workshops and training resources for targeted groups of researchers, including those from equity denied groups and early career researchers to develop and strengthen research leadership and management skills.

4. Through collaborations among the faculties, colleges and research institutes and centres, increase the number of qualified university researchers from equity-denied groups who lead or co-lead large-scale, collaborative, funded interdisciplinary research initiatives.

5. Align strategic allocations of Canada Research Chair, Canada Excellence Research Chair and other chair and research professorship positions to increase the number of recipient researchers from equity-denied groups.

### KEY INDICATORS

1. Increase external funding that targets the hire of research trainees and research faculty from equity-denied groups by 30% by 2028.

2. Create at least three workshops per year, with accompanying resources, for researchers from equity-denied groups for research leadership and management skills development by 2028.

3. Increase per capita funding held by researchers from equity-denied groups by 25% by 2028.

4. Increase the number of University researchers from equity-denied groups who lead or co-lead large-scale, collaborative, funded research initiatives by 25% by 2028.
**Objective #3**

Engage and support diverse researchers from broad research areas and demographic groups to apply for internal and external research awards, to expand their national and international research profiles.

**TACTICS**

1. Actively deploy internal research award processes and policies, incorporating, where applicable, Indigenous worldviews and furthering the principles of equity, diversity and inclusion (EDI).

2. Recognize and celebrate community-engaged research, community-led research, intersectional research, and research with Indigenous communities.

3. Establish targeted internal awards to recognize and celebrate Indigenous scholars and scholars from equity-denied groups.

4. Establish internal awards to recognize and celebrate research scholarship in the areas of Indigenous-engaged research and EDI research.

5. Strengthen capacity for national and international research awards, ensuring that engagement and nomination processes are attentive to principles of Indigenous-engaged research and EDI.

**KEY INDICATORS**

1. Establish at least four new internal research awards to celebrate Indigenous and equity-denied scholars or research scholarship in Indigenous-engaged or EDI research by 2025.

2. Increase the number of successful national and international research awards by 25% by 2028.
**Objective #4**

Establish an integrated network of research support for Indigenous initiatives and equity, diversity and inclusion (EDI) in research and creative activities and in multi-disciplinary research initiatives.

**TACTICS**

1. Appoint an EDI specialist and create an EDI research Centre of Expertise in the Office of the Vice-President (Research and Innovation).

2. Appoint an Indigenous research specialist and create an Indigenous research and innovation Centre of Expertise in the Office of the Vice-President (Research and Innovation).

3. Develop and provide training and web-based tools on Indigenous initiatives and EDI to researchers as an integral element of transformative research grant and ethics applications.

4. Formally engage researchers on integrating Indigenous-engaged scholarship, research and relationships in relevant research grant and award applications.

**KEY INDICATORS**

1. Appoint EDI and Indigenous research specialists by 2026.

2. Develop and launch Indigenous-focused (or Indigenous-engaged) research training programming for researchers by 2024.

3. Develop and launch EDI training programming for researchers by 2024.
2. Support Researchers with Tools and Infrastructure

To sustain creativity and fuel discovery, talented researchers require high-calibre research spaces and supports. Our University will continue to provide a suite of research support services that effectively meet the day-to-day and strategic needs of researchers and innovators. This will better position them to secure funding, enter into partnerships, engage with communities, capitalize on research opportunities, and undertake impactful work in line with their research passions. We will also strategically build on our robust research infrastructure to ensure researchers and innovators across all disciplines benefit from high quality spaces and tools, including creative and artistic workspaces, data systems, lab equipment, computing power, and other necessary technologies.

Objective #1

Develop streamlined and co-ordinated institutional processes for integrating and supporting operations and the expansion of shared institutional infrastructure for research and creative activities.

TACTICS

1. Strategically guide the institutional creation, operation and financial sustainability of core and shared research and creative activity infrastructure.

2. Develop an integrated and informed approach and initiatives for identification, alignment, support and resourcing of renewal and expansion of existing core research and creative activity infrastructure

3. Expand and diversify funding to support infrastructure expansion and renewal, towards establishing institutional core and shared research and creative activity infrastructure.

4. Develop institutionally harmonised operations of stand-alone infrastructure and core facilities such as the small animal services facilities and shared computational facilities for research and innovation.

5. Implement effective models for financial sustainability and regulatory processes for animal welfare, research ethics, and clinical trials to ensure proper operations and compliance.

KEY INDICATORS

1. Increase annual sponsored research revenue for infrastructure from the Canada Foundation for Innovation by 50% from $20M to $30M by 2028.

2. Increase institutional funding envelopes and allocations received from Canada Foundation for Innovation programs by 20% from $76M to $90M by 2028 for every 3-year cycle.

3. Increase the success rate of the Innovation Fund program from the Canada Foundation for Innovation by 20% from 45% to 55% by 2028.

4. Increase annual institutional funding received from research infrastructure grant programs, other than from the Canada Foundation for Innovation, by 50% from $10M to $15M by 2028.

5. Launch a functional, searchable database of research resources by 2025.

6. Create and implement guidelines to establish and support institutional core and shared research infrastructure by 2025.
### Objective #2

**Strengthen guidelines and develop knowledge base for research-related administrative, financial and infrastructure operations and liability, as well as occupational health and safety compliance activities.**

#### TACTICS

1. Develop communication and training assets for researchers and trainees, especially early career researchers.

2. Improve, co-ordinate and expand institutional researcher onboarding and support processes for administrative, operational, facilities, safety and financial matters.

3. Develop researcher satisfaction studies for feedback to improve guidelines and operations.

#### KEY INDICATORS

1. Develop targeted research communications assets by 2024.

2. Develop and implement researcher satisfaction surveys by 2024.

### Objective #3

**Develop and expand robust and secure safeguarding research systems, including data storage, data exchange, and data management systems.**

#### TACTICS

1. Strategically integrate institutional safeguarding research, technology transfer protocols, Intellectual Property protections and research data management processes to secure research knowledge systems.

2. Implement institutional processes and systems to help safeguard research, data and technology transfer, and Intellectual Property.

3. Develop an inventory of resources and create documented processes and tools to evaluate and mitigate the risks of unauthorised disclosure of research information and data.

4. Develop a functional, searchable database with research proposal development resources, grant examples and templates for researchers, trainees and innovators.

#### KEY INDICATORS

1. Implement a research data management plan by 2024.

**Objective #4**

Enhance development and expand access to high-performance computing and research information management system infrastructure locally, regionally and nationally.

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<td>1. Align existing and emerging research priorities with access to high-performance computing resources.</td>
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<td>2. Lead development of information technology and library support platforms for research information management.</td>
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<td>3. Leverage existing national research data repository platforms to expand access and sharing of research data.</td>
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<tr>
<td>1. Identify and implement suitable support platforms for high-performance computing by 2025.</td>
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<td>2. Identify and implement research information management systems and implement government research data repository and open access requirements by 2026.</td>
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3. Strengthen Our Research Culture and Broaden Our Impact

Stemming from our world-class people and enhanced supports, we will continue to infuse a research and innovation culture across the University. To nurture this culture, we will help researchers and innovators embrace a multitude of ways of thinking, knowing, doing, and relating. We will continue to create conditions that encourage multi-disciplinary engagement while fostering sole investigator-driven research activities. We will also work to showcase and celebrate the impacts of our research discoveries, creative activities, and relationships – and the people behind them. These impacts will expand academic thought, influence research paradigms, and contribute to better practices and public policies. They will continue to foster diverse, equitable, and sustainable social and technological innovation in communities, society, the economy, and the environment.

Objective #1

Build a centralized research-driven and innovation ecosystem that brings together existing scholarly networks, multi-disciplinary research work, entrepreneurial endeavours and knowledge mobilization activities from across the institution.

TACTICS

1. Use outcomes from entrepreneurial, socially and technologically innovative, creative, and other impactful forms of research activities occurring in the institution and with external communities to enhance our innovation ecosystem.

2. Formulate and support formal training programs and activities for researchers in innovation and entrepreneurial initiatives, knowledge mobilization, and community-engaged research activities.

3. Connect commercialization assets in core and innovation facilities in a cohesive institutional network.

4. Co-ordinate and strategically communicate the institution’s innovation supports and services through centralized communication tools.

5. Promote and showcase commercialization and innovation, and broadcast stories.

6. Engage and connect diverse funding sources to support innovation, including social innovation, commercialization, mentorship, upskilling, experiential learning and training through interdisciplinary entrepreneurial and socially innovative research.

7. Develop innovation, commercialization and social impact annual reports for broad dissemination to internal institutional and external stakeholders.

KEY INDICATORS

1. Develop and launch the Research and Innovation website by 2024.

2. Create an online searchable database platform of all commercialization and social innovation initiatives by 2024.

3. By 2028, apply for four institutionally-led funding opportunities that prominently feature social innovation, commercialization, upskilling, experiential learning, and training (e.g., via MITACS or the Alberta 2030: Building Skills for Jobs strategy).

4. Starting in 2024, issue an annual survey to measure impact and significance of innovation in researchers’ work, collaborations, and partnerships with at least 70% response rate.
## Objective #2

Establish an Innovation Fund to provide risk capital to support high-growth innovation, knowledge creation, and entrepreneurial initiatives developed and led by institutional researchers.

### TACTICS

1. Strategically invest risk capital from the Innovation Fund in business startups by leveraging innovation, knowledge creation, artistic, and entrepreneurial activities developed by researchers.

2. Provide proposals and pitches to the Innovation Fund managed by an independent investment committee to generate a continuous, filtered, and developed pipeline through various development and support pathways.

3. Use the Innovation Fund to support mobilization of research, innovation, and creative and artistic activities and initiatives to commercialization or community implementation programs.

4. Use the Innovation Fund to develop companies for scale, and reinvest financial gains in the institution, highlight best practices, and contribute to further research and innovation.

### KEY INDICATORS

1. Launch the Innovation Fund to directly invest in startups from early stage concepts (pre-seed) to the first stage of company creation (Series A, $150K - $2M) by 2028.
**Objective #3**

Translate and mobilize innovation, knowledge, and entrepreneurial research to enable and support formation of public, private, and community partnerships.

**TACTICS**

1. Build partnerships with municipal, provincial and national governments, Indigenous nations, not-for-profit organizations and the private sector to collaboratively develop and implement innovative, creative, artistic, entrepreneurial and commercial solutions to shared challenges.

2. Align and mobilize the institution toward experiential learning and skills development through research with expanded funding opportunities for industry and community-based training.

3. Involve industry, community partners, and commercialization pre-accelerators and accelerators in institutional major initiatives, and connect these initiatives with funding for social innovation and commercialization.

4. Integrate institutional commercialization assets into a cohesive network that will be a major player in the external innovation ecosystem of Alberta and Canada.

5. Mobilize institutional commercialization activities by streamlining all new intellectual property and commercialization policies and processes.

6. Showcase our artwork, creative artistic performances, and collections locally, provincially, nationally, and globally.

7. Develop relationships and collaborate with Indigenous, Northern, and equity-denied communities and civil society organizations to define and stimulate community-driven and community-led research and implementation programs.

**KEY INDICATORS**

1. Develop or participate in three major initiatives per year relating to innovation with government, community or private sector partners by 2028.

2. Increase sponsored research revenue from programs that support experiential learning and skills training through research, such as MITACS funding, by 50% from $8M to $12M by 2028.

3. Increase annual funding to support mobilization of research into entrepreneurial and community spaces by 25% by 2028 by engaging with programs such as NSERC Idea to Innovation grants, MITACS Accelerate Entrepreneur grants, and not-for-profit organization grants.

4. Issue at least four targeted calls for funding per year across the Colleges and Faculties to encourage grant applications on innovation.

5. By 2028, support at least two Indigenous-led and institutionally led initiatives that define and stimulate community engaged research and impact.
**Objective #4**

Recognize, celebrate, reward and communicate all forms of innovation, entrepreneurship and creative and artistic work and their impact.

**TACTICS**

1. Develop and deliver regular institutionally led innovation workshops.

2. Create events to celebrate innovation awards and showcase researchers.

3. Draw from existing initiatives, hubs and teams to create forums for researchers and university innovators to deliver innovation narratives.

4. Incentivize innovation, entrepreneurship, commercialization and creative activities through a framework of financial support and a reward system.

5. Collect and disseminate innovation, entrepreneurship, commercialization and knowledge mobilization metrics and accomplishments.

6. Develop entrepreneurship sabbaticals and release opportunities for researchers and innovators to facilitate and reward entrepreneurship and commercialization activities.

**KEY INDICATORS**

1. Organize five thematic innovation workshops annually by 2028.

2. By 2028, support course release for research professors by leveraging course releases offered by colleges and/or faculties for innovation, entrepreneurship and creative and artistic work activities.
4. Enhance the University of Alberta’s Reputation as a Global Research and Innovation Leader

Claiming our place amongst the world’s top research universities will require us to be clear about and broadly showcase our distinguishing work in areas of global excellence and emerging strength. We will do this by deliberately building high-priority collaborative opportunities across our University, in ways that wisely leverage sole investigator-driven research activities and encourage the formation of multi-disciplinary, diverse research teams. We will also strategically enhance our external engagement with funders and potential research partners and community groups and strengthen our involvement in international research networks.

Objective #1

Ensure leadership and sustainability of existing areas of research strength, innovation and creative activity, while building areas of emerging strength.

TACTICS

1. Prioritize multi-partner, multi-institutional and international collaborative research and funding initiatives that target existing areas of strength.

2. Align research chairs and allocations for infrastructure funding with areas of research strength, innovation and creative activity.

3. Leverage the college model to conceptualize and lead large-scale, collaborative, multi-disciplinary research initiatives.

4. Build high-priority collaborative opportunities across the academy with a focus on sole investigator-driven research activities, formation of multi-disciplinary and diverse research teams, training, and translation of skills to address major shared challenges with the public and private sectors, and civil society.

5. Leverage the strength of centres and institutes across the academy to address specific multi-disciplinary research and training challenges, priorities or funding calls.

6. Strategically mobilize University resources to increase and leverage large-envelope research funding from diverse sources, including the Tri-Agency federal research councils, research infrastructure sponsors, government agencies and ministries, philanthropic, civil society, and community organizations, international organizations, and the private sector.

7. Strengthen institutional capacity for large-scale funding initiatives by expanding per capita funding secured by individual researchers.

KEY INDICATORS

1. Increase annual sponsored research revenue from $550M to $650M by 2028.

2. Establish at least four large-scale, college-led, collaborative, multi-disciplinary research initiatives per annum.

3. Become one of top three ranked U15 universities in annual sponsored research revenue by 2033.

4. Become one of the top 50 internationally ranked universities by 2033.
Objective #2

Strategically align existing and emerging areas of strength considering evolving institutional, government, community, and societal priorities.

TACTICS

1. Prioritize areas of strength to support rapid response to evolving institutional and external priorities.

2. Use data from government, institutional and external research performance metrics, as well as diverse technical and economic data analyses to inform prioritization of the areas of strength.

3. Establish a strategic research initiatives fund to support and leverage areas of research strength, innovation and creative activity, and increase sponsored research funding.

4. Create strategic advisory groups of institutional, national and international experts.

Objective #3

Strengthen our participation in key municipal, provincial, national, and international research networks.

TACTICS

1. Secure membership and committee participation in recognized networks that align with institutional areas of current and emerging research strengths, such as the Global Alliance of Universities on Climate.

2. Collaborate with all levels of government on priorities of interest to government and the institution and leverage government funding support to build municipal, provincial, national, and international partnerships.

3. Integrate international institutional partners in large-scale multi-disciplinary research initiatives and funding opportunities.

4. Sustain participation in key international research networks by aligning our participation with institutional priorities and securing external funding.

5. Increase annual funding received from government and private sources and programs, including those that currently target national and international collaborations such as Social Sciences and Humanities Research Council Partnership Grants, Horizon Europe, New Frontiers in Research Fund (international stream), Natural Sciences and Engineering Research Council of Canada Alliance International, NSERC CREATE with the German Deutsche Forschungsgemeinschaft, Mitacs, and International Development Research Centre.

KEY INDICATORS

1. Secure membership in at least six international networks by 2028.

2. Increase annual sponsored revenue for international research activities by 30% from $20M to $26M by 2028.
## Objective #4

Build or expand relationships with research experts from developing countries and emerging market economies through international research collaborations, drawing on existing relationships with research experts from developed countries.

### TACTICS

1. Expand international research partnerships with institutions in developed countries.

2. Mobilize research activities and outcomes informed and led by researchers from developing countries and emerging market economies to benefit their economies and societies.

3. Use an institutional bilateral priority research partnerships approach to create funded collaborations with international institutions and researchers, especially those in developing countries and emerging market economies in Africa, Asia, and the Americas.

### KEY INDICATORS

1. Create at least five new bilateral research partnerships with institutions in developing countries and emerging market economies by 2028.

2. Include an institution from a developing country and emerging market economy in each large-scale funded collaborative research initiative undertaken with existing international partners from developed countries per annum by 2028.
Objective #5

Broaden the reputation of the University of Alberta in municipal communities, provincially, nationally, and globally through targeted communications and promotional activities.

TACTICS

1. Targeting local communities, provincial, national and international markets, celebrate and highlight institutional strengths and accomplishments in key research priority areas through digital marketing and promotional assets.

2. Showcase researcher participation and funding data.

3. Strategically integrate research funding metrics, including the number of funding proposals and successful funding applications to support engagement with institutional and external communities.

4. Disseminate biannual research outcomes, including those relating to research funding and institutional ranking.

5. Develop monitoring and reporting mechanisms to track the net flux of academic positions at every career level.

6. Measure and communicate the impact of research, innovation and creative activity.

7. Expand institutionally co-ordinated visits to international priority partners and other emerging or potential partners annually to promote our research brand and build relationships.

KEY INDICATORS

1. Establish 12 international research priority partners by 2028.

2. Conduct at least 12 annual visits to international research priority partners and other emerging or potential partners by 2028.
Prioritizing with inclusion

Our University values and is committed to supporting high-calibre research and creative activities across all disciplines, despite having to establish priority areas.

To the greatest extent possible, investments and initiatives will be designed in ways that energize the priority areas while enhancing research and creative activities across our institution.

Priorities for Maximum Impact

As a comprehensive research university, we are proud of our commitment to high-calibre research and creative activities across all disciplines. Our University has opportunities to harness this robust body of scholarship in ways that capitalize on areas of opportunity in research and innovation.

These serve as priority areas for investments and initiatives to significantly enhance capacity and multi-disciplinary collaboration. They represent areas of research and innovation for which we are best known and where we can maximize our impact on Alberta, Canada, and the world.

These priorities emerge under two distinct themes:

- **Global Excellence**, in areas where our University has broad and deep institutional strength and
- **Growth**, in areas of emerging leadership that will continue to position the University of Alberta as a top global research institution.

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**GLOBAL EXCELLENCE**

- Energy Solutions
- Artificial Intelligence
- Health & Well-being

**GROWTH**

- Renewing Indigenous Relationships
- Agriculture & Food
- Reducing Social Disparities
Global Excellence

Energy Solutions
Energy systems, resilience, and climate change mitigation

Our deep and renowned expertise in energy has taken on new significance in the face of the global climate emergency. It is a challenge that demands innovative solutions for stable, reliable energy in a “net-zero emissions” paradigm.

Our researchers are at the leading edge of discovering the technologies to produce, store, transport and deliver cleaner, reliable energy sources in ways that drive us to net-zero emissions and help meet global climate change commitments. Importantly, this research is occurring across the continuum of energy systems – from production, through transmission, storage, and consumer use.

This includes work to enhance the efficiency and sustainability of conventional energy sources, and innovations to help realize the full potential of sustainable energy sources. It also includes robust social science research to address policy and regulatory issues and explore the unique implications of energy transition alongside diverse peoples and communities, including Indigenous communities.

Research and innovation directions in energy systems include:

- Discovery, development, and translation of resilient renewable energy technologies and energy transition solutions, including hydrogen, wind, solar, geothermal, and biomass fuel sources.
- Development of new methods and technologies for efficient use of conventional energy sources, reducing greenhouse gas and carbon emissions, and supporting carbon capture, utilization, and storage.
- Climate change and addressing energy systems impacts, their consequences, and their causes.
- Northern cold-affected climates by addressing energy systems in climates with below freezing temperatures many months of the year.
- Broadening our understanding of the social implications of energy use and transition to a net-zero economy.

Impact in Energy

- One of the top 10 universities for energy systems research.
- Ranked as one of the top 50 academic institutions for energy and climate subjects.
- First to discover technology to unlock bitumen from oil sands.
- More than $1B invested in over 170,000 m$^2$ of energy research infrastructure.
- UofA researchers inform policies such as Alberta’s Hydrogen Roadmap.
Over the past three decades, our institution has existed at the forefront and created the foundations of global research in artificial intelligence (AI) and machine learning. Already, our University’s innovations in AI and machine learning have made key contributions to reinforcement learning, video game design, medical informatics, precision health imaging and diagnostics, smart prosthetics and robotics, automated legal reasoning, financial forecasting, smart agriculture tools, optimization of oil and gas recovery, and water treatment.

Importantly, these inquiries also extend to exploration of the social, cultural, economic, ethical, and privacy implications of AI, machine learning, and data science. We will continue to lead discourse around how these technologies will interact with diverse peoples, including the incorporation of Indigenous worldviews and epistemologies.

Research and innovation directions in artificial intelligence include:

• Advancing applications of artificial intelligence to autonomous systems, space technologies, smart buildings and cities, quantum technologies, smart agriculture, and health.

• Integrating artificial intelligence, machine learning, and data science for autonomy, adaptability, and reliability of net-zero energy systems.

• Analyzing the intersectional, social, cultural, ethical, and educational impact of artificial intelligence, including the ways in which it shapes race and gender relations, equality, and diversity.
Health and Well-Being

Health, disease prevention and life-course approaches to care and well-being

Our University’s health research and innovation goes beyond traditional definitions of health, to a “health plus” focus that recognizes interfaces with the environment, energy, food security, agriculture, and physical activity. We are a leader in integrating social determinants of health, such as income, education and social status, access to nutritious food, physical activity, housing, and employment, into scholarly discourse and actionable interventions to address health inequities. Our work in life-course approaches to advance the health and well-being of children, women, aging, and elderly populations is internationally recognized.

Our University is renowned for research leadership and innovation excellence in virology, vaccines, cell-based therapies, and small molecule therapeutics. With this incredible and versatile bench strength, our University is ready to respond to an array of public health issues and threats, including emerging pathogens. Our deep expertise in clinical trials, translational research will bolster our impact in areas such as disease management and prevention, biomedicine, and next-generation therapies.

Research and innovation directions in health and well-being include:

- Expanding community-engaged research, interventions, and intergenerational health literacy through an intersectional lens to advance the health and well-being of underserved populations through life course perspectives.
- Discovery and development of new vaccines, cell-based therapies, and small molecule therapeutics and pharmaceuticals.
- Accelerating cutting-edge research in “big data”, artificial intelligence, and digital health.

Accomplishments in Health

- 2020 Nobel Prize Laureate in Medicine, Dr. Michael Houghton, for discovery of the Hepatitis C virus.
- More than $130M for the Li Ka Shing Institute of Virology.
- More than $100M in research funding for Precision Health, intelligent medical devices, and therapeutics.
- Leader of the $80.5M Canadian Critical Drug Initiative to create 1000 high-paying pharmaceutical jobs.
- More than $100M for the Women and Children’s Health Research Institute.

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Growth

Indigenous Research

Indigenous Research, Community Engagement, and Relationships

The University of Alberta views research, creative activities and innovation as opportunities to meaningfully build relationships and engage with First Nations, Inuit, and Métis Peoples. This vision is strengthened by Braiding Past, Present and Future: University of Alberta Indigenous Strategic Plan, an Indigenous-led and Indigenous-written five-year plan that outlines how Indigenous Peoples, languages, cultures and worldviews are reflected in everything our University does.

Through the creation of an Indigenous Research Strategy Task Force led by the Vice-Provost (Indigenous Programming & Research) and scholars engaged with Indigenous communities, and informed by the voices of Indigenous community members, particular attention is being given to issues of intellectual property, research data management, data sovereignty, and the creation of a research ethics framework based in Indigenous Knowledges. As we respond to reconciliation calls framed around supporting the research priorities of Indigenous Peoples and communities, our University has expanded Indigenous resiliency and resurgence research to resist narratives of Indigenous deficiency and disappearance. Our institution is recognized for long-term excellence in research and teaching, with programs that place Indigenous self-determination at the core of theory, research, and technology development.

Building on these initiatives and accomplishments, our University is forging a path to strengthen international recognition of our excellence in Indigenous research, Indigenous-led and community-engaged initiatives, and theoretical and methodological innovations. Through collaborative partnerships with Indigenous communities and multi-disciplinary research programs, the University of Alberta will excel as an engaging, inclusive leader in decolonial and anti-colonial research, championing Indigenous leadership and self-determination in research and innovation.

Research and innovation directions in Indigenous research include:

- Ensuring Indigenous-led research capacity development and support for initiatives that promote Indigenous self-determination and positively impact Indigenous community well-being.
- Encouraging and resourcing ethical Indigenous community engagement and research.
- Broadening the capacity and impact of Indigenous research in both existing and new initiatives.
Agriculture and Food
Sustainable agriculture, food security, and animal science

The University of Alberta is a leader in innovative agriculture, food systems, and animal science. Research in environmentally sustainable resource development and management underpins our strength in climate-friendly agriculture and food, including activities around natural resources, water, soil, biodiversity, forest and land use management, ecosystem services, cropping systems, and livestock. Our multidisciplinary approach has allowed us to tackle major national challenges to optimize sustainable use of rangelands, develop technologies (e.g., “omics”), including digital technologies to create smart agriculture systems, develop new value-added oils for health, and drive innovation in Alberta’s world-recognized beef and canola sectors.

We will continue to use our expertise to shape public policy and clinical practice, such as policies to promote provision of safe, healthy, and nutritious food to children and in school food environments and defining nutritional requirements for different population groups though an intersectional lens. Across the institution, multi-disciplinary teams explore the role of gender on food security in Canada and in the Global South, while others create research frameworks to focus on sustainability and food sovereignty and security in Indigenous and rural communities.

Research and innovation directions in agriculture and food include:

• Creating solutions for resilient food systems that will improve the health of individuals, enterprises, and communities.
• Developing value-added products built on sustainability principles for climate-friendly economies in collaboration with local communities.
• Using artificial intelligence and digital technologies to create next generation smart agriculture and food systems, and advance forest and land use management.
• Advancing the future of food from petri dish to protein, to new industries and new sustainable, climate smart options for consumers through cellular agriculture.
Reducing Social Disparities
Transformative approaches to social disparities in the 21st century

Exploring what it means to live, learn, work, express ourselves and advance social change in the twenty-first century drives University of Alberta researchers engaged in critical, creative and empirical research. Across many fields of inquiry, we are tackling challenging questions about the diversity and interconnectedness of the human condition, through the interpretation of cultural, historical, literary, political, religious and social narratives, and by understanding societies through their legal traditions, organizational structures, pedagogical practices, and creative and performing arts.

There has never been a more urgent need for artistic, cultural, educational, legal, organizational and social expertise to address global conflicts, violence, and ongoing colonialism. Intersections with environmental and health crises, growing racism, high levels of transphobia, persistent gender inequities, and other forms of societal injustices, complicate the picture.

Against this backdrop, our University has substantial growing excellence in the development of transformative approaches to address and reduce social disparities. Through our creative practices, critical analyses, and local, provincial, national, and international community-based interventional research, we will continue to explore and implement social improvements for individuals and communities, as well as the cultural, educational, economic, and legal institutions that organize and serve them.

Research and innovation directions in reducing social disparities include:

• Advancing knowledge, social innovation, and public policy to tackle inequities and better address intersectional forms of social oppression.

• Deepening community-engaged research commitments, methods, and impacts to collaboratively right social inequities.

• Engaging interdisciplinary, arts-based, and social science expertise necessary to effectively address complex human behaviours in the face of the global climate crisis.

• Developing international partnerships for further research and solutions in support of the UN Sustainable Development Goals that aim to confront the most pressing issues affecting our world today.
Conclusion

Through decades of research and creative activities across a wide range of disciplines, the University of Alberta has built a proud and impressive legacy of discovery. It is a legacy that has been fashioned through the curiosity, dedication, and tenacity of high-calibre researchers and a fervent belief in the power of new knowledge.

Now, our University will wield these strengths to even greater effect – to maximize our impact, for the betterment of Alberta, Canada, and the world. Energized by a more focused and aligned research and innovation ecosystem, and an ongoing commitment to multi-disciplinary collaboration, we will pursue a new chapter in our legacy of great discovery and impactful innovation.
Strategic Plan for Research and Innovation Working Group

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