Research + Innovation
Plan

Ahead of
Tomorrow

In June 2023, the General Faculties Council and Board of Governors approved the University of Calgary's Strategic Plan for 2023–2030. Titled *Ahead of Tomorrow*, this plan outlines the University's mission and values— as well as goals, approaches to work and **initiatives for:**

- **Teaching and Learning;**

- **Research and Innovation;**

- **Community; and**

- **Operations**

To deliver on this community vision, Vice-Presidents of the University have been asked to draft more detailed work plans that cover shorter time periods. These three-year implementation plans expand on how the University will deliver approved initiatives and meet set goals— and build out roadmaps of enabling activities that will be needed to deliver on *Ahead of Tomorrow*.

This draft Research and Innovation Plan addresses the research and innovation strategy for *Ahead of Tomorrow*. Activities and initiatives in this Research and Innovation Plan are integrated with approaches described in the Academic Plan, Community Engagement Plan, and Operations Plan.

As with all University activity, the Research and Innovation Plan should be considered and interpreted through our foundational commitments to: Equity Diversity, Inclusion, and Accessibility; Indigenous Engagement; Mental Health; Global Engagement; and Sustainability.
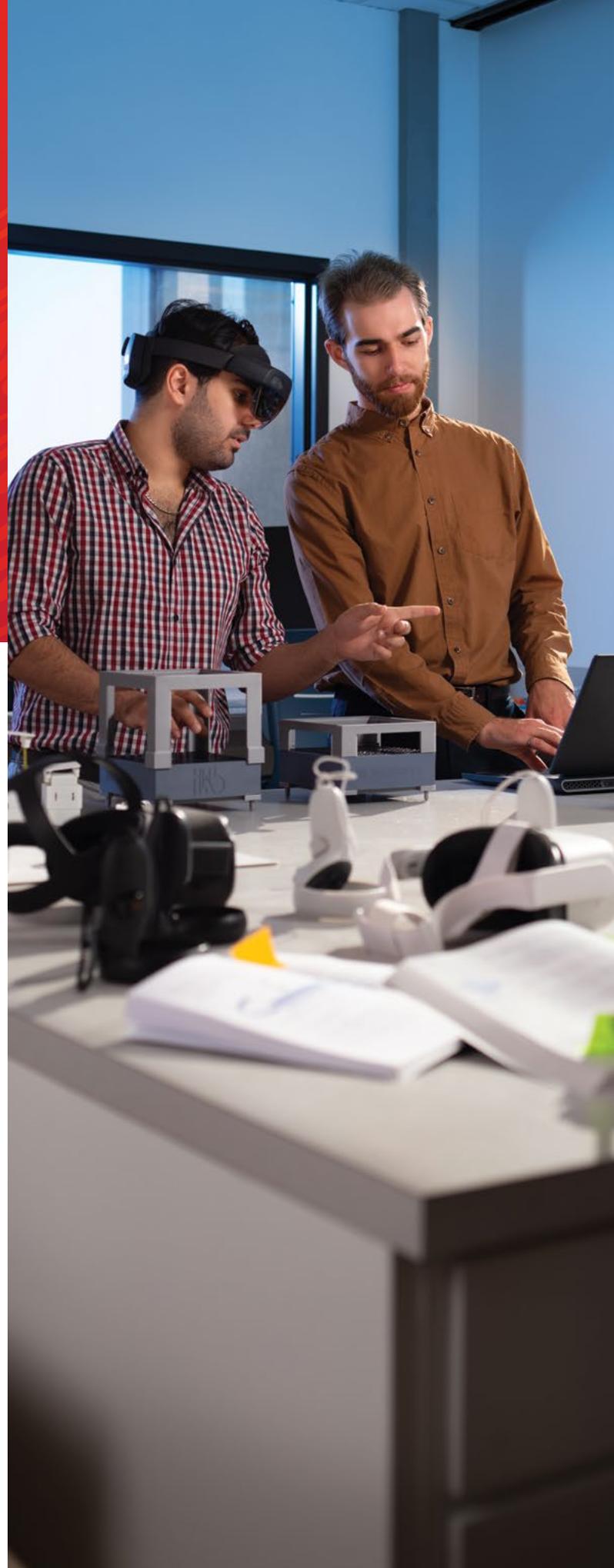
Introduction

Universities exist to educate, to discover and to enrich the societies they serve.

The University of Calgary is one of Canada's top comprehensive research universities, with a mission to produce new knowledge and to translate knowledge into impact. Impact from research and scholarship is realized in many domains —including social, health, environmental, artistic, cultural, economic, legal, technological, and policy domains. These positive influences from UCalgary research and scholarship will benefit local, national and international communities.

Research and Innovation
Ahead of Tomorrow

As established by *Ahead of Tomorrow*, the goal of the University of Calgary is to maximize research impact, and we will do this by harnessing the power of research and innovation to tackle society's biggest challenges.

Three objectives have been set for 2030 in *Ahead of Tomorrow*:

1. Become #1 University in U15, research revenue per scholar.

2. Grow external research revenue to $750M a year.

3. Grow our position as Canada's #1 creator of start-ups to the top 50 start-up creators in the world.

The above *Ahead of Tomorrow* targets are high level metrics that the University of Calgary can use for comparisons with other Canadian institutions (—as these are available through national data systems). These are, by no means, the only measures of interest to UCalgary. The above measures will be supplemented by discipline specific and agency specific analyses (e.g. tri-council specific analyses, discipline specific bibliometrics). Furthermore, UCalgary's endorsement and participation with the San Francisco Declaration on Research Assessment (DORA, see below) signals an intention to assess and describe research impact through a diversity of lenses and methodologies, including qualitative narratives of impact.

Research and innovation activities will be integrated with strategies described in the *Academic Plan*, as these relate to enhancing research opportunities for undergraduate students. Similarly, research and innovation activities will be integrated with the *Community Plan*, through an institutional commitment to establish and advance multifaceted partnerships with communities, industry, governments, and post-secondary institutions globally. Furthermore, the UCalgary Research and Innovation ecosystem will rely heavily on the enhancement of University processes to be achieved through the *Operations Plan*.

These four new *Ahead of Tomorrow* implementation plans for 2024 through to 2027 are not only linked and interdependent to one another, they are also fully connected to and integrated with the institutional strategies in a number of key core areas—specifically Indigenous Engagement, Equity, Diversity, Inclusion and Accessibility (EDIA), Sustainability, and Campus Mental Health and Well-being.

MEASURING PROGRESS

Progress towards objectives will be measured in the following ways:

A. Research Revenue Per Scholar in U15

- These data are available annually through the standardized reporting that universities provide to the Canadian Association of University Business Officers (CAUBO). This is a robust and explicit indicator.

B. Research Revenue

- Similarly, these data are available through CAUBO, with standardized reporting criteria for all Canadian post-secondary institutions.

C. Top 50 Start-Up Creators in the world

- Data from the Association of University Technology Managers (AUTM) is used for tracking UCalgary's ranking within Canada for start-up company creation. To begin tracking UCalgary's performance and ranking internationally, we will acquire data from PitchBook and track progress against international comparators.

UCalgary has created new research support teams for international partnerships, non-traditional funding programs, and industry partnerships. To track progress in these specific areas, we will gather information on additional key performance indicators aligned with these new programs, as elements of the Research and Innovation Plan (2024–2027):

- Annual Research Revenue from Industry Partnerships

- Annual Research Revenue from International Partnerships

- Annual Research Revenue from non-traditional Canadian funding sources (ie. outside of tri-council funding opportunities)

Progress on these three indicators is necessary to achieve *Ahead of Tomorrow's* 2030 targets.

ACTIVITIES AND INITIATIVES

As a major research University, the University of Calgary's research enterprise is multi-faceted and complex with many initiatives that support it. The Office of the Vice-President (Research) has identified five domains of activity that support and advance this research enterprise. These include dedicated initiatives for: i) enhancing institutional capacity; ii) connecting our people with opportunities; iii) becoming best-in-class for administrative and regulatory functions; iv) leading research impact; and v) innovation. These are described in detail below.

Domain #1: Enhancing Institutional Capacity

We will create new opportunities for growth in faculty positions, maximize funding opportunities for postdoctoral scholar competitions, develop and/or expand programs for graduate students and undergraduate students to participate in research, advance Indigenous Engagement, and enhance institutional EDIA capacity and literacy. These opportunities will be developed in conjunction with the Academic Plan.

1.1 Expand capacity in faculty level hires. *Ahead of Tomorrow 2.A, 2.B, 2.C*

Fostering research and innovation by attracting top talent for cutting-edge research programs.

- **a.** Create new transdisciplinary assistant professor positions.

- **b.** Continued growth of our research chairs portfolio including Canada Excellence Research Chairs, Canada Research Chairs, internal chairs, and endowed chairs.

- **c.** Create pathways for career progression to faculty roles for postdoctoral scholars.

1.2 Support and enhance future rounds of the Postdoctoral Match-Funding Program. *Ahead of Tomorrow 2.A, 2.B, 2.C*

Attracting exceptional early-career researchers for formative post-doctoral training at UCalgary.

   a. Launch future funding competitions for the Postdoctoral Match-Funding Program.

   b. Enhance access to professional development programs for postdoctoral scholars.

1.3 Create a new Visiting Scholars Program. *Ahead of Tomorrow 2.A, 2.B, 2.C*

Strengthening global networks and partnerships, elevating the university's international reputation and outreach.

   a. Enrich the UCalgary research ecosystem through the hosting of notable scholars across all disciplines.

   b. Increase global awareness of UCalgary's vibrant academic community and research excellence through these scholar invitations.

1.4 Strengthen connection of undergraduate students to the research ecosystem. *Ahead of Tomorrow 1.A, 1.C, 2.A, 2.B*

Enriching the undergraduate experience with hands-on research, fostering critical thinking and empowering students with real-world research skills.

   a. Create new undergraduate research-intensive courses in faculty curricula.

   b. Broaden access to, and increase participation in, the Program for Undergraduate Research Experience (PURE) and in other existing and new undergraduate research programs.

1.5 Expand University partnerships to create opportunities for undergraduate students, graduate students, and postdoctoral scholars to engage with community and industry partners. *Ahead of Tomorrow 2.A, 2.B, 2.C, 3.A, 3.B*

Forging linkages between academia and community, equipping research trainees at all levels with invaluable networks and experiences to elevate their career readiness.

   a. Promote opportunities for collaborative research and innovation projects between partners and UCalgary, which helps to improve research trainees' on-the-job skills development.

1.6 Expand integrated learning opportunities for undergraduate students, graduate students, and postdoctoral scholars. *Ahead of Tomorrow 1.A, 1.C, 2.A, 2.B, 3.B*

Attracting local, national, international students and postdoctoral scholars, growing our economy, our province and country, and our reputation.

   a. Promote Mitacs Accelerate and Globalink funding opportunities.

   b. Optimize funding for research trainees through a combination of increased internal funding and external funding opportunities.

1.7 Enhance institutional EDIA capacity and literacy for research. *Ahead of Tomorrow 2.A, 2.B*

Fostering a research ecosystem where diversity is understood and celebrated, thus broadening the relevance, reach, and impact of UCalgary research and scholarship.

   a. Establish EDIA best practices in all research processes, supported through EDIA support teams in Research Services and the Office of EDIA.

   b. Provide support to all scholars conducting research that advances equity, diversity, inclusivity, and accessibility.

1.8 Advance Indigenous Engagement and Truth and Reconciliation. *Ahead of Tomorrow 2.A, 2.B*

Enriching the academic landscape by embracing Indigenous wisdom, traditions, and methodologies to enhance ethical Indigenous research and engagement to foster parallel paths in scholarship with guidance from, and in partnership with, Indigenous Elders, advisors, and communities.

   a. Create an Indigenous Research Pathways institutional guidance by 2026.

b. Increase institutional capacity for Indigenous research.

c. Provide support to Indigenous scholars conducting research.

d. Provide support, through the Indigenous Research Support Team, to all scholars (both Indigenous and non-Indigenous) in the conduct of research with Indigenous communities.

Domain #2: Connecting Our People with Opportunities

Building on the foundation of existing research supports available in faculties and Research Services, the University of Calgary has developed new research support units to connect students, postdoctoral scholars, faculty, and staff with i) non-traditional funding opportunities; ii) international research and innovation opportunities; iii) industry-engagement activities and iv) community-based initiatives and organizations. The ultimate objective of all UCalgary research support units and programs is to remove or mitigate any barriers that may prevent our faculty, trainees, and/or staff from optimally engaging in research. Collectively, these units and programs will enhance the institution's ability to secure new funding and produce far-reaching impact. These activities will be undertaken in conjunction with the Academic Plan and the Community Plan.

2.1 Activating the entire campus community in opportunities for interdisciplinary and transdisciplinary research and scholarship. *Ahead of Tomorrow 2.A, 2.B, 3.A, 3.B, 3.C*

Cultivating a spirit of problem-solving and community engagement, positioning UCalgary at the forefront of addressing global challenges through transdisciplinary approaches.

a. Undertake a large-scale campus-wide grand challenge project that broadly engages the entire campus with community and/or industry partners in addressing a major societal challenge.

b. Create open opportunities for participation in transdisciplinary initiatives in UCalgary's five defined areas of focus (described below).

2.2 Provide continued strategic investment in new and existing research support units. *Ahead of Tomorrow 2.A, 2.B, 2.C, 3.A*

Solidifying UCalgary's competitive edge locally, provincially, nationally, and internationally through the provision of outstanding research support programs.

a. Strategic Initiatives and Research Intelligence Unit.

    i. Promote, support, and participate in non-traditional strategic funding programs.

    ii. Develop tools to increase capacity to gather research intelligence.

b. Industry Engagement Unit.

    i. Match industry partners with researchers with relevant interests and goals to engage in collaborative partnerships.

    ii. Leverage industry investments with government funding.

    iii. Advance and evolve the partnership(s) towards new and exciting opportunities.

c. International Research and Innovation Unit.

    i. Initiate, connect, grow, and sustain collaborations globally.

    ii. Promote international funding sources.

    iii. Maintain strategic intelligence on international partnership opportunities.

d. Knowledge to Impact Unit.

    i. Build and maintain meaningful partnerships for research between UCalgary and community organizations.

    ii. Support collaborative efforts to enable knowledge engagement for increased impact.

    e. Renewed Urban Alliance Initiative.

        i. Connect university researchers to City of Calgary priorities and information needs.

        ii. Encourage multi-disciplinary solutions for complex problems.

2.3 Establish internal seed funding mechanisms. *Ahead of Tomorrow 2.A, 2.B, 2.C*

Positioning UCalgary scholars to move forward as strong applicants for external funding awards.

    a. VPR Catalyst Grants—designed to catalyze research initiatives that will lead to substantial external funding and are intended to support well-defined early-stage research activities.

    b. Transdisciplinary Connector Grants—explores questions, challenges and opportunities that demand a transdisciplinary approach; and fosters new connections among scholars, trainees, and external partners.

2.4 Advocate for investments in the research ecosystem. *Ahead of Tomorrow 2.A, 2.B, 2.C, 3.A., 3.B, 3.C*

Ensuring our government and community funding partners understand the importance and value of investing in research funding programs.

    a. Ongoing advocacy to federal, provincial, and municipal governments for investments in research capacity and infrastructure. This includes individual awards for scholars as well as transformational research programs.

    b. Ongoing engagement with community, as described in the Community Plan, for investments in research partnerships through philanthropy and industry partnerships.

2.5 Enhance opportunities for everyone at UCalgary to access research and scholarship award opportunities. *Ahead of Tomorrow 2.A, 2.B*

Elevating the reputation of our scholars, and by extension, UCalgary.

    a. Maintain and enhance internal awards programs that reward our people and position them for subsequent external award nominations.

    b. Increase both the number and quality of nominations of faculty and research trainees for prestigious external awards—nationally and internationally.

Domain #3: Becoming Best-in-Class for Administrative and Regulatory Functions

Research functions are numerous and complex, and a leading research university must enable all involved in research to navigate these functions effectively and efficiently. This work will be undertaken in conjunction with the Operational Plan.

3.1 Commitment to user experience and satisfaction. *Ahead of Tomorrow 2.A, 2.B, 4.A, 4.C*

Supporting and rewarding our scholars with the creation of better and faster processes.

    a. Develop personalized research facilitation.

        i. Project management support for complex research opportunities.

        ii. Produce research intelligence reports from robust and sophisticated analytics.

    b. Develop integrated IT support for research management.

        i. Implement a research management system where all research data are captured including all grants, contracts, ethics and animal care certifications.

        ii. Integration of such systems to financial systems.

        iii. Integration to include reporting capabilities.

    c. Advance campus research infrastructure (specialized research facilities).

    i. Ensure IT resources enable advances in all domains of research.

    ii. Develop new state-of-the art facilities and infrastructure to support future-focused research and innovation.

    iii. Promote the development of shared core labs and multi-user facilities.

d. Establish research security measures.

    i. Safeguard research while upholding our commitments to academic freedom, to international collaboration, and to equity, diversity, and inclusion.

e. Bolster capacity to support and enhance the outstanding work in the mission critical research support areas including:

    i. Animal Care

    ii. Finance

    iii. Research Strategic Marketing and Communications

    iv. Research Services (including all of its sub-units such as Legal, Ethics, and others)

Domain #4: Leading Research Impact

The University of Calgary seeks to position itself as a leader in producing impact in social, health, environmental, cultural, economic, legal, technological, and policy domains. UCalgary became a signatory to the San Francisco Declaration on Research Assessment (DORA) in January 2021. The Declaration affirms a university-wide commitment to societal impact, with validation of multiple forms of output from UCalgary research, scholarship, and innovation activities. DORA also emphasizes the university's accountability to rigorous assessment and reporting of impact both internally and externally.

4.1 Provide UCalgary educational opportunities on research impact using validated and replicable frameworks.
Ahead of Tomorrow 2.A, 2.B, 4.B

Equipping UCalgary scholars with robust tools to objectively measure and articulate the societal impact of their work to funders and other interested parties.

a. Roll out campus-wide education activities on UCalgary use of validated frameworks such as the Canadian Academy of Health Science's Research Impact Assessment (RIA) Framework.

b. Provide free access to online toolkits for the above.

4.2 Implement campus-wide RIA reporting across all research units, centers, and institutes. *Ahead of Tomorrow 2.A, 2.B*

Demonstrating an unwavering commitment to meaningful reporting on research impact.

a. Embrace UCalgary accountability to funders and other interested parties, by establishing standardized RIA templates for regular and uniform reporting on research impact, from all UCalgary research programs.

4.3 Advance DORA principles in all evaluations of UCalgary professoriate and their diverse contributions. This work will be done in conjunction with the Academic Plan. *Ahead of Tomorrow 2.A, 2.B, 2.C*

Embracing the variety of outputs that research and scholarship initiatives can produce, and recognizing and rewarding the diverse impacts that our people deliver.

a. Continue to support DORA principles on diverse outputs and impact in the activities guided by the UCalgary GFC Academic Staff Criteria & Processes Handbook (for Renewal, Transfer, Tenure and Promotion, and Merit).

4.4 Launch a new campus wide UCalgary Open Science initiative. *Ahead of Tomorrow 2.A, 2.B*

Making scientific research processes and outputs broadly accessible for the benefit of scientists and society as a whole, and to make UCalgary scholarship more transparent, inclusive, equitable, and sustainable.

a. Expand on an existing Open Science pilot program at UCalgary to establish a university-wide Open Science program that embraces the UNESCO Recommendation on Open Science, to increase both the multidimensional impact and equitable reach of UCalgary research and scholarship.

Domain #5: Innovation

The University of Calgary's innovation ecosystem is foundational to our ambition as Canada's entrepreneurial university. The UCalgary innovation ecosystem is broad, includes activities and support functions in faculties, departments, and programs, as well as support functions in several innovation resource nodes accessible to the entire UCalgary community. *Ahead of Tomorrow* calls on UCalgary to move from being a nationally leading innovation university to becoming an international leader. This will require bold steps, and a pathway to providing entrepreneurial experiences and opportunities to all our students and staff.

5.1 Create programming to support innovation and raise ambition within the university. *Ahead of Tomorrow 2.A, 2.B, 2.C*

Accelerating translation of UCalgary research and scholarship to produce tangible community benefits—driving economic, social, and technological advancements for Calgary, Alberta, Canada, and the world.

a. Continue to integrate all the innovation support nodes into a seamless functional entity, overseen by a Council on Innovation and Entrepreneurial Leadership (CIEL) for strategic advice, and an improved functional management system that ensures synergy across all innovation nodes. This work will be undertaken in conjunction with the Academic Plan and the Community Plan.

b. Continued progress and evolution of the Hunter Hub for Entrepreneurial Thinking to support a campus-wide culture for innovation, and undergraduate and graduate exposure to curriculum offerings relevant to innovation and entrepreneurship. This work will be undertaken in conjunction with the Academic Plan.

c. Develop a Research and Innovation Fellows program to attract 50 innovation-focused postdoctoral scholars per year, looking to create social and technological innovations and businesses.

d. Introduce programming to support and double invention disclosures and/or patent numbers within five years.

e. Continue to develop and grow a suite of UCalgary catalyst programs to support innovation and entrepreneurship. These include:

   i. The e2i: Evolve to Innovate program, an eight-month experiential innovation curriculum, including mentorship, for competitively selected teams presenting research-related innovation concepts.

     a. Double the number of placements in this program over the next five years.

   ii. The Academic Entrepreneurs in Residence (AEiR) program, that connects UCalgary researchers with mentors who are all experienced researchers and start-up co-founders, for in-depth innovation and commercialization steps.

     a. Triple the number of AEiR mentors and participating start-up companies over the next five years.

   iii. Now Innovating: an educational toolkit examining the trials and tribulations of innovation and innovators.

     a. Expand to include international content and reach of these tools to increase global awareness of the UCalgary innovation ecosystem.

f. Continue progress and evolution of existing innovation units and programs:

   i. The UCalgary Social Innovation Initiative

   ii. Ward of the 21st Century

   iii. IMPACT

   iv. Launchpad

5.2 Triple the size of the UCeed venture funds. This will be done in conjunction with the Community Plan.
Ahead of Tomorrow 2.A, 2.B, 2.C, 3.A

Increasing venture funding to boost UCalgary start-up companies toward success and meaningful impactful.

a. Expand this unique UCalgary venture funding program to help commercialize new technologies and innovations and accelerate UCalgary and community start-up companies through early-stage investments.

b. Introduce a UCeed Ambition Fund to support commercially risky but mission driven ventures capable of high-impact solutions in areas where markets are not yet established.

5.3 Bolster Innovate Calgary, UCalgary's tech transfer corporation, advancing its programs and hubs for 2030 targets.
Ahead of Tomorrow 2.A, 2.B, 2.C, 3.A

Establishing Innovate Calgary as Canada's leading University technology transfer entity.

a. Continue to support Innovate Calgary's strong capacity in propagating UCalgary intellectual property and start-up companies.

b. Continue progress and evolution of Innovate Calgary theme-specific hub.

    i. Life Sciences Innovation Hub

    ii. Energy Transition Hub (Avatar)

    iii. Social Innovation Hub

    iv. Aerospace Innovation Hub

    v. Quantum Hub (forthcoming)

c. Increase graduation of UCalgary start-up companies from Innovate Calgary into CDL Rockies and/or downstream growth and scale programs and accelerate them to become eligible for the Pitchbook Top 50 table.

5.4 Develop the University Innovation Quarter (UIQ) adjacent to the UCalgary campus, to catalyze Calgary's knowledge economy, fueled by research-driven start-up companies, high-tech industry partners, and economic development activities. *Ahead of Tomorrow 2.A, 2.B, 2.C*

Creating a vibrant innovation district as a dynamic focal point for creativity, ambition, and enterprise, reshaping the regions adjacent to the University and enhancing Calgary's knowledge economy.

AREAS OF FOCUS FOR TRANSDISCIPLINARY RESEARCH AND SCHOLARSHIP

UCalgary is committing resources, developing capacity, and enabling collaboration across our campuses and communities, continuing our tradition of multidisciplinary, interdisciplinary, and transdisciplinary paradigms, all built on a foundation of disciplinary excellence.

Led by the Office of the Vice-President (Research), the Transdisciplinary Scholarship initiative is deploying a series of opportunities and programs.

Transdisciplinary scholarship:

"Transdisciplinary scholarship is directed towards a complex issue or problem, most often one with a social dimension. Because of the complexity of the issue or problem, it is best addressed by teams of researchers from multiple disciplines. To address the social dimension of the question, transdisciplinary scholarship incorporates knowledges from outside the university, through theoretical or creative approaches to societal issues, and ideally by including societal actors who are implicated in the issue or problem in question."
(A working definition proposed by the Calgary Institute for the Humanities through a deliberative process, 2023)

The UCalgary community identified five Transdisciplinary areas of focus in the 2021 [Framework for Growth](#). These areas of focus draw on the disciplinary excellence within faculties, and build on these by connecting scholars in collaborative research that transcends disciplinary boundaries:
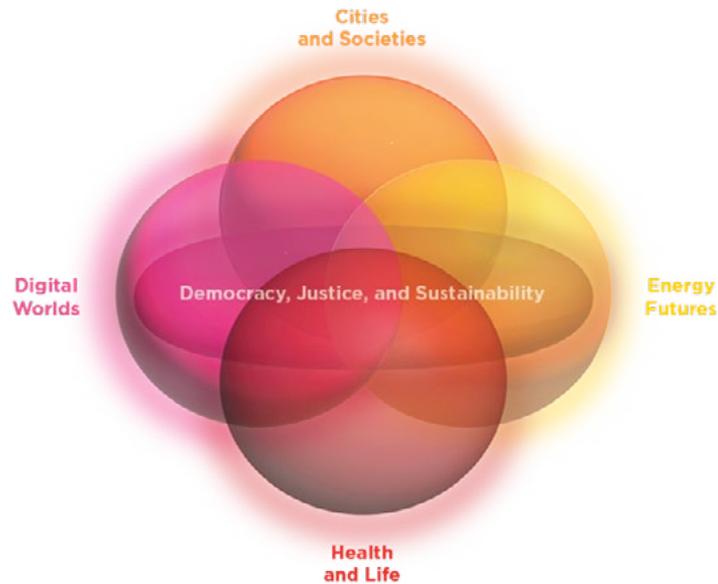
- **Cities and Societies**
  Will study how to design, plan, and build sustainable, equitable and healthy communities where all members of society can thrive. This area will consider themes including smart cities and the role of technology, transportation and infrastructure, biodiversity, healthy cities, and populations, and designing for diversity and inclusivity.

- **Digital Worlds**
  Will examine how we can use data to expand and create connections to inform a world with no boundaries. This area will look at how we can harness new technologies and consider themes of extended reality, human connection and enrichment, intelligent tools, security, ethics, regulations and law, and socio-culture transformation.

- **Energy Futures**
  Will examine the evolving energy system and the technological, economic, social, and political opportunities and challenges it presents. This area will consider themes of climate and environment, energy use and sources, politics and policy, economics, and the socio-cultural role of energy.

- **Health and Life**
  Will build upon UCalgary's strong network of existing health research institutes, biomedical engineering, kinesiology, and life sciences programs to increase collaborations and knowledge sharing to tackle critical issues in child health and wellness, cancer, inflammatory chronic diseases, brain and mental health, cardiovascular, bone and joint, and public health. The area of focus will also encompass the broader themes of biodiversity and One Health, with a focus on the interplay of environment, animal, and human health.

- **Democracy, Justice, and Sustainability**
  This horizontal thematic, intersecting with the four others, will examine how we can transform our institutions, governments, societies, and spaces to be equitable, inclusive and diverse. This area will consider themes including justice, democracy, freedom and autonomy, pluralism, anti-racism and decolonization, all considered through the lens of sustainability and the UN's sustainable development goals.