Inclusive Impact
Dalhousie's Research & Innovation Strategic Direction (2023-2028)
Summary

Introduction

Dalhousie is a vibrant hub with regional, national and global impact, recognized for the outstanding quality of its research and innovation. For more than two centuries, Dalhousie has been building an environment that enables researchers to think big, innovate and make discoveries that benefit society locally, nationally and globally. The university attracts more than 21,000 high achieving, motivated and engaged students from around the world to its four campuses. In its more than 200 undergraduate and graduate programs across 13 faculties, Dalhousie provides a unique, interactive and collaborative environment for creating and sharing knowledge, supported by research funding from governments, industry and non-governmental organizations.

Dalhousie's refreshed Research and Innovation Strategic Direction (2023-2028), Inclusive Impact, provides a roadmap to support the development of our research, scholarship, and creative activity, serves as a guide for the allocation of research and innovation resources and highlights how we aspire to create a healthier, more sustainable and brighter future for us all. Building on the collective momentum of the university's research community, Dalhousie research contributes to the broader global response to the most pressing economic, social, and environmental challenges, in ways that are measurable, collective, and in support of the UN's Sustainable Development Goals.

Dalhousie's Vision and Mission

Vision: Dalhousie inspires our diverse community to serve Nova Scotia, Canada, and the world through innovative and impactful teaching and research, world-class scholarship, a passion for learning, and a deep sense of social responsibility.

Mission: To lift the intellectual, social, and economic vitality of our local, national, and global communities through an institution-wide commitment to a world-class **student experience**, interdisciplinary **collaboration**, and **mutual respect and inclusion** in all aspects of our academic, research, and civic priorities.

Equity, Diversity, Inclusion and Accessibility: Equity, diversity, inclusion, and accessibility (EDIA) are integral to Dalhousie's vision, mission, actions, culture, and how we interact with one another daily. These obligations extend to redressing historical and ongoing systemic inequalities among our citizenry. The university has introduced a wide-reaching Diversity & Inclusiveness Strategy and an Employment Equity Plan, which provide the university with a set of priorities and actions to enhance the access, opportunity, and success of equity-deserving groups across the institution. The Research and Innovation enterprise at Dalhousie will propel research and innovation excellence across all disciplines, fully aligned with the university's EDIA goals.

Research and Innovation Strategic Direction Objectives

Dalhousie University's research and innovation strategic direction is oriented towards the following objectives:

Building Inclusivity: We value diverse perspectives, expertise and methods of scholarship that push the boundaries of research and discovery in every field.

Increasing Productivity: We strive to create an environment that empowers our researchers to advance knowledge on the most pressing challenges of our time.

Demonstrating Impact: Our research and innovation has real impact on the health, culture, environment and economy of our region, our country and the world.

We will evaluate our progress towards these objectives via an inclusive suite of performance measures that track our research income and outputs, our collaborative research activity, and our impacts on society.

These objectives are underpinned by the following Guiding Principles:
- Research Excellence
- Sustainability
- Curiosity, Creativity & Innovation
- Equity, Diversity, Inclusion, & Accessibility
- Decolonization & Indigenization
- Responsible & Ethical Conduct of Research
- Social Responsibility & Justice
- Collaboration, Interdisciplinarity, Global Engagement

As part of Dalhousie's Third Century Promise, we continue to focus our actions on growing world-leading research programs in our areas of particular strength, and investing in infrastructure that supports our researchers to achieve excellence*.*

Strategic Research Clusters

Dalhousie University's research and innovation is focused around six Strategic Research Clusters that bring scholars together from across disciplines, aligning our academic strengths to best address key global challenges. These are our priority areas of research and research training. All past, current, and future Canada Foundation for Innovation (CFI) projects and Canada Research Chairs are aligned with and enhance at least one Strategic Research Cluster.

<u>Sustainable Ocean:</u> All life on Earth requires a healthy Ocean. With its central role in climate regulation, oxygen production, and supporting diverse ecosystems, the ocean plays a fundamental role in sustaining life on Earth.

Dalhousie is a global leader in ocean research, ranked first in Canada and 20th globally for oceanography (Global Ranking of Academic Subjects 2023). Our research extends across disciplines and includes partnerships with leading institutions locally, nationally and globally. Our ocean researchers are having a significant influence on policy decisions and are strategically guiding the development of a blue — and sustainable — economy in Canada and around the world.

Dalhousie's multidisciplinary approach and involvement in international research projects including the Ocean Frontier Institute (OFI; Ocean Tracking Network (OTN); Marine and Environmental Law Institute; Marine Environmental Observation, Prediction and Response (MEOPAR), and others, allows Dalhousie researchers to contribute to the most pressing ocean challenges of our time.

Research Focus Areas:
- Climate Impact
- Marine Life
- Technology & Engineering
- Social & Human Impact

Healthy People, Communities, and Populations: Dalhousie researchers work across disciplines to advance knowledge that improves our understanding of the biological and social underpinnings of disease, with the goal of developing and implementing evidence-informed interventions to improve wellness and longevity.

We also collaborate with government, industry, and communities to inform and evaluate policies while implementing community-based measures to improve health outcomes for all. Dalhousie's approach to health research is grounded in an understanding that the health of individuals, communities and populations are interconnected and interdependent. Dalhousie is the major training centre in the Maritimes for life sciences, health professions and health law and policy research personnel. Research in this area involves work done a wide range of Faculties at Dalhousie as well as provincial health departments, hospitals, research institutes and research foundations.

Research Focus Areas:
- Infection, Immunity, Inflammation and Vaccinology
- Neuroscience & Mental Health
- Healthy Aging & Healthy Development
- Health Equity & Access
- Indigenous Health & Well-being
- Black Health & Well-being
- Cancer
- Genomics & Other "omics"
- Technologies & Biomaterials
- Health Systems Transformation
- Prescribing & Therapeutics

Climate Tech and Clean Energy: As the impacts of climate change are felt around the world with increasing force, the need to transition to green energy is increasingly urgent. Dalhousie researchers are working to develop clean, carbon-free technologies that will support and enable the transition to a more sustainable future. This effort extends towards the engineering and commercialization of innovative breakthroughs, including long-life batteries for electric mobility, new materials and alternative fuels.

Our research in this area also addresses the economic, social and regulatory issues that are part of any sustainable energy solution.

Research Focus Areas:
- Renewable Energy Generation, Storage & Access
- Clean Water, Soil & Air
- Social Dimensions of Resource & Environmental Sustainability
- Sustainable Tech & NextGen Materials
- Sustainable & Resilient Built Environment
- Green Chemistry

Culture and Society: Research in the humanities, social sciences and arts helps to illuminate our understanding of the world around us and guide us toward solutions to some of society's most pressing challenges. Dalhousie researchers ask bold and challenging questions about society. How does social justice define what we do? How can digital media be harnessed to create community? What can we do to amplify marginalized voices? In asking, our researchers are amplifying diverse voices and concerns, informing public policy and helping to build resilient communities.

Research Focus Areas:

- African Nova Scotian & Black Culture
- Reconciliation & Indigenous Peoples
- Ethics & Social Justice
- Culture & the Arts
- Rural Communities & Development
- Law, Governance & Security
- Migration & Global Affairs
- Organizations, Workplaces & Employment

Sustainable Food Systems: From climate change to increasing hunger to biodiversity loss, food systems are at the center of challenges we face today.

Dalhousie researchers are employing cutting edge methods, like precision agriculture and artificial intelligence to gain a deep understanding of the mechanisms that drive growth and sustainability and to create potential solutions for food challenges on the local and global levels.

Our work in food security includes policy and governance concerns, examining how rules and policies can affect our ability to advance towards more productive, sustainable and equitable food systems.

Research Focus Areas:
- Sustainable Agriculture Production Systems
- Sustainable Fisheries and Aquaculture
- Food Safety & Nutritional Quality
- Food Policy, Access & Distribution
- Food and Farming Technology
- Social Dimensions of Food System Sustainability

AI and Digital Innovation: Artificial intelligence is set to revolutionize our world on-and offline, and Dalhousie is well positioned to help meet the challenge.
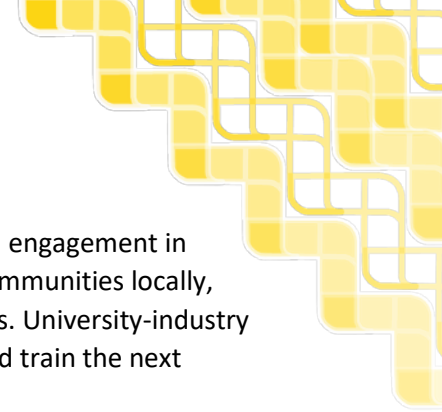
With established and emerging scholars in the areas of AI and digital innovation, Dalhousie scientists are contributing their expertise to find solutions to pressing local and global challenges, including climate change, health care, food production, cyber security and much more. Our researchers are collaborating across disciplines to push the boundaries of knowledge and make unprecedented discoveries that help define the future of our world.

Research Focus Areas:
- AI and Machine Learning
- Bioinformatics and Digital Technologies for Health
- Digital/Precision/Smart Agriculture
- Ocean Data
- Sustainable Software and Computing
- Technology and Society

Partnerships and Collaborations
Dalhousie prioritizes and supports collaborations that benefit the region, the nation, and the world. Strong and positive relations with partners are key to this strategy as Dalhousie continues to expand and strengthen our R&D linkages with industry and community partners and sharpen our focus on mission-oriented, problem-

solving research and policy relevant community outreach and communication. Through engagement in meaningful collaborations and partnerships with colleagues, students, partners, and communities locally, nationally, and internationally, we can contribute directly to resolving societal problems. University-industry collaborations address real-world problems, drive innovation and economic growth, and train the next generation of leaders.

In support of partnerships and collaborations, Dalhousie researchers are encouraged to expand academic networks, make connections with other experts, and access unique communities, equipment or facilities. Many of our faculty have international engagement through formal, as well as informal, research collaborations and partnerships. Several of our research centres and institutes are already world-renowned in the research they undertake nationally and internationally and enjoy extensive collaborations with individuals and teams around the globe.

Alignment of Canada Research Chairs with Strategic Research Clusters

Strategic Research Cluster	Tier 1 CRCs	Tier 2 CRCs	Total CRCs
Sustainable Ocean	4	10	14
Healthy People, Communities, and Populations	7	11	18
Climate Tech and Clean Energy	4	4	8
Culture and Society	2	6	8
Sustainable Food Systems	0	4	4
AI and Digital Innovation	1	3	4
Total	**18**	**38**	**56**

*Numbers as of January 2024, includes recruitments

The University strategically selects its CRCs by aligning them with its Strategic Research Direction. Dalhousie nominates individuals whose work will enhance an area of research within the Strategic Research Clusters and are aligned with its collaborative, cross-cutting research environment. The majority of Dalhousie's CRC allocations are used for external hires of the most qualified people, whether they have a national or international background.

Dalhousie has developed an EDI Action Plan to monitor and track progress towards meeting its EDI targets for the CRC Program. The University is committed to attracting, recruiting and retaining members from traditionally under-represented groups, including Indigenous people, persons with a disability, racialized individuals and women and other gender-equity seeking groups. Dalhousie supports population-based representation amongst our Chairholders, and is committed to meeting and exceeding the population-based targets for both Tier 1 and Tier 2 Chairs by December 2029. Progress towards these goals is monitored semi-annually, and representation of equity-deserving groups is considered upon allocation of each available Chair.

Strategic Direction Planning and Approval Process
This refreshed Strategic Research Direction is the result of an inclusive and collaborative planning process that engaged more than 400 faculty members, students and staff, as well as affiliated hospitals and external partners in town halls, a survey, and one-on-one consultations. With the support of the President and senior administration, the Strategic Direction was presented to Senate in Fall 2023.