

Strategic Plan 2009-2014

Institute of Cancer Research
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The Canadian Institutes of Health Research

The Canadian Institutes of Health Research (CIHR), established by an act of Parliament in 2000, is Canada's premier federal agency for health research. CIHR promotes a problem-based, multidisciplinary and collaborative approach to health research in four areas:

- Biomedical
- Clinical
- Health systems and services
- Social, cultural and environmental factors that affect the health of populations

Facilitated by 13 research institutes, CIHR unites researchers across disciplinary and geographic boundaries and invests in research ideas originating from individuals and teams of health researchers and trainees in universities, teaching hospitals, other health research organizations and research centres.

CIHR's **mandate** is to excel, according to internationally accepted standards of scientific excellence, in the creation of new knowledge and its translation into improved health for Canadians, more effective health services and products, and a strengthened Canadian health care system.

CIHR's **vision** is to position Canada as a world leader in the creation and use of knowledge through health research that benefits Canadians and the global community.

CIHR's **strategic priorities** recognize that science, technology and highly skilled individuals are essential to Canada's international ability to compete in the global economy. CIHR activities will be guided by four strategic priority directions:

- Investing in world-class excellence
- Addressing health and health system research priorities
- Accelerating the capture of health and economic benefits of health research
- Achieving organizational excellence, fostering ethics and demonstrating impact

In October 2009, CIHR launched its new strategic plan, *Health Research Roadmap: Creating innovative research for better health and health care*, designed to:

- enhance patient-oriented care and target science and technology innovations to improve health outcomes
- support a high-quality, accessible and sustainable health care system
- reduce health inequities of Aboriginal peoples and other vulnerable populations
- prepare for and respond to existing and emerging threats to health
- promote health and reduce the burden of chronic disease and mental illness

Institute of Cancer Research

The **mandate** of ICR is to support research that reduces the burden of cancer on individuals and families through prevention strategies, screening, diagnosis, effective treatments, psycho-social support systems, and palliation.

The **mission** of ICR is to foster research based on internationally accepted standards of excellence, which bears on preventing and treating cancer, and improving the health and quality of life of cancer patients and survivors.

To achieve this, ICR will:

- Collaborate in the development of Canada's cancer research agendas
- Foster collaborations with federal, provincial and non-governmental organizations, CIHR Institutes and International agencies to fund research within the cancer continuum
- Develop and support strategic initiatives that will foster excellence in cancer research
- Develop and support cross cutting research initiatives that lead to enhanced cancer prevention, diagnosis and effective treatment
- Create and maintain a robust cancer research environment in Canada that attracts and sustains world-class researchers

Vision

In the long-term, ICR will be recognized as a dynamic research organization that:

- Takes a lead role in the establishment of a national strategic cancer research agenda
- Interacts with other agencies – federal, provincial, and non-governmental organizations – to fund research that supports cancer control priorities as established through national consultation
- Creates and maintains a robust cancer research environment in Canada that attracts and sustains excellent young researchers, established world-class investigators and research teams
- Improves the health of Canadians by supporting cross-cutting research initiatives that lead to enhanced cancer prevention, diagnosis, and treatment

The Changing Landscape

The strategic cancer research funding landscape in Canada has evolved significantly since the creation of ICR in 2001. At that time, most of the national strategic research in the field of cancer was supported by a few charitable organizations. The launch of ICR provided a new source of federal funds to support strategic cancer research and sparked a national priority setting exercise, which led to the identification of ICR's initial research priorities.

Funding for strategic cancer research by charitable organizations and the provinces has expanded and the federally funded Canadian Partnership Against Cancer (CPAC) has been established (<http://www.partnershipagainstcancer.ca/>). This new generation of cancer research funding agencies has increased the need for communication and collaboration between parties and has led to the creation of the Canadian Cancer Research Alliance (<http://www.ccra-acrc.ca/>). ICR, through its inaugural Scientific Director Dr. Philip Branton, and in support of its original strategic orientations to promote collaboration and co-ordination of funding for cancer research, played a pivotal role in building CCRA. CCRA now provides a forum for national consultation and alignment of strategic research directions among members of the cancer community.

One of the immediate outcomes of the creation of CCRA was the development of an annual document recording cancer research investment in Canada. The 2009 release, reporting on 2007 data, showed an investment in peer-reviewed cancer projects in all domains of more than \$402 million, with CIHR being the single largest investor overall. The breakdown of this data provides a snapshot of cancer research funding by organization, and province, as well as for tumour site and discipline. It provides links to international databases allowing comparisons between Canada, the UK and the US, and has become a valuable resource for identifying Canadian and international gaps and strengths in cancer (http://www.ccra-acrc.ca/PDF%20Files/CCRA_EN_Main_2009.pdf).

The ICR Strategic Planning Process

ICR, like all CIHR Institutes, focuses on the identification of research areas that would benefit from strategic investment stemming from a broad-based, partnered approach, encompassing the four health research domains of biomedical, clinical, health systems and services, and the social, cultural, and environmental factors that affect the health of populations.

Moving forward, ICR has begun a second phase of growth, which, while not neglecting the original strategic directions (<http://www.cihr-irsc.gc.ca/e/27224.html>), priority areas and the ongoing programs (<http://www.cihr-irsc.gc.ca/e/43582.html>), has identified new strategic research priorities for the next five year period 2009-2014.

In building this strategic plan, the Institute of Cancer Research held a consultation workshop in May 2008 and participated in five Trans-Canada workshops towards building a Cancer Research Strategy for Canada (http://www.ccra-acrc.ca/PDF%20Files/Pan-Canadian%20Strategy%202010_EN.pdf). The May 2008 consultation workshop was attended by individuals representing all major cancer funding agencies, past and present Institute Advisory Board (IAB) members, cancer researchers, and the decision and policy-making communities.

Criteria for selecting priorities:

- Addresses identified research gaps and has potential for impact on disease burden – includes cost benefit and economic impact
- Potential for national and international partnerships and alignment with national research strategies; i.e. working within CCRA
- Continuity and alignment with current and past efforts and initiatives led by ICR and others – sustainability of research
- Competitive advantage in Canada and potential for global excellence
- Ability to translate research results into improvements in clinical outcomes

Discussions by the ICR Institute Advisory Board were led by the recommendations from the workshop consultations, together with the cancer research community at large, and in concert with priority setting open forums facilitated by CCRA, and by acknowledging gaps.

It was agreed by the IAB that ICR should continue to focus on the Cancer Continuum, from prevention to palliation with an overarching need to address Customized Cancer Care for all populations.

Strategic Research Priorities

In Canada, due to our aging population and lifestyle choices, cancer incidence has not significantly declined in the last 20 years. Yet, by early detection and new research leading to tailored therapies, many cancers are effectively managed and considered a chronic disease with increasing numbers of cancer survivors (<http://www.cancer.ca/>).

Towards providing effective cancer care and decreasing mortality from cancer, ICR recognizes the need for innovative research approaches to prevention, detection and monitoring, as well as tailored therapies and care strategies, that increase survival, minimize late effects and improve quality of life. As such, ICR is presently focusing on four strategic funding priorities:

Strategic Priorities
1. Lifestyle, environment and cancer
2. Diagnosis and guided therapy; towards personalized medicine
3. Cancer initiation and progression
4. Survivorship

Strategic Priority 1: Lifestyle, environment and cancer

ICR recognizes the need to support research leading to increased cancer prevention. To reduce the health and economic burden of cancer, there is an urgent need to prioritize prevention efforts into those areas that offer the greatest potential for population-wide impact. Since tobacco use, obesity, physical inactivity and poor eating habits account for the majority of preventable cancers (<http://www-dep.iarc.fr/WHOdb/WHOdb.htm>) and the majority of Canadian adults have at least one of these risk factors, these are immediate priority areas for action.

ICR will continue to work collaboratively to support programs aimed at lifestyle changes and interventions aimed at reducing cancer incidence, particularly targeting vulnerable populations and Canadian youth. These may include but are not restricted to:

- Epidemiological and Intervention Research leveraging major research investments recently made in the development of well annotated large cohorts with biorepositories

- Research, develop and evaluate lifestyle and policy interventions (including those related to tobacco, nutrition, alcohol, obesity and activity) particularly targeting youth
- Research leading to improved understanding, detection or intervention of inflammatory processes involved in cancer initiation

Strategic Priority 2: Diagnosis and guided therapy; towards personalized medicine

It is estimated that about one third of the cancer burden could be decreased if cancer was detected early, accurately diagnosed and treated with therapies tailored to the disease (Ref: [Nature Reviews Cancer 3, 243-252, April 2003](#)).

For most cancers, treatment is more effective when cancer is detected early prior to metastatic spread. However, as our understanding of cancer biology grows, it is becoming increasingly obvious that there is great diversity in the way cancers grow, metastasize and respond to treatment. Patients with apparently similar cancers may respond quite differently to the same treatment. This may be due to factors related to the cancer, the host, the tumor microenvironment or the stage of disease at the time it is discovered.

To improve outcomes and reduce undesirable effects from futile treatments, new tools are needed to detect cancers at an earlier stage and identify the most effective therapy that will benefit a given patient. Research is necessary to improve the quality of the information used in the medical decision making process. Translation of discoveries to the Canadian Health Care System will require integration with health services, health economics and ethics research. It is essential that receptor capacity exists and that the policies and systems are in place and adequately prepared to implement and take advantage of new discoveries.

ICR will build on consultations to promote the development of new technologies, tools and methods to improve detection, diagnosis and management of cancer, and deliver the appropriate treatment for a given cancer to the right patient, at the right stage of their disease. Through patient-oriented research, these will support development of evidence based approaches towards personalized cancer care and include but are not restricted to:

- Research to develop new technologies to improve cancer management, including molecular imaging, molecular diagnostics, targeted drug delivery
- Research and platforms supporting biomarker and technological validation, development of standards for precision, reproducibility, and sensitivity and robust clinical platforms

- Develop research and tools to predict and monitor drug response
- Stimulate research in ethics related to implementation of personalized medicine approaches
- Development of appropriate study methodologies to maximize knowledge translation and adoption of new protocols in patients

Strategic Priority 3: Cancer Initiation and Progression

Until a few years ago, all neoplastic cells within a tumour were thought to have tumorigenic capacity, but recent evidence suggests that such tumorigenic capacity is confined to a subset of Cancer Initiating Cells, also called Cancer Stem Cells.

Cancer stem-like cells have been discovered in many cancers, but are present in very small numbers and are distinct from stem cells present in normal tissues that are key to normal developmental processes. Current evidence suggests that not only are the cancer stem cells the cells that initiate tumour growth at distant sites – i.e. are responsible for metastatic disease – but they are also resistant to chemotherapy and radiation. Therefore, the two most common treatment modalities for cancer may selectively allow the cancer stem cells to survive and seed new tumours resistant to current treatment protocols.

Canadian researchers were pioneers in the early discovery of stem cells and cancer stem cells, and Canada continues to play a leadership role in this area. New therapies targeted to cancer stem cells open the door to new possibilities for cancer treatments that selectively eradicate the cancer stem cells improving cancer therapy.

In 2007, the Cancer Stem Cell Consortium (<http://www.cancerstemcellconsortium.ca/>) was created in Canada to advance the field of cancer stem cell research and accelerate the uptake of research results into clinical practice. ICR, together with Genome Canada and CIHR as well as other CSCC members, aim to build on Canadian strengths to increase our understanding of cancer stem cells through the development of new reagents, tools and technologies aimed at therapeutic intervention. These include but are not limited to:

- Research to develop therapeutic interventions targeting cancer stem cells, including biology, animal models, mechanisms of resistance, genetic/genomics, pharmacogenomics based approaches
- Research to determine clinical utility of cancer stem cells in disease prognosis, including new reagents and tools to detect cancer stem cells
- Research on biobanks and live cell banks for cancer stem cells

Strategic Priority 4: Survivorship

One of the successes of cancer research is the increasing number of individuals who are now cancer survivors. This is true both for pediatric, adolescent and adult populations. However, the cost of survival sometimes comes at a significant cost in terms of quality of life and health status. In 2005, approximately 1 in 46 Canadians are survivors of cancer diagnosed within the previous ten years (<http://www5.statcan.gc.ca/bsolc/olc-cel/olc-cel?catno=82-226-X&chropt=1&lang=eng>), many living with late effects of treatment making this a significant health care problem.

As the population ages, the incidence of cancer will increase and so will the number of cancer survivors. Not only are there biomedical and clinical questions that need to be addressed but also there are psychosocial, socioeconomic and health services issues that need attention. It is therefore likely that a coordinated multi-faceted approach will be necessary that will increase research capacity, provide an improved understanding of the needs, both of the survivor populations and the health care system, and unite the many groups already working in the area of cancer survivorship.

To enhance the quality of life of cancer survivors and decrease the burden of chronic disease, ICR will support innovative programs aimed at developing and translating evidenced based knowledge to promote survivorship, as well as to prevent or mitigate the late effects of cancer treatments.

These will include but are not restricted to:

- Biomedical research understanding causes of late effects, leading to patient stratification for suitable alternative therapeutic regimens or mechanisms to prevent late effects
- Biomedical research aimed at ameliorating late effects of cancer treatments
- Developing appropriate knowledge translation of the efficacy of interventions for late effects
- Developing partnerships to promote clinical practice guidelines for all phases of cancer care for children and adolescents with cancer, including long term follow-up with integration of clinical disciplines
- Developing enhanced databases of late effects of cancer treatments

Knowledge Translation, Partnerships, and Capacity building

The translation of new knowledge is integral to all of ICR activities. Towards this, ICR will continue to stimulate research required to facilitate dissemination, transfer and translation of knowledge from research findings into policies, interventions, services and products. ICR will also establish and maintain ongoing communications with cancer researchers, health professionals, public decision-makers and representatives of various professional, scientific and community organizations (including NGOs and Charities) involved in cancer control. ICR will facilitate the transfer and translation of knowledge resulting from cancer research to the research community, health care professionals, public decision-makers, and the health care industry and facilitate the dissemination of plain language information on cancer research, its findings and potential applications to the general public and groups interested in cancer research.

ICR will identify and fill capacity, support mentorship and training initiatives for emerging researchers and trainees. It will attract students at all levels and postdoctoral fellows to programs and disciplines required for high quality cancer research. ICR will continue to develop and support cancer research training programs in multidisciplinary and collaborative settings.

ICR Action Plan

This Strategic Plan will guide all ICR activities during the next four years. Emphasis will be placed on ensuring the continued support of research excellence, collaborating with our many partners in the cancer field to align priorities and reduce duplication and ensuring that research outcomes are captured and used to improve the health of Canadians. During the period of this Strategic Plan, ICR is committed to moving forward to address all the priority areas described above – both the Institutes ongoing original priorities and those identified during the recent consultation process. Existing ICR-led initiatives will be monitored and evaluated and efforts will be made to assist the research community in engaging end-user groups and moving their results into practice. This Strategic Plan will be reviewed annually by ICR and its Advisory Board to ensure that it continues to align with emerging health challenges and priorities.

New initiatives addressing the four priority areas will be developed in consultation and partnership with a wide variety of public, private and voluntary sector organizations. These initiatives will align with the CIHR research priority areas and will be developed to include anticipated outcomes, milestones and deliverables.

ICR will remain open and accessible to the cancer research community at large and will continue to support cancer research across the continuum from prevention to palliation. The Institute will communicate with the cancer research community through web postings and newsletters and will provide regular updates on the implementation of this strategic Plan. ICR will continue to actively support the training, networking and mentoring of young investigators and students who will become the next generation of cancer researchers.