



Canadian Institutes
of Health Research

Instituts de recherche
en santé du Canada

Canadian Institutes of Health Research Institute of Cancer Research

ANNUAL REPORT 2003-2004



CIHR IRSC
Canadian Institutes of Health Research
Instituts de recherche en santé du Canada

Canada 

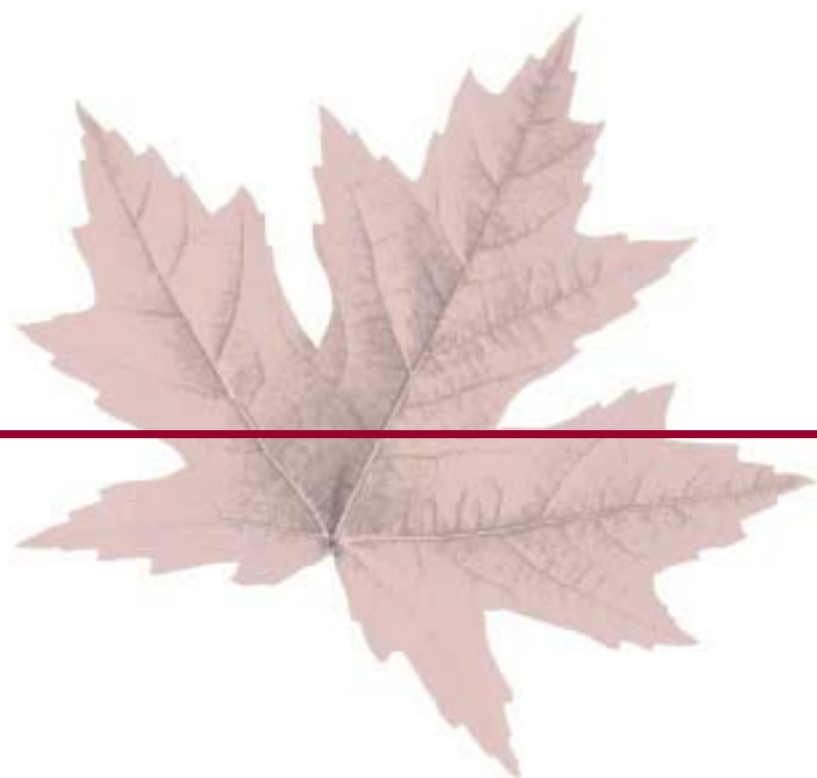
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MESSAGE FROM THE SCIENTIFIC DIRECTOR



Dear Colleagues,

After spending more than a year in national consultations to identify research priorities for the Institute of Cancer Research and then several months planning specific research initiatives, we have finally begun to roll out a series of programs that should transform several areas of cancer research. I would like to thank everyone who helped steer us on our present course, especially members of our Institute Advisory Board and specialty working groups who have given generously of their time and ideas. I also would like to thank our extraordinary Institute staff both in Montreal and Ottawa.

Although training continues to be the largest investment of the ICR, I believe that our leadership in palliative care has yielded perhaps the most significant commitment ever in this important but neglected area of research. Several Canadian palliative care researchers have achieved international success; this research community, however, appeared to be relatively small and poorly connected. With the awarding of many Pilot Project Grants, a Training Grant, a Career Transition Award and the promise of funding several New Emerging Team Grants in palliative care research, this community appears to be energized to form networks that will make Canada a world leader. A critically important next step will be to create an appropriate panel that could properly peer review palliative care and quality-of-life operating grants. I strongly support the formation of such a review panel at CIHR.

Another important development has been the successful application of a provincial consortium to create a national network to oversee tumour banking. The banking of cancer patient material linked to thorough clinical information represents a singularly important research resource in the development of new methods of detection, diagnosis, staging, and treatment of cancer. Several provinces (British Columbia, Alberta, Ontario and Quebec) are investing significant amounts for this kind of activity and an important operation in Manitoba is supported by a CIHR multi-user equipment grant. The formation



of the Canadian Tumour Repository Network (CTRNet), with funds from ICR will allow the establishment of national databases and permit the linking of provincial tumour banking activities.

CTRNet is a small example of the kind of big science that will be necessary to place Canada in a leadership role in cancer research. Canada will face a health crisis in the next 25 years from the almost doubling of cancer cases due to our aging population. It is only through research that we will be able to meet this challenge successfully. With this crisis in mind a group of more than 20 of the leading cancer research funding organizations (the Canadian Cancer Research Alliance, CCRA) has been meeting to discuss a national research strategy. The CCRA identified two large legacy projects that would be impossible to finance as independent organizations, but that would have a profound effect on cancer treatment in the next decade and on cancer prevention in the near future. First, Canada needs to lead the way in the development of treatments and tools for cancer therapy to prepare for the radical change to individualized therapy that will certainly occur within ten years. We must be at the forefront of this revolution to gain the appropriate commercial and clinical benefits and to prepare our health care system for 21st century medicine. Secondly, we must learn to prevent cancer, as prevention may ultimately be the most effective way of avoiding the crisis in future generations. Prevention of cancer and many chronic diseases involves not only identifying and controlling environmental factors but also managing human behavior to avoid harmful activities like smoking. Only the development of appropriate population cohort studies will allow elucidation of the means to more effective prevention. I believe the CCRA could make a real difference through research and I hope that it finds appropriate financial backing from federal and provincial sources to make it a reality.

Cancer research in Canada is among the best in the world, and it is a continuing pleasure to work with all of you to make it better.

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PROFILE OF THE INSTITUTE

As one of CIHR's 13 virtual Institutes, the goals of the Institute of Cancer Research (ICR) align with the CIHR mandate of supporting and encouraging excellent, multidisciplinary research across the full spectrum of health research: basic, clinical, health services and policy, and the health of populations. Since its creation in 2000, ICR's primary focus has been on identifying those areas within the continuum of cancer control, from prevention to palliation, which would benefit the most from targeted research programs designed to build capacity, promote research in areas of identified need, provide innovative programs and create a culture of collaboration and partnership. Cancer research in Canada is a well-established field that receives strong financial support from federal and provincial governments and non-governmental voluntary agencies. In 2003/2004, CIHR alone invested more than \$93 million in cancer research, a significant increase over last year's commitment.

ICR is located at McGill University, home of its inaugural Scientific Director, Dr. Philip Branton. The Institute is supported by a small staff located both in Montreal and at CIHR headquarters in Ottawa and has strong links to other CIHR Ottawa-based branches and divisions. Institute staff work closely with the staff of other Institutes to exchange information, share best practices and identify opportunities for coordination and partnership.



*In 2003/2004,
CIHR alone invested
more than \$93 million
in cancer research.*



ICR is also supported by an excellent Institute Advisory Board (IAB) comprising individuals from across the spectrum of cancer control including lay representation from the cancer survivor community. The IAB meets four times a year to plan strategic research directions and specific research initiatives. Meetings are held at various venues across Canada, and generally include a reception with local researchers and community members, giving the Institute staff and IAB members the opportunity to share information and obtain input from a wider community.

ICR has a strong commitment to its research community and continues to support capacity building through innovative training and research programs. The Institute encourages networking both within and across disciplines and, in 2003/2004, ICR provided financial support for 20 workshops and symposia ranging in topic from molecular biology to chronic disease prevention. These workshops are critical for identifying research strengths and weaknesses and for the initiation of partnerships and development of strategic research initiatives. This year ICR also made the decision to support excellent fundable, but unfunded, CIHR operating grants in the area of the Institute research mandate, beginning with the September 2003 open competition. It is anticipated that the provision of bridging funding to excellent researchers will provide much needed support to ICR-associated investigators and will increase their chances of success on the resubmission of their grant proposals to a subsequent competition.



*CIHR headquarters
located at 160 Elgin
Street in Ottawa.*



ORGANIZATIONAL EXCELLENCE

Despite its small staff, ICR has made remarkable progress during 2003/2004 through the launch of strategic research initiatives, the development and maintenance of many diverse partnerships and the creation of a major alliance between the agencies and organizations that fund Canadian cancer research. ICR staff work with IAB members and the wider research community to prepare Requests for Applications (RFA), identify partners, develop collaborative agreements, track and evaluate Institute-funded initiatives and identify future directions. ICR is involved in the organization and support of many workshops and symposia and ICR staff represent the Institute at meetings both in Canada and abroad. Dr. Branton is a well-known and well-respected figure in the cancer research community and serves as an excellent ambassador for ICR and CIHR on many Boards and Councils related to cancer control. He recently published a review article on the Institute and its early achievements in the February 2004 edition of the journal *Oncology Exchange*.

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INSTITUTE STRATEGIC RESEARCH PRIORITIES

ICR is committed to supporting CIHR's five strategic outcomes, described in the CIHR Blueprint document as **outstanding research, outstanding researchers in innovative environments, translating health research into action, effective partnerships and public engagement and organizational excellence**. These five themes are represented in all of ICR's major research programs and initiatives and will be highlighted in this report.

Through a broad-based consultation process in the initial year of ICR's operation, six research priorities were identified. These six areas have since been the focus of much of ICR's efforts in the development and launch of strategic research initiatives. They are:

- **Palliative and End of Life Care**
- **Molecular Profiling of Tumours**
- **Clinical Trials**
- **Early Detection of Cancer**
- **Risk Behaviour and Prevention**
- **Molecular and Functional Imaging**

During 2003/2004, ICR was active in all priority areas either through the development/funding of research initiatives or community/capacity building among researchers and various stakeholder organizations. Following consultation with the cancer research community and the agencies and organizations that fund Canadian cancer research, Translational Cancer Research was identified as an additional priority area that encompasses several of the goals and objectives of the original six priorities.



PALLIATIVE AND END-OF-LIFE CARE

Based on a recommendation from the ICR Working Group, the following definition of palliative care was used to describe the key concepts covered in the Palliative and End-of-Life Care Initiative:

Palliative care aims to improve the life of patients and families through the early identification and impeccable management of suffering associated with life-limiting illness and emphasis on the positive aspects of life inclusive of physical, psychosocial and spiritual sources. Palliative care is also prevention - prevention of suffering through prioritizing the diagnosis and skillful care of sources of distress throughout the course of illness and for the family into the bereavement period. Palliative care research focuses on fundamental symptom mechanisms as well as the experience of the patient and the family.

Palliative and end-of-life care, although traditionally associated with cancer care, intersects with a number of other clinical disciplines, such as cardiology, respiratory medicine, critical care, nephrology, paediatrics and neurology. As the aging population continues to grow and modern medicine provides the means to prolong the life of individuals with a variety of life-limiting diseases and conditions, society struggles with ethical and legal issues around "appropriate" utilization of health care resources and quality-of-care issues toward and at the end of life. Currently, the reality is that only a small fraction of people who could benefit from palliative and end-of-life care actually receive it. Only through rigorous scientific research can sound, evidence-based decisions be made by clinical practitioners and policy makers. Current models of palliative and end-of-life care will need to adapt to meet the needs of different patient groups in our changing demographic and social environment. The identification of palliative and end-of-life care as the number one priority for ICR presented an unprecedented opportunity to create a strong research base of

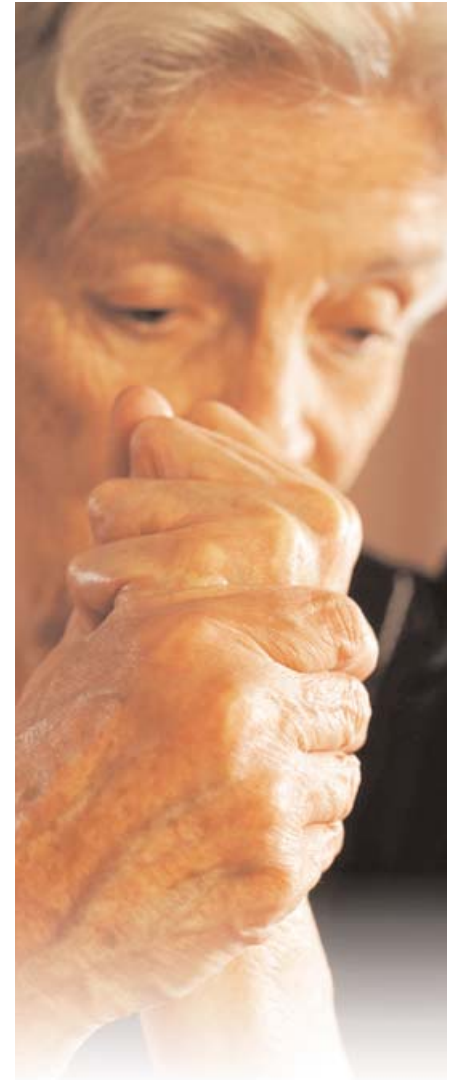




Table I

Partners on the Launch of the Palliative and End-of-Life Care RFA

Canadian Breast Cancer Research Alliance
CIHR Institute of Aging
CIHR Institute of Cancer Research
CIHR Institute of Circulatory and Respiratory Health
CIHR Institute of Human Development, Child and Youth Health
CIHR Institute of Gender and Health
CIHR Institute of Genetics
CIHR Institute of Health Services and Policy Research
CIHR Institute of Neurosciences, Mental Health and Addiction
Health Canada
Heart and Stroke Foundation
National Ovarian Cancer Association

excellent researchers in an area that historically has sometimes struggled for public funds and to stimulate recognition of such care as a health research discipline.

Canada is fortunate in already having a small but highly committed community of **excellent researchers** dedicated to palliative care research. One example is the **outstanding research** of Dr. Harvey Chochinov and his colleagues in Manitoba, which has produced a detailed model for delivering “dignity-conserving care” at the end of life.

His findings suggest that, in the care of dying patients, there are therapeutic options which reach far beyond the relief of pain and other symptoms. There is also the **excellent research** of Dr. Pierre Allard and his group, based at the University of Ottawa, which focuses on the structure, process, quality and outcomes of end-of-life care for older persons and how personal, social and environmental factors affect care. This team recently received funding from the Institute of Aging in **partnership** with ICR, for a New Emerging Team program entitled “Optimizing End of Life Care for Seniors”. Early in 2003, ICR, in partnership with the National Cancer Institute of Canada (NCIC) also funded a CIHR Strategic Training Program in palliative care led by Dr. Robin Cohen of McGill University that will train **excellent researchers** in interdisciplinary palliative care research.



Building on this strong research base but recognizing the need for further capacity building within the field, the Palliative and End-of-Life Care Initiative, launched as a Request for Applications (RFA) by ICR in June 2003, included three components: one-year pilot project grants intended to support innovative, high-risk pilot or feasibility research; one-year Career Transition Awards to attract new researchers to the field or to facilitate rigorous training outside a primary research area; and five-year New Emerging Team (NET) grants to build research capacity through the creation of multidisciplinary teams and training of new investigators. From the outset ICR recognized the need to extend the scope of palliative and end of life care beyond cancer to other clinical disciplines, a goal that could best be realized through effective **partnership and public engagement**. ICR took the lead in recruiting other CIHR Institutes and external organizations as partners on this initiative. The original partners on the RFA launch are listed in Table 1 (Page 8).



In total, 70 full applications were submitted in response to the three programs included in the RFA. In January 2004, an international peer review panel, brought together specifically for this initiative, reviewed the Pilot Project and Career Transition Award applications. As a result, 20 Pilot Projects and one Career Transition award were judged to be of sufficiently high quality to be eligible for funding. With the support of many of the partners listed in Table 1, 19 Pilot Projects and the one Career Transition award were funded. The **outstanding research** supported includes topics such as nutritional supportive care, home care, service utilization, cross-cultural issues, cost of care, pediatric palliative care, and cachexia. The Career Transition Award focuses on dietary patterns in palliative care cancer patients. The NET grant applications will be reviewed in summer, 2004.



MOLECULAR PROFILING OF TUMOURS

One of the prerequisites for the identification of novel tumour targets and the rapid screening of new molecules with anti-tumour activity is access to tumour tissue linked to patient



Breast Cancer



Lung Cancer

data. The requirement for a national tumour banking infrastructure was identified by the ICR Working Group on Molecular Profiling of Tumours. Currently, several excellent tumour bank facilities exist in Canada but they are fragmented, with areas of strength in certain provinces and little action in others. In 2003, ICR invited five provincially funded tumour banks from British Columbia, Alberta, Ontario, Manitoba and Quebec to collaborate on the submission of a grant application for a national tumour banking network. The network will link existing tumour banks by establishing a shared informatics infrastructure and will establish national standards for tissue collection, dissection, preservation and storage. The network will also standardize databases containing pathology reports, patient medical history,

treatment outcomes and molecular profiles. ICR has committed almost \$4 million over five years to support the creation of a national tumour bank network. A joint application from the Canadian Association of Provincial Cancer Agencies and the five Canadian provinces was received in February 2004.

CLINICAL TRIALS

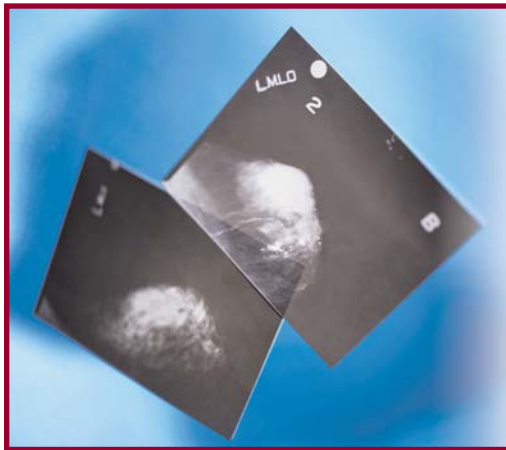
During 2003/2004, ICR continued to contribute to the financial support of Canadian cancer clinical trials carried out by the National Cancer Institute of Canada (NCIC) - Clinical Trials Group.





EARLY DETECTION

In general, the earlier a malignancy is detected, the better the prognosis for the patient. In many cases, however, a growing tumour, particularly one that originates in an internal



Mammograms: normal and malignant tissue.

organ, causes few, if any symptoms. By the time the patient feels sufficiently unwell to seek medical attention, it is often too late for curative treatment as the tumour may have already metastasized to distant regions of the body. Early detection through screening already exists for a few cancers such as the PAP smears for cervical cancer and mammography for breast cancer. Colonoscopy is an effective method for detection and prevention of colorectal cancer in at-risk patients, but is not without risk of complications. Ideally, a screening test should be specific, non-invasive, safe, cost-effective and easy to administer on a population level across a broad spectrum of the Canadian

public. There should also be strong evidence that early detection of tumours or pre-cancerous lesions by any screening method indicates a better outcome for the patient. The ICR Working group on Early Detection recommended that, as a first step, ICR should support one-year operating grants that would evaluate current and future Canadian cancer screening programs as tools for effective early detection of cancer. Three important areas were identified where further information would be helpful in designing screening protocols: new and existing cancer screening technologies; the costs and benefits of screening programs; and serious complications of colonoscopy in Canada.

In response to a Request for Applications posted in June 2003 and entitled “Cancer Screening from a Canadian Perspective”, three applications were received in January 2004. The results will be announced in June 2004, following the peer review process.

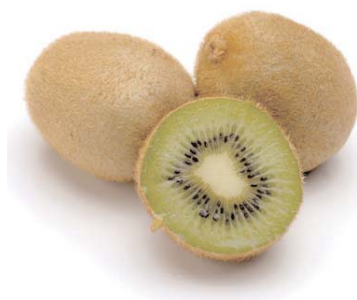


RISK BEHAVIOUR AND PREVENTION

In an ideal world, cancer would be a preventable disease, especially as many risk factors such as sun exposure, smoking, environmental carcinogens, diet and weight control are already known. During the last 15 years, numerous studies have linked dietary patterns and physical activity levels to cancer. Cause-and-effect



estimates cover a wide range, but it is becoming increasingly evident that eating a predominantly plant-based diet, including a substantial variety of fresh fruits and vegetables, will reduce the incidence of many cancers. When combined with regular exercise and weight control, the reduction in incidence increases. The American Institute for Cancer Research and the World Cancer Research Fund reviewed 4500 scientific studies on the association



between diet and activity level on one hand and cancer risk on the other. In their report, *Food, Nutrition and the Prevention of Cancer: A Global Perspective* (1997), they concluded that one third of fatal cancers could be prevented through modifications in diet and lifestyle. CIHR is currently funding many **excellent researchers** in the area of risk behaviour and prevention,

including Drs. Christine Friedenreich and Kerry Courneya at the University of Alberta who are studying the role of physical exercise in cancer prevention and control and Dr. Kristan Aronson at Queens University who is studying numerous risk factors related to the etiology of prostate cancer. CIHR is also funding the **outstanding research** of Dr John McLaughlin and his team of more than 60 researchers, clinicians and community representatives from across Canada, whose studies





are aimed at reducing the risk and impact of colorectal cancer among Canadians. Six projects are underway examining genetic and environmental factors associated with the development and progression of colorectal cancer, the physiological impact of the disease, the determinants of whether people seek preventive services and how services are delivered in the community.

Due to the increasing recognition of obesity as a major health issue and the potential links between obesity and cancer, ICR formed a **partnership** with the Institute of Nutrition, Metabolism and Diabetes (INMD) to support a New Emerging Team grant led by Dr. David Jenkins of the University of Toronto, entitled “Fruits, Vegetables and Whole Grains: A Community-based Intervention to Reduce Obesity”. ICR also committed funds to support the New Strategic Initiative in Health Research Training in Obesity and Chronic Disease: Target Obesity. This initiative, led by the Heart and Stroke Foundation, was supported by five CIHR Institutes and the Canadian Diabetes Society and is designed to support personnel awards in the field of obesity research. Funding will begin in 2004/2005.





ADVANCING THE SCIENCE TO REDUCE TOBACCO ABUSE AND NICOTINE ADDICTION

The major modifiable risk factor for cancer is undoubtedly smoking. Tobacco use is implicated in many medical conditions including cancer, heart disease, stroke, lung diseases, diabetes, miscarriages, sudden infant death syndrome and slow recovery from surgery or illness. Tobacco use, including the effects of second-hand smoke, is the primary cause of preventable death in the world and, according to the World Health Organization, represents a major public health disaster. Despite an increasing understanding of the causes and effects of tobacco abuse and nicotine addiction, intervention strategies have not succeeded in eliminating tobacco use, although, since the 1960s there has been a significant reduction in the overall percentage of Canadians who smoke. Canada has received international recognition for the **outstanding research** that is taking place at the NCIC's Centre for Behavioural Research and Program Evaluation located at the University of Waterloo. A strategic training program focused on tobacco research and supported by ICR is led by IAB member Dr. Roy Cameron, who is the Director of this Centre. A compelling example of **outstanding research** likely to have impact at a global level is the world-leading project by Dr. Geoff Fong of the University of Waterloo. The International Tobacco Control Evaluation Project, which is funded in part by CIHR, aims to evaluate the psychosocial and behavioural effects of national-level tobacco control policies throughout the world. A prime example of **knowledge translation** in action, this project inherently focuses on policy but makes natural connections between policy and science.



Table 2

Partners on the RFA “ Advancing the Science to Reduce Tobacco Abuse and Nicotine Addiction”

Canadian Lung Association
Canadian Tobacco Control Research Initiative
CIHR Institute of Aboriginal Peoples' Health
CIHR Institute of Cancer Research
CIHR Institute of Circulatory and Respiratory Health
CIHR Institute of Human Development, Child and Youth Health
CIHR Institute of Gender and Health
CIHR Institute of Neurosciences, Mental Health and Addiction
Health Canada
Heart and Stroke Foundation of Canada
National Cancer Institute of Canada

Last year ICR and the CIHR Institute of Neurosciences, Mental Health and Addiction (INMHA), helped to organize a major CIHR cross-cutting initiative to address the measures, causes, consequences, prevention, treatment and control of tobacco abuse and addiction. In June 2003, a Request for Applications (RFA) entitled “Advancing the Science to Reduce Tobacco Abuse and Nicotine Addiction” was launched in collaboration with the Canadian Tobacco Control Research Initiative. This innovative research program incorporates both regular grant and team support (Interdisciplinary Capacity Enhancement, Policy Research, Knowledge Synthesis, Idea Grants) and capacity-building grants (Student Research, Research Planning, Researcher Travel). The launch of this initiative represents a central and critical component of a multi-partnered strategy for tobacco-related research in Canada. The partners who are currently committed to the

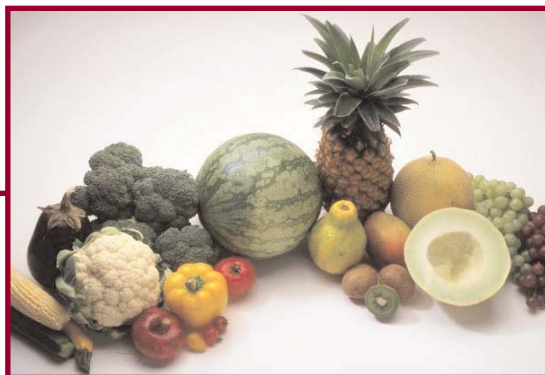
support of this RFA are listed in Table 2. Currently the funds available for all programs under the strategic initiative are approximately \$2 million per annum. ICR has committed \$2.8M over five years to this initiative. Funding of successful applications will commence in 2004/2005.





FOOD FOR HEALTH MUSEUM EXHIBIT

Clearly, diet and exercise are important risk factors for many chronic diseases, including cancer. Current research focuses on identifying effective means of behaviour modification. One of the prerequisites for behaviour change is access to information in a clear and understandable format. In the case of lifestyle habits such as diet and physical exercise, it is important to start early and so one of the primary target audiences is young children and their caregivers. In **partnership** with four other CIHR Institutes, Health Canada, the Canadian Food Inspection Agency, and Agriculture and Agri-food Canada, ICR is one of the sponsors of a travelling museum exhibit with the working title “Food for Health”. This 140m² (1500 sq.ft.) exhibit is scheduled to open at the Canada Agriculture Museum in Ottawa in Spring 2006 and will travel to many venues across Canada over a four-year period. The exhibit will serve as an educational outreach tool that will reach millions of children and their families across Canada with information and practical advice on food safety and suggestions for behaviour modifications based on what we know about the links between diet, exercise and susceptibility to chronic diseases such as diabetes, heart disease and cancer. During 2003/2004, work began on the project brief and the interpretive plan.



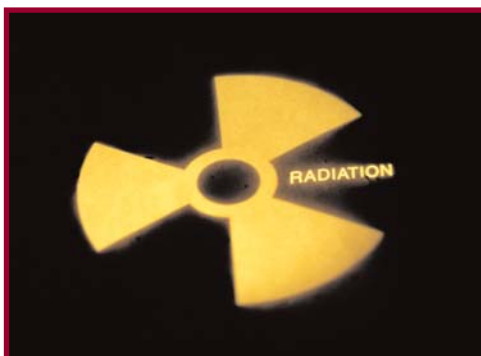


MOLECULAR AND FUNCTIONAL IMAGING

Molecular and functional imaging plays a vital role in the diagnosis and monitoring of cancer. Major advances in imaging technologies coupled with dramatic advances in computer technology, have made it possible to identify very small tumour masses, or even pre-cancerous lesions deep within the body, and also to track the response of individual tumours to therapy. Increasing specificity and sensitivity through the use of novel contrast agents make image-guided biopsy and therapy a real possibility.

Increasingly, health research spans traditional boundaries and disciplines and there is a growing need for expertise and experience available in the physical sciences to be made available to the life sciences. Imaging technologies are no exception and would benefit

from the integration and application of expertise developed in fields such as chemistry, physics, molecular biology, engineering, photonics and nanotechnology. An example is optical coherence tomography (OCT), a high resolution sub-surface imaging modality with great promise as both a clinical and a research tool. OCT was





developed almost entirely from components that were originally created for the fibre optic communications industry. The ICR Working Group on Molecular and Functional Imaging recommended a focus on new discovery and the novel application of existing technologies that would bridge the gap between the life sciences and the physical sciences to enhance imaging capability. In June 2003, ICR launched an RFA entitled “Novel Technology Applications in Health Research” that was designed to create small, multidisciplinary teams in which investigators from different fields will combine their expertise to create new imaging tools and contrast agents. The RFA identifies an urgent need for improved imaging and spectroscopy devices, contrast agents, radiopharmaceuticals and optically-labelled probes that will create innovative imaging methods to characterize tumours at the cellular or molecular level. The results of the competition will be known in 2004/2005.

On a related topic, ICR in **partnership** with the Institute of Genetics (IG), Institute of Musculoskeletal Health and Arthritis (IMHA), and INMHA supported the 2002 launch of a program designed to engage Canadian scientists in research projects to advance research tools and techniques, entitled “Invention – Tools, Techniques and Devices for Research and Medicine”. This program was designed to promote the development of new research tools that may lead to improvements in the diagnosis and treatment of patients, while at the same time promoting the culture of invention in Canada. In 2003, ICR funded two successful applications that were relevant to the field of cancer research.





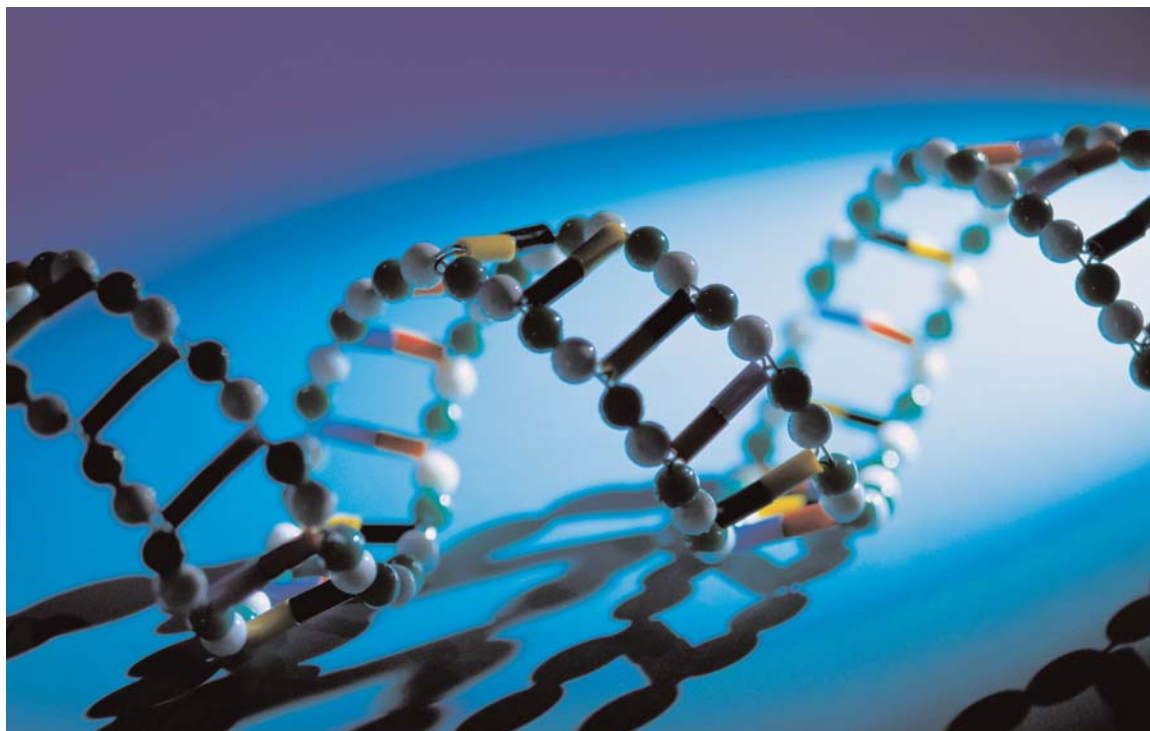
TRANSLATIONAL CANCER RESEARCH

The term translational cancer research refers to the uptake of new knowledge generated in the laboratory into clinical practice. For decades, cancer research has been slowly advancing our understanding of the disease and through improved methods of early diagnosis and treatment, has produced dramatic clinical outcomes in paediatric cancer and certain less common adult cancers such as cervical and testicular cancer. These gains in cancer control are a result of incremental advances that either prevent the onset of cancer, extend the life of cancer patients or, in some cases effect a cure. CIHR and its predecessor, the Medical Research Council, have a long history of funding **outstanding cancer research** and **excellent cancer researchers**. In 2003/2004, for example, a team of **excellent researchers** headed by Dr Jerry Pelletier at McGill University discovered a new type of combination chemotherapy that has the potential to offer improved treatment for patients whose tumours have stopped responding to standard treatment. In mice given a combination of two drugs, an antibiotic and a chemotherapy drug, cancers went into long-term remission. Another example is Dr. Shoukat Dedhar from the BC Cancer Agency who via identification of a new target for anti-angiogenesis drug therapy, has discovered a way to stop the growth of some cancers by halting the blood flow that they need to grow. Also in 2003/2004, a



landmark study by a team of **excellent clinical researchers** headed by Dr. Shabbir Alibhai at the University Health Network and the University of Toronto has shown that older prostate cancer patients should not be denied aggressive treatment because of their age. The study shows that many men over the age of 65 benefit from surgery and radiation treatment. Previous studies have shown that such patients often do not receive this potentially life-prolonging treatment.

In the last decade, following the sequencing of the human genome, there has been an explosion of knowledge in the field of molecular biology that promises to revolutionize the way cancer is treated. This new science offers the potential for individualized cancer treatment that will not cause the debilitating side effects common with current chemotherapy drugs. A whole new generation of anti-cancer drugs is under development that offers superior specificity and, more importantly, the possibility of patient stratification so that only those patients with a tumour known to be responsive to a particular drug will receive the treatment. It is not inconceivable to imagine a time, perhaps within 10 years, when a





patient's tumour will be profiled at the molecular level and individualized therapy known to be effective against that specific tumour will become a reality. This new therapy will significantly reduce the burden of cancer for both patients and health systems and services, with some cancers becoming curable and others being downgraded to a manageable disease. The challenge is to ensure the timely implementation of the results of this new science into patient care. The urgent need to accelerate the **translation of research into action** has been recognized in many countries including Canada. The UK has responded, with the help of major financial investment from the government, with the creation of the National Cancer Research Network and the National Translational Cancer Research Network. These two bodies, working together, have succeeded in significantly increasing enrolment into clinical trials and in accelerating early drug development through centrally coordinated networking.



CANADIAN CANCER RESEARCH ALLIANCE (CCRA)

A coordinated approach, coupled with significant financial investment, will also be required in Canada if Canadians are to fully experience the benefits of exciting 21st century science. The creation of the Canadian Strategy for Cancer Control (CSCC) in 2000 signaled the beginning of a new era in coordination for cancer control in Canada. Of the seven action groups created by CSCC, one focused on research and was chaired by the Scientific Director of ICR, Dr. Philip Branton. It was, therefore, a logical step when, in December 2003, ICR, in an example of **effective partnership and public engagement**, took the lead in bringing together Canada's cancer research funding organizations and agencies in the Canadian Cancer Research Alliance (CCRA), formerly known as the Canadian Cancer Research Initiative (CCRI). The purpose of the December 2003 meeting was to determine how best to bridge the gap



between discovery and innovation and implementation of results into health care. Two major projects were identified that will have a significant impact on cancer control and provide a legacy for future generations of Canadian researchers. These projects are a translational/clinical research initiative focused on moving new treatments rapidly into the clinic and a large national cancer cohort study to facilitate population studies focused on risk factors and disease prevention. Linked to the Network for Chemical Biology that is under development as part of the CIHR commercialization strategy, the translational research initiative will coordinate and expand existing centres of research excellence in the area of early drug development and testing, and integrate this network into an enhanced clinical trials program that will ensure the rapid **translation of health research into action**. A large cancer cohort of 250-300,000 individuals, followed over 20-25 years, will provide a laboratory for population studies on the impact of and interaction between numerous





determinants of risk and will establish a strong evidence base for intervention studies to prevent the onset of disease. The national repository of information created will provide a vital source of information for future generations of researchers.

Table 3

**Members of CCRA as of
 March 31st, 2004**

Alberta Cancer Board Alberta Heritage Foundation for Medical Research BC Cancer Agency Canadian Association of Provincial Cancer Agencies Canadian Cancer Society Canadian Strategy for Cancer Control CancerCare Manitoba Cancer Care Nova Scotia Cancer Care Ontario Cancer Research Society Canadian Institutes of Health Research Fonds de la Recherche en Santé du Québec Glaxo SmithKline Inc. (as a representative of the pharmaceutical industry) Health Canada Michael Smith Foundation for Health Research National Cancer Institute of Canada Ontario Cancer Research Network University Health Network
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Following a recommendation made at the December 2003 meeting, a group of 25 young investigators was convened on March 21-22, 2004, to obtain the perspective of the next generation of cancer researchers and to solicit their input on recommendations for a path forward for Canada. The outcome of this meeting was an endorsement for the two projects previously identified in December. The young investigators' meeting was immediately followed by a second meeting of the organizations and agencies represented at CCRA in December, with additional interested groups, to listen to the recommendations of the young scientists and further develop the concepts for the translational/clinical initiative and the cohort study. At these two CCRA meetings, ICR succeeded in bringing together 18 organizations and agencies to plan and implement a research action plan for cancer control in the

21st century, an impressive achievement in terms of **partnership and public engagement**. The members of CCRA are listed in Table 3.



TRANSLATION ACCELERATION GRANTS PROGRAM FOR BREAST CANCER

In March 2004, the Canadian Breast Cancer Research Alliance, in **partnership** with ICR and the Institute of Gender and Health (IGH), launched the second competition of the Translation Acceleration Grants Program for Breast Cancer Control. The goal of this program is to facilitate the passage of innovative basic research findings in breast cancer through to early evaluation and phase 1 clinical testing, i.e to accelerate the translation of basic breast cancer research into practice. The program targets small multidisciplinary teams of three or more independent researchers who are recognised as experts in the field of breast cancer. The first competition resulted in two funded awards and the second competition will build on this early success.



Appendices



APPENDIX I

Institute Advisory Board of the Institute of Cancer Research		
	Dr. Heather Bryant	Director and Vice-President, Division of Epidemiology, Prevention and Screening, Alberta Cancer Board
	Dr. Neil Berman	Manager, National Cancer Coordination; Executive Director, Canadian Strategy for Cancer Control, Health Canada
	Dr. Angela Brooks-Wilson	Head of Cancer Genetics, Genome Sciences Centre, BC Cancer Agency; Assistant Professor, Medical Genetics, University of British Columbia
	Dr. Sharon K. Buehler	Associate Professor, Division of Community Health, Faculty of Medicine, Memorial University of Newfoundland
	Dr. Roy Cameron	Director, Centre for Behavioural Research and Program Evaluation, Lyle Hallman Institute, University of Waterloo
	Dr. Carol Cass	Professor and Chair, Department of Oncology, University of Alberta
	Dr. Gerald Johnston	Professor and Head, Department of Microbiology and Immunology, Dalhousie University
	Dr. Anne Leis	Associate Professor, Department of Community Health and Epidemiology, University of Saskatchewan



APPENDIX I

Institute Advisory Board of the Institute of Cancer Research

	Ms. Joan Loveridge	Past President, Ontario Division, Canadian Cancer Society
	Dr. Neil MacDonald	Director, Cancer Nutrition/Rehabilitation Program Professor, Departments of Oncology and Medicine McGill University
	Dr. William Mackillop	Head, Division of Cancer Care and Epidemiology, Queen's University Cancer Research Institute; Professor and Chair, Community Health and Epidemiology, Queen's University
	Dr. Joseph L. Pater	Director, NCIC Clinical Trials Group, Queen's University
	Ms. Diane Proulx Guerrero	Founder and Administrator, CURE Foundation
	Dr. Ian C. P. Smith	Director General, Institute for Biodiagnostics, National Research Council of Canada
	Dr. James E. Till	Senior Scientist, Ontario Cancer Institute; University Professor Emeritus, University of Toronto
	Dr. Jim Woodgett	Division Head, Experimental Therapeutics, Ontario Cancer Institute, Princess Margaret Hospital



APPENDIX 2

Institute Support Grant - For the year ending March 31st, 2004

Available Funds		\$ 1,813,277
Expenses		
Institute Development		
Conference, Symposia and Workshops	\$ 219,342	
Institute Advisory Board	132,122	
Professional Services	31,660	
Travel Expenditures	60,521	
		\$ 434,645
Institute Operations		
Salaries and Benefits	\$ 312,867	
Office Accomodations	18,000	
Telephone and Communication Services	4,759	
Supplies, Material and Other Services	18,327	
Office Furniture and Fixtures	3,164	
Computer Equipment and IT Support	8,833	
Travel Expenditures	12,029	
Translation Services	50,820	
		\$ 428,799
Total Expenses		\$ 863,444
Unspent Balance*		\$ 949,833

*Note: The unspent balance as at March 31, 2003 is carried forward to the subsequent fiscal year



APPENDIX 3

Institute Investments in Strategic Initiatives - For the year ending March 31st, 2004

Strategic Initiatives	Number	Contributions through Grants and Awards				Total
		2003-04	2004-05	2005-06	2006 and beyond	
National Cancer Institute of Canada	1	1,500,000	-	-	-	1,500,000
Cancer Research Society	1	412,750	-	-	-	412,750
Invention-Tools, Techniques and Devices for Research and Medicine	2	135,308	71,348	65,403	-	272,059
Reducing Health Disparities and Promoting the Health of Vulnerable Populations	1	92,117	-	-	-	92,117
Healthy and Successful Aging	1	100,000	100,000	100,000	200,000	500,000
Excellence, Innovation and Advancement in the Study of Obesity and Healthy Body Weight	1	50,000	50,000	50,000	100,000	250,000
Operating Grants to Open Competitions	-	-	464,098	-	-	464,098
Training Awards	1	10,250	2,500	-	-	12,750
Gene Therapy-Neurological Diseases	1	50,000	-	-	-	50,000
CIHR Training Program Grants	16	1,719,038	1,869,266	2,142,600	5,406,553	11,137,457
Palliative and End-of-Life Care	32	972,695	-	-	-	972,695
Translation Acceleration Grant	1	250,000	310,000	250,000	250,000	1,060,000
	58	5,292,158	2,867,212	2,608,003	5,956,553	16,723,926

Note : Grants and awards in respect to these programs are approved for 1 to 6 years. Figures displayed represent CIHR financial commitments for these programs in 2003-04 and subsequent years. Availability of these funds in future years are subject to funding appropriations by Parliament. For some initiatives, partners also contributed to the funding of the grants and awards.



APPENDIX 4

CIHR Cancer Research Funding - 2003/2004		
FUNDING PROGRAM	AMOUNT	NUMBER
Research Grants		
Operating Grants	51,140,404	602
Group Grants	6,058,620	30
Equipment and Maintenance Grants	1,785,686	26
Clinical Trials	615,819	3
NCE Operating Grants	3,525,000	1
Total	63,125,527	662
Training Awards		
Studentships and Ph.D. Research Awards	2,393,344	146
Fellowships	3,686,958	122
Clinical Scientists	441,503	11
Total	6,521,805	279
Investigator Awards		
New Investigator	2,600,373	49
Investigator	2,255,194	31
Senior Investigator	526,414	19
Chair	100,000	2
Total	5,481,980	91
Workshops and Symposia		
Workshops and Symposium	31,000	5
* ICR-sponsored Workshops and Symposia	220,000	15
* Total	(251,000)	20
Strategic Initiative Grants		
ICR Institute Support Grant	1,000,000	1
** ICR Strategic Initiative Grants	2,685,861	16
Other Institute Cancer Initiatives	1,403,464	20
CBCRA	2,500,000	2
New Emerging Team Grants	59,053	12
*** Strategic Training Program Grants	2,798,926	22
Total	10,447,304	73
SUB - TOTAL	85,607,615	1,125
Canada Research Chairs Funded through CIHR		
****CRC-Health	7,900,000	62
Total	7,900,000	62
TOTAL (including CRC-Health)	93,507,615	1,187

* Funds for ICR-sponsored workshops & symposia are accounted for in ICR Institute Support Grant

** Excluding TPGs

*** Amount proportional to cancer research component of 15 training programs

**** The research interest of the chairholder is relevant to cancer research and/or the chairholder has been awarded operating grants for cancer research