



CIHR

Achievements in Research

July 2001 – July 2002



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



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Achievements in Research July 2001 – July 2002



*Alan Bernstein,
OC, PhD, FRSC*

At no time has the potential of research been so clear, and the time for discovery been so great.

Across the country, Canadian researchers are making discoveries that will impact the lives of Canadians – and the health care system. This book will allow you to read more about some of the outstanding researchers who are based in the Western provinces, Ontario, Quebec, and the Atlantic provinces.

Since our launch on June 7, 2000, CIHR, and our partners in the provinces, health charities and industry, are bringing together researchers, caregivers, policy-makers and community groups to address very real health and health system challenges, as well as scientific opportunities.

Our mission is to fund outstanding research that will have impact. To that end, CIHR believes in a problem-based approach to research, breaking down the silos of academic discipline, sectors of society, or geographic distance, to focus on important health research questions.

The health challenges that face Canadians and people everywhere — access to the health care system, health disparities, disease, the environment and health — all depend on sustained public investment in health research. Progress in research only flourishes in an environment that rewards excellence and recognizes the intrinsically long-term nature of the research process.

In the [December 2001 budget announcement](#), the Government of Canada demonstrated its confidence in CIHR with a \$75 million increase in federal funding for 2002-2003. This commitment to health and health research, even in difficult times, acknowledged the importance of sustaining CIHR's momentum as Canada's lead agency for health research. CIHR's budget increase will enable Canada's health research community to create the new knowledge that is necessary to fight disease, improve the health of Canadians, develop an innovative health system and support the growth of our country's health-related industries. As well, it allows us to address issues of importance to Canadians – the integrity of our water supply, tobacco and drug addiction, cancer, palliative care, the biological and social determinants of aging, osteoarthritis, HIV/AIDS, cardiovascular disease, rehabilitation, obesity and diabetes.

Canadians care deeply about health, whether it is the promise and challenges of stem cell research, access to current diagnostic technology or genetic testing for disease. I believe that it is our responsibility — and our opportunity — to provide Canadians with timely, objective, balanced, and easily understandable information on these and other issues. On behalf of CIHR's Governing Council, I am pleased to provide you with the second in a series of publications that demonstrates the results and impacts that are being achieved thanks to public funding. And on behalf of the Canadian health research community, I wish to express the deepest appreciation for your continuing support for our shared vision and objectives.

A handwritten signature in black ink, appearing to read 'Alan Bernstein', written over a light blue horizontal line.

Alan Bernstein, OC, PhD, FRSC
President, Canadian Institutes of Health Research

The Second Year: Taking Off

Halfway through its second year, CIHR received a vote of confidence from the Government of Canada in the form of a \$75 million budget increase. As a result, CIHR's budget will grow from \$485 million in 2001-2002 to \$560 million in 2002-2003.

In a short two years, the breadth and depth of Canada's health research community, supported by CIHR, has increased dramatically. The average value of grants is now 40 per cent greater and the number of researchers who receive them has increased by 25 per cent. In total, CIHR now supports the health research efforts of over 7,000 researchers and students across Canada. These grants and awards translate directly into discoveries that will affect the health and well-being of all Canadians.

The most recent budget increase will allow CIHR's 13 Institutes to address strategic research initiatives through alliances with partners in the voluntary, public and private sectors as well as assist universities, hospitals, and research centres across Canada to attract and retain the world's best health researchers.

Throughout its second year, CIHR continued to break new ground in all fields of health research, embracing our four designated pillars of research, biomedical, clinical, population health, and health services. Here is just a brief list of some of CIHR's achievements:

- An invitational bioterrorism workshop, co-sponsored by CIHR and Health Canada, explored the critical role of research in limiting the threat of disease caused by the deliberate use of biological agents.

- The **Community Alliances for Health Research (CAHR)** program continued to integrate health researchers with communities, community groups and community leaders all across the country.
- The development of **Interdisciplinary Health Research Team (IHRT)** programs gave researchers the opportunity to collaborate on a national and international level to promote health research issues.
- The launch of CIHR's stem cell guidelines set rules for funded researchers who work in a field in need of a delicate ethical framework.
- CIHR's new **Strategic Training Initiative in Health Research**, in partnership with health charities, provincial research agencies and industry, is providing \$88 million over six years to 51 teams of accomplished health researchers to foster the multidisciplinary and innovative training of over 500 trainees in all aspects of health research.
- The 13 "virtual" Institutes identified nine strategic initiatives that will affect the health of Canadians for years to come.
- The **Global Health Research Initiative**, a unique partnership between CIHR, the Canadian International Development Agency (CIDA), the International Development Research Council (IDRC) and Health Canada will address global disparities in health.
- The Trial to Reduce Insulin Dependent Diabetes in the Genetically at Risk (TRIGR), announced at Toronto's Hospital for Sick Children, is the largest clinical trial ever launched in Canada.
- CIHR was a major presence at BIO 2002 in recognition of Canada's burgeoning biotechnology and innovation sectors.
- CIHR's new **Establishment Grants** allowed the recruitment of a significant number of researchers to this country.
- CIHR's new **Development Grants** provided support to 35 smaller universities to help them develop their health research efforts.



Taking Genes out of the Laboratory

CIHR is taking its mandate to transfer knowledge into a new arena: Canada's museums. **The Gee! In Genome** is a partnership between the **Canadian Museum of Nature**, CIHR, and **Genome Canada**, based on a common desire to inform Canadians about genomics and the results of genomics research. This national traveling bilingual exhibition will educate and entertain Canadians by blending learning with fun. The exhibition will celebrate Canadian discoveries and facilitate discussion and debate in one of the hottest and most controversial areas of health research. It will open at the Canadian Museum of Nature in Ottawa on May 2, 2003. Then it will begin a three-year national tour of museums across Canada.

Working with Canadians

CIHR is supporting multi-disciplinary, integrated research, which brings together researchers and community partners in Canada and throughout the world to take a problem-based, multi-disciplinary approach to health, in a way that has never been done before in Canada.

The **Community Alliances for Health Research (CAHR)** and **Interdisciplinary Health Research Teams (IHRT)** programs are supporting 30 projects involving nearly 600 researchers in more than 100 institutions and community groups in conjunction with over 290 partners in five countries. They cover issues as varied as healthy child development, diabetes among Aboriginal peoples, community genetics, comparison of the origins and treatment of colon cancer in Newfoundland and Ontario, autism in children, Maritime work safety and how best to provide health services to the elderly.

Focusing on Rural Canadians

Health issues facing rural Canadians are of growing importance. As part of its strategic agenda, CIHR appointed Dr. Renée Lyons as CIHR Special Advisor to the President on Rural Health and contributed \$1 million to the first phase of a national rural health research initiative. This initiative will provide diagnostic information about the state of rural health in Canada and assist in developing a long-term rural health agenda. Among the issues that will be examined are rural health status and health determinants, implications of rural/urban settlement patterns in Canada for rural health services, and successful innovations and best practices for delivering rural health services. This contribution is in addition to the \$10.8 million investment that CIHR is already making in rural health research over the next five years. Information obtained from this first phase will be used to develop a second, larger investment in rural, remote and northern health, which is now in the planning phase.

Advancing the Ethics Agenda



*Dr. Françoise Baylis
Dalhousie University*

Some of the most exciting advances in health research are also among the most ethically challenging. CIHR is mandated both to conduct research according to the highest standards of ethics and to conduct research on ethics as it relates to health research. CIHR has created a Standing Committee on Ethics, co-chaired by Dr. Françoise Baylis of Dalhousie University, to advise its Governing Council on these aspects of CIHR's mandate which ensures that CIHR is at the forefront of excellence.

Stem cell research is a primary example of the ethical challenges that are part of advances in health research. Stem cell research offers tremendous potential for treating some of the most debilitating diseases, including Alzheimer's and Parkinson's

disease, diabetes and multiple sclerosis. Yet, because early-stage human embryos are currently the most promising source of human stem cells, there are significant ethical concerns attached to such research.

In March 2002, CIHR's Governing Council adopted guidelines that set out the conditions for human pluripotent stem cell research funded by CIHR. These guidelines also outline practices that should not be eligible for funding and create a Stem Cell Oversight Committee to provide ethical review of all research proposals involving human pluripotent stems cells eligible for funding by CIHR. The guidelines can be found at http://www.cihr-irsc.gc.ca/publications/ethics/stem_cell/stem_cell_recommendations_e.shtml and are consistent with the provisions of the federal government's proposed legislation on assisted human reproduction.

CIHR's stem cell research guidelines are based on the *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans*. This policy was released in 1998, after a four year collaboration with the [Natural Sciences and Engineering Research Council \(NSERC\)](#) and the [Social Sciences and Humanities Research Council \(SSHRC\)](#). In November 2001, the three funding agencies launched the Interagency Advisory Panel and Secretariat on Research Ethics, a pan-Canadian initiative to promote high ethical standards in Canadian research involving humans and to advise the agencies on the ongoing development and evolution of the policy statement in light of changing science and societal concerns.

Through its Ethics Office, CIHR is collaborating with [Health Canada](#) on a unique initiative to determine appropriate placebo use in clinical trials. Placebos, or look-alike medications with no active ingredients, are often used in such trials to assess the efficacy of a new drug. However, there are concerns about the ethical implications of using placebos. In March 2002, following public consultation, a National Conference on Appropriate Use of Placebos in Clinical Trials was held. A draft report is now being prepared, along with further public and stakeholders consultations, so that recommendations can be proposed on a common placebo policy for Canada.

Training the Next Generation of Health Researchers

The impact of health research in Canada is entirely dependent on the quality of the people involved. CIHR is committed to ensuring that Canada's health research community continues to maintain and expand its pool of excellent researchers and to increase Canada's capacity for health research in areas where there are gaps and opportunities.

The **Strategic Training Initiative in Health Research** is intended to build a national culture of creativity, innovation, and interdisciplinary research in the next generation of health researchers. CIHR's 13 Institutes are working together with health charities, provincial governments and industry to implement this new training program. In the first round of this program, \$88 million was awarded over the next six years to 51 groups of investigators who have records of excellence in both research and training to develop transdisciplinary training programs and to support trainees.



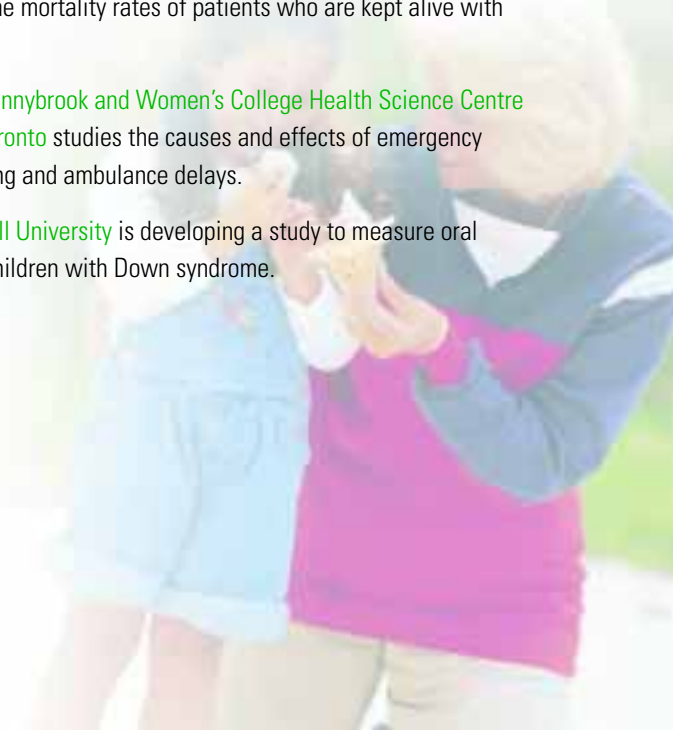
Among those receiving strategic training grants are

- Dr. Steven Jones of the [British Columbia Cancer Agency](#) who will head up a bioinformatics (computational methods that manipulate information) team to focus on everything from validating genes involved in disease to targeting areas for therapeutic development.
- Dr. Stephen Lye of Toronto's [Samuel Lunenfeld Research Institute](#) whose CIHR Interface Training Grant Program will work to realize potential health breakthroughs derived from the completion of the human genome.
- Dr. Michel Tremblay at [McGill University](#) who will lead the CIHR training grant in experimental and clinical cancer research from gene function to functional analysis and bring together researchers from 30 laboratories to advance cancer research, training and clinical science.
- Dr. Jocelyn Downie from [Dalhousie University](#) who is leading a team that is investigating the impact of new scientific discoveries on the legal, regulatory, policy and governance tools. Dr. Downie's expertise in legal and ethical issues, from a gender perspective, will contribute to this comprehensive investigation.
- Dr. Norman Rosenblum from Toronto's [Hospital for Sick Children](#) who has pulled together a team of mentors from coast-to-coast to create a virtual training program for pediatric clinician scientists.

In addition, CIHR continues its support of young researchers who are at the beginning of their careers through its career development awards.

The **Peter Lougheed/CIHR New Investigator Awards** represent a partnership between CIHR and the Peter Lougheed Medical Research Foundation. Presented for the first time in October 2001, they are awarded to the highest-rated applicants in CIHR's national competition for scholarships. The awards, worth approximately \$525,000 over a five-year period, nurture investigators who are in the first years of a university appointment. The first six scholarship winners address a wide range of health issues:

- Dr. Deborah Burshtyn of the [University of Alberta](#) studies special immune cells called natural killer cells (NKs) to learn how to control them when they are involved in autoimmune and allergic diseases.
- Dr. Linda Cook of the [University of Calgary](#) and the [Alberta Cancer Board](#) will focus on early detection of ovarian cancer, prevention tools, and new therapies.
- Dr. Bruce Rannala of the [University of Alberta](#) will develop new statistical techniques to identify and study the hundreds of DNA mutations that can cause inherited disorders in humans.
- Dr. Maureen Meade of the [Hamilton Health Sciences Centre](#) and [McMaster University](#) has developed a randomized clinical trial of a ventilation strategy which could decrease the mortality rates of patients who are kept alive with ventilators.
- Dr. Michael Schull of [Sunnybrook and Women's College Health Science Centre](#) and the [University of Toronto](#) studies the causes and effects of emergency department overcrowding and ambulance delays.
- Dr. Paul Allison of [McGill University](#) is developing a study to measure oral health and hygiene in children with Down syndrome.





Dorothy J. Lamont

In October 2001, there was another first for young Canadian researchers when Dr. Robin Cohen received the first **Dorothy J. Lamont Scientific Award**. The award, which represents a partnership with the **National Cancer Institute of Canada (NCIC)**, will be given annually to young investigators who are undertaking research in the area of cancer control and who are within five years of beginning their independent research careers. The award includes a contribution to the investigator's salary for five years. Dr. Cohen, an

Assistant Professor of Oncology and Medicine at **McGill University** and Medical Scientist at the McGill University Health Centre in Montreal, is undertaking research to improve the quality of life for people living with cancer and for their families.

The award is named in honor of Dorothy Lamont, the former Chief Executive Officer of both the **Canadian Cancer Society (CCS)** and the **NCIC**. In January 2000, Ms. Lamont left her position to devote her energies to her personal battle against cancer – a battle she recently lost. She also served as Vice-Chair of the Interim Governing Council of CIHR.

Building Partnerships

Partnerships, built around shared research goals and objectives, are an integral part of the CIHR vision.

As of May 2002, the **Health Research Partnership Fund (HRPF)** was extended for three more years at a rate of \$3 million per year. The **HRPF** invests in some of Canada's most promising research trainees and investigators using CIHR's internationally recognized peer-review process. Together as investors, CIHR with partner charities (which include everything from the **Arthritis Society** to the **Canadian Blood Services**), will improve the health of Canadians through new knowledge generated from researchers as we continue to support, link and strengthen our networks with stakeholders in Canada.

And it doesn't stop here. CIHR's 13 Institutes have also developed innovative partnerships with health charities and other non-governmental agencies, which will improve the health of all Canadians.

In May 2002, CIHR teamed up with the **Canadian Institute for Health Information (CIHI)** to announce a joint effort to examine the extent of adverse events in Canadian acute care hospitals and the availability of data that could be used to support continuous monitoring and reduce these events. This study is the first of its kind in Canada and the results, which will benefit the Canadian health care system, are expected to be released in 2004.



CIHR has partnered with Health Canada, the National Secretariat on Homelessness and the Social Sciences Health Research Council of Canada (SSHRC) to request applications for research aimed at reducing health disparities and promoting equity for vulnerable populations. This development grant involves CIHR's Institutes of Gender and Health, Population and Public Health, Aboriginal Peoples' Health, Aging, Human Development and Child and Youth Health, Infection and Immunity, Neurosciences, Mental Health and Addiction, and Musculoskeletal Health and Arthritis. It will enable interdisciplinary groups of researchers in health and other sectors to develop research programs that describe, investigate and ultimately reduce health disparities.

CIHR's Institute of Aging (IA) considers cognitive impairment in aging as one of its top priorities. Disorders, such as Alzheimer's Disease, come with many physical, psychological and economic consequences. A national research strategy on cognitive impairment represents a partnership between CIHR and the Alzheimer Society of Canada, NeuroScience Canada, the Canadian Nurses Foundation, Astra Zeneca Canada Inc., Pfizer Canada Inc., Janssen-Ortho Inc., Merck Frosst Canada Ltd., Novartis, Nova Scotia Health Research Foundation, Fonds de la recherche en santé du Québec and the Consortium of Canadian Centers for Clinical Cognitive Research (network of university-based investigators who are committed to research in the understanding and treatment of cognitive disorders). It will attract researchers in this field to optimize and make efficient use of resources available from CIHR, governments, non-governmental organizations and the private sector.

CIHR's Institute of Neurosciences, Mental Health and Addiction (INMHA) has established roundtable discussions for research collaboration with Health Canada and voluntary organizations regarding the mission and goals of the Institute as well as related activities of other voluntary organizations. As of January 2002, 19 voluntary organizations have joined these sessions, including the Autism Society Canada, the Parkinson Society Canada and Vision Research Council/National Coalition for Vision Health. A unique partnership between CIHR's Institutes of Nutrition, Metabolism and Diabetes, Circulatory and Respiratory Health, Gender and Health, and three health charities, the Heart and Stroke Foundation of Canada, the Kidney Foundation of Canada and the Canadian Diabetes Association, will yield new treatments for chronic diseases such as diabetes, cardiovascular disease and kidney disease.

The Heart and Stroke Foundation of Canada has also teamed up with CIHR's Institute of Circulatory and Respiratory Health to co-lead **TomorOw's Research Cardiovascular Health Professionals (TORCH)**. This six-year, \$1.5 million training program will combat the severe shortage of cardiovascular health care researchers in Canada. Thanks to the Universities of Alberta and Calgary, as well as their respective health regions, **TORCH** will bring together outstanding researchers and trainees with differing backgrounds, preparatory training and career aspirations, all of whom share the qualifications and disposition to be successful in a cardiovascular career.

CIHR's Institute of Musculoskeletal Health and Arthritis (IMHA) has recently partnered with the Arthritis Society, the Canadian Arthritis Network, and the Musculoskeletal Review Group (CMSG) of the Cochrane Collaboration to develop a **National Arthritis Research Strategy**. The agreement involves identifying questions in all disciplines of health, and then bettering our understanding of the causes, prevention, screening, diagnosis, treatment, support systems and palliation, and a wide range of conditions related to arthritis.

In January 2002, CIHR joined forces with three other Canadian government organizations to formalize their shared commitment to global health through research. The **Global Health Research Initiative** pools the knowledge, experience, and resources of CIHR, the [Canadian International Development Agency \(CIDA\)](#), the [International Development Research Centre \(IDRC\)](#), and [Health Canada](#). The agreement allows the partners to launch new programs and research strategies in the area of global health with the ultimate goal of improving the health of vulnerable people throughout the world. Vulnerable people are affected by conditions such as violence, poverty, racial discrimination, gender inequities, and exposure to environmental hazards.

The partnership addresses the fact that only 10 per cent of the estimated US\$73.5 billion invested in health research worldwide is allocated to the 90 per cent of the world's health problems that are concentrated in poor countries. This new partnership will help to ensure that knowledge and treatments generated through health research are shared by all, wherever they live. Priorities for action include joint research on complementary AIDS vaccine trials to be carried out both in Canada and in developing countries; research to improve the health systems of developing countries; and adapting promising findings in HIV/AIDS in Canada to developing countries.

International collaboration is an important aspect of CIHR's work. In February 2002, during Prime Minister Jean Chrétien's Team Canada visit to Germany, CIHR's Institute of Genetics and the Canadian Genetic Diseases Network signed a collaborative agreement with Germany's Max Planck Institute for Molecular Genetics. The five-year program, called **Elucidation of Human Genetic Disease Using Genomic Technologies**, will focus on shared development and application of genomic technologies, development of new genomic methodologies and clinical resource databanks, and the study of single-gene disorders and mouse models of human disease. The program will also help meet the growing international need for scientists trained in genetics and genomics.



Dr. Michael Smith – Nobel Laureate (1932-2000)

Canadians took pride in Dr. Michael Smith, Canada's Nobel Laureate, and Dr. Smith took pride in Canada. Following his death in 2000, CIHR joined together with the [EJLB Foundation](#), CIHR's [Institute of Neurosciences, Mental Health and Addiction](#), and the Royal Society of Canada to create the **EJLB-CIHR Michael Smith Chair in Neurosciences and Mental Health**. The Chair will allow a Canadian university or health research institute to attract a leading scientist in the field of neurosciences and mental health to Canada. The inaugural chairholder will be announced in 2002.

In Memory of Michael O'Reilly

In 1999, Michael O'Reilly, an advertising copywriter, died of complications related to cystic fibrosis (CF). After his death, his former client Zellers made a donation in his name, which was directed to the [Canadian Cystic Fibrosis Foundation \(CCFF\)](#). That donation is being used to create a partnership with CIHR's [Institute of Circulatory and Respiratory Health](#). More than \$1 million over three years will go towards funding research in new approaches for treating CF patients who have multiresistant bacteria in their airways. The deadly bacterium *Burkholderia cepacia* complex has a huge impact on people with CF. Many of those infected with the bacterium experience a rapid decline in lung function, which compromises their long-term survival, while others may develop a severe and often fatal pneumonia. *B. cepacia* complex is resistant to most antibiotics and is highly contagious.



Michael O'Reilly

Creating Health, Creating Wealth: Health Research and Canada's Economy

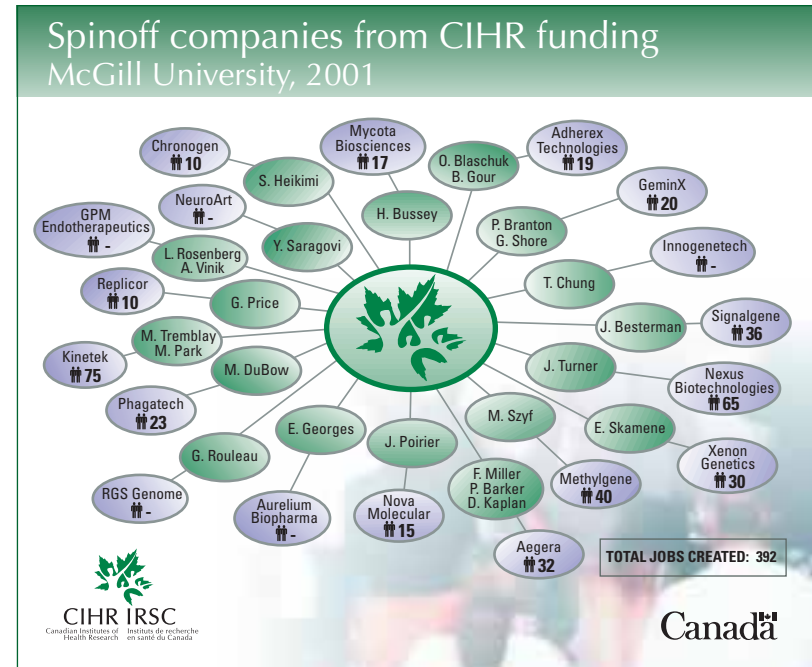
It costs a lot to treat disease. In 2001, Canadians spent over \$100 billion in health expenditures.

It costs even more to suffer from disease. In 1993, disease and illness cost the Canadian economy \$85 billion in lost productivity related to illness, premature death and costs related to pain and limited activity.

Fighting disease can help reduce this burden on the Canadian economy. When Canadian researchers translate the results of their research discoveries into new products and services for Canadians, it has an even greater impact on the economy by creating a strong private sector which generates jobs and wealth.

According to a 1997 **Industry Canada** study, employment growth in knowledge-based industries, such as those built around the life sciences, is double that of other industries. In fact, Canada is home to the world's second largest biotechnology industry.

Much of the growth in the health sector in general, and the biotechnology sector in particular, is the direct result of research supported by CIHR and its predecessor organization. In 2000, the biotechnology industry consisted of more than 380 "core" firms. While three quarters of these currently employ fewer than 30 people, one in five is traded on public markets, and the potential for growth is tremendous.





In recognition of Canadian strength in this area, the Biotechnology Industry Association held its annual conference, **BIO 2002**, in Toronto in June 2002. This was the second time the conference has been held outside of the United States, and more than 15,000 participants from 52 countries attended the event. CIHR President Dr. Alan Bernstein participated in three panel discussions, and CIHR attracted attention to its work with an exhibit highlighting innovation along a pipeline of discovery to widespread application.

CIHR plays a strategic role in building the pipeline of discovery. Programs have been developed to assist researchers in taking the knowledge they have created into the marketplace where it can be applied to save lives and reduce the economic burden of ill-health.

- The **CIHR/Rx&D Research Program**, a partnership between CIHR and Canada's Research-Based Pharmaceutical Companies, unites researchers, industry, and government, who collaborate to capitalize on the opportunities that are created by research. Through the research funded by this innovative program, discoveries are transferred more directly to health care practitioners, patients, and the public.
- The **CIHR/Small- and Medium-Sized Enterprises (SME) Program**, a jointly funded partnership between CIHR and Canadian biotechnology companies, is designed to strengthen the infrastructure for technology transfer in Canada. The program provides support for research commercialization in universities and hospitals, turning today's research into tomorrow's health solutions.

- The **Proof of Principle (POP) Program** is designed to improve the transfer of knowledge and technology resulting from peer-reviewed research. The POP Program provides one year of support to allow researchers to pursue highly promising research with a clear potential for commercialization
- The **Intellectual Property Management (IPM) Program** provides support to initiate the transfer of intellectual property, broaden existing capabilities, and undertake cooperative activities. Its goal is to enhance Canada's competitiveness in the knowledge-based global economy. **IPM** grants strengthen the ability of institutions to manage their intellectual property, attract potential commercial partners, and promote the development of personnel involved in intellectual property management. The program is jointly managed by Canada's three funding agencies, CIHR, **NSERC**, and **SSHRC**.

Between July 2001 and June 2002, the CIHR/Rx&D Research Program resulted in salary awards of nearly \$9.3 million, grants totaling nearly \$2 million, and clinical trial funding amounting to \$840,000. All funded projects passed through CIHR's peer review system, ensuring that they meet international standards of excellence.

Canadian Companies Show Promise

Bioniche Life Sciences Inc. is testing a vaccine to prevent *E-coli* infections in cattle, the source of the infection in humans. If successful, the vaccine could help to prevent 50,000 human infections and 500 deaths each year in North America and potentially save meat producers as much as \$5 billion per year. The vaccine was developed at the **University of British Columbia** by CIHR-funded researcher Dr. Brett Finlay, one of only 34 CIHR Distinguished Investigators.

SignalGene Inc. combines computer-aided drug design with genomic biology and pharmacology to develop diagnostic tests, preventive treatments, and genetic therapies for breast cancer and osteoporosis. The company has its roots in the CIHR-funded research of **Laval University's** Dr. François Rousseau, who identified genes associated with these two discoveries.

MDS Proteomics (MDSP) is a drug-discovery company and leader in the burgeoning field of proteomics (the study of proteins and how they interact with one another). Created in 1999, by CIHR-funded researchers including Dr. Tony Pawson, **MDSP** is a subsidiary of the Canadian life sciences giant **MDS Inc.**, started in 1999. **MDSP's** technology integrates numerous scientific and technical discoveries, inventions, know-how, observations, techniques and developments. **MDSP** is located in Toronto and is an industrial partner with CIHR through the University-Industry program. **MDSP** and CIHR fund the research of Dr. Christopher Hogue, a bioinformatics researcher who, like Dr. Pawson, is based at the **Samuel Lunenfeld Research Institute at Toronto's Mount Sinai Hospital**. Bioinformatics uses information technology to organize, analyse, and distribute biological information in order to answer complex biological questions.



The Institutes: Moving Ahead with Strategic Initiatives

The structure of CIHR's 13 Institutes is internationally unique because it takes an integrated, interdisciplinary approach to health research. The Institutes are collaborative networks that link researchers, universities, hospitals, industry, governments, communities, charities, and patient groups from across Canada and internationally in an effort to address the health needs and priorities of Canadians. Since they were announced in July 2001, CIHR's Institutes have been consulting with stakeholders and developing strategic research agendas. Now, Institutes are putting those agendas into action as they develop strategic initiatives.

Examples of strategic initiatives undertaken in recent months include a wide range of activities aimed at building research capacity and focusing research energies. For example,

- The **Institute of Neurosciences, Mental Health, and Addiction (INMHA)** has identified brain and spinal cord repair as one of its key strategic initiatives. This initiative, which will create a variety of funding opportunities, will replace the Canadian Neurotrauma Research Program, which funded 56 operating grants and 22 fellowships in its three years of existence.

CIHR-funded research has shown that severed spinal cords can regenerate. Drs. Molly Shoichet and Charles Tator from the University of Toronto have grown spinal cords in porous tubular 'bridges' implanted in rats. The tubes imitate the flexibility of a spinal cord and allow nutrients to pass through so that nerves can grow inside. While it's too early to declare a solution to spinal cord injuries, the results of this research show that this bridge, which allows tissue to grow, may be a step forward.



*Back Row Standing (from left to right): John Challis, Réjean Hébert, Philip Branton, Miriam Stewart, Jeff Reading, Morris Barer, Cyril Frank, John Frank.
Front Row Seated (from left to right): Rémi Quirion, Bruce McManus, Bhagirath Singh, Alan Bernstein (President), Diane Finegood, Roderick McInnes.*

- The **Institute of Circulatory and Respiratory Health (ICRH)** is focusing on Environmental and Genetic Interactions in Circulatory and Respiratory Diseases with a strategic initiative intended to build collaboration among scientists representing CIHR's four pillars of health research. The goal of the initiative is to plan novel and innovative molecular epidemiological studies of environmentally related circulatory and respiratory diseases.
- The **Institute of Nutrition, Metabolism, and Diabetes (INMD)** has launched a strategic initiative on obesity and healthy body weight. The initiative is intended to build capacity and strengthen Canadian health research in this broad area. The World Health Organization (WHO) has identified obesity as North America's fastest-growing, yet most neglected, public health problem. Obesity and excessive body weight is directly associated with increased risk of cardiovascular disease, cancer and diabetes.

- The **Institute of Aging (IA)**, in partnership with CIHR's 12 other Institutes, is involved in the **Canadian Longitudinal Study on Aging**. This initiative, implemented in collaboration with **Health Canada's Division of Aging and Seniors**, the **Canadian Association of Gerontology**, and **Statistics Canada**, will develop a Canadian multi-centre study to focus on all aspects of aging in Canada. Research will focus on the genetic, immunological, and molecular determinants of aging; the effect of physical exercise, nutrition, and other habits on the health of Canada's aging population; the evolution of physical, psychological, and cognitive abilities in aging; the role of psychological determinants of health; and how the aging population uses health services. The study will also identify preventative strategies and health services that promote healthy aging, and focus on ways to translate findings into clinical practice, health services, and public policy.



A graphic of a red spotlight shining from the top left corner of the page.

Spotlight on...

The Institute of Aboriginal Peoples' Health (IAPH)

Canada has been ranked by the United Nations amongst the top three nations in terms of quality of life. Aboriginal communities are ranked number 62. Health is a major reason for this discrepancy. For nearly every indicator, the health status of Aboriginal Canadians is significantly worse than that of non-Aboriginal Canadians. For example, Aboriginal people have rates of diabetes nearing epidemic proportions, while Aboriginal youth commit suicide more often than their non-Aboriginal counterparts. Fetal alcohol syndrome rates are over 50 times higher in the Aboriginal population.

Led by Dr. Jeff Reading, the CIHR [Institute of Aboriginal Peoples' Health \(IAPH\)](#) supports research to address the special health needs of Canada's Aboriginal people. By encouraging researchers from a diverse range of disciplines to work together to solve complex problems, the Institute is contributing to the improved health of Aboriginal people.

Fostering Innovative Partnerships

Health disparities between Aboriginal people and the general population are strikingly similar in many countries. In April 2002, CIHR signed an International Cooperation Agreement on Indigenous Health with [Australia's National Health and Medical Research Council](#) and the [Health Research Council of New Zealand](#). The three agencies have agreed to exchange graduate students, develop international research priorities in indigenous health, and share scientific expertise for the review of research proposals. Planning is underway to develop an International Forum on Indigenous Health to be held in Townsville, Australia, in order to create an International Network in Indigenous Health Knowledge and Development which will also include representatives from the United States.



Dr. Sonia Anand

Aboriginal people in Canada are twice as likely to have heart attacks and strokes as Canadians of European descent, according to CIHR-funded research carried out by [McMaster University's](#)

Dr. Sonia Anand. As recently as 10 years ago, there was a belief that Aboriginal people were not susceptible to heart disease. However, Dr. Anand discovered this was only because they did not live long enough. The research suggests that heart-related problems among Aboriginal people will only increase unless community awareness, diet and other social problems are addressed.

Training Aboriginal Health Researchers

Canada's Aboriginal people face unique health challenges; their involvement is critical to finding solutions to those challenges. CIHR's Institute of Aboriginal Peoples' Health has created the **Aboriginal Capacity and Developmental Research Environments (ACADRE)** program, its flagship strategic initiative to create supportive research environments to facilitate the development of Aboriginal capacity in all fields of health research. The **ACADRE** program will

- encourage Aboriginal students to pursue careers in health research;
- provide scientists with opportunities to pursue research in partnership with Aboriginal communities;
- provide opportunities for Aboriginal communities and organizations to identify important health research objectives in collaboration with Aboriginal health researchers; and
- ensure that research results are communicated and disseminated to help achieve better health for Aboriginal people wherever they live.

The **ACADRE** centres aim to balance the pursuit of scientific excellence in health research with meaningful community involvement including building capacity for the next generation of research scientists. **ACADRE** centres have been established in Alberta, Saskatchewan, Manitoba and Ontario, and more are being planned in order to create a national network of health research training centres.

Since its creation, the internationally unique Institute of Aboriginal Peoples' Health has launched important strategic initiatives, both on its own and in partnership with other Institutes.

- The **New Emerging Team (NET)** program is a partnership between the Institutes of Circulatory and Respiratory Health, Gender and Health, Aging, Human Development, Child and Youth Health, Infection and Immunity, Neurosciences, Mental Health and Addiction, and Nutrition, Metabolism and Diabetes. Non-CIHR partners in this initiative include the **Alzheimer Society of**

Canada, the **Canadian Diabetes Association**, the **Heart and Stroke Foundation of Canada**, the **Juvenile Diabetes Research Foundation**, the **Kidney Foundation of Canada** and the Neuroscience Canada Partnership. **NET** aims to promote the growth of small existing research teams and the development of new teams focused in specific areas of research that reflect the strategic priorities of the Institutes and their partners, such as violence, gender and health. Twenty-eight teams have been funded so far, including Dr. James Brien from **Queen's University**. His project will look at fetal alcohol syndrome — a problem that affects Aboriginal communities.



Dr. Jeff Reading

Dr. **Jeff Reading**, the Scientific Director for the Institute of Aboriginal Peoples' Health, is a Mohawk from southern Ontario who is known nationally and internationally for his research on native health, policy and social determinants. He has particular expertise in participatory research and survey research methods, and has focused on diabetes, tobacco use, and heart disease. Dr. Reading is proud to be the inaugural Scientific Director of the Institute and is committed to working with Aboriginal communities to tear down walls, unmask creative ideas, respect different ways of knowing and foster new approaches to health research.

"In my view," Dr. Reading says, "given the complexity and significant public health challenge, health researchers have a moral obligation to work with the Aboriginal community to effect positive changes that aim to improve health."

- In partnership with the CIHR [Institute of Neurosciences, Mental Health and Addiction \(INMHA\)](#), IAPH awarded funding to Dr. Laurence J. Kirmayer at Mortimer B. Davis [Jewish General Hospital](#) in Montreal to spearhead the **National Network for Aboriginal Mental Health Research**. The innovative national network will train new researchers and will provide research consultation services in collaboration with, and for, Aboriginal communities.
- In partnership with other CIHR Institutes, IAPH awarded funding to support investigators who are leading health research training programs. These include:
 - Dr. Roy Cameron from the [University of Waterloo](#) and his tobacco research training program;
 - Dr. Charles J. Frankish from the [University of British Columbia](#) and his transdisciplinary training in community partnership research program (which bridges the gap between research and practice);
 - Dr. Ronald Labonte from the [University of Saskatchewan](#) and his population health training program that works at strengthening the interface between research, policy and community;
 - Dr. Michael McDonald from the [University of British Columbia](#) and his proposal for an ethics health research training program;
 - Dr. Norman D. Rosenblum from [Toronto's Hospital for Sick Children](#) and his Canadian child and youth health research clinician-scientist development program;
 - Dr. Francis Plummer from the [University of Manitoba](#) and his international centre for infectious diseases training program; and
 - Dr. Moira A. Stewart from the [University of Western Ontario](#) and her interdisciplinary research training in primary health care research program.



Excellence in Research – From Coast to Coast

The breadth of Canada's health research community is one of its outstanding features, and CIHR is committed to encouraging and facilitating the growth of health research capacity in universities and hospitals from coast to coast. Through its **Regional Partnerships Program (RPP)**, it has provided funding to researchers in the six provinces that have historically received the smallest portion of health research funding – Manitoba, New Brunswick, Newfoundland, Nova Scotia, Prince Edward Island, and Saskatchewan.

Last year, CIHR offered **Development Grants** to smaller institutions to help them mobilize and build their health research capacity by providing seed grants for investigators, start-up funds for new recruits, and monies for strategic planning exercises. These grants of up to \$100,000 were awarded to 35 institutions including the **Université de Moncton**, **Brock University** and the **University of Northern British Columbia**.

Indeed, while CIHR funding has increased across the country, the Atlantic provinces and the four western provinces have seen the greatest percentage increase in funding, an indication that CIHR funding is helping to build research capacity and contributing to research results throughout Canada.

This past year, CIHR introduced **Institutional Establishment Grants** to help Canadian institutions recruit world-class health researchers. These grants allow researchers to begin their programs in Canada without delay, and provide a bridge to longer-term Canadian sources of funding through CIHR or other agencies. Here are two outstanding examples.

Dr. Prabhat Jha, a **Canada Research Chair** holder, was recently recruited to Toronto's **St. Michael's Hospital** Research Institute. Having served as a Senior Scientist for the World Health Organization (WHO), Dr. Jha has focused his research on developing major research tools that will control the spread of HIV and tobacco-related diseases. Dr. Jha will be the Director of the Canadian Initiative on Health and Development at St. Michael's. His research has implications for both the developing world and our own inner city poor.

The **Ottawa Health Research Institute** has recruited Dr. Jeremy Grimshaw to fill the position of Head of the Program in Clinical Epidemiology. A **Canada Research Chair** holder, Dr. Grimshaw studies and evaluates factors that influence the behavior of health care professionals and methods to help them use health knowledge more effectively. His research could improve the health of Canadians, as well as international citizens, through the rapid uptake of health knowledge.

Western Provinces

Heart, health research gets \$25 million boost from feds

Winnipeg Free Press, (July 8, 2001)

UBC's top minds celebrate brain-gain:

*Federal research money has made
Canada financially attractive for scientists
Ottawa Citizen, (October 24, 2001)*

Health researchers get cash

Regina Leader-Post, (October 18, 2001)

Autism research study recruiting participants

Winnipeg Free Press, (December 19, 2001)

U of C team tackles pain

Calgary Herald, (July 11, 2001)

New funds help prof study dementia signs

Victoria Times-Colonist, (July 9, 2002)

Manitoba lands \$5.4M for health research:

Cash will help train new medical scientists

Winnipeg Free Press, (June 11, 2002)

U of A lures German specialist on infant breathing deaths:

*Top neuroscientist to head
Edmonton research team
Edmonton Journal, (October 29, 2001)*

U of C cell biologist joins team tackling MS

Calgary Herald, (December 19, 2001)

Alberta scientist makes major advance in diabetes research: Edmonton Protocol could eliminate daily insulin injections

National Post, (May 2, 2002)

Defective gene could cause glaucoma:

*Finding opens door to
treatment for eye disease
National Post, (February 8, 2002)*

Prof gets \$350,000 grant

The Regina Leader-Post, (June 15, 2002)

U of S reaps \$3.2 million share of new health research cash

Saskatoon Star-Phoenix, (June 11, 2002)

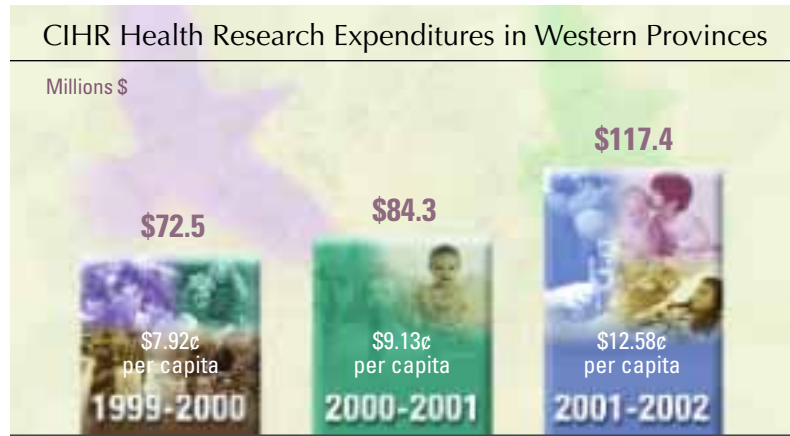
Foundation heaps praise on U of C researchers

Calgary Herald, (September 8, 2001)

Canadi

Western Provinces

Some of Canada's most exciting health research discoveries have their roots in Canada's four western provinces. From the [University of British Columbia's](#) Brett Finlay, who has developed a vaccine to prevent *E. coli* in cattle, to the [University of Manitoba's](#) Stephen Moses and his work on HIV/AIDS, researchers in British Columbia, Alberta, Saskatchewan, and Manitoba are truly world leaders.



In 2001-2002, CIHR allocated a total of \$117.4 million to Canada's four western provinces, an 84 per cent increase in just two years. The [University of Saskatchewan](#) alone has seen its CIHR funding increase by more than 61 per cent, to more than \$4.9 million, while the number of funded researchers has grown from 51 to a remarkable 106 over the same period.

Here are some exceptional examples of western-based health research currently funded by CIHR.

Improving the Health of Canadians

- In Calgary, Dr. V. Wee Yong is leading an **Interdisciplinary Health Research Team (IHRT)** whose work could result in new treatments for multiple sclerosis (MS). His team is trying to understand the role of amplified levels of a group of enzymes called *matrix metalloproteinases*, or MMPs, and how they can lead to the destruction of myelin, the sheath surrounding the nerves of the central nervous system. It is this destruction that results in the symptoms of MS. Dr. Yong's team has also successfully tested a common acne drug called minocycline which has shown significant promise in reducing MS in mice. If it proves to be successful in humans, this relatively inexpensive drug could replace injectable MS drugs which currently cost about \$20,000 per patient, per year.
- The [University of Calgary's](#) Dr. John Wallace and his research team have identified a pain receptor they believe is linked to inflammatory diseases such as arthritis, Crohn's disease, and pancreatitis. The discovery will help in the development of new drugs to treat people coping with painful chronic health conditions by blocking the receptor.
- Dr. Robert McNeill from the [University of Saskatchewan](#) has discovered that two hormones can interact in a unique way to increase blood pressure. His work could lead to the development of new drug treatments.
- Researchers at the [University of Alberta](#), led by Dr. Lorne Tyrrell, have created a mouse model of hepatitis C. This is a major step forward in efforts to test new antiviral drugs and vaccines and better treat the disease.
- Dr. Stephen Moses from the [University of Manitoba](#) believes that men who are not circumcised are more likely to contract HIV/AIDS. Together with Dr. Robert Bailey from the [University of Illinois in Chicago](#), he is testing this hypothesis in a study involving 2,800 African men.

- Dr. Luis Melo from the [University of Saskatchewan](#) has discovered a protein that is involved in regulating heart attacks. Now he is trying to understand this protein better in the hope of designing a safe and efficient gene therapy strategy for protecting the heart from damage due to heart attacks.
- Dr. Anne Neufeld from the [University of Alberta](#) is leading a team of researchers in an investigation of the supportive and unsupportive experiences of women caregivers of seniors, children and adults with various chronic health conditions (such as cancer, diabetes, asthma and Alzheimer’s disease). Dr. Neufeld’s work will have positive implications for over 2.8 million Canadians caregivers, most of whom are women.

Strengthening the Health Care System

- Our health care system is stressed and in need of change – but what kind of change? A **Community Alliance for Health Research (CAHR)** led by the [University of Victoria](#)’s Dr. Marcia Hills is examining how changes to primary health care could make other changes to the health care system more effective and efficient. By bringing together researchers, practitioners, decision-makers and policy-makers, Dr. Hills’ project will help ensure that change happens simultaneously in practice and at a policy level, which she sees as a prerequisite for success.
- A new clinical trial by Dr. Julio Montaner, from [St. Paul’s Hospital](#) in Vancouver, found that starting anti-retroviral therapy for HIV/AIDS later does not reduce the therapy’s effectiveness. The study could save health care systems millions of dollars. The team has also developed a way to tailor individual medication doses through a combination of gene-sequencing procedures. Their work will help to reduce the toxicity and side effects of powerful AIDS drugs while saving money by delivering more precise amounts of the costly medications.
- Routine childhood vaccination is one of the most common public health measures and has resulted in a dramatic reduction in many infectious diseases. Dr. Lorne Babiuk from the [University of Saskatchewan](#) is leading a team developing new and innovative ways to deliver vaccines to children and young animals. By improving compliance with vaccination, his team could help reduce the cost of disease for the health care system and for society as a whole.
- The [University of British Columbia](#)’s Dr. Joan Anderson, a member of the [Institute of Gender and Health’s](#) Institute Advisory Board, has conducted several research projects funded by CIHR on access to health services for immigrants and refugees.
- First Nations in Manitoba have taken responsibility for their own health care services. Dr. John O’Neil, from the [University of Manitoba](#) is leading a **Community Alliance for Health Research (CAHR)** and working with Aboriginal communities and academic researchers, ranging from political scientists to nurses to social workers, to investigate how the process is working.
- It has been estimated that physical inactivity costs the Canadian health care system over \$2 billion annually. The [University of Saskatchewan](#)’s Dr. Karen Chad is leading an initiative that brings together Saskatchewan’s public, private, and business communities in order to encourage people to lead physically active lives. Now she is also leading a **Community Alliance for Health Research (CAHR)** that focuses on how to get youth, particularly disadvantaged youth, and older adults moving.



“It’s not that more money or more doctors are needed. It’s a total restructuring of how health services are delivered and who delivers them,” says Dr. Marcia Hills.

Dr. Marcia Hills



Dr. John O'Neil

"We need to recognize that the transfer of health services from federal to First Nations authority is one of the most significant but undocumented experiments in the history of health care in Canada," says Dr. John O'Neil.

Generating Economic Growth

- Dr. Theresa Allen from the [University of Alberta](#), in conjunction with the [ALZA Corporation](#) and supported by the [CIHR/Small- and Medium-Sized Enterprises \(SME\) Program](#), is exploring the potential of the anti-cancer drug *Liposomal Doxorubicin* (Doxil, in the U.S., and Caelyx, in Canada). This drug received clinical approval for the treatment of sarcomas (soft-tissue tumours) and refractory ovarian cancer. Dr. Allen wants to improve the efficacy of the drug using mouse and rat models.
- Dr. Rusing Tan from the [University of British Columbia](#) hopes to use a human peptide sequence as a basis for developing effective diagnostic tools for Type 1 diabetes. Dr. Tan has received a [Proof of Principle \(POP\) Program](#) grant for his work, which could lead to new vaccines and possibly prevent the onset of Type 1 diabetes.



Dr. Carole Estabrooks

Turning Research Into Action

CIHR has granted \$1.97 million over five years to an interdisciplinary team of researchers at three universities led by Dr. Carole Estabrooks, of the [University of Alberta's Faculty of Nursing](#), to develop ways to influence the use of research results in decisions by health professionals, consumers, administrators, and senior policy-makers.



Dr. Michael Chandler

A CIHR Profile in Excellence: Michael Chandler

Dr. Michael Chandler, a CIHR Distinguished Investigator, is studying how cultural differences during the course of identity development help or hinder Aboriginal youth facing health- and life-threatening situations.

His research fits into CIHR's mandate to focus on the cultural, social, and psychological factors that affect the health of populations. Dr. Chandler is a professor in the [Department of Psychology at the University of British Columbia](#).

Ontario

Genetic key found to rare leukemia

Ottawa Citizen, (September 4, 2001)

Scientists announce major stem-cell advances

Toronto Star, (June 21, 2002)

Smoke linked to crib deaths;
Study finds more nicotine in lungs of SIDS babies

Toronto Star, (February 21, 2002)

Heart pumps beat drugs, study finds

Toronto Star, (November 17, 2001)

Research institute is a study in excellence

Toronto Star, (June 25, 2002)

Fruitflies offer clues to children's brain cancer

National Post, (June 17, 2002)

Scientists get \$8.2 million in grants

London Free Press, (November 8, 2001)

Ottawa team races to save HIV patients:
International study looks for ways to 'salvage' lives if treatment fails

Ottawa Citizen, (December 27, 2001)

How to get them before they get us:
fighting deadly viruses

National Post, (February 4, 2002)

Ear-tube surgery needs rules, study suggests

Globe and Mail, (November 7, 2001)

Weekend hospital check-in riskier

Montreal Gazette, (August 30, 2001)

Research groups probe Canadian hospital blunders

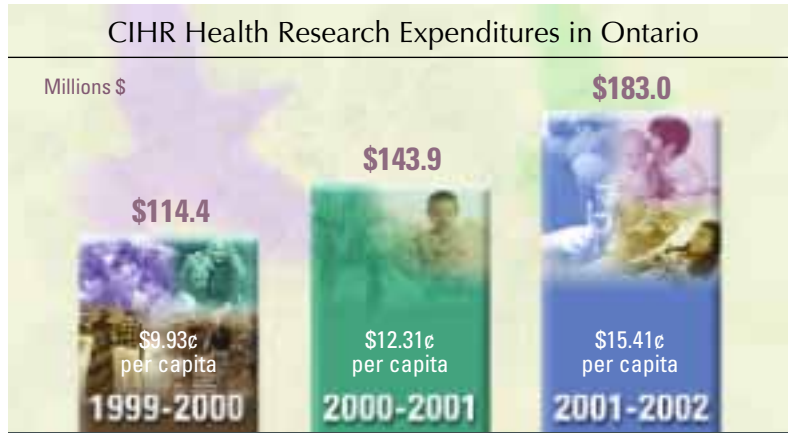
Ottawa Citizen, (May 8, 2002)

AIDS vaccine research among projects at Mac awarded more than \$9 million

Hamilton Spectator (July 30, 2002)

Ontario

As Canada's largest province, Ontario houses a significant proportion of Canada's health research community. Much of this expertise is centred at the [University of Toronto](#) where four of CIHR's 13 Institute Scientific Directors are based. However, the participation of other institutions in the field of health research is growing



rapidly. For instance in 1985, the [University of Ottawa](#) ranked 12 out of 16 medical schools in Canada in terms of the research funding it received. Today it ranks fifth, with the fastest research growth in the country.

Ontario receives the largest share of CIHR funding — \$183 million in 2001-2002, up from \$114.4 million in 1999-2000. This funding is supporting over 2,300 projects by principal investigators in 31 institutions who are conducting research in areas including genomics and proteomics, cardiovascular disease, cancer, diabetes, stem cells, mobility aids, and the role of the private sector in health care services.

Here are some leading examples of Ontario-based health research currently being funded by CIHR.

Improving the Health of Canadians

- The Canadian Child Welfare Research Partnership, led by the [University of Toronto](#)'s Dr. Nico Trocmé, is bringing together researchers, service providers, and policy-makers to create better health for children in Canada. His **Community Alliance for Health Research (CAHR)** program consists of four projects that focus on sexually abused children in foster care; chronic maltreating families; adolescent risk behaviour in the child welfare system; and the establishment of a shared database of institutional data and health statistics regarding child abuse.



Dr. Nico Trocmé

"It's very exciting to see how social science pushes the envelope of health research. There will be mutual gains on all sides," says Dr. Nico Trocmé.

- CIHR researchers Drs. Josef Penninger, Graham Pitcher and Michael Salter are part of a team of Toronto-based researchers who have discovered a genetic mechanism involved in pain modulation. They found that mice lacking a gene called DREAM (downstream regulatory element antagonistic modulator) were much less sensitive to pain than mice that had this gene. Their research could lead to an entirely new approach to pain control.
- Dr. Nancy Edwards from the [University of Ottawa](#) is examining the threat of stair falls among seniors. Dr. Edwards will undertake to understand stair hazards and determinants of stair use with a study that involves face-to-face interviews with community-living seniors over a six-month period. The results of her work will inform policy-makers and fall prevention programmers.

- Jackie Bosch from **McMaster University** is conducting a study on 9,000 patients at risk of stroke or cardiovascular disease. Bosch found that there were 61 per cent fewer fatal strokes in people who took the drug Ramipril.
- Dr. Grant McFadden from the **Robarts Research Institute at the University of Western Ontario** is looking at poxviruses, one of the largest viruses to battle the immune system. His work could provide new strategies to treat diseases which are based on excessive inflammation or hyperactive immune responses.
- Dr. Jeffrey L. Wrana leads a team of researchers at the Microarray and Robotics Center of Toronto's **Samuel Lunenfeld Research Institute at Mount Sinai Hospital**. Dr. Wrana is trying to understand how certain genes contribute to both normal human developmental processes and diseases like cancer.

Strengthening the Health Care System

- A study by Dr. Paul Grootendorst from **McMaster University** shows that British Columbia saved \$14.9 million in just over three years on drugs to treat angina after it introduced reference-based drug pricing. This system requires doctors to prescribe lower-cost drugs when they are available.
- According to a study by Dr. Donald Redelmeier from **Toronto's Sunnybrook and Women's College Health Sciences Centre** and the **Institute for Clinical Evaluative Sciences**, people admitted to the hospital on the weekend are more likely to die within 48 hours than people admitted with the same disease on a weekday. His study suggests the problem may be related to reduced staff and fewer experienced weekend supervisors.
- For-profit privately owned hospitals present a higher risk of death for patients compared to non-profit privately owned hospitals. This conclusion comes from research by Dr. Philip Devereaux from **McMaster University** who reviewed 15 studies involving more than 26,000 hospitals and 38 million patients.

Generating Economic Growth

- In partnership with **Syn X Pharma Inc.**, Dr. Hans-Michael Dosch from **Toronto's Hospital for Sick Children** will attempt to identify abnormally expressed proteins in multiple sclerosis (MS) and Type 1 diabetes using contemporary molecular technology. Dr. Dosch hopes the identification of these proteins will lead to new insights into the underlying mechanisms of these autoimmune diseases.
- Dr. Bosco Chan from the **Robarts Research Institute at the University of Western Ontario** is using a **Proof of Principle (POP) Program** grant to design and validate new ways to dress wounds that will promote healing by incorporating biomaterials that gradually release healing agents. His discovery should improve the physical and psychological well-being of large numbers of Canadians including the elderly, those with compromised immune systems, and people with diabetes. He estimates that a 10 per cent increase in wound healing rates will translate into multi-million dollar savings for the Canadian health care system.



Dr. Peter St George-Hyslop

A CIHR Profile in Excellence: Peter St George-Hyslop

CIHR Distinguished Investigator Dr. Peter St George-Hyslop came to public attention in 1995, when he discovered and cloned two genes that cause early onset of Alzheimer's disease. In 2000, he cloned nicastrin, another novel gene that plays a role in the disease. Now, as Director of the Centre for Research in **Neurodegenerative Diseases** at the University of

Toronto he is working on new ways to treat Alzheimer's disease.

- Drs. Robert Korneluk and Alex MacKenzie from the [University of Ottawa](#) discovered a family of genes involved in programmed cell death, or apoptosis. [Aegera Therapeutics Inc.](#), the company formed as a result of their research, has become a leader in the development of new treatments for neuro-degenerative diseases.
- [World Heart Corp.](#), creators of the world's first artificial heart is just one of many companies formed as a result of health research conducted at the [University of Ottawa](#). Together, it is estimated that these companies have created nearly 500 jobs for highly trained Canadians.



Dr. Ian Stiell

A CIHR Profile in Excellence: Ian Stiell

Injuries to the foot, ankle, knee, neck, or brain are among the most common to show up in hospital emergency rooms. Dr. Ian Stiell, a CIHR Distinguished Investigator, has provided emergency room physicians with guidance on when and how to order radiographs for these injuries. The Ottawa Ankle and Knee Rules, and the Canadian C-spine and CT Head Rules have contributed to more

effective treatment for those who are injured and more cost-effective procedures for hospitals. Dr. Stiell, a professor in the [Faculty of Medicine at the University of Ottawa](#), is also widely known for his research dealing with both in-hospital and out-of-hospital resuscitations. This research will provide valuable evidence on the relative effectiveness of pre-hospital programs and on the morbidity rates among patients with cardiac arrest, major trauma, and respiratory distress.

Quebec

McGill researchers tracking cause of cervical cancer

Ottawa Citizen, (December 27, 2001)

Une exposition de 2,5 millions \$ sur la révolution de la génomique

Le Droit, (January 24, 2002)

Controlling diabetes without needles: Montreal breakthrough

National Post, (May 10, 2002)

Découverte majeure au sujet du diabète

Le Nouvelliste (Trois-Rivières), (October 2, 2001)

Twist of fat at McGill could help end obesity:

Cancer research accidentally produces leaner mice

Montreal Gazette, (October 5, 2001)

No reason to fuss over pacifier: study

Montreal Gazette, (July 18, 2001)

Vieillir en pleine autonomie

La Tribune, (January 14, 2002)

Taking a human approach to medical research

Montreal Gazette, (October 13, 2001)

Recherche sur les cellules souches

Les bailleurs de fonds applaudissent Ottawa

Le Devoir, (May 18, 2002)

Montreal scientists find epilepsy gene

National Post, (May 6, 2002)

Teens need more sleep, study finds

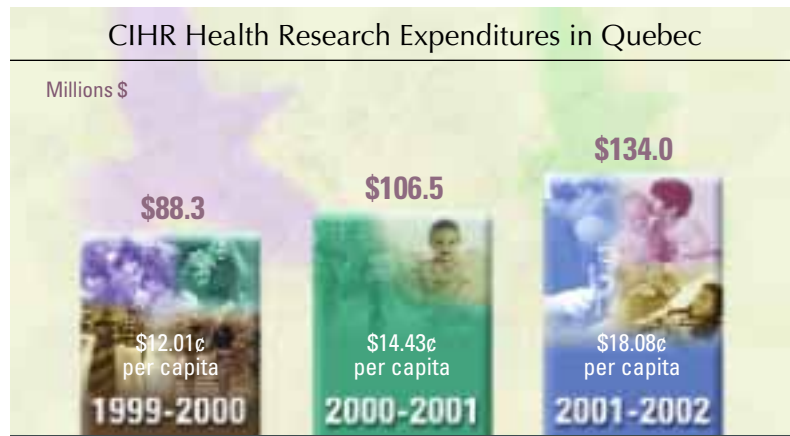
National Post, (October 13, 2001)

Des chercheurs québécois ont identifié un gène protégeant du cancer du sein

Le Devoir, (August 10, 2001)

Quebec

Health researchers in Quebec universities and hospitals are among the world's best. This commitment to excellence is reflected in the proportion of CIHR funding that goes to investigators in Quebec — \$134 million in 2001-2002, up from \$88.3 million two years previously, accounting for nearly 30 per cent of CIHR's total funding base.



From discovering ways to predict heart disease to learning how best to deliver health services to the elderly, Quebec researchers are contributing to the health and well-being of Canadians.

Here are some exciting examples of CIHR-funded health research going on in Quebec.

Improving the Health of Canadians

- A team of Quebec researchers headed by Dr. Benoît Lamarche from [Université Laval](#) has discovered that patients with high levels of *C-reactive protein (CRP)* in their blood are at a significantly increased risk of suffering from heart disease. Dr. Lamarche believes that routine testing of *CRP* levels could soon be standard for middle-aged patients, particularly those who are already at risk for heart disease. *CRP* levels could prove to be a more accurate way to flag impending heart disease than the current method of measuring blood cholesterol levels.
- Dr. Michel G. Bergeron from [Université Laval](#) has developed a test to diagnose *Streptococcus B* infections in pregnant women in less than one hour. This diagnostic tool, which was released by [Infectio Diagnostic Inc.](#) in September 2002, will help eliminate ineffective treatments for bacterial infections (*Streptococcal B* infections in pregnant women cause meningitis in newborns and often lead to death).
- Stem cells could be prompted one day to produce myelin, reversing the destructive effects of multiple sclerosis (MS), a disease that destroys this protective coating around nerves. CIHR is supporting top MS scientists at [McGill University](#), the [University of Calgary](#), the [University of Toronto](#), the [Mayo Clinic](#) and the [University of Rochester in New York](#) in a five-year, \$3.5 million project led by McGill's Dr. Jack Antel. Approximately 50,000 Canadians currently suffer from MS and three Canadians are diagnosed with the disease every day.
- Dr. Alan Evans from the [Montreal Neurological Institute](#) is charting a 'map' of the brain that is becoming the standard against which abnormalities such as Parkinson's disease and schizophrenia are diagnosed.
- [McGill University's](#) Dr. Guy Rouleau, who is leading a team of Montreal scientists, has discovered the gene that causes juvenile myoclonic epilepsy (JME). JME is one in a category of common disorders called 'classical' epilepsies.

- Dr. Janet Rennick from **McGill University** led a national study involving young children who underwent invasive hospital procedures and discovered that they can be traumatized for months after they return home.
- An antibiotic usually prescribed for acne may help delay the onset and progression of amyotrophic lateral sclerosis (ALS), commonly known as Lou Gehrig's disease. Research led by **McGill University's** Dr. Jean-Pierre Julien found that the drug works in mouse models. The next step is human clinical trials.

Strengthening the Health Care System

- As Canada's population ages, the health care needs of the elderly are becoming a more pressing concern. Drs. François Béland, from **Université de Montréal** and Howard Bergman, from **McGill University**, believe that our current fragmented health care services cannot adequately meet the complex medical and social service requirements of frail, elderly people. They are leading an interdisciplinary team examining the changing needs of the elderly, their access to health and social services, and ways of delivering integrated health services. In November 2001, 250 members of the team gathered in Montreal to share information and progress reports on projects.
- **McGill** researcher Dr. Jocelyne Feine has found that dental implants allow seniors to eat healthier foods. Now a follow-up study is investigating whether patients fitted with the implants use fewer health care services than those with conventional dentures.

Generating Economic Growth

- Dr. Michel Tremblay, Director of the **McGill Cancer Centre**, in partnership with his colleague Dr. Morag Park and Kinetek Pharmaceuticals Inc. (Vancouver), is using a **CIHR/Small- and Medium-Sized Enterprises (SME) Program** grant to identify and validate potential targets for the development of new cancer gene inhibitors.
- Dr. Jiangping Wu from the **Centre Hospitalier de l'Université de Montréal (CHUM)** received a **Proof of Principle (POP) Program** grant to examine a better way to treat graft rejection. The method uses proteasome (a protein complex that degrades most proteins in a cell) inhibitors in combination with other immunosuppressants. If successful, his research will have strong commercial potential.



Dr. Philippe Gros

A CIHR Profile in Excellence: Philippe Gros

Dr. Philippe Gros understands genes. As a postdoctoral fellow at the **Massachusetts Institute of Technology (MIT)**, he cloned and sequenced the gene responsible for resisting drugs used in cancer therapy. As a professor in **McGill University's Department of Biochemistry**, he has characterized the gene responsible for spina bifida and is trying to understand how it works in mice as a prelude to understanding how it works in humans. Dr. Gros has also cloned several genes that regulate the capacity of the body to resist infection by bacterial, parasitic, and viral pathogens such as *Salmonella* and the *tuberculosis bacterium*. One of 19 inaugural members of CIHR's Governing Council, Dr. Gros is also a CIHR Distinguished Investigator.

- Many of the companies created from CIHR and investments at [McGill University](#), such as [Xenon Genetics](#), [RGS Genome](#), [Kinetek](#), and [Mycota Biosciences Inc.](#), specialize in identifying genes associated with human disease and developing new drugs that target these genes. Others, such as [Phagatech Inc.](#), are working on developing new antibiotics to help overcome widespread antibiotic resistance. To date, it is estimated that the CIHR-generated companies have created 392 jobs, and that number continues to grow.



Dr. Nahum Sonenberg

***A CIHR Profile in Excellence:
Nahum Sonenberg***

For more than 20 years Dr. Nahum Sonenberg has made tremendous contributions to the fields of molecular biology and biochemistry. His work in the area of gene expression has led to a greater understanding of a range of viral infections including polio, rhinoviruses, reoviruses (which have potential for fighting cancer) and HIV-1. It also sheds light on the control of cell growth and proliferation as it relates to cancer. A professor in the Department of Biochemistry at [McGill University](#), Dr. Sonenberg is also a CIHR Distinguished Investigator.



Atlantic Provinces

\$100,000 injection for research

Fredericton Daily Gleaner, (November 22, 2001)

**Building world-class reputation
for applied health research**

Halifax Chronicle-Herald, (December 14, 2001)

Mount A. in health research

Moncton Times and Transcript, (June 8, 2002)

More information on clinical trials

The Charlottetown Guardian, (June 11, 2002)

**Heart drugs and alternative medicines
deadly cocktail, study finds**

Halifax Chronicle-Herald, (October 25, 2001)

**Too young for milk?: Local infants
sought for clinical trial
studying Type 1 diabetes**

The Telegram, (June 13, 2002)

**Grants needed to study
domestic violence**

Fredericton Daily Gleaner, (November 22, 2001)

**Ritalin abuse by teens
soaring, study says**

Globe and Mail, (October 16, 2001)
The Atlantic Provinces

**Study to focus on rural
health of seniors**

Halifax Chronicle-Herald, (June 20, 2002)

**Research into cardiovascular
disease given financial boost**

The Charlottetown Guardian, (December 17, 2001)

Atlantic Provinces

In the past two years, health research institutions in the Atlantic provinces of New Brunswick, Nova Scotia, Newfoundland and Labrador and Prince Edward Island have seen their CIHR funding nearly double from \$8.7 million to \$15.5 million. Nova Scotia's [Dalhousie University](#) alone has increased its CIHR funding by 63 per cent, from \$6.7 million in 1999-2000 to more than \$10.9 million in 2001-2002.



Much of the research that CIHR is supporting in the Atlantic provinces focuses on the needs of rural and aging populations as well as on marine and coastal health and safety.

Here are some examples of health research excellence from CIHR-funded researchers who are based in the Atlantic provinces.

Improving the Health of Canadians

- According to a study conducted by [Dalhousie University's](#) Dr. Jafna Cox, mixing alternative medicines with prescription heart drugs can have deadly consequences for cardiac patients. The study found that about two thirds of Nova Scotians with heart disease use at least one form of alternative therapy, leading to potential lethal interactions with prescription medicines. For example, people taking the blood thinner Warfarin should not take high doses of *vitamin K*, *ephedra*, *ginseng*, *St. John's wort*, or *echinacea*.
- [Memorial University of Newfoundland's](#) Dr. Thomas Michalak is at the forefront of research on hepatitis. Dr. Michalak is studying how hepatitis B develops and progresses by using a variant of a virus commonly found in woodchucks that closely resembles the human-borne virus. The model can also be used to evaluate new drugs and therapies. Estimates suggest that, worldwide, some two billion people have been exposed to the virus, and two million people are dying from it each year. Dr. Michalak also holds a [Senior Canada Research Chair](#).
- Working on the water can be dangerous to your health. Shellfish workers are prone to occupational asthma, while work and work schedules in the offshore oil and gas industry can affect the health of workers and their families. Drs. Stephen Bornstein and Barbara Neis from [Memorial University of Newfoundland](#) are working with more than 60 researchers and nearly 40 partners from Newfoundland communities in a program called SafetyNet, one of CIHR's [Community Alliances for Health Research \(CAHR\)](#) programs. The project will evaluate and improve marine and coastal safety, leading to clear and practical benefits for Maritime coastal workers. Dr. Neis also has the distinction of serving on the [Institute of Gender and Health's](#) Institute Advisory Board.

Strengthening the Health Care System

- Access to health care is one of the primary principles of the *Canada Health Act*, and one of the most difficult to realize for rural Canadians. **Dalhousie University's** Dr. Patrick McGrath, one of CIHR's 34 Distinguished Investigators, has developed innovative tools including a newsletter, audio and video tapes, and primary care coaches providing telephone support to family physicians, to help children with behavioural problems, attention deficit disorder, depression, and anxiety. Telehealth is filling an important gap in providing care to youths in Nova Scotia and their families while creating the knowledge needed to create a framework for all Canadian children whose access to health care is impaired by distance.
- Living with chronic health problems is difficult enough. But for rural Canadians without easy access to the specialists they need, it becomes even more challenging. A CIHR-**Heart and Stroke Foundation** collaborative project underway in Yarmouth, Nova Scotia, is putting in place measures to help people recovering from strokes and assessing how services can be delivered most effectively. Dr. Renée Lyons, a Professor from **Dalhousie University** and Special Advisor to the President of CIHR on Rural Health, is heading this community-wide project.
- Dr. Carol Amaratunga of the **Maritime Centre of Excellence** for Women's Health, is working with Brigitte Neumann of the Nova Scotia Advisory Council on the Status of Women and numerous other partners to explore how women can create a healthy balance for themselves. *Thinking It Through: Women, Work, and Caring in the New Millennium* was released in February 2002 and is the first step in assessing the physical and psychological costs incurred by women who are unpaid caregivers. The results of the project will be translated to policy-makers at all levels to ensure that the needs of women caregivers are factored into decision-making in our health care system.

Generating Economic Growth

- Dr. Andrea Hebb from **Dalhousie University** is partnering with Nova Neuron Inc. to examine changes in gene expression in Parkinson's disease. Her research, supported by a **CIHR/Small- and Medium-Sized Enterprises (SME) Program** grant, could lead to important advances in our understanding of the underlying molecular basis for this debilitating disease.
- Dr. Donald F. Weaver from **Dalhousie University** is using a **Proof of Principle (POP) Program** grant to create a comprehensive computer library containing all possible molecules that could be used as drugs for treating neurological diseases such as Alzheimer's. This library will contain 32 million molecules which researchers can use to find potential drugs, benefiting disease sufferers and the economy alike.



Dr. Renée Lyons

"We're using the Yarmouth community as a national pilot site to test a systematic process of redesigning health services," says Dr. Renée Lyons.

