

Transforming the Health Research Landscape

The CIHR/Rx&D Research Program: Mission

The CIHR/Rx&D Research Program shall develop partnership opportunities in coordination with the private sector, the CIHR and its member Institutes. The Program shall:

Identify and develop health research opportunities

Strengthen interaction between CIHR research communities and the private sector

Facilitate the creation and transfer of knowledge

Facilitate opportunities for international collaboration

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Combining Forces to Improve Health

As partners, we are working together to improve health, sustain a leading-edge health care system and develop the transformative new technologies of tomorrow. Together, we are closing the gap between a good idea and a vision achieved.

Mobilizing research, developing people and building partnerships are the strategies that are building a strong health research capacity in our academic institutions and fostering innovation. The CIHR/Rx&D Research Program supports the successful achievement of these objectives.

Our organizations are committed to collaborating to ensure that knowledge creation is translated into excellent therapeutics that enhance the quality of life. When we as partners combine forces, the strength of each of our communities and the impact of our efforts are amplified.

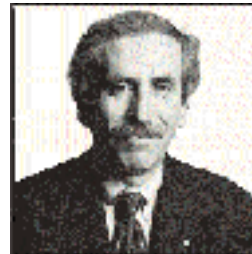
CIHR, through its funding of some of the world's finest health researchers, excels at knowledge creation and increasingly at the principles of knowledge translation. Its unique structure, with 13 virtual Institutes taking a problem-based approach to health issues, its broad mandate and its interdisciplinary approach make it a model for the world in these endeavors. Now CIHR has put in place a dynamic commercialization strategy to take research the next step, to do more to mobilize "our ideas and innovation out of our minds and into the marketplace" (Speech from the Throne, 2003).

Canada's Research-Based Pharmaceutical Companies (Rx&D) are CIHR's natural allies in this mission. They are international experts at the transformation of knowledge into therapeutics and managed care strategies.

The CIHR/Rx&D Program focuses the strengths of both organizations to optimize the impact of health research, spanning the often complex and always challenging developmental path from bench to bedside.

The Program builds research capacity in Canada. It contributes to Canada's 'brain-gain', provides opportunities to researchers whose discoveries carry with them the possibility of commercialization, and, through these opportunities, supports the development and integration of an emerging network of small and medium-sized enterprises, many with their roots in public funding from CIHR.

Canadian researchers increasingly recognize the opportunity and responsibility to derive economic value for Canadians from the fruits of publicly funded research and they recognize the value of partnership with Canada's Research-Based Pharmaceutical Companies in achieving this goal. Success breeds success, and our collaboration attracts new partners and investment to improve health, sustain our health care system and strengthen our economy.



Alan Bernstein
President
Canadian Institutes of Health
Research



Jean-Michel Halfon
Chair, Board of Directors
Canada's Research-Based
Pharmaceutical Companies (Rx&D)

New Directions for AIDS Research

Twenty years ago, men started showing up at St. Paul's Hospital emergency room in Vancouver with fatal pneumonia. No one knew what it was. All that we knew was that the men were young, previously healthy – and gay.

Today, we know they were among the earliest victims of AIDS – and over those 20 years, we have transformed this rapidly lethal epidemic into a more chronic and manageable condition. That is truly satisfying.

I have been involved with HIV/AIDS clinical trials for more than 20 years. Currently, I am focusing on developing new treatments for people who are not responding to the standard antiretroviral therapy.

HIV/AIDS research is a hugely competitive international field – it takes a lot to attract research initiatives to Canada.

HIV/AIDS research has become a global, fast-moving field – it takes a lot to attract research initiatives to Canada. I'm extremely fortunate to have access to the CIHR/Rx&D Research Program. The support I have received from numerous Rx&D member companies, in the form of both Randomized Controlled Trials and operating grants, has allowed me to attract additional funding and research mandates from industry around the world.

Combining the resources of CIHR and the Rx&D member companies has created new opportunities for training and education for younger investigators. In fact, I would tell my colleagues, especially the younger ones, that the CIHR/Rx&D Research Program is a great opportunity for them to do meaningful innovative research. I would encourage them to pursue this opportunity – I only regret that I didn't have this opportunity ten years earlier!

The benefits of the Program are not just one-way –

international pharmaceutical companies recognize that Canada is a leader in HIV research, treatment and management, highly competitive internationally. Our public health care system means that there is a standard of care to which all people with HIV/AIDS have access. As a result, we can investigate the more difficult questions, such as why some patients don't respond to antiretroviral therapy, or how to reduce its side effects. Furthermore the Canadian HIV Trials Network provides an integrated approach that reinforces Canada's strengths in HIV/AIDS clinical trials.

As well, we have one of the few jurisdictions in the world in which the entire HIV/AIDS program is under one umbrella – research, prevention, treatment, everything. This has given us a unique opportunity to look at the impacts and effectiveness of clinical guidelines and, as a result of our work, International Treatment Guidelines have been revised to be more effective. It truly is a unique environment here.

Canada is a leader in preventing, treating and managing HIV/AIDS, in no small part due to the investments made through the CIHR/Rx&D Research Program. Now it is my hope that we can take our leadership to the international arena, to translate our achievements into global advances and help end the devastation that HIV/AIDS is causing throughout so much of the world.



Building on Strength

Research is the lifeblood of the pharmaceutical industry. It is the beginning of the pipeline that culminates in products that enhance lives, by offering new ways to prevent, diagnose and treat disease effectively and profitably. Canada offers an ideal environment in which to carry out that research.

Research conducted under the aegis of the CIHR/Rx&D Research Program benefits from CIHR's rigorous peer review process. Throughout the world, Canadian researchers and CIHR bear the hallmark of excellence that is engendered by this process. It provides assurance that research meets and exceeds the highest international scientific and ethical standards. As an example, Canadian researchers have world-class expertise in the development and implementation of large-scale, multi-centre international clinical trials. Some of the world's top trialists are to be found in Canada and they are sharing their expertise through a mentoring and accreditation program that will strengthen Canada in this critical area of expertise.

CIHR's activities and programs, with their emphasis on meaningful collaborative partnerships with stakeholders, have created a sense of excitement and vitality within the research community. From around the world, researchers are choosing Canada because of the unprecedented opportunities that are open to them. Through the CIHR/Rx&D Program, pharmaceutical companies have access to the wealth of expertise and the superb researchers that can be found here in Canada.

Public investment in health research has also given rise to a vibrant and rapidly growing community of small and medium-sized biotech and pharmaceutical companies that are home to researchers on the cutting edge of innovation. This is an area of keen interest and excitement, fostering collaboration between multinational pharmaceutical

companies and members of this emerging community. CIHR-sanctioned programs provide a framework for this collaboration. CIHR is committed to working with relevant stakeholders to facilitate Canada's evolution into a world leader in the translation of research into health and economic benefits and to support the continued growth of this sector of the economy.

Since the creation of the CIHR/Rx&D Program in 2000, it has responded to the changing landscape of international health research in both the public and private sectors. The Program has integrated a growing emphasis on partnership

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across the public, private and voluntary sectors into its operations. It has demonstrated an increased understanding of the value of these partnerships for ensuring that research findings are applied where they are most needed.

Today, pharmaceutical companies throughout the world participate in the Program because it has demonstrated its effective use of their hard-to-come-by research resources and because it taps into the benefits of being associated with Canada's health research infrastructure, world-renowned for its excellence.

I encourage all my colleagues to explore the opportunities Canada has to offer through the CIHR/R&D Research Program.

Ronnie Miller
President and CEO, Hoffmann-
La Roche Limited



Delivering Results

Following an energetic start, the CIHR/Rx&D Research Program, under the leadership of Program Director Dr. David Brener, responded to new challenges and opportunities in 2002-2003, moving forward in three key areas: mobilizing research, developing people and building partnerships.

Mobilizing research

There has been remarkable progress over the past several years in fundamental science. Today, the challenge is to convert these discoveries into innovations that will lead to new therapeutic treatments. The CIHR/Rx&D Research Program plays a key role in achieving this goal.

A study of consultations between adult asthmatic patients and general practitioners, Marie-Thérèse Lussier, Université de Montréal, (Merck Frosst Canada & Co./CIHR)
 Improving cardiac rehabilitation participation by women and men, Neville Suskin, University of Western Ontario, (AstraZeneca Canada Inc./CIHR)

The past two years have also seen the Program extend its reach to include members of Canada's burgeoning small and medium-sized biotechnology and pharmaceutical enterprises as partners. CIHR supports this sector through programs such as the Proof of Principle (Phase I and Phase II), and CIHR/SME Research Programs, contributing to its growth and its ability to partner with Canada's Research-Based Pharmaceutical Companies (Rx&D).

“Discovery without application is but half the task. This Program mobilizes the translation of research discoveries focused on improving health and further benefiting the health economy.”

Dr. Phil Branton, Scientific Director, CIHR Institute of Cancer Research

Developing people

Recognizing and supporting researchers at the apex of their fields, through Research Chairs, helped to attract and retain some of the best researchers in the world. These researchers, in turn, with the support provided to them through the Chairs

Program, are in a position to train and mentor others. Nine Research Chairs were funded in 2002-2003. In addition to the CIHR/Wyeth Clinical Research Chairs in Transplantation, the Program now offers the GlaxoSmithKline-CIHR Research Chair Award, which will ultimately establish endowed research chairs at all Canada's medical schools.

Every research project funded through the Program has passed through CIHR's rigorous peer review process. This “seal of approval” is a guarantee that each project meets international standards of excellence and the highest ethical standards of conduct.

Over the past two years, the breadth of research projects undertaken through the Program has markedly increased, reflecting CIHR's broadened mandate to incorporate all approaches to health and disease. While biomedical and clinical research remain the mainstays of the Program, it is venturing onto new ground, funding research in areas such as population health and health systems research, through projects such as: A survey of Hepatitis A infection rates to guide future use of Hepatitis A vaccine, Jan Ochnio, University of British Columbia, (GlaxoSmithKline/CIHR)

In addition, the Program supported researchers at the outset of their careers with training awards and New Investigator Awards. These awards supplement base CIHR funding, permitting young investigators to establish their own groups and pursue their research interests. The seed funding provided by the Program helps these researchers to attract additional funding from other sources, leveraging the original investment by the Program. These awards contribute to training new investigators in excellent mentored environments, building capacity for future collaboration with Canada's Research-Based Pharmaceutical Companies.

Canada is a coordinating centre for some of the largest and most complex international clinical trials. The COURAGE (Clinical outcomes utilizing revascularization and aggressive drug evaluation) trial, for instance, involves four different industry partners contributing more than \$6 million, as well as the United States' Department of Veterans' Affairs, which is contributing more than \$8 million. The trial is headed by Teo Koon at Ontario's McMaster University. The presence of some of the world's top clinical trialists will help to build capacity in this area through the Randomized Controlled Trial Mentoring Program. Developed during 2002-2003, the program will be implemented in 2004, making yet more expertise available to companies carrying out leading-edge international trials.

Building partnerships:

Research is not a solitary activity and the creation of programs and partnerships that incorporate those who fund research, those who carry it out and those who use its results is one of CIHR's fundamental tenets. The involvement of Canada's Research-Based Pharmaceutical Companies (Rx&D) in these activities has, in turn, attracted more partners from government, non-governmental organizations, research institutes and other members of the private sector, creating a synergy that maximizes the impact of their investments.

These partnerships increasingly are playing an important role in facilitating the implementation of the strategic activities of CIHR's 13 Institutes. They also permit Canada's Research-Based Pharmaceutical Companies (Rx&D), as they move into new areas such as care management, to learn from and build on the unique strengths of CIHR's Institutes with their focus, not only on biomedical and clinical research, but on health services and systems and population health research as well.

Public-private partnerships are helping to facilitate Canadian leadership in international science. For example, the Structural Genomics Consortium, a partnership of more than \$100 million involving GlaxoSmithKline, the U.K. Wellcome Trust, CIHR, Genome Canada, the Canada Foundation for Innovation and the

Ontario Innovation Trust, is bringing together more than 100 researchers from Oxford and Toronto under the leadership of Canadian scientist Dr. Aled Edwards to facilitate drug discovery through determining the three-dimensional structure of more than 300 proteins. As well, Aventis Pharma is partnering with CIHR through the CIHR/Rx&D Research Program to establish the CIHR/Aventis Scholarships for students from developing countries to train in Canada before returning to their homes to continue their work.

Looking to the Future

“The CIHR/Aventis Scholarship exposes promising young scientists to the very best of Canadian science, laboratories and training environments.”

Jean-François Leprince, President, Aventis Pharma Inc

As a country, Canada is committed to catalysing the commercialization of research carried out at universities and hospitals. The Government of Canada has recently announced support for improving the capacity for commercialization and providing incentives to encourage venture capital and private-sector investment in this area. CIHR is expected to triple its annual investment in programs supporting commercialization over the next three years.

CIHR is poised to deliver this government priority, with its dynamic and innovative Commercialization and Innovation Strategy, approved by CIHR's Governing Council in 2003. This strategy is based on a vision of making Canada, with its private sector partners, a global leader in the translation of health research for economic, health and social benefit. The CIHR/Rx&D Research Program will play a central role in turning this vision into reality.

Putting Sleep Apnea to Bed

A good night's sleep – without it, the experts tell us, it's hard to concentrate, make decisions, handle stress, fight off colds and flu bugs. But for many people with sleep apnea, including 60% of people who suffer from stroke, a good night's sleep is but a dream; instead, they wake hundreds of times a night because they stop breathing.

Dr. Richard Wilson is trying to find out why this happens by studying the neural control of breathing.

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Specifically, he is focusing on the two chemoreceptors, peripheral and central, which together control breathing, to learn more about what each of them does and how they interact. He is also studying the neuropeptides involved in regulating breathing, to learn where and how they operate. His work could lead to the development of drug treatments for sleep apnea and other respiratory disorders that target the neural control mechanisms of breathing.

Dr. Wilson is a New Investigator with the Focus on Stroke Initiative, a partnership of the CIHR/Rx&D Research Program and AstraZeneca Canada Inc. together with the Canadian Stroke Network, the Heart and Stroke Foundation of Canada and the CIHR Institute of Circulatory and Respiratory Health. He works at the University of Calgary, where he is in good company – a quarter of the researchers funded through Focus on Stroke are at that university.

It was this critical mass of excellent researchers that attracted him to Calgary in the first place – that and the presence of his mentor, Dr. John Remmers. In fact, this UK native says, "...the quality of science and personnel throughout Canada is outstanding. Government and industrial recognition of the importance of pure science to future health and well-being are vital components in

the creation of this excellence and are helping make Canada one of the most attractive environments for scientific research."

Dr. Wilson is grateful to Focus on Stroke for the opportunities it has afforded him. It has enabled him to establish himself as an independent researcher. He has subsequently received grants from the Alberta Heritage Foundation for Health Research and the Canada

Foundation for Innovation, which would have been impossible without the support provided by Focus on Stroke. As a result, he has a well-equipped lab and

a graduate student and post-doctoral fellow to assist him in his work.

And while he does teach medical students, Focus on Stroke has given him what he calls "protected time" to concentrate on his research, something he says happens in very few places in the world. This, he adds, is making the difference in his productivity. And that means that a good night's sleep may not be such an elusive dream after all.



Dr. Richard Wilson, *University of Calgary*

Improving the Transplantation Odds

More than 3,500 Canadians are waiting for an organ transplant. Every year, 150 of them die, still waiting. And those who are lucky enough to receive the chance of a lifetime – a transplant – face a future of immunosuppressive drugs, with their often-toxic and always-significant side effects.

Dr. Li Zhang's research team may have found a way to reduce those waiting lists and the need to depend on immunosuppressive drugs. She has identified a type of regulatory T-cell lymphocytes that can be manipulated to stop rejecting transplanted organs without the use of

Dr. Zhang came to Canada in 1991, after finishing her PhD in Holland. This Transplantation Chair is the latest in a long line of accomplishments that began with her faculty appointment at the University of Toronto. The Transplantation Chair is exceptional, though, because it provides both salary support and operating funds – something Dr. Zhang says makes it possible for her to focus more on her research. She gets fulfillment from the fact that the Chair gives her the opportunity to mentor graduate students and post-doctoral fellows and discuss her research with them. Being awarded the Chair played a decisive role in her decision to stay in Canada.

“This Program is tremendously beneficial to our R&D endeavours, attracting, developing and enabling the world’s top researchers to pursue their careers in Canada.”

Dr. Rémi Quirion, Scientific Director, CIHR Institute of Neurosciences, Mental Health and Addiction

Today, Dr. Zhang is looking forward to going the full distance, from discovery to therapy. Tomorrow, thanks to her work and the support she has received from the CIHR/Rx&D Program, the chance of a lifetime may no longer mean a lifetime of immunosuppressive drugs.

drugs in rodents. And her work has revealed other potential roles for these cells. They may help prevent the rejection of transplants from other species, which could help to eliminate long waiting lists. They also have a potent anti-tumour effect, which means they have the potential for fighting cancer. And they could even have application for auto-immune diseases.

Dr. Zhang holds a CIHR/Wyeth Clinical Research Chair in Transplantation, awarded through the CIHR/Rx&D Research Program. This five-year, \$1.1 million award, which is also funded by the University Health Network, has allowed Dr. Zhang to accelerate the pace of her research, bringing her closer to developing a new therapeutic to make transplantation easier and more successful.



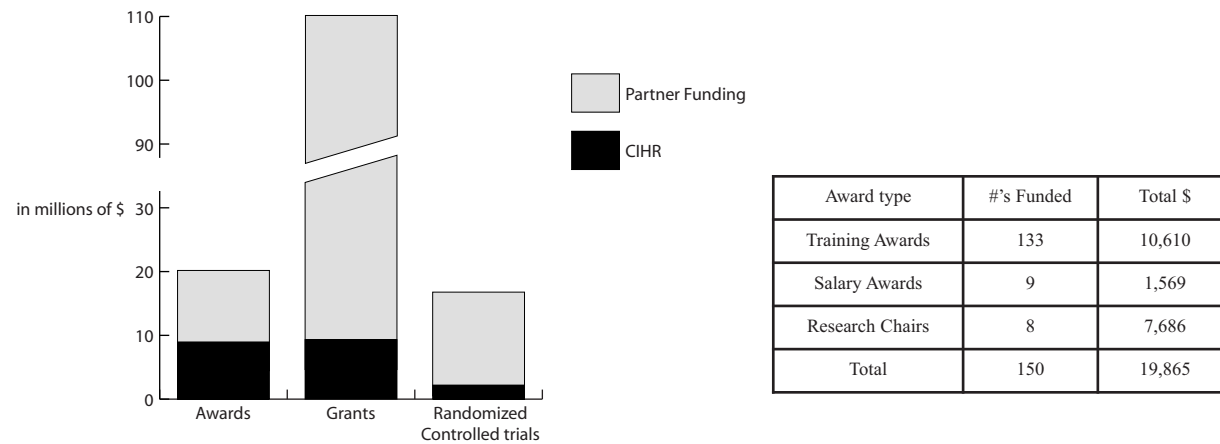
Dr. Li Zhang, *University Health Network*

Financial Overview

The performance detailed below for the period January 2002 to December 2003 is based on the results of competitions held five times a year as well as eligible competitions reviewed outside of regular competitions.

Activity profile and partner participation

(in millions of \$)



Award type	#'s Funded	Total \$
Training Awards	133	10,610
Salary Awards	9	1,569
Research Chairs	8	7,686
Total	150	19,865

Program activity showed a significant shift to awards in the 2002/3 period. Operating grants are fewer but of higher value. The Randomized Controlled Trial (RCT) application rate was low despite high international acclaim for Canadian quality, efficacy and leadership. Application requirements, review and the administrative process are being reviewed with the goal of improving the application rate.

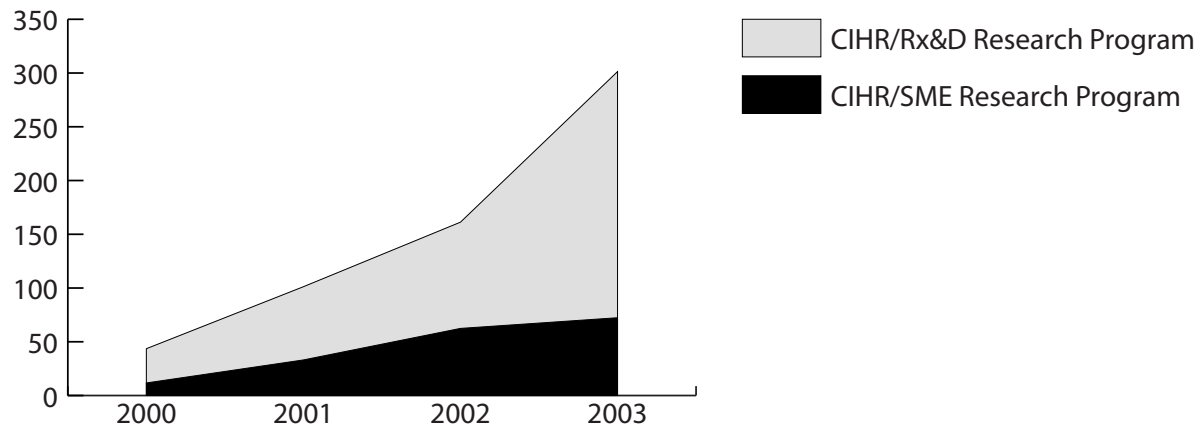
	Awards	Grants	Randomized Controlled Trials
Jan-June 2002	4,179,475	4,408,686	0
July-Dec 2002	6,631,166	1,964,483	226,821
Jan-June 2003	2,178,750	107,594,753	14,888,441
July-Dec 2003	6,937,778	1,201,560	1,652,000
Total	19,927,169	115,169,482	16,767,262

The RCT application rate was low (see note above). Total awards increased significantly over the previous period reported (# vs #)

Contribution of funded applications

	Partner Funding (\$)	CIHR (\$)	Total
Jan-Jun 2002	5,423,593	3,164,568	8,588,161
Jul-Dec 2002	5,306,142	3,516,328	8,822,470
Jan-Jun 2003	115,358,826	9,303,118	124,658,944
Jul-Dec 2003	6,529,917	3,261,421	9,791,338
Total	132,618,478	19,245,435	151,863,913

Cumulative industry partnered research activity



Partnered funding nearly tripled compared to the previous reporting period. Total funding activity increased by 122% over previous reporting period.