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THE OFFICIAL BULLETIN OF THE INTERNATIONAL ACADEMY OF CARDIOVASCULAR SCIENCES

VOL. 2 • NO. 1 • Pages 1-12, Feb. 2003

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From the Vice President



Dr. Stephen F. Vatner

There is a wide discrepancy between the national origins of high quality cardiovascular research vs. the national origins of the individuals performing the research.

The majority of research fellows and technicians in the U.S., particularly on the east and west coasts, are from the Asian continent. With the exception of Japanese students and post-doctoral fellows, who traditionally return to their country after training, the majority of other Asian scientists generally remain in Western countries. This serves to widen the gap between the quality of research originating in Western countries and Japan compared with the rest of the world.

There are a number of causes for these disparities. In the U.S., there has been a marked increase in funding for research over the last decade, as reflected by the dollars awarded to grants by the NIH Heart, Lung, Blood Institute, and as reproduced from their website (Figure 1).

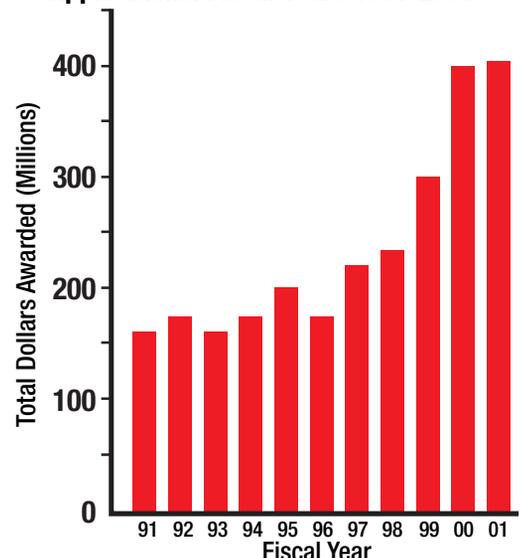
This increase in funding has not translated into a commensurate increase in students undergoing

graduate education for research or those in medical schools, who follow a research career after finishing their medical education. Indeed, there appears to be a serious decline in research scientists emanating from U.S. medical schools, even from prestigious MD/Ph.D. programs, where there is still a significant reduction of the fraction of students who stay the course and ultimately seek a career, which focuses on research.

This two-sided force, one which results in fewer students locally trained to do research and secondly, the increased need for students, fellows, and technicians to perform the increased research emanating from the augmentation of research dollars available, has created the vacuum, which is now being filled with students, fellows and technicians from foreign graduates.

Figure 1

NHLBI Competing Research Project Grant Applications: Fiscal Years 1981-2001



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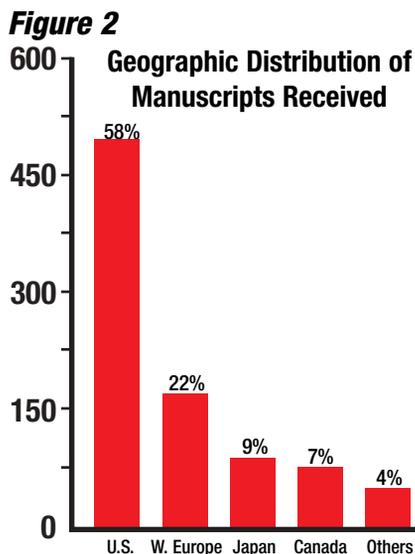
As noted above, with the exception of Japan, there are frequently diminished educational opportunities available to students from Asia and Africa. It is for this reason that in the absence of reversing the exodus of these students, the gap in training between Western Universities and those in China, India, and Africa, and to some extent, South America, will actually widen.

It is potentially in this arena that the International Academy of Cardiovascular Sciences can make a major difference. An important goal of the Academy is to improve the education, in general, and research preparedness, in particular, in countries where the current level of education is not competitive. If this could be coupled with a partial reversal of the exodus of trained scientists, the research gap would begin to narrow.

The American Heart Association recently has changed its visa criteria for applications, not only for post-doctoral fellows and students, but also for faculty, where scientist development grants are available to foreign visa holders. Importantly, a recent analysis of the first five years of this program, not only demonstrated very successful career development for principal investigators on the scientist development grants, but also that the

majority will remain in the U.S. Even more interesting, was the statistic that the fraction of foreign visa holders awarded grants was the same as that for grant applications. This indicates that the foreign visa holders submitted grants equal in quality to those with permanent residency in the US and US citizenship. One might even speculate that the quality was even higher considering that their English language skills may have been weaker.

In most academic environments, research productivity is measured primarily by peer-reviewed grant support and peer-reviewed publications in journals of high impact factor. During my tenure as Editor of Circulation Research, the journal reviewed over a thousand articles per year. Figure 2 shows the demographics of the national origins of the articles that were published after peer review. As expected, the largest contributing country was the USA, with Japan, Canada and Western European countries following. Only a very small fraction came from the remainder of the world, which includes South America, Eastern Europe, Russia, Australia, India, the remainder of Asia, and Africa. Paradoxically, as noted above, the availability of furthering education and research training in Western countries has not resulted in the expected improvement in research and education in the remainder of the world, but actually served to widen the gap. This widening research gap between Western countries and Japan on the one side and the remainder of the world needs to be remedied. It is within the purview and mission of the Academy to move into the breach and provide a broad worldwide forum for cardiovascular education and research. ❤️



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Academy Honours Eugene Braunwald

by Pawan K. Singal · Winnipeg, Canada

Eugene Braunwald, M.D. is the Distinguished Hersey Professor of Medicine at Harvard Medical School, Faculty Dean and Chief Academic Officer of the Partners HealthCare system founded by the Brigham and Women's and Massachusetts General Hospitals. The International Academy of Cardiovascular Sciences has bestowed on Dr. Braunwald the Academy's Medal of Merit for lifetime achievements.

Dr. Braunwald was born in Vienna Austria on August 15, 1929. He and his family fled Austria after the Nazi occupation and came to the U.S. in November 1939. Dr. Braunwald received his medical training at New York University and completed his Medical Residency at the Johns Hopkins Hospital. In 1955 he became a Clinical Associate in the (then) National Heart Institute. Subsequently, he served as the first Chief of the Cardiology Branch and then as Clinical Director of the National Heart, Lung and Blood Institute. After he left the intramural program, Dr. Braunwald became the founding Chairman of the Department of Medicine at the University of California, San Diego. From 1972 to 1996 he was Chairman of the Department of Medicine at the Brigham and Women's Hospital. Dr. Braunwald is the only cardiologist who is a member of the U.S. National Academy of Sciences. He has served as President of the American Society for Clinical Investigation and the Association of Professors of Medicine.

Dr. Braunwald has received numerous honors and awards including the Wiggers and Bowditch Awards of the American Physiological Society, the Abel Award of the American Society for Pharmacology and

Experimental Therapeutics, the Research Achievement, and Herrick Awards of the American Heart Association, the Distinguished Scientist Award of the American College of Cardiology, and the Kober medal of the Association of American Physicians. He is the recipient of nine honorary degrees from distinguished universities throughout the world. In 1996, Harvard University created the Eugene Braunwald Professorship in Medicine as a permanently endowed chair. In 1999, the American Heart Association created the Eugene Braunwald Academic Mentorship Award as a permanent annual award. In 2000, the living Nobel Prize winners in medicine voted Dr. Braunwald as "the person who has contributed the most to cardiology in recent years". During the International Society for Heart Research XVII World Congress in Winnipeg, Canada in July 2001, Dr. Braunwald was presented with the St. Boniface Hospital and Research Foundation International Award. In 2002, the Brigham and Women's Hospital dedicated a research facility as the "Eugene Braunwald Research Center".

Dr. Braunwald is the author of more than 1100 publications and an editor of Harrison's Principles of Internal Medicine, (Editor-in-Chief of the 11th Edition and the current 15th Edition) and the founding editor/author of Heart Disease, now in its 6th Edition. These two books are the leading texts in internal medicine and cardiology respectively. Dr. Braunwald has been Chairman of the TIMI trials since 1984 and he has led the SAVE and CARE trials.

Dr. Braunwald's research has illuminated many aspects of cardiology. He has been a major force in cardiovascular research continuously for almost five decades and remains so. His earliest work in the 1950's dealt with the hemodynamics of valvular heart disease. In studies with Stanley Sarnoff at the NIH, Braunwald characterized the hemodynamic determinants of myocardial oxygen consumption and coronary blood

flow, identifying the tension time index as a major determinant of myocardial oxygen consumption. He and John Ross then clarified the importance of Starling's Law of the heart as a major determinant of ventricular performance in man; and with Andrew Morrow he made seminal contributions to the description of, and then named, idiopathic hypertrophic subaortic stenosis, a relatively common form of heart disease.

Braunwald and his colleagues developed techniques for characterizing myocardial force-velocity relations in intact unanesthetized man. Together with Ross and Sonnenblick, Braunwald identified velocity of cardiac contraction as a major determinant of myocardial oxygen consumption. He and Steven Epstein performed some of the earliest studies on beta-adrenergic receptor blocking drugs and with Charles Chidsey described an important biochemical defect in heart failure -- the depletion of norepinephrine in the hearts of patients with this condition.

Dr. Braunwald demonstrated, first in experimental animals and then in patients, that limitation of infarct size (by improving the balance between the heart's supply of and demand for oxygen) can improve the outcome of patients with this common condition. This led to widely used methods of treatment of myocardial infarction such as reperfusion therapy (to improve oxygen supply) and beta adrenergic receptor blockade (to reduce oxygen demand). He then showed in patients who had survived a heart attack that survival can be improved further by preventing remodeling of the left ventricle using an angiotensin converting enzyme inhibitor. Most recently, he showed that clinical outcome in victims of infarction with average cholesterol levels can be improved with cholesterol reduction. Thus, taken together, Dr. Braunwald's major scientific contributions are central to the dramatic worldwide improvement in the outcome of patients suffering myocardial infarction. ♥



Academy Honours Robert J. Lefkowitz

by Pawan K. Singal · Winnipeg, Canada

With great pleasure, the Academy announces the award to Dr. Robert J. Lefkowitz of the Medal of Merit for his extraordinary lifetime of research, teaching and contribution to heart health in the world.

Dr. Lefkowitz was born in the Bronx, New York City in 1943. The only child of Max and Rose Lefkowitz, he had set his career goal of becoming a practicing physician as early as elementary school. Highly focused on this goal, he graduated from Columbia College with a Bachelor of Arts Degree at age 19 and from Columbia University College of Physicians and Surgeons at age 23. After an internship and 1 year of medical residency at Columbia Presbyterian Medical Center, he moved in 1968 to the NIH to fulfill his two-year military obligation as a Clinical Research Associate at the National Institute of Arthritis and Metabolic Diseases (NIAMD, as it was then called). During the subsequent two years, he worked together with Jesse Roth and Ira Pastan and developed the first radioligand binding assay for ACTH receptors leading to his very first publication in *The Proceedings of the National Academy of Sciences*. This study was amongst the very first to ever label a membrane receptor with a radioligand and was contemporaneous with the early work on the nicotinic cholinergic receptor. This first research experience greatly excited him, but he moved to Boston to finish his clinical training in General Internal Medicine and Cardiovascular Diseases at the Massachusetts General Hospital. During this period (1970-73) he began working in the laboratory of the Chief of Cardiology, Dr. Edgar Haber, a noted immunochemist, and initiated the studies that ultimately formed the basis for his life's work on adrenergic receptors. In July of 1973, he

moved to Duke University as an Associate Professor of Medicine and Biochemistry and started his own independent research program. In 1976, he became an Investigator of the Howard Hughes Medical Institute, a position he holds to this day. He became a James B. Duke Professor of Medicine and Biochemistry in 1982.

Working with the adrenergic receptors as models, Dr. Lefkowitz's research has formed the basis for the now vast field of research into so-called G protein-coupled membrane receptors. This, the largest superfamily of membrane receptors, includes approximately one thousand members in the mammalian genome and regulate virtually all physiological processes from hormonal and neurotransmitter signaling to sensory signaling in the visual, olfactory and taste systems to chemokine signaling. Virtually all cardiovascular regulation is controlled by members of the seven membrane spanning receptor superfamily such as the adrenergic and muscarinic cholinergic receptors, angiotensin and endothelin receptors and many others.

In the early 1970's, Lefkowitz and his numerous students and fellows systematically developed ligand binding approaches for the study of each of the then-known adrenergic receptors, both $\alpha 1$ and 2 and $\beta 1$ and 2 . They then developed methods to solubilize, photoaffinity label and ultimately purify by affinity chromatography each of these receptors. In the 1980's, they were able to obtain small amounts of protein sequence from the purified receptors and clone their genes and cDNAs. His cloning, together with collaborators at Merck, of the gene for the $\beta 2$ -adrenergic receptor, announced in *Nature* in 1986, revealed its homology and secondary structure relationship to the visual pigment, rhodopsin. The common theme of seven membrane spanning domain receptors was rapidly confirmed by his laboratory on the other members of the adrenergic receptor family. This early work made possible the cloning of essentially all the other members of the vast superfamily of receptors by various homology techniques over the ensuing fifteen years.

Lefkowitz also unraveled the molecular mechanisms underlying the phenomenon of desensitization of receptors, in the process discovering and cloning the G protein-coupled receptor kinase and b-arrestin families of proteins which regulate this universally important regulatory phenomenon. More recently, he has found that G protein-coupled receptor kinases and b-arrestins not only desensitize receptors, but can link them to novel signaling pathways. Exciting new functions for the arrestins are being reported by laboratories around the world including their important role in mediating clathrin-mediated endocytosis of the receptors.

His laboratory has also made numerous other discoveries about the molecular mechanisms of functioning of the receptors, how they signal, interact with G proteins, etc. They also discovered the phenomenon of constitutively active mutant receptors, now known to be the cause of an ever-growing list of human diseases.

As he approaches his sixtieth birthday, he continues as actively engaged in his research as ever, with the major current focus being on unraveling the novel signaling roles of b-arrestins and G protein-coupled receptor kinases. His approaches range over the entire spectrum from genetically altered knockout and transgenic animals to detailed molecular and structural studies. Despite all of his accomplishments in research, the professional accomplishment of which he is most proud is the training of a large number of extremely successful and productive investigators. Almost 200 individuals have worked in his laboratory over the past 30 years, many of whom have gone on to distinguished careers as scientists and administrators in both the academic and commercial settings. Along the way, he helped raise five children, three boys and two girls, none of whom have pursued careers in Science or Medicine, but four of whom are involved in one or another aspect of the entertainment business.

For his research, Lefkowitz has been repeatedly recognized and honored. Some of his awards include: 1976 Howard Hughes

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Medical Institute Investigator; 1979 George W. Thorn Award for Scientific Excellence of the Howard Hughes Medical Institute; 1982 Ernst Oppenheimer Memorial Award of the Endocrine Society; 1982 Gordon Wilson Medal, American Clinical and Climatological Assn.; 1986 Goodman and Gilman Award of the American Society for Pharmacology and Experimental Therapeutics; 1987 North Carolina Award for Science; 1988 National Academy of Sciences; 1988 American

Academy of Arts and Sciences; 1990 Association of American Medical Colleges Biomedical Research Award; 1990 American Heart Association Basic Research Prize; 1990 Honorary Member Japanese Biochemical Society; 1994 Institute of Medicine National Academy of Sciences; 1995 The Endocrine Society Gerald D. Aurbach Lecture Award; 1997 The New York Academy of Medicine, 2000 F.E. Shideman-Sterling Award, University of Minnesota; 2001 The Louis and

Arture Lucian Award for Research in Circulatory Disease 2001 Jessie Stevenson Kovalenko Medal, The National Academy of Sciences; 2001 Peter Harris Distinguished Scientist Award, International Society for Heart Research (presented at the World Congress in Winnipeg); and 2001 Appointed as a Fellow in the International Academy of Cardiovascular Sciences and is now a most befitting recipient of the Academy's Medal of Merit. ♥

A D V A N C E S I N H E A R T H E A L T H



Remarks by DR. MICHAEL DEBAKEY following presentations to him by His Honour, Lt-Gov. Peter Liba (the Queen's representative to Manitoba) of the Medal of Merit of the International Academy of Cardiovascular Sciences (left) and by Mayor Glen Murray of Honourary Citizenship in the City of Winnipeg (right), at the Annual Cardiovascular Awards Dinner of the Institute of Cardiovascular Sciences at the Winnipeg Convention Centre, October 1, 2002

"Distinguished Guests, Ladies and Gentlemen

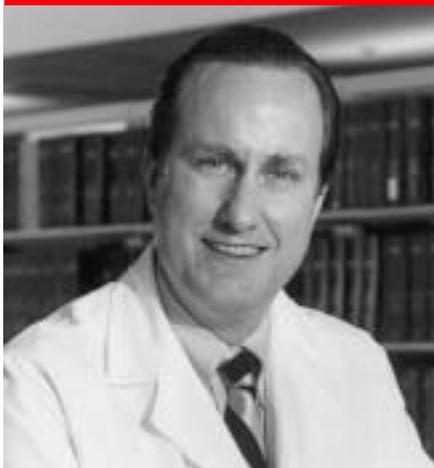
My first thought, of course, is to express my very humble and grateful appreciation for the high honour of the Medal of Merit and Honourary Fellowship awarded me by the International Academy of Cardiovascular Sciences and the Honouray Citizenship of Winnipeg and the presentations to me by His Honour, Lt-Gov. Peter Liba and by the Honourable Glen Murray. I have long admired Canadians and have enjoyed their gracious hospitality over many years. Tonight, I was inspired by the Awards that were presented to the scientists and the emphasis given to research and I had the opportunity today to observe the ongoing research in a laboratory at the St. Boniface Research Centre Cardiovascular Institute. To me, this is perhaps the best characteristic of a society that seeks to improve its civilization. Throughout history, the human condition has been improved through new knowledge. The new knowledge created through research makes life better for each genera-

tion. You can be sure of one thing: there will be no new knowledge unless investigations are allowed to flourish. All new knowledge that has been created throughout history has derived from research in one form or another' largely through the innate sense of curiosity that we have and that is especially active in the minds of researchers

In my long life, I have had extensive experience the cardiovascular field, and the progress that has been made in the last half century in this specialty probably exceeds all of previous time. When I was a medical student and a resident many years ago, a patient who had a heart attack and was admitted to the hospital had about a 50/50 chance of leaving the hospital alive. There was very little that we could do and the patient's outcome was probably more in the hands of God than it was in our hands. Today, patients with the same condition being admitted to Canadian hospitals, and to those in the United States, have a better than 95% chance of leaving the hospital, not only alive, but returning to a reasonably normal life. And

that is directly attributable to research. When I was a resident I stayed by the bedside of a patient dying of a ruptured aneurysm of the aorta Nothing could be done for him at that time, but today a curative operation is routine. Again, all because of research. Every means that we now have that is effective in the field of cardiovascular health in restoring circulation and returning to productive life a patient with a deadly form of cardiovascular disease is the result of research. And that is why I said I was so inspired by the scientific research being conducted here in Winnipeg, in Manitoba, as evidenced by what I saw in the laboratories and what I heard in the lectures today.

I would also like to express my grateful appreciation for the opportunity of being here with you and for the honours accorded me by the International Academy of Cardiovascular Sciences as well as to express my admiration and commendation for your support and for your activities in the field of research. ♥



Challenges, Opportunities and Obligations For Improving Cardiovascular Health Worldwide

by Karl T. Weber, Neuton Stern Prof. of Cardiovascular Medicine, University of Tennessee College of Medicine, Memphis, TN

Biomedical scientists live in a scholarly community, where creative thought and inquisitiveness are endorsed, indeed nurtured, and where there exists the opportunity to be productive in a never-ending mode of discovery. Fellowship in the International Academy of Cardiovascular Sciences bestows recognition to biomedical scientists who have advanced their discipline and perhaps the practice of medicine. Lest the scourge of elitism invade those so privileged, fellowship carries a responsibility that reaches beyond personal gain and one's scholarly community; it offers an opportunity to improve the society we live in. The Academy's mission is to educate and to promote world health. An imperative its members must embrace.

In 1804 the world's population reached 1 billion. One hundred years later it was 2 billion. Current estimates suggest it will exceed 6 billion in 2004 and 8 billion in 2025. The 21st century will see our world's population living longer. Global life expectancy, currently 66 yrs, will continue to increase to age 73 in 2025. In all countries it will exceed 50 yrs.

The improvement in world health is an outcome of many factors: economic development; water management, including sanitation facilities; improved health services, such as the control of infectious diseases in children through immunization; and more effective therapies, particularly the management of cardiovascular diseases.

With more older people the world over, disease patterns will likely change. Diseases affecting the heart and vasculature, for example, will become more prevalent in countries where infectious diseases once dominated and determined life expectancy.

As people continue to live longer, will they live healthier? We should not simply presume this the case, but ensure it is so. As Fellows of the International Academy of Cardiovascular Sciences, we must broaden our perspective. We must not only continue to advance biomedical science but promote global health as well. We must implement better health and subscribe to global citizenship shedding the mantle of colonialism and its mandate of exclusivity. We must foster goodwill, peace and understanding between peoples of the world. In so doing, we position ourselves as dedicated to the progress of mankind. As an asset to humanity and in the spirit of altruism, we should not expect to receive, but to give.

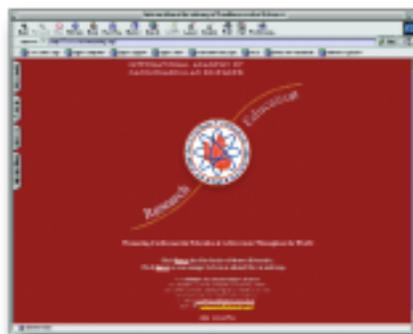
By transcending divergences of opinions, interests inherent with political convictions and religious beliefs, racial prejudice, social elitism and conflict, we overcome activities destructive to the common good. We must seek the high road-- the welfare of society--through research, shared knowledge and education while mindful of differences in culture, religion, political and social structure. We should work toward the common good – health and well-being. We should build relationships that recognize and pro-

mote social value of collaboration in a spirit of international understanding.

As Fellows of the Academy, what can each of us do to promote world health? Venues abound: implementing programs that focus on world health through prevention and treatment; integrating discoveries between bench and bedside thereby contributing to the progress and development of one global society; creating bridge-building strategies between basic, clinical and population-based sciences for the purpose of world health promotion and education; drawing on the wisdom and expertise of senior scientists in their capacity as "books of knowledge" to educate others; and developing collaborations with industry and governments that advance global health.

Let us dare to dream more than others thought practical; care more than others thought wise. Choices might involve a well-worn road, but doing it better than others thought possible. Perhaps a less well traveled path, risking more than others thought safe. In either case, success brings a better world to live in. As Fellows of the Academy, the opportunity is at hand, lets grasp it. ♥

Visit The Academy At:



www.heartacademy.org

The CIHR Institute of Circulatory & Respiratory Health

by: Bruce McManus, Scientific Director, Institute of Circulatory and Respiratory Health, Canadian Institutes of Health Research, Vancouver, Canada



ICRH staff (from left to right: Arun Chockalingam, Elissa Hines Reimer, Salima Harji, Bruce McManus, and Melanie Larson).

Dr. Alan Bernstein, my fellow CIHR Scientific Directors, all CIHR staff, and many champions across the country are working intensely on the implementation of a bold vision of excellence for Canadian human health research programs. There is great optimism about the future of Canadian contributions to health research knowledge generation and translation. Staff of the Institute of Circulatory and Respiratory Health (ICRH) have worked tirelessly for all health researchers, and especially those working on conditions associated with the heart, lung, brain (stroke), blood vessels, blood, critical and intensive care, and sleep. The ICRH supports studies of molecules and mechanisms, clinical research including trials, health services and policies that affect health care, and the health of complex and diverse populations. In this brief snapshot of the ICRH, we capture programmatic accomplishments since its creation, what is planned for the upcoming year and what may be over the horizon.

Outstanding Research

With evolution of CIHR, the importance of the individual investigator has been kept front and center through the open competitions for grants and awards, while we develop novel

strategic avenues to harness and build our capacity for high value health research. Throughout 2001 and 2002, ideas and information from many sources including the Institute Advisory Board, as well as funding partners, have spawned a range of Institute research priorities. Priorities will evolve based on disease burdens, opportunities for advances, advice from researchers, the direction of public policy, emerging technologies, partner support and other forces. As well, the Research Planning and Priorities Committee of CIHR has earmarked a beginning set of cross-cutting research themes, spanning Institutes and CIHR themes. Clinical Research, Rural and Remote Health, Population Platform for Integrated Gene-Environment Health Research, and Regenerative Medicine are examples of such. These initiatives in development may evolve into large-scale programs in the coming years. CIHR and the Institutes have an expanded menu of funding vehicles (e.g., New Emerging Teams [NETs], Interdisciplinary Health Research Teams [IHRTs]) to enable teams of researchers to accomplish the goals of strategic research endeavours. The suite of funding vehicles will change as needs and gaps are identified.

In August 2001, the ICRH, in collaboration

with the Heart and Stroke Foundation of Canada, announced its first large-scale strategic initiative related to genetic and environmental interactions that determine circulatory and respiratory diseases. IHRT scientists are studying the complex and multivariate interplay between genes, gene products, and the social, cultural, ecological, behavioural and therapeutic environments in causation of common and burdensome ailments including hypertension, heart failure, atherosclerosis, asthma and COPD. Three teams were funded in April 2002. Given the importance of genetic and environmental interactions in circulatory and respiratory diseases, ICRH encouraged NETs to submit applications on this same theme in spring 2002 call for new applications. Together with the IHRTs, the successful new NETs will lead in dissecting the intricate process that determines disease phenotype over the course of disease.

The ICRH is co-sponsoring with the Canadian Cystic Fibrosis Foundation a three-year program led by Dr. Miguel Valvano from the University of Western Ontario, the Special Initiative in Cystic Fibrosis Research – In Memory of Michael O'Reilly, aimed at discovering new approaches for treating cystic fibrosis patients who have *Burkholderia cepacia* complex and other multi-resistant bacteria in their airways.

Through the NET program, designed to build effective new teams of established and emerging investigators, ICRH is supporting six successful applications in the area of chronic diseases in collaboration with various partners. The program enables interdisciplinary research focused on common and related aspects of kidney disease, cardiovascular disease and diabetes. Likewise, ICRH, in collaboration with partners, is supporting one NET grant led by Dr. Allan Becker from the University of Manitoba that will address the underlying mechanisms, predisposing risk factors, treatment and prevention strategies, and impact on health services and sys-

tems of asthma.

For 2002, the ICRH participated in offering strategic research programs that not only build on the strengths of groups funded through 2001, but also explore newly identified areas of opportunity and need (Table 1). The results of these competitions will be announced over the coming months following peer review.

Excellent Researchers and a Robust Research Environment

ICRH continues to allocate significant resources, energy and time to exploring the needs of researchers and developing sustainable pathways to meet these needs. A New Frontiers Program (NFP) was launched on May 7, 2001, as the inaugural ICRH strategic initiative, a program designed to help build a national research agenda for circulatory and respiratory health and to enhance the effectiveness and activity of these research communities toward solving a health research problem. Twenty-one were funded during the 2001 call for applications. Initial NFP researchers represent 19 universities and 24 research institutes, hospitals, government, and other organizations and agencies.

In February 2002, ICRH and its partners hosted an NFP national symposium. ICRH continues to monitor the progress of the NFP groups as they move toward more mature research programs. In a recent 2002 call for applications, ICRH funded NFP Extension grants in six research areas. A second wave of NFP in 2002 addresses key horizon focuses for research or research enablement (Table 1).

In a new approach to health research training in Canada, CIHR including all 13 Institutes and their partners, launched a national training program call in May 2001. The training program aims to increase the capacity of the Canadian health research community through improved mentoring, training and fostered immediacy, flexibility and local autonomy in the support of young research talent. The ICRH, in collaboration with the Heart and Stroke Foundation of Canada (HSFC), received applications that focused on the integration of diverse research disciplines and themes and promoted the inclusion of clinicians and clinician-scientists. Six outstanding

training programs were funded in March 2002 by ICRH in partnership with the HSFC. The overwhelming positive response and support for this program by the community has prompted ICRH and HSFC to re-launch the program in May 2002. More applicants will be funded in the spring of 2003.

In June 2001, the Canadian Stroke Network (CSN) approached the ICRH regarding the shortage of highly qualified personnel working in the area of stroke research and proposed the creation of a new initiative to increase capacity for stroke research in Canada. By the fall of 2002, and with a unique partnership between the CSN, ICRH, HSFC, CIHR Rx&D and AstraZeneca, the Focus on Stroke partnership was born. This program provides funding opportunities for training through Doctoral Research Awards, Postdoctoral Fellowships (MD/PhD), and New Investigator Awards specifically in the area of stroke and is being relaunched this year.

The ICRH has engaged Dr. Naranjan S. Dhalla, Distinguished Professor and Director, Institute of Cardiovascular Sciences, St. Boniface General Hospital Research Centre, University of Manitoba, in planning a National Young Investigators Research Forum in circulatory and respiratory health, the first to take place in 2004 in Winnipeg, Manitoba. This Forum will showcase trainees through less than 10 years as an independent investigator for the purpose of creating a sense of exuberance, confidence, and diligence in the next generations of researchers. The circulatory and respiratory research community will become an integrative and truly synergistic enterprise through initiatives like this.

Partnerships

By working in a coordinated fashion with international and national partners, ICRH has a unique opportunity to benefit world progress in health research. To encourage the sharing of ideas and experiences among organizations and agencies that support circulatory and respiratory research in Canada, ICRH hosted Partners Forum: Toward a National Research Agenda in April 2001 in collaboration with 16 organizations/agencies (Table 2). This Forum was the first in an annual series focused on foundations for

partnerships to support research and training in circulatory and respiratory health in Canada, and more specifically, learning about each other's mandates, defining principles of partnering, and seeking to identify specific areas of focus for potential partnerships. The purpose of Partners Forum II, held in April 2002, was to build toward an integrative strategic research and knowledge translation agenda. Partners Forum III is scheduled for April 2003 and once again, will be a meeting ground for organizations/agencies that support circulatory and respiratory research in Canada.

In February 2001, ICRH led a delegation from the Canadian Lung Association, Canadian Blood Services, Heart and Stroke Foundation of Canada and CIHR to the National Heart, Lung, and Blood Institute (NHLBI) and the National Institute of Neurological Disorders, and Stroke of the National Institutes of Health, USA. Representatives had an opportunity to discuss experiences, strategic planning processes and opportunities for partnerships. In follow-up to this site visit, ICRH and the NHLBI co-hosted a plenary session on Research Collaborations Between the United States and Canada at the Frontiers in Cardiovascular Research conference held in October 2001 in Seattle, Washington. ICRH continues to interact on a regular basis with the NHLBI and is working toward joint research programs.

In January 2002, on behalf of Dr. Alan Bernstein, ICRH led a delegation of 21 Canadian health researchers and research administrators representing eight partner organizations and agencies and the CIHR Secretariat and eight Institutes, on a visit to the Institutos Nacionales de Salud (INS) in Mexico City. The primary goal of this visit was to discuss a path toward cooperation and collaboration in health research, research training, policy development and knowledge translation between Canada and Mexico. Tenets tabled during the visit were summarized in a brief Letter of Agreement. A return visit of a Mexican delegation to Ottawa took place in October 2002 wherein further steps around shared research activities took place.

Outreach

Communication efforts have enabled ICRH to develop ties with the research community including continual upgrading of the CIHR and ICRH website, e-mail notices, and especially visits by Dr. Bruce McManus and the ICRH team to many health research institutions, organizations and agencies across the country and internationally. As well, ICRH has participated in and/or contributed to various scientific and professional meetings in a variety of ways including exhibits and presentations on such topics as grant writing and invites researchers to participate at regular Institute Advisory Board meetings.

Dr. Bruce McManus and the other CIHR Scientific Directors have had several venues including a meeting with members of the Caucus on Post Secondary Education and Research of the Federal Government and one-on-one meetings with politicians to discuss the present status and future trajectory for health research initiatives in Canada and to discuss work needed in the area of circulatory and respiratory health research on a Canadian and global scale.

Translation and Use of Knowledge

CIHR is mandated not only to forge a health research agenda that creates knowledge, but also to facilitate the translation of this knowledge for a strengthened health care system and improved health for all Canadians. ICRH has promoted and will facilitate exchange between researchers who generate knowledge and end-users of research including health policy makers, health professionals and the general public, whenever possible. In these regards, ICRH has incorporated knowledge translation activities as a core criterion for evaluating applications to ICRH programs including the Genetic and Environmental Interactions initiative and the New Frontiers Program (NFP). As ICRH-funded programs progress and mature in the coming year, ICRH will monitor and track knowledge translation activities stemming from ICRH funded research. ICRH will continue to promote linkage activities and lead the changes that are required, by serving as an intermediary or knowledge broker

between researchers and research users.

Clinician-scientists have a significant role to play in ensuring the transfer of health research knowledge into clinical practice and are optimally positioned to facilitate this transfer because they work in the health research and health care enterprises simultaneously. ICRH has championed the cause of clinician-scientists and more broadly the Canadian clinical research enterprise on behalf of CIHR and is working with a wide range of stakeholders to increase the knowledge translation impact, contributions and strength of clinician-scientists in Canada. In recent months, ICRH, on behalf of CIHR, convened two such groups, the CIHR Working Group on Clinical Research and the Multi-Stakeholder (MUST) Taskforce for Clinical Research, to design processes and programs to enhance the environment for training and retaining clinician-scientists and in the furtherment of clinical research in Canada. The recent Romanow Commission supports CIHR's pursuit of establishing Centres of Health Innovation where researchers, including clinician-scientists, knowledge translators, policy analysts and other professionals are focused on improving the knowledge translation value and impact of health research.

Organizational Excellence

The ICRH team consists of five members, four of whom work from the ICRH office located at Providence Health Care/University of British Columbia, St. Paul's Hospital in Vancouver, British Columbia. Working with Bruce McManus (Scientific Director) are: Arun Chockalingam (Assistant Director), Elissa Hines Reimer (Senior Associate, Planning and Policy) from the CIHR Secretariat in Ottawa/Munich, Salima Harji, (Senior Project Officer) and Melanie Larson (Administrator) (Figure 1). The ICRH team will expand in the coming year with the addition of permanent and temporary staff and including participation by students.

The Institute is guided by a distinguished, passionate and committed group of researchers spanning the mandate of the Institute, the ICRH Institute Advisory Board (IAB). This Board has shown incredible generosity and commitment to further the goals

of ICRH and of health research. The ICRH team regularly updates IAB members on progress made by ICRH and CIHR through monthly letters of update and meetings. At an important milestone meeting in June 2001 the Board members provided guidance for a number of strategic directions that have since been developed as requests for applications. Another such planning and priorities meeting is planned for January 2003.

ICRH is actively involved in monitoring and improving the peer review process for open and strategic research. ICRH staff has been actively involved in the CIHR Peer Review and Grants and Awards Administration group that recently tabled a draft report on the findings and recommendations for improving and optimizing current review and administration processes. As well, ICRH has made significant steps forward to facilitate joint peer review processes for initiatives offered with partners. The Special Initiative in Cystic Fibrosis Research – In Memory of Michael O'Reilly involved a review by experts jointly chosen and approved by the Canadian Cystic Fibrosis Foundation and ICRH. Likewise, the Focus on Stroke partnership involved management of a single application intake and peer review process and joint approval of the awards.

Conclusion

If, within the next several years, the ICRH has created a sense of wholeness within the cardiovascular, respiratory, critical care, sleep and blood research communities across the country and we have fostered the initiation of several worthy multi-disciplinary, nationally relevant strategic projects in health research, we will be heading in the right direction. If we have contributed to a broad and positive public awareness of the Institute of Circulatory and Respiratory Health and of the CIHR as catalysts for discovery and research translation, then we will have succeeded. A sense of personal success must permeate the investigators across the many scientific communities, and ultimately the public must own the bridge between discovery and better care.

Tables and Figures continued on next page ♥

Table 1. ICRH funding opportunities, 2002.

Program Title	CIHR Institutes*
Request for Proposal: Population-Based Health and Health Service Data in Canada: Current Status and Future Health Research Potential (Full proposal due March 15, 2003)	IPPH, IHSPR, IAPH, IA, ICR, ICRH, IGH, IG, III, IMHA, INMHA, INMD
Building Healthy Communities Through Rural and Northern Health Research	All
Global Health Research Program Development and Planning Grants	IPPH, IAPH, ICRH, IGH, III, INMHA, INMD
Knowledge Translation Strategies for Health Research	All
Institutional Establishment Grants - Repatriation of outstanding researchers in circulatory and respiratory health (Full proposal due Feb. 1, 2003)	ICRH
New Emerging Team (NET) Grant Program <ul style="list-style-type: none"> Fetal-Maternal Influences on Circulatory and Respiratory Diseases Novel and Integrative Approaches to the Assessment, Care and Management of Patients with Circulatory and Respiratory Diseases Obesity-Associated Vascular and Respiratory Conditions Self-Regeneration, Repair and Replacement of Damaged and Diseased Cells, Tissues and Organs in Circulatory and Respiratory Diseases Interaction of Genes and Environment in Determining Susceptibility to Circulatory and Respiratory Disorders 	All
Strategic Training Initiative in Health Research	All
New Frontiers Program <ul style="list-style-type: none"> Extension grants Development grants: <ul style="list-style-type: none"> ✓ Building synergy in the blood research community: Setting research priorities in the area of thrombosis ✓ Operational and ethical issues associated with banking human biological materials ✓ Exploration of legal and ethical issues in circulatory and respiratory research ✓ Improving our understanding of circulatory and respiratory diseases using tools rooted in the computational sciences and mathematics ✓ E-Research: Information technology applications in the Canadian circulatory and respiratory health research enterprise ✓ Infectious causes of circulatory and respiratory diseases 	ICRH

***Abbreviations:** IA, Institute of Aging; IAPH, Institute of Aboriginal Peoples' Health; ICR, Institute of Cancer Research; ICRH, Institute of Circulatory and Respiratory Health; IG, Institute of Genetics; IGH, Institute of Gender and Health; IHSPR, Institute of Health Services and Policy Research; III, Institute of Infection and Immunity; IMHA, Institute of Musculoskeletal Health and Arthritis; INMD, Institute of Nutrition, Metabolism and Diabetes; INMHA, Institute of Neurosciences, Mental Health and Addiction; IPPH, Institute of Population and Public Health.

Table 2. Organizations/agencies that participated in the ICRH-hosted Partners Forum I and II.

Partners Forum I, 2000	Partners Forum II, 2001
Anemia Institute for Research and Education	Canadian Blood Services
Canadian Blood Services	Canadian Cardiovascular Society
Canadian Cardiovascular Society/ Canadian Thoracic Society	Canadian Council of Cardiovascular Nurses
Canadian Council of Cardiovascular Nurses	Canadian Cystic Fibrosis Foundation
Canadian Cystic Fibrosis Foundation	Canadian Diabetes Association
Canadian Hypertension Society	Canadian Hypertension Society
Canadian Lung Association	Canadian Intensive Care Foundation
Canadian Sleep Society	Canadian Lung Association
Canadian Society of Respiratory Therapists	Canadian Sleep Society
Canadian Stroke Network	Canadian Sleep Society/Sleep Wake Disorders Canada
Capital Health	Canadian Stroke Network
Health Canada	Health Canada: Centre for Chronic Disease Prevention and Control
Heart and Stroke Foundation of Canada	Heart and Stroke Foundation of Canada
CIHR Institute of Circulatory and Respiratory Health	CIHR Institute of Circulatory and Respiratory Health
Laboratory Centre for Disease Control	
Nova Scotia Health Research Foundation	
Statistics Canada	



Opportunities in Cardiovascular Sciences in Japan

by Hiroyuki Suga, Director General, Research Institute National Cardiovascular Center, Osaka, Japan

In Japan, the death rate due to Cardiovascular (CV) diseases is similar to that experienced by cancer patients. However, patients with CV diseases are several times more than cancer patients and medical expense for managing CV diseases is twice that for cancers. All 80 medical schools and their hospitals (see UMIN, www.umin.ac.jp/eng/) in Japan have Departments or Divisions of Cardiovascular Medicine and Surgery. Many national (>200), municipal, and private hospitals all over Japan have clinics more or less specializing in CV diseases (see UMIN).

There are six specialist national medical centers in Japan: National Cancer Center, National Cardiovascular Center (NCVC), National Center for Neurology and Psychiatry, National Center for Child Health and Development, International Medical Center of Japan, and National Institute for Longevity Sciences, all belonging to the Ministry of Health, Labor and Welfare (www.mhlw.go.jp/english/index.html). Of these, the NCVC is the only one entirely specializing in CV diseases in Japan (www.ncvc.go.jp/english/indexe.html).

The NCVC was founded in 1977 to provide the public with the most advanced treatment for CV diseases and to conduct the highest level of basic and applied research on the CV system and its diseases. The NCVC has the fundamental aims: 1) to elucidate the mechanisms of CV diseases and combat them, 2) to establish complete treatment for CV diseases by developing new technology, 3) to assist patients suffering from CV diseases in mak-

ing a complete recovery and return to society, and 4) to provide new CV medical care systems that are needed.

Toward these aims, the NCVC is responsible for providing extensive medical care, including not only highly advanced and specialized medical treatment for acute-phase CV diseases, but also heart, lung, tissue and cell transplantation, artificial organs and tissue regeneration. To spread these medical skills and knowledge nationwide, the NCVC is also providing training to medical staff such as doctors, nurses and technicians and communicating information on CV diseases by using the nationwide internet system (Jun-net) and other means with the national hospitals specializing in CV diseases.

The NCVC consists of a hospital, a research institute, and the administration on the same site in Osaka. The Hospital is highly integrated as it specializes in CV diseases and their associated risks such as heart, vascular, cerebrovascular and renal diseases and hypertension. Each clinical division provides highly advanced and specialized medical care and clinical research while providing mutually cooperative diagnosis, treatment and prevention. The hospital also acts as a top teaching hospital and provides training to medical staff.

The Research Institute, of which I am the Director General since 2000, is making its maximum effort to elucidate the mechanisms of CV diseases such as heart failure, arrhythmia, hypertension and arteriosclerosis and develop their diagnosis and treatment methods. Current activities of the Research Institute include the following: genomics, proteomics, bionic medicine, nanomedicine, regenerative medicine, tissue engineering and artificial organs beside the basic and translational curiosity-driven studies.

Our genomics is part of the National Millennium Genome Project for 2000-2004, where the mission is to identify patients' SNPs responsible for hypertension as a lifestyle CV disease and related CV diseases such as atherosclerosis, cardiac infarction, and arrhythmia. Our proteomics and bionic medicine are parts of the National Medical Frontier Project for 2001-2005. Our mission of proteomics is to combine the genomic information with the bioactive proteins and peptides that we found and will find and their functions in CV diseases. Our mission of bionic medicine is to develop a fully computerized and automated coronary care unit so that the computer system acquires clinical data, evaluate pathophysiology and provides optimal treatment. Our nanomedicine is part of the National Nanotechnology Project for 2002-2006. Our mission is to apply the nanotechnology to CV medicine. Our tissue engineering and artificial organ projects are also part of national projects aiming to establish substitutes for seriously diseased tissues and organs by utilizing the rapidly advancing bioscience and bioengineering knowledge and technologies. The final goals of these national projects are not only to enable order-made medicine to enhance quality of life of all patients and hopefully prevent as many diseases as possible in the near future, but also to activate the domestic industry and revive our economy by fully utilizing the domestic intellectual property.

Our Research Institute has 14 departments consisting of 50 laboratories (www.ncvc.go.jp/english/res/rese.html). They are Departments of Etiology and Pathogenesis, Biochemistry, Cardiac Physiology, Vascular Physiology, Molecular Physiology, Epidemiology, Cardiovascular Dynamics (where I used to be Director in 1982-1991), Artificial Organs, Regenerative

Medicine and Tissue Engineering, Medical Engineering, Investigative Radiology, Pharmacology, Structural Analysis, and Bioscience.

The full staff consists of 100 MDs and PhDs. Each Department has a Director and consists of 2-6 laboratories. Each laboratory has a Chief, one full-time scientist, and a few to several post-doctoral fellows. These post-docs count nearly 100 and are supported by the Ministry of Health, Labor and Welfare (MHLW, www.mhlw.go.jp/english/index.html), Japan Science and Technology Corporation (www.tokyo.jst.go.jp/EN/), Japan International Cooperation Agency (www.jica.go.jp/english/index.html), and other domestic and foreign fellowship foundations.

The annual budget for research in our Research Institute is around 2 billion yen (approximately US\$17 million) excluding the salary of the full-time employees. Ten percent of our budget is intramural, coming directly from the MHLW and the rest is competitive funds not only from MHLW but also from MEXT (Ministry of Education, Culture,

Sports, Science and Technology, www.mext.go.jp/english/index.htm) and METI (Ministry of Economy, Trade and Industry (www.meti.go.jp/english/index.html)). The NCVC has its own extramural funds for competitive CV research proposed by domestic scientists.

These CV research budgets are governed by the Council for Science and Technology Policy (www8.cao.go.jp/cstp/english/s&tmain-e.html) in the Cabinet Office of the Japanese Government. The Council has decided the Science and Technology Basic Plan for 2001-2005 (www8.cao.go.jp/cstp/english/plan.html). In 2002, the total budget for science and technology in all ministries amounts to 3500 billion yen (Ministry of Finance, www.mof.go.jp/english/index.htm). This budget category is the only one that is growing over these 10 years.

One third of our research budget is for curiosity-driven, blue-sky research, and the rest for national missionary strategic research. The missionary strategy of our medical research in Japan is described using the following key words and phrases

(www8.cao.go.jp/cstp/english/plan.html). "... the life sciences are key to actualizing healthy, active, and comfortable lives ... Japan must work selectively and strategically in the newly emerging fields of the advanced life sciences such as: genome science, cellular biology, clinical medicine and medical technology, brain science, bioinformatics ... To promote the life sciences, Japan must implement basic R&D in basic science fields, training and securing of researchers and technicians required in merging fields, maintenance and widespread utilization of an intellectual infrastructure that includes biological genetic resources, action against international problems relating to patents, safety checks from a scientific point of view, promotion of public understanding in biology, and formulation of ethical guidelines relating to biological R&D." Our missionary research is along this line.

This is a brief summary of different aspects of cardiovascular sciences in Japan at present. For more details, browse the URLs cited in the text.

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hsuga@ri.ncvc.go.jp



From Basic Science to Clinical Perspectives



The IV International Symposium on Myocardial Cytoprotection will be held in Pecs, Hungary, September 25-27, 2003.

The Department of Experimental Surgery and Experimental Section of the Hungarian Society of Cardiology will organize the Symposium in collaboration with: International Academy of Cardiovascular Sciences.

- 2003 Scientific Secretariat: Prof. Dr. Elizabeth Roth, University of Pecs, Faculty of Medicine, Department of Experimental Surgery, Kodaly Z. str.20, H-7624 Hungary; Fax:36-72-535821;
- E-mail: zsoka@expsurg.pote.hu
- Web Site: <http://expsurg.pote.hu/ismc2003s>



The Symposium is being organized by Masaryk University in cooperation with the Academy of Sciences of Czech Republic, the Slovak Academy of Sciences and the Czech Cardiological Society, and sponsored by the International Academy of Cardiovascular Sciences, August 26 – 29, 2003, Brno, Czech Republic.

GENERAL INFORMATION:

- Venue:** Abbey of St. Thomas, Mendel Square 1, Brno, Czech Republic
- Date:** August 26 – 29, 2003
- Language:** English
- Accommodation:** Hotel Voron · 10 minutes walking distance
- Information:** morwen.rect.muni.cz/conference/
- E-mail:** braveny@med.muni.cz
majka@med.muni.cz
- See also:** www.mendel-museum.org