



from  
**molecules**  
to **miracles**

Every newborn is a miracle, but baby Eleanor's mother Huiling Hu is a miracle too. Just days after giving birth to her daughter, Huiling felt feverish and sore. She was found to have sepsis, an often-fatal, overwhelming infection that affects the heart, lung and blood vessels. Her blood pressure dropped dangerously and her body failed to produce the hormone vasopressin. iCAPTURE researchers Drs. Jim Russell and Keith Walley were on hand at St. Paul's Hospital when Huiling was admitted. iCAPTURE's clinical trial of synthetic vasopressin allowed Huiling to receive this experimental treatment. It helped save her life, and gave baby Eleanor her mother back.





*Dr. James Hogg is the founder of the small pulmonary laboratory that has grown into the 250 person-strong James Hogg iCAPTURE Centre for Cardiovascular and Pulmonary Research.*

#### **iCAPTURE's Current Partners**

Canada Foundation for Innovation  
British Columbia Knowledge  
Development Fund  
Providence Health Care,  
St. Paul's Hospital  
University of British Columbia  
St. Paul's Hospital Foundation  
Heart and Stroke Foundation  
of BC and Yukon  
BC Lung Association  
GlaxoSmithKline  
IBM  
Michael Smith Foundation  
for Health Research  
Canadian Institutes of Health Research  
Canada Research Chairs  
National Institutes of Health (USA)

## **Year Three in Review: 2002-03**

A hidden gem gleams behind the red brick walls on Burrard Street — a place where scientists strive to make a difference for patients by changing molecules into miracles. In the past three years, the iCAPTURE Centre on the St. Paul's Hospital campus of the University of British Columbia has taken great strides in establishing itself as a world class cardio-pulmonary-critical care research facility. In the past year, new imaging and molecular tools purchased with \$21 million in funding from the Canada Foundation for Innovation (CFI), the BC Knowledge Development Fund (BCKDF), and other key partners have allowed the 26 principal investigators to accelerate their work.

Recently renamed **The James Hogg iCAPTURE Centre for Cardiovascular and Pulmonary Research** after its founding scientist, iCAPTURE's health researchers focus on discovering how gene variations interact with environmental factors to cause diseases of the heart, lung and blood vessels. These disorders are the leading cause of decreased quality of life and premature death in men and women in our communities. iCAPTURE's new office and educational space on Burrard West was completed in early spring, and laboratory renovations were completed in October 2003 for an official opening on December 3rd, 2003. At a recent retreat the group embraced six priorities for the future: to Discover, Synergize, Attract, Communicate, Translate, and Sustain their research.

# discover

Discoveries happen when people with good ideas and collaborative energy have access to the best available technology. In the past year, researchers have completed the design phase to create a new database for the iCAPTURE Registry of patient tissues, data, and images. Core 1, the **Molecular Phenotyping Laboratory** where genes and proteins are analyzed, acquired new equipment such as the Laser Capture Microdissection system to sample tiny pieces of tissue. Core 1 researchers collaborate with clinician investigators to bring bench-top research to the bedside of patients with hypertension, sepsis, asthma, cystic fibrosis, atherosclerosis, heart failure, and emphysema.

Core 2, the **Laboratory for Ultrastructural Imaging**, purchased new equipment that offers researchers the ability to see, for example, individual molecules in the muscle surrounding blood vessels and airways. Using these strategies, scientists have revealed important new information relevant to high blood pressure and asthma. Core 3, the **Laboratory for Dynamic Cellular Imaging and Biophysics**, is where living cells and tissues can be seen in real time. The two-photon confocal laser microscope purchased with CFI funding is the only instrument of its kind in Canada. Researchers have observed that bone marrow stem cells can migrate to the heart and apparently transform into heart muscle cells after damage. Also in the last year, Core 4, **Organ Pathophysiology and Imaging**, installed a Siemens Computed Tomography (CT) scanner and a General Electric Magnetic Resonance Imager (MRI). These new instruments allow iCAPTURE investigators to test their hypotheses in living patients.

# synergize

Synergy characterizes the collaborative relationships on which iCAPTURE's success is built. From the first breath of life in every grant application to the success in the laboratory or clinic, iCAPTURE is a model of synergy and partnerships: between Providence Health Care, VGH and UBC; between laboratory science and clinical science; between students and researchers. In the past year, the CFI infrastructure support has enabled iCAPTURE to pursue major national and international proposals with a diverse group of co-investigators.

These include:

- A CFI application involving the University of Toronto and the University of Montreal to create a cross-Canada cardio-pulmonary research database accessible by all researchers;
- The iQ Engine project with IBM researchers including Barry Robson, an IBM distinguished engineer, UBC Computer Science researcher Raymond Ng, CMMT's Wyeth Wasserman, and UBC statistician Reuben Zamar, to design new ways of analyzing diverse biologic data;
- A major Genome Canada project to identify the genes that modify the severity of cystic fibrosis in collaboration with Dr. Lap-Chee Tsui and investigators at the University of Toronto's Hospital for Sick Children; and
- A CIHR-funded Interdisciplinary Health Research Team award to study gene-environment interaction in heart, lung and blood vessel diseases for \$2.7 million over five years.

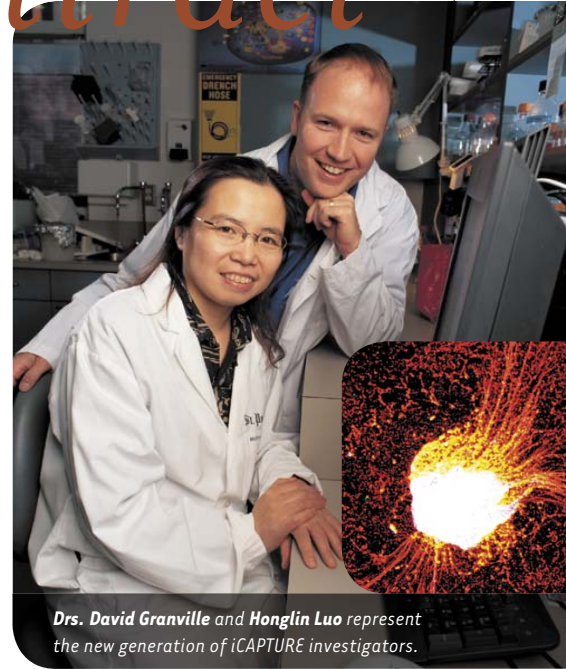


# attract

iCAPTURE's new infrastructure, its renovated laboratory space, and successful grant applications have allowed it to proactively recruit top scientists from Canada and around the world. Recruits for 2002-03 include new Canadian Research Chair **Dr. David Granville**, a cell biologist and repatriated Canadian back from the Scripps Research Institute in the USA; **Dr. Tom Podor**, a confocal microscopist from McMaster University; **Dr. Honglin Luo** a molecular biologist from the University of Washington in Seattle; and **Dr. Harvey Coxson**, a home grown expert in lung imaging. In addition to new full time faculty members, a multi-national and talented group of post-doctoral fellows, research associates and graduate students have enriched the laboratory.

The iCAPTURE Centre's ability to attract outstanding post doctoral fellows was greatly enhanced by a CIHR-HSFC Strategic Training Grant entitled "IMPACT: Integrated and Mentored Pulmonary and Cardiovascular Training." The objective of IMPACT is to enhance the trans-disciplinary training environment for post-doctoral fellows to nurture the next generation of investigators. This award provides \$300,000 support per year for six years.

In other news, the UBC Faculty of Medicine has assigned additionally one Tier 1 and two Tier 2 Canadian Research Chairs to the iCAPTURE Centre. Active recruitment of three outstanding scientists is in progress. Tier 1 Chairs provide \$170,000 per year for salary support for the duration of the candidate's appointment. Tier 2 Chairs provide \$85,000 per year for 10 years. These Chairs represent \$5 million in long-term faculty support. In partnership with GlaxoSmithKline and the St. Paul's Hospital Foundation, a \$2.5 million endowment has also been established for a professorship in COPD (Chronic Obstructive Pulmonary Disease) research. Active negotiations with an excellent candidate are in progress.



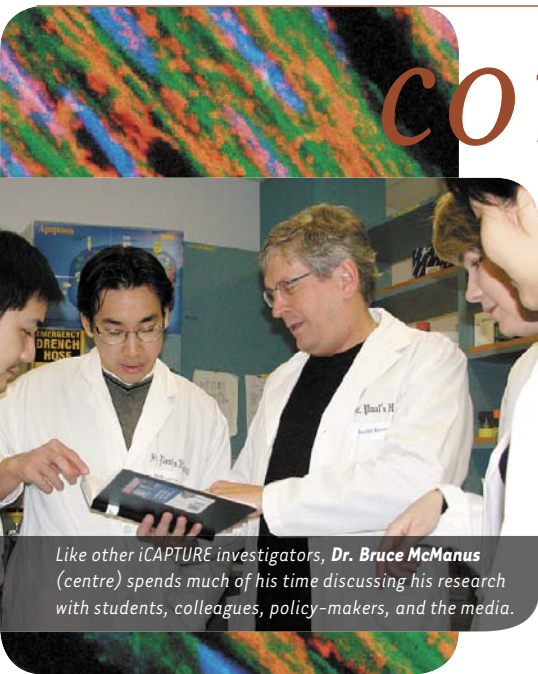
*Drs. David Granville and Honglin Luo represent the new generation of iCAPTURE investigators.*

# communicate

The primary avenue for communication of research is the peer-reviewed biomedical literature. In 2002, iCAPTURE investigators published 89 papers (listed on [www.icapture.ca](http://www.icapture.ca)).

Public interest in the iCAPTURE Centre continued throughout the year, spurred by the worldwide press release about the IBM / iCAPTURE iQ Engine Project. iCAPTURE appeared in local and national media including the Vancouver Sun, CTV News, CBC, and The Globe and Mail. iCAPTURE's close relationship with the St. Paul's Hospital Foundation continued as staff hosted numerous tours for donors, local business professionals, and the public.

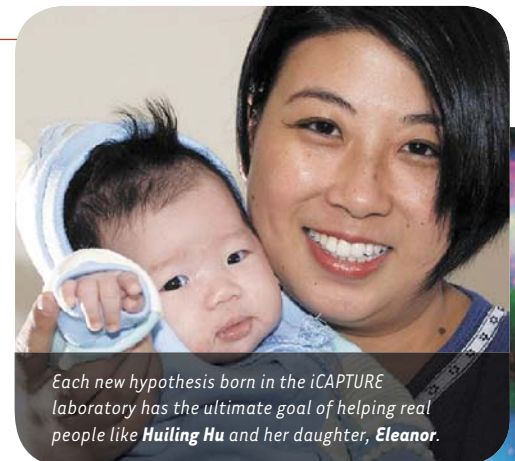
On December 6, 2002, iCAPTURE's newly conceived "Alan Bernstein Distinguished Lectureship" was delivered by its namesake, internationally renowned researcher and leader Dr. Alan Bernstein, head of the Canadian Institutes for Health Research (CIHR). The Lectureship serves to highlight scientific achievements, celebrate health research in the Vancouver community, and provide trainees a learning opportunity. In February 2003, the second annual "Frontiers in Cardiovascular Science Conference" was held. This is a joint initiative between iCAPTURE, UBC, Hope Heart Institute, and the University of Washington. Themes included blood vessels in health and disease, cell signals in cardiovascular disease, and myocardial injury and repair. iCAPTURE also hosted an international young investigators meeting for the study of airway disease.



*Like other iCAPTURE investigators, Dr. Bruce McManus (centre) spends much of his time discussing his research with students, colleagues, policy-makers, and the media.*

# translate

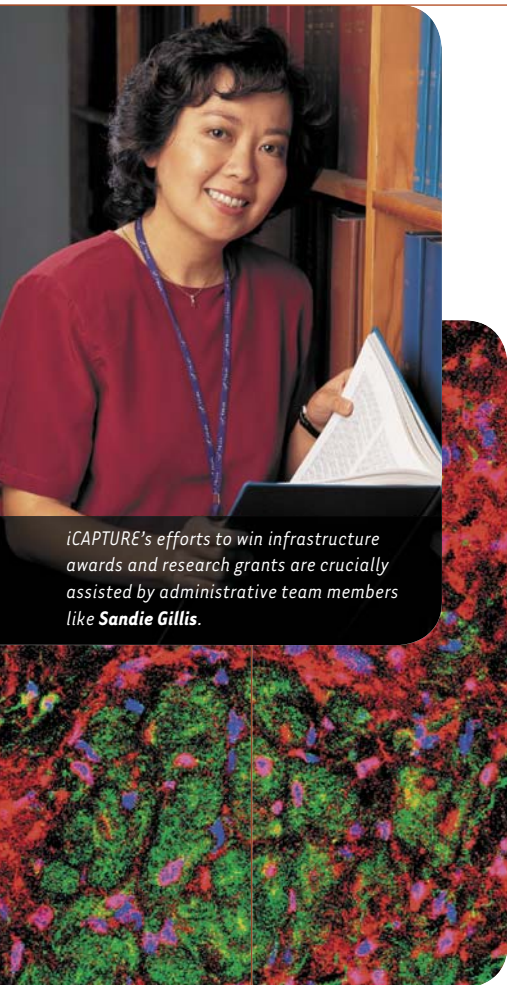
In medical science and health research, the term "translate" means changing knowledge into practice, a goal of every project undertaken at iCAPTURE. For example, groundbreaking work by **Dr. McManus** and colleagues has revealed the potentially adverse effects of an effective weight loss drug on heart valves in patients, forming the basis for development of a safer therapy for obesity. **Dr. Sandford** and colleagues have demonstrated which genes predispose some infants to develop allergy and asthma. **Drs. Russell** and **Walley** are investigating how variations in gene sequences affect the outcome of individual patients with critical illness. **Dr. van Breemen's** team is working with human blood vessels to determine ways to reduce blood vessel blockages and cardiac tissue death. **Dr. Paré's** team is developing predictors of lung disease susceptibility and progression that can be applied in a clinical setting. Each principal investigator at iCAPTURE focuses his or her work on questions that will eventually benefit patients with heart, lung and blood vessel diseases.



*Each new hypothesis born in the iCAPTURE laboratory has the ultimate goal of helping real people like Hailing Hu and her daughter, Eleanor.*

# sustain

To view a complete listing of grants, publications and biographies for 2002/03, visit the iCAPTURE Centre website at [www.icapture.ca](http://www.icapture.ca)



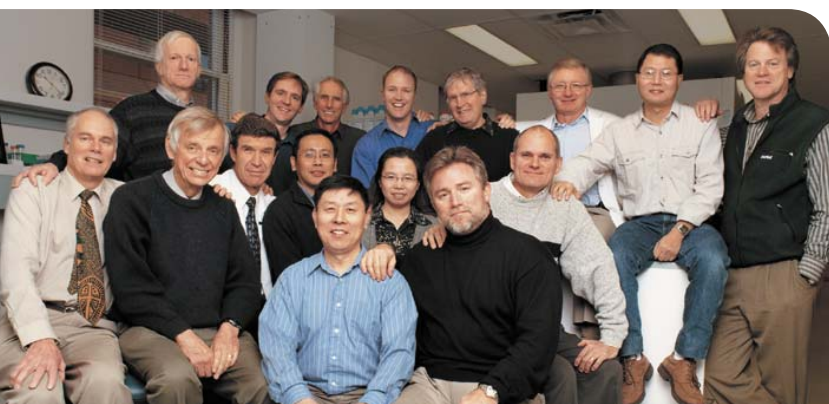
iCAPTURE's efforts to win infrastructure awards and research grants are crucially assisted by administrative team members like **Sandie Gillis**.

Infrastructure support is vital to sustaining iCAPTURE's work. Providence Health Care, the organization that includes St. Paul's Hospital and its Foundation, has provided iCAPTURE with outstanding support from day one. iCAPTURE has built on this support by obtaining additional infrastructure monies from BC's Michael Smith Foundation for Health Research (MSFHR). iCAPTURE also recovers costs for many of the services it can now offer because of its new technology and personnel.

## Major Awards and Grants

Ultimately, it is peer reviewed and industry supported operating grants that fund the actual research projects and personnel awards that secure our researchers and trainees. iCAPTURE investigators have been very successful in competing for such awards in 2002-03. A full listing of all grants and awards is available on iCAPTURE's website. Here are some highlights:

- MSFHR grant for research unit support for five years at \$250,000 per year;
- \$400,000 from CANARIE to build and populate a genomic and environmental database;
- **Dr. David Granville** received a Tier 2 Canada Research Chair Award in cardiovascular biochemistry;
- **Dr. Chun Seow** received a CIHR/BC Lung Investigator Award to further his research on how smooth muscle contributes to asthma;
- **Drs. Walley, Dorscheid, Granville** and **Sandford** were honored with MSFHR salary support awards;
- **Dr. Honglin Lou** won a St. Paul's Hospital Foundation—CIHR New Investigator Award;
- **Drs. Saren Azer** and **Harvey Coxson** received the highly competitive Parker B. Francis Fellowship in Pulmonary Research;
- **Dr. Bruce McManus** was elected as a Fellow in the Royal Society of Canada in the Canadian Academy of Science and as a Fellow of the International Academy of Cardiovascular Sciences;
- **Dr. James Hogg** was honoured with the 2002 Henry Friesen Award from The Canadian Society for Clinical Investigation and The Royal College of Physicians and Surgeons of Canada and the 2004 Chugai Award for Excellence in Mentoring and Academic Scholarship;
- **Dr. Peter Paré** received the Jacob Churg Distinguished Researcher Award and the Joseph R. Rodarte Award for Scientific Distinction; and
- **Dr. Stephan van Eeden** was honoured with the William Thurlbeck Distinguished Researcher Award.



Sixteen of iCAPTURE's 26 principal investigators, from left to right:

*Back Row:* Jiri Frohlich, John Hill, Casey van Breemen, David Granville, Bruce McManus, Bob Schellenberg, Chun Seow, Jim Russell.

*Front Row:* Peter Paré, Jim Hogg, Stephan van Eeden, Xiaodong Wang, Decheng Yang, Honglin Luo, Tom Podor, Keith Walley.

*Absent:* Mike Allard, Tony Bai, Harvey Coxson, Del Dorscheid, Shizu Hayashi, Richard Hegele, Issy Laher, Andy Sandford, David Walker, Pearce Wilcox.

**Private Support of iCAPTURE's Research** Worldwide disability from heart, lung and blood vessel diseases continues to rise. The death rate from these diseases still leads all others in the world. iCAPTURE's recent competitive successes with infrastructure funding aren't sufficient to maintain a highly technical and expertly-staffed laboratory. The Centre must continue to raise funds in the private sector. iCAPTURE encourages corporate, private and individual donors to look into iCAPTURE's research, its people and their capabilities with the help of the St. Paul's Hospital Foundation (604 682 8206 / 1 800 720 2983, [www.helpstpauls.com](http://www.helpstpauls.com)) or the UBC Development Office (604 682 8900 / 1 877 717 GIVE, [www.supporting.ubc.ca](http://www.supporting.ubc.ca)).

# Grants 2002-03

April 1 – March 31

Researcher	Award Amount	Title	Agency
Allard, Michael	\$ 30,000.00	Industry Collaboration	Institut de recherches
	93,314.00	Operating Grant	Heart and Stroke Foundation of B.C. & Yukon
	85,000.00	Operating Grant	Heart and Stroke Foundation of B.C. & Yukon
	76,050.00	Operating Grant	Heart and Stroke Foundation of B.C. & Yukon
	58,416.00	Operating Grant	Canadian Institutes of Health Research
<b>Allard, Michael</b>	<b>\$ 342,780.00</b>		
Bai, Tony	\$ 66,099.97	Industry Collaboration	Intermune Pharmaceuticals, Inc.
	3,000.00	Industry Collaboration	Intermune Pharmaceuticals, Inc.
	81,302.00	Operating Grant	Canadian Institutes of Health Research
<b>Bai, Tony</b>	<b>\$ 150,401.97</b>		
Dorscheid, Delbert	\$ 45,000.00	Industry Collaboration	Natural ASA
	22,500.00	Operating Grant	BC Lung Association
	84,536.00	Operating Grant	Heart and Stroke Foundation of B.C. & Yukon
	80,069.00	Operating Grant	Canadian Institutes of Health Research
	63,873.60	Operating Grant	Parker B. Francis Foundation
	28,329.64	Operating Grant	National Heart, Lung and Blood Institute
	91,748.80	Operating Grant	National Institutes of Health
<b>Dorscheid, Delbert</b>	<b>\$ 416,057.04</b>		
Frohlich, Jiri	\$ 30,103.38	Industry Collaboration	AstraZeneca Canada Inc.
	2,471.70	Industry Collaboration	Merck Frosst Canada & Co.
	43,654.93	Industry Collaboration	Merck Frosst Canada & Co.
	4,000.00	Industry Collaboration	Pfizer Canada Inc.
	9,000.00	Industry Collaboration	Sanofi-Synthelabo Canada Inc.
	3,189.67	Industry Collaboration	Merck Frosst Canada & Co.
	12,337.00	Industry Collaboration	Schering-Plough Research Institute
	1,720.00	The Heart Outcomes Prevention Evaluation - The Ongoing Outcomes (HOPE TOO) Study	McMaster University
	48,950.00	ASL Trust Fund	Various Sources
	68,500.00	Operating Grant	Heart and Stroke Foundation of B.C. & Yukon
11,006.02	Operating Grant	National Heart, Lung and Blood Institute	
<b>Frohlich, Jiri</b>	<b>\$ 234,932.70</b>		
Hayashi, Shizu	\$ 21,330.00	Operating Grant	BC Lung Association
<b>Hayashi, Shizu</b>	<b>\$ 21,330.00</b>		
Hegele, Richard	\$ 12,500.00	Pathology Infrastructure Award	Pathology Endowment Fund
	42,000.00	Operating Grant	BC Lung Association
	82,614.00	Operating Grant	Canadian Institutes of Health Research
	40,950.00	Operating Grant	Canadian Institutes of Health Research
<b>Hegele, Richard</b>	<b>\$ 178,064.00</b>		

Hill, John	\$	57,000.00	Operating Grant	Heart & Stroke Foundation of Canada
		30,000.00	Equipment: AKTA-FPLC Chromatography System	Heart and Stroke Foundation of B.C. & Yukon
		63,400.00	Operating Grant	Heart and Stroke Foundation of B.C. & Yukon
		30,000.00	Operating Grant	Michael Smith Foundation for Health Research
<b>Hill, John</b>	<b>\$</b>	<b>180,400.00</b>		
Hogg, Jim	\$	225,992.50	Operating Grant	Glaxo Wellcome Inc. (now GlaxoSmithKline)
		417,930.00	Operating Grant	GlaxoSmithKline
		85,315.00	Industry Collaboration	Bayer AG
		42,000.00	Dr. K.K. Pump Fellowship in Pulmonary Pathology - Dr. Emiko Ogawa	BC Lung Association
		1,041.66	GlaxoSmithKline/Canadian Lung Assn/ CIHR Research Fellowship	Canadian Lung Association
		117,258.00	Operating Grant	Canadian Institutes of Health Research
		81,000.00	Operating Grant	Canadian Institutes of Health Research
		44,704.00	Operating Grant	Canadian Institutes of Health Research
		320,489.13	Operating Grant	National Institutes of Health Reduction Surgery
		6,210.01	Operating Grant	National Institutes of Health
		337,123.13	Operating Grant	National Institutes of Health
<b>Hogg, Jim</b>	<b>\$</b>	<b>1,679,063.43</b>		
Laher, Ismail	\$	25,000.00	Operating Grant	Chugai Pharmaceutical Co. Ltd
		85,700.00	Operating Grant	Heart and Stroke Foundation of B.C. & Yukon
<b>Laher, Ismail</b>	<b>\$</b>	<b>110,700.00</b>		
McManus, Bruce	\$	115,000.00	Infrastructure Grant	Providence Health Care
		995,065.00	Infrastructure Grant	BC Knowledge Development Fund
		1,767,415.00	Infrastructure Grant	BC Knowledge Development Fund
		40,374.00	Infrastructure Grant	BC Knowledge Development Fund
		778,969.00	Infrastructure Grant	BC Knowledge Development Fund
		397,918.00	Infrastructure Grant	BC Knowledge Development Fund
		1,007,836.00	Infrastructure Grant	BC Knowledge Development Fund
		943,474.00	Infrastructure Grant	BC Knowledge Development Fund
		117,237.00	Infrastructure Grant	BC Knowledge Development Fund
		120,353.00	Infrastructure Grant	BC Knowledge Development Fund
		207,841.00	Infrastructure Grant	BC Knowledge Development Fund
		120,518.00	Infrastructure Grant	BC Knowledge Development Fund
		1,856,908.00	Infrastructure Grant	BC Knowledge Development Fund
		1,767,415.00	Infrastructure Grant	Canada Foundation for Innovation
		995,065.00	Infrastructure Grant	Canada Foundation for Innovation
		40,374.00	Infrastructure Grant	Canada Foundation for Innovation
		778,969.00	Infrastructure Grant	Canada Foundation for Innovation
		397,918.00	Infrastructure Grant	Canada Foundation for Innovation
		1,007,836.00	Infrastructure Grant	Canada Foundation for Innovation
		943,474.00	Infrastructure Grant	Canada Foundation for Innovation
	117,237.00	Infrastructure Grant	Canada Foundation for Innovation	
	120,353.00	Infrastructure Grant	Canada Foundation for Innovation	
	207,841.00	Infrastructure Grant	Canada Foundation for Innovation	
	120,518.00	Infrastructure Grant	Canada Foundation for Innovation	
	1,856,908.00	Infrastructure Grant	Canada Foundation for Innovation	

McManus, Bruce	\$	114,666.00	Infrastructure Grant	UBC Blusson Fund
		358,904.00	Infrastructure Grant	UBC Blusson Fund
		12,767.00	Infrastructure Grant	UBC Blusson Fund
		246,331.00	Infrastructure Grant	UBC Blusson Fund
		125,832.00	Infrastructure Grant	UBC Blusson Fund
		318,704.00	Infrastructure Grant	UBC Blusson Fund
		298,351.00	Infrastructure Grant	UBC Blusson Fund
		37,073.00	Infrastructure Grant	UBC Blusson Fund
		38,059.00	Infrastructure Grant	UBC Blusson Fund
		65,725.00	Infrastructure Grant	UBC Blusson Fund
		38,111.00	Infrastructure Grant	UBC Blusson Fund
		400,000.00	Infrastructure Grant	UBC Blusson Fund
		12,785.64	Infrastructure Grant	Miltenyi Biotec Inc. (US)
		253,573.80	Infrastructure Grant	Siemens Canada
		100,000.00	iCAPTURE	Various Sources
		112,500.00	Operating Grant Research Associate Salary Support	Canadian Institutes of Health Research
		175,000.00	Operating Grant	Heart and Stroke Foundation of B.C. & Yukon
		86,500.00	Operating Grant	Heart and Stroke Foundation of B.C. & Yukon
		1,000.00	Operating Grant	Michael Smith Foundation for Health Research
		1,000.00	Operating Grant	Michael Smith Foundation for Health Research
		2,000.00	Operating Grant	Michael Smith Foundation for Health Research
		500.00	Operating Grant	Canadian Institutes of Health Research
		108,381.00	Operating Grant	Canadian Institutes of Health Research
	500.00	Operating Grant	Canadian Institutes of Health Research	
	130,000.00	CIHR Institute of Circulatory and Respiratory Health (collaboration)	Canadian Institutes of Health Research	
	70,992.00	Operating Grant	Canadian Institutes of Health Research	
<b>McManus, Bruce</b>	<b>\$</b>	<b>19,932,071.44</b>		
Moghadasian, Mohamed	\$	65,000.00	Operating Grant	Heart and Stroke Foundation of B.C. & Yukon
<b>Moghadasian, Mohamed</b>	<b>\$</b>	<b>65,000.00</b>		
Paré, Peter	\$	453,477.00	Industry Collaboration	GlaxoSmithKline
		337,721.87	Operating Grant	Glaxo Wellcome Inc. (now GlaxoSmithKline)
		2,000.00	Physiology Funds	Various Sources
		120,000.00	Operating Grant	Michael Smith Foundation for Health Research
		1,300.00	Operating Grant	Michael Smith Foundation for Health Research
		506,760.00	Operating Grant	Canadian Institutes of Health Research
		5,000.00	Operating Grant	Canadian Institutes of Health Research
		64,097.00	Operating Grant	Canadian Institutes of Health Research
		67,766.00	Operating Grant	Medical Research Council (now CIHR)
		29,979.00	Operating Grant	Ontario Genomics Institute
		295,855.00	Operating Grant	National Institutes of Health
		291,670.00	Operating Grant	National Institutes of Health
	<b>Paré, Peter</b>	<b>\$</b>	<b>2,175,625.87</b>	
Podor, Thomas	\$	10,000.00	Start up funding	Dean of Medicine
<b>Podor, Thomas</b>	<b>\$</b>	<b>10,000.00</b>		

Russell, James	\$	1,200.00	Industry Collaboration	Eli Lilly Canada Inc.
		1,462.70	Industry Collaboration	Suntory Ltd.
		47,475.00	Industry Collaboration	Eli Lilly and Company, US
		11,057.16	Industry Collaboration	Eli Lilly and Company, US
		10,633.66	Industry Collaboration	Eli Lilly and Company, US
		11,367.59	Industry Collaboration	ICOS Corporation
		34,746.75	Operating Grant	St. Paul's Hospital
		4,675.00	Operating Grant	Medical Research Council (now CIHR)
		540,954.00	Operating Grant	Canadian Institutes of Health Research
	91,670.15	Operating Grant	National Institutes of Health	
<b>Russell, James</b>	<b>\$</b>	<b>755,242.01</b>		
Sandford, Andrew	\$	53,227.00	Operating Grant	Providence Health Care
		100,000.00	Canada Research Chair - Dr. Andrew Sandford	Canada Research Chairs
		106,456.00	Operating Grant	BC Knowledge Development Fund
		106,456.00	Operating Grant	Canada Foundation for Innovation
		90,000.00	Operating Grant	Canadian Cystic Fibrosis Foundation
		38,749.00	Operating Grant	Canadian Institutes of Health Research
		25,327.00	Operating Grant	Medical Research Council (now CIHR)
<b>Sandford, Andrew</b>	<b>\$</b>	<b>520,215.00</b>		
Schellenberg, Robert	\$	2,589.55	Industry Collaboration	AstraZeneca Canada Inc
		3,500.00	Various Sources	Various Sources
		20,325.00	Operating Grant	BC Lung Association
		7,287.00	Operating Grant	Canadian Institutes of Health Research
<b>Schellenberg, Robert</b>	<b>\$</b>	<b>33,701.55</b>		
Seow, Chun	\$	42,000.00	Operating Grant	BC Lung Association
		40,950.00	Operating Grant	Canadian Institutes of Health Research
		101,866.00	Operating Grant	Canadian Institutes of Health Research
<b>Seow, Chun</b>	<b>\$</b>	<b>184,816.00</b>		
Van Eeden, Stephanus	\$	22,500.00	Operating Grant	BC Lung Association
		22,000.00	Operating Grant	Heighway Fund (Florence and George)
		8,831.00	Operating Grant	UBC Faculty Awards Committee
		29,250.00	Operating Grant	Canadian Institutes of Health Research
		37,031.00	Operating Grant	Canadian Institutes of Health Research
		55,195.00	Operating Grant	American Lung Association
<b>Van Eeden, Stephanus</b>	<b>\$</b>	<b>174,807.00</b>		
Walley, Keith	\$	20,000.00	Operating Grant	UBC VPR Research Development Fund
		32,500.00	BC Lung/St. Paul's Hospital Scientist Award	BC Lung Association
		98,948.00	Operating Grant	Heart and Stroke Foundation of B.C. & Yukon
		32,500.00	BC Lung/St. Paul's Hospital Scientist Award	St. Paul's Hospital
		119,197.00	Operating Grant	Canadian Institutes of Health Research
		48,766.00	Operating Grant	Canadian Institutes of Health Research
<b>Walley, Keith</b>	<b>\$</b>	<b>351,911.00</b>		

## Grants / April 1, 2002 - March 31, 2003

Wang, Xiaodong	\$	14,500.00	Operating Grant	St. Paul's Hospital
		14,500.00	Operating Grant	UBC Hampton Fund
		21,937.50	Operating Grant	Canadian Institutes of Health Research
<b>Wang, Xiaodong</b>	<b>\$</b>	<b>50,937.50</b>		
Wilcox, Pearce	\$	14,875.00	Industry Collaboration	BCY LifeSciences Inc
		2,000.00	Industry Collaboration	Boehringer Ingelheim (Canada) Ltd.
		12,849.35	Industry Collaboration	Boehringer Ingelheim Pharmaceuticals Inc.
		2,289.45	Industry Collaboration	Intermune Pharmaceuticals, Inc.
		4,195.00	Research	Various Sources
<b>Wilcox, Pearce</b>	<b>\$</b>	<b>36,208.80</b>		
Yang, Decheng	\$	2,106.00	Operating Grant	Heart and Stroke Foundation of B.C. & Yukon
		73,892.00	Operating Grant	Medical Research Council (now CIHR)
		71,256.00	Operating Grant	Medical Research Council (now CIHR)
<b>Yang, Decheng</b>	<b>\$</b>	<b>147,254.00</b>		

<b>Grants - Peer Reviewed</b>	<b>\$</b>	<b>5,979,477.64</b>
<b>Grants - Non Peer Reviewed</b>	<b>\$</b>	<b>603,685.55</b>
<b>Industry Contracts</b>	<b>\$</b>	<b>1,912,092.48</b>
<b>Infrastructure</b>	<b>\$</b>	<b>19,256,263.64</b>
<b>TOTAL Funding</b>	<b>\$</b>	<b>27,751,519.31</b>

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Sixteen of iCAPTURE's 26 principal investigators, *from left to right:*

*Back Row:* Jiri Frohlich, John Hill, Casey van Breemen, David Granville, Bruce McManus, Bob Schellenberg, Chun Seow, Jim Russell.

*Front Row:* Peter Paré, Jim Hogg, Stephan van Eeden, Xiaodong Wang, Decheng Yang, Honglin Luo, Tom Podor, Keith Walley.

*Absent:* Mike Allard, Tony Bai, Harvey Coxson, Del Dorscheid, Shizu Hayashi, Richard Hegele, Issy Laher, Andy Sandford, David Walker, Pearce Wilcox.

**MICHAEL F. ALLARD, BSc, MD, FRCP(C)** is an investigator at the iCAPTURE Centre and a Cardiovascular Pathologist at the St. Paul's Hospital site. Dr. Allard's research examines how the heart uses fuels such as sugar for energy production, how disease, exercise, and hormones alter fuel use by the heart, and how alterations in fuel use influence heart function. A particular focus of his work is to understand specific cellular and molecular mechanisms responsible for alterations in fuel use in these settings, especially in hearts enlarged by exposure to long-standing hemodynamic overload. Ultimately, he hopes to develop novel therapeutic approaches to modulate fuel use by the heart and, thereby, improve heart function. He works closely with Dr. Roger Brownsey in the Department of Biochemistry and Molecular Biology at the University of British Columbia and with Dr. Gary Lopaschuk in the Departments of Pharmacology and Pediatrics at the University of Alberta. Dr. Allard was recently awarded a five-year CIHR Operating Grant (2003 -2008) to investigate glycogen turnover and glycolytic capacity in the hypertrophied heart. He is a Career Investigator of the Heart and Stroke Foundation of B.C. and Yukon.

**TONY RAMON BAI, MD, FRCPC** is an investigator with the iCAPTURE Centre who trained in Internal Medicine, Physiology, Pharmacology and Respiratory Medicine at the University of Otago in Dunedin, New Zealand, St. Thomas' Hospital in London, England, and McGill University. For more than two decades, he has studied the underlying mechanisms and causes of asthma. He is now investigating the

determinants of asthma severity and the role of interactions between the immune system and airway innervation in the expression of the inflammatory response in the lung. Specifically, he is interested in the interaction of the IL-6 family of cytokines with neuro-transmitters, nerves and smooth muscle, the use of non-invasive biomarkers of asthma control and a new therapy for idiopathic pulmonary fibrosis. Dr. Bai is currently evaluating a diagnostic tool to correctly diagnose chronic cough; a disabling condition that is now prevalent in respirology practices, accounting for up to one third of referrals from family practice. He collaborates with other members in the pulmonary research group as well as investigators from the UBC Faculty of Pharmaceutical Sciences and Dr. D. Knight at the University of Western Australia.

**HARVEY COXSON, PhD** is new principal investigator with the iCAPTURE Centre. Dr. Coxson is an assistant professor of radiology and the co-director of the Thoracic Imaging Group (CORE 4) at Vancouver General Hospital. He has worked in the pulmonary field since 1986 with a specialty in quantitative imaging using both pathology and computed tomography; first at the UBC Pulmonary Research Laboratories under the direction of Dr. James Hogg and then as a Fellow in the Department of Radiology at VGH with Dr. John Mayo. Dr. Coxson received his PhD from the University of British Columbia Department of Experimental Medicine in 1998. He collaborates with other investigators at UBC as well as Drs. R. Rogers and F. Sciarba at the University of Pittsburgh, Dr. Y. Nakano at Shiga University of Medical Science (Japan), and the GlaxoSmithKline

COPD Network. His main areas of research include quantitative imaging of COPD, longitudinal studies of lung disease and pulmonary embolism. Dr. Coxson is a Parker B. Francis Fellow in Pulmonary Research.

**DEL DORSCHIED, MD, PhD, FRCPC** is a physician-scientist who serves as an intensivist in the ICU at St. Paul's Hospital and leads a research group at the iCAPTURE Centre investigating the role of the airway epithelium in the genesis of inflammatory airways diseases. Dr. Dorscheid is now studying the role of glucocorticoid-induced airway epithelial cell apoptosis, novel glycoproteins involved in the repair of injured epithelium and the expression of Fas ligand as an immune barrier for the airway in changes associated with chronic airways remodeling. Dr. Dorscheid is a past winner of Parker B. Francis Fellowship in Pulmonary Research for his work entitled Glucocorticoid-induced airway epithelial cell apoptosis. This past year Dr. Dorscheid was honored with a Michael Smith Foundation for Health Research, Scholar Award for 2003 - 2008 for his research on airway epithelial injury as a result of corticosteroid-induced apoptosis.

**JIRI FROHLICH, MD, FRCPC** is the Academic Director of the St. Paul's Hospital Healthy Heart Program where he conducts and oversees both basic and clinical research, and an investigator with the iCAPTURE Centre. Dr. Frohlich's specialty is medical biochemistry, a subspecialty of pathology and laboratory medicine. Over the last 25 years, he has extended his specialty into laboratory and clinical aspects of lipoprotein metabolism and atherosclerosis. He now studies dyslipidemias,

atherosclerosis, phytosterols in medicine, genetic determinants of response to inflammation and atherosclerosis and HDL metabolism. Drs. John Hill and Jiri Frohlich are currently working together to discover new ways for the diagnosis, treatment and prevention of heart disease resulting from the accumulation of fatty plaques in the coronary arteries. Dr. Frohlich collaborates with colleagues at the Czech Academy of Sciences, the University of Hong Kong and the University of Tehran, among other institutions. Dr. Frohlich is also President of British Columbia Healthy Heart Society.

**DAVID GRANVILLE, PhD** is an Assistant Professor/Canada Research Chair in the iCAPTURE Centre. Dr. Granville completed his BSc at Simon Fraser University and his PhD at UBC. Following the completion of his PhD dissertation, David returned as a Scientist to QLT Inc. (Vancouver, BC) where he had been working since 1994. David was then recruited to the prestigious Scripps Research Institute (La Jolla, CA) where he worked with Dr. Roberta Gottlieb to develop and patent a novel method of attenuating experimental myocardial infarction caused by ischemia and reperfusion. Since 1997, David has published over 40 original research or review articles, including 4 book chapters and 4 patents (2 pending) related to the mechanisms and regulation of apoptotic cell death pertaining to diseases such as cancer, atherosclerosis, myocarditis, myocardial infarction and heart transplant rejection. Dr. Granville holds a Tier II Canada Research Chair and is a Michael Smith Foundation for Health Research Scholar. He has received start-up grants from the Canada Foundation for Innovation (\$350,000) and the Michael Smith Foundation for Health Research (\$150,000), respectively. His research at iCAPTURE is focused on understanding the role and regulation of cell death in cardiovascular injury and repair in atherosclerosis, heart transplant rejection and heart valve disease.

**SHIZU HAYASHI, PhD**, a molecular biologist in the iCAPTURE Centre, received her PhD at the University of Konstanz, Germany under Dr. Ernst Florey then trained with Dr. Gordon Tener in the Department of Biochemistry at UBC. Dr. Hayashi works closely with Drs. James Hogg, Stephan van Eeden and Andrew Sandford in studying the role of adenovirus E1A in the pathogenesis of chronic obstructive pulmonary disease. She also collaborates with Drs. William MacNee,

University of Edinburgh, Stephen Rennard, University of Nebraska Medical Centre and Peter Barnes, National Heart & Lung Institute, Imperial College, London.

**RICHARD G. HEGELE, MD, FRCPC, PhD** is an investigator in the iCAPTURE Centre, an Anatomical Pathologist at St. Paul's Hospital and Acting Head, University of British Columbia, Department of Pathology and Laboratory Medicine. Dr. Hegele is studying the role of respiratory viral infections in the onset of childhood asthma and allergy, molecular viral diagnosis and animal models of viral lung infections. Over the next few years he will focus on examining the effects of interventions designed to prevent post-bronchiolitis asthma and allergy in children. He collaborates extensively with other UBC scientists and has several national and international collaborations. He holds operating grant funding from CIHR and is a BC Lung Association/CIHR Investigator.

**JOHN HILL, BMLSc, MSc, PhD**, an investigator with the iCAPTURE Centre, directs the Atherosclerosis Specialty Laboratory (ASL) at St. Paul's Hospital. The ASL conducts both basic science and clinical research of the development, treatment and prevention of atherosclerosis through the study of population genetics and lipid and protein biochemistry. Specifically, Dr. Hill investigates the relationship between the expression of selected lipase genes by human macrophages and the promotion of atherosclerosis. Additionally, in collaboration with Dr. Frohlich, Dr. Hill is studying a large cohort of patients who have undergone angiography to discover novel genetic and environmental determinants of atherosclerosis. Dr. Hill is a Michael Smith Foundation for Health Research Scholar Award recipient.

**JAMES HOGG, MD, PhD, FRSC** is Professor Emeritus of Pathology at UBC and an investigator in the iCAPTURE Centre. Dr. Hogg's research focuses on the inflammatory process in the lung with particular reference to the structure and function of the lungs in Chronic Obstructive Pulmonary Disease. On his retirement at the end of 2000, he was honoured by the St. Paul's Hospital Foundation, which established the "Dr. James Hogg Young Scientist Award" in recognition of his leadership and mentorship of many young scientists over a stellar career, including 23 years at St. Paul's. Dr. Hogg works in collaboration with

Drs. Peter Paré, Stephan Van Eeden and Shizu Hayashi. Dr. Hogg was honoured with the 2002 Henry Friesen Award from the The Canadian Society for Clinical Investigation and The Royal College of Physicians and Surgeons of Canada and the 2004 Chugai Award for Excellence in Mentoring and Academic Scholarship.

**ISSY LAHER, PhD**, a faculty member in Pharmacology and Therapeutics, UBC, and an investigator in the iCAPTURE Centre, specializes in the pharmacology of autoregulation of blood flow, and autonomic pharmacology of specialized circulations. His interests are in understanding the function of small blood vessels in health and disease, in particular how blood vessel diameter is modified on both a short and long term basis. The laboratory uses simultaneous measurements of arterial diameter, intracellular calcium and membrane potential. Dr. Laher is the co-recipient of two Heart and Stroke Foundation of B.C. and Yukon in 2002.

**HONGLIN LUO, MD** is the newest investigator in the iCAPTURE Centre. Dr. Luo's main research interests lie in the study of understanding the mechanisms leading to the pathogenesis of viral myocarditis as well as vascular responses to injury. The focus of Dr. Luo's research program at the iCAPTURE Centre is to define the pathogenetic determinants related to virus-host interactions, host and viral genetics, and incited immune response in virus-induced myocarditis. Dr. Luo was recently awarded a Canadian Institutes of Health Research/St. Paul's Hospital Foundation new investigator award (2003-2008). Her work on the roles of ubiquitin/proteasome pathway and host signalling in virus-mediated myocarditis were also recently funded by both the Canadian Institutes of Health Research and Heart & Stroke Foundation of British Columbia and Yukon.

**BRUCE McMANUS, MD, FRCPC, PhD, FRSC** is Co-Director of the CFI funded iCAPTURE Centre and Director of the Cardiovascular Research Laboratory and the Cardiovascular Registry. As Scientific Director of the Institute of Circulatory and Respiratory Health, one of the Canadian Institutes of Health Research, Dr. McManus leads the development and implementation of a strategic research plan for Canada to address outstanding questions related to cardiac, respiratory, vascular, brain (stroke), blood, critical and intensive care, sleep disorders and diseases.

His current research focuses on host and viral genetic determinants of myocardial injury and on the mechanisms of endothelial injury and matrix accumulation in allograft vasculopathy. Groundbreaking work by Dr. McManus and colleagues has defined the effects on heart valves in patients who develop complications from certain weight loss drugs. This research forms a foundation for the potential development of a safer and efficacious therapy for weight reduction. Dr. McManus is heavily engaged in graduate education, greatly enjoying his eight current graduate students. Dr. McManus collaborates with Drs. Yang, Luo, Granville, Podor, Van Breemen, and Laher in the iCAPTURE Centre, and with investigators like Drs. Michael Hayden and Urs Steinbrecher in the UBC community. He also works extensively with scientists across North America. This past year, Dr. Bruce McManus was elected as a Fellow in the Royal Society of Canada in the Academy of Science. He was also elected as a Fellow of the International Academy of Cardiovascular Sciences.

**PETER PARÉ, MD** is Director of the iCAPTURE Centre and the Director of the Department and Faculty of Medicine Clinical Investigator Programs. Dr. Paré has continued to assist in the advancement of the Michael Smith Foundation for Health Research as a member of the Research Advisory Committee. This past year he was the PI on the iCAPTURE Centre application awarded a Michael Smith Foundation for Health Research Unit Infrastructure Support Program for five years at \$250,000 per year and the Joseph R. Rodarte Award for Scientific Distinction. Dr. Paré and his team were also awarded a CIHR Strategic Training Grant entitled "IMPACT: Integrated Pulmonary and Cardiovascular Training." The objective of IMPACT is to enhance the trans-disciplinary training environment for post-doctoral fellows to create the next generation of investigators. This award provides \$300,000 support per year for six years. He collaborates with Drs. Bob Schellenberg and Chun Seow in investigating a scheme of events which relate bronchoconstricting stimuli to the ultimate airway narrowing that occurs in asthma. Dr. Paré also collaborates with Drs. Sandford, Bai and J. Hogg and with health economist Dr. Aslam Anis. Dr. Paré's team is currently developing genetic predictors of COPD susceptibility and progression that can be applied in a clinical setting. Once identified these predictors will assist in the appli-

cation of appropriate therapy.

**TOM PODOR, B.Sc., M.Sc., Ph.D.** is an Associate Professor and Co-Director of the Dynamic Cellular Imaging and Biophysics (Core 3) in the iCAPTURE Centre. His research has led him to investigate further the role of PAI-1, vitronectin, t-PA in the repair and remodeling of hearts damaged by ischemia/infarction, infections, or transplantation. Thus, to facilitate his studies on damaged hearts, he moved his laboratory in July 2002 to the iCAPTURE Centre. Since arriving, Dr. Podor has also developed a new line of research involving the use of autologous bone marrow-derived stem cells to repair and regenerate the damaged myocardium, and to use these stem cells as a means of introducing cardioprotective transgenes (e.g., t-PA) into the damaged heart. Much of his work has involved the use of laser confocal scanning microscopy to visualize the distribution of fluorescently labeled proteins and cells in tissues. His new laboratory is equipped with state-of-the-art confocal and two-photon microscopy facilities suited for advancing three- and four-dimensional imaging technology for studying cardiovascular disease, and developing animal models for testing new methods of treating thrombosis, defects in fibrinolysis, and regenerating damaged myocardium.

**JIM RUSSELL, MD, FRCPC**, an investigator with the iCAPTURE Centre, is an intensivist and internist who did his research training at the University of California, San Francisco. Dr. Russell's research has focused on two areas: 1. trials of new therapy for sepsis (severe infection), septic shock and acute lung injury and 2. the role of genomics of the inflammatory and innate immunity responses in the critically ill. He is Principal Investigator of a CIHR-funded multicentre trial of vasopressin in septic shock (VASST), directing research at the only Canadian site in the NIH-funded ARDSnet clinical trial network and doing prospective studies of the genomics of sepsis. He is Co-investigator on a large SCCOR (NIH-funded Specialized Centers of Clinical Research) in Translational Research in Acute Lung Injury (PI is Tom Martin at the University of Washington). In 2003 Dr. Russell won the University of British Columbia Martin F. Hoffman Award for Excellence in Research. Dr. Russell collaborates locally with Drs. Keith Walley, Peter Paré, Andrew Sandford, and with US investigators of the ARDSnet.

**ANDY SANDFORD, BSc, PhD** earned a doctorate at Oxford University (1993) with a study of the genetic basis of allergic diseases such as asthma. He continues this research at the iCAPTURE Centre and has broadened his focus to include the genetic basis of cystic fibrosis and chronic obstructive pulmonary disease. Dr. Sandford held a fellowship from the Parker B. Francis Foundation and has been awarded a Tier 2 Canadian Research Chair. This past year Dr. Sandford was honored with a prestigious MSFHR salary support award. Dr. Sandford and colleagues have demonstrated which genes predispose some infants to develop allergy and asthma. This research will translate into environmental modifications for at-risk infants so that childhood asthma and eczema can be reduced. Dr. Sandford also collaborates in a study of a second cohort of patients, which examines the genetic factors that affect the rate of decline of lung function. He has recently been awarded a grant to study genetic modifiers of pulmonary disease severity in patients who have cystic fibrosis.

**ROBERT SCHELLENBERG, MD, FRCPC** is a scientist at the iCAPTURE Centre and an Internist/Allergist at St. Paul's Hospital. Dr. Schellenberg studied at the University of Manitoba and the Johns Hopkins University School of Medicine. His primary interests relate to the role of extracellular matrix changes in modulating airway smooth muscle contraction in asthma and COPD. Recent studies have utilized laser capture microdissection to define specific enzymes from individual cell types present in human airways that are relevant to maintenance of normal smooth muscle function and its modulation by cytokines involved in allergic inflammation. He collaborates with other members of iCAPTURE as well as investigators at the University of Alberta.

**CHUN Y. SEOW, PhD**, an investigator with the iCAPTURE Centre, specializes in smooth and skeletal muscle cell physiology. His current research focuses on understanding the structure-function relationship in smooth muscles in general and airway smooth muscle in particular. Specifically, he studies changes in ultrastructure of contractile and cytoskeletal filaments and proteins in smooth muscle under physiological / pathological conditions, and correlates these changes to mechanical functions of the cell. His other interests include skeletal muscle mechanics, ATPase cycle associated with the crossbridge cycle in

muscle contraction, energetics of muscle contraction, and mathematical modeling of muscle contraction. Dr. Seow has been continuously supported by salary and operating grant awards from CIHR since he came to UBC from the University of Chicago in 1996. He collaborates with Peter Paré and other investigators of the iCAPTURE Centre, as well as with Dr. Newman Stephens at the University of Manitoba and Dr. Lincoln Ford at Indiana University. Dr. Seow is currently funded by CIHR (2002-2007) to study the basic mechanism of contraction in smooth muscle.

**CORNELIS (CASEY) VAN BREEMEN, DVM, MSc, PhD** trained as a veterinarian and pharmacologist and was a faculty member at the University of Miami before returning to Canada to join the iCAPTURE Centre. He is Professor Emeritus at UBC. Interested in the control of blood vessel function in health and disease, Dr. van Breemen uses confocal microscopy combined with measurements of force and membrane currents and potentials to elucidate the mechanisms of intracellular calcium signaling in smooth muscle and endothelial cells. In particular, he is keen to answer two questions: How does one signaling ion, calcium, control a number of separate functions in the same cell; and what are the ionic mechanisms responsible for vascular heterogeneity? He is also interested in relating changes in cell signaling in response to pathological insults to early functional changes in the development of vascular disease. Dr. van Bremen's team is working with human blood vessels to determine ways of reducing blood vessel blockages and cardiac tissue death. He has delivered numerous invited lectures internationally this past year.

**STEPHAN VAN EEDEN, MD, PhD, FRCPC** is a scientist at iCAPTURE Centre and an Internist at St Paul's Hospital. He did his medical training at the University of Stellenbosch, South Africa, specializing in pulmonology and critical care, and completed his PhD in Experimental Medicine at UBC. Dr. van Eeden's research deals with the mechanisms of lung inflammation, particularly, lung inflammation caused by infection, cigarette smoking and air pollution. A recent study by Drs. Stephan van Eeden and Jim Hogg in the *Journal of the American College of Cardiology*, is the first to provide a biological explanation as to why numerous epidemiological studies have found increased risk of heart disease and stroke

from air pollution. In this widely publicized study, air pollution is found to accelerate atherosclerosis - the cause of heart disease and stroke - by two times. This past year Dr. van Eeden was honoured with the William Thurlbeck Distinguished Researcher Award.

**DAVID WALKER, PhD** is an Associate Professor in the iCAPTURE Centre and the Graduate Advisor for the Department of Pathology and Laboratory Medicine at UBC. A graduate of botany and zoology at the University of California at Santa Barbara and UBC, Dr. Walker's research encompasses three areas: definition of structural and functional aspects of the migratory pathway of leukocytes during inflammatory processes in the lungs and conducting airways; diaporesis to destinations within the interstitium and the airspaces; and the roles of fibroblasts in this process. His current initiatives include a collaborative study with Dr. J.C. Hogg, on the role of alveolar wall fibroblasts in "normal" and emphysematous human lungs in leukocyte migration. In collaboration with Dr. Bruce McManus, Dr. Walker is looking at leukocyte interactions with the endothelium in transplant hearts.

**KEITH R. WALLEY, MD, FRCPC, ABIM**, is a St. Paul's Hospital intensivist, and assistant head of basic research in the St. Paul's Department of Medicine. Dr. Walley's research articulates the mechanisms of decreased left ventricular contractility during sepsis and of other organ dysfunction during sepsis and examines the role of genotype on phenotype in sepsis and systemic inflammatory states. He has shown how to measure left ventricular contractility by using left ventricular pressure-volume relationships in acute animal model experiments. Drs. Russell and Walley are investigating how individual patient genetic variation influences their outcome from critical illness. This past year Dr. Walley was awarded a CIHR Operating Grant for his work on the "Influence of polymorphisms in coagulation pathway and inflammatory mediator genes on phenotype post-cardio-pulmonary bypass surgery." Dr. Walley was also honoured this year with a prestigious Michael Smith Foundation for Health Research Distinguished Scholar Award.

**XIAODONG WANG, PhD**, an investigator with the iCAPTURE Centre, focuses his research on Ca<sup>2+</sup> regulation in vascular endothelium. He uses both electrophysiological and Ca<sup>2+</sup> sensitive fluorescence imaging techniques

to study ionic currents and Ca<sup>2+</sup> regulation in freshly isolated endothelial cells and in disease models for transplant vascular disease. This cellular work is combined with complimentary studies on intact blood vessels in an organ bath system, RT-PCR and electron microscopy. Dr. Wang's current projects include the studies of Ca<sup>2+</sup> extrusion in native and diseased endothelium, effects of oxidative stress and cytokines on Ca<sup>2+</sup> extrusion and nuclear Ca<sup>2+</sup>, and endothelium derived hyperpolarizing factor (EDHF).

**PEARCE WILCOX, MD, FRCPC** is a clinician-researcher based at the iCAPTURE Centre. Dr. Wilcox, who completed his research training at the University of British Columbia, is an Associate Professor, in the UBC Faculty of Medicine and teaches extensively on respiratory medicine. Dr. Wilcox's research interests include adult cystic fibrosis, respiratory sleep disorders, respiratory medicine, ventilatory muscle disorders, pathophysiology and treatment, intermittent mechanical ventilation for treatment of chronic hypercapnic respiratory failure, exercise physiology, ventilatory muscle testing, and the effects of sepsis inflammatory mediators on ventilatory muscle.

**DECHENG YANG, PhD**, trained at University of Illinois, is an investigator in the iCAPTURE Centre. He is also an Associate Professor in the Department of Pathology and Laboratory Medicine and a member of the Centre for Microbial Disease and Host Defense (MDHD) at UBC. His primary research interest focuses on molecular biology and pathogenesis of viral myocarditis and the development of potential antiviral treatments. Specifically, Dr. Yang is investigating the structure and functional relationship of coxsackieviral genes involved in viral replication and pathogenesis. He also studies the host gene responses to viral infection. By establishing inducibly expressed cell lines and generation of transgenic mouse model, Dr. Yang's group is focusing on the functional characterization of several genes identified by differential mRNA display using a viral myocarditis mouse model. Based on these studies, certain candidate genes of virus and host have been utilized as targets for the development of siRNA antiviral drugs.