



Bruce McManus (second from left)  
with students

## **BRUCE M. McMANUS** MD, FRCPC, PhD, FACC, FCAP

### **BIOGRAPHY AND DESCRIPTION OF RESEARCH**

Dr. Bruce McManus was appointed Scientific Director of the CIHR Institute of Circulatory and Respiratory Health in 2000. In this capacity, he leads the development and implementation of a national research strategy for addressing outstanding questions related to cardiac, respiratory, vascular, brain (stroke), blood, critical care, and sleep disorders and diseases. Over the past four years, he has inaugurated several strategic initiatives in knowledge creation and translation.

Dr. McManus received BA and MD degrees at the University of Saskatchewan, an MSc in Applied Physiology from Pennsylvania State University, and a PhD in Exercise Physiology and Biochemistry from University of Toledo. He pursued post-doctoral fellowships in Environmental Physiology at the University of California – Santa Barbara and in Cardiovascular and Pulmonary Pathology at the National Heart, Lung, and Blood Institute in Bethesda, MD. Residency training at the Peter Bent Brigham Hospital – Harvard University in Internal Medicine and Pathology led to board certification in Anatomic Pathology, with subsequent specialization in Cardiovascular Pathology. Following 11 years as a faculty member at the University of Nebraska Medical Centre, Dr. McManus joined the Faculty of Medicine of the University of British Columbia as Department Head of Pathology and Laboratory Medicine in July 1993, a post he held until December 2000.

Dr. McManus' investigative program is focused on injury and repair involved in inflammatory diseases of the heart and blood vessels, with particular emphasis on enteroviral infections of the heart and transplant vascular disease. Transdisciplinary work related to molecular biomarkers for allograft rejection, as well as the daily necessity to integrate complex and diverse data for investigative purposes, has driven an interest in information management and use. He has co-authored over 250 full-length publications, as well as many chapters. He has served as Councillor for the International Society for Heart Research and for the American Society for Investigative Pathology. He is currently on the editorial board of several professional and scientific journals. He is past-president of the Society for Cardiovascular Pathology. He was co-recipient of the prestigious Max Planck Research Award with Dr. Reinhard Kandolf in 1991, and he was elected to the Royal Society of Canada as a Fellow of the Academy of Sciences in 2002. He received the UBC Killam Research Prize Senior Scientist Category, and was elected as Fellow of the International Academy of Cardiovascular Sciences in 2003.

## ACCOMPLISHMENTS IN 2003–2004

- 17 published or in press peer-reviewed scientific manuscripts in 2003, 13 in 2004, and four book chapters
- Successful recipient of the Genome Canada award on “Better Biomarkers of Acute and Chronic Allograft Rejection”
- Recipient of the 2003 UBC Killam Research Award in the Senior Scientist Category
- Elected as Fellow of the International Academy of Cardiovascular Sciences
- Primary mentor to six PhD graduate students, one post-doctoral fellow, two masters degree trainees and numerous summer and coop students; and, co-supervisor to an additional four graduate students
- Active participant in two CIHR initiated Strategic Training Programs in Health Research (STIHR’s) as co-applicant:
  1. IMPACT: Integrated and Mentored Pulmonary and Cardiovascular Training and
  2. UBC Training Program for Translational Research in Infectious Disease (TRID)
- Successful recipient of a collaborative CFI Infrastructure Grant on “The BioMedical Imaging and Therapy (BMIT) Beamline at the Canadian Light Source”
- Presented to numerous scientific national and international conferences
- Sat on many local, national and international committees, boards, councils, and taskforces for various professional organizations in Canada and internationally, including for the National Heart, Lung and Blood Institute (NHLBI)

## 2003–2004 GRANTS AND AWARDS

| Award Dates            | Type  | Annual Amount  | Role (PI or Co-PI) | Title  | Source                                 |
|------------------------|-------|----------------|--------------------|--|--|
| 10/1/1998 to 9/30/2007 | Grant | \$115,008.00   | PI                 | Myocyte death in myocarditis: coxsackievirus modification of host cell death machinery | Canadian Institutes of Health Research |
| 4/1/2001 to 3/31/2005  | Grant | \$150,000.00   | PI                 | Inflammatory cardiovascular diseases   | Canadian Institutes of Health Research |
| 10/1/2001 to 9/30/2007 | Grant | \$123,499.00   | PI                 | VEGF in endothelial permeability and cell viability in transplant vascular disease     | Canadian Institutes of Health Research |
| 9/1/2003 to 8/31/2006  | Grant | \$77,400.00    | PI                 | Mechanisms and consequences of Coxsackievirus-mediated ERK activation                  | Heart and Stroke Fdn of New Brunswick  |
| 04/2004 to 03/2007     | Grant | \$9,111,778.00 | PI                 | Better Biomarkers of Acute and Chronic Allograft Rejection                             | Genome Canada                          |

## 2003–2004 PUBLICATIONS

Luo H, Zhang J, Dastvan F, Yanagawa B, Reidy MA, Zhang HM, Yang D, Wilson JE, McManus BM: Ubiquitin-dependent proteolysis of cyclin D1 is associated with coxsackievirus-induced cell growth arrest. *J Virol* 77:1–9, 2003.

Yanagawa B, Spiller OB, Choy JC, Luo H, Cheung P, Zhang M, Goodfellow IG, Evans DJ, Suarez A, Yang D, McManus BM: Coxsackievirus B3-associated myocardial pathology and viral load reduced by recombinant soluble human decay-accelerating factor in mice. *Lab Invest* 83:75–85, 2003.

Yang DC, Cheung P, Carthy C, Anderson D, Sun Y, Yuan J, Zhang H, Bohunek L, Wilson J, McManus BM: A Shine-Dalgarno-like sequence mediates in vitro ribosomal internal entry and subsequent scanning for translation initiation of coxsackievirus B3 RNA. *Virology* 305:31–43, 2003.

Chockalingam A, Yanagawa B, McManus BM: Frontiers in cardiovascular research: Forging further scientific collaborations between Canada and the United States. *Can J Cardiol* 19:94–95, 2003.

Loucks EB, Godin DV, Walley KR, McManus BM, Rahimian R, Granville DJ, Hong JM, Aktary FM, Qayumi AK: Role of platelet activating factor in cardiac dysfunction, apoptosis and nitric oxide synthase mRNA expression in the ischemic-reperfused rabbit heart. *Can J Cardiol* 19:267–274, 2003.

Liang W, McDonald P, McManus BM, van Breemen C, Wang X: Histamine-induced Ca<sup>2+</sup> signaling in human valvular myofibroblasts. *J Mol Cell Cardiol* 35:379–388, 2003.

Choy JC, McDonald PC, Suarez A, Hung VH, Wilson JE, McManus BM, Granville DJ: Granzyme B in atherosclerosis and transplant vascular disease: Association with cell death and atherosclerotic disease severity. *Mod Pathol* 16:460–470, 2003.

Zhang HM, Cheung P, Yanagawa B, McManus BM, Yang DC: BNips: A group of pro-apoptotic proteins in the Bcl-2 family. *Apoptosis* 8:229–236, 2003.

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Carthy CM, Yanagawa B, Esfandiarei M, Yang D, Luo H, Granville DJ, Cheung P, Rudin CH, Thompson CB, Hunt DWC, McManus BM: Bcl-2 and Bcl-xl overexpression inhibits cytochrome C release, activation of multiple caspases and virus release following coxsackievirus B3 infection. *Virology* 313:147–157, 2003.

Lai J, Tranfield E, Walker DC, Dyck J, Kerjner A, Loo S, English D, Wong D, McDonald PC, Moghadasian M, Wilson JE, McManus BM: Ultrastructural evidence of early endothelial damage in coronary arteries of rat cardiac allografts. *J Heart Lung Transplant* 22:993–1004, 2003.

Zhang HM, Juan J, Cheung P, Yanagawa B, Luo H, Chau D, Tozy NJ, Wong B, Zhang J, Wilson JE, McManus BM, Yang DC: Over-expression of interferon-inducible GTPase inhibits coxsackievirus B3-induced apoptosis through the activation of the P13-K/Akt pathway and inhibition of viral replication. *J Biol Chem* 278:33011–33019, 2003.

Choy JC, Podor TJ, Yanagawa B, Lai J, Granville DJ, Rezai N, Walker D, McManus BM: The regulation and consequences of immune-mediated cell death in atheromatous diseases. *Cardiovasc Toxicol* 03:269–282, 2003.

Moien-Afshari F, McManus BM, Laher I: Immunosuppression and transplant vascular disease: Benefits and adverse effects. *Pharmacol Ther* 100:141–156, 2003.

Okon EB, Szabo T, Laher I, McManus BM, van Breemen C: Augmented contractile response of vascular smooth muscle in diabetic mouse model. *J Vasc Res* 40:520–530, 2003.

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Esfandiarei M, Luo HL, Yanagawa B, Suarez A, Dabiri D, Zhang J, McManus BM: Protein kinase B/Akt regulates coxsackievirus B3 replication through a mechanism which is not caspase-dependent. *J Virol* 78:4289–98, 2004.