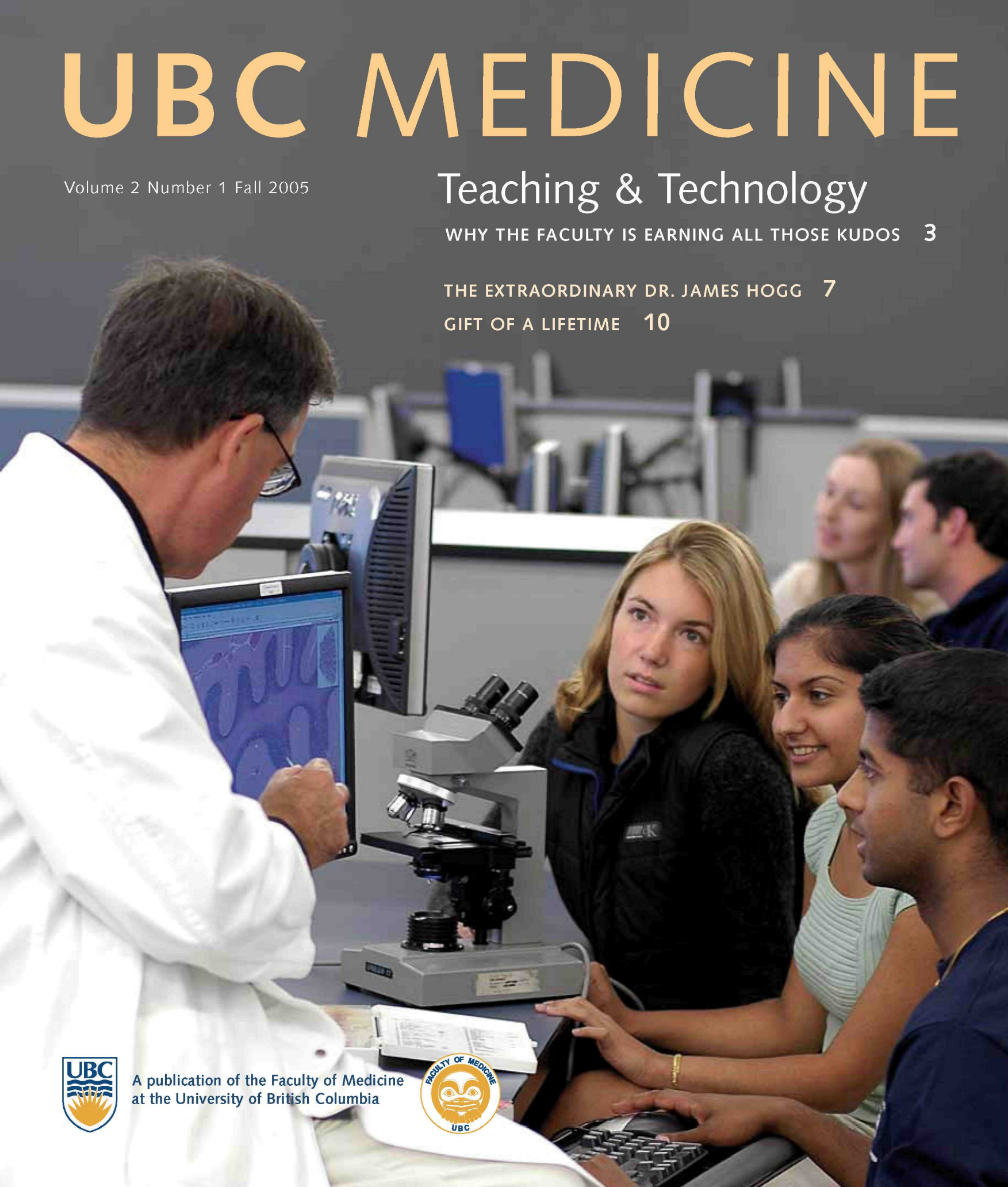
UBC MEDICINE

Volume 2 Number 1 Fall 2005

Teaching & Technology



A publication of the Faculty of Medicine
at the University of British Columbia

FACULTY OF MEDICINE

VISION
Through knowledge, creating health

MISSION
Together we create knowledge and advance learning that makes a vital contribution to the health of individuals and communities locally, nationally and internationally

EDUCATION RESEARCH
COMMUNITY PEOPLE
SUSTAINABILITY & RENEWAL

UBC Medicine is published twice a year by the Faculty of Medicine, and provides news and information about the activities of faculty members, students, staff, alumni, and friends, and their contributions to the health and well-being of people and populations locally, nationally and internationally. Submissions are welcome.

Volume 2 Number 1 Fall 2005

Editor: Miro Kinch

Writers:
Tim Carlson
Barb Daniel
Miro Kinch
Kyle Kirkham
Mari-Louise Rowley,
Pro-Textual Communications

Design: Tandem Design Associates Ltd.

Principal Photography:
Martin Dee

Additional Photography:
Darin Dueck
The James Hogg iCAPTURE Centre
Trasi Jang
Slides courtesy of:
The James Hogg iCAPTURE Centre
Dr. William Ovalle
Dr. Wayne Vogl

On the cover: Where old and new technology meet—Dr. William Ovalle and first-year histology students in the new Multi-purpose Lab on the Point Grey campus, where the state-of-the-art virtual slide box is complemented by traditional microscopes. See p. 3.

CONTENTS

FEATURES

DEPARTMENTS

The Faculty of Medicine at UBC is a dynamic component of one of Canada's most exciting, innovative public universities, and the home of British Columbia's only medical school.

Faculty members, students, staff, and alumni from fifteen academic departments and two schools—Audiology & Speech Sciences, and Rehabilitation Sciences—are actively engaged in leading-edge research, education and community service on university and hospital campuses across the province.

DEAN'S MESSAGE

I am always pleased with the energy and excitement that accompanies the start of a new academic year and the entry of a new class.

All of us have been students at some time in our lives. Most of us still are; some formally, others informally. Many of us are teachers ourselves and all of us support teaching and learning in some way, at work, at home and/or in the community.

It is an enormous responsibility, a tremendous honour and a great privilege to be involved in teaching and learning, and one I personally take very seriously. I have never forgotten my discovery, in high school, that the word "doctor" derives from the Latin verb *doceo*, which means "to teach." As a medical student, a resident and a practising physician, I have been fortunate to have had a number of gifted teachers and mentors. Each one was distinguished by the unique set of skills, interests and abilities that they generously shared with me, and their personal styles and teaching methods were as individual and varied as they were. What they all had in common, however, was their passion for and commitment to their work, and a spirit of enquiry that informed everything they did, in the clinic and the classroom, at the bedside or in the lab—something that can't be mandated, but that can so often make the difference between good and great.

In this issue of *UBC Medicine* we have a number of stories to tell about faculty members, students, staff and alumni who have that spirit of enquiry and who demonstrate that passion and commitment every day.

The men and women in these pages are just the tip of the iceberg, however. With almost 16,000 faculty members; students and learners in undergraduate, graduate, residency and continuing education programs; staff members; and alumni in communities and on our academic and clinical campuses across the province, we have a wealth of talent to draw upon. There are stories enough to last a lifetime. It will be our great pleasure—and challenge—to choose some of those stories to tell in this publication, on our website, and in the media over the next year.

GAVIN C.E. STUART, MD
Dean, Faculty of Medicine

STUDENT POINT OF VIEW

BALANCING ACT

Medical Students Do It All— with a Little Help from Their Friends

Medicine Undergraduate Society president Kyle Kirkham (Class of 2005) speaks from the heart about students and student bursaries at the naming of the Donald B. Rix Lecture Theatre in recognition of Dr. Rix's $2 million gift for medical student support.

"It is my very great pleasure to be here today to recognize Dr. Rix for his incredible generosity. His gift will not only support a number of medical students directly, it will have the greater impact of ensuring this important training is a real possibility for students from any financial background and from any region of our province.

I'd like to take a moment to try and show you a little more about what these bursaries will mean.

Helen Rosenauer is a colleague of mine in the class of 2006. She was born in rural BC, but travelled to Vancouver to pursue an honours BSc in Chemistry and Math here at UBC. She completed the Professional Development Program in Education at SFU and became a high school teacher and community counsellor. She has lived in Golden and Hazelton and has worked in Hazelton, Gitsegukla and Kitwanga. Somewhere along the way she met and married her husband Stewart and they had two children, Cara and Christopher. While Stewart knew that coming to Vancouver would mean giving up his job in the forest industry, I wonder if the kids at two and four years old had any idea what they were getting into. In fact, her youngest was probably just happy to be breastfed during the short breaks while Helen wrote the MCAT entrance exam.

Their family endured significant culture shock with the transition to Vancouver, learning first-hand the premium we all pay to live in this beautiful city. Her husband has found his earning potential decimated by the move, and it has been more valuable for them to have a stay-at-home parent. Within their first year here, they exhausted their savings and have relied on support from sources such as UBC bursaries to see them through. In addition to her role as medical student, Helen has had to balance the demands of being a parent and a partner—and find enough of her own time to keep her sanity. Helen hopes to pursue residency training in either Psychiatry or Family Medicine, and to return to rural BC to focus on adolescent populations.

Clara Tan turned 30 this year. She has been in school forever, she tells me. She already has a bachelor's and a master's degree to her credit and is currently in her fifth year with the Faculty of Medicine, working toward a combined MD/PhD degree. After five years with us, she is still exploring her residency options, but knows that research will play a significant part in her future. Her research areas include: inflammation and angiogenesis, blood and thrombosis, pediatric palliative care education at Canuck Place, and MRSA and burns.

Clara actively encourages other medical students to pursue research because she feels that "If we stop thinking of ways to improve care, we risk becoming more like computers with diagnostic algorithms." She says, "it is a great privilege to be given the opportunity to work towards making a positive impact, not only on your own patients, but also future patients." She balances this work with her commitment to her partner, her work at the student clinic downtown, and her leadership in the student community. Clara is perhaps the biggest champion of the fine arts I know and has tirelessly worked to create more opportunities for medical students to express their talents in this area.

There is no single focus for medical students during our program. We all know coming in that academics will take our full commitment. But most of us have other responsibilities that we cannot leave behind or passions that we choose to balance. Medical students' minds should be set on improving our patients' health and maintaining our own. Too often, though, life gets in the way—and money is a big part of life when you have no opportunity to earn any.

Dr. Rix's contribution will mean that students like Helen can go home at night and play with her kids with greater peace of mind. That those of us who uproot to join this program, forcing families to move with us and throwing relationships into turmoil, may have a better chance at coming out intact after four years because finances are not distracting us at every turn. That students like Clara, who are passionately committed to their research and to the huge range of other activities that got us all into medicine in the first place, will feel more freedom to continue with their volunteerism, their leadership, their mentorship, and the curiosity-driven investigation that advances our field.

Thank you, Dr. Rix."

The Anatomy of Distributed Learning

Reconfiguring Medical Education in BC

First-year medical students study a slice of kidney using both microscopes and computer screens in a new high-tech laboratory at UBC. A traditional microscope view is augmented with digital versions of the tissue samples in the "virtual slide box," a UBC-developed database that is revolutionizing the study of microscopic anatomy. Via high-speed video-conferencing technology, the students and instructors maintain a live, interactive connection with their classmates and counterparts in labs at the University of Victoria and the University of Northern BC in Prince George.

Gross anatomy is wired into the universities' distributed learning circuitry as well. A complex matrix of lights, cameras, robotics and audiovisual control systems delivers precision imagery into each lab. The goal, after all, is to give students at each site an identical experience—as if they were all around the same table as the instructor opens up the cadaver and takes them on a tour inside the chest cavity.

These are just two examples of how the technology behind distributed learning is reconfiguring the anatomy of medical education in BC. Innovative solutions have been demanded from teams of medical faculty, clinicians and technicians since planning began in 2001. The results are impressive.

"In terms of medical education programs this is absolutely cutting edge," says Dan Zollmann, an engineer and project manager with AMBiT, a Vancouver-based consulting firm. Zollmann acts as "intersite technology lead" in the distributed learning program.

Already the work here at UBC has set a new standard and is making an impact at other Canadian medical schools. Delegations from the University of Western Ontario (UWO), which plans a similar partnership with the University of Windsor, and from l'Université de Sherbrooke, which is moving ahead with a program in partnership with l'Université de Moncton and l'Université du Québec à Chicoutimi, visited BC in the spring. Both are looking at adapting components of the UBC system to their programs.

"It was almost overwhelming to see the marriage of careful thought and technology," says Jim Silcox, advisor for the Schulich School of Medicine and Dentistry at UWO. "What really hit home was that the technology really worked to preserve the cohesion of the group even though the students are on three different campuses."

The distributed education program demanded specialized infrastructure—beginning with bricks and mortar, moving through to the computer network, and on to the audiovisual and information technology components.

First, "There were major architectural considerations," says network strategist Stan Shaw, who, with a doctorate in molecular biochemistry as well as network industry experience, brought both scientific and technological expertise to the enterprise. "In any video-conferencing environment you have to take into consideration the acoustics and lighting in order to make it work properly—it's a production facility." The state-of-the-art interactive lecture theatres and laboratories in the Medical Sciences Building in Victoria, the Life

Sciences Building at UBC, and the Dr. Donald Rix Northern Health Sciences Centre at UNBC were the result.

Next, they had to design a network fast enough to deliver exceptionally crisp video. Image quality is essential in the context of medical education for reasons that go far beyond an attempt to look pretty. Zollmann says the guiding principle was that "we're training the students' eyes as well as their minds. One of the critical aspects of what we train and hire doctors to do is to use their eyes.... If an instructor was showing an MRI scan in a lecture, it would be meaningless if the remote learner saw a jittering, distorted image at the other end."

To get around the problem of other Internet traffic slowing down the medical school's video conferencing, explains Shaw, "We took a slice of the Internet on BCNET, isolated it and gave it priority over other traffic on the system network." The result is a system built for speed: at three megabits per second, the network transmits video five to six times faster than the industry average.

This solved the delivery problem, but each component of the program made its own particular demands. For Zollmann, the gross anatomy lab offered one of the most interesting challenges in the design of the "remote presentation technology."

Imagine three labs, one in each of Vancouver, Victoria and Prince George, where students are gathered in an operating room–type setting, cadavers on the table. At two of the sites, students watch the anatomist deliver the lecture on large LCD or plasma monitors, with clinicians on hand for consultation.

At the third site, the anatomist not only presents the lecture and proceeds with the dissection, but also controls the outgoing video imagery. The lecturer operates the switching system for cameras that are trained on him when he's speaking directly to the students and for cameras allowing both macro and micro views of the dissection. He also has to keep his eyes on a lectern where a pair of "confidence" monitors show the imagery that is seen at the remote sites, as well as the students asking questions from those sites.

The system development required experimentation. Zollmann, the other technologists and the anatomists identified problems during demonstrations of a prototype system in early 2004: the controls were wall-mounted and out of the anatomist's reach; the touch-screen control was not sensitive to a gloved hand; the images were often in shadow because the lighting did not adjust to the camera angle and focus; and there were motion control issues.

"There were a couple of demonstrations where people were getting ill, not because of the subject matter—everyone in the room was comfortable seeing organs on display—but because the motion of the tour through the chest cavity was so erratic that people couldn't maintain orientation," Zollmann says. "It was clear we couldn't actually teach students with that particular configuration of technology."

Video and lighting systems used in hospital operating rooms proved not to be the answer as they are extremely expensive and meant to be controlled by a dedicated operator.

"What we did instead was adapt off-the-shelf camera equipment and very high-powered lights," Zollmann says. "One is a $30,000 camera, ceiling-mounted and with a robotic control that works in sync with the lights to make sure the specimens are not in shadow, and are consistently illuminated and clear. It's completely motorized, which allows for very close zoom or magnification without shaking or jittering. With a very simple joystick, the anatomists were controlling the camera like a pro in about 90 seconds."

The second camera is a $3,000 miniature camera mounted on an adjustable stem that can be angled or twisted in any direction—it looks like a flashlight on a gooseneck microphone. The anatomist can place it inside the chest cavity and focus in on details that are not captured by the ceiling-mounted camera.

"What made it exciting is that we had a group of anatomists who didn't know technology, and technologists who didn't know anatomy, and we educated each other to the point where we created something that made everyone extremely happy," Zollmann says.

The use of video technology has gradually entered into the teaching of anatomy over the past decade. Says Zollmann, "This system expands its capability—it's an evolutionary rather than a revolutionary thing. What's happening in histology, however, is revolutionary."

The virtual slide box is an online version of the set of 200 slides students study in their first- and second-year histology courses. Each digital image is a whopping 5.9 gigabytes, which renders a perfectly sharp image on large computer screens, even when looking at a detail magnified 40x.

"The students are of a generation that has grown up with computers and they love this kind of interactivity with the computer screen," says Dr. William Ovalle, UBC's medical histology course director. "They can look at it at home; review on their own time."

The virtual slide box is one of the components of the distributed learning program that most impressed the recent delegation from the University of Western Ontario, Zollmann says. "When Dr. Ovalle and I took them through the histology multi-purpose labs and showed them the virtual slide box, their chins hit the table. They could not believe it. They all instantly recognized that what we're doing in histology will transform the way the subject is taught."

UWO's Silcox, who recalls his own struggles with the microscope as a student, agrees with Zollmann. "The histology lab demo was breathtaking," Silcox says. "The virtual slide box, in fact, almost makes the microscope obsolete."

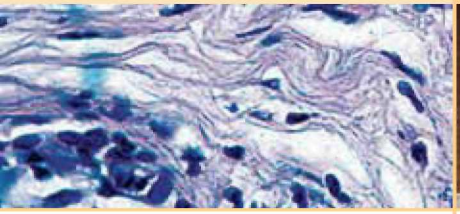
Ovalle, who has taught histology at UBC for 33 years, says it's still important for students to be skilled with both the old and the new

technology. "Some people ask, 'Doesn't this replace the microscope?' In our view, it supplements the microscope. It's important to have both."

Development of the technology used in the distributed program continues. For example, Zollmann says, the future is in refining the current distributed-learning technologies for greater portability—for sites even further removed from special facilities at universities or hospitals.

"What I think is going to be the next frontier for us is exploring video conferencing between potentially many sites. Traditional video conferencing maxes out at four locations. After that they stop working the way we need them to work—we lose the ability to view people at all the sites. Our next challenge is to have large numbers of sites connecting and distributing to sites with just one or two people at them. The other areas we're now starting to research and test are fully functioning laptop systems that can connect with traditional video-conferencing systems."

There is more innovation on the way in the delivery of medical education, and UBC is clearly on the cutting edge.



The virtual slide box and the remote presentation technology support the delivery of the Faculty of Medicine's MD Undergraduate program on three university campuses. This "distributed" program, developed in collaboration with UNBC, UVic, the regional health authorities and the provincial government, is an innovative response to the alarming shortage of doctors in BC's rural communities.

The evidence suggests that training doctors in or close to the communities they come from, and/or hope to serve, helps to keep them there. "This may attract students who wouldn't otherwise consider medicine because they don't want to relocate to larger centres," says Dr. Angela Towle, associate dean, MD Undergraduate Curriculum. "The distributed program, with the technology, makes it more acceptable, more doable."

In recognition of this innovation and collaboration, the Faculty's Distributed Medical Education team, Drs. Joanna Bates, Angela Towle, Oscar Casiro, and David Snadden, were named winners in the Leadership category at the seventh annual **BC Innovation Awards in Educational Technology** this spring. For more about the awards, please go to www.bccampus.ca.

Technology offers solutions, but it also makes demands. The web of fibre-optic cable, circuitry and lenses that brings together three campuses requires teachers to rethink their techniques.

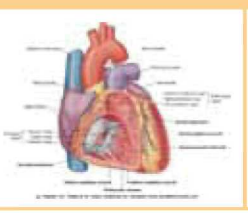
"Teaching's always been a performance for me; that's what I've always loved about it," says Dr. William Ovalle, a 33-year veteran of the classroom. Now he has to adapt his style to multiple cameras and remote audiences as well as run PowerPoint projections and direct the use of the virtual slide box. "When I first heard about the distributed program I thought, 'Oh no, this is going to be impossibly hard work, and we'll lose the sense of personal touch.' But I found that that's not the case. We are in touch; we're communicating. It's incredible. We're all in the room together."

Ovalle is enthusiastic about the new technology. "I thought I would get swamped, but I find it revitalizing. We are incorporating traditional ways of teaching, but we have new methodologies as well. We have the best of both worlds."

For Niamh Kelly, UBC's foundations of medicine course director, the technological component of the distributed program will set medical students up for the technological advances and continuous learning that will be an ongoing part of their practice.

"To me, technology means better connectedness and that means better communication," she says. "Look at the work life of a medical practitioner: they qualify at age 25; on average, they have 40 years of practice. Look at the rate of change of knowledge over four decades, and it's a given that they will have to continually upgrade.

"How will they get that knowledge if they could be working anywhere from an urban centre to a remote village? Technology is the answer. It's all about up-to-the-minute connectedness. It makes sense that our undergraduate students embrace technology, expect it, learn to use it and make it the forerunner of their continuous learning."



Faculty of Medicine professor Wayne Vogl has a runaway international success on his hands with ***Gray's Anatomy for Students***, the textbook he co-authored with Richard Drake and Adam Mitchell. The book, which features access to an online searchable text, an interactive surface anatomy component, downloads of more than 1,000 illustrations, and a test bank, is an ideal complement to the gross anatomy courses in the Faculty's distributed medical program. Among the many other medical schools using the text are Johns Hopkins, Yale and UCLA.

Student end-users were involved in every step of the book's development. Publisher Elsevier sent mock-ups of each chapter—including options for artwork—to student groups around the world. "We paid incredible attention to student feedback," Dr. Vogl says.

Professor Vogl and Richard Drake, director of Anatomy at Cleveland Clinic Lerner College of Medicine, each bring 25 years experience teaching in the lab to this project. Mr. Mitchell, MBBS, FRCS, FRCR, a consultant radiologist at Charing Cross Hospital, Imperial School of Medicine, London, England, provided the clinical expertise.


ZEISS

Pioneering Lung Research—
a Lifetime of Achievement

Pulmonary pathologist Dr. James Hogg is the recipient of the first UBC Faculty of Medicine Lifetime Achievement Award for his pivotal and extensive contributions in the understanding of chronic obstructive pulmonary disease—the fifth most common cause of death in North America.

Imagine not being able to catch your breath—ever. Professor Emeritus of Pathology at UBC, Dr. James Hogg has dedicated his life to the study of chronic obstructive pulmonary disease (COPD). He has also made major contributions to understanding the mechanism of airway hyper-responsiveness in asthmatic patients, how viruses and bacteria worsen airway diseases, and how white blood cells are attracted to the lung, where they can cause damage. In recognition of both his seminal work in pulmonary medicine and his role as an educator, Dr. Hogg has been chosen to receive the Faculty of Medicine's first Lifetime Achievement Award.

Dr. Hogg continues to teach, mentor graduate and summer students, and do research at his namesake, the James Hogg iCAPTURE Centre for Cardiovascular and Pulmonary Research at St. Paul's Hospital. "Teaching has been one of the most satisfying aspects of my job because you see people grow from students to colleagues," he says. The Research in Progress summer school program initiated by Dr. Hogg in 1978 now involves 25 medical and pre-med students from all over the world.

"Dr. Hogg is an original thinker, an outstanding teacher and a stimulating colleague. His laboratory provides an active intellectual milieu for young physician-scientists, and he has trained some excellent young people, who contribute significantly in their own right."

Reuben M. Cherniak, MD, Distinguished Professor of Medicine
National Jewish Medical and Research Center
University of Colorado Health Sciences Center

Controlling COPD

COPD refers to lung disorders that obstruct the airways—commonly a combination of chronic bronchitis and emphysema. It takes a long time to develop, and occurs as a result of inhaling toxic gases or particles such as cigarette smoke, or exposure to chemical fumes, pollutants and dusts from grain, wood and minerals.

People suffering from COPD are unable to fully expel the air in their lungs, limiting new air intake and the amount of fresh oxygen circulating in the bloodstream. In chronic bronchitis, the lungs are unable to clear mucous. In the latter stages of emphysema, the lungs are riddled with holes and scar tissue. One of the mysteries of the disease is that not all smokers develop it, and only 10 to 15 percent of heavy smokers do. Unlike asthma, which occurs in young, healthy individuals, COPD occurs in older people, usually in their 50s or 60s. Asthma can be effectively controlled, but there is still no cure for COPD, and it is the only major cause of death that is rising in prevalence.

Dr. Hogg made his first major contribution to understanding the nature of COPD in 1968 when working with colleague and mentor Dr. Peter Macklem at McGill University in Montreal. In normal human subjects, the vast majority of the resistance to airflow is in the large airways of the lungs. However, they found that in patients with obstructive lung disease, most of the resistance was in the smaller airways, those less than two millimetres in internal diameter. This research altered the course of investigation of COPD. The discovery that the significant pathology was in the small airways also led to the realization that considerable disease could be present before ever being diagnosed.

Since coming to UBC in 1977, Dr. Hogg has worked closely with Dr. Peter Paré and other iCAPTURE scientists on small airway research. The group recently published a landmark paper detailing the anatomic and cellular basis for the increased resistance to airflow in small airways—quantifying three decades of investigation and discovery.

Understanding Neutrophil Kinetics

Dr. Hogg's expertise in pathology and physiology advanced the understanding of how inflammatory cells and fluids enter the lung. His research has provided new insights into the migration of neutrofils, inflammatory cells that provide the "first line of defence" against infection or injury by attacking bacteria, fungi, protozoa, viruses, and tumour cells. When the body is exercised or stressed, neutrophils are released en masse, elevating the white blood cell count. The time it takes neutrophils to traverse the pulmonary capillary network is 30 to 40 seconds, whereas red blood cells take only one second. "This difference in travel time produces an accumulation of

neutrophils in the lung," notes Dr. Hogg. In the 1980s his innovative work on the effect of cigarette smoking on neutrophil kinetics in the lungs led to new insights into the pathophysiology of emphysema.

More recently, Dr. Hogg and colleague Stephen van Eden—with the consent of cardiopulmonary bypass patients—were able to measure neutrophil levels during surgery. They expected the counts to remain level, but instead, neutrophil levels soared. They discovered that bone marrow leaks neutrophils when the body encounters a traumatic or invasive stimulus, such as surgery. This work was pivotal to understanding the communication between lung cells and bone marrow and the role this has in several systems and organs. It also shed light on the progression of atherosclerosis.

"Perhaps the most interesting thing we found is that air pollution stimulates the bone marrow and your white cell count goes up," says Hogg. He and Stephen van Eden used data collected by Japanese colleague Dr. Yuki Sato when he was on a scientific expedition to the South Pole. His group measured neutrophil levels of the researchers while they were living in this relatively pristine environment, and then again when they returned to more polluted cities. "As the number of particles in the air decreased, the white cell count fell and stayed down the entire year that they were away," explains Hogg. "When they returned, their white cell count went back up."

Honouring a Very Distinguished Career

Dr. James Hogg has received numerous awards over the course of his career, including:

1987	Izaak Walton Killam Research Prize
1991	Distinguished Scientist Award, Canadian Society for Clinical Investigation
1992	Fellow, Royal Society of Canada
1993	Fleischner Medal
1994	Science Council of British Columbia Gold Medal, Health Sciences
1995	American Thoracic Society Scientific Accomplishment Award
1997	Ochsner Award, American College of Chest Physicians
1997	Burns Ambersom Lecture, American Thoracic Society
2002	Henry Friesen Award, Royal College of Physicians and Surgeons of Canada
2003	Chugai Award for Excellence in Mentorship and Scholarship, American Society for Investigative Pathology
2004	Lifetime Achievement Award, Pulmonary Pathology Society
2005	Order of Canada

Harnessing the Immune Response

In a recent study published in the *New England Journal of Medicine* (Vol. 350, No. 26, June 2004), Dr. Hogg and colleagues were the first group of researchers to demonstrate the long-suspected hypothesis that COPD is caused, in part, by the body's own inflammatory immune response. Their data suggested that the lung's natural defences may initiate an exaggerated response to colonization and infection by a variety of bacteria and viruses. The repair process then forms scar tissue that thickens the airway walls and passages, producing irreversible obstruction. "Two things happen in the lung," explains Dr. Hogg. "The airway walls thicken and the lung parenchyma (alveoli and capillaries) are destroyed, so there is both a proliferative response and a destructive response." Understanding how these immune responses are triggered in COPD could lead to novel therapeutic interventions.

Dr. Hogg is also working to understand the mucosal inflammatory response of the lower respiratory tract, characteristic of chronic bronchitis. "It is the inflammation of the mucous glands in the major bronchi that causes chronic bronchitis," he notes. "Whereas, it is the inflammation of the peripheral areas of the lung (the alveoli) that causes emphysema." Why the same stimulus produces different responses, causing different disease phenotypes, is a focus of his current research.

Viral Triggers to COPD and Asthma

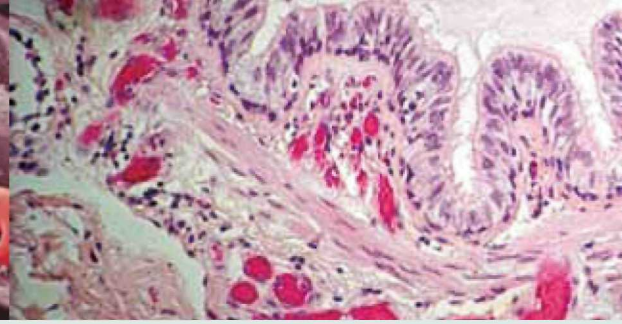
While on sabbatical in 1987 at Merton College in Oxford, Dr. Hogg studied the principles of molecular biology. Over the past fifteen years he has applied this knowledge to investigating the role of latent viral respiratory infections in the development of COPD. This work has provided clues to the riddle of why only a minority of smokers develop obstructive lung disease. It has also furthered understanding of the role that viral infections play in the worsening of asthma.

As a member of the Global Initiative for Chronic Obstructive Lung Disease (GOLD), Dr. Hogg says a main goal of the initiative is early diagnosis. With 30 percent of the population still smoking and industrial and air pollution increasing, Dr. Hogg doesn't believe the number of COPD sufferers will decrease very soon. Early detection could make a huge difference in the effectiveness and cost of treatment, and in the near future he would like to see simple, self-administered breathing tests available at community clinics or drugstores, similar to current blood pressure tests.

After nearly four decades, James Hogg is as enthusiastic about his research as when he was a graduate student. "I feel extremely fortunate to have been able to go to medical school. There have been many highlights in my career, but it really has been the whole ride—with colleagues, staff and students. To be able to continue to work is a great bonus."

THE JAMES HOGG iCAPTURE Centre

for Cardiovascular and Pulmonary Research



Established in 2000, the James Hogg iCAPTURE Centre at St. Paul's Hospital has become world renowned for leading research to eliminate heart, lung and blood vessel disease.

The James Hogg iCAPTURE Centre for Cardiovascular and Pulmonary Research, a 50,000 sq. ft. state-of-the-art facility developed collaboratively by the UBC Faculty of Medicine and Providence Health Care, is home to the foremost scientists in the field of genetic and environmental cardiopulmonary research. The centre was built with $21 million in infrastructure funding from the Canada Foundation for Innovation, BC Knowledge Development Fund and other partners, including the BC Lung Association and the Heart and Stroke Foundation of BC and Yukon. The iCAPTURE Centre is one of the best-equipped facilities of its kind in the world, and a magnet for the brightest young researchers in the field. Currently, 29 principal investigators, eight associate investigators, and a team of over 200 staff and trainees work in the centre's four overlapping areas: Molecular Phenotyping, Ultrastructural Imaging, Dynamic Cellular Imaging and Biophysics, and Organ Pathophysiology and Imaging.

"iCAPTURE research involves a conjunction of clinical insight, computational science, modern biological tools such as genomics and proteomics, and a strong team-based approach that draws on the best of everyone's skills from a wide range of knowledge domains," says Dr. Bruce McManus, centre co-director with Dr. Peter Paré.

Capturing and Understanding Mountains of Data

The technological tools Dr. McManus refers to include a Biowave machine that can isolate antigens from cells and process tissues for electron microscopy—in two hours rather than two days. An atomic force microscope (AFM) allows researchers to study live cells at the nanometre level and to follow molecular events. The centre's new electron microscope delivers 95,000x magnification and has a 3-D function. Other imaging equipment includes a new confocal microscope, a CT scanner, and an MRI (shared with Vancouver Hospital and Health Sciences Centre).

In addition, the iCAPTURE Registry provides computerized catalogues of multi-institutional patient data integrated with banked tissue samples for molecular and pathobiological studies. A computer room stacked with fourteen servers and banks of storage units processes and stores all the data—well in excess of ten gigabytes a day. And then there is the challenge of turning data into knowledge. iCAPTURE researchers include computer scientists, statisticians and others working in bioinformatics and health informatics, who are developing specific algorithms and computational tools to ensure the robust analysis of complex and diverse medical data.

Transforming Research into Treatment

There are currently seventeen major research studies and fifteen clinical trials underway at iCAPTURE. In a current project funded by Genome Canada, Genome BC, Novartis Pharmaceuticals, and IBM, researchers are working in a community-wide team to identify biomarkers in blood or other body fluids, which can be used to diagnose and predict organ rejection and immunotherapy response in transplant patients. At present, patients have to undergo invasive and expensive biopsies on a regular basis. In addition, understanding individual responses to immunotherapy will help physicians personalize treatment to reduce side effects and over-prescribing of expensive immunosuppressive drugs.

Another example of translational or bench-to-bedside research is a huge interdisciplinary study led by Dr. Peter Paré and funded by the Canadian Institutes of Health Research and the Heart and Stroke Foundation of Canada. The research group is working to identify roughly 100 genes related to inflammation, or to immunity and repair following injury, and which trigger the development and progression of obstructive lung disease, asthma, atherosclerosis, degenerative heart valve disease, and systemic inflammatory response syndrome.

Groundbreaking work by Dr. McManus and colleagues has shown how certain drugs used for weight loss damage heart valves. Dr. James Hogg and Stephen Van Eden are studying how air pollutants affect immune response and cause plaque in arteries to become unstable, a process which is linked to sudden cardiac arrest.

"Each of us has a different capacity to respond to injury or to avert disease," says Dr. McManus. Working to understand the mechanisms involved in such responses is a central component of iCAPTURE research. Better diagnosis and more personalized treatment is the ultimate goal.

GIFT *of a* LIFETIME

In UBC's Faculty of Medicine, more than 2,800 talented, dedicated—and busy—practising health professionals annually take on the responsibility for ensuring that the highest standards and best practices of their profession are passed on to the next generation. By making their expertise available to students and learners at many different stages of professional development, they give an invaluable gift to the people in British Columbia, across Canada and elsewhere in the world—the best doctors, audiologists, speech language pathologists, occupational and physical therapists, and midwives, now and in the future.

Along the way, these clinicians report, they often find themselves energized and inspired by the interaction with a diverse and ever-changing set of fresh minds and new ideas.

This year the Faculty of Medicine honoured the sustained contributions of two distinguished clinical faculty members, Dr. Graeme (Ted) Wilkins and Dr. Barry Koehler, with the Career Award for Excellence in Clinical Teaching. The award recognizes the major impact each has had on their students' acquisition of clinical knowledge, skills and judgment—and at times on their career choices. It celebrates their contribution as role models and sources of lifelong inspiration for the impressive roster of health professionals they have taught over the years.

Dr. Ted Wilkins is a clinical professor in UBC's Division of Endocrinology—and a graduate of UBC's Faculty of Medicine (Class of 1965).

As founder of the Division of Endocrinology at St. Paul's Hospital and head for sixteen years, Dr. Wilkins played a key role in developing educational programs for the division. He was chairman of the Internal Medicine Residency Training Program at St. Paul's, and has consistently integrated residents into his private practice. He also extended his skills and knowledge to physicians further advanced in their careers through the Faculty's Division of Continuing Medical Education.

No stranger to awards, particularly teaching awards, Dr. Wilkins has been honoured many times over the years. "Ted was widely viewed among house staff as one of the best teachers in the hospital and was a perennial winner of the interns' teaching award," says Dr. John Ward, who came to St. Paul's as an intern in 1983. "As a resident and later as the Internal Medicine Residency Program director, I recall the Endocrinology rotation being the very best-rated rotation in Vancouver for many years—in no small part because of the experience of working with Ted." His contribution "extends well beyond the education of house staff," Dr. Ward continues. "As a staff member at St. Paul's I have always felt his rounds presentations to be superb, and I have continued to benefit and learn from Ted for over 20 years."

"The people you work with as a student have a huge impact—seen and unseen—on where you end up," Dr. Wilkins says. Dr. Abraham Rapoport, his clinical fellowship supervisor at the University of Toronto, is a case in point. "What fascinated me about endocrinology was the marriage of science in the lab and patient care in the clinic," says Dr. Wilkins, "Dr. Rapoport was head of the Metabolic Unit at Toronto Western Hospital, and not only ran a sophisticated lab, but was also an excellent clinician."

Dr. Rapoport was an "amazingly talented" teacher. "His knowledge of the literature was encyclopedic. He didn't teach didactically; he sent you to the literature. He always asked 'Have you thought about why?'" Dr. Rapoport's students were expected to be rigorous in validating their observations and lab results. "That sort of discipline encodes in your DNA," says Dr. Wilkins. "It's seminal in my approach to teaching."

For Dr. Wilkins, teaching and learning are often synonymous. "Teaching is a tremendous responsibility—you'd better know what you're talking about. It's an extra motivator for me to keep up on the literature and maintain my knowledge base. And the residents teach me. I'll bring something I've read to their attention and challenge them to do the research, and they bring me new information in response. It truly is a two-way street."

Dr. Wilkins' enthusiasm, energy and high standards in patient care and teaching are consistently cited by his former students as hallmarks of his teaching excellence. What motivates him to continue? "It's the pleasure of seeing people pick up new concepts and grow in knowledge and ability in patient care," he says. "That's my reward for teaching."

"a perennial winner"

"I wish I could clone Dr. Barry Koehler"

A clinical professor in the Division of Rheumatology, **Dr. Barry Koehler** not only teaches Rheumatology Fellows and MD students, but also helps educate Internal Medicine residents, physiotherapists, occupational therapists, and psychologists. In 2002 he won the Canadian Rheumatology Association's Distinguished Rheumatologist Award—the highest rheumatology award in the country—for his teaching and clinical excellence.

Dr. Koehler also shares his expertise with the general public through his activities with the Arthritis Society. As the medical director for the British Columbia and Yukon Division for five years, he developed and delivered some of the popular public information sessions that have made such a difference to patients and their families.

"I wish I could clone Dr. Barry Koehler," says Dr. John Esdaile, professor and head of UBC's Division of Rheumatology. "Many of us have the knowledge base and clinical skills, but few have the ability that he has to excite a student or a trainee and make them aware of both the drama and intellectual challenges of a career in rheumatology."

Dr. Koehler has seen tremendous changes in the teaching of medicine and particularly, rheumatology. "When I was a resident, it was an apprenticeship program," he says. "There were no organized academic programs for house staff. Now, residents are treated more like students."

He began his teaching career in Thunder Bay, where he helped develop the McMaster University–based Northwest Ontario Medical Program and welcomed its students into his clinic. Over the years, many of his students have chosen to follow in his footsteps. "Some of the people who spent time with me switched their careers to rheumatology, including two of the residents in Thunder Bay. That was very rewarding," says Dr. Koehler. "They are now my friends and colleagues."

What comes to mind about his own teachers and mentors? Dr. Koehler doesn't hesitate for a second. "They loved what they did," he says. "It was the joy they took in teaching and in the specialty they practised. They influenced me so much—I still find myself emulating them."

Dr. Metro Ogryzlo, founder of the *Journal of Rheumatology*, was one his more colourful mentors. "He loved to walk along the corridor with us, throw out a controversial statement about an approach to treatment, and stand back and watch the fireworks," Dr Koehler remembers. "He taught by anecdote, and analogy, and made unexpected comparisons—he never stopped challenging us to think."

Dr. Koehler gets the greatest satisfaction from watching his students develop their clinical skills and confidence in their own observations and abilities. "Rheumatology is very much a bedside specialty. It's all about seeing the patient and making observations," he says. "The more clinical skills you impart, the more you see the trainees' confidence growing. The penny drops—they discover they don't have to order a bunch of tests in order to understand what's going on; they can actually rely on their own observations. That's exciting."

CONGRATULATIONS

Dr. James Hogg

on being the recipient

of the first

UBC Faculty of Medicine

Lifetime Achievement Award

CONGRATULATIONS

to the over 200 members of the Faculty of Medicine who received awards for their contributions to education, research and community service, and to the Faculty's eighteen new full-time and clinical professors.

The photos below capture a few of the Faculty's honourees and guests at both the annual Awards Reception and the New Professors' Dinner held this spring.

Professors Emeriti Drs. Edith McGeer, OC, OBC, Patrick McGeer, OC, OBC (Alzheimer's Association's Henry Wisniewski Award) and Patricia Baird, OC, OBC (Canadian College of Medical Geneticists Founders Award)

Professor Ross MacGillvray, chair of the Faculty's Awards Committee

Dr. Yvonne Lefebvre, the Faculty's assistant dean, Research, and vice-president, Research and Academic Affairs, Providence Health Care

PAR-BC President Dr. Kevin McLeod and Vice-President Dr. Jason Kur, with Dr. Richard Klasa (Residents' Advocate Award) and Dr. Jane Buxton (Award for Excellence in Teaching)

Drs. Katherine Paton and Joanna Bates, with Dr. Paul Kliffer, one of the Faculty's three Excellence in Clinical Teaching Award winners

Newly gowned professors, l to r: Drs. Adrian White (Anesthesia), Richard Schreiber and Robert J. Adderley (Pediatrics), Stuart Smith, Edward Gofton, and Peter Dolman (Ophthalmology), Derek Blackstock (Anesthesia), Ritchie Younger (Surgery), Shafique Pirani (Orthopedics), Richard Hegele (Pathology), Carolyn Brown (Medical Genetics), Timothy Murphy and Lynne Raymond (Psychiatry), Wendy Robinson (Medical Genetics)

Absent: Drs. Piotr Blachut (Orthopedics), Simon Holland (Ophthalmology), Emlene Murphy (Psychiatry), Juliette Prendiville (Pediatrics)

Dr. Judith Johnston (Honors of the Association, American Speech-Language-Hearing Association), Catherine Backman (Health Professional Investigator Award, American College of Rheumatology Research and Education Foundation)

Killam University Teaching Prize winners Drs. Eric Webber, Joanne Weinberg and Richard Barton

For more information and/or to request additional copies of **UBC Medicine** contact us at:
Faculty of Medicine
The University of British Columbia
317–2194 Health Sciences Mall
Vancouver BC
Canada V6T 1Z3
T 604-822-2421
F 604-822-6061
www.med.ubc.ca

PUBLICATIONS MAIL AGREEMENT NO. 41020503 RETURN UNDELIVERABLE CANADIAN ADDRESSES TO UBC FACULTY OF MEDICINE 317–2194 HEALTH SCIENCES MALL VANCOUVER BC V6T 1Z3