MEDICINE

Volume 1 Issue 1 2004

Students Shine
page 3

Class of '54
page 12

One Medical School, Three Sites
page 6

Community Partnerships
pages 3, 10,11

Award-Winning Research
pages 4, 5, 8, 9

FACULTY OF MEDICINE UBC

FACULTY OF
MEDICINE

FACULTY VISION

Empowered by our core values of learning, discovery, integrity, excellence, people and partnership, we challenge the present and champion the future.

FACULTY MISSION

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

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MESSAGE

FROM THE DEAN

PHOTO: MARTIN DEE

This first edition of the Faculty of Medicine magazine comes at a time of tremendous growth and accomplishment. Two key events merit comment. Both represent significant milestones for the Faculty of Medicine and the University of British Columbia.

This month the first medical school class to graduate from UBC, the pioneering Class of 1954, celebrates their 50th anniversary. At the end of August the Faculty of Medicine, with our academic partners, the University of Northern British Columbia and the University of Victoria, our clinical partners, the six regional Health Authorities, and the government of BC, will officially launch the newly expanded medical school and the new "distributed" model of medical education. The first test of the distributed model took place in January at all three sites—Vancouver, Prince George (the Northern Medical Program) and Victoria (the Island Medical Program)—another first for the Faculty and for UBC, this time in collaboration with institutions, organizations and individuals province-wide.

As the new Dean of the Faculty of Medicine, I am committed to ensuring that the Faculty will continuously strive to meet the health needs of all British Columbians.

This requires a new focus—on health as well as on disease, and on whole groups, or populations, as well as on individuals. It also requires that programs of care be delivered by teams of health care providers working collaboratively, rather than by individual providers working alone.

As a consequence of this new focus and the significant pressures that the health care system is facing, the need for new knowledge and innovation has never been more critical. This need will only be met through outstanding research. UBC provides a world-class research environment, and I am extremely proud of the accomplishments of our faculty members across a spectrum of diverse topics. We have been very successful in the recent Canada Foundation for Innovation competition, the Canadian Institutes for Health Research funding process and in a number of other locally, nationally and internationally coordinated research opportunities. A key feature of many of these successes has been the collaborative nature of the undertaking. Interdisciplinary teams have come together within UBC, and across institutions, organizations and borders of every kind.

While physical and financial resources provide the necessary tools to achieve our objectives in education, research and community service, our human resources are, unquestionably, our most significant asset. Our faculty, including both full-time and clinical members, our support staff, and our students are amongst the best in North America and the world. In this issue, you will read about some of their tremendous contributions to the local and global communities, made both independently and in collaboration with others.

Examples of outstanding partnerships and collaborations abound—not only in the stories about our recent major CFI successes and the prototypical week, but also in those about the Alzheimer Society of BC and The Fisher Foundation, and the Tl'atz'en Learning Centre in Tache, BC. CHIUS, the Community Health Initiative by University Students, is well-known for their interdisciplinary team approach, and research and service collaborations with the residents of Canada's poorest urban neighbourhood, Vancouver's Downtown Eastside.

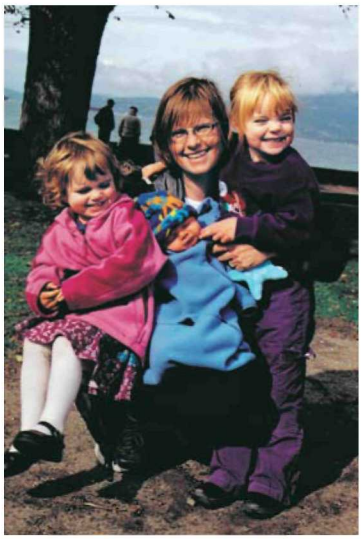
The Faculty of Medicine at UBC is a dynamic component of an exciting, innovative university. Through strong partnerships and creative collaborations in education, research and community service, we will continue to develop significant opportunities to improve the health of the population of BC. The challenges are numerous, but with the Faculty's dedicated team I am confident that we will undertake them positively and effectively.

Gavin C.E. Stuart, MD
Dean, Faculty of Medicine

UBC

MEDICAL STUDENTS SHINE

Students Nori MacGowan and Jonathan Tang typify the dynamic, multi-talented and creative spirit of BC's promising young doctors.



Nori MacGowan won a gold medal in pairs rowing for Canada in the 1991 Pan Am Games. **Jonathan Tang** played piano as guest soloist for the Vancouver Symphony Orchestra, the Montreal Symphony Orchestra and the Seattle Philharmonic. Both fourth-year medical students take their achievements in stride—as they navigate two diverse and exciting career paths to medicine.

MacGowan received a B.Comm. (Honours) from Queen's (1987) and a B.Sc. in Physical Therapy from the University of Western Ontario in 1990. She worked as a physiotherapist for four years in Toronto, where she was a member of Canada's National Rowing Team. She recalls winning gold in Cuba, and being presented the medal by Fidel Castro. "Competing for Canada was a wonderful experience. Rowing helped me to clarify my goals and not become overwhelmed anticipating the end result," she says.

After moving to Vancouver with her husband, MacGowan completed a master's degree in Rehabilitation Sciences, while continuing to work as a physiotherapist.

"You learn persistence and how to deal with setbacks. In rowing, it could be injuries, or a wind that's too strong, but if you just put your head down your hard work usually pays off."
NORI MACGOWAN

She started medicine—her true career aspiration—in 1998. She also had three children while completing her medical degree. "I wanted both, a career in medicine and a family," she says, noting that she took only one month of maternity leave after her son was born last fall. "I came back with two goals: one to graduate this year and the second to be accepted in a residency program." MacGowan just finished a radiology elective and will be starting her residency in radiation oncology this summer. Another goal; another stride forward.

Jonathan Tang was working on an honour's degree in Environmental Chemistry at SFU when "medicine came calling." He, too, had aspirations to become a doctor, although he admits enjoying his engagements as a concert pianist. "I decided to pursue this career path because I wanted to make a direct difference in people's health and contribute back to the community," he says.

After third year, Jonathan took time off from his studies to work in hospitals in Zambia and Tanzania. "I wanted to get a different experience focusing on tropical medicine and international health."

He says the most rewarding part of the experience was the warmth and generosity of the people. The most challenging was the lack of physical, emotional, financial, and political resources to deal with the myriad of problems encountered in Third World countries.

"From my experience in Africa I've learned to adapt to any situation. I will be happy as long as I strive to achieve my best and fully appreciate the resources and people I have around me."
JONATHAN TANG

Tang recently returned from Japan, where he was doing an elective in internal medicine, the field of his residency. As for music, he admits that he doesn't have much time for the piano, but he still enjoys playing the occasional benefit concert, or working with the UBC Faculty of Medicine jazz band, The Black and Blues. "Medical school can be pretty strenuous sometimes, so it's important to just kick back, relax and enjoy every minute."

CHIUS—Reaching Out in the Downtown Eastside

In 1998, a group of UBC medical students developed the Community Health Initiative by University Students, or CHIUS, to help address the complex health needs of Vancouver's Downtown Eastside and bridge the gap between the classroom and the community. Today, over 500 students from nine different healthcare disciplines, including medicine, nursing, social work, pharmacy, occupational therapy, and dietetics, volunteer at the student-run clinic.

Street Youth Ambassadors

CHIUS programs are excellent examples of innovative, student-driven, service-learning models. In the summer of 2002, CHIUS undertook a program of focus groups with street youth to better understand their ideas about health and determine their greatest health needs. The youth identified their greatest needs as food and shelter, survival on the street, getting information about drugs and related services, and how to find out about and access other resources that might be available. They also showed keen interest in becoming "peer teachers" for other youth at risk.

The response to the program was very positive, and led to immediate action. "An initial training manual for the street youth ambassadors is currently being field tested and the results will be incorporated into the second version," says Vince Verlaan, the program manager who funded the project. "This is a great example of CHIUS's vision to respond to the needs of marginalized communities while providing a valuable learning experience," he says.

For more information go to www.chius.ubc.ca

PROSTATE CANCER RESEARCH

FROM BENCH TO BEDSIDE

PC-TRIADD will build on the infrastructure established at the Prostate Centre to accelerate discovery and bring new therapeutics to patients more quickly and comprehensively.

PHOTO: JOSHUA BERSON PHOTOGRAPHICS

Dr Martin Gleave (centre) and members of his team.

The Prostate Centre, at Vancouver General Hospital, is a National Centre of Excellence, and one of the world's leading facilities for research and treatment of prostate cancer. Recent funding of $7.7 million from the Canada Foundation for Innovation (CFI) will create the Prostate Centre's Translational Research Initiative for Accelerated Discovery and Development (PC-TRIADD). The infrastructure funding will support expanded information technologies, robotics, laboratories, and disease modelling facilities to facilitate "translational" or "bench-to-bedside" research.

PC-TRIADD's Translational Approach

The $19.2 million initiative will focus on five themes: high-throughput bioprofiling, molecular pathology, functional genomics, therapeutic development, and translational trials.

"We use various high-throughput studies to examine how cancer cells change when stressed with a treatment, and then we study the gene that produces that particular change, to determine whether the cancer cells need it for growth or survival," explains Martin Gleave, co-director of the Prostate Centre, project leader for PC-TRIADD and professor of Surgery at UBC. Researchers are then able to design therapeutic inhibitors, test them in preclinical models, and finally, move the therapy into clinical trials. This translational approach not only involves multifaceted collaborations across disciplines, but also between research hospitals, academic institutions and industry.

Dr. Colleen Nelson, UBC assistant professor in the Department of Surgery and director of the Genome BC Microarray Platform (an offshoot of the Prostate Centre's array facility) will lead the high-throughput bioprofiling platform. UBC Professor Steven Pelech, a leading expert in cell signalling, will use robotics, bioinformatics and antibody arrays to evaluate changes in regulatory proteins. UBC molecular pathologist David Huntsman will use high-throughput tissue microarrays to identify how specific gene products change in human cancers. The Functional Genomics Platform, led by Dr. Gleave, will examine target genes to determine their role in cancer biology.

The last two themes involve therapeutic proof of principle, therapeutic development (Emma Gunn and Helen Burt), and human testing (Kim Chi, Larry Goldenberg and Martin Gleave). "We will be studying tumour biology at the DNA, RNA and protein levels," says Dr. Gleave.

> "We don't patent the gene, we patent the use of that gene, and that's an important part of translational research."
>
> DR. MARTIN GLEAVE

Helping to Develop BC's Biotech Industry

"We have partnerships in place that allow intellectual property (IP) to be harnessed and channelled toward the clinic," notes Dr. Gleave. "We want to keep the IP here, add value to it and actually develop the biotech industry in BC. If you publish before patenting, nobody is going to invest the $50 or $100 million required to bring a product through clinical development." Once specific inhibitors are patented, they are then licensed to biotech companies who develop the drugs.

Dr. Gleave credits the University Industry Liaison Office at UBC for facilitating the patenting and partnering process with industry. The Prostate Centre's industry network includes local biotech companies such as OncoGenex, Angiotech, QLT, Kinexus, and Kinetek, and major pharmaceutical companies such as Aventis, Eli Lilly and Astra-Zeneca. IBM is another partner; centre researchers are using their hardware and software to develop bioinformatics systems to mine high-throughput and clinical data. The Prostate Centre is also one of the few centres in the world involved in IBM's Clinical Genomics Program. In addition, researchers at the centre have received funding from the Department of Defence and National Institutes of Health in the US, and the National Cancer Institute of Canada.

"These partnerships, along with the grant dollars our researchers are able to bring in, all leverage the CFI funding in a major way," says Dr. Gleave.

OncoGenex—Spin-Off Success

As founder and chief scientific officer of OncoGenex, a biotech company spun off from his research, Martin Gleave considers the partnership between the Prostate Centre and companies such as OncoGenex not only mutually beneficial, but also essential for translational "bench-to-bedside" research. Gleave and researchers at the Prostate Centre successfully characterized the role of several cancer survival genes, such as bcl-2, clusterin and IGF binding proteins, which led to patented therapeutic inhibitors and the first human trials of these targeted drugs. For example, the drug OGX-11, which targets and inhibits the survival gene clusterin to enhance cancer cell death after chemotherapy, is currently in Phase II clinical trials.

CANADIAN MOLECULAR

CYTOGENETICS PLATFORM

UBC will lead a team of Canada's top researchers, who are developing new ways to identify chromosomal abnormalities that cause mental retardation and other birth defects.

For years, researchers and clinicians have been working to discover the causes of birth defects such as mental retardation, which affects 300,000 people in Canada, causing severe, life-long disabilities. With $4.5 million in funding from CFI, the $11.3 million Canadian Molecular Cytogenetics Platform (CMCP) is a national initiative that will bring together leading genetic clinicians and investigators at various sites, and provide them with powerful new research tools to help unravel the complexities of these devastating conditions.

"British Columbia has always been a leader in medical genetics and cytogenetics in Canada," says Jan Friedman, professor of Medical Genetics and an international authority in genetic epidemiology. "We also have a history of being a highly collaborative group within the province and with colleagues throughout Canada. It is an incredible strength."

Cytogenetics is the study of chromosomes. The development of all organisms is orchestrated by genes arranged in specific alignments along chromosome strings. Any deletion or addition of genes can cause defects in development. For example, people with Down syndrome have an extra copy of all of the genes contained on chromosome 21. It is easy to see a whole extra chromosome under the microscope, but many chromosomal changes are much more subtle and cannot be seen by conventional microscopic methods. With three billion base pairs in human DNA, searching for these subtle changes can be like trying to find the proverbial needle in a haystack.

Unmasking Genetic Troublemakers

New molecular cytogenetic techniques developed for cancer research can be applied to improve the understanding of chromosomal abnormalities that cause mental retardation and birth defects, says Dr. Friedman. The CMCP will test the latest technologies, such as high-resolution microarray comparative genomic hybridization (CGH), which is being developed by Marco Marra and his colleagues at the BC Cancer Agency and by Jeremy Squire at the University of Toronto. With this technology they can look for gains or losses of many thousands of tiny pieces of chromosomal DNA displayed on a single microscope slide. "We expect these technologies to be 100 times more sensitive than conventional methods in picking up small additions or deletions of the chromosomes," says Dr. Friedman.

"We also have people like UBC Professor Peter Landsdorf and Wendy Robinson, associate professor in Medical Genetics at UBC and BC's Children's Hospital, who are world leaders in human cytogenetics research here."

Improving Prenatal Diagnosis

Currently, amniocentesis is performed on 21,000 women per year in Canada. The procedure has a one in 200 risk of causing miscarriage, requires two to three weeks for results from culturing the fluid, and costs $1,400 per patient. The CMCP will test several state-of-the-art techniques for prenatal diagnosis of uncultured amniotic fluid. Tests on uncultured fluid would greatly reduce waiting time and save $1.8 million per year in direct healthcare costs.

A potentially safer, cheaper and more efficient prenatal diagnostic procedure is primed in situ labelling (PRINS), which tests fetal cells that normally circulate in a pregnant woman's blood. The challenge is to improve methods of finding the small number of fetal cells in the mother's blood. If PRINS can be developed as a routine diagnostic method, it could save the medical system $28 million annually.

"There is no other centre in the world working in molecular cytogenetics that will have the collection of people and resources that we will be able to put together."

DR. JAN FRIEDMAN

Understanding the molecular basis of mental retardation and other birth defects will give prospective parents more accurate information with which to make difficult decisions. It will also enable relatives to know whether they risk passing on the problem to their children. In the long term, this research could lead to interventions that would prevent birth defects. "Most importantly, it will provide insight into the molecular basis for normal and abnormal human development," says Dr. Friedman.

A Canada-Wide Platform

Canadian Molecular Cytogenetics Platform technology centres are spread across the country, at the BC Research Institute for Children's and Women's Health, London Health Sciences Centre, Manitoba Institute of Cell Biology, the University of Sherbrooke, and North York General Hospital. To ensure coordinated development of these new technologies, the CMCP will include a national database (Hôpital Ste-Justine), a national cell and DNA bank (McGill U.), a health technology assessment facility (U. Alberta), and a statistical support facility (UBC). The informatics governance facility (U. Montréal) will address legal and ethical issues of collaborative genetics research.

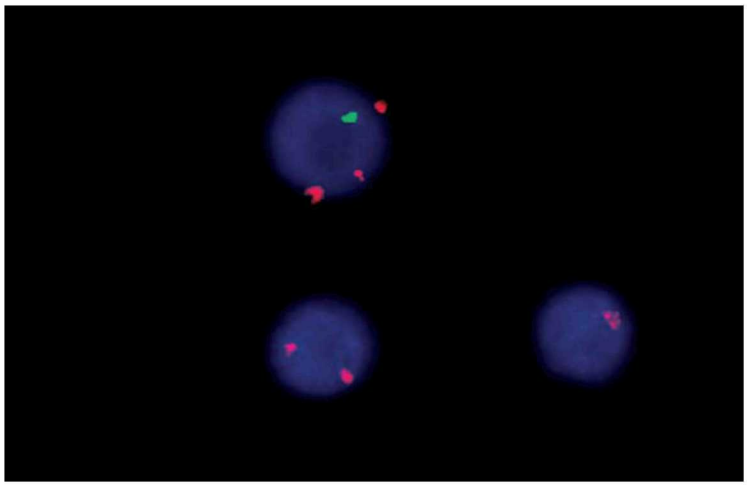


PHOTO: DR. RÉGEN DROUIN (UNIVERSITÉ DE SHERBROOKE)

The cell of a male fetus with trisomy 21 (Down syndrome) is demonstrated by two-colour PRINS in the blood of the mother during pregnancy. The pink signals mark the #21 chromosomes, and the green signal marks the Y chromosome in non-dividing cells. The cell with the green signal is a male (XY) fetal cell. This cell has three signals for chromosome 21, which indicates Down syndrome. The other cells, which have only the normal two copies of chromosome 21, are the mother's.

THE PROTOTYPICAL WEEK

A RESOUNDING SUCCESS

In January, students, instructors and community partners in Vancouver, Victoria and Prince George put the UBC medical school's new distributed model of learning to the test. By all accounts, it passed with flying colours.

How do you run a medical school from three geographically separate sites? How do you ensure that a distributed program provides the same learning experiences and outcomes for all students, regardless of whether they are studying in the Lower Mainland, on Vancouver Island or in Northern BC? Can the vision of "One Medical School—Three Sites" be realized?

The three academic partners—UBC, the University of Northern British Columbia (UNBC) and the University of Victoria (UVic)—tested the innovative and highly collaborative "distributed" program at all three sites in January this year. Two groups of eight first-year students volunteered to take one week of their MD undergraduate courses in either Victoria or Prince George. They helped evaluate and test the technology and teaching techniques, and compared their experiences on the UBC campus, and in doctors' offices, clinics and hospitals in Vancouver, with a brand new one as students in the university and healthcare settings of the Island Medical Program (IMP) and the Northern Medical Program (NMP).

For newly recruited IMP and NMP faculty members, and for participating physicians in both communities, the prototypical week was an opportunity to test, evaluate and learn as well.

"The prototypical week translated the vision of medical school expansion and the rhetoric of partnership into the practical reality of teaching and learning for all of us," says Dr. Angela Towle, associate dean, Curriculum, whose brainchild the project was.

One of the mandates of the distributed program is that key components of the curriculum be delivered in real time to all sites simultaneously. "In our initial assessment, we found that students did not want pre-taped lectures, or even web-based learning material," says Dr. Brian Conway, assistant professor in Pharmacology and Therapeutics at UBC and scientific coordinator for the prototypical week. "What the students crave more than anything is interpersonal contact and interaction. To do that you have to make sure that communication in both directions is maintained at a high level."

> "The challenge of the prototypical week was to find out if you can run a medical school this way. The answer was a resounding YES."
>
> DR. BRIAN CONWAY, SCIENTIFIC COORDINATOR, PROTOTYPICAL WEEK

Multimedia Experience Larger than Life

Lectures were delivered from each of the UBC, UNBC and UVic sites using multimedia video conferencing. "Everything ran very smoothly. In fact, we had back-up plans that were never used," says Dr. Conway, who organized the lectures for the entire week. "The technology opens up new possibilities for presenting the material," he says, noting that instructors can integrate video presentations into lectures, or use blank slides like an "electronic blackboard" to transmit high-resolution lecture notes to all three sites.

PHOTO: PROTOTYPICAL WEEK STUDENTS

PTW students at UVic.

"Once you spend time learning the technology, you realize that these are powerful tools that will improve teaching," says Dr. Conway. "Faculty training and development is key to using the technology effectively." The Faculty of Medicine is very aware of how important this is. Planning is underway for a program to assist faculty members in acquiring the necessary expertise, and technical support will be available at all sites.

Students commented that the large screen actually allowed them to see facial expressions and mannerisms better than in live situations, sitting at the back of a room. "We had a better view of the lecturer and material than students in the Vancouver classroom," participants reported. "The lecturers did a good job in making the remote classes feel included."

> "It was a great experience. All the people connected with the Island Medical Program in Victoria were enthusiastic and very prepared—from the administrative staff and info-technology people, to the faculty and the clinicians."
>
> CHAD EVASCHESEN, IMP STUDENT PARTICIPANT

The challenge, according to both students and faculty, was making the larger group at UBC feel part of the two smaller groups. "We want to make everyone feel as if they are all part of the same class," says Conway. Innovative e-learning and telecommunications technology in the new buildings at all three sites, supported by BCNET's high-speed broadband network, mean the partners will be able to do just that.

The University of British Columbia

UNBC UNIVERSITY OF NORTHERN BRITISH COLUMBIA

University of Victoria

"The prototypical week provided valuable information for future improvements to the distributed model," says Dr. Oscar Casiro, associate dean, IMP. "Being in a smaller group gave students a greater degree of comfort than in a large lecture theatre, where it is more intimidating to ask questions."

Dr. Conway noticed that students in the smaller groups would often try to resolve a question quickly among themselves before asking the lecturer. "This might end up being a strength of the distributed program, and a special benefit for students in the IMP and NMP."

PHOTO: ROB VAN ADRICHEM

Students taking a look at the new Northern Health Sciences Centre.

IMP and NMP have Local Communities Buzzing

You know that something exciting is happening in a community when taxi drivers are talking about it. Prototypical week participants in both Victoria and Prince George received enthusiastic—and unsolicited—reports from local cabbies on their new medical programs. Everyone, from the doctors who took on teaching responsibilities in both high- and low-tech classroom, clinic, office and hospital settings, to other members of the healthcare community, to the general public, shared this enthusiasm and welcomed the students.

Dr. Darlene Hammel participated as a problem-based learning tutor in Victoria. "The prototypical week was stimulating and informative, and I learned a lot about HIV and immunity as an extra," she reports. "The students were dynamic, interesting, enthusiastic, and are quickly learning skills of critical thinking. I hope to be involved in future problem-based learning with IMP students."

"The development of the Northern Medical Program has been a huge story in Prince George, where we are acutely aware of the important link between physician recruitment/retention and community stability," says Prince George mayor Colin Kinsley. "It's an issue right across the North." So much so that communities around Prince George have come together to form a trust fund to help medical students who plan to stay and practice in the area. "Twenty communities, including Prince George, have already pledged to provide financial and moral support to future NMP students by establishing the Northern Medical Programs Trust. Our goal is to raise $6 million over the next five years," says Mayor Kinsley. "In the process, we're moving toward making Prince George a National Centre of Excellence in rural/northern health training and research."

"The entire Prince George community made us feel right at home during our brief stay. We soon got used to the video conferencing format, and the northern faculty and physicians we worked with were extremely knowledgeable and supportive. It will be an exciting place for the incoming students to study medicine."

JOHN DUFTON,
NMP STUDENT PARTICIPANT

A key philosophy of the distributed program, says Dr. Conway, is to increase the number of physicians who practice in the communities where they received their training. The welcome that students received and the excitement about the IMP and NMP are excellent indicators that UBC and partners UVic and UNBC are on track to realizing their goals.

PTW students in Prince George with Tim and Janet Curry, Co-Chairs of the Northern Medical Program Trust.

PHOTO: ROB VAN ADRICHEM

Fast facts

- On March 15, 2002, the BC government announced the expansion of UBC's medical school to help meet the urgent need for more doctors in the province, especially in rural and underserved communities;
- BC has the lowest per capita ratio of physicians to population in Canada, increasing our reliance on externally trained physicians, and reducing young British Columbians' access to a medical career.
- Studies show that doctors tend to practice in the regions in which they were educated. The UBC MD Undergraduate program will be delivered on university campuses and in healthcare settings in the Lower Mainland, the North and Vancouver Island, in partnership with the University of Northern British Columbia (the Northern Medical Program), the University of Victoria (the Island Medical Program), the provincial Health Authorities, and the government of British Columbia.
- By 2010 the number of first-year medical students will double, from 128 to 256.
- By 2014, 1,024 medical students will be enrolled in the four-year program.
- All students will graduate with a UBC degree.
- Over 1,300 applications were received for admission to the 2004/05 academic year.
- The "distributed" program will enhance BC's research capacity, building on the unique strengths of the partners, and maximizing opportunities for collaboration and growth.
- New buildings are under construction—the province has invested $110 million in UBC's Life Sciences Building and $12 million each in UNBC's Northern Health Sciences Centre and UVic's Medical Sciences Building. Agreements for academic space at major hospitals have been signed.

LEADING

FROM THE HIP

The new Centre for Hip Health will support innovative research to reduce the costly—and painful—burden of hip fractures and hip osteoarthritis.

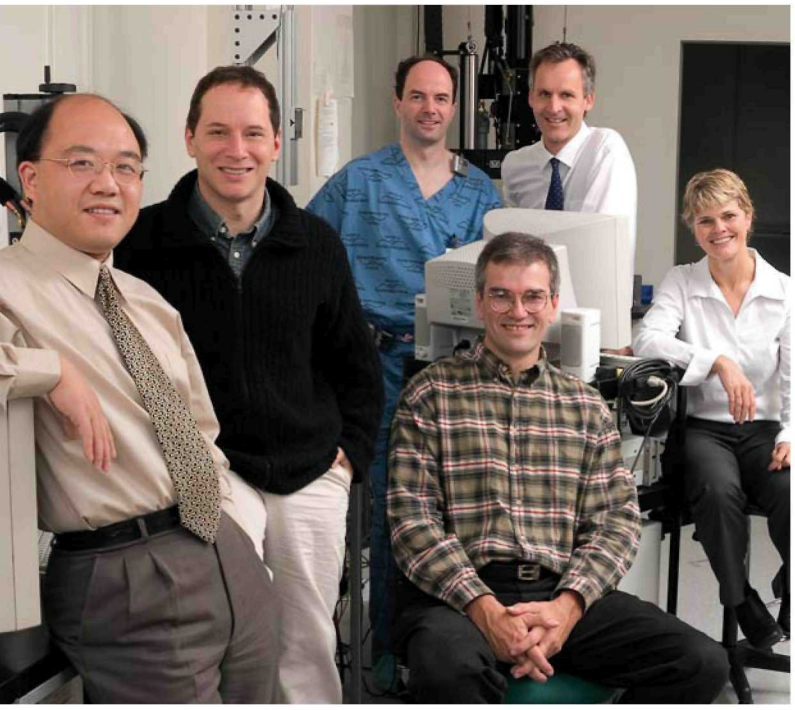


PHOTO: FRANK VENA

Associate Professor Tom Oxland (seated) and members of his team.

"The incidence of hip fractures in Western society is increasing at a rate beyond demographics, and we don't understand why," says Tom Oxland, project leader of the Centre for Hip Health (CHH) and associate professor in both Orthopaedics and Mechanical Engineering at UBC. "In addition, very little is known about the risk factors and early detection of hip osteoarthritis."

With $5.5 million in funding from CFI, the $13.8 million centre will focus on intervention and prevention strategies from childhood to old age, and will include research in bone health, orthopaedics, epidemiology, genetics, biomedical engineering, and social sciences. The CHH's three overlapping research facilities—for risk assessment, novel intervention and population health—will address three priorities: hip fracture, hip osteoarthritis and surgical solutions.

Current methods for assessing risk predict only 40 percent of hip fractures. The CHH will develop the first "fracture risk calculator" to incorporate risks related to geometry, bone defects and neuromuscular function, as well as genetic, social and cultural factors. "UBC professors Mark Fitzgerald, an epidemiologist in the department of Medicine, and John Esdaile at the Arthritis Research Centre of Canada are experts in designing trials and doing economic analysis," notes Dr. Oxland.

Clinical research will be carried out at UBC and Vancouver General Hospital, while researchers at the University of Calgary will work on animal models. The CHH will also collaborate with Harvard, Stanford and the University of New South Wales.

Image is Everything

The centre's image analysis facility, a key resource for assessing risk, will include several state-of-the-art computed tomography (CT) technologies such as peripheral quantitative CT (pQCT), which provides a three-dimensional image at higher resolution than the current standard for measuring bone density (dual energy x-ray absorptiometry or DXA). Micro-CT will be used to study the structure-function relationship in bone in small animal models.

David Wilson from UBC is pioneering the application in Canada of an imaging technique called dGEMRIC, originally developed at MIT to identify areas of degeneration in cartilage. Multimodal "superimaging" will combine images from different imaging techniques, such as CT, magnetic resonance (MR) and ultrasound, to greatly enhance the detail of structural and functional changes in hip osteoarthritis. The centre has also applied for funding for an open MRI, which will allow researchers to image the hip while subjects bear weight and move their limbs.

> "Osteoporosis and osteoarthritis rarely occur together, yet researchers are finding that the interaction between bone and cartilage is critical to understanding both these diseases."
>
> DR. TOM OXLAND

Prevention and Intervention for All Ages

The CHH's innovative, 2,000-square-foot "safe movement environment," complete with energy-absorbing floor and integrated sensors for monitoring movement, will provide a safe, controlled setting for the study of balance and falls prevention. Developer Stephen Robinovitch from SFU and program leader Karim Khan from UBC will design training programs to reduce falls in the frail and elderly.

Heather McKay from UBC will coordinate with Action Schools! BC to study the effect of increased activity on bone development and health in young people.

Novel Surgical Interventions

The CHH will expand on the work of Oxland, UBC surgeons Clive Duncan and Bassam Masri, and Helen Burt in Pharmaceutical Sciences in developing targeted surgical interventions. These will accelerate fracture healing, stimulate bone formation and reduce the risk of infection after surgery, problems that currently cost the healthcare system at least $20 million annually. Using bioactive substances in tandem with novel implants, the group hopes to improve outcomes in revision hip replacement surgery, where severe bone loss often occurs. CHH biologists and bioengineers are exploring the potential use of stem cells, derived from bone marrow, to reverse bone loss. Further development of minimally invasive hip joint surgery will accelerate recovery and reduce hospital stays.

The 40,000-square-foot Centre for Hip Health, targeted for construction in 2005, will include over 100 researchers and 20 principal investigators. "We are bringing together an incredible group of people in one centralized facility," says Dr. Oxland. "Our work is people-based, so we want a centre that is easily accessible and people-friendly."

The Cost of Hip Fractures

- Next to cardiovascular disease, musculoskeletal conditions comprise the second most costly disease in Canada—over $16 billion annually ($2.5 billion in BC).
- This year, roughly 25,000 Canadians will suffer a hip fracture; 20 percent will die of complications, and at least half will be disabled.
- A 10 percent reduction in hip fractures could save the Canadian healthcare economy more than $100 million a year.

NEW LIGHT

ON MACROMOLECULES

The new High-Throughput Macromolecular Crystallography Beamline at the Canadian Light Source will give researchers in BC and across Canada a competitive edge in the exploding field of structural biology.

The research community of structural biologists using macromolecular x-ray crystallography is one of the youngest, most dynamic and fastest growing in Canada. Their work ranges from basic research in biochemistry, cell biology, genetics and immunology, to applications in pharmaceuticals and protein engineering. Macromolecular x-ray crystallographers use synchrotron radiation to determine the novel atomic structure of macromolecules such as proteins and nucleic acids.

Synchrotron light is millions of times brighter than sunlight and covers the full range of the spectrum from infrared to x-ray wavelengths. To produce it requires a facility the size of a football field. The new Canadian Light Source (CLS) nearing completion in Saskatoon is the first facility of its kind in Canada. The light's brilliance and "tunability" (researchers can select the wavelength they need for a particular experiment) are the qualities that enable scientists to study matter at the minute level of atoms and molecules.

In macromolecular x-ray crystallography, scientists make crystals of the substance they want to study. "Many of these crystals are extremely difficult to produce, and synchrotron radiation is often the difference between being able to solve their structures, or not," says Natalie Strynadka, principal investigator on the successful CFI application and associate professor in Biochemistry and Molecular Biology at UBC. The method also provides the high resolution required for structure-based drug design, a key application of this research.

"If you know where each atom is placed, you can design a drug that is highly specific, and the more you can direct your drug to the right enzyme, the fewer side effects it will produce by hitting other proteins," says Prof. Strynadka. "Synchrotron-based methodology is now a required foundation for all structural genomics initiatives, including those aimed at structure-based drug design."

> "There is global recognition that understanding the three-dimensional structure of macromolecules facilitates drug design and protein engineering, and that has caused the explosion in this area of research."
>
> ASSOC. PROF. NATALIE STRYNADKA

The first crystallography beamline currently under construction at the CLS is already oversubscribed, notes Strynadka. With $4.2 million from CFI's Innovation Fund, a second high-throughput beamline will give Canadian researchers the synchrotron access they need to continue to excel in this growing field. The second beamline will complement the first, which has a more intensely focused final beam designed to handle the smallest or most weakly diffracting crystals. "Beamline two will provide capacity by being highly automated, so the two together should provide Canada with the capacity to cover the full range of problems."

PHOTO: KENT KALLBERG

Associate Professor Natalie Strynadka.

Innovation in Automation

Robotics and secure Internet access will make the new beamline a virtual data collection centre. Strynadka and fifty other principal investigators from every major institution in Canada will be able to FedEx crystals directly to the CLS site. They will then be mounted onto the system robotically and data will be collected around the clock, seven days a week. Researchers will be able to monitor the data online from their home institutions.

Research in areas such as structural genomics requires large blocks of time. With the completion of the CLS beamlines, Canadian scientists will no longer have to "buy time" on synchrotrons in the US and Europe. Dedicated access to this state-of-the-art facility for the BC crystallographic community—the second largest in Canada—is crucial in order to retain and attract top investigators to universities and the biotech industry, says Strynadka, noting that the CLS has already received major funding from Alberta, Saskatchewan and Ontario.

"Macromolecular crystallography research has crucial applications in health, the environment and biotechnology," says Prof. Strynadka. "This will be a very high-profile investment for BC and a wonderful opportunity for the province to become a major player in this important field of research."

More CFI Awards for UBC

Congratulations to other members of the Faculty of Medicine who have received recent CFI funding from projects under the aegis of other UBC faculties. The Centre for Disease Modelling, a UBC-wide facility, received $7.5 million to explore new therapies for a wide range of infectious and other diseases such as SARS, HIV, diabetes, and cancer. In the Faculty of Graduate Studies, a $3 million CFI award will help to create the UBC-based Population Health Observatory, an advanced data resource allowing investigators to explore how health care, education, early childhood experience, employment, the environment, and other factors work together to affect the health of individuals and populations.

CFI support represents 40 percent of required funding. UBC researchers apply to the provincial government's BC Knowledge Development Fund for a matching 40 percent. The remaining support will come from private sources and industry. "Previous CFI grants to UBC have been generously matched by the BC Knowledge Development Fund, and we anticipate a similar level of commitment to the outstanding research projects in this round of CFI grants," says Dr. Alison Buchan, associate dean, Research.

TL'ATZ'EN LEARNING CENTRE

A MODEL PARTNERSHIP

Community Learning Centres are collaborative, health-related learning partnerships between BC's underserviced and remote communities and the Faculty of Medicine.

The village of Tache in the Tl'atz'en Nation, 120 kilometres north of Prince George, is pioneering an innovative new program in community health and learning. Directed by the band's governing council, the Tl'atz'en Learning Centre's goal is to develop local skills and knowledge and improve community well-being through communication technology and shared access to information. The project links youth and elders in a collaborative effort to share information on both traditional and contemporary health practices.

"The Community Learning Centre concept was formulated through a collaborative development process between UBC and Mexico's University of Monterrey Tech," says Vince Verlaan, manager of Community Engagement for the Faculty. "We can't just go in and 'fix problems.' We have to work with communities to build systems that will allow them to help themselves, and information technology was the avenue the Tl'atz'en Nation chose for doing that."

PHOTO: TACHE COMMUNITY

TLC youth trainees, CME members, funders, and Tl'atz'en education staff smile for the camera.

Co-Learning and Capacity Building

For the 700 residents of Tache, the learning partnership provides multiple levels of interaction and engagement. Villagers manage the centre, determine and act on local health priorities, and create locally relevant content, while staff from the Faculty's Division of Continuing Medical Education provide technical expertise.

"In Phase I, the community decided that in order to promote health, they also needed to do cultural restoration of language and land-use practices," notes Verlaan. Seven local youth were hired as production research assistants to design an interactive website that promotes the Tl'atz'en language, medicine and culture. Youth and elders work together to develop and update the content of the web portal.

> "I think it is important that we don't lose our language and culture. We all have to work hard to preserve our heritage, for there is another generation that will take our place and we must value the future that is ahead of us. Together we can make a difference."
>
> DONNIE JOHN, TL'ATZ'EN LEARNING CENTRE PRODUCTION RESEARCH ASSISTANT

Dr. Kendall Ho, associate dean, Continuing Medical Education, is enthusiastic about the partnership with the Tache community. "This program vividly illustrates that the health of a community is much more than medical knowledge. It is about social strengths, mutual caring of community members, joint pride and ownership of cultural heritage, and a strong vision of community wellness," he says. "My CME team and I are privileged to be able to experience this first-hand through the warmth and generosity of Tache."

PHOTO: VINCE VERLAAN

The TLC team in action.

The first phase of the Tl'atz'en Learning Centre (TLC) project was primarily funded by a grant from the provincial Ministry of Management Services, with additional support from HRDC through the Prince George Nechako Aboriginal Employment and Training Association, and both the Faculty of Medicine's Division of Continuing Medical Education (CME) and Community Liaison for Integrating Study and Service (CLISS) Committee. Telus helped with technology linkages and has now provided a high-speed ISDN line free of charge for a year.

Phase I wrapped up with a community showcase and workshop, attended by 40 people. They identified and ranked the health priorities that will form the core of the workplan for Phase II. Addictions, diet and nutrition, diabetes, using and sharing traditional information, and exercise and recreation were high on their list. The Ministry of Management Services has just allocated $180,000 to fund this next phase, and Verlaan is optimistic that other funding partners will come on board.

"Too often social responsibility is seen only as a 'responsibility,' rather than an opportunity to be innovative and creative," says Verlaan. "Everyone involved in this project is enjoying it immensely. All the partners are learning about how to connect community health issues, culture, technology and educational practice, and all sides are making their own unique contributions. It is wonderful to have the community acting as an equal player."

Encompassing Traditional Wisdom

The TLC website (www.tlc.baremetal.com) includes a detailed description of local herbs used in traditional healing. For communities with limited support from doctors or nurses, Community Learning Centres are designed to assist local, informal healthcare providers—the grandmother who knows how to apply a poultice to a burn, the traditional healer who knows how to make herbal remedies, or the trapper who knows how to set a broken leg. "People who fall outside of the standard definition of a certified healthcare practitioner are included in this model," says Verlaan. "We see a learning centre as complementary to the local health unit that is struggling to meet community needs. In Phase II of the TLC project, we want to explore how to use the technology for improved service delivery as well as for the health promotion activities we began in Phase I."

PARTNERS UNITE

TO FIGHT ALZHEIMER'S DISEASE

The recently established Ralph Fisher and Alzheimer Society of BC Professorship will translate research into practical applications.

By now, almost every Canadian's life has been touched by Alzheimer's disease. We are all too familiar with its devastating impact on people with the disease, their families and caregivers. UBC and its community partners, the Alzheimer Society of BC and The Fisher Foundation, are providing fresh hope by establishing the new Ralph Fisher and Alzheimer Society of BC professorship in Alzheimer's research

"You see your loved one slowly fading and fading. And you know that there is no cure, that there are no survivors. It is devastating."

PATRICIA HUSCROFT, WHOSE MOTHER, THE LATE SELMA CORWIN, SUFFERED FROM ALZHEIMER'S DISEASE

Vision of the Alzheimer Society of BC

The catalyst for this joint venture was philanthropist Patricia Huscroft, who, as an Alzheimer Society supporter, works toward the society's ultimate vision—to create a world without Alzheimer's disease.

Determined to champion research into the disease here in BC, she invited to lunch two equally committed individuals—Alzheimer Society of BC executive director Rosemary Rawnsley, and UBC Faculty of Medicine development manager Miro Kinch.

The trio agreed on an endowed professorship to support a dedicated leader in Alzheimer's research as a challenging, achievable goal. It would advance the Alzheimer Society's mission to not only help alleviate the personal and social consequences of Alzheimer's, but to also support the search for causes and cures. They would need to raise $1.8 million to fund it—a tremendous commitment of time and energy. "It was clear from the start it would have to be a three-way partnership to support the professorship," says Rawnsley.

Rawnsley and Kinch then met with the director of UBC's Brain Research Centre, Dr. Max Cynader, and head of Neurology, Dr. Howard Feldman, who were enthusiastic about the project and the role of the new professor—a leader in research who will translate pure science "from bench to bedside."

Ralph and Grace Fisher in their prime.

Says Rawnsley: "What is most important to the Alzheimer Society is the fact that the research can translate into the clinic and into the community, that it will help in actual practice."

At the same time, Fisher Foundation director Peter Young was looking for opportunities to help fight Alzheimer's, which robbed Ralph Fisher of the last years of his life. In one of those serendipitous moments, the Alzheimer Society of BC, The Fisher Foundation and UBC came together with a common mission.

The Alzheimer Society of BC and The Fisher Foundation both stepped up to launch the professorship with a commitment of $600,000 each.

Now, UBC is spearheading a campaign to raise the additional $600,000 needed for the Ralph Fisher and Alzheimer Society of BC Professorship.

"I'd like people to know how exciting it is to get involved in these projects."

ROSEMARY RAWNSLEY
ALZHEIMER SOCIETY OF BC

Dreaming in Living Colour

Like the Alzheimer Society of BC, The Fisher Foundation and the University of British Columbia, Ralph Fisher had a dream.

In the 1950s, local flower growers faced hard times. Ralph Fisher and five other growers took action by forming their own marketing co-operative: United Flower Growers Co-operative Association, whose members got together and auctioned their flowers directly to buyers, on the spot and for cash.

PHOTO: ALZHEIMER SOCIETY OF BC

Rosemary Rawnsley, Alzheimer Society of BC

Today United Flower Growers does $56 million worth of business annually. The 200 member co-operative has blossomed beyond its founders' wildest dreams.

CEO Tom Mulleder remembers Ralph Fisher as a man of integrity and vision. "He was the driving force behind this organization. At every occasion he encouraged others to be involved. Ralph was very much a leader: he chaired this association for 18 years, and that will never be duplicated by anyone."

When Ralph Fisher died of Alzheimer's disease, he had no memory of the business he and his wife Grace had worked all their lives to nurture. Still, his legacy lives on in the thriving co-operative he helped to create.

His values are also reflected in the leadership and commitment of The Fisher Foundation and the Alzheimer Society of BC in supporting research that will help us all to realize—and remember—our dreams.

UBC MEDICINE'S

FIRST GRADS CELEBRATE 50TH ANNIVERSARY

Drs. Al Boggie and Al Knudson, alumni from the Class of '54, share their memories of the Faculty of Medicine's inaugural years and their lives as family practitioners.

PHOTO: JANE MERLING

Class of 1954

COURTESY OF UBC LIBRARY ARCHIVES.

UBC Faculty of Medicine's first home.

In 1954, the first class of medical students graduated from UBC—and British Columbia finally had doctors who were actually educated right here at home. Fifty years later, UBC medical students will be able to enrol in the new Northern or Island Medical programs, and study even closer to the communities they come from, and want to live and work in. Like the generation 50 years before them, the new recruits of 2004 will be breaking new ground.

The pioneering spirit of the students and instructors in that first class helped to set the standards for today's medical school. The classrooms for the Faculty's first 60 students were renovated army huts—but they felt privileged to have them. "We were just grateful to get into medical school. Because it was new, there was a great feeling of collegiality among students and instructors," says Dr. Al Boggie.

> "We were aware that we were trailblazing with our professors. Everybody was determined to work hard, make it a success, and as doctors, to be of equal calibre to graduates from any other school in Canada."
>
> DR. AL KNUDSON, CLASS OF '54

Both Dr. Boggie and Dr. Knudson remarked on the dedication of their professors, many of whom volunteered their time to teach in the first years of the program. As well, one-third of their class, including Boggie, were army veterans, so they brought a high level of maturity to the group. "We wouldn't think of going to a lecture without a jacket and tie on," says Dr. Knudson.

After graduating, Dr. Knudson spent his first year of general practice in Ladner and the next 35 years in Vancouver. He notes that most students in their class went into general practice. "I had an opportunity to go into orthopaedics or obstetrics, but I started in general practice and enjoyed it so much that I never thought of doing anything else." Obstetrics, however, did end up being a major part of his practice. For nearly fifteen years he delivered an average of eight to ten babies a month!

Dr. Boggie was a general practitioner in Vernon for 14 years before coming back to Vancouver to help start the Department of Family Practice in the Faculty of Medicine. He also founded and ran the Fairmont Family Practice Unit at Heather and 11th. Ten years later, he became associate dean of Admissions and moved his practice to UBC, where he divided his time between administration and patient care.

Both doctors agree that general practice has changed significantly—and that new technology is not a panacea for either doctor or patient. "Medicine now has become more focussed on technology rather than interpersonal relationships," says Dr. Boggie. "Keeping up with technology is important, but it takes away from your time with the patient."

> "To be a good family practitioner, you need to be genuinely interested in people, and be prepared to deal with a lot of diversity and surprises."
>
> DR. AL BOGGIE, CLASS OF '54

Dr. Knudson's advice to the new students of 2004—"Be constantly aware of what a privilege it is to be a doctor. You have an element of trust that probably no other area of work has. And listen to your patient!"

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