



AUTUMN 2010

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A New Place to Call Home

This September, Sunnybrook's Women & Babies Program opened at 2075 Bayview Avenue, following a landmark relocation. The move transferred critically ill and premature newborns, women in labour and Sunnybrook staff from rented space at 76 Grenville Street.

As part of the permanent relocation, researchers from the program are also moving to 2075 Bayview. The opening will create new collaborative opportunities for scientists previously based at 76 Grenville, and enable better access to research infrastructure and resources for their research groups.

"Evidence-based innovations in care depend upon close interaction between physician-researchers, patients and basic scientists," says **Dr. Jon Barrett**, director of the Women & Babies Research Program at Sunnybrook Research Institute (SRI), and chief of maternal-fetal medicine at Sunnybrook. "Locating these teams together—in and near the stunning new home for the Women & Babies Program—will enable us to bring those innovations to patients more quickly."

The largest new group at the Bayview campus will be the Centre for Mother, Infant and Child Research (CMICR), led by **Dr. Elizabeth Asztalos**, an associate scientist at SRI and neonatologist at Sunnybrook. Most of the centre's 16 staff will be on the eighth floor of C wing, where they will continue to run large, randomized controlled trials that seek answers to critical questions in the care of women and their babies.

Researchers in the centre—the roots of which stretch back to 1990—have conducted high-profile international trials on cae-



L to R: Laura Tomat, Dr. Elizabeth Asztalos, Michael Shi and Judy Cardwell are members of the Centre for Mother, Infant and Child Research (CMICR) at Sunnybrook Research Institute

sarean section versus vaginal birth for delivery of multiples, and whether repeated courses of steroids improve the outcomes of preterm babies, among others.

"With the skill set we have in CMICR, we hope to collaborate with other investigators at Sunnybrook on clinical trials in the perinatal domain and other areas," says Asztalos. "Clinical trial skills are transferable—you still need to collect the data, maintain its integrity, ensure sites follow proper procedures and work with a principal investigator to provide the content expertise."

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Histopathology Imaging Paper Garners Award

Dr. Gina Clarke, a research associate in the lab of senior scientist **Dr. Martin Yaffe** at Sunnybrook Research Institute, won an award for best presentation for lab workflow in the scientific session at the Pathology Informatics 2010 conference. Clarke presented her paper, "Whole specimen breast histopathology imaging for more accurate tumour measurements," in Boston this September. Co-authors are **Dr. Claire Holloway**, **Danoush Hosseinzadeh**, **Dr. Anne Martel**, Yaffe and **Dr. Judit Zubovits**.

"I was pleased to receive this award on behalf of the group, as it was a reflection of the interest and discussion that the work has generated at this international conference," Clarke said. "I work with a team of very talented individuals, and together we are developing improved techniques for evaluating surgical specimens, especially in breast cancer."

Clarke presented a clinical validation study. Her team's preliminary results suggest these new techniques can provide more accurate measurements of specimen margins and reduce the risk of recurrence and mortality that would occur due to failure to detect residual disease. Techniques for 3-D comparison of histology and imaging data can be applied in future studies that evaluate new imaging techniques for accurate surgical guidance, helping the surgeon achieve definitive primary treatment and the patient to avoid secondary treatments.

The work was funded by a Canadian Breast Cancer Research Alliance grant.

Speaking of babies . . .

Jeanette Andreatta, executive assistant to Sunnybrook's vice-president of research **Dr. Michael Julius**, gave birth on August 15, to a healthy baby boy.

Aidan Jonathan Andreatta weighed eight pounds, 10 ounces. Big brother Connor is very excited to have a little brother.

Mom, dad Carlo Andreatta, Connor and baby Aidan are all doing well.



Aidan Jonathan Andreatta



Jeremiah Hyung Kim

It's a boy!

Jeremiah Hyung Kim arrived a week earlier than expected for first-time parents Alisa and Ed Kim.

Alisa Kim, communications coordinator at Sunnybrook Research Institute, gave birth to a healthy baby boy on August 17. Jeremy weighed eight pounds, one ounce.

Mom, dad and their bundle of joy are all doing well.

Continued from page 1

Asztalos hopes the centre's physical presence at Sunnybrook will entice SRI investigators across programs to develop new trials. She estimates her group could handle up to eight studies at once, and they are waiting on news from submitted grant applications that could push them closer to that number.

The Obstetric Anesthesia Research Unit (OARU) is also moving. The unit's director, **Dr. Pamela Angle**, and **Drs. Stephen Halpern** and **Pamela Morgan**, are associate scientists at SRI and bring with them six research staff and students.

The group has published studies describing issues and barriers in maternity anesthesia care in Ontario and potential solutions; development of a multiattribute health index to measure the quality of epidural pain relief during labour and delivery; and work on ultrasound for epidural placement, obstetric team training and crisis management. The unit recently completed a national trial on the impact of smaller epidural needles on postdural puncture headache.

Two ongoing research programs within OARU relate to developing and testing tools to measure labour pain and the quality of pain relief provided by epidurals. "One problem with research in obstetrical anesthesia is that we don't have validated tools that capture many of the advances we've made in the care of women during labour and delivery," says Angle.

In another study, Angle found that in rural Ontario, anesthesia services for maternity care are often delayed or unavailable. She wrote a report recommending more anesthesiologists for those areas and the formation of networks linking university-based anesthesia specialists to staff in small and remote hospitals.

Angle hopes to establish those mentorship networks using the knowledge-transfer resources and collaborative approach that made Sunnybrook's Northern Ontario Remote Telehealth Network a success. "We want to provide a minimum standard of care for women across the province, which could also serve as a model for the country," says Angle.

Other Women & Babies researchers moving to the Bayview campus include **Drs. Sharyn Gibbins**, **Clifford Librach**, **Adrian Ziino**, **Julia Lowe** and **Ori Nevo**.

American Asthma Foundation Invests in Novel Asthma Study

The American Asthma Foundation has awarded \$150,000 to **Dr. Daniel Dumont** and his research team. Dumont and **Drs. Paul Van Slyke** and **Annie Bourdeau** will investigate a peptide mimetic called Vasculotide as a potential treatment for asthma.

Dumont, the director of molecular and cellular biology at Sunnybrook Research Institute, says, "This award is very important to our group as the funding provides a real boost to the research endeavour of the lab. It now provides support for my research team to look into the impact of Vasculotide in the early inflammatory response." Dumont holds the Canada Research Chair in Angiogenic and Lymphangiogenic Signalling.

Vasculotide is a fully synthetic angiopoietin-ligand mimetic developed in Dumont's lab. Bourdeau and Van Slyke will test Vasculotide's ability to decrease the severity and long-term effects of asthma in mice by using the inExpose system, a bench-top inhalation exposure unit. The researchers will first administer an asthma-inducing ovalbumin solution to two groups of 20 animals, then inject Vasculotide in one group and compare their outcomes to the control group.

If the experiment ameliorates symptoms of the disease in mice, then it will provide Dumont's group with knowledge to develop further Vasculotide for dermatitis and rhinitis—two diseases that with asthma form the "atopic triad." Currently, Dumont's lab is also testing Vasculotide for diabetic wound healing, arteriosclerosis, ischemic limb disease and acute lung injury.



Dr. Daniel Dumont

Funding Agency News

From the **Canada Foundation for Innovation**, two updates: first, an investment of \$182 million into its Leaders Opportunity Fund. Second, an announcement of a new Leading Edge Fund and New Initiatives Fund competition, which will see \$155 million disbursed for research infrastructure, plus \$45 million for operations associated with the proposed space and equipment. No word yet on the deadline for proposals.

Welcome as the news is, note that it's not new money; rather, it comes from the \$600 million announced in Budget 2009.

Closer to home, the **Ministry of Research and Innovation** has a new head after Premier McGuinty reorganized his cabinet on August 18. Glen Murray, MPP for Toronto Centre, has taken the helm.

Project Funding for Cancer Research

The Ontario Institute for Cancer Research (OICR) and Cancer Care Ontario (CCO) have awarded grants to four researchers at Sunnybrook Research Institute.

Dr. Craig Earle, a scientist in clinical epidemiology, will receive \$954,297 from OICR and \$977,911 from CCO. He is also the recipient of \$256,632 from OICR for his work on the Ontario Cancer Data Linkage Project.

Dr. Linda Rabeneck, a senior scientist in clinical epidemiology, will receive \$78,417 from CCO for research on the impact of Ontario's ColonCancerCheck and evaluating strategies to improve population-based cancer screening.

Dr. Lisa Barbera, a scientist in the Odette Cancer Research Program, will receive \$234,465 from OICR for her research on patient- and provider-reported outcomes in cancer patients in Ontario.

Dr. Nicole Mittmann, an associate scientist in clinical integrative biology, will receive \$540,545 from OICR for her work on determining costs for cancer care in Ontario.



Dr. Nicole Mittmann

Scientists Recognized for Brain Research

The Alzheimer Society of Canada has awarded two SRI researchers Quality of Life research grants for studies conducted over two years.

Dr. Mark Rapoport, an associate scientist in clinical integrative biology, received \$78,870 for research on driving and dementia in Ontario. His research focuses on traumatic brain injury in the elderly, the study of drug use and its effects, and predictors of motor vehicle collisions in the elderly.

Dr. Mary Tierney, a senior scientist in clinical integrative biology, received \$107,928 for her project on the feasibility of computer-administered cognitive assessment of older adults in family medicine. Tierney studies cognitive impairment in aging and dementia.

CIHR Invests in Magnetic Resonance Imaging Experiment

The Canadian Institutes for Health Research has awarded \$139,840 to **Dr. Charles Cunningham**, an imaging scientist in the Schulich Heart Research Program at Sunnybrook Research Institute.

The award is a one-year grant that will support the first phase of a proof-of-principle project on a wire for MRI-guided interventions.

Tool Kit: inExpose



L to R: Drs. Paul Van Slyke and Annie Bourdeau will use the inExpose system to test Vasculotide in the treatment of asthma

Induction of lung disease in animals for preclinical study is labour-intensive, but scientists at Sunnybrook Research Institute (SRI) can now perform this time-consuming task reliably and more humanely—in a compact space and in several animals at once—with the inExpose system, a bench-top inhalation exposure unit.

Built by Scientific Respiratory Equipment Inc., the inExpose system has a stacked design that enables precise and efficient

nose-only or whole-body exposure to aerosolized drugs and compounds, cigarette smoke and other toxins.

Dr. Annie Bourdeau, a junior scientist in the lab of **Dr. Dan Dumont**, SRI's director of molecular and cellular biology, will use the inExpose system to administer asthma-inducing ovalbumin to two groups of 20 mice over nine weeks. At the same time, Bourdeau and her colleagues will inject the mice with Vasculotide, a compound developed in Dumont's lab that has shown promise in the treatment of several diseases including atopic dermatitis, which shares key inflammatory characteristics with asthma.

"In the past, researchers induced asthma through intranasal challenges in individual mice that were anesthetized—this was effective, but it had downsides," says Bourdeau. Handling time was long, which made large experiments difficult; anesthetizing mice repeatedly was not good for them; and nasal administration created background inflammation that worsened asthma symptoms. "Given ethics and experimental considerations, this new chamber is very beneficial to our large study," she says.

Bourdeau and her group will be the first to test Vasculotide in asthma, and she says they are "very excited" about the compound's ability to ameliorate symptoms of the disease.

The American Asthma Foundation funded SRI's purchase of the \$23,000 inExpose system.

CV: Dr. Yana Yunusova



Bio basics: An associate scientist in clinical integrative biology and the Brain Sciences Research Program, and an assistant professor in speech language pathology at the University of Toronto. Born in Russia, completed her master's in speech language pathology and PhD in speech physiology at the University of Wisconsin-Madison; did postdoctoral fellowship at the University of Nebraska-Lincoln.

Tell me about your area of research.

Basically, I'm interested in how people produce speech: sounds, movements and how the brain controls speech.

What's your main research project?

The largest one is an NIH [National Institutes of Health]-funded study on deterioration of bulbar (speech and swallowing) functions in patients with amyotrophic lateral sclerosis, or Lou Gehrig's disease. As motor nerves are affected, muscles of the bulbar mechanism get weaker and people lose their ability to talk. By the time the ear can diagnose speech loss, up to 50% of motor neurons are dead. That's way too late. We want to diagnose deterioration in the bulbar system as early as possible. In the past five years, a variety of technologies have become available to measure movement of the face and tongue. Another objective is understanding why people lose their ability to speak. We look at different speech subsystems—respiration, larynx, jaw, lips, tongue, velum—to depict those most important to preserve speech intelligibility.

What interested you in this area of research?

During my master's, I was fascinated by the complexity of the speech motor system. Speech is the most important mode of communication, yet there wasn't much clinical information on slowing down loss in speech, so I thought it would be an important area for research.

What do you like most about being a scientist?

I enjoy a certain degree of independence in choosing the direction of my research and working with smart, interesting people. It's very rewarding seeing my students turn into young researchers. Because our field is so young, through a clinical program you wouldn't really appreciate how complex our research is.

What do you enjoy outside the lab?

I like to cook and have friends over. Theatre in Toronto is another great thing that's finally accessible. As you can imagine, Lincoln, Nebraska was not big on theatre.

PEOPLE @ SRI

Newly Appointed:

Dr. Homer Tien, CE, TECC (associate scientist)
Dr. Robert Yeung, imaging, Brain Sciences (associate scientist)

Moving Within SRI:

Dr. David Juurlink, CE, Cardiac (scientist)

Marching to His Own Beat

Clinician-scientist is studying new treatment strategy for prostate cancer, a departure from standard chemotherapy

By Alisa Kim

It was supposed to be a two-maybe three-year stint.

That was how long **Dr. Urban Emmenegger** had planned to stay in Toronto to do his postdoctoral training in the lab of Sunnybrook Research Institute (SRI) senior scientist **Dr. Robert Kerbel**. In 2001, Emmenegger moved from Switzerland to work with Kerbel because of his pioneering research on antiangiogenic therapies. These are treatments designed to block the growth of blood vessels that feed cancerous tumours.

Fast-forward nine years: Emmenegger is a scientist in molecular and cellular biology at SRI and an oncologist at Sunnybrook's Odette Cancer Centre. He is also an assistant professor in the department of medicine at the University of Toronto.

"Dr. Kerbel is one of the reasons why I finished up in Canada," says Emmenegger of his move to SRI. "It was a good decision. Initially we didn't plan to stay, but it got longer and longer; the kids were born here and are now in school here. It's very unlikely that we'll go back."

With his roots in Toronto growing deeper, Emmenegger's dual role at Sunnybrook has been recognized with a Prostate Cancer Canada Clinician Scientist Award, worth \$300,000 over two years.

The award will support Emmenegger's research on the use of metronomic chemotherapy, a form of antiangiogenic therapy, to treat prostate cancer. Metronomic chemotherapy is a treatment strategy that involves long-term administration of low doses of chemotherapeutic drugs with few or no breaks. This approach contrasts sharply with conventional chemotherapy, whereby patients receive high doses of chemotherapeutic drugs followed by rest periods to enable recovery from the therapy's harmful side effects.

Emmenegger's research is informed by his clinical work. He treats men with castration-resistant prostate cancer, a form of the disease in which cancer cells have become resistant to testosterone-deprivation therapy.

Metronomic chemotherapy may be a more suitable option for these patients than conventional chemotherapy. "The majority of prostate cancer patients are elderly men who often have cardiac risk factors or other diseases such as diabetes. Their tolerance of normal doses of chemotherapy might be limited," he says.

Even though metronomic chemotherapy is less toxic than its conventional counterpart, some patients fail to respond to such treatment or can develop resistance to it. Emmenegger seeks to uncover the mechanisms of resistance by comparing tumours that are sensitive to metronomic chemotherapy to those that are unresponsive to it. He is looking for markers that can predict responses to the therapy to be able to identify those patients who would benefit most from the treatment and to devise ways of overcoming resistance.

For example, one way of countering resistance may be to sensitize patients to the treatment through the use of additional drugs. Like many of his colleagues, a major challenge Emmenegger faces in his research is obtaining support. The harsh funding climate has more researchers vying for fewer dollars. Moreover, says Emmenegger, since metronomic chemotherapy is a different way of using drugs that are already approved, pharmaceutical companies are less inclined to fund clinical trials to validate the therapy.

His grant from Prostate Cancer Canada is therefore significant in advancing this research, he says: "This award is quite crucial. It really came at the right time."



Dr. Urban Emmenegger studies the use of metronomic chemotherapy, a form of antiangiogenic therapy, to treat castration-resistant prostate cancer

Trainees' Post

For Students and Postdocs

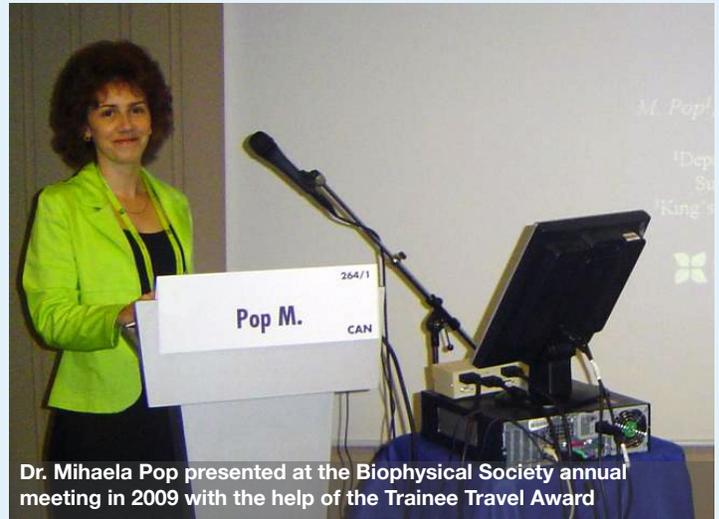
Travel Award Enhances Research Experience

Graduate students and research fellows are often confronted with expensive costs when looking to participate in national or international conferences. Sunnybrook Research Institute (SRI) is committed to providing support for trainee activities by offering students financial assistance through the Trainee Travel Award Program to enhance their research experience.

Since 2007, SRI has given 57 awards to trainees engaged in research under the supervision of an SRI scientist. Winners receive \$1,000 to cover conference registration fees, accommodations and transportation expenses from the event. Students may apply for the competitive award every year.

Dr. Mihaela Pop, a postdoctoral fellow in medical biophysics, has received the Trainee Travel Award twice and used it to participate in two international conferences. She is working with **Dr. Graham Wright**, director of the Schulich Heart Research Program and a professor of medical biophysics at the University of Toronto.

Here, she tells **Eleni Kanavas** about her learning experience and the skills she's gained through the process.



Dr. Mihaela Pop presented at the Biophysical Society annual meeting in 2009 with the help of the Trainee Travel Award

What is your research focus?

My research is focused on using biomedical imaging and cardiac computer models to characterize the substrate of abnormal rhythms developed by patients who suffered a heart attack.

I specifically work on building 3-D MR (magnetic resonance) image-based computer models and their experimental validation using state-of-the-art electrophysiology tools. Such predictive models allow us to have a 'virtual' look into the heart and help us understand how the abnormal electrical waves propagate and generate high heart rhythms, potentially lethal. These models will be soon integrated into clinical applications, with final aims to help diagnose and plan therapy for these patients, as well as to predict therapy outcome.

How would you describe your experience with the travel award?

I am very grateful for receiving the award twice. It helped ease the financial burden associated with travelling to an international conference. I received the first award when I was a PhD graduate student and was fortunate to participate as a scholar in an International Summer School on Biomedical Imaging, organized by EMBS (Engineering in Medicine and Biology Society) in Berder, France.

This biennial event brings together world-renowned teachers and research leaders in the biomedical imaging field, for an intense week of lectures, seminars as well as presentations from the participating scholars. The school's objectives are to provide up-to-date, state-of-the-art knowledge in emerging areas, and to address important issues dealing with complex, multivariate systems and with rapidly evolving technological fields, from basic to applied research.

What conference did you attend the following year?

I presented at the 53rd Annual Meeting of the Biophysical Society held in Boston, Massachusetts. The meeting brings together over 6,000 biophysicists in academia and industry. My presentation was on optical mapping of ventricular fibrillation in infarcted hearts, an experimental method used to obtain detailed activation maps of the heart, from which we can better understand the causes of abnormal excitation occurring in hearts with myocardial infarct (following a heart attack).

How did presenting at the conferences improve your skills?

I really enhanced my professional development and research capabilities as an individual scientist. Moreover, I had the opportunity to present my research work, discuss and start collaborations with several international senior and junior researchers, and obtain positive feedback from colleagues working in the field.

Did you receive any guidance from your supervisor?

Yes; Dr. Wright has always guided and mentored me in every aspect of my research, including thorough preparation for conference presentations. It is a tradition in our group that we always rehearse the presentations with our colleagues and supervisor and prepare answers for potential questions.

What advice do you have for other trainees?

Apply for this award because it helps pay the costs associated with participation at conferences and workshops. It's an opportunity for students to present their work and learn about leading-edge technology, as well as to meet prospective collaborators and employers.

Applause

Terry Fox Foundation Invests in Ultrasound Research at Sunnybrook

The Terry Fox Foundation, in partnership with the Canadian Institutes of Health Research (CIHR), awarded Sunnybrook researchers \$2.7 million over three years for innovative work in ultrasound imaging for cancer therapy. Sunnybrook hosted the announcement at the Odette Cancer Centre. This year marks the 30th anniversary of the Terry Fox Marathon of Hope.



L to R: Dr. Anthony Pawson, distinguished scientist at the Samuel Lunenfeld Research Institute of Mount Sinai Hospital; Dr. Gregory Czarnota, imaging scientist at Sunnybrook; Dr. Morag Park, scientific director for the Institute of Cancer Research at CIHR; Dr. Victor Ling, president and scientific director of the Terry Fox Research Institute; and Lisa Klapstock



This national cancer research investment is part of the Terry Fox New Frontiers Program Project Grants Competition at CIHR. The Terry Fox Foundation also generously supports long-term imaging research projects at SRI led by Drs. Stuart Foster, Martin Yaffe, Peter Burns and Kullervo Hynynen



Dr. Linda Rabeneck, senior scientist in the Odette Cancer Research Program, presided over the announcement



Dr. Martin Yaffe (far left) and Dr. Kullervo Hynynen (far right) took Dr. Ling to see the new research facilities being constructed in M wing



Dr. Czarnota, lead investigator on the grant, is working on the development of ultrasound methods to better monitor the effects of cancer therapies on cell death; Klapstock is a patient in the clinical trial



Dr. Yaffe showed Dr. Park his new pathology lab

"I'd like to express my appreciation for our enduring partnerships with both the CIHR and the Terry Fox Foundation, which stretch back many years. Their sustained investment into cancer research at Sunnybrook has enabled us to make fundamental discoveries, knowledge on which we are building."

Dr. Michael Julius vice-president of research, Sunnybrook



WHAT'S ON

October 7

REB Submission Requirements: An Update on the Old and New

Clinical Studies Resource Centre

12:00–1:30 p.m.

Sunnybrook Health Sciences Centre, EG 61

October 12

What's Your Passion? Formulating Practice-Based Research Questions

12:00–1:30 p.m.

Sunnybrook Health Sciences Centre, E1 04

November 12–14

Canadian Undergraduate Conference on Healthcare

Queen's University, Kingston, Ontario

www.cucoh.com

November 24

Schulich Heart Program Research Day

7:30 a.m.–4:00 p.m.

Sunnybrook Health Sciences Centre

Harrison Hall, EG 21

November 24

Announcing the Launch of Canada's First Clinical Trial of Magnetic Resonance Imaging-Guided High-Intensity Focused Ultrasound to Treat Uterine Fibroids

Sunnybrook Health Sciences Centre

Editor: Stephanie Roberts

Contributors: Dilys Chan, Eleni Kanavas, Alisa Kim, Jim Oldfield

Photography: Doug Nicholson

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We welcome your suggestions. Please send them to Eleni Kanavas at eleni.kanavas@sri.utoronto.ca.



Sunnybrook Research Institute hosted the 2010 Best Summer Research Project competition on August 11, 2010. Award winners were, from left to right: Stefan Hadjis, Alvin Lee, Lauren Greenwood, Hiten Naik and David Katz. Dr. Michael Julius, vice-president of research at Sunnybrook (right) presented the awards