Immunologists: Creating Cellular Harmony

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Message

FROM THE VICE-PRESIDENT (RESEARCH)

Research impacts every aspect of our daily lives. There are the immediate tangible benefits such as vaccines and new drugs, and improving the makeup of seeds so that farmers can produce more and higher quality crops that feed us.

The less visible impacts of research include the economic stimulus it provides to the local and national economies of countries around the world. The skilled team members that form the research teams, the supplies and equipment, and sometimes new space that require construction, all provide the economic fuel for prosperity.

Two new research team members that have recently joined me in leading the research activities of the University of Manitoba are Drs. Gary Glavin and Janice Ristock. They assumed the positions of Associate Vice-President (Research) and bring years of experience and expertise in medical and social sciences research, respectively.

The diversity of life is reflected in the research conducted at the University of Manitoba. In this issue, you will find many examples of this diversity. From immunologists working on cells at the microscopic level seeking answers to diseases like leukemia and breast cancer, to the impact that domestic violence has on women’s lives and the creative work that is helping to mend the spirits of Aboriginal female artists.

I invite you to turn the pages and get a glimpse of what our researchers and students are doing to make a difference in lives around the world.

—Digvir S. Jayas, PhD, PEng, PAg
IMMUNOLOGISTS: CREATING CELLULAR HARMONY

The mysteries of why one person contracts a disease or not, and why, when they do they respond differently to it, permeate the work of immunologists at the University of Manitoba’s Faculty of Medicine.

BY JANINE HARASYMCHUK

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Dr. Suzanne Fortier, President of the Natural Sciences and Engineering Research Council (NSERC)

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On Saturday, March 28, 2009 the Duff Roblin Building at the University of Manitoba suffered significant damage due to an electrical fire. This story tells the impact the fire had on occupants of the building and how they are bouncing back and moving forward.

BY KATIE CHALMERS-BROOKS

25 ENDING THE VIOLENCE

Jane Ursel leads RESOLVE, a prairie-based research network aiming to end violence against women.

BY KATIE CHALMERS-BROOKS

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FROM WASTE TO FUEL

RESEARCHERS RICHARD SPARLING AND DAVID LEVIN are co-leading a $10.4 million international collaboration aimed at finding new ways to convert waste materials—like woodchips and straw—into biofuels.

With increasing concerns about the world’s depleting oil resources, scientists are looking for new, economical and renewable energy sources. One such alternative has been the production of ethanol from cellulosic feed stocks. Rather than using food sources for fuel, scientists are looking for abundant, low-cost alternatives for the production of commercially viable biofuels.

One possibility may be straw. Sparling and Levin are investigating ways to turn straw and other agricultural waste products (including hemp hurds, flax shives and woodchips) into fuel sources. They’re focussing on bacteria that convert ligno-cellulosics (a component of straw and woodchips) into ethanol, hydrogen, and bioplastics. Their team will produce metabolically engineered bacteria and create communities of microorganisms that will generate these products in a way that is commercially viable. “We will carry out a full genomic characterization of known and new bacteria that are selected for their ability to contribute to a variety of metabolic processes,” explains Sparling, a microbiologist.

The four-year project involves University of Manitoba researchers in science, engineering, agriculture and medicine, along with their counterparts at the University of Waterloo and Ryerson University. “The goal is to establish Canada as a leader in the production of biofuels and bioplastics,” says Levin, a biosystems engineer.

The project is managed by Genome Prairie and funded by: Genome Canada; the Province of Manitoba’s Ministry of Science, Technology, Energy and Mines; and several other research partners. Genome Canada contributed $4.84 million, while Genome Prairie secured $5.6 million in co-funding from the province and other partners.

HARVESTING IDEAS WITH INDIA

PEN WAS PUT TO PAPER in New Delhi, this past July, on a new memorandum of understanding with the Indian Institute of Crop Processing Technology (IICPT). The new pact means faculty and students at both institutions will do research and share ideas with their counterparts. IICPT is India’s leading institute of crop processing in regions prone to storms, flooding and cyclones.

Located on the outskirts of Thanjavur in southeast India, IICPT is equipped with a cutting-edge food analysis lab where researchers study things like toxins in food, nutritional information on food labels, and pesticide residue in soft drinks and organic products.

Together, the two post-secondary institutions will develop new programs and courses; conduct research, lectures and training; share research materials; and provide students and faculty with exchange opportunities.

The partnership is a good fit since both schools are doing extensive research in grains and processing (including drying, storage handling, the production of biofuels and bioproducts, and functional foods and nutraceuticals).

Subodh Kant Sahai, India’s food processing industries minister, told Indian media he hopes the pact between the University of Manitoba and the IICPT results in shared technology that will help them prevent post-harvest losses.
CHILD BRAIN DEVELOPMENT

A NEW NETWORKS OF CENTRES OF EXCELLENCE (NCE)—NeuroDevNet, based at the University of British Columbia—will involve two leading-edge researchers from the University of Manitoba’s Faculty of Medicine. David Eisenstat, associate professor of pediatrics and child health, and Marc Del Bigio, professor of pathology and Canada Research Chair in Developmental Neuropathology. Both professors are scientists at the Manitoba Institute of Child Health.

The new NCE will focus on researching the genetic and environmental causes of cerebral palsy, autism spectrum disorders and fetal alcohol syndrome, training the next generation of researchers in pediatric brain development, and converting new knowledge into improved diagnosis, treatments and interventions to inform care delivery and policy decisions.

Del Bigio studies brain disease processes and consequences. Among the disorders he studies are damages associated with premature birth, especially bleeding in the brain, which can cause cerebral palsy and learning disorders. In addition, he has begun to study the effects of fetal alcohol exposure in the developing brain.

Eisenstat’s laboratories are based at the Manitoba Institute of Cell Biology and the Manitoba Institute of Child Health and study master regulatory genes that control networks of other genes required for proper brain development, including how newly generated neurons get to their final destination and what type of neuron they will become.

The scope of the NeuroDevNet team will cover everything from gene discovery to translation of this knowledge to affected patients and their families. The research network will bring together Canadian experts in clinical assessment and treatment, genetics and epigenetics, imaging, model organisms, knowledge translation, informatics, and neuroethics. The network’s goals for the first five years include discovering the genes involved in brain dysfunction.

ON THE LEADING EDGE

THREE RESEARCHERS IN THE FACULTY OF MEDICINE—Sabine Mai, Aaron Marshall, Patricia Martens—were awarded more than $3 million in funding from the Canada Foundation for Innovation for innovative projects in the areas of cell biology, immunology and population health. These projects will expand the current boundaries of knowledge and move research in these areas forward in new directions.

Mai, associate professor of physiology and director of the Genomic Centre for Cancer Research and Diagnosis at the Manitoba Institute of Cell Biology (a joint initiative of the University of Manitoba and CancerCare Manitoba), will purchase a 3-D nanoBioMedical Imaging Node (3D-nBMiN) that will enable researchers—for the first time in Canada—to study previously unseen changes that occur in molecules in the 3-D space of cells and tissues.

Marshall, an immunologist and Canada Research Chair in Immune Regulation, will establish an integrated unit for cell purification and analysis. This facility will fulfill an urgent need for specific isolation and analysis of live cell populations from human blood or other potentially infectious sources.

Martens’ funding will support the Manitoba Centre for Health Policy (MCHP) Leading-Edge Access and Data Enhancement Research Strategy (LEADERS) initiative. This initiative will expand the world-class data repository housed at MCHP with the addition of sixteen key databases and transform scientists’ access to the repository by developing and piloting Repository Access Arms (RAAs).

REDE—SET—EXTREME WEATHER

EXTREME WEATHER AND CLIMATIC EVENTS are growing problems for Canada. Over the past decade, there have been devastating damages and substantial loss of life associated with these forces of nature.

Extreme weather and climate change experts from across Canada and the United States met in May for the Research for Disaster-Reduction from Extremes (REDE) Workshop, hosted by the University of Manitoba. They discussed strategies to reduce the turmoil caused by the latter.

Deputy Minister Linda McFadyen of the Manitoba Ministry of Intergovernmental Affairs (which is responsible for the Emergency Measures Organization) was the opening speaker and noted the Province is concerned about the possible effects of climate change on the increasing occurrence and intensity of extreme events. In particular, she referred to the Elie tornado and the 2009 Red and Assiniboine River floods.

Organizers deemed the workshop a "success," having achieved their goals, including the establishment of many new connections.

“REDE will be working to build on the workshop’s success by promoting ongoing communication between physical and social sciences applications groups,” said workshop lead Ronald Stewart, in the Clayton H. Riddell Faculty of Environment, Earth, and Resources, “one means of accomplishing that is through the development of a research network.”

The workshop was funded by the Natural Sciences and Engineering Research Council of Canada, the Canadian Foundation for Climate and Atmospheric Sciences, the Institute for Catastrophic Loss Reduction, Nelson Education Limited, and the University of Manitoba.
Three University of Manitoba professors—Digvir Jayas, Noralou Roos, Ronald Stewart—were elected to the Royal Society of Canada (RSC), the country’s most prestigious association of scholars and scientists. Election to the society is the highest honour a scholar can achieve in the arts, humanities and sciences. Professor Emeritus Kenneth Standing received the Sir John William Dawson Medal.

The newly elected fellows, while coming from diverse backgrounds and disciplines, are all dedicated to achieving excellence in their own endeavours, and thus enhancing Canada’s competitiveness on a global basis.

Jayas, Distinguished Professor in the Faculty of Agricultural and Food Sciences, and vice-president (research), is a world renowned leader in grain storage research, striving to reduce losses in grain quality and quantity during storage in farm and commercial systems.

Roos, professor in the Faculty of Medicine, founded the Manitoba Centre for Health Policy and pioneered the use of administrative data to identify the healthcare use patterns of Manitobans over the past three decades.

Stewart, professor in the Clayton H. Riddell Faculty of Environment, Earth, and Resources is a global leading expert on precipitation processes within winter storms.

Standing, Professor Emeritus in the Faculty of Science, is internationally renowned for innovations in time-of-flight mass spectrometry that have provided significant improvements in methods for characterizing large biomolecules.

TOP ACHIEVER IN HEALTH RESEARCH

PROFESSOR STEPHEN MOSES’ research proving male circumcision reduces the risk of HIV infection was named one of the ‘Top Canadian Achievements in Health Research.’ Moses was one of eight
researchers recognized by the Canadian Institutes of Health Research and the Canadian Medical Association Journal. His research findings have already been put into action, and encouraged many countries in eastern and southern Africa to increase male circumcision services in their battle against HIV and AIDS.

A physician and public health specialist in the Faculty of Medicine, Moses’ findings will have the greatest impact in regions where HIV infection rates are high and rates of male circumcision are low, such as several countries in eastern and southern Africa. In these settings, it could take as few as 19 circumcisions to prevent one person from contracting HIV.

Moses, along with colleagues in the United States and Kenya, conducted a randomized clinical trial involving men in Kenya, and showed that circumcised men were over 50 per cent less likely than uncircumcised men to acquire HIV during sex with women. The clinical trial began in 2001 and involved more than 2,700 men before coming to a close nearly five years later. The trial ended early when its Data Safety and Monitoring Board deemed that the results were already so compelling it was unethical to continue without offering the control group the protection of circumcision. In 2007, Time magazine identified male circumcision for HIV prevention as one of the year’s top medical breakthroughs.

The Top Canadian Achievements in Health Research acknowledges the discoveries and innovations that have had the biggest impact on the health of people in this country and around the world. A peer-review panel of Canadian and international experts selected the final list.

FROM BUTTERFLIES TO BRAIN FUNCTION

THE BUTTERFLY FLITTERING AROUND your backyard come summer might provide a pleasant distraction from your gardening. But for biological sciences researcher Jeffrey Marcus this pretty insect offers incredible insight.

Marcus is one of three new Canada Research Chairs (CRCs) from the University of Manitoba. Chairholders are research leaders or rising stars in natural sciences and engineering, health sciences, or social sciences and humanities.

As CRC in Phylogenomics, Marcus is studying the origins, organization and evolution of butterfly colour patterns and will develop new methods for mapping and manipulating genomes, which includes creating the world’s first genetically modified butterfly.

Peter Eck received a CRC in Nutrigenomics to investigate whether genetic variations in cellular membrane transporter proteins, such as vitamin C and organic cation carriers, cause functional changes that lead to diseases. Eck aims to refine nutritional recommendations based on individual genotypes. The goals of his research are to prevent or treat dietary-related diseases by personalized nutritional intervention.

Zahrah Moussavi received a CRC in Biomedical Engineering. Moussavi’s research merges human anatomy, signal processing and electronics. She aims to apply engineering skills to medical problems
to develop non-invasive diagnostic and treatment technologies. Her research on respiratory sound analysis has resulted in a new technology for acoustic sleep apnea screening.

Three professors had their CRCs renewed—Fikret Berkes (community-based resource management), Hao Ding (genetic modelling), and Phillip Gardiner (physical activity & health studies).

The University of Manitoba currently has 48 Canada Research Chairs.

DYING WITH DIGNITY

HARVEY MAX CHOCHINOV is a pioneer in palliative care research. His work spans decades and has transformed the field of end-of-life care, with impact around the world. In recognition of his work he was awarded the 2009 Dr. John M. Bowman Memorial Winnipeg Rh Institute Foundation Award for outstanding research by senior university faculty.

Chochinov and his team were the first to study the issue of dignity in the terminally ill, which resulted in a new model of care for patients nearing death. He has developed a novel intervention for suffering at the end of life—Dignity Therapy. This work has served as the basis for an international trial funded by the United States National Institutes of Health.

Chochinov is highly regarded by colleagues at home and abroad and described as “an innovator and disseminator of palliative care services” whose accomplishments are accompanied “by a genuine modesty and earnestness.”

He leads a Canada-wide study examining the application of the Palliative Care Dignity Inventory and also heads the Canadian Virtual Hospice—a cutting-edge initiative in e-Health, which provides support, exchange of information, education and consultation for the terminally ill and those caring for them. Nearly 1,000 Canadians visit this website daily. With over five million hits to its credit and having responded to hundreds of individual inquiries, this project has begun to change the landscape of palliative care in Canada.

Chochinov has attracted more than $14 million in grant funding from many Canadian and international funding sources. He is a Distinguished Professor in the Faculty of Medicine’s Departments of Psychiatry, Community Health Sciences and Family Medicine, and Director of CancerCare Manitoba’s Palliative Care Research Unit. He is currently Canada Research Chair in Palliative Care.
WITH H1N1 ON THE RISE IN MANITOBA it was important for health officials to know as much as possible about the virus, but more importantly how emergency departments and clinics could best treat patients and control the outbreak. The Manitoba Centre for Health Policy (MCHP) works to provide accurate and timely information to healthcare providers, analysts and decision-makers on issues such as emergency room usage and immunization patterns so policy makers can help keep Manito- bans healthy.

The team at MCHP have been tackling the big healthcare issues and making sense of scores of collected medical data for two decades. Their research illustrates who visits emergency departments, why and how often, and in the process helps the healthcare system provide better care for patients while minimizing costs. The reports from MCHP also show the links between health, income and area of residence; as income level goes up, so does health. This insight will help educate health and social policy makers with evidence-informed analysis to improve the health of the population of Manitoba.

A leader in population and public health research, MCHP will celebrate its 20th anniversary this spring with an international conference at the Fort Garry Hotel. The two-day event, scheduled for March 8 and 9, 2010 will bring together investigators and policy-makers from around the world to explore innovations in health services, population, and public health research, in addition to acknowledging the accomplishments that have helped keep MCHP at the forefront of its field.

MCHP is located within the Faculty of Medicine’s Department of Community Health Sciences. Their team includes researchers, graduate students, analysts and support staff who partner with experts from Canada, the United States, Europe and Australia. The team of specialists is directed by Patricia Martens, associate professor and senior research scientist.

Researchers want to know what makes people healthy, and are zeroing in on determinants like income, education, employment and social conditions. MCHP collects and maintains a world-class comprehensive data repository on behalf of the Province of Manitoba that is used by the local, national and international research community. MCHP’s aim is to learn the factors that influence peoples’ health and work with policy makers in Manitoba to improve our healthcare and social systems.

“Our healthcare system is a very good one,” says Martens. “We need to preserve its best characteristics—effective care, universal access, public funding—while focusing less on illness and more on what makes people healthy through various public health and social programs. The centre’s work can play a part in that future.”
Dr. Suzanne Fortier has served as President of the Natural Sciences and Engineering Research Council of Canada (NSERC) since January 2006. A native of St-Timothée, Quebec, she attended McGill University, where she received a BSc (1972) and a PhD in Crystallography (1976). Before her appointment to NSERC, she held a number of senior academic and administrative positions at Queen’s University, including Vice-Principal (Research) and Vice-Principal (Academic).
Think of any area of your own life, whether at home or in the workplace, and think of how it has changed over the last 10, 20 or 50 years. Much of these changes have come about because of research, taking creative ideas and translating them into innovations—products, processes, services—that improve our lives and the lives of people around the world.

An important thing that we’ve learned in the recent economic crisis is that we have to have an economy that is far more driven by research and development, to increase our productivity, to diminish the environmental impact of our industries and to better explore our natural resources. We are, in this country and around the world, in the process of a major renewal of our economic base and one that will be far more driven by research and development.

We’ve learned over the past 20 years that in order to have the capacity to meet important research or innovation challenges, we must have strong teams. We must be able to forge very agile partnerships with people across disciplines and sectors, across our country and across nations. We have a lot of experience in doing that in Canada because we had to. In many cases we did not have the critical mass of people we needed in one specific location, so we had to find a Canadian way to build centres of excellence. A few weeks ago, we celebrated the 20th anniversary of the Networks of Centres of Excellence program, a great Canadian success story. That’s a huge advantage for Canada.

I often mention to people from other countries that the notion of ‘six degrees of separation’ doesn’t exist here—in the research and innovation environment it’s often only one degree of separation. This makes it easier to create the trust and respect we need to forge partnerships.

Our strong post-secondary sector is definitely one of Canada’s strengths. I’ve heard that many, many times from other countries. Our graduates are sought after because they are known to have a very strong and broad education.

Canada has done a lot to link university strengths with the industrial strength, creating a strong partnership environment. But we need to do more and step up our game to be a key player in the global research and innovation race.

It is incredibly stimulating to be exposed every day to great ideas and the fantastic discoveries and innovations that people are making. That is a wonderful and unique privilege of my job.

Programs that inspire our younger generation are key to engaging this important segment of our population. Programs like the University of Manitoba-based Schools on Board that bring high school students on the CCGS Amundsen to do research in the high arctic are key to exciting young people about science and engineering.

NSERC’s goal is to be a good partner with programs like this across the country.

We are really excited at NSERC about our new Strategy for Partnerships and Innovation: “Connect. Collaborate. Prosper.” Canada has a very powerful research engine and we need to use that engine to its full capacity, in particular to increase our innovation capacity. There have been many studies and reports in the last several years—particularly last spring—that say we’ve got to ‘up our game’ in that area. Our Strategy is NSERC’s response to this call for action. We are ready to shift Canada’s research engine to high gear with immediate and concrete steps and we are committed to doubling the number of industry-academic partnerships we support by 2014.

If I could say one thing to today’s young generation, it is that there are almost no areas in our lives as human beings that will not require the input of the sciences—the natural sciences and engineering, as well as the social sciences, humanities and health sciences—to continue to improve our lives on this planet. There is so much more to learn and discover and there is hardly anything more exciting than to be a discoverer and innovator. That’s what they should aim for!
Immunologists: CREATING CELLULAR HARMONY

Antibiotic hand cleansers, face masks, coughing into elbows, whether to get the ‘shot’ or not—these potential flu fighters have preoccupied conversations, media stories and the world, for the past six months. The mysteries of why one person contracts a disease or not, and why, when they do they respond differently to it, permeate the work of immunologists at the University of Manitoba’s Faculty of Medicine.

BY JANINE HARASYMCHUK

Redwan Moqbel, professor and head, Department of Immunology
For three decades the Department of Immunology has been delving into the mysteries of conditions that attack our immune systems—not only is it the oldest immunology department in North America, it’s one of only two stand-alone departments in Canada. And now they’re set to build upon their significant track record with a recent move into a new state-of-the-art, open-concept, $5.6 million laboratory and teaching space in the Bannatyne Campus’ Apotex Centre.

Their diversity—the angles from which they approach problem solving—is one of their unique strengths. “This diversity creates a remarkable harmony within the department,” says Redwan Moqbel, professor and, since 2008, head of the department. “We are not a uniform department. We are like an orchestra—made up of so many different instruments—yet producing a harmonious sound at the end, much like the cells in our body working together in harmony to maintain health and wellness. But when they don’t, that’s where immunology comes into play: Finding the answers.”

Moqbel is an international authority on the immunobiology of asthma and, in particular, human eosinophils (white blood cells) and their role in airway disease. He investigates the roles and relationships of these cells in the immune response of individuals with allergic asthma, seeking solutions that would regulate dysfunctioning cells and ultimately relieve their symptoms. The diverse areas of research represented by the 25 faculty members (including cross-appointed faculty) and the more than 40 graduate students, post-doctoral fellows and research associates, range from immune responses to parasitic organisms, and diseases like asthma, allergy, leukemia, and breast cancer.

The collaborations that come out of such a varied pool of researchers are facilitated by the new space in the Apotex Centre. The open concept, which many newer laboratories are moving towards both nationally and internationally, provides the opportunity for researchers and student trainees to work side-by-side and learn from each other.

“Our group has always interacted so well. Now, we have space that facilitates that at the fundamental level. Not just faculty interacting with faculty, but students and technicians interacting with each other and with faculty,” says Aaron Marshall, associate professor and Canada Research Chair in Molecular Immunology.

“A student can struggle with something for a long time but if they can step over to the next lab bench, talk to someone else or have someone show them, they can save so much time. Working in isolation on your own specific issue you may think that you’re the only one in the world struggling with this; just having that support to consult with someone else a step away is hugely important. Plus, not all collaborations are initiated by professors; they are often initiated by students. That’s a thing of beauty when it happens.”

Moqbel emphasizes the impact of this unrestrictive environment on collaboration. “I believe that research is not only an intellectual effort, it is a social process also. When you have a group of people who interact comfortably with each other you get a lot more ideas and you get a lot more done, because the collaboration is seamless. And when I say seamless, I actually mean that; there are no minor barriers that you have to cross to collaborate with anyone in our group. That, for me, makes us a unique department.”

In addition to the 18,000-square-foot laboratory and teaching space, an atrium area provides the place where the social processes complement the scientific processes. Funding for the new immunology department space was provided by a combination of support from the Winnipeg Partnership Agreement ($1.6 million), the University of Manitoba, the Faculty of Medicine, the private sector, a generous donation from the Olenick family plus contributions from faculty members within the Department of Immunology.

Afshin Raouf, assistant professor, stem cell biologist, and the newest member of the team says, “I was attracted to this position by the very strong scholarly work of the department. The approaches taken in problem-solving are similar to my own and this supportive environment allows new faculty members to flourish, learn the ropes from senior faculty members who can be a guiding beacon to students and faculty alike.”

“Another significant thing that attracted me to this position is this department’s strong undergraduate and graduate program. In this department, students receive a very competitive cutting-edge training that makes them better students, and in return, I get the benefit of that expertise, which makes my job as a researcher easier. Their expertise enhances the interactions I have with these students and allows us to get into very difficult and complex biological questions.”

For Raouf, those complex issues involve breast cancer stem cells. Stem cells are our body’s spare-part factories that are respon-
feature

possible for tissue regeneration whose function is highly regulated. “I’m interested in the spare-part factories in our bodies. The regeneration of our skin, our hair, our livers after that night out on the town.”

These ‘factories’ under the influence of regulatory cues, produce the extra cells that are needed, when they are needed. Raouf focusses on the cues that stop these special cells from producing and how these signals go wrong, resulting in the production of too many cells, (i.e. tumor mass). The ultimate goal of his research is to leverage this information into producing new therapies that will stop these spare-part factories from over-producing.

“We believe that’s the only way to achieve a possible cure for cancer. It will also assist in developing new diagnostic markers—or tests—that could detect cancers earlier and determine if the cells will progress to malignancy and metastasis. Ultimately, this research will translate into better patient recovery and reduced cancer recurrence.”

Marshall’s research focus is on B lymphocytes, which can produce antibodies that neutralize viruses like H1N1 or go completely awry and produce antibodies that bind to pollen or DNA, causing conditions like asthma, leukemia and rheumatoid arthritis.

“I come at research from a very molecular level, wanting to discover fundamental mechanisms of how things work,” says Marshall, who was a graduate student when the human genome was sequenced, which he admits had an influence on his ultimate aim. “When you know every gene and have a name for them, then the next step is to understand what each of those molecules contributes to each kind of immune response. We believe this fundamental knowledge base will be critical for designing improved treatments for many diseases involving the immune system.”

Marshall is collaborating with parasitic immunologist and assistant professor Jude Uzonna, a concrete example of the benefits of belonging to such a diverse department. Uzonna is a Doctor of Veterinary Medicine as well as an immunologist. His special research focus is on Leishmaniasis, a disease caused by sand flies infected with the protozoan parasite Leishmania following a bite of the host (humans and animals). The result can take a cutaneous form, which causes skin sores, or a visceral form, which affects internal organs of the body (for example the spleen, liver, and bone marrow). The disease is common in parts of the tropics, subtropics and southern Europe. It affects approximately two million people worldwide, and is being seen more and more in North America, with troops returning from Afghanistan and Iraq where the flies are prevalent.

Marshall says, “We were studying this molecule that we had pegged as being important for leukemic B cells. Based on preliminary information we had on mouse deficiency in this signaling enzyme, Jude said ‘Let’s see if this enzyme also affects the ability to make a protective immune response against Leishmania.’ The results were completely unexpected. No one else in the world was thinking in that direction. It was completely boundary crossing and would not have happened if not for the environment we are now working in.”

Uzonna adds, “Why is this important to study a parasitic subtropical disease like this? Because we can learn a lot about host-pathogen interactions from these parasites. Some people become very sick from this disease and others do not. Why? If we can find those connections it will lead us to a vaccine to prevent the development of the disease. And this model could be applied to other insect-borne diseases, like West Nile Virus.”

“It would be easy to look at things from a narrow aspect, but I like the holistic approach we are using here by looking at things from different areas of perspective.”

Moqbel says the department puts a big emphasis on their trainees—both graduate students and post-doctoral fellows. The department is associated with the National Training Program in Allergy and Asthma, and they’re now creating their own Manitoba-based training program in allergy and inflammation. “Students represent the next generation of immunologists. If they choose to come to this department, they will experience the best three to five years of their lives, doing fantastic work that is going to contribute to their reputation and ultimately provide the country with the people who will be finding cures and developing vaccines in the future,” he says.

The new physical space no doubt has an impact on the research happening at the centre. Marshall notes. “The new space and attention that has come with it has, of course, provided a psychological boost. But we’ve been doing what counts long before the success of this new space. What’s real is what we discover and the contributions we make to moving the field forward. The space provides an advantage to us but also raises the bar in terms of what we will do in the future. Faculty and students alike are aware of this challenge and welcome and embrace the opportunity this presents.”

Uzonna echoes the sentiment. “One of the reasons I wake up every day, why I want to come here to work, is to continue the excellence that we have thus far achieved—and to surpass it.”
 Tamara Nathanie adds, “why is this important to study a parasitic subtropical disease like this? Because we can learn a lot about host-pathogen interactions from these parasites. Some people become very sick from this disease and others do not. why? if we can find those connections it will lead us to a vaccine to prevent the development of the disease. And this model could be applied to other insect-borne diseases, like west nile Virus. ”

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Aaron Marshall with post-doctoral fellow Sandrine Lafarge, in the lab.
Prairie Metropolis: New Essays on Winnipeg Social History
(University of Manitoba Press, 2009) Edited by Esyllt W. Jones and Gerald Friesen • history

At the turn of the twentieth century, Winnipeg was the fastest-growing city in North America. But its days as a diverse and culturally rich metropolis did not end when the boom collapsed. Prairie Metropolis brings together some of the best new graduate research on the history of Winnipeg and makes a groundbreaking contribution to the history of the city between 1900 and the 1980s. The essays in this collection explore the development of social institutions such as the city’s police force, juvenile court, health care institutions, volunteer organizations, and cultural centres. They offer critical analyses on ethnic, gender, and class inequality and conflict, while placing Winnipeg’s experiences in national and international contexts.

About Canada: Childcare
(Fernwood Publishing, 2009)
Martha Friendly (Childcare Resource & Research Unit), and Susan Prentice • sociology

In Canada, early childhood education and care includes childcare programs, kindergartens and nursery schools. When these programs are well-designed, they support children’s development and accommodate parents who work or study. About Canada: Childcare answers questions about early childhood education and childcare (ECEC) in Canada. Why doesn’t Canada have an ECEC system, even though other countries do? Why is ECEC so important? What is missing in Canada’s ECEC landscape and why? Can ECEC programs be designed as wonderful environments for young children or are they merely necessary but not particularly desirable places to keep children safe while mothers are at work? Is ECEC primarily a public good, a private family responsibility or an opportunity for profit-making? Early childhood education and childcare is a political issue, the authors argue, and Canada needs an integrated system of services. The absence of a universal, publicly funded, ECEC system is detrimental to families, women and children and Canada’s future.

Let’s Play!: Promoting Active Playgrounds
(Human Kinetics, 2009)
Jane Watkinson • kinesiology and recreation management

Kids love recess and playground time. But some kids have not developed the skills they need to take part in physical activities on the playground, and those kids are often left standing alone on the side, watching others play. The children are left inactive and isolated, which can lead to long-lasting negative effects on their self-esteem.

Let’s Play!
Promoting Active Playgrounds will help you make sure that no kids are left on the sidelines watching and waiting for the bell or for a parent to pick them up. Not all kids automatically have, or learn, the skills they need to be active and have fun on the playground. But through Let’s Play!, you can ensure that every child under your care has a repertoire of movement skills to be active on the playground.

The Methods Coach: Learning Through Practice
(Oxford University Press, 2009)
Lance Roberts, Karen Kampen and Tracey Peter • sociology

AN IDEAL COMPANION TO any core research methods text, The Methods Coach: Learning Through Practice helps students to bridge the gap between knowing and doing. The coaching program encourages students to not only understand research methods, but to do research methods for themselves. Lab exercises are organized into three parts—a ‘tune-up’, applications, and constructive feedback—to optimize students’ ability to apply the theories, concepts, and techniques taught in introductory research methods courses. With this hands-on, lab-based approach, The Methods Coach offers far more than conventional study guides.
**THE LAW OF EMPLOYEE MONITORING IN CANADA**  
(LexisNexis Canada, 2009)  
Melanie R. Bueckert • law

**TECHNOLOGY FOR MONITORING EMPLOYEES** changes constantly. Employers have reason to worry about potential liability for their employees’ actions. Recent cases and media reports show that employees do sometimes break the law or reveal confidential information over the Internet – whether inadvertently or deliberately.

Tracking employees’ activities can seem like an ideal solution to protect company interests and prevent lawsuits, along with avoiding damaging publicity and loss of goodwill. But monitoring may raise more issues than it resolves: Which methods are reasonable? What activities should be monitored? When can employees assert privacy rights? Who will review the recorded data? Is the expense of monitoring employees cost-efficient?

The Law of Employee Monitoring in Canada is the first book to focus exclusively on this topic. Melanie Bueckert addresses concerns for both unionized and non-unionized workplaces in jurisdictions across Canada.

**POLITICS IN MANITOBA: PARTIES, LEADERS, AND VOTERS**  
(University of Manitoba Press, 2008)  
Christopher Adams • marketing (University of Manitoba and University of Winnipeg)

Politics in Manitoba is the first comprehensive review of the Manitoba party system that combines history and contemporary public opinion data to reveal the political and voter trends that have shaped the province of Manitoba over the past 130 years.

Christopher Adams looks in particular at the enduring influence of political geography and political culture, as well as the impact of leadership, campaign strategies, organizational resources, and the media on voter preferences. He also presents here, for the first time, public opinion data based on more than 25,000 interviews with Manitobans, conducted between 1999 and 2007. He analyzes voter age, gender, income, education, and geographic location to determine how Manitobans vote. In the process Adams dispels some commonly held beliefs about party supporters and identifies recurring themes in voter behaviour.

**A BAUHAUSLER IN CANADA: ANDOR WEININGER IN THE ’50S**  
(Gallery One One One, School of Art, University of Manitoba and The Robert McLaughlin Gallery, 2009)  
Curated by Oliver Botar • school of art

**HUNGARIAN-BORN ANDOR WEININGER** (1899-1986) was a recognized figure at the Bauhaus, the most influential art and design school of the 20th century.

In Weimar Germany he was known for his innovative theatre design and for the establishment of the celebrated Bauhaus Band. After his arrival to Toronto in 1951, it seemed as though he would integrate into the burgeoning city’s emergent Modernist art scene, but after initial successes, Weininger’s Canadian career faltered. His correspondence with Bauhaus figures such as Walter Gropius and Xanti Schawinsky mirrored his frustration at this lack of acceptance. Soon after receiving Canadian citizenship in 1957, Weininger and his family moved on to New York City. Since the 1960s his works have been included in many major international exhibitions. His art is represented in the collections of the MOMA and the Metropolitan Museum of Art in New York, the Busch-Reisinger Museum at Harvard University, and in a number of European collections.

What this book reveals, is that despite his marginalization in Toronto, Weininger enjoyed his most productive years as an artist in Canada, resulting in an inventive, highly eclectic and often strikingly beautiful oeuvre. The recovery of this oeuvre to Canadian art began when the foundation set up in his memory donated important groups of his works to The Art Gallery of Ontario, The Robert McLaughlin Gallery and Gallery One One One at the University of Manitoba.

In this volume, Oliver Botar both documents these donations and takes a close look at Weininger in Canada, attempting to understand how the career of one of the most significant Modernists ever to have settled here could have gone so wrong. In doing so, he narrates the shifting loyalties of Canadian abstract artists during an eventful period, thereby recovering a significant piece of the still-laconic puzzle that is the history of Canadian Modernism.

**TALES FROM THE UNDERWORLD AND OTHER STORIES**  
(Heartland Associates, 2009)  
Roland Penner • law

**TALES FROM THE UNDERWORLD** and Other Stories is a unique and fascinating collection of more than 200 stories and anecdotes—some funny, some tragic, some bizarre, all based on interviews and correspondence with 80 Manitoba lawyers and retired judges. Included are chapters about the legendary Sam Freedman and Harry Walsh, the mysterious murder of a Winnipeg hearse in Florida, and a fatal duel in a blizzard in Northern Manitoba—as well as anecdotes on the often humorous and sometimes testy relationship between judges and lawyers, and lawyers and their clients.
SMARTPARK, THE UNIVERSITY OF MANITOBA’S research and technology park is the talk of the town, so to speak. There are currently 20 tenants in the park and new construction and expansions abound. Monsanto is expanding, Cangene is renovating and expanding, and RTDS Technologies is building their new office space on stilts—over a retention pond.

RTDS Technologies’ office space has presented some construction challenges: the need to drain the pond to install the steel piles across the basin that would hold up the space is just one. But designers and engineers have been up to the task. One unique design feature has been the floor to ceiling glass windows. Placing them has required the use of a pontoon/barge that carries the necessary scaffolding to reach the windows. There is a boat on hand to assist and be there should someone fall off the scaffolding into the water and require assistance.

“As one looks at the building spanning the pond, the panoramic view from the reflective glass curtain wall windows is amazing, the reflection provides an extension of the landscape giving the appearance of a building floating over water,” says Larry Paskaruk, Smartpark’s director of property development and management. RTDS is set to take possession in early 2010.

There are 25 research and technology parks in Canada, according to the Association of University Research Parks Canada (AURP Canada). During its first five years, Smartpark has stimulated over $100 million in capital developments and currently employs 1,000 people. With the recent injection of $2.5 million from the Knowledge Infrastructure Program for expansion of Phase Two, Smartpark is set to make even more waves.

Another one-of-a-kind research facility will begin construction on the southeast corner of Smartpark in early 2010: the Sea-ice Environmental Research Facility (SERF). SERF is an outdoor sea-ice pond that will grow sea ice under semi-controlled conditions. By adding various ingredients into artificial seawater and with the help of the mighty Winnipeg winter, different types of sea ice will be grown in the facility. This will allow the research team, led by Professor Feiyue Wang in the Clayton H. Riddell Faculty of Environment, Earth, and Resources, to study the processes associated with the growth and melting of sea ice and to develop satellite remote sensing techniques that can be used to forecast Arctic sea ice conditions.

“We will be able to study the fundamental processes governing the cycling of greenhouse gases and chemical contaminants in the sea ice environment. When integrated with field studies in the Arctic Ocean, these experiments conducted at SERF will improve our ability to predict the impact of the rapid sea-ice loss on climate, ecosystems and human use of sea ice,” says Wang. SERF is expected to be operational in the fall of 2010. It is funded by the Canada Foundation for Innovation, the Manitoba Research and Innovation Fund, and the University of Manitoba.
What They Lost... and What They Gained

Researchers bounce back after the fire

Plant researcher John Markham in his temporary lab. Sharing space has meant a new research collaboration for Markham. He and a fellow researcher, who specializes in crabs, realized their shared interest in nitrogen.
The flames destroyed 37 years of original data Dick had gathered in rivers and lakes and oceans across Canada, the fodder of major studies and the building blocks of an impressive career. Scores of samples of the endangered lake sturgeon were also lost. His extensive personal library—lovingly grown over three decades to include some 20 books in which he wrote chapters—are gone too. To make matters worse, Dick’s lab served as a depository over the years for retiring and equally accomplished professors, in addition to many graduate students. His most recent master’s student left in his lab her collection of Arctic cephalopods that within days was to be shipped to the Smithsonian Institute. All of it—gone.

“The fire started in Dick’s fourth-floor lab. The culprit was a trivial item: an overheated extension cord attached to a fridge. Damage to the 180,000 square-foot building could reach $50 million and is expected to result in the largest post-secondary insurance claim in Canadian history.”

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“It’s like somebody just put a bomb and blew your life up,” says Dick, who admits his stomach now turns at the sound of fire truck sirens. “It’s hard to talk about what you’ve lost.”

The culprit was a trivial item: an overheated extension cord attached to a fridge. Damage to the 180,000 square-foot building could reach $50 million and is expected to result in the largest post-secondary insurance claim in Canadian history.

It happened on a Saturday, around lunchtime, March 28. Dick was alone in a lab down the hall from his own. His hobby was his work and he came in every weekend. The father of two adult children—both medical doctors as well as professors, one of them at Harvard—liked that it was quiet enough to “really concentrate” even when he left the door open. Research can be a lonely pursuit but as Dick explains “I live for science. I really live for it.”

“As a scientist it takes a lot of individual effort. You’ve got to like yourself,” says the Ontario-born professor, who was raised on a farm and received his first degree in forestry but was turned off by clear-cutting.

“I liked trees too much,” says Dick, who eventually discovered ecology and zoology.

Dick smelled smoke but at first saw nothing. He called to report the odour and within moments the fire alarm sounded. He watched in horror as a massive black cloud swallowed the hallway and lowered like a heavy curtain. “I’ve never seen anything like it,” he says, his clasped hands resting on his chest.

Judy Anderson, head of the Department of Biological Sciences, had spent the morning volunteering at an orchid sale at the Assiniboine Park Conservatory.

Terry Dick visits the Duff Roblin Building for the first time since the fire. He hasn’t looked at any of the aftermath photos because, he explains, he’s not the type of person “to gawk at accidents.”
She returned home to four messages on her answering machine from colleagues alerting her to the fire. She had only listened to a couple before dashing to her car. As she headed toward the university, her mind raced with worry: Were people hurt? was important research lost?

“You just think ‘Oh My God. What kind of crazy thing is that?’ ” she says. “It was quite a shock.”

Meanwhile, plant researcher John Markham was fulfilling his promise for a miniature golf tee-time with his young son at U Puttz. His wife called with the news and at first he thought she was kidding. Markham says everyone initially figured the impact would be minor. “Then it really started to hit home,” he says. “My area, it was just destroyed.”

Everyone made it out of the building safely; Dick was checked for smoke inhalation. The biological sciences area of the west wing was the hardest hit by the flames but other areas had significant water, smoke and soot damage. The 1970s building is home to faculty from the biological, human nutritional and textile sciences; along with psychology; and anthropology. Firefighters not only had to deal with the flames but the building’s potentially explosive contents: all of the chemicals used in labs.

Elements are carefully controlled in a scientific setting so the heat from flames and the resulting dousing and power outages can be especially damaging. Some specimens were lost since they were stored in freezers that warmed above the required -80°C when the power shut down. Markham had to part with hundreds of root samples when the heat popped the lids off their vials and released the preservative chemical. The fire left behind troubling logistics: How to clean smoke-damaged textiles without ruining the samples? How to safely remove fragile anthropological collections to make way for construction? And how to pinpoint the types of chemicals released or spilled?

Some researchers lost scores of samples from projects years in the works. The fire’s biggest cost is time, says fish researcher Gary Anderson, whose lab was adjacent to the fire’s epicenter. “To get back to where we were takes time,” he says. “Time that we’ll never get back.”

When Markham eventually got inside to check out the aftermath firsthand he couldn’t make out what anything was since a layer of soot had settled. It was as though someone had come in with a gallon of black paint and brushed away any three-dimensionality. “It looked like a completely black wall,” he says.

Markham’s hydrogen gas tanks had released their contents but fortunately didn’t blow. He was also concerned about his stored hydrochloric acid. Much of what was in Markham’s lab is now tucked away in a trailer, considered too contaminated to repair and awaiting shipment to the United States for proper disposal.

All of the building’s contents have been removed (other than in the basement, where the animal holding laboratory continues to operate) and its tenants displaced throughout the university. Some of the nearly 300 relocated professors, staff and students are calling themselves Duff refugees.

Crews have taken any items that can be cleaned or repaired to a nearby 140,000 square-foot warehouse where thousands of Goodyear tires have been replaced with thousands of boxes of scientists’ stuff—15,000 at last count. Technicians have recovered a staggering 27.3 million computer files (that’s 5.7 terabytes worth).

The restoration process to research materials and other items is a massive undertaking, carried out in part by an assembly line of cleaners hunkered down at tables in a corner of the warehouse. One woman is wiping soot marks off the pages of a psychology textbook using a dry sponge. Another is scrubbing a plastic cover using a frayed toothbrush.

If not cleaned properly the soot could eat away at materials over time, says fire recovery project manager Mia Kinal, a consultant who was brought in when it became clear the fire’s reach was broader...
than originally anticipated. They’re erring on the side of caution, Kinal explains.

There are workers whose job it is to clean individual papers and if they’re too damaged, photocopy them and even replicate a professor’s original highlighting if necessary. So far, they’ve done more than 150,000 photocopies.

“Lots,” says an exasperated female worker, still managing a smile.

• • • •

The steps required to get dozens of academics back on track are tedious: from helping them locate the basics like teaching notes to filing insurance claims for ruined equipment and seeking grant extensions from research sponsors.

Professors are concerned the fire could jeopardize future funding opportunities down the road, says head of psychology Todd Mondor. Psychology researchers may not have lost data in the fire but for several months they were unable to collect new data. “When you go to apply for your next grant or the renewal of your existing grant, you have less to show for your previous period. Everyone is really concerned right now about how severe that deficit will be,” says Mondor, noting research has since begun in temporary trailers.

The arrow on the fire exit sign in Judy Anderson’s office points to the door, to the way out. She is trying to do the same for faculty members coping with the fire’s aftermath, guide them out of a very stressful situation. The journey has been an emotional one. “Many people here define themselves by their research and their teaching. They’re professionals. And that was taken away from them all at once, like cold turkey. So a lot of them have had mental traumas to work through,” she says.

Gary Anderson credits the department’s recovery to Judy’s tireless efforts. “I don’t know how Judy does it, to be honest with you. She has demonstrated tremendous leadership and support for everyone.”

The fire was destructive, but out of the ashes has come some good. Within departments, faculty members have pulled together and friendships have been cemented. Markham says for the first time he and his colleagues would go for a beer together after work. Researchers are even proposing they have some shared lab space in the new upgraded facility.

Professors who were offered labs elsewhere on campus have made new connections with faculty in other fields and even teamed up to do research together.

Faculty members have gone the extra mile to help graduate students, for whom a loss of samples is particularly concerning given their narrow time-frame to complete their projects. Nutritional sciences student Trisha Pownall, who was focussed on antioxidants in pea protein before fleeing her fifth-floor lab, still managed to complete her master’s this summer. She credits her professors’ ongoing support and encouragement. A lot was at stake, Pownall says, “You’re dedicating almost every hour and every day to this project. It almost becomes like your baby.”

The fire hasn’t deterred other graduate students from coming on board. Biological sciences alone has since welcomed 20 new grad students, in addition to four new faculty, which Judy Anderson says is a testament to the university’s solid reputation.

At an information session in September, university president David Barnard referred to what he calls “an amazing display of the community coming together.” The ordeal has given the university valuable experience in handling a disaster of this magnitude. At the time of publication, demolition was set to begin on the west side; its tenants not expected back in until at least early 2011. “We’re still discussing design options with the insurer,” Kinal says. Tenants on the east side are scheduled to be back in by late spring.

For some researchers, Judy Anderson says, the fire has allowed them to “mentally clean house,” and rethink their projects or redirect their focus. While still excited about his research, Dick says the fire has helped him reevaluate his priorities and achieve a better work-life balance. “You either rise above it or you don’t,” says Dick. “What you have to do is face it and go on. The road is never perfect, so what you do is learn to roll with it as much as you can.”

Gary Anderson agrees. And as these scientists, scholars and students move on, they do so as a stronger team. “(The fire) has demonstrated that humans can pull together in times of crisis,” he says.

“I think we’ve done that very well.”
When you see someone being treated badly at work, what effect does that have on you? Do you feel bad or want to defend the target? Do you think he or she may have done something to deserve it? How does your relationship with each of the perpetrator and the target affect this reaction? These are the questions I am addressing in my doctoral research on observing aggression at work, which I am currently undertaking at the Asper School of Business.

My predecessors in the area of workplace aggression have made a lot of progress with respect to what we know about perpetrators and targets of workplace aggression. What hasn’t received a lot of attention, however, is how aggression can influence other people at work. This perspective is important because aggressive interactions—more than half of which occur in the presence of others—are bound to affect many people beyond the perpetrator-target dyad.

When there are witnesses to aggression in the workplace, the situation changes for all parties. An altercation within a dyadic interaction can potentially be resolved between the direct participants, but the perpetrator and target may not be able to control the wider impact of the incident (or even be aware of how their altercation has affected others). For example, the mere act of witnessing aggression may lead observers to develop negative attitudes towards targets. The result may be that observers also victimize targets, which could ultimately spiral into an overall negative organizational climate.

In response to this issue, my research focuses on how observers’ attitudes and behaviors towards both the perpetrator and the target are affected by witnessed aggression. Along with my academic advisor, Dr. Sandy Hershcovis, I am conducting experimental and field research to find answers to important questions about observers of aggression.

Specifically, how are observers’ attitudes and behaviors affected after witnessing aggression? How do observers’ relationships with each of the perpetrator and the target—be they a supervisor or a co-worker; a friend or a foe—affect the same? Dr. Hershcovis and I believe the answers to these questions will speak directly to intervention efforts that currently focus almost exclusively on perpetrators and targets, often ignoring the wider social context in which aggression occurs.

This research is important to me because it will uncover how aggression can spread in the workplace, as well as how it can be contained. I am excited by the potential for this research to have a positive impact on the well-being of Canadian workers.
KATHRYN DREPKO
Faculty of Science

KATHRYN IS A MASTERS OF SCIENCE
student with Mark Fry in the Department of Biological Sciences and is working on a project to investigate physiological properties of neurons involved in regulating appetite and feeding behaviour. These neurons are located in a part of the brain called the Area Postrema: this is a crucial centre for communicating the levels of hormones circulating in the bloodstream to the rest of the central nervous system.

She is using a transgenic mouse model where neurons that use dopamine as their neurotransmitter produce a green fluorescent protein, making these neurons easily identifiable. Kathryn’s aim is to better understand how circulating hormones interact with the brain to control appetite.

Ultimately, the goal of this research is to discover new ways to prevent and treat obesity in humans. Her research is funded by an operating grant from the Thorlakson Foundation.

AREZOO EMADI
Faculty of Engineering

AREZOO IS A PHD STUDENT IN THE
Department of Electrical and Computer Engineering, working with Professor Cyrus Shafai. Her research aims to design, fabricate and evaluate an odor sensor capable of monitoring spoilage in stored grains. The project is part of a Strategic Grant being led by Professors Digvir Jayas in collaboration with Professors Freund, Shafai, Thomson and White. There are several causes for spoilage, all of them resulting in a drop in quality and quantity of grain. In spite of the source of deterioration, any spoilage releases traceable odors. By identifying the gases produced, the spoilage can be detected and traced at an early stage, minimizing economic loss.

In the past, many sensors sensitive to different gases have been fabricated and are widely used. However, most of the commercial gas sensors are bulky with high power consumption and temperature dependencies. They are also expensive and complicated to use for an untrained person.

Arezoo is investigating the potential use of polymer-based sensors for odor detection. They have a very simple structure and are easy to fabricate, which reduces costs. An array of different polymer sensors is used to distinguish between different volatiles.

Her research is funded by the Natural Sciences and Engineering Research Council and by a University of Manitoba Graduate Fellowship.
UNDERGRADUATE STUDENTS REPRESENTING SEVEN FACULTIES at the University of Manitoba showed their research wares at the Fourth Annual Student Poster Competition on Monday, November 9, 2009. This year’s competition marked a change and expansion to four categories—applied sciences, health sciences, natural sciences—by adding the new category of social sciences/humanities.

“We are thrilled with the participation across campus,” said Janice Ristock, Associate Vice-President (Research). “We’re working on a further expansion in the categories to include creative works next year, to make it truly representative of the breadth of research and scholarly work conducted at the University of Manitoba.”

“I think it’s great for the university to provide such a platform to showcase our work,” said Tiffany Cheung, Faculty of Dentistry. “Students put a lot of time and effort into research and we are proud of that.”

Budding forensic scientists or avid CSI fans would be interested in Cheung’s project that reviewed her “Preliminary analysis of dental materials before and after incineration.” Cheung took first prize in the applied sciences category for the project.

“Identification of victims in fires often rely on forensic odontology,” said Cheung. “My research found that there is no significant change in the elemental content when dental materials are incinerated at a temperature that simulates cremation. In addition, I found that composite-resin, also known as tooth-coloured fillings, from five of the seven manufacturers in this project can be distinguished based on the elemental content. This project creates a known reference spectra for the brands analyzed and that can be used to match against samples from future forensic odontology cases.”

Other student research in the applied sciences category included a look at Manitoba’s Indigenous population and rheumatoid arthritis by Gabriela Montes-Aldana, Faculty of Science, and a look at third generation biofuels using *Clostridium thermocellum* (a bacteria) with local hemp feedstock by second place winner Warren Blunt, a biosystems engineering student.

“This year’s competition again successfully show-cased the wide variety of research undertaken by undergraduate students at the University of Manitoba,” said Elliott Scott, Professor & Associate Dean (Research), Faculty of Dentistry, and judge in the applied sciences category. “From hypothetical mathematical modelling of whale shark feeding behaviour to studies of forensic dentistry, the scope of research was amazing.”

Research by Maneesh Sud, Faculty of Medicine, was awarded first prize in the health sciences category. His project focussed on “Upregulation of the mTOR and proteasome pathways in evil acute myeloid leukemias.” Jarret Woodmass also from the Faculty of Medicine, took second place for his research on “Treatment patterns and outcomes of pancreatic cancer.”

Elizabeth Skovopata, Faculty of Science, took first place in the natural sciences category for her research titled “Surface moment pining in iron-oxide-copper core-shell nanoparticles.” Fellow science student Alexandra Hrabowycz was second place winner for her research on “Purification and characterization of tocopherol cyclase.” Tocopherol cyclase is a critical enzyme in the biosynthesis of vitamin E.

In the newly added category of social sciences/humanities, Karen Delichte, Faculty of Arts, took first place for her project on “Gender differences in factors that prompt heavy gambling.” Mylene Gamache, Faculty of Arts, took second place for her research on the “Subversion et l’(é)crits des guérrières: The Cry of the Hysteric in French Fiction.”

Gamache described the poster as a representation of her undergraduate thesis work in the Women’s and Gender Studies Program. “I am exploring the aim to rewrite the hysteric—as an example of subversive feminine subjectivity—in contemporary French fiction. I have read three French novels and within each of them, I have identified characters who seem to be talking back to the historical, medical, and patriarchal discourse of hysteria (which endorses the notion that hysteria has generally been categorized as a “female” disorder associated with uterine or otherwise neurological systems).” Gamache adds, “Furthermore, these characters seem to exceed the boundaries to which the hysterical has been historically circumscribed by virtue of their individual states of resistance and respective appeals to flight, fidelity, and desire.”

Watch for further details coming on the 2010 Poster Competition, set for October 14, 2010.
ENDING THE VIOLENCE

Researchers make a difference in the lives of abused women

By Katie Chalmers-Brooks
Hard to believe, says Ursel, now an internationally-recognized expert in domestic violence, that decades later that home—the scene of their innocent hijinks—would become the setting for a truly sinister event. As an adult, Brooksbank (who became Reid once married) had moved back into her parent’s house to raise her own family. It was there that she was murdered by her husband. He also killed their two young sons before taking his own life.

By this time, in the late 1980s, Ursel was entrenched academically in the complex world of family violence but despite all the research she had accumulated, she was unprepared for the shock of losing her childhood friend in such a brutal manner. As kids, they spent their summers swimming at the neighborhood pool and their winters skating at the local rink.

“I don’t think that any kind of academic knowledge prepares you for that type of psychological impact. It doesn’t matter who you are. It doesn’t matter how much you’ve studied. If it happens to someone that you knew, that you grew up with and cared for, it’s overwhelming,” says Ursel, who is the director of RESOLVE, a research network focussed on family violence, based at the University of Manitoba with sister centres at the Universities of Regina and Calgary.

The murder led Ursel to believe there was no way to predict who would become a victim of domestic violence; Brooksbank was raised in a loving home by caring parents. Often, family violence is intergenerational. “This tragedy made me confront all of the stereotypes about victims.” says Ursel. “There are two kinds of learning, cognitive (head) learning and empathic (heart) learning. Maryann’s murder taught me that domestic violence is not just a police issue or a social service issue, it is everybody’s issue. Being safe in one’s own home is a fundamental human right.”

It is particularly important to do extensive longitudinal studies on domestic violence given its complexity, Ursel says. The RESOLVE team is currently conducting two such projects, no easy feat given how costly and difficult these are to sustain. The resulting data—years and years worth—are providing new insight on the topic and will result in better programming and policies that directly affect abused women. Every six months for the last four and a half years, interviewers have sat down with 670 abused women in Manitoba, Saskatchewan, and Alberta, posing questions about the services they sought, what worked for them and what didn’t. The Healing Journey Study, funded by a $1 million grant from the Social Sciences and Humanities Research Council (SSHRC) and $500,000 from various supporters, involves women in 39 communities both rural and urban. “One of the hopes is that by hearing the stories of all of these women—across three provinces, in small towns, on reserves, in cities—we can begin to document and articulate some of the complexities of those experiences,” Ursel says.

RESOLVE’s other longitudinal study has researchers analyzing Winnipeg’s Family Violence Court, the first specialized court of its kind in Canada. The study indicated early on that court specialization had changed sentencing dramatically. In the past, the most frequent sentence for a convicted offender was a conditional discharge—which means no punishment, no treatment, no consequences. Today the most frequent sentence is probation and court-mandated treatment, and the second is jail. The team has been gathering data and identifying trends for a staggering two decades thanks to funding from several sources. They have received three SSHRC grants, and support from a number of contributors including the Prairie Action Foundation, the Max Bell Foundation and the Manitoba Law Foundation. “You can imagine trying to keep a project alive for 20 years. You have to be creative about finding funders over that length of time,” Ursel says.

Jane Ursel had a mischievous side growing up and someone to share it with: her good friend who lived across the street, Maryann Brooksbank. Upon seeing Maryann’s freshly painted white house, young Jane convinced her chum they should grab their crayons and showcase their artistic flair on such a pristine canvas.
Cheryl Fraehlich, a post-doctoral fellow at ReSOLVe, describes Ursel as “extremely dedicated.” Historically, the longtime sociology professor hasn’t taken no for an answer. While working for the provincial government—she left academia for five years to do so—Ursel wanted to introduce a support program for women whose partners had been arrested for abusing them. She approached the justice department with her idea for a women’s advocacy program and was told they were focussed on the offenders, not the victims. But she was determined and created the program anyway, finding a place for it in the Department of Family Services. The program has since transferred to its rightful home in Manitoba Justice and has been renamed Victim Services. It has expanded from just a handful of staff to more than 50. They help victims navigate the confusing criminal court system, which could mean assisting with protection orders or accompanying a witness to court to testify. "It was a good idea. It just took time for the system to be ready for it," Ursel says. "It's a very important service and 25 years ago we were told it would never happen. It was a lesson in perseverance.”

Ursel showed the same passion during the Rhonda and Roy Lavoie inquiry following the Winnipeg couple's highly-publicized murder-suicide in 1995. Roy was out on bail for a previous assault on Rhonda when he took her life and his own. Ursel sat through nearly every day of testimony before the inquiry; she wanted to know how the system could have better protected Rhonda, a 22-year-old mother of three. At the end of the inquiry Ursel was chosen to chair the committee responsible for implementing the judge's astounding 73 recommendations.

Ursel's latest push is for the creation of a domestic violence death review committee here in Manitoba. Such a group already exists in Ontario and is made up of experts like coroners, academics and police investigators with the goal of determining how to prevent further fatalities. "One of the saddest things is that often the people who get murdered are the people who never reached out for help," Ursel says.

It’s unclear whether domestic violence is on the rise in Canada or if the growing number of reported assaults simply reflects a greater number of women coming forward. "There is probably nobody around today who hasn’t had it touch their life, whether it was a friend, family member or a neighbour. We've become increasingly aware of how pervasive the problem is," says Ursel, who has a history of tackling the issue head-on. “When you help a woman turn her life around and the life of her children, when you see a man who has been abusive and has participated in treatment programs and has changed, it’s so rewarding. You know you can make a difference and I guess that’s what keeps people working in a really harsh field.”

Julie Goertzen, a social work student who scours case documents that land in family violence court for ReSOLVE’s intensive study, says reading the testimonies can be painful. But her commitment to the issue motivates her to help others. “If no one was willing to do it, we would never see any changes,” Goertzen says. Fraehlich agrees, noting research is the key to improving the lives of abused women. “If we want to see things change, we need to do the research.”

The lengthy face-to-face discussions between the interviewers and hundreds of participants in The Healing Journey Study have proven to be emotional and the findings revealing. This project, in conjunction with the court study, provides some dramatic contrasts between women’s lived experiences and the official data. For example, researchers discovered only two per cent of abusers charged by police faced a charge of sexual assault but close to 40 per cent of the women interviewed revealed their partner’s abusive behavior included sexual assault. Ursel says this information is extremely valuable for training police officers, paramedics, and crown prosecutors who interact with abused women on a routine basis. Domestic violence-related incidents are the most frequent call to 911, she notes.

Her team also discovered tremendous altruism among study participants, the majority of them motivated to take part in the hopes that doing so would spare other women from getting similarly hurt. “Women are trying to take a terrible experience in their life and use it as a resource that we can learn from,” Ursel says.
And despite everything they’re going through, these women are acting as a support for friends and loved ones with other sorts of problems. Ursel says this was “another opportunity to shatter stereotypes.”

“I was seeing these women in one way only and that was as service users, as needers of support. I never realized the extent to which these women are also informal service providers. In the midst of this huge set of complex realities that they’re trying to negotiate, they’re also finding the time to help people, which was a real eye opener.”

Also surprising was the emotional rollercoaster friends and family members ride when they are close to someone who is being abused. Ursel says they go through the same ups and downs as the victim and could benefit from taking part in support groups, which in turn would help them better support the abused woman in their life. Ursel doesn’t believe any such groups exist in Winnipeg but would like to see them introduced. “We don’t want to neglect the very people women turn to for support,” she says.

It is findings like these that Ursel and her colleagues are continuing to analyze and anticipate doing so for years to come. They hope to provide concrete strategies for agencies and policy makers, and ultimately save lives. There is something to be learned not only from the tragedies but from the success stories. Some of the study participants have safely left their abusive spouses and gone on to pursue an education and a career; researchers want to know what worked for them. They are still merging data from successive years and are excited about the potential outcomes. “It’s when you see the whole pattern put together that you’re going to see some very interesting results,” Ursel says. “You just learn so much from these women.”

And, unfortunately, there is no shortage of abused women from whom to learn. As Fraehlich notes, domestic violence is “very far-reaching.”

“It crosses all boundaries in society, all socioeconomic classes. Everyone is affected. No group is excluded from this phenomenon.”
Northern Lights
Southern Exposure

BY GRACE NICKEL
In the summer of 2009, I worked with ceramic artist Sandra Black in her studio in Perth, Australia, making new pieces for an exhibition of collaborative pieces. I received a University Creative Works Grant from the Office of Vice-President (Research) for travel to Perth. Our exhibition opened at Perth Galleries on November 20, 2009, and showed solo and collaborative ceramic works by myself, Sandra Black of Perth, and Trudy Golley and Paul Leathers of Red Deer, Alberta. The exhibition is called *Northern Lights/Southern Exposure*. The collaborative process brought a new way of working, with unique challenges and rewards.

In Australia, I responded immediately to the lush and often oddly alien vegetation of Western Australia. I was struck by how frequently issues with the preservation of indigenous plants (especially trees) appeared in the local papers. This meshed with the work I had already begun in Halifax and in Winnipeg, in reference to the destruction of trees, and with my attempts at rescuing them by making moulds of the fragments and rebuilding them in porcelain (see inset *Devastatus Rememorari*), shown recently at Gallery One One One in the School of Art, University of Manitoba.

In Perth, I created a new series of porcelain trees called *Save the Banksias*, inspired by the many articles and letters to the editor in the local newspaper which addressed environmental issues such as saving the ancient indigenous trees in the area. The old banksia trees were among them. I made another new grouping called *Palm Pod Vases*, informed by some of the weird and wonderful Western Australian vegetation I collected there. In addition to these new solo works, Sandra Black and I developed several collaborative bodies of work, including a series of pieces assembled from a mix of her forms and mine that we called *Hybrids*, and a series called *Branch Lights*, which combined one of my cast branch forms with Sandra’s exquisite piercing technique. The perforated patterns she created are resonant of the tracks left by boring beetles which infest trees and branches. These natural “drawings” are beautiful but often fatal.

David Walker, renowned sculptor–metalsmith from South-Eastern Australia has written the forward for the catalogue of the exhibit. Of my contribution to the exhibition he observes, “In Fremantle she was intrigued by press reports of community concerns about environmental issues and the loss of native vegetation. In her richly layered depiction of the bark surfaces of WA trees she has used text from the reports in the *Fremantle Herald* to transfer her concern from the Canadian situation to Western Australia. These personal and public expressions of compassion have lead to a new series, made in Sandra Black’s South Fremantle studio, with the title *Save the Banksias*, uniting the functional tradition of the vase with that of sculpture. Her *Bamboo* series perhaps reflects her recent visit to China and is in a lighter vein while her *Hybrid* series, carried out in collaboration with Sandra Black, is gently playful suggesting the easygoing spirit of their friendship.”
Funding for studio research was also received from the Manitoba Arts Council in relation to the Australia collaborative exhibition.

In Australia, partial funding for the exhibition was received from the WA Dept. for Culture and the Arts.

To learn more about Grace Nickel’s art and research visit <gracenickel.ca>

THE BEAUTY OF INCONGRUITY
BY KATIE CHALMERS-BROOKS

DRIVING DOWN LOGAN AVENUE, it's doubtful you'd notice the tiny green bungalow on the side of the road. Or the cutout of a friendly Santa Claus taped to its front window, adjacent to a not-so-friendly Beware of Dog sign.

Leave it to artist and School of Art professor William Pura to pluck the interesting from the everyday. Pura’s photograph of the home is one of 55 images he captured of industrial and residential structures on this busy Winnipeg thoroughfare.

“People are putting these things up and not being aware of the incongruity of placing something as welcoming as a Santa Claus next to a Beware of Dog sign. There was stuff like that all along there,” says Pura. “There were also people becoming very extravagant with lighting for Christmas time and yet the house looks really dilapidated.”

From his Chevrolet mini-van, Pura has been photographing along Logan since 2005, his camera resting on a make-shift tripod attached to his driver's side window. He came up with the idea while driving the route from his Stonewall home to art galleries in the Exchange District. Pura was struck by the avenue's rawness and eccentricity. He says the street is unlike other major arteries like Portage Avenue and Pembina Highway because homes are not hidden by stores, but instead intermingle with industry.

Also a composer and painter, Pura is fascinated by the urban landscape. “The manmade environment, the buildings, the lighting, the arrangement of trees – it's an artificial world that we've created,” he says, adding the extraordinary is
hidden in the ordinary. “Sometimes the most banal, commonplace things can actually be very deeply meaningful.”

Capturing images of grandiose modern buildings doesn’t appeal to Pura, who is more captivated by the modest, hidden gems. “It’s the everyday world we tend to ignore. We just breeze through these spaces. Taking the everyday and making it into something special is probably the most important thing that (these photos) do.”

To view more images from Pura’s collection, go to <loganavenue.williampura.com>

SPIRIT MENDERS: EXPRESSIONS OF TRAUMA IN ART PRACTICES BY MANITOBA ABORIGINAL WOMEN
BY JANINE HARASYMCHUK

LEAH FONTAINE, A GRADUATE STUDENT in the Faculty of Arts, Department of Native Studies, undertook a series of interviews with Aboriginal female artists on the ways in which they use art to depict political, social, and cultural injustices that they themselves have experienced. Jackie Traverse was one of the artists interviewed by Fontaine. Traverse graduated with a Diploma of Fine Arts from the University of Manitoba School of Art in 2008.

“I have this gift,” says Traverse. The illustration entitled Reminder depicts the story of how art restored her by serving as a reminder to herself of the trauma she experienced; the visual representation of that reminder is the string tied in a bow around a finger. The marks on the arms in the image are self-inflicted and represent self-harm. Art now serves Jackie as a coping mechanism in lieu of self-mutilation.

Traverse also created Butterflies, dedicated to murdered and missing women. The creation represents the Aboriginal belief that if you whisper a wish to the butterfly, it flies the wish to the Creator and your wish can be granted. Jackie’s wish “is that these women not be forgotten. We honor their memory even if white society chooses not to.”

“Art saved Jackie and restored her belief in herself,” says Leah Fontaine. “We all share a common experience and depict visually our collective memories of how intergenerational impacts affected our lives and how we cope with them is what is important. If anything, art serves as a channel, which provides a release and is truly a gift to the women in this project.”

Fontaine’s project was funded by the Centre for Creative Writing and Oral Culture, Collaborative Research Grants Program. This program is a new initiative designed to support collaborative work in creative writing, performance, translation, recording, transcription, film, and other creative endeavours.
The Office of the Vice-President (Research) sponsors and presents a free public speaker series titled Bringing Research to Life. This series is designed to introduce the general public to the talented people who make up the research community at the University of Manitoba.

This year the series takes place in Room 290, Education Building at 71 Currie Place (right behind Max Bell Centre) with free parking available in P Lot.

The next four speakers in the series and dates are:

**MANAGING TALENT IN TOUGH TIMES**
Krista Uggerslev – Asper School of Business
January 20, 2010 – 7:00 PM

**WHAT’S ALL THE FUSS ABOUT PHOSPHORUS?**
Don Flaten – Faculty of Agricultural and Food Sciences
February 24, 2010 – 7:00 PM

**CAFÉ SCIENTIFIQUE**
Interested in talking and learning more about different health topics and related research? Café Scientifiques bring together experts with non-researchers (you, me, neighbours, friends, etc.) in a relaxed atmosphere to talk about their work and the questions it raises. Come and join the discussion!

**KEEPING YOUR TICKER HAPPY – HEART HEALTH**
With Drs. Todd Duhamel, Davinder Jassal, Carla Taylor and Grant Pierce
February 25, 2010 – 7:00 PM
McNally Robinson – Grant Park, Travel Alcove

More people die of heart attacks every year in Canada than from any other cause. Researchers around the world continue to work on learning what makes our tickers keep on ticking and what factors play a role in our hearts’ health. Things like what we eat, how often we move, and lifestyle choices like smoking, play a major role. Come hear what our heart health researchers at the University of Manitoba are up to and how you can keep your heart happy.

For additional Cafés and dates go to
<umanitoba.ca/research/cafescientifique.html>
JUST THE FACTS

BY THE NUMBERS:

- 67 endowed & sponsored research chairs – including 48 Canada Research Chairs
- 38 research centres, institutes & shared research facilities
- 8 National Synergy Awards for Innovation
- 30 tenant companies in Smartpark, the university’s research and technology park
- 8,242 staff (2008/09) – 3,661 academic staff, 4,581 support staff
- $487.2 million annual operating budget (2009/10)
- $1.3 billion in building assets

RESEARCH FUNDS BY SOURCE 2008-09

- Federal Government 43%
- Provincial Government 11%
- Other 46%

TOTAL: $172.1 MILLION

TRI-COUNCIL FUNDING 2008-09 ($ MILLION)

- NSERC (Natural Sciences and Engineering Research Council) $24
- SSHRC (Social Sciences and Humanities Research Council) $6
- CIHR (Canadian Institutes of Health Research) $22

TOTAL: $51 MILLION