



University of Toronto Scarborough  
Annual Review 2009



# Moving Ahead



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At the University of Toronto Scarborough, innovative thinking is in high gear and propelling us rapidly forward. After an extensive consultation and planning process, we're more focused than ever on pursuing UTSC's goals as a leader in breakthrough research and academic excellence. The sense of new momentum is evident right across our campus, from the labs where students work alongside faculty on pioneering investigations to the latest departmental programs that link several core disciplines in expanding the horizons of learning.

This acceleration is also directed outward, reinforcing UTSC's role as the dynamic intellectual and cultural hub for the eastern Greater Toronto Area. Our students explore local as well as global communities, gaining vital first-hand experience. And those diverse communities in turn send us talented students and faculty whose international outlook broadens our own. As we forge new partnerships to support the next wave of campus expansion, UTSC is, as always, focused on the future – and purposefully moving ahead.



# Planning in Motion



**Professor Franco J. Vaccarino**  
Principal, University of Toronto Scarborough  
Vice-President, University of Toronto

## Message from the Principal

As the theme of our *2009 Annual Review* underlines, the University of Toronto Scarborough is moving ahead. Over the past two years, we've tackled the challenges of managing recent growth with a rigorous collaborative planning effort. As a result, we now have an even deeper understanding of the UTSC identity and a clearer vision of where we're headed next. Going forward, our strategic planning will continue to drive everything we do as UTSC evolves to reflect – and help set – the pace of global change.

**As one of three unique campuses that comprise the University of Toronto, UTSC has doubled its enrolment since 2001.** With top-notch faculty and more than 10,000 undergraduate and graduate students, we've joined the ranks of Canada's mid-sized universities – large enough to have significant impact, yet nimble enough to respond quickly and effectively to shifts in the social and educational landscape.

Rooted in our community and connected to the world, UTSC has achieved international recognition for groundbreaking research in diverse academic disciplines, as well for the quality of our innovative approaches to teaching. As one pillar within a tri-campus system, **we embrace the high standards of academic excellence and global relevance** that distinguish the University of Toronto among leading postsecondary institutions.

The Honourable David Peterson (bottom, right), U of T's Chancellor, helped welcome Pan Am Games officials to UTSC as chair of Toronto's successful bid to host the 2015 Games.



We are also uniquely positioned to provide an **intellectual, cultural and social hub for the eastern Greater Toronto Area** – a region identified by all levels of government as a centre of dramatic population growth that will see a boom in economic development in the decades ahead.

**We're evolving from inside out and outside in.** UTSC faculty members in growing numbers are forming dynamic intellectual clusters to bridge related fields of inquiry. Across all disciplines, our researchers are immersed in promising investigations, whether contributing to Nobel Prize-winning work on climate change or helping to improve the global food supply. The impact of their collective insights reaches out to the wider world, inspiring further discoveries and sparking successful enterprises. At the same time, their collaborations open up new avenues of undergraduate and graduate study that point students along rewarding career paths.

UTSC alumnus John McKay (left), MP for Scarborough-Guildwood, celebrates the Pan Am Games announcement with Principal Franco Vaccarino (see page 6).



Our university also responds to the needs of communities, both nearby and on the other side of the planet. We design academic programs that reflect **the demands of our knowledge economy and the broader issues facing contemporary society**. Our research efforts are similarly attuned to high-priority challenges, covering the spectrum, from workplace anxiety to greenhouse gas emissions to the AIDS epidemic in Africa.

**The vital expansion of our UTSC North Campus is now under way.** The new Instructional Centre, slated for completion in 2011, addresses many of the urgent space requirements that have only intensified during our planning process over the past few years.

However, this landmark building is only the first step in realizing our vision for the North Campus. As we put the finishing touches on a master development plan, the results of our exhaustive consultations make one thing clear: **UTSC will continue expanding to meet the inevitable demand for more space and specialized facilities** expected from a leading centre of teaching and research.

Managing our future growth will require creative solutions and new kinds of partnerships. We recognize that the impact of the recent global recession will be felt for several more years in the form of continued budget restraint and reduced availability of capital. With government resources severely limited, we must be even more proactive in exploring new sources of funding. We need to investigate potential partnerships with public and private sector organizations, identifying shared aims and determining how we can achieve them together – while maintaining the essential values that define UTSC.

**As an institution devoted to innovative thinking, we are constantly in motion.** UTSC is in the business of creating and disseminating new ideas, superior methodologies and smarter solutions to vexing problems. That means we're constantly asking questions of the world around us – and of ourselves. The aim of our academic planning is not to reach some fixed point where all things are decided; it's an ongoing process in which department chairs and their colleagues build on strengths established over 45 years to develop better teaching strategies and create exciting programs.

Charting the future of a complex institution is a multi-dimensional process, with various intertwined strategies progressing at different rates of development. But at UTSC we understand that rigorous planning only becomes meaningful through decisive action. We appreciate the opportunity, in this *Annual Review*, to highlight some areas where our plans are already in motion. And as always, **we welcome your thoughts and suggestions** as we invite feedback from our valued network of alumni, friends of the university, and current and prospective partners. By planning and acting together, we can accelerate crucial research, help shape a talented workforce and improve the quality of everyday life in the various communities we serve.

**Thank you for your interest and support as we continue moving ahead to achieve our vision.**

**Professor Franco J. Vaccarino**  
Principal, University of Toronto Scarborough  
Vice-President, University of Toronto

## How We're Moving Ahead

UTSC is focusing on five strategic priorities

**1 New and emerging areas of scholarship.** One of our main goals at UTSC is to illuminate significant issues and determine solutions to complex problems by thinking beyond traditional disciplinary boundaries. We encourage dialogue between complementary disciplines – chemistry and biology, for instance, or psychology and ethnography – by hiring faculty with appropriate expertise, by providing the necessary infrastructure and support, and by fostering a spirit of collaborative discovery. Then we develop programs that introduce these new ways of thinking into the classroom.

At the same time, we know that innovative exploration must be grounded in our core strengths. This remains a priority across all academic departments as we offer students inspiring pathways to learning supported by solid foundations of disciplinary knowledge.

**2 Research and graduate studies.** UTSC is on its way to becoming a centre for pioneering work in a wide range of fields, from neuroscience to cell biology, environmental studies to social psychology. The common thread is relevance. Whether examining the behaviour of youth gangs in Canadian cities or environmental impacts on harvests in developing countries, our researchers shed light on important issues and point the way toward practical solutions.

The same motivation underlies our plans to develop more graduate-level studies. Our faculty members already supervise graduate students from across the tri-campus system. Now plans are moving forward to base a number of advanced degrees at UTSC, including a PhD in Environmental Science (a first for U of T). The result will be a dramatic shift on campus, as the number of master's and doctoral candidates is projected to increase fourfold to more than a thousand students. Directed by faculty with global reputations, the new programs will build on our established areas of research excellence.

**3 Experiential learning.** UTSC has forged its reputation for teaching excellence in part by developing pedagogical approaches that connect students to the real world. Our co-op programs, which are widely admired and sought after, turn theory into practice and offer stepping stones to future careers. Extremely popular among Management students, the co-op option is being extended to other departments as well, attracting top candidates who are keen to round out their academic achievements with hands-on experience.

We're working to broaden our employer partnerships, so we can offer even more co-op opportunities in the future. We'll also be expanding our range of experiential choices to include more co-curricular options, as well as service

placements with community organizations and other volunteer positions. What differentiates all experiential learning at UTSC is the degree of integration with academic programs. The bar is set high for employers, who must align workplace tasks with educational milestones.

**4 Internationalism.** The numerous students who come to UTSC from outside North America bring a mix of cultural perspectives, enriching campus life as they interact with peers from dozens of nations. This diversity is equally evident in students from nearby communities, many of whom are first-generation Canadians or newcomers to Canada. Their innate internationalism adds a new depth of insight – backed by first-hand knowledge – to discussions of global issues. UTSC's cultural diversity also fuels a growing wave of interest in programs with an international perspective.

At the same time, the global outlook of our university inspires research initiatives worldwide, as faculty members and students investigate everything from flu pandemics to economic development, from women's issues to the need for agricultural diversity. Our internationalism is also reflected in successful student recruitment programs such as Green Path, which we envision expanding from China to other countries. And it drives our efforts to create more academic links around the world, as faculty members travel abroad and welcome scholars to our campus for conferences and collaborative projects.

**5 A sustainable university platform.** The final pillar of UTSC's strategic plan is the recognition that we must have the best possible people, facilities and programs to create an ideal environment in which to work, teach and learn. Our future planning addresses immediate needs while considering the capital and human resources required for the long term. The commitment we've made to outstanding research and scholarship assumes a foundation that is sturdily built and designed for continuous renewal.

We are attracting faculty who consider UTSC their intellectual home – in sufficient numbers to meet future needs, and in the right cross-disciplinary clusters to nurture fruitful collaborations. This in turn attracts additional talented students who appreciate the easy access to inspiring teachers and mentors – and who embrace the entire UTSC experience, from cultural and social activities, to fitness and wellness opportunities, to community partnerships and social engagement. In short, sustaining a great university platform means ensuring the infrastructure is in place to help researchers, scholars and learners contribute their best – to UTSC as well as the global community.

## Moving Ahead on Campus Expansion

UTSC's vision for the future is moving forward at full speed. With construction under way on our new Instructional Centre and a superb athletic facility announced for the Pan Am Games in 2015, the next phase in the transformation of our campus has begun. This physical expansion mirrors the rapid growth of the entire region, as we meet steadily increasing demand for postsecondary education and affirm our role as an intellectual and cultural hub for the eastern GTA. The facilities we're building will carry on the evolution of UTSC as a centre of learning and research, embraced by the community and reaching out to the world.

**We have a clearly defined strategy for the development of our campus.** The master plan we are now completing is designed, first and foremost, to support UTSC's academic mission, ensuring the delivery of high-calibre facilities and services as our campus continues to grow with expanding undergraduate programs, graduate studies and research initiatives. In addition, our long-term development strategy will help further define UTSC's distinct profile within the tri-campus U of T system, as well as regionally and internationally.

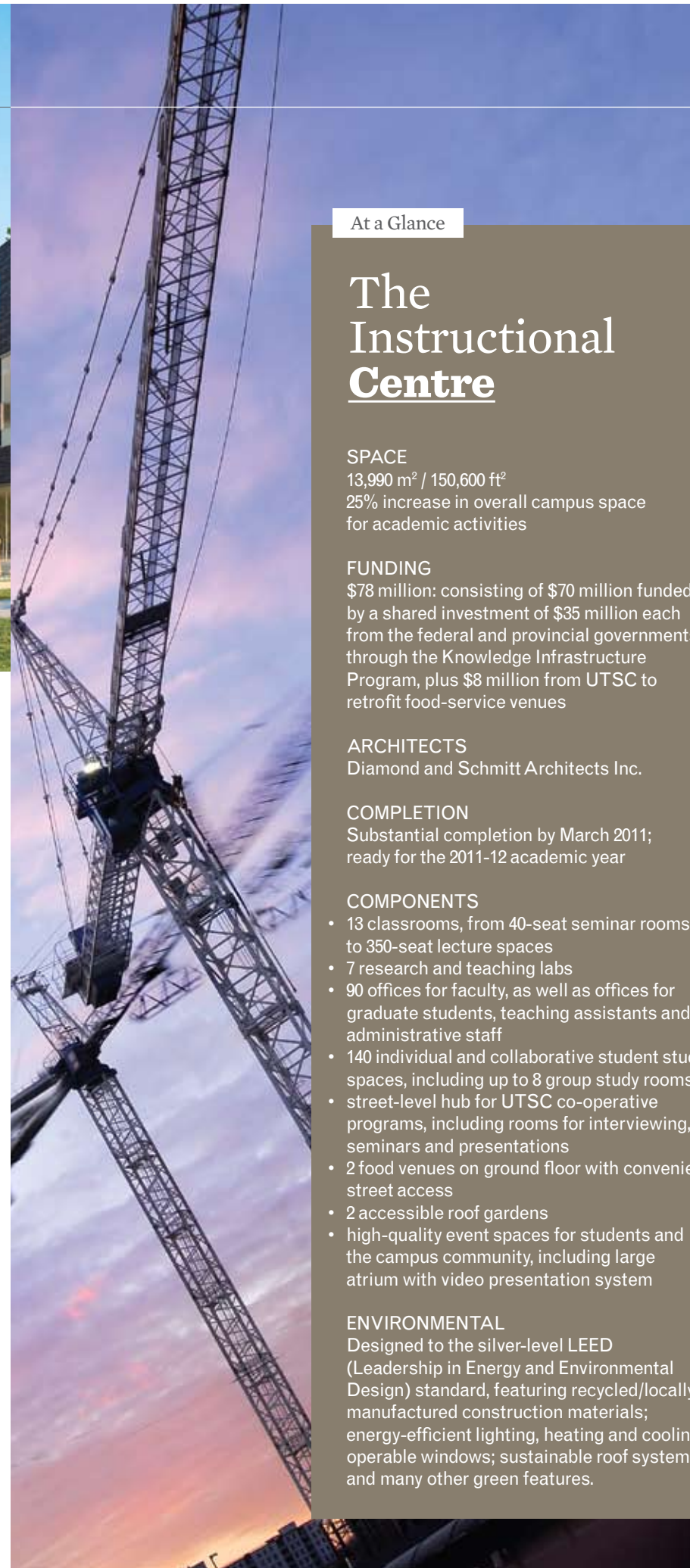
New development will bring added energy to campus life, creating a vibrant central gathering place along with many other mixed-use spaces where students can engage, interact and grow. The master plan creates a platform for rapid transit and other sustainable alternatives to car travel. Most fundamentally, it will guide us as we create a truly impressive physical campus, refining currently developed areas and making the North Campus the focus for a dynamic new campus experience.



## STARTING FROM THE CENTRE

On September 24, 2009, a cheering crowd celebrated as the first shovels broke ground for the new Instructional Centre, the largest single facility to be built at UTSC since our founding in 1964. The \$78 million building is critical for meeting the needs of our students today and in the future. The acute space shortfall resulting from our recent enrolment growth will begin to be eased by nearly 14,000 square metres of technology-enhanced classrooms, research and teaching laboratories, and other learning and study areas.

When the Instructional Centre opens in 2011, it will house faculty offices and teaching spaces for two academic departments – Management and Computer & Mathematical Sciences – along with the administrative offices of our co-op programs. The building now taking shape on the North Campus will benefit all UTSC students by addressing specific program requirements and by freeing up space elsewhere on campus that can be repurposed for other academic and research initiatives. This landmark project is a key step in our continuing efforts to meet the needs of the UTSC community, raise the standards of academic excellence and forge the innovative partnerships that drive long-term prosperity.



### At a Glance

## The Instructional Centre

**SPACE**  
13,990 m<sup>2</sup> / 150,600 ft<sup>2</sup>  
25% increase in overall campus space for academic activities

**FUNDING**  
\$78 million: consisting of \$70 million funded by a shared investment of \$35 million each from the federal and provincial governments through the Knowledge Infrastructure Program, plus \$8 million from UTSC to retrofit food-service venues

**ARCHITECTS**  
Diamond and Schmitt Architects Inc.

**COMPLETION**  
Substantial completion by March 2011; ready for the 2011-12 academic year

- COMPONENTS**
- 13 classrooms, from 40-seat seminar rooms to 350-seat lecture spaces
  - 7 research and teaching labs
  - 90 offices for faculty, as well as offices for graduate students, teaching assistants and administrative staff
  - 140 individual and collaborative student study spaces, including up to 8 group study rooms
  - street-level hub for UTSC co-operative programs, including rooms for interviewing, seminars and presentations
  - 2 food venues on ground floor with convenient street access
  - 2 accessible roof gardens
  - high-quality event spaces for students and the campus community, including large atrium with video presentation system

**ENVIRONMENTAL**  
Designed to the silver-level LEED (Leadership in Energy and Environmental Design) standard, featuring recycled/locally manufactured construction materials; energy-efficient lighting, heating and cooling; operable windows; sustainable roof system; and many other green features.



## Pan American Showcase

The recent news that Toronto has been chosen to host the 2015 Pan Am Games was welcomed across the region – and especially at UTSC, which has the opportunity to be one of the main competition venues by partnering in a new aquatics and athletics facility that some have described as the crown jewel of the Games. Detailed planning is now proceeding on a spectacular \$170 million complex featuring two Olympic-sized (52-metre) pools, a 10-metre diving tank, multi-purpose gymnasiums, a running track, racquet courts, and fitness and training areas.

Scheduled for completion in 2014, the proposed new complex will be jointly operated by UTSC and the City of Toronto, and is being built in partnership with the provincial and federal governments. Although the complex is designed for the 2015 Pan Am Games, its legacy will extend far into the future, allowing students, local residents and the entire UTSC community to enjoy access to a superb athletics, fitness and recreation centre. At the same time, our campus will gain a world-class facility to attract other international competitions. It will energize sports activities as well as research and training in high-performance athletics across the university.

And there's a further benefit from this exciting development. The City of Toronto has stated its commitment to improve transit access to UTSC with a new Light Rapid Transit link, which will make travel to our campus faster, easier and greener than ever.



## Moving Ahead by Supporting Students

At UTSC, students' academic pursuits represent just one element within a rich, multi-faceted campus experience. We strive to create a holistic environment where efforts in the classroom, lab or library are enriched by opportunities for personal growth, engaging with peers and mentors, and simply enjoying a memorable and rewarding time in one's life. Our job is to provide the necessary support, from leadership development to career guidance to health and wellness services, that will give students the best possible university experience.

The remarkable diversity of our student population ensures that life at UTSC is stimulating, inclusive and culturally vibrant. Students can participate in more than 150 clubs on campus. Many are co-curricular, promoting professional development. Others celebrate a vast spectrum of interests, from social activism to cultural and religious identity, from sports and recreation to global affairs and the arts. In addition, seven departmental student associations organize widely diverse events.

UTSC's diverse character is further enhanced by the many students who've joined us from around the world. In 2009-10, **International Student Services** welcomed a record 1,164 visa students to our campus – an increase of 19 percent over the previous year. More than 200 mentors and 100 program volunteers help these students adjust to life in new surroundings and make the most of their UTSC experience.

All students, whether from across the globe or nearby neighbourhoods, participate in a first-year **orientation program** designed to facilitate their transition to university and engage them in UTSC life; many return as volunteers in subsequent years. Students who live on campus have further opportunities to connect with and support their peers through a range of **Residence Life** programs. And those who want to help out in the communities beyond our campus can join the

hundreds of socially aware volunteers who participate in our **Community Outreach** programs.

The recognition that enriching life outside the classroom creates more engaged and successful students inspires a broad range of additional programs developed and managed by our **Student Affairs team**. Through the Academic Advising & Career Centre – the only integrated service of its kind in Canada – we offer **academic advice, learning skills, career counseling and employment skills development** as part of one cohesive, student-centred strategy.

Student Affairs also offers guidance on **financial support**, including scholarships, bursaries and student loans, and develops **co-curricular initiatives** such as mentorship programs, speaker series and the Leadership Development Program (see opposite page).

Encouraging participation in sports and fitness activities is another key component of UTSC's holistic approach to fostering student success. The **Athletics and Recreation** department reported significant increases in engagement for the year ending July 2009. Total visits to the Recreation Centre were up by more than 21 percent, participation levels in intramural sports rose by over 14 percent, and instructional classes experienced average attendance gains of better than 11 percent. Our intramural program has more championships than any other at U of T.

From our unique **Health & Wellness Centre** – integrating medical, nursing, counselling and health promotion under one roof – to the **AccessAbility** office, which looks out for the needs of disabled members of our campus community, UTSC offers a comprehensive network of programs and services all directed at one goal: supporting students as they strive to achieve their full potential.



## Leadership Development Follow the Leaders

There's more to students' time at UTSC than simply fulfilling the requirements for a degree. We believe that the university experience should be about developing inner strengths and building personal and professional relationships. It should offer new perspectives on how principles such as equity, diversity, civic engagement and humanitarianism figure in students' lives and in their communities. Helping ensure that this is what students take away from UTSC is the goal of the Leadership Development Program.

Coordinated by the Student Life department with support from the wider UTSC community (including alumni – see pages 10-11), the program presents more than 130 workshops and events annually, organized around five key themes:

- **Exploring Leadership** – examining students' effectiveness in interacting with others
- **Personal Development** – focusing on specific skills such as delivering presentations, managing personal finances, conflict resolution and coping with stress
- **Organizational Development** – targeting leadership skills such as event planning, soliciting sponsorships and managing volunteers
- **Global and Community Leadership** – a framework for tackling real-world issues, with in-depth discussions sparked by guest experts
- **Perspectives on Leadership** – a series of talks by high-profile leaders who've taken on some of the world's difficult problems.

Since launching in 2006-07, the Leadership Development Program has more than doubled its participation levels each year; as this *Annual Review* goes to press, over 2,500 students have registered for sessions in 2009-10. This new experiential initiative has resonated with students preparing for the challenges they see ahead – personal and professional, local and global.

## The Guest List

The extensive agenda of the Leadership Development Program includes four speaker series designed to deepen understanding across a range of global issues. The roster of guest speakers includes politicians, business leaders, social activists and respected authorities in various fields. Among those sharing their insights in 2009-10 are the following:

- Wayson Choy** – award-winning fiction writer, and activist whose novels include *The Jade Peony*
- Douglas Coupland** – writer, artist and designer best known for novels such as *Generation X*, *Microserfs*, *JPod* and *Hey Nostradamus!*
- Thomas Homer-Dixon** – political scientist and author of *Carbon Shift: How the Twin Crises of Oil Depletion and Climate Change Will Define the Future*
- Peter Mansbridge** – veteran Canadian broadcaster and anchor of the CBC's flagship nightly newscast *The National*
- Elizabeth May** – environmentalist, activist, lawyer and national leader of the Green Party of Canada since 2006
- Monia Mazigh** – author of *Hope and Despair: My Struggle to Free My Husband*, *Maher Arar*
- Jeff Rubin** – former chief economist with CIBC and author of the best-selling book *Why Your World is About to Get a Whole Lot Smaller*
- Adria Vasil** – environmental advocate whose best-selling book, *Ecoholic*, offers tips on how to live greener, smarter and healthier lives
- Jan Wong** – former *Globe and Mail* reporter and author whose books include *Red China Blues: My Long March from Mao to Now*.

Below, clockwise from top left: Monia Mazigh, Douglas Coupland, Jan Wong, Peter Mansbridge



## Moving Ahead by Giving Back

Much of the momentum at UTSC originates on campus, in the collective efforts of our faculty and students. But it gains vital energy from the broader community of supporters who believe in what we're trying to achieve and generously share their resources, guidance and inspiration. More and more alumni – who now number nearly 35,000 – recognize the importance of their university experience in shaping what they've accomplished and are keen to give something back. They in turn encourage others to take a closer look at UTSC, sparking the kinds of fruitful partnerships that fuel our growth as a hub for innovative thinking and practical solutions – the drivers of regional prosperity, social health and long-term sustainability.

Some of UTSC's valued partners in the community donate funding or gifts in kind to help bolster our teaching and research efforts. Others contribute their time in the form of expert guidance on a range of fiscal and development challenges. And many are exemplars of personal commitment, inspiring us to pursue our full potential, both as individuals and as an institution. **What all of these partners share in common is a belief in UTSC's power to foster innovative discoveries, nurture young talent and enhance the lives and livelihoods of people around the globe.**

Here are a few snapshots from the past year illustrating how many friends of UTSC are giving back to keep us moving ahead:



### Discovering Potential

Another UTSC graduate with a legacy of public service is **Mary Anne Chambers** (photo above), who capped her successful banking career with a term as the MPP for Scarborough East and membership in the provincial cabinet, including as Minister of Training, Colleges and Universities. Chambers, known for her many years of volunteering in Toronto's Jamaican community, is part of a mentorship initiative at UTSC. Supported by her wise counsel (and generous donation), IMANI: The Black Students' Alliance invites middle and high school students onto the campus in a program of personal and academic coaching designed to build self-esteem, increase cultural awareness and encourage the pursuit of postsecondary education. For Chambers, it's another opportunity to give back to the community where she got her start as a new immigrant three decades ago – and to the university that helped her discover her full potential, as she hopes to help today's young people discover theirs.

### Early Adopters

The desire to give back to UTSC is also shared by alumni who are just beginning their careers. For example, **Jagjot Singh**, who graduated with a BBA in 2006 and now works for Telus, participates in an alumni mentorship program called Partners in Leadership – a joint initiative by several UTSC departments that guides fourth-year students through the transition into working life. Recent alumnus **Adam Watson** agrees that it's never too soon to start giving back. A former president of the Scarborough Campus Students' Union, Watson discovered his entrepreneurial interest in property development and management while still at UTSC, where he oversaw completion of the Student Centre. As a major supporter of UTSC's Leadership Development Program (see page 9), Watson encourages current students to seek out the kind of leadership opportunities he feels were critical to his own success.



### Growing Support

The sense of momentum on campus is spreading through the wider UTSC community. The **University of Toronto Scarborough Alumni Association** saw **volunteer support rise by 44 percent** in 2009, and its board has a full slate of directors for the first time in several years. Alumni, current students and other partners work together on many initiatives – for example, using proceeds from the school's affinity MBNA MasterCard program to help fund a Book Bursary Fund.

The growing engagement of alumni and other partners is also evidenced by a string of successful recent events. "Spring Reunion 2009: A Taste of Home" (photo at lower right) experienced a 75 percent increase in attendance over previous years as alumni brought families and friends to the UTSC campus for a reunion with classmates.

At the spring Convocation, the keynote address was delivered by **David Onley**, Ontario's Lieutenant Governor. It was another welcome visit from a distinguished alumnus who regularly returns to campus to raise awareness about disability issues (photo at upper right). An inspiring role model for people of all abilities, the former broadcaster accepted his honorary doctorate with a characteristic plea for greater social equity and inclusiveness.

Autumn brought an event of a different flavour. "Food for Thought: Renaissance Spice" was hosted by Professor Rick Halpern, Dean and Vice-Principal (Academic), and Professor Daniel Bender, Canada Research Chair in Urban History – two UTSC food experts who are also first-class chefs (photo at center right). The pair entertained guests with fascinating explanations of the origins of the spice trade and culinary techniques of centuries past – all as a way of saying thanks to alumni and donors for their contributions to UTSC.

In these and many other initiatives, large and small, UTSC reaches out through our network of alumni and friends to engage them in campus life. They are responding with tangible support for everything from leadership development to lecture series to arts programs, enhancing the student experience and accelerating our evolution as a vibrant cultural hub in the community.



# Academic Momentum



## Message from the Dean & Vice-Principal (Academic)

Since assuming my new role at UTSC in July 2009, I've been struck more than ever by the remarkable energy on campus. A record influx of new faculty is matched by an impressive array of recently completed facilities – with much more to come. Programs in emerging fields are making exciting cross-disciplinary connections while remaining solidly grounded in core disciplines. We meet real-world needs with our trademark balance of creative problem solving and hands-on experiential learning. We also continue to pursue global opportunities while strengthening ties to the local community. Following months of intensive visioning as part of a new academic planning process, we are indeed moving ahead on all fronts.



Professor Rick Halpern  
Dean & Vice-Principal (Academic)

**The key to academic excellence is a great faculty.** In the past year we added 23 talented individuals to a dynamic team of professors and lecturers whose teaching skills regularly win accolades. Virtually all UTSC faculty members are active in research. Their groundbreaking work in an extraordinary range of fields earns extensive publications, significant funding and global recognition, including appointments to prestigious bodies such as the Royal Society of Canada and the American Association for the Advancement of Science. These research discoveries enhance the classroom experience at UTSC, benefiting our students enormously.

As UTSC's enrolment has risen to meet growing demand, our hiring has had to keep pace. About a third of current faculty members joined us in the past five years. The result is a marked **demographic shift**, as recent hires find areas of common interest with more seasoned colleagues and collaborate on creating new courses and programs. The fact that many younger faculty members are the products of multidisciplinary training further invigorates our academic development.

At UTSC we're committed to nurturing **intellectual clusters** among faculty members by investing in talent and resources, and by bringing in new faculty who can add complementary insights. As a result, there are areas of research where UTSC has a critical mass of expertise – in environmental science, for example, and also in neuroscience – that further raises our profile, attracts additional funding and enables us to develop truly innovative academic programs. New clusters in primatology (page 49), neuroimaging (page 43) and African studies (page 33) foster this trend.

**Interdisciplinary strength requires strong disciplines.** As our unique clusters of expertise evolve into new programs, we maintain a critical balance between fruitful cross-pollination and our core disciplinary strengths. For instance, our growing focus on Biological Chemistry (page 39) opens up promising pathways in everything from advanced medical research to environmental remediation – but the success of our students is built on a solid foundation of in-depth study in both biology and chemistry. >



Young people who have grown up in a world of increasingly complex interconnections are **looking beyond conventional dividing lines in their education and future careers.** In our new Global Asia Studies program, students are eager to examine this vitally important region from many perspectives – historical, political, economic, philosophical and cultural. Our faculty experts help them combine various angles to gain a holistic view while also ensuring they gain the skills required for rigorous study in specific disciplines. Even students in programs that are not specifically interdisciplinary are consciously broadening their disciplinary exposure through joint major or major/minor combinations.

**We expand the horizons of learning in response to real-world needs.** UTSC remains committed to ensuring that our academic options are connected to practical goals. In new programs ranging from Mental Health Studies to Biodiversity, Ecology and Evolution, we prepare students for career opportunities or future studies in fields where there is clear demand, equipping them with the knowledge and skills to meet challenges facing specific communities or the entire planet.

This commitment to relevance is exemplified by our advocacy of **experiential learning.** With more than 80 programs in co-operative education, we remain “the co-op campus” of the University of Toronto and a leader among universities in the GTA (see “Experience on the Job,” page 15). At the same time, we are exploring complementary approaches such as **service learning,** beginning with a pioneering program in community-based research launched this year in City Studies (page 48).

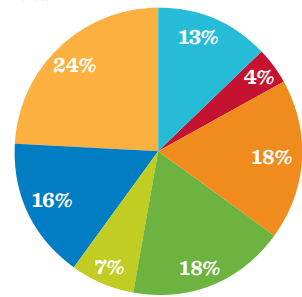
Another facet of UTSC’s experiential focus is **our partnership with Centennial College** in joint programs that emphasize practical learning within the conceptual framework provided by traditional academic study. Awarding both undergraduate degrees and college diplomas, five joint programs – Environmental Science and Technology, Paramedicine, Applied Microbiology, Journalism and New Media – continue to achieve a high level of success in launching graduates into rewarding careers.

**We are meeting our strategic goals by expanding graduate studies.** The success of our professional Master of Environmental Science degree, launched in 2006, has set the stage for a new PhD program that will be the first tri-campus doctorate administered at UTSC. The Psychology department is developing a Master’s and PhD in Clinical Psychology, as well as an MSc in Neuroimaging Technologies in collaboration with Biological Sciences. The latter department is also proposing an MSc in Conservation and Biodiversity. And Management will soon launch a Master’s in the Management of the Professional Firm.

**Program enrolment, 2008-09**

(may include students enrolled in more than one department)

- Biological Sciences
- Computer & Mathematical Sciences
- Humanities
- Management
- Physical & Environmental Sciences
- Psychology
- Social Sciences



**Programs and courses offered, 2008-09**

	Programs	Courses	Course enrolment*
Biological Sciences	10	94	8,641
Computer & Mathematical Sciences	39	85	7,300
Humanities	60	523	19,203
Management	37	148	19,716
Physical & Environmental Sciences	36	93	8,147
Psychology	11	92	12,198
Social Sciences	43	213	18,717
<b>Total</b>	<b>236</b>	<b>1,248</b>	

\* head count

**Programs with the highest enrolment, 2008-09**

**Specialist Programs**

- Management
- Management Co-op
- Psychology
- Human Biology
- English
- Cell and Molecular Biology
- Neuroscience
- Journalism
- Cellular Molecular Biology Co-op
- Political Science

**Double Majors**

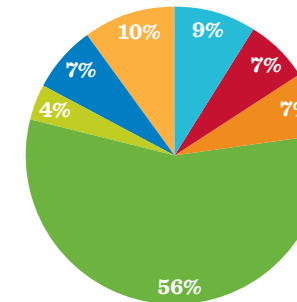
- Health Studies and Psychology
- Neuroscience and Psychology
- Integrative Biology and Psychology
- Integrative Biology and Health Studies
- Integrative Biology and Neuroscience
- Economics for Management and International Studies
- Biochemistry and Psychology
- English and History
- Biochemistry and Integrative Biology
- Health Studies and Neuroscience

**Program Majors**

- Psychology
- Health Studies
- English
- Integrative Biology
- Neuroscience
- Political Science
- Biochemistry
- Economics for Management
- History
- International Development Studies

**Co-op program enrolment, 2008-09**

- Biological Sciences
- Computer & Mathematical Sciences
- Humanities
- Management
- Physical & Environmental Sciences
- Psychology
- Social Sciences



Note: 17% of UTSC students were enrolled in a Co-op program

All of our proposed graduate programs build on specialized expertise at UTSC and **complement the full range of higher degrees offered** at the University of Toronto. In 2009 about three-quarters of UTSC faculty members supervised more than 400 graduate students across the university’s tri-campus system.

**UTSC’s internationalism has two facets: global reach and a diverse local community.** Our reputation for excellence opens doors for faculty and students to pursue initiatives overseas, whether it’s an environmental scientist and his graduate students conducting research in Costa Rica or an undergraduate doing relief work in Burkina Faso as part of our International Development Studies co-op program. By the same token, our profile abroad draws a growing number of international students to our campus – more than 10 percent of total enrolment in recent years. In China, our Green Path recruiting program attracted 150 students from top Chinese high schools in 2009. We hope to take this highly successful initiative to other parts of the world in the future.

Another dimension of our internationalism originates much closer to home, as students from the **vibrant multicultural communities of the eastern GTA** bring their unique perspectives into our classrooms. A discussion on immigration history, for example, or on sociological trends in the East Asian diaspora, gains immeasurably from the contributions of students who can share personal or family experiences. >

**Experience on the Job**

CO-OP PROGRAMS

Co-operative education at UTSC, now in its 35th year, is a cornerstone of our academic commitment to experiential learning. We helped pioneer the concept of extending an undergraduate course of study to include paid work terms in which students gain relevant, hands-on experience with employers in their chosen fields. Today we are the designated co-op campus for the University of Toronto and the leader among postsecondary institutions in the region.

Co-op offices in Management and Arts & Science provide the necessary infrastructure and recruiting connections, supported by a robust network of employers in the private and public sectors. From the Management student learning the ropes in a marketing department to the Biology specialist assisting in a government lab to the Psychology intern helping out in a world-class hospital, UTSC co-op students gain remarkable opportunities to apply, test and refine what they’ve learned. And our committed employer partners help ensure that those workplace lessons link directly back to the curriculum. In many cases, co-op assignments lead to offers of full-time positions upon graduation.

In 2009 the overall number of co-op placements was up slightly despite one of the most dramatic economic downturns in recent history. A decrease in opportunities from many sectors was offset by the program teams’ success in forging new employer partnerships, as well as students’ aggressive pursuit of available positions. New outreach initiatives in areas such as accounting, healthcare and the Ontario Public Service yielded postings from several dozen new employers.

Looking ahead, we expect renewed momentum in our co-op programs as the economic recovery continues, assisted by steadily growing interest from students and employers alike. Fully integrated into the planning of new academic programs, the co-op option is a key differentiator for UTSC and a huge part of our success in launching students into productive and rewarding careers.



**UTSC Co-op at a Glance**

- since 1975, the “co-op campus” of the University of Toronto
- heavy student demand, with entry averages among the highest at U of T
- 17% of UTSC students were enrolled in co-op programs in 2008-09
- 80+ distinct program streams
- 3,200+ active co-op employer partners
- \$45 million in salaries paid to students since 2004

**UTSC attracts students from all over the world**  
(as of 2009)

**NORTH AMERICA**  
Canada  
United States

**EUROPE**

- Bulgaria
- Finland
- France
- Germany
- Norway
- Portugal
- Switzerland
- Turkey
- Ukraine
- United Kingdom

**CENTRAL, EASTERN, SOUTHERN & WESTERN ASIA**

- Bangladesh
- China
- Hong Kong
- India
- Indonesia
- Iran
- Japan
- Jordan
- Kazakhstan
- Macau
- Malaysia
- Mongolia
- Northern Mariana Islands
- Oman
- Pakistan
- Philippines
- Singapore
- South Korea
- Sri Lanka
- Taiwan
- Thailand
- Uzbekistan
- Vietnam

**CARIBBEAN, CENTRAL & SOUTH AMERICA**

- Antigua & Barbuda
- Bahamas
- Barbados
- Brazil
- Cayman Islands
- Colombia
- Costa Rica
- Dominica
- Ecuador
- Guyana
- Honduras
- Jamaica
- Mexico
- Panama
- Trinidad & Tobago
- Uruguay

**AFRICA**

- Egypt
- Ethiopia
- Gambia
- Ghana
- Kenya
- Mauritius
- Mozambique
- Nigeria
- Rwanda
- South Africa
- Tanzania, United Republic of
- Uganda

**Two-Part Equation**

CENTRE FOR TEACHING & LEARNING

The Centre for Teaching and Learning (CTL) provides integrated support for both sides of the education process at UTSC. A valued academic resource for students and faculty, its innovative programming has provided a model for other institutions across Canada. The CTL is also unique in not being structured as an administrative department but rather as an academic unit led by a faculty member who understands first-hand the needs of its two constituencies.

“Usually, teaching and learning support are separated,” explains the CTL’s current director, Biology Professor Clare Hasenkampf. “We championed the combined approach because we believe it promotes closer collaboration and cohesion between students and faculty.”

CTL faculty have cross-appointments with other academic departments, where they teach courses and, in several cases, supervise undergraduate programs. They combine a wealth of multidisciplinary experience with in-depth knowledge of pedagogical research in advising both parties in the classroom experience. The same CTL consultant might, for example, advise a faculty member in designing an essay project and then help a group of students complete the assignment.

The Centre helps students develop the full range of essential skills, including written communications, quantitative reasoning and conversational English for international students. On the teaching side, staff experts offer their colleagues guidance on everything from syllabus design to class management. Recognized by prestigious national and international awards, the CTL is a showcase for innovative academic leadership and the embodiment of UTSC’s constant efforts to set new standards of excellence.



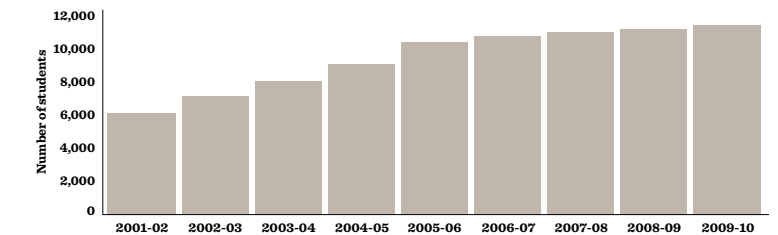
**The ultimate test of our academic strategy is student success.** Of the 1,276 students who graduated in 2008-09 from UTSC, 22 percent graduated with distinction and many earned further recognition and awards, including several exemplary individuals profiled in this *Annual Review*. Some are pursuing higher degrees at the University of Toronto; others are in graduate studies at renowned international institutions such as Oxford, Harvard and the Massachusetts Institute of Technology.

Our pride in the achievements of UTSC students is matched by a deep sense of responsibility. Rapid growth in enrolment has brought a corresponding increase in teaching load and the challenges of maintaining acceptable student-faculty ratios. As discussed elsewhere in this review, the **new Instructional Centre and future expansion of the North Campus** will bring much-needed classrooms, teaching labs, study spaces and other resources aimed at providing the best possible learning experiences and ensuring our students’ continued success.

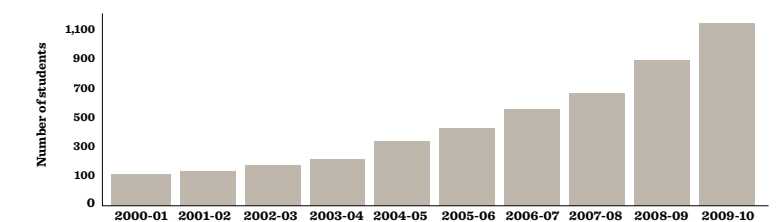
**The various developments I have highlighted point to the value of having a flexible, collaborative strategic planning process in motion across all of our departments.** In the following pages, we review recent academic achievements while highlighting future milestones that are already in view as our ambitious plans unfold. These are only a few of the stories we might tell in documenting our dedication to innovative thinking and making new connections – across campus and around the globe. I am grateful for this opportunity to show how our faculty and students are moving ahead academically and to share some of the remarkable energy that is propelling UTSC toward even greater things to come.

**Professor Rick Halpern**  
Bissell-Heyd Chair of American Studies  
Dean & Vice-Principal (Academic)

**Enrolment growth**



**International enrolment growth**



# Research Advances



Message from the Vice-Principal, Research

The pace of discovery at UTSC continues to accelerate. Since starting my new role in August 2009, I've seen first-hand the extraordinary research momentum on our campus. A dramatic rise in student enrolment has been matched by an influx of talented faculty members who are extending the horizons of their diverse fields of inquiry. They join a group of established investigators whose innovative breakthroughs and illuminating scholarship have earned international respect. Together they form a research enterprise of exceptional breadth and depth – committed to strong disciplines, cultivating dynamic interdisciplinary collaboration, expanding the scope of graduate studies and, above all, focused on relevant work that yields meaningful outcomes.



Professor Malcolm Campbell  
Vice-Principal, Research

**Having set a high standard of excellence across a wide range of disciplines, we're now focusing on where related research clusters can potentially interact and propel each other in new directions.**

Here the relatively compact scale of UTSC works to our advantage. When so many of our academic departments are by nature multidisciplinary, the door is already open for exploring *interdisciplinary* opportunities. As we move forward, we'll be building on crosstalk within departments and disciplines, identifying and nurturing points of commonality where we have natural synergies and the critical mass required for full-fledged new initiatives. Even at this nascent stage, the possibilities are immediately obvious – and very exciting.

One thematic thread that runs through many departments – and that holds a high degree of interest for students and the wider community – is what we can broadly label *interactions in the environment*. A remarkable number of UTSC investigators study, for example, how humans shape their environmental conditions and are in turn shaped by them. Other researchers look at the complex interplay between organisms and their environment, and how interactions between

organisms take place in an environmental context. Still others examine the same kinds of interactions at the cellular and the molecular level, zeroing in on the microscopic building blocks of highly complex relationships and events.

Our strengths in the exploration of environmental interactions are exemplified by a number of groups in Physical and Environmental Sciences – the natural hub for this type of activity. For example, one group examines the fate and behaviour of persistent organic pollutants in a variety of ecosystems. In a neighbouring lab, other teams use nuclear magnetic resonance (NMR) technology to study molecular soil contaminants. Out in the field, a specialist in fluid mechanics studies the impact of effluents on aquatic organisms. This, of course, overlaps with Biological Sciences, which is also home to pioneering work on, for example, environmental impacts on the world's critical food crops. Other biologists conduct molecular-level analyses of various stressors – particularly environmental ones – on the human brain. And nearby, in the Psychology department, sophisticated neuro-imaging technology helps reveal the influence of

Message from the Vice-Principal, Research

genetics and family behaviour – another kind of environmental factor – in language development.

Additional examples abound, mapping out a clear direction for the future. There are many streams of interrelated research at UTSC that converge around this unifying theme of environmental interaction on every scale, from the effects of a toxin on a single cell to the impact of large groups of humans on other organisms – including other humans – and on the entire planet. This is a promising area of interdisciplinary cross-pollination that we're actively exploring.

**The stimulating intellectual climate at UTSC is supported by major enhancements and additions to the physical facilities required for ground-breaking research.** In the current academic year, we've invested nearly \$1 million in the renovation of more than 20 labs for researchers and graduate students in chemistry, biology, neuroscience and other disciplines. This is just one phase in a multi-year commitment to upgrade research spaces and equipment across the campus, transforming our existing facilities from within. The new Instructional Centre, now under construction, has advanced computer hardware and data modelling labs, as well as office and meeting space for researchers and graduate students in several disciplines. It's the first step in a bold expansion plan for the North Campus (see page 6) that also provides for buildings that will be fully focused on research.

This investment in infrastructure not only enhances the quality of ongoing research but also helps attract the top talent – among both faculty and students – that is essential to sustain our momentum as a centre of innovation. **The improvements now under way will also bolster our researchers' continued success** in securing financial support for their work. With eight federally funded Canada Research Chairs (a high number for an institution of our size), along with approximately \$7 million in annual funding from a wide range of sources, we have a solid foundation in place. Our highly visible commitment to building on that foundation will be a catalyst for new funding and partnership opportunities going forward.

As vital as the evolution of our physical campus may be, however, the decisive factor driving our future success is something far more fundamental: the quality of our faculty. At UTSC, we don't impose a defined research agenda from the top down. Our strategy is simpler and more effective: **We identify and recruit the best people with the best ideas**, and then we help them explore those ideas in productive investigations. In our experience, quality research always begins with a grassroots initiative that steadily gains traction. And no one is better equipped to explain the ultimate societal benefits – whether to potential collaborators or major funding bodies – than the talented individuals whose passion and commitment will ensure its success.

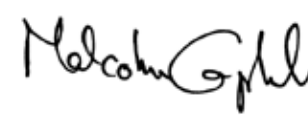
**Whether they realize it or not, all students at UTSC are engaged in research.** For those pursuing studies at the graduate level, the research enterprise is an everyday reality as they work alongside faculty investigators. Since 2003 the number of graduate students directly affiliated with UTSC has increased nearly fivefold to 192. Such opportunities will continue to multiply significantly with the introduction of a range of new graduate degree programs (discussed in the departmental sections of this *Annual Review*) over the next few years. At the same time, the number of upper-year undergraduates who can gain hands-on research experience will continue to grow – particularly in Physical and Environmental Sciences, Psychology and Biological Sciences – as UTSC evolves into a more conspicuous centre of graduate studies within the U of T tri-campus system.

At a more fundamental level, **the research perspective informs every aspect of the learning experience at UTSC.** It's present in the superior teaching of faculty members who illuminate lectures with their latest findings and evolving ideas. Another key research tool comes into play when students begin, typically by second year, to critically evaluate the literature in a

particular field. On completing their undergraduate degrees, they should have a suite of tools with which they can test, analyze and draw conclusions about the world – in other words, apply the research perspective to all areas of their lives.

Making that perspective more explicit – which begins with shifting students from individual to team-based research endeavours – is one of the broader strategic goals we've mapped out as I seek colleagues' help in tackling this challenging and exciting new role. I'm confident that we'll succeed – in this and the many other initiatives outlined here – for the very simple reason that UTSC is a place where good things happen. Indeed, they're happening right now. The proactive, forward-looking attitude that prevails on this campus is unparalleled in my experience.

With our gifted faculty, engaged students and an entire community supporting us as we move ahead, research at UTSC will continue to advance on all fronts.



Professor Malcolm Campbell  
Vice-Principal, Research

Supervision of graduate students and post-doctoral fellows, 2008-09

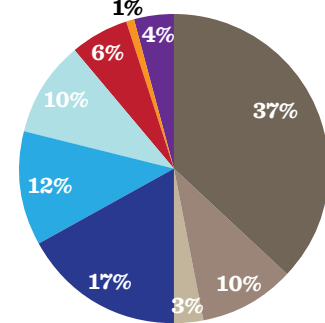
	Graduate students (supervised)	Post-doctoral fellows
Biological Sciences	64	14
Computer & Mathematical Sciences	56	9
Humanities	82	-
Management	16	2
Physical & Environmental Sciences	61	10
Psychology	38	2
Social Sciences	86	3
<b>Total</b>	<b>403</b>	<b>40</b>

Research grants and contracts, 2008-09

	Value	Number
Biological Sciences	\$2,718,763	50
Computer & Mathematical Sciences	696,113	21
Humanities	407,257	33
Management	264,921	18
Physical & Environmental Sciences	1,173,977	39
Psychology	891,919	32
Social Sciences	681,371	32
<b>Total</b>	<b>\$6,834,321</b>	<b>225</b>

Total research funding by source, 2008-09

- NSERC\*
- SSHRC\*
- CIHR\*
- CRC
- Federal Government
- Provincial Government
- International
- Corporate
- Other



\*Tri-Council funders

Research publications, 2008-09

	Papers in refereed journals	Books	Book chapters
Biological Sciences	38	1	5
Computer & Mathematical Sciences	60	-	1
Humanities	51	10	29
Management	43	2	9
Physical & Environmental Sciences	96	3	8
Psychology	55	2	16
Social Sciences	44	6	24
<b>Total</b>	<b>387</b>	<b>24</b>	<b>92</b>

Conferences & Presentations

(2008-2009)



# Biological Sciences

At a Glance

## DISCIPLINES

Biochemistry  
Cell and Molecular Biology  
Ecology and Evolutionary Biology  
Neuroscience and Behaviour  
Physiology  
Plant Biology

Biological Sciences at UTSC investigate all aspects of the natural world, from the inner life of cells to the pathology of human disease to the interdependencies of vast ecosystems. We constantly tailor our curriculum to keep pace with new discoveries and technologies. Our overall goal is to help students achieve their best as they carry on to related careers or further studies in medicine and graduate programs. In our teaching and research, the common thread is a concern for the Earth's diverse forms of life, in nearby communities or on the other side of the planet.




In May 2009 the **Canadian Society of Zoologists** held its annual scientific meeting at UTSC (photo above). Attracting some 350 delegates from across Canada and abroad, the conference was the best attended in the organization's long history and the largest event of its kind ever hosted on our campus. Professor Stephen Reid of the Biological Sciences department planned and organized the event, working closely with colleagues across UTSC. "The vast majority of delegates had never visited our campus before," Reid recalls. "They were extremely impressed by the quality of our facilities and services and by the overall environment. I think this positive experience will provide a model for similar events down the road."



## Devoted to Discovery

Current research within the department covers the full spectrum of biological inquiry, from the examination of life's building blocks at the molecular level to studies illuminating the causes of human disease and threats to vital food sources. With the recent addition of a **Physiology** specialty, we now have six clusters that build on the unique strengths of UTSC faculty while facilitating the kind of collaborative efforts that are essential in contemporary scientific research. Across all biology-related disciplines, our commitment to exemplary scholarship is reflected in a steady stream of publications in leading national and international journals.

**Neuroscience** remains an area of particular focus, as its various subdisciplines play an increasingly important role in advancing medical treatment and care, particularly for North America's aging population. In the past year a research cluster focusing on **Integrative Behaviour and Neuroscience** moved into newly outfitted labs in the Science Wing. Led by Professor Maydianne Andrade, who holds a Canada Research Chair, six principal investigators guide well-funded teams studying various functional and evolutionary aspects of animal behaviour. Also in 2009, a related cluster at the **Centre for the Neurobiology of Stress** received significant additional funding (see "Stress on the Brain," page 25).



The **Australian redback spider** and its reproductive behaviours are the focus of research by UTSC Biological Sciences Professor Maydianne Andrade.

**RESEARCH STRENGTHS INCLUDE**  
 Biological Dynamics of Environmental Change  
 Cells and Infection  
 Integrative Behaviour and Neuroscience  
 Neurobiology of Stress  
 Plant Cellular and Molecular Processes  
 Physiology

## Dimensions of Learning

The Biological Sciences department offers **undergraduate** specialist programs in Cell and Molecular Biology, Biodiversity, Ecology and Evolution, Human Biology and Integrative Biology, as well as a major and a minor in Biology. In addition, we've developed an undergraduate program in Neuroscience in partnership with the Psychology department. We also offer two joint programs with Centennial College: career-bound students in Paramedicine and Applied Microbiology graduate after four years with both college diplomas and university degrees.

We add an **experiential dimension** to undergraduate studies through a variety of avenues. A co-op program in Cell and Molecular Biology enables talented students to explore future career possibilities through placements with pharmaceutical firms, research laboratories and government agencies. In 2009 the Natural Sciences and Engineering Research Council of Canada (NSERC) again funded summer jobs for several students, while many more were hired directly as assistants by faculty researchers. Undergraduates can also gain experience via work-study programs during the academic year, and through initiatives such as Science Engagement, which invites top UTSC students to share their passion for learning in high school classrooms around the community. In addition, the department typically provides a fourth-year research project course for about 50 students annually.

At the **graduate** level, our faculty provide on-site supervision for more than 50 MSc and PhD students enrolled in tri-campus graduate programs. The Biological Sciences department excels in graduate and postdoctoral training, offering high-quality facilities, well-funded research programs and the University of Toronto's acclaimed network of resources and expertise.



### > FACULTY PROFILE

## Independent Thinkers

When lecturer **Aarathi Ashok** joined the Biological Sciences department in 2009, she set to work creating a course on the pathobiology of human disease. An introduction to current research on viral infections, the course also reflects recent events. "Students in the GTA have seen the torment of pathogens such as SARS and H1N1," says Ashok (pictured below with UTSC students), "so it's important for them to understand the molecular details of these infections while also appreciating their impact on global public health. I believe it's critical for biologists to stay abreast of research on emerging human pathogens, so this course will be designed to evolve with the field."

Another key aspect of Ashok's mandate is to make fourth-year students' independent research program a more well-rounded experience. In addition to their lab work, students will now spend time developing written and oral presentation skills; they'll also discuss issues such as research ethics. "The goal is to supplement undergraduates' research experience with the skills that are required of budding scientists," Ashok explains. "And as they address important research questions, it also expands my own scientific horizons."



**FACULTY & STUDENTS**  
 Professor Greg Vanlerberghe, Chair  
 4 Canada Research Chairs  
 19 faculty members  
 1,837 undergraduate students  
 64 graduate students (supervised)  
 14 post-doctoral fellows

## Degree of Interest

Planning is well under way for a new undergraduate program leading to a **Biodiversity, Ecology and Evolution Specialist** degree – with the apt acronym BEES. Slated for the fall of 2010, the program develops students' understanding of how ecology and evolution shape the morphology, physiology and behaviour of individual organisms, as well as the nature of entire ecosystems. Challenges such as habitat destruction, biological invasions and climate change will be examined within a global framework. Among those launching the program is new faculty member **Professor Marc Cadotte**, an ecologist who studies extinction, invasions and other factors driving diversity changes in plant communities.

The new BEES degree will prepare graduates for roles in government, NGOs and consulting firms, as well as business or law with an environmental focus. The program can also lead to graduate studies – including a **Professional Master's degree in Conservation and Biodiversity** that our department has proposed to complement the Master of Environmental Science degree.

## Recognizing Students

The many dedicated students in Biological Sciences are ably represented by **Edward Eng** (pictured below), winner of the 2009 PhD Graduate Student Research Award for his academic achievements and contributions to campus life. Having earned BSc and MSc degrees at UTSC, he is completing his doctoral research on macrophages – white blood cells that are crucial to the body's defense against infection. Outside the lab, Eng founded a chapter of the national **Let's Talk Science** program, volunteering to promote science in local schools and encouraging fellow students to follow suit. Recognized by his professors as a natural teacher, Eng has treasured his 10 years at UTSC: "I feel like I'm part of a community here, which is why I've put a lot of time and energy into different activities."



### > RESEARCH SHOWCASE

## Stress on the Brain

The aging of Canada's population over the next decade will bring a steady rise in the incidence of heart attacks and strokes, along with Alzheimer's, Parkinson's and other neurodegenerative diseases. Critical research on the brain's role in these conditions got an important boost this past year when the **Centre for the Neurobiology of Stress (CNS)** secured additional infrastructure support from the Canada Foundation for Innovation. With a matching grant from the Ontario Research Fund, the new funding totals more than \$4 million.

The CNS was founded in 2001 by **Professor Ian Brown**, a molecular biologist who holds a Canada Research Chair in the neurobiology of stress. The centre is home to a cluster of UTSC researchers who bridge the molecular, cellular and physiological aspects of neuroscience. Virtually all of the new funding will go to technology that aids in examining the nervous system's response to biological stress. The researchers also explore new therapeutic approaches – often in partnership with Canadian companies – for treating cerebrovascular and neurodegenerative disorders.

Among the beneficiaries is **Professor Michelle Aarts** (shown below with Professor Ian Brown), a cell and systems biologist and Canada Research Chair whose team studies the impact of strokes at the level of single neurons. "Our research targets the mechanisms of neuronal death following a stroke injury," explains Aarts. "The underlying causes of cell death and the progression of the brain lesion are still poorly understood. We hope to gain insights into which signal pathways influence cell survival."

While Aarts and her colleagues work in a highly technical field with a language all its own, the reality of the afflictions they study is never far away. "Stroke is a devastating disease with a severe impact on quality of life for patients and their families. It's also the third leading cause of morbidity and mortality in Canada and costs the healthcare system almost \$3 billion annually," she notes. "Our aim is to understand how cells communicate, recover from injury or die, so **we can develop the first effective treatments** to protect the brain from damage and speed functional recovery."



# Computer & Mathematical Sciences

DISCIPLINES  
Computer Science  
Mathematics  
Statistics

At a Glance

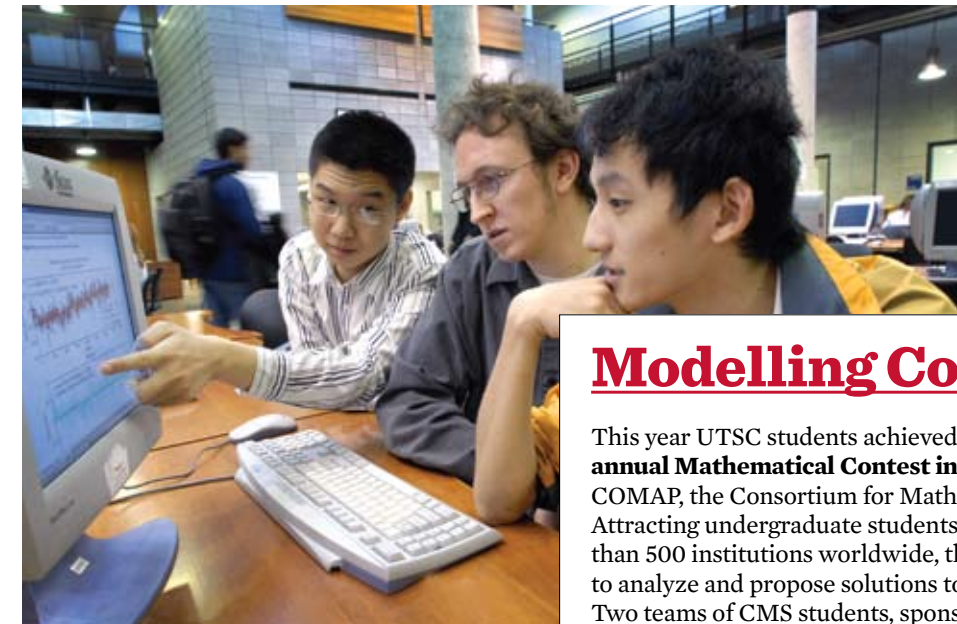
Computer and Mathematical Sciences (CMS) is the UTSC base for three core disciplines that underlie all advances in science and technology: Mathematics, Statistics and Computer Science. Whether students are specializing in CMS programs or taking courses in support of other degrees, they benefit from the guidance of faculty members who are highly respected for their own research. From landmark proofs in quantum physics to evaluations of search engine effectiveness, our researchers have helped build the University of Toronto's global reputation as a leader in these fundamental and exciting fields.

## Original Thinking

In Mathematics, the CMS department is the de facto hub for tri-campus research in probabilistic combinatorics, whose applications range from the managing of traffic on communications networks to the efficient division of tasks among workers. Mathematics faculty members also teach and study number theory, algebra, geometry, topology and applied mathematics. In Statistics, important recent research has focused on Bayesian methods for analyzing probability. Computer Science faculty explore a wide range of subjects, including mathematical foundations of the field, computer systems, database and knowledge management, artificial intelligence and scientific computing.

All tenure-stream CMS faculty members are active in graduate student supervision as well as their own research initiatives. Responsible for bringing close to \$1 million in funding to UTSC each year, the department's researchers published articles in prestigious refereed journals and conference proceedings in 2008-09.

The diverse range of research areas explored by Computer & Mathematical Sciences faculty includes number theory, data security and web search analysis.

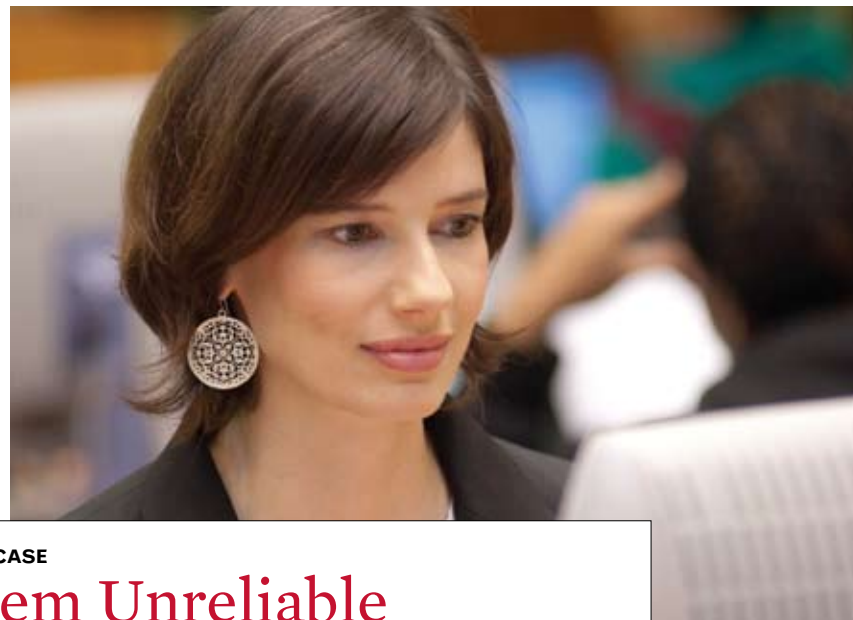


## Modelling Competition

This year UTSC students achieved their best showing yet in the **annual Mathematical Contest in Modelling** sponsored by COMAP, the Consortium for Mathematics and its Applications. Attracting undergraduate students and faculty advisors from more than 500 institutions worldwide, the competition challenges teams to analyze and propose solutions to open-ended practical problems. Two teams of CMS students, sponsored by Mathematics professor Paul Selick, achieved the "Meritorious" designation. Among those sharing the honours were UTSC teammates (photo, left to right) Fan Zhang, David Lehman and Marcel Bao.

RESEARCH STRENGTHS

- Mathematics
- Algebra
- Applied Mathematics
- Combinatorics
- Geometry
- Number Theory
- Topology
- Computer Science
- Artificial Intelligence
- Computer Systems
- Database and Knowledge Management
- Scientific Computing
- Theoretical Computer Science
- Statistics
- Bayesian Statistics
- Probability



## Adding Faculty

Some 500 students are enrolled in CMS specialist and major programs. In addition, each year some 7,000 undergraduates take courses within our department as part of their degree requirements in a range of fields. We remain committed to meeting this growing demand by developing well-crafted courses delivered by teachers with deep credentials in their areas of study.

To that end, CMS faculty added two new members in 2009. Lecturer **Mike Moras** shares his love of problem solving with UTSC students in statistics courses. His research explores questions of mathematical probability, focusing specifically on the measurement of phenomena such as Brownian motion. Also teaching courses in statistics and statistical analysis is **Mahinda Samarakoon**, who studies limit theory in mathematics for heavy-tailed stochastic processes, illuminating the limitations of certain mathematical models in handling financial and econometric variables.

> RESEARCH SHOWCASE

## Call Them Unreliable

"Just think about all of your personal information that's stored on digital media," says UTSC Computer Science Professor **Bianca Schroeder** (pictured above). "Your family photos and vacation videos, your emails, your bank statements. Unreliable storage systems can lead to the loss of this valuable information. The goal of my research is to find ways to safely store it despite the fact that individual components may fail."

Schroeder joined the CMS faculty in 2008 after completing her PhD and two years of post-doctoral studies at Carnegie Mellon University in Pittsburgh. She has already won wide recognition for her work on system reliability, both in academic publications – where she has received numerous best-paper awards – and on news sites such as Computerworld, PCWorld and eWEEK.

"I was amazed to find how little we know about why systems fail," Schroeder says, "even though reliability has always been a key concern in designing them. As systems keep growing in size, that concern becomes even greater. Individual clusters in data centres now routinely include thousands of nodes.

"Google, for example, is estimated to have several hundred thousand servers. That means even if failures of individual nodes are relatively rare – with a probability of, say, five percent a year – for many large-scale systems, there will be a node outage almost every day."

In getting at the root causes of system failures, Schroeder was not content to rely on vendors' assurances or the findings of lab experiments. She wanted to conduct field research on large-scale systems, producing insights that would help make future technology more reliable. "This is very sensitive information that companies don't like to share," she explains. "Nobody likes to talk about things that go wrong. But with a lot of persistence I've been able to convince a number of organizations to let me collect and analyze data on their systems."

Among those that have opened their data centre doors are the Los Alamos National Lab and companies such as Google and Network Appliances. The findings so far have been eye-opening for Schroeder: "The failure behaviour of systems in the real world looks very different from what we've assumed for decades. We've found that for both hard drives and memory DIMMs [dual inline memory modules] – the most frequently replaced components in today's systems – failure rates in the field are orders of magnitude higher than the numbers previously quoted in research or by vendors."

The good news is that by carefully analyzing failure data, Schroeder and her research team, in collaboration with engineers at Google, have developed a method for protecting against system crashes due to errors in memory circuits. Google is considering plans to deploy the solution across its systems in the coming year. "That's the exciting thing about this area of research," Schroeder concludes. "There's an opportunity to really make an impact."

FACULTY & STUDENTS

- Professor Vassos Hadzilacos, Chair
- 1 Canada Research Chair
- 31 faculty members
- 534 undergraduate students
- 56 graduate students (supervised)
- 9 post-doctoral fellows



## More Program Options

To better meet the needs of UTSC students pursuing interdisciplinary studies, in 2009 CMS introduced two minor programs in Computer Science and Statistics, adding to our existing array of four specialist and three major programs. All CMS specialist and major programs include a co-op option with work placements in which students apply their skills and explore future career possibilities.

We have also collaborated with other UTSC departments to develop a number of interdisciplinary programs, including Management and Information Technology, Natural Sciences and Physical & Mathematical Sciences. In total, CMS faculty each year offer about 80 courses and 90 lecture sections to students across the campus.

> RESEARCH SHOWCASE

## Keeping Up With the Bloggers

When UTSC Computer Science Professor **Nikos Koudas** (photo below) looked at how people were connecting via the Web, he saw the same phenomenon that everyone sees: countless individuals around the planet simultaneously exchanging information, sharing ideas and voicing opinions. The difference for Koudas was that he wanted to bring some order to that chaos of idiosyncratic voices and disparate points of view. Drawing on his expertise in data management, web search and data analysis and mining, he began researching new techniques for warehousing and analyzing text data from across the Web.

The result was BlogScope, an analysis and visualization tool capable of automatically tracking some 40 million blogs containing more than 1 billion posts – and counting. "BlogScope helps users discover interesting information from these millions of blogs," Koudas explains. "The system has a set of unique features for analyzing vast amounts of text-based content. You can plot popularity curves showing the interest level in a particular topic over time and identifying what we call 'information bursts' along the curve. You can also conduct searches by keyword or related term, as well as geographically."

Although initially focused on the blogosphere, the new system can easily be extended to collect and analyze any streaming text source. And with the explosion in social networking, a tool that can help find meaningful patterns in that vast chorus of voices clearly has a strong appeal for marketing-based companies and other organizations trying to understand what their target audiences are thinking and talking about.

Recognizing a promising opportunity, Koudas has channeled his research into a new commercial venture – a social media analytics company called Sysomos. Currently on a sabbatical from UTSC, he has secured start-up financing from Ontario Centres of Excellence and a venture capital firm, and is working with his former graduate student Nilesch Bansal to launch the new business. By giving customers the ability to analyze user-posted content from personal blogs as well as Facebook, Twitter and other social media channels, Sysomos can help better define prevailing opinion around a product, brand, public figure or event. Unlike other systems that simply track how frequently a topic is mentioned, Sysomos can dig deeper, cross-referencing geographical and demographic data (age, gender, region or employment sector) to better understand who is saying what – and the nuances of sentiment that differentiate them.

"We provide businesses, brands and agencies with the kind of real-time insight they haven't been able to get before," says Koudas. "We help them see not only what's happening but where it's happening, what it means and who's driving the most important or relevant conversations." Now fully launched with offices in downtown Toronto and a growing list of high-profile clients, Sysomos represents a perfect example of advanced research connecting with real-world needs – and producing tangible results in the community in the form of green jobs and economic opportunities.





# Humanities



A hand-carved mask from Ghana is one of many artifacts collected by Professor Stephen Rockel, a specialist in African history who also supervises UTSC's new African Studies program.

At a Glance

## DISCIPLINES

African Studies  
Classical Studies  
English  
French  
Global Asia Studies  
History  
Intersections, Exchanges, Encounters in the Humanities (IEE)  
Journalism  
Languages  
Linguistics  
Media Studies  
New Media Studies  
Philosophy  
Religion  
Visual and Performing Arts:  
Art History, Arts Management, Drama, Music and Studio  
Women's and Gender Studies

The humanities examine culture in its various expressions – social, political, philosophical, religious, aesthetic – finding meaningful parallels and striking contrasts among people, places and entire eras. UTSC's Humanities department encourages in-depth exploration of traditional fields while recognizing where the lines between disciplines start to blur or disappear entirely. Our faculty experts bring new angles of inquiry into the classroom, inspiring students to look beyond old boundaries as they extend the humanist passion for making connections right around the globe.

## Crossing Borders

The mandate of UTSC Humanities is to invigorate the classic disciplines through imaginative research and stimulating classroom experiences. At the same time, **we build on our core strengths to create exciting multidisciplinary programs** that reflect the intellectual curiosity of faculty and students alike. The cultural diversity of our campus only magnifies the effect: humanistic studies flourish in an environment where everyone understands the value of crossing borders, both geographically and intellectually.

In **Women's and Gender Studies**, for example, students consider gender roles in society, history, philosophy and religion; in relation to race, class, politics and sexuality; in the family dynamic and international development; and in language, literature and the arts. In doing so, they're guided by experts in everything from anthropology to psycholinguistics, philosophy to the performing arts. And so it goes across the spectrum of multidisciplinary study, whether students are bridging creativity and commerce in Arts Management or exploring cultural convergences in the newly launched program **Intersections, Exchanges, Encounters in the Humanities (IEE)**.

The same cross-disciplinary impulse drives two degree-diploma programs offered jointly with Centennial College – New Media and Journalism – as well as the new degree program in Media Studies. Even our **language studies** reflect the needs of a dynamic immigrant community in a rapidly evolving world, with a course list that includes Arabic, French, Hindi, Japanese, Latin, Mandarin, Sanskrit, Spanish and Tamil.

Our ultimate goal in Humanities is to help students become more insightful global citizens, guided by acclaimed faculty who travel around the world conducting research, creating art and sharing their expertise. As one multi-faceted department on a relatively young campus, we can adapt quickly with changing times. We explore disciplines in depth while seeing how they can support and inspire one another. Above all, **we give students the analytical and communications skills they need to embrace complex challenges** and become productive, engaged contributors to a diverse global community.



RESEARCH STRENGTHS

Faculty members study every area of the humanities, from the Buddhist conception of time to American labour history, from the depiction of violence in modern Chinese art to the language patterns of Latin American migrant communities in Israel.

## Centre Stage

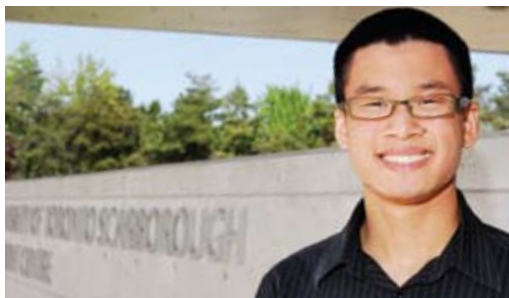
The Humanities department plays an important part in reinforcing UTSC's status as the **cultural hub for the eastern GTA**. Our fully staffed Arts and Events Programming Office produces more than 100 events annually, ranging from musical performances and literary readings to stage productions in the campus theatre. The department is also responsible for the Doris McCarthy Gallery, which mounts a continuing series of exhibitions and also houses a permanent collection of works by McCarthy and other contemporary Canadian artists.

All of these activities have specific curricular connections for students but at the same time are designed to appeal to a **broad community audience** – pointing the way toward the creation, in the not too distant future, of a dedicated performing arts and culture centre on campus.

## Students Say It All

In 2009, **UTSC Philosophy student Mark Lee** (pictured below) earned the prestigious John Black Aird Scholarship, awarded annually to the top graduating student at U of T, as well as the Governor General's Silver Medal recognizing the individual with the highest marks of all Arts graduates. With a near-perfect cumulative grade point average of 3.999, Lee considered offers from many top U.S. graduate schools before settling on Rutgers.

The Scarborough native, who won many other undergraduate honours, looks back with appreciation on his years at UTSC and the professors who guided him: "I was lucky to have chosen the Philosophy program – the faculty are amazing." As for his future career, Lee is appropriately philosophical. "The questions that are really important for me, I would be asking on my own: How can we live a good life? What are our responsibilities to the very needy? The longer I've stayed in this field, the more I've come to realize that I can do a lot of good in the world by helping to make ethical progress."



> GLOBAL ASIA STUDIES

## Representing Women

A Korean newspaper ad from the 1920s depicts "modern" women at a café or bar, fashionably dressed and smoking cigarettes. The product being promoted: a treatment for venereal disease. Such cultural artifacts, and the animated discussions they spark about gender constructs or images, are typical classroom fare for **Professor Jin-Kyung Park** (photo above), a new Humanities faculty member who teaches in both Women's Studies and the new Global Asia Studies program.

Responding to world events as well as keen interest from the local community, **Global Asia Studies** is a unique undergraduate program that explores the growing economic, political and cultural influence of East and South Asia. Cutting across geographic boundaries, the program blends a range of multidisciplinary perspectives – including history, religion, law, media, art, languages and literature – to illuminate the region's current social realities, along with those of the Asian diaspora. This exciting addition to Humanities at UTSC promotes the deeper understanding of Asia that more and more students see as vital to their futures, while also perhaps making a connection to their pasts.

Professor Park studies the history around **issues of gender and the status of women** in Korea and East Asia generally, with a specific focus on the socio-cultural aspects of medicine, science and technology. She completed two degrees in her native Korea before moving to the U.S., where she earned a PhD from the University of Illinois at Urbana-Champaign. Currently completing a cultural history of gynecological disease in Korea under Japanese colonial rule (1910–1945), Park will next be examining the history of reproductive technologies and infertility in modern Korea.

At the same time, she'll continue inspiring those lively class discussions: "Students on **the multicultural and multiethnic UTSC campus** have a deep interest in the historical formations of gender identity, issues of equity in the colonial past, and cultural representations of women in Asian societies and the diaspora – including in Canada. It's a pleasure to play a role in meeting their intellectual needs while capitalizing on my areas of expertise."

FACULTY & STUDENTS

Professor William Bowen, Chair  
64 faculty members  
1 Canada Research Chair  
2,536 undergraduate students  
82 graduate students (supervised)

> RESEARCH & TEACHING

## Images of China

How do depictions of violence in early-20th-century Chinese art relate to public perceptions of democracy – a century ago and in China today? These are the kinds of questions posed by **Professor Yi Gu** (pictured at right), the newest member of UTSC's Visual and Performing Arts faculty, in her research. An expert on modern Asian art and visual culture, Gu augmented university studies in her native China with a PhD from Brown, where she specialized in the history of perception, cultural translation and art replication technologies. Her latest project – "AssassiNation: Photography, Political Violence and the 1911 Revolution" – examines how new technologies mediated public opinion on violence and justice during China's transition from an imperial dynasty to a republic.

"China is no longer a remote presence," says Gu, who blends original research with her classroom teaching in Art History as well as in the Humanities department's new Global Asia Studies program. "**Many students have a strong interest in Asian art and visual culture** even before they enroll in my classes. My job is to nurture that curiosity and help them understand that the analytical skills they learn are also applicable to their immediate surroundings. The study of Chinese art encourages students to analyze all art objects and their context from a cross-cultural perspective."



## AFRICAN CONNECTIONS

As Humanities faculty members discover areas of common interest, both with immediate colleagues and in other departments, they form intellectual clusters to promote multidisciplinary teaching and research. One such cluster has coalesced into a new program in **African Studies**, which is based in Humanities but reaches into the Social Sciences as well. Bringing together diverse perspectives on Africa and African diasporas, the program covers a wide range of topics, including the continent's varied cultures and worldviews, the histories of colonialism and recent conflicts, the social ravages of the development crisis and AIDS, and the worldwide influence of African arts and literatures.

Directing the new program is **Professor Stephen Rockel**, a specialist in the social history of sub-Saharan Africa who draws on anthropology, political science and sociology in studying the impact of Africa's rapid integration into the global economy, as well as its legacy of imperial and post-colonial wars. In 2009 Rockel received the Joel Gregory Prize from the Canadian Association of African Studies for his first book, *Carriers of Culture: Labor on the Road in Nineteenth-Century East Africa*, described as "a story of African initiative and adaptation to modernity, and a contribution to the history of Tanzania and East Africa."

Joining Rockel in establishing African Studies are three colleagues from Humanities: English professors Neil ten Kortenaar and Maria Assif, who specialize in African literatures, and, from the French program, Juvenal Ndayiragije, who studies African linguistics. Social Sciences Professor Michael Lambek, a Canada Research Chair in Anthropology, also offers key program courses. Through their varied research interests, the program's leaders inspire students to pursue in-depth investigations of African political, social, economic and cultural issues – augmented in some cases by students' own life experiences.

# Management

At a Glance

## DISCIPLINES

Accounting  
Business Economics  
Finance  
International Business  
Management Science  
Marketing  
Organizational Behaviour/  
Human Resource Management  
Strategic Management  
Public Management

The Management department seeks to provide tomorrow's business leaders with the best undergraduate education in the country, teaching practical skills and nurturing high-level analytical thinking within a comprehensive, multi-faceted learning experience. Backed by UTSC's strength in co-op education, we build bridges from the classroom to potential careers, ensuring all of our programs maintain close collaborative links with private and public sector organizations.

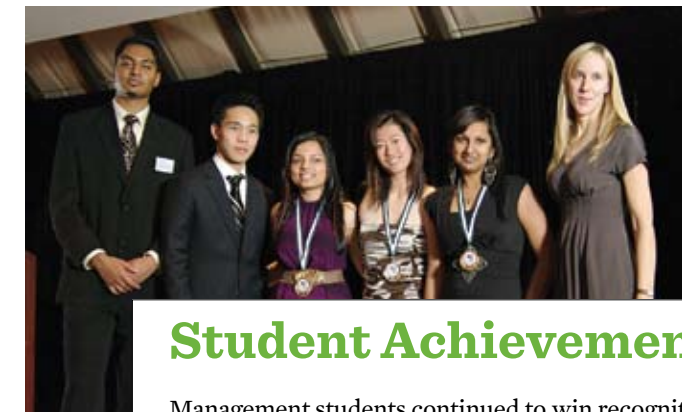
## Preparing for the Future

The goal of management education at UTSC is to prepare students not simply for their first jobs, but for multi-decade careers in which most will shift their areas of focus several times. We ensure our courses and teaching approaches deliver a broad-based grounding in business fundamentals while also stressing creative problem solving, encouraging students to develop **flexible strategies that can evolve** in response to changing needs.

A case in point is our innovative **Bachelor of Business Administration (BBA)** program, which is designed to reflect the evolving priorities of global business. Indeed, a significant number of students enter the BBA program from abroad – in particular from China as part of our acclaimed Green Path program, which helps talented students adjust to language and cultural differences as they realize their full potential at UTSC.

Another essential component of management education is the option to pursue **experiential learning** opportunities. Each of our programs has a co-op option combining classroom studies with firsthand experience in the workplace. Beginning in second year, co-op students alternate between academic terms and work placements of four or eight months – a feature that attracts some of the best and brightest from Canada and worldwide.

Students pursuing specialist degrees in Management and Economics are exposed to a wide range of interrelated subjects, from accounting and finance, to strategy and marketing, to organizational behaviour and human resource management. This **emphasis on program breadth** applies equally to all BBA students, whatever their career interests. The responsibilities of today's business professionals extend far beyond merely balancing the books. We ensure that all students learn to analyze cases, communicate with clients and formulate strategies that take into account all key functional areas of an enterprise.



## Student Achievement

Management students continued to win recognition in 2009. At the annual DECA U Provincial Conference, attended by more than 500 students from 14 universities, **UTSC teams won a dozen medals** in simulation and case-study competitions testing their skills in marketing, entrepreneurship and general business management.

On campus, the diverse needs and interests of more than 2,500 students are met by the Management & Economics Students' Association (MESA), the largest student-operated business organization at UTSC, which organizes academic competitions, seminars, skill-building sessions, networking opportunities and social activities. A key event of the past year was the fourth annual **LIVE Conference** (photo above), which once again drew undergraduate business students from across Canada. The Toronto gathering featured team competitions in which participants managed their own companies in simulation scenarios. Students also had opportunities to network with corporate executives and UTSC Management alumni.

UTSC Management students, who have some of the highest entrance averages at U of T, benefit from interaction with exceptional faculty such as Professor Esther Eiling.

**RESEARCH STRENGTHS**

- Performance: Individual and Organizational Leadership
- Recruitment and Retention
- Organizational Knowledge and Learning
- Trade and Globalization
- Branding and Consumer Behaviour
- Public Finance and Management
- Business Ethics and Innovation
- International Finance
- Education – Early Childhood to Graduate
- Production and Distribution Optimization

## Exemplary Faculty

To support growing demand, the Management department hired several new faculty members in 2009 and has additional searches under way. Our high teaching standards were once again recognized by a number of awards: **Professor April Franco** received the Excellence in Teaching Award from the Rotman School of Management; Economics Lecturer **Iris Au** earned the UTSC Dean's Merit Award; and Accounting Lecturer **Liang Chen** received the Lorna Henderson Outstanding Mentor Award from the Certified General Accountants of Ontario for her dedication to university graduates' further development in the CGA certification program.

## Continuing Investigations

The research interests of Management faculty members span a broad spectrum of subject areas, from international finance to organizational justice, consumer behaviour to employee recruitment, information processing to integrated production-distribution systems, cross-cultural differences to work-life balance.

In 2008-09 more than 20 faculty members were active in research, half of them with funding from major grants. The scope of their efforts was reflected in a steady flow of publications, including 2 books, 40 journal articles and 12 book chapters or reviews. In addition, nearly all research faculty members reviewed for major journals, and 10 were either editors or served on editorial boards. The year's investigative highlights range from a study by professors Samantha Montes and David Zweig on the impact of promises that organizations make to employees – accepted for publication in the *Journal of Applied Psychology* – to Professor Julie McCarthy's award-winning research on workplace anxiety (showcased on this page).

> RESEARCH SHOWCASE

## Performance Anxiety

Groundbreaking research on workplace anxiety earned **Management Professor Julie McCarthy** (pictured below) a prestigious distinction in 2009: the UTSC Wynne and Beryl Plumtre Faculty Research Fellowship. McCarthy's award-winning submission, based on her work with Canadian police services, proposes an in-depth investigation of social and performance anxiety in work environments. (The fellowship is named for a pair of highly regarded Canadian economists; Wynne Plumtre was also Principal of the Scarborough campus from 1965 to 1972.)

An expert in organizational behaviour, Professor McCarthy hopes to better understand how worries over the hiring process, recruiting interviews, annual reviews and other milestones of career development affect performance from the employee's point of view. Her program of research includes recommended strategies and policies aimed at helping employees and employers respond more effectively to anxiety issues.

On the UTSC Management faculty since 2002, McCarthy pursues a wide range of research subjects, including hiring and personnel selection, performance measurement, personality issues in the workplace and work-life balance. Her academic interests are reflected in what she calls a "very student-centred" approach to teaching. While encouraging critical thinking and problem-solving skills, she also understands the daunting stresses that students face: "I am particularly sensitive to how students manage anxiety. Many come to see me, and we'll talk about strategies to help them find balance. It's very rewarding to feel I've helped."



**FACULTY & STUDENTS**

- Professor Michael Krashinsky, Chair
- 36 faculty members
- 2,553 undergraduate students
- 16 graduate students (supervised)
- 2 post-doctoral fellows

## UNIQUE NEW PROGRAMS

As part of a five-year academic planning initiative launched last year, the Management department is redesigning current undergraduate programs (about 120 courses in total) and at the same time exploring new directions that will ensure we keep pace with emerging trends. The latter efforts have led to the development of a proposed specialist program in **International Business**, which combines new courses offering a global perspective, existing courses that have an international dimension, and opportunities for work placements and additional studies abroad. Our goal is to introduce the new program in the fall of 2011.

At the graduate level, the department is developing a new **Master's degree in Management of the Professional Firm** in response to a recognized need in the legal, accounting and medical professions.

The department is investigating additional Master's and PhD programs that would build on clusters of research and teaching strengths within the faculty complement.



> FACULTY PROFILE

## Starting Early Down Under

Studies around the globe have shown that early learning programs play a critical role in determining young people's future success. That's why a number of Australian universities and several levels of government are investing more than Cdn\$16 million in a five-year project examining the developmental effects of childhood education and care in that country. A key member of the team is **Gordon Cleveland** (photo below), Senior Lecturer in Economics on the UTSC Management faculty and a specialist in the economics of early childhood education.

Cleveland joins a dozen other researchers from Australia and the U.K. who will assess **the effectiveness of early childhood programs** in a number of representative communities. His role as lead economist is especially crucial as the project gets under way, when the data collection process and overall study design are being determined. "Economists are very particular about methodology," he explains, "and because any conclusions may influence policy, the data will need to be supported by sound numbers that speak to the policy people in government."

National child care research on this scale is unusual. Cleveland points out that Canada has not yet conducted any countrywide studies that include on-site evaluation of the quality of early childhood education. The Australian project will therefore be closely followed by education experts around the globe, including in Canada. The research team members – educators, psychologists, early child care specialists and health professionals – are counting on their economist colleague to help generate **results that will be meaningful to policy-makers**. "Governments want to know that a study like this includes a sound assessment of the costs and benefits of any potential policy changes," says Cleveland.

As for his own interest in the economics of child care, Cleveland says it began when he was completing his PhD at the University of Toronto: "At that time, I had young kids, so perhaps it's not surprising that when it came to choosing a thesis topic, **my family life and my academic interests came together.**"



# Physical & Environmental Sciences



On a field course in Costa Rica, students in the Master of Environmental Science program welcome the opportunity to conduct hands-on research under the guidance of Professor Ken Howard.

At a Glance

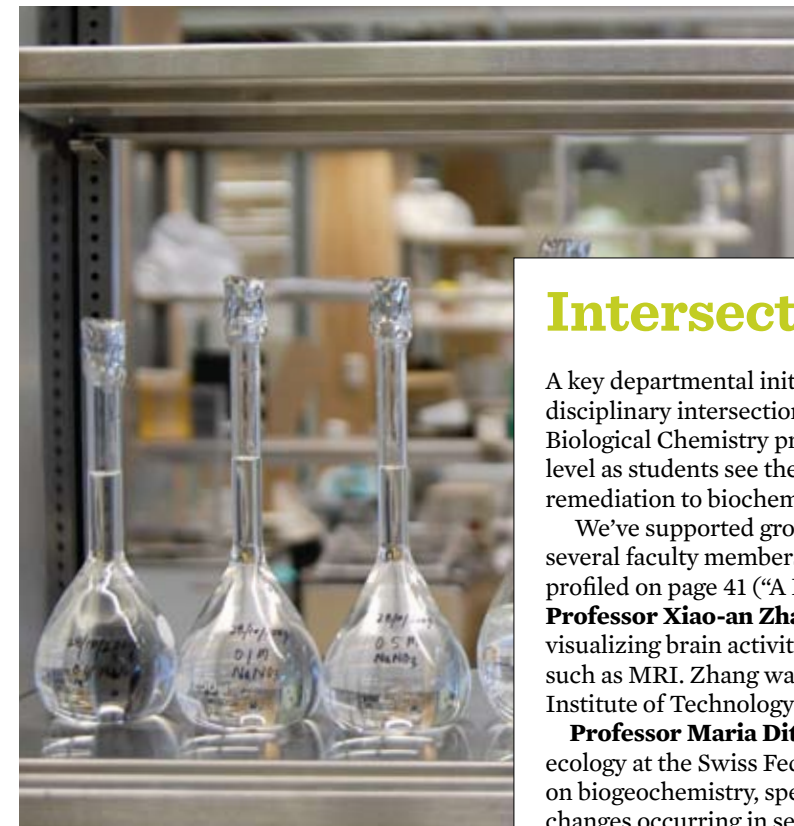
## DISCIPLINES

Chemistry  
Environmental Science  
Physics  
Astronomy

Humanity's detrimental impact on the environment poses one of the greatest scientific challenges of our time – and casts a shadow over the future of the planet. The unique learning programs and pioneering discoveries spearheaded by the Physical and Environmental Sciences department place UTSC in the vanguard of efforts to restore global sustainability. Our support for collaborative research, both within our department and in partnerships worldwide, is helping spark innovative thinking, create jobs and inspire a new generation to join in the search for sustainable solutions.

## QUANTUM LEAP

The undergraduate learning experience in Physical and Environmental Sciences provides an excellent springboard for future studies, as evidenced by the recent success of student **Molu Shi**. Graduating in 2009 from the specialist program in Physics (with a major in Mathematics), Shi is now a PhD candidate at the Massachusetts Institute of Technology and the MIT-Harvard Center for Ultracold Atoms. While at UTSC, Shi distinguished himself as a scholar and researcher. In addition to collaborating with several faculty members on publications and conference papers, he was also a teaching assistant for courses in physics, astronomy and mathematics. Shi now studies quantum information processing, potentially the next leap forward in the development of faster, more compact computers.



## Intersection Ahead

A key departmental initiative that continues to gain momentum is our focus on the disciplinary intersection between biology, chemistry and environmental science. The Biological Chemistry program has become our most popular at the undergraduate level as students see the promising possibilities in many fields, from environmental remediation to biochemical manufacturing to medicine.

We've supported growing interest in all of these areas with the recent addition of several faculty members. One of our newest arrivals is **Professor Kagan Kerman**, profiled on page 41 ("A Prescription for Hope"). Also joining us in 2009 was **Professor Xiao-an Zhang**, a chemist who is developing new molecular probes for visualizing brain activities and detecting disease using neuroimaging technologies such as MRI. Zhang was previously a joint post-doctoral fellow at the Massachusetts Institute of Technology and the McGovern Institute for Brain Research.

**Professor Maria Dittrich** was most recently head of a research group in aquatic ecology at the Swiss Federal Institute for Technology. Currently her research focuses on biogeochemistry, specifically calcite biomineralization by algae and the chemical changes occurring in sediments between deposition and solidification. Her colleague **Professor Carl Mitchell**, who joined the department in 2008, studies the links between hydrology and biogeochemistry, focusing on the growing problem of toxic methylmercury production in aquatic environments.

## RESEARCH STRENGTHS

Environmental Science  
Biological Chemistry  
Biological, Chemical and Physical Processes  
in the Environment  
General Relativity, Planetary System  
Formation and the Evolution of  
Planetary Interiors

## &gt; RESEARCH SHOWCASE

## Outstanding in Her Field

Threats to the world's agricultural lands – soil degradation, water contamination, climate change – don't fall neatly within national borders. So it's no surprise that an expert in sustainable land management has a résumé that crosses boundaries. **Professor Marney Isaac** (pictured below), who arrived at UTSC in 2009, has degrees in forestry and environmental biology, did post-doctoral studies in agricultural development in France, conducted fieldwork in Ghana and Kenya – and is now cross-appointed to Physical and Environmental Sciences and the International Development Studies program of the Social Sciences department.

While much of Isaac's work to date has focused on agroforestry in the tropics, she recently began exploring the unique challenges of other regions, including Southern Ontario. "My research applies ecological principles to agricultural landscapes," Isaac explains, "with particular attention to new strategies for conservation, management and system resilience. We investigate practices that improve the efficiency of nutrient cycles, optimize plant-soil interactions and promote ecosystem services and food security in low-input agricultural and agroforestry systems."

In her multi-dimensional role at UTSC, Isaac hopes to heighten students' awareness of the global need for improved agricultural diversity. From her perspective, what's needed is a hands-on approach that reaches beyond the classroom. "I want students to be intrigued by interdisciplinary research and its application to real-world issues," she says. "In the current geopolitical context, agricultural production plays a key role in mitigating ecological and economic risk. Through integrative and collaborative research, we can give students the opportunity to assess complex societal and environmental challenges – and to help find solutions."



## Building on Our Strengths

Our department's depth of expertise in four **core disciplines** – Chemistry, Environmental Science, Physics and Astronomy – provides the platform for a wide range of multidisciplinary initiatives. In the classroom and in the field, faculty members look for opportunities to bring together areas of study, bridging the latest advances in, for example, geology and hydrology with new approaches in aquatic and microbial ecology. Cross-disciplinary collaboration on global sustainability issues has led to groundbreaking work on everything from the transport and fate of toxic compounds in the environment to the release of soil-stored carbon as the result of climate change. Even in classic disciplines such as Physics and Astronomy, students are exposed to a remarkable range of teaching and research, whether focusing on theories of planetary evolution or supercomputer-based modelling of fluid dynamics.

Our unique one-year **Master of Environmental Science** program continues to attract record numbers of high-calibre applicants from across Canada. Balancing academic and professional content, the program includes four-month paid internships in industry or the public sector. Career-focused students gain skills that are in high demand, often receiving offers of full-time employment at the end of their internships, while those in the research-oriented stream can opt to pursue PhD studies.

Another unique offering is the **Joint Program in Environmental Science and Technology**, developed with Centennial College. Earning a BSc degree and a diploma in Environmental Protection Technology, students combine a solid grounding in science with technical and applied courses as they pursue career opportunities in industry and the public sector. As for aspiring science educators, our innovative **Concurrent Teacher Education Program (CTEP)** presents a five-year course of study leading to a double BEd and BSc degree.

Many Physical & Environmental Sciences programs include **co-op options** that develop practical skills and offer a window on potential careers. All students, whether aiming for the job market or preparing for further studies, are supported by our academic strengths and commitment to exemplary teaching in all core disciplines.

## FACULTY &amp; STUDENTS

Professor Donald Cormack, Chair  
22 faculty members  
930 undergraduate students  
61 graduate students (supervised)  
10 post-doctoral fellows

## &gt; TEACHING &amp; RESEARCH

## A Prescription for Hope

Where does AIDS research intersect with work on Alzheimer's and Parkinson's disease? A point of convergence is the lab of **Professor Kagan Kerman** (pictured below), a new member of the Physical and Environmental Sciences faculty. The bioanalytical chemist pursues a range of investigations under the umbrella of theranostics – the study of diagnostic techniques and therapeutic agents for treating disease.

"My research on neurodegenerative diseases and HIV/AIDS is truly interdisciplinary and requires insight into biology, chemistry and also physics," says Kerman, who works with a team in UTSC's newly renovated Biological Chemistry lab. "In the initial stages, we're testing various electrochemical and optical techniques to determine the structural changes that peptides and proteins undergo through the development of Alzheimer's and Parkinson's."

Born in Turkey, where he earned two degrees from the University of the Aegean, Kerman completed his PhD at the Japan Advanced Institute of Science and Technology at Osaka University. He came to UTSC in 2008 following post-doctoral postings at the University of Saskatchewan and the University of Western Ontario. His new role combines funded research (he received a **Biomedical Young Investigator Award** from the Alzheimer Society of Canada) with teaching in bioinorganic, analytical and pharmaceutical chemistry.

"I like to combine my research topics with what I teach at the undergraduate and graduate levels," Kerman says. "I'm sure **UTSC students will have many opportunities to gain research experience in my laboratory.**" As tomorrow's investigators learn technical skills in the study of nanomaterial-biological molecule interactions, they'll also help Kerman pursue his ultimate quest: "Our biggest dream is the discovery of compounds that will put an end to devastating diseases such as Alzheimer's and AIDS."



## DISCOVERING SUCCESS

Among Physical and Environmental Sciences faculty members recognized for their research efforts in 2009, several merit highlighting:

**Professor George Arhonditsis** received a coveted Early Researcher Award from the Government of Ontario, gaining \$140,000 in funding for his work in aquatic biogeochemical modelling – the use of sophisticated mathematical models to develop environmental management strategies for freshwater resources.

In the field of analytical environmental chemistry, **Professor André Simpson** earned the prestigious SETAC/Royal Society of Chemistry Environmental Sciences Award from the Society of Environmental Toxicology and Chemistry. Simpson uses nuclear magnetic resonance (NMR) technology to study the molecular interactions of contaminants in the soil that previously have been difficult to analyze.

The Leaders Opportunity Fund of the Canada Foundation for Innovation (CFI), in conjunction with the Ontario Research Fund, provided \$400,000 for NMR equipment to assist **Professor Myrna Simpson** in her study of biochemical stresses on soil-dwelling organisms caused by low-concentration pollutants.

**Professor Frank Wania**, in collaboration with fellow U of T chemist Professor Scott Mabury, has received a \$1.2 million grant from the CFI to establish an ultra-clean room for the analysis of trace environmental contaminants – a unique facility that will also support research groups from other universities and government departments.

# Psychology

At a Glance

**DISCIPLINES**  
Psychological Science  
Neuroscience (in collaboration  
with Biological Sciences)  
Mental Health Studies

UTSC's Psychology department advances understanding of the human mind through exceptional research and learning opportunities in every branch of the discipline – social, personality, abnormal, developmental, cognitive and perceptual. We bring the same investigative passion and teaching excellence to exploring the frontiers of neuroscience – a rapidly evolving field in which several faculty members pursue pioneering work. And our new Mental Health Studies program has opened up exciting avenues for those seeking careers in this vital area of healthcare.

## Fresh Insights

UTSC Psychology faculty members work at the forefront of current and emerging areas of inquiry. One research cluster focuses on **computational approaches to cognition**, modelling neural data from a theoretical perspective. Other groups employ **neuroimaging technologies** to correlate specific brain activity with higher-order cognition as well as social and affective phenomena.

Wherever our investigators focus their efforts, from developmental phenomena, to social and personality psychology, to challenges in mental health, they add to the university's reputation for **innovative psychological research** while bringing fresh insights to their classroom teaching.

## Distinguished Faculty

The Psychology department's dedication to excellence in teaching and research yielded several noteworthy distinctions in 2009. **Professor Konstantine Zakzanis** (photo at right) received the Principal's Award for Faculty Teaching in recognition of his "ability to engage and captivate large classes with case studies and stories that bring to life the course material and get students excited about science, abnormal psychology and neuropsychology."

**Professor Michael Inzlicht** earned a prestigious Early Researcher Award from the Government of Ontario, receiving \$140,000 to further his research on how prejudice affects the ability of stigmatized groups to make everyday decisions. In examining the economic and health consequences for groups that are stereotyped on the basis of ethnicity, race, gender or religion, Inzlicht's work has the potential to reduce the impact of prejudice around the globe.

Two other faculty members received rare distinctions in the past year: **Professor Laura-Ann Petitto** was elected a Fellow of the prestigious American Academy for the Advancement of Science for her contributions to the understanding of human language, including bilingualism and sign language, using behavioural and neuroscience techniques. And **Professor John Kennedy** was named a University Professor, one of the highest honours bestowed by the University of Toronto, in recognition of his scholarly achievements and pre-eminence in his field. Kennedy has devoted his career to the psychology of perception and cognition as it relates to art. He is particularly known for research demonstrating that sighted and unsighted people produce similar drawings, and for showing how the blind can devise metaphoric pictorial devices that are readily understood by those who can see.



Perceptions of virtual reality and other promising areas of neuropsychological testing are explored in various labs across the Psychology department.

## RESEARCH STRENGTHS

Cognitive, Social and Affective Neuroscience  
(including Neuroimaging Technologies)  
Computational Cognition  
Lifespan Development  
Social and Personality Psychology  
Mental Health

## Higher Degrees

A key component of the department's five-year strategic plan is the development of **higher-degree programs** in psychology. Our goal is to complement existing programs within the U of T's tri-campus approach to graduate studies while building on specialized areas of research whose centre of gravity is at UTSC.

In the past, undergraduate studies at UTSC concentrated more on the research side of psychology, advancing students' understanding of perception, memory, social interaction and other phenomena. More recently, growing interest in mental health and the consequent need for trained practitioners have led us to place more emphasis on clinical psychology, which focuses on the diagnosis and treatment of abnormalities and disorders. Now we're extending that focus to the graduate level with a proposed **Master's and PhD program in Clinical Psychology**. While the scope of this unique program is still being mapped out, it will offer multifaceted practical training in clinical techniques within a solid conceptual framework illuminated by the latest research.

In the course of establishing neuroscience as an area of expertise at UTSC, we've identified another graduate-level opportunity: a proposed **MSc program in Neuroimaging Technologies** that will help set the standards for an emerging field in which very few university programs currently provide formalized professional training.

The new program will focus on a range of rapidly evolving technologies, many of which are deployed in our faculty members' research, including:

- **functional magnetic resonance imaging (fMRI)**, which tracks the flow of oxygenated blood in response to specific brain activities;
- **functional near-infrared spectroscopy (fNIRS)**, which detects blood flow using laser-based light and is more tolerant of movement than fMRI, allowing participants to carry on activities such as talking or writing;
- **electroencephalography (EEG)** and other electrophysiology systems that monitor neural and autonomic activity concurrently.

The Master's in Neuroimaging Technologies could lead directly into a professional career or provide another pathway to PhD studies in Psychology. Our current objective is to see both new graduate programs launched as early as 2011.

## &gt; NEW FACULTY PROFILE

## Both Sides Now

The newest faculty member of UTSC's Psychology department is **Elizabeth Page-Gould** (pictured below with lab manager Jeffrey Wong), a social psychologist who followed her PhD at the University of California Berkeley with post-doctoral research as a Mind/Brain/Behaviour Fellow at Harvard University. Page-Gould's work examines the psychophysiological and cognitive aspects of "dyadic" interactions (i.e., involving two people) with a particular focus on relationships between members of different racial groups. Her success in identifying the minute physiological changes that accompany, for example, an expression of racial prejudice have earned a National Science Foundation Graduate Fellowship, among many other awards.

In addition to her research expertise, Page-Gould brings a love of teaching to her new role: "I assume students are drawn to this research for exactly the same reasons I am – the potential to positively impact people's lives, especially in diverse societies such as those we find in the GTA."



## FACULTY &amp; STUDENTS

Professor John Bassili, Chair  
22 faculty members  
2,334 undergraduate students  
38 graduate students (supervised)  
2 post-doctoral fellows

## &gt; NEW PROGRAM SHOWCASE

## Mental Health Coverage

In 2009 the UTSC Psychology department launched a full-fledged undergraduate program in Mental Health Studies – the only one of its kind in Canada. Where many courses in psychology concentrate primarily on the whys and hows of "normal" thoughts, feelings and behaviours, Mental Health Studies focuses on the identification and treatment of disorders that are deemed psychologically abnormal.

Like all Psychology undergraduates, students in Mental Health Studies start with a thorough grounding in methodology and statistical approaches as well as theoretical perspectives. They then focus their studies on abnormal mental processes. The program includes three new courses: Psychotherapy, examining various theoretical frameworks and schools of therapeutic practice; Psychological Assessment, focusing on tests and measures used to evaluate disorders; and Psychopharmacology, an introduction to the pharmacological strategies used for addressing a variety of mental health conditions.

The new program also has a co-op option; students can take advantage of UTSC's partnerships with well-known mental health institutions. Already sparking a high level of interest, with more than 200 students enrolled for its inaugural year, Mental Health Studies addresses a keenly felt need in the community and promises to be a significant area of growth in the future.

*Photo at right: Professor David Nussbaum conducts research on the human brain related to impulsive behaviours.*



## Meeting a Growing Need

According to current research on disabilities, of the top 10 barriers preventing millions of North Americans from leading fully productive lives, half are psychological. Number one on the list is depression.

For a new generation, these are not shocking revelations – they're facts of life. The past few decades have seen a steady growth in **public awareness of, and sensitivity to, mental health issues**.

Behaviours that were once ignored, misunderstood or hidden behind taboos are now part of the mainstream of healthcare, meriting not isolation and shame, but understanding. The challenge of broadening that understanding leads more and more students to choose psychology as their field of study.

Traditional psychology was focused on therapy and other forms of interpersonal support to help people deal with stresses. Today the field includes psychopharmacology and the insights of neuroscience. The Psychology department **balances psychosocial and psychobiological approaches**, guiding students to the areas they find most rewarding – and the best possible learning experience.

Our faculty's research strengths lend depth to the undergraduate **Neuroscience program** (in collaboration with Biological Sciences). Students can explore cognitive, affective and social neuroscience as well as "wet" laboratory studies – for example, on the effects of cocaine addiction. Many courses also use neuroimaging technology to correlate brain activity with psychological phenomena.

## Firsthand Experience

In keeping with the UTSC commitment to experiential learning, the Psychology department offers many opportunities to refine classroom insights in real-world contexts. One avenue is through **co-op placements with respected mental health institutions** such as the Centre for Addiction & Mental Health (CAMH), the Baycrest geriatric care facility and the Ontario Shores Centre for Mental Health Sciences in Whitby. Our close partnerships with these and similar organizations provide undergraduate and graduate students with invaluable experience in the field. At the same time, we welcome our partners' expertise on campus through guest lectures and collaborative projects.

Undergraduates can also gain **first-hand research experience** under the supervision of faculty members, either as volunteers or in paid positions subsidized by the university's Student Experience Fund. These assistantships are an ideal way for talented students to get a taste of graduate studies – and for faculty and current graduate students to provide mentorship to the next generation of researchers.



# Social Sciences

At a Glance

**DISCIPLINES**  
 Anthropology  
 City Studies  
 Diaspora and Transnationalism Studies  
 Health Studies  
 Human Geography  
 International Development Studies  
 Political Science  
 Public Policy  
 Sociology



**International Development Studies** student David Librado experienced the front lines of community work in Bolivia on a co-op placement with Canadian University Students Overseas (CUSO).

In addition to opening doors to potential careers and further studies, the broader goal of the Social Sciences department is to help students become better-informed members of the global community and prepare them for future leadership challenges. Through teaching and research tackling a diverse range of issues – from the impact of globalization to the decline of urban environments, from the politics of immigration to inequality in multicultural societies – we foster the analytical skills required to understand complex problems from many angles and identify possible steps toward positive change.

## Strong Foundations

UTSC's Social Sciences department promotes exemplary teaching and research in four principal areas of study: Political Science, Sociology, Anthropology and Human Geography. At the intersections among these disciplines, we've built on our established strengths to create specialized programs in City Studies, Health Studies, Public Policy and International Development Studies.

The key to the success of our multidisciplinary programs is our equally strong commitment to the core disciplines that provide their foundation. Students who choose to pursue these new collaborative learning opportunities know that their studies are supported by deep intellectual roots. At the same time, those who focus on more traditional fields inevitably have their perspectives broadened as they take cross-disciplinary courses and interact with peers investigating alternative approaches to similar questions.



## Helping Out for 25 Years

UTSC's flagship co-op program in **International Development Studies** celebrated its 25th anniversary in 2009. Still one of the few programs of its kind in Canada, IDS combines interdisciplinary study in the social and environmental sciences with practical experience in field placements around the world. The program gives outstanding Canadian and international students the opportunity to put concepts into practice during year-long engagements in developing nations such as Bolivia and Zambia. Partnering with more than 75 organizations, IDS has so far placed some 360 students in nearly 70 countries. Among them is Tiana Rodrigue (photo at left), who travelled to the African nation of Burkina Faso: "My time abroad helped define my insight, understanding and aspirations. Beyond the personal growth I experienced, it gave me an advantage in pursuing a career I'm passionate about."

## RESEARCH STRENGTHS

City Planning and Governance  
 Tourism, Recreation and Heritage Sites  
 Equity, Gender and Human Rights  
 Ethnic Diversity and Multiracialism  
 Epidemics and the History of Healthcare  
 Transnational Religious Movements  
 Failed Authoritarian States  
 Teenage Gangs  
 Foster Parenting  
 The Ethics of Everyday Life  
 Political Ecology of Environmental Issues

## Scope of Inquiry

Faculty members in Social Sciences have forged international reputations in their fields of expertise, whether conducting research in nearby communities or on other continents. Their scholarship and insights contribute significantly to ongoing debates around issues such as global governance, civil society, international migration and the ethical choices underlying everyday events.

Through the addition of new positions and the replacement of retiring faculty, the department is expanding its leadership in urban geography, bio-anthropology, city studies, political ecology, Canadian politics and the sociology of inequality. A sampling of recent initiatives and achievements:

- Geography Professor Mark Hunter has written a book on the social roots of the **AIDS pandemic in South Africa**, to be published later this year by Indiana University Press.
- After years of researching **access to post-secondary learning**, Professor Ann Mullen has completed *Degrees of Inequality: Culture, Class and Gender in American Higher Education*, a sociological study to be published by Johns Hopkins University Press in the near future.
- Professor Larry Sawchuk, an anthropologist specializing in epidemics, continues his research into the impact of the 1918 **influenza pandemic** in Gibraltar, shedding new light on the challenges presented by the recent SARS and H1N1 outbreaks.
- Professor Julian Tanner, a sociologist with a focus on youth culture, has received a \$1 million grant from the Canadian federal government to study **youth gangs in Toronto** with his colleague Scot Wortley, a criminologist at the U of T St. George campus.



## &gt; TEACHING &amp; RESEARCH

## Taking It to the Streets

Professor Girish Daswani is an expert on socio-cultural issues in Ghana researching the impact of Pentecostal Christianity in the West African nation as well as the Ghanaian diaspora in the U.K. But the anthropologist's interest in religion and migration in urban contexts also extends to communities right next door to UTSC. In 2009 Daswani, along with fellow Anthropology professor Maggie Cummings and their colleague Professor Susannah Bunce (Geography/City Studies), received funding for a project in **Kingston-Galloway-Orton Park**, designated by the City of Toronto as a priority neighbourhood for renewal. Their grant from the Centre of Excellence for Research on Immigration and Settlement (CERIS) will yield a study examining residential settlement patterns and the sense of belonging and identity among newcomers.

Fieldwork is being conducted by an interdisciplinary team of City Studies and Anthropology students. "This is a way to give students experience in doing research and to create more engagement between the university and the community," says Daswani. "We hope the results will inform future development projects."

Meanwhile, **Professor Bunce** (on the left in the photo above) is spearheading another City Studies project in the same neighbourhood: Learning in Community Service, the first-ever service learning program offered by Social Sciences. Inaugurated in the summer of 2009, the program is centred in the engagement office of a local United Way initiative, Action for Neighbourhood Change. Sharing space with East Scarborough Storefront – a hub for social services programming – and the community association Residents Rising, students volunteer with local charitable and service agencies, then bring that experience back to their off-campus base for classroom discussion and further research.

"**This project breaks down the boundaries between academia and a neighbourhood that has been historically marginalized**," says Bunce. "Students investigate such issues as who has decision-making power or sets agendas, the effectiveness of community collaborations, and the quality and conditions of housing settlements – all the issues that are relevant to those who develop policy and provide community services. In turn, the community benefits from students' assistance and research."

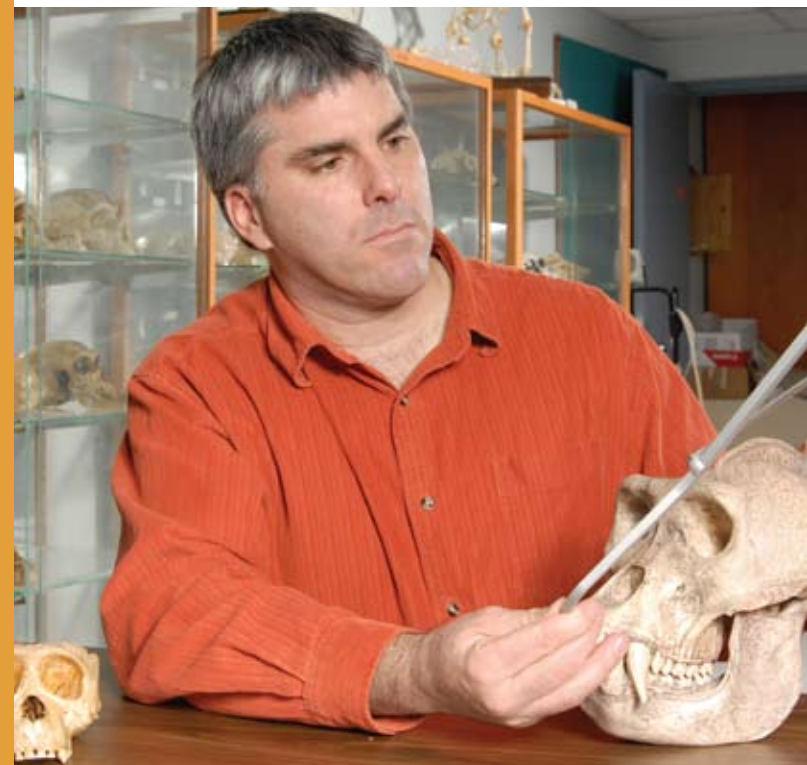
## FACULTY &amp; STUDENTS

Professor Ted Relph, Chair  
 37 faculty members  
 2 Canada Research Chairs  
 3,582 undergraduate students  
 86 graduate students (supervised)  
 3 post-doctoral fellows

## CELEBRATING SUCCESS

Each year the University of Toronto's Donald Forster Award recognizes an undergraduate student whose academic achievements are matched by significant contributions to campus life. The 2009 award went to **Jenna Hossack**, a UTSC Anthropology and Health Studies major who devoted her energies outside class to help bring about improvements on a wide range of fronts, from diversity and accessibility to health and the environment.

In addition to leadership roles with various student organizations and advisory committees, Hossack was a volunteer for the Women's Centre, an invigilator for the AccessAbility office and coordinator for the new Mental Wellness Peer Educators Program. Now pursuing an MA in Social Anthropology at York University, Hossack recalls her UTSC years fondly: "It really prepared me for future studies and offered more opportunities than I could have ever imagined. University is not just about your marks – it's learning about the world and growing as a person."



## &gt; RESEARCH SHOWCASE

## Planet of the Primates

Two anthropologists in the Social Sciences department are part of an emerging research cluster devoted to primatology – the study of non-human primates – that will significantly raise UTSC's profile in the field. **Professor Joyce Parga** recently received funding from the Canada Foundation for Innovation (CFI) to establish the first lab in Canada combining the study of genetics and social behaviour in primates. The new Molecular Anthropology and Primatology Laboratory for the Study of Evolution (MAPLE) will analyze the DNA of ring-tailed lemurs (photo above) in relation to their reproductive performance.

"This lab will be a wonderful resource for our students," says Parga, who conducts her fieldwork each fall on St. Catherines, a coastal island off the U.S. state of Georgia – the only place where researchers can study free-ranging ring-tailed lemurs outside their native Madagascar. To understand the unusual mating behaviour of this species (which, like all lemurs, faces the risk of extinction), Parga and her team will use genetic analysis to gauge the success of male reproductive strategies – which means taking samples back for analysis in the MAPLE lab. "**For undergraduates to get this kind of research experience is really valuable**," Parga says. "Anthropology students may discover a nascent interest in molecular genetics."

Parga's colleague **Professor Michael Schillaci** (pictured at left) advances primatology research from an entirely different angle. The biological anthropologist studies variation patterns of growth and morphology within species, focusing on Asian macaque monkeys, primarily from Indonesia and Singapore. In addition to non-human primates, he is also interested in modern human evolution. "Unlike most biologists," Schillaci explains, "biological anthropologists are interested in the social or cultural context of variation and evolution. We're interested in humans and primates as cultural and social animals."

Schillaci's work focuses on some of the pivotal – and controversial – events in our evolutionary past. In a recent article in the *Journal of Human Evolution*, he presented evidence to suggest that the migration of early humans from Africa into southern Asia may have occurred up to 50,000 years earlier than previously surmised by scientific consensus.

In blurring the traditional boundaries between academic disciplines, **bioanthropology is opening up new paths to understanding humanity's origins**. At the same time, this exciting interdisciplinary area attracts top young talent. Several of Schillaci's undergraduate students, in addition to working with his research team on campus and in the field, have presented at conferences and published articles in peer-reviewed journals. "That's something I'm proud of," the professor says. "I think our undergrads' success could be a model for others."



**SOLOMON, S.** BA (McGill), MA, PhD (Columbia). Political Science, *Professor*

**SORENSEN, A.** BFA (Nova Scotia College of Art & Design), MSc, PhD (London). Geography, *Associate Professor*

**SPERDAKOS, P.** BA (McGill), MA, PhD (Toronto). Visual and Performing Arts, *Associate Professor*

**STANBRIDGE, A.** MA (Wolverhampton), PhD (Carleton). Visual and Performing Arts, *Assistant Professor*

**STARK, A.** BA (British Columbia), MSc (London), MA, PhD (Harvard). Management, *Professor*

**STAWINOGA, A.** BA (Toronto), MBA (York), CMA. Management, *Senior Lecturer*

**SZAMOSI, M.** BA (Brandeis), MA (Harvard). Computer Science, *Lecturer*

**SZEGEDY, B.** PhD (Budapest University of Technology and Economics). Mathematics, *Assistant Professor*

**TANNER, J.** BSc (Honours) (London), PGCE (Leicester), MA, PhD (Alberta). Sociology, *Professor*

**TAWFIQ, S.** BSc, MSc (Al-Mustansiriya) PhD (Trieste). Physics, *Senior Lecturer*

**TEICHMAN, J.** BA, MA, PhD (Toronto). Political Science, *Professor*

**TEN KORTENAAR, N.** MA, PhD (Toronto). English, *Associate Professor*

**TEO, L.** BSc, BEd, (Singapore). Chemistry, *Senior Lecturer*

**TEREBIZNIK, M. R.** BSc, PhD (Buenos Aires). Biology, *Assistant Professor*

**TRIADAFILOPOULOS, P.** BA (Toronto), MA (Brock), PhD (The New School–NY). Political Science, *Assistant Professor*

**TROUGAKOS, J.** BS, MBA (Oklahoma State), PhD (Purdue). Management, *Assistant Professor*

**TSIMENIS, M.** BA (Athens), MA, PhD (Montreal). French, *Lecturer*

**TUCKER, L. C.** BMus, BMusEd (Memorial), MMus, MusEd, MMusPerf (Wisconsin–Madison). Visual and Performing Arts, *Lecturer*

**TYSDAL, D. S.** BA (Honours), MA (Acadia), MA (Toronto). English, *Lecturer*

**UNGAR, S.** BA (McGill), MA, PhD (York). Sociology, *Associate Professor*

**VACCARINO, F. J.** BSc (Toronto), MSc, PhD (McGill). Psychology, *Professor*

**VANLERBERGHE, G. C.** BSc, MSc (Western Ontario), PhD (Queen's). Biology, *Professor*

**VERNER, A.** BSc (St. Andrews), MSc, MEng (Toronto). Chemistry, *Senior Lecturer*

**VERNON, K.** BA (Honours), MA, PhD (Victoria). English, *Assistant Professor*

**VIRAG, B.** PhD (UC Berkeley). Mathematics, *Associate Professor*

**WAIN-BANTIN, K.** BSc (Toronto). Computer Science, *Lecturer*

**WANG, SL.** V. BA, MA, PhD (Hawaii–Manoa). Linguistics, *Lecturer*

**WANIA, F.** BA (Bayreuth), PhD (Toronto). Chemistry, *Professor*

**WAY, L.** BA (Harvard), MA, PhD (UC Berkeley). Political Science, *Assistant Professor*

**WEBSTER, E.** BA, MA (Toronto), PhD (Case Western Reserve). Visual and Performing Arts, *Lecturer*

**WEL, J.** BSc (Harbin Institute of Technology), MBA (York), PhD (Toronto). Management, *Professor*

**WELCH, K. C.** BSc (Trinity), MA, PhD (UC Santa Barbara). Zoology, *Assistant Professor*

**WELLS, M.** BSc, PhD (Australian National). Environmental Science, *Assistant Professor*

**WHITTING, L.** DipOpPerf (Toronto). Visual and Performing Arts, *Lecturer*

**WILLIAMS, D. D.** BSc, DSc (Wales), DipEd (Liverpool), MSc, PhD (Waterloo). Biology, *Professor*

**WILSON, J.** BA (UC San Diego), PhD (Cornell). Philosophy, *Associate Professor*

**WU, X. Y.** BA (Shanghai International Studies University), MA, PhD (Toronto). Languages and Linguistics, *Senior Lecturer*

**ZAKZANIS, K. K.** BA, MA, PhD (York). Psychology, *Associate Professor*

**ZHANG, X.-A.** BSc, MSc, PhD (Switzerland). Physical and Environmental Science, *Assistant Professor*

**ZHAO, R.** BSc (Peking), PhD (Chinese Academy of Agricultural Sciences). Biochemistry, *Assistant Professor*

**ZWEIG, D.** BA, MASc, PhD (Waterloo). Management, *Associate Professor*

## Grants & Awards

**AARTS, MICHELLE M.** *Biochemistry and Signaling of TRPM-Family Cation Channels.* NSERC.

**AARTS, MICHELLE M.** *Chair in Signal Transduction in Ischemia.* CIHR–CRC.

**AARTS, MICHELLE M.** *Development of a Stroke Model in Non-Human Primates.* NCE–Canadian Stroke Network.

**AARTS, MICHELLE M.** *Establishment of a Molecular Biology and Proteomics Laboratory for Research into Signal Transduction and Cell Death in Ischemia.* CFI and Ontario MRI.

**AARTS, MICHELLE M.** *Ischemic Cell Death Mechanisms in Primary Cultured Neurons.* NCE–Canadian Stroke Network studentship.

**AARTS, MICHELLE M.** *Synaptic NMDA Receptor Activity Promotes Neuroprotection via Down Regulation of Pro-Apoptotic Genes.* CIHR–fellowship.

**AARTS, MICHELLE M.** *Targeting Cell Death.* NCE–Canadian Stroke Network.

**AGGARWAL, PANKAJ.** *Brand Anthropomorphism: People as Carriers of Brand Traits.* SSHRC–Management, Business and Finance.

**AGGARWAL, PANKAJ.** *Do I like it more if you choose it? The influence of brand relationship on satisfaction with self versus other selected outcomes.* SSHRC.

**AGGARWAL, PANKAJ.** *The Heuristic Basis of Consumer Choice and Brand Preferences.* SSHRC.

**AGGARWAL, PANKAJ.** *What Is Yours Is Mine: The Role of Culture in the Prevalence of Bribery.* AIC Institute for Corporate Citizenship, Rotman School of Management.

**ANDRADE, MAYDIANNE.** *Chair in Integrative Behavioural Ecology.* CRC–NSERC.

**ANDRADE, MAYDIANNE.** *Influence of Mating System and Variable Selection on Adaptive Variation within and across Species of Cannibalistic Black Widow Spiders.* NSERC.

**ARHONDITSIS, GEORGE.** *Bayesian Calibration and Benefits for Environmental Management.* NSERC.

**ARHONDITSIS, GEORGE.** *Environmental Risk Assessment and Adaptive Management Implementation in Hamilton Harbour.* Ontario MOE and Hamilton Harbour Remedial Action Plan.

**ARHONDITSIS, GEORGE.** *Temporal Trends of Contaminants in Lake Erie Fish.* Ontario MOE.

**ARTYMOWICZ, PAWEL.** *Origin and Early Evolution of Planetary Systems.* NSERC.

**AVERBAKH, IGOR.** *Non-Classical Discrete Optimization Problems.* NSERC.

**BAMFORD, SANDRA.** *Legislating Care: Kinship, Fosterage and the State in North America.* SSHRC.

**BEAUQUIS, CORINNE.** *LACEF XIX (Ottawa).* SSHRC.

**BENDER, DANIEL E.** *Chair in Urban History.* SSHRC–CRC.

**BENDER, DANIEL E.** *Domestic Exotic: Zoos and the American Empire.* SSHRC.

**BIRN, ANNE-EMANUELLE.** *Chair in International Health.* CIHR–CRC.

**BIRN, ANNE-EMANUELLE.** *International Health in the Making: Uruguay on the Global Stage, 1880-1940.* SSHRC.

**BLOUIN, KATHERINE.** *Inventory, Restoration, Cataloging and Edition of Greek Papyri from France (BnF Paris) and Egypt (Tebtunis).* Connaught Fund.

**BLOUIN, KATHERINE.** *Research Stay in Paris.* Norwood Travelling Fellowship.

**BOONSTRA, RUDY.** *Response of the Boreal Forest in the Yukon to Global Warming.* EJLB Foundation.

**BOONSTRA, RUDY.** *Testosterone, Territoriality and Winter in Mammals.* Indian & Northern Affairs Canada–studentship.

**BOONSTRA, RUDY.** *The Role of Stress in Natural Populations.* NSERC–Northern Research Supplement.

**BOONSTRA, RUDY.** *The Role of Stress in Natural Populations.* NSERC.

**BORINS, SANDFORD.** *Contemporary Narratives on Managing Public Organizations.* SSHRC.

**BOWEN, DEANNA.** *Power Plant Contemporary Art Gallery.* Ontario Arts Council–exhibition assistance.

**BOWEN, DEANNA.** *WARC Gallery.* Ontario Arts Council–exhibition assistance.

**BOWEN, WILLIAM R.** *Digitizing the Cranz Microform Corpus.* Gladys Kriebel Delmas Foundation.

**BOWEN, WILLIAM R.** *The Other Voice in Early Modern Europe.* Gladys Kriebel Delmas Foundation (New York).

**BROWN, IAN.** *Chair in the Neurobiology of Stress.* NSERC–CRC.

**BROWN, IAN.** *Heat Shock Proteins in the Nervous System.* NSERC.

**BROTMAN, YAEL.** Ontario Arts Council, National and International Touring and Residencies Grant.

**BROTMAN, YAEL.** Finalist, Open Studio National Printmaking Competition Award.

**BRYANT, TOBA.** *Globalization and the Health of Canadians: A Transdisciplinary Research Network.* CIHR Institute of Population and Public Health.

**BRYANT, TOBA.** *The Societal Determinants of the Incidence and Management of Diabetes.* SSHRC.

**BUCHWEITZ, RAGNAR-OLAF.** *Homological Methods in Algebra and Geometry.* NSERC.

**BUNCE, SUSANNAH.** *Planning for Urban Community Land Trusts.* SSHRC.

**CAMPOLLETTI, MICHELE.** *Disability and the Labour Market.* SSHRC.

**CHAN, LESLIE.** *Bioline International Development Grant.* OSI–Information Program.

**CHAN, LESLIE.** *Open Access Scholarly Information Source Book (OASIS): Practical Steps for Implementing Open Access.* OSI–Information Program.

**CHAN, LESLIE.** *Scholarly Output in the Digital Age.* Jackman Humanities Working Group Grant.

**CHEN, LIANG H.** Recipient, Lorna Henderson Outstanding Mentor Award. Certified General Accountants of Ontario.

**CLEVELAND, GORDON.** *Child Care Use and Its Effect on Child Development: A Study Focusing on the Children of Immigrants to Canada, Lone Parent Families, Rural Families, and Official Language Minority Families.* HRSDC.

**CLEVELAND, GORDON.** *Qualité Educative des Services de Garde et Petite Enfance.* Fonds de Recherche sur la Societé et al Culture.

**CREE, GEORGE S.** *Towards a Neurobiologically Constrained Model of Semantic Cognition.* NSERC.

**CUDDY-KEANE, MELBA.** *Modernist Key Words.* SSHRC.

**CUMMINGS, MAGGIE I.** *Good Bodies: Running, Charity and Ethics.* SSHRC.

**CUPCHIK, GERALD C.** *Eating Behaviours and Self-Efficacy Project.* SSHRC

**DEWAR, GENEVIEVE.** *Adaptations to Marginal Environments in the Middle Stone Age.* SSHRC.

**DEWAR, GENEVIEVE.** *Excavation at Rockshelters of Melikane and Sehongong.* SSHRC.

**DHUEY, ELIZABETH A.** *Special Education Finance Reform: The Effect of Incentives on Diagnosis and Servicing.* Connaught Fund.

**DHUEY, ELIZABETH A.** *The Effect of Finance Reform on Special Education.* SSHRC.

**DOLAN, NEAL.** *Book Indexing for Emerson's Liberalism.* SSHRC.

**DOLAN, NEAL.** *Examination of Whitman Materials at the New York Public Library and Princeton and Rutgers universities (New York).* SSHRC.

**DONALDSON, D. JAMES.** *Atmospheric and Interfacial Reaction Dynamics.* SSHRC.

**DONALDSON, D. JAMES.** *Heterogeneous Photochemistry: Effects on Atmospheric Radical Production and Air Quality.* CFCAS.

**DROGE, ARTHUR.** *AIA/APA Joint Annual Meeting (Philadelphia).* SSHRC.

**DUNBAR, KEVIN.** *An Investigation of the Network of Brain Based and Cognitive Mechanisms Involved in Analogy, Creativity, and Categorization.* NSERC.

**DUNBAR, KEVIN.** *The mechanics of creativity and conceptual change.* Connaught Fund.

**DYER, CHARLES.** *Applications of General Relativity to Astrophysics and Cosmology.* NSERC.

**EILING, ESTHER.** *Best Paper Award (Business Valuation). Industry-Specific Human Capital, Idiosyncratic Risk and the Cross-Section of Stock Returns.* Northern Finance Association meetings.

**EILING, ESTHER.** *Currency Investing in Global Portfolios: Hedging or Speculative Benefits?* Connaught Fund.

**EILING, ESTHER.** *How Do Investors Choose Their Stock Portfolios? The Role of Their Industry-Specific Human Capital.* SSHRC.

**EILING, ESTHER.** *Junior Extramural Fellow, CentER, Tilburg University (The Netherlands).*

**EILING, ESTHER.** *The Role of Currencies in International Investment Portfolios.* Connaught Fund.

**ENRIGHT, WAYNE.** *Robust and Reliable Software for the Numerical Solution of ODEs.* NSERC.

**ENRIGHT, WAYNE.** *The Effective Use of High Performance Computer Workstations in Scientific Computing.* Connaught Fund–workshop.

**ERB, SUZANNE.** *Interactive Influences of Catecholamines and Corticotropin-Releasing Factor in Anxiety Responses and the Reinstatement of Cocaine Seeking in Rats: Role of Withdrawal Duration.* NSERC.

**EVANS, MICHAEL.** *Bayesian Statistical Inference and Computation.* NSERC.

**EYLES, NICHOLAS.** *Sedimentology of Glaciated Basins.* NSERC.

**FITZPATRICK, MARK.** *Genetic Analyses of Allelic Variation in cGMP-Dependent Protein Kinase and Good Bodies: Running, Charity and Their Effects on Behaviour.* NSERC.

**FLEET, DAVID JAMES.** *Computational Vision.* NSERC.

**FLEET, DAVID JAMES.** *Fellowship in Neural Computation and Adaptive Perception Program.* CIFAR.

**FOURNIER, MARC.** *Adolescent Depressive Vulnerability through the Lens of Face-to-Face and Day-to-Day Social Interaction.* CFI.

**FOURNIER, MARC.** *Conference organizer and program chair for the 12th annual meeting of the Society for Interpersonal Theory and Research.* SSHRC.

**FOURNIER, MARC.** *Extraversion, Hierarchy Formation, and Social Attention-Holding Power.* SSHRC.

**FRANCO, APRIL.** *Excellence in Teaching Award.* Rotman School of Management.

**FRANCO, APRIL.** *Spillovers, Selection, and Spats.* Connaught Fund.

**FRANCO, APRIL.** *The Composition of Research Teams: Theory and Evidence.* SSHRC.

**FRASER, SIMON J.** *Investigation of Invariant Manifolds, Bifurcations and Stochastics Processes in Chemical Systems.* NSERC.

**FRAZER, GARTH.** *Globalization and International Links to Business in Africa.* SSHRC.

**FRAZER, GARTH.** *Unions, Globalization, Wages and Productivity in Africa.* SSHRC.

**FRIEDLANDER, JOHN.** *Research in Number Theory.* NSERC.

**FULTHORPE, ROBERTA.** *Biological Safety Cabinet.* NSERC.

**FULTHORPE, ROBERTA.** *Catabolic Bacteria of the Rhizosphere-Selection and Stability.* NSERC.

**GAZZARRINI, SONIA.** *Developmental Phase Transitions in Plants.* NSERC.

**GAZZARRINI, SONIA.** *High-Throughput Cell and Molecular Biology Facility for Functional Genomics Studies of Developmental Phase Transitions and Hormone Cross-Talk.* CFI.

**GERVERS, MICHAEL.** *Central and Inner Asia Seminar.* Asian Institute, Centerra Gold, and SSHRC.

**GERVERS, MICHAEL.** *The Church of Yemrehänna Krestos (Lasta, Ethiopia); Its Historical and Art Historical Context.* SSHRC.

**GOLDMAN, MARLENE B.** *The Politics and Poetics of Haunting in Canadian Literature.* SSHRC.



**VANLERBERGHE, GREG.** Reverse Engineering Plant Variants for Direct C-Sink Management: Respiratory Metabolism of Natural Plant Variants with Beneficial Growth Responses to Prolonged Elevated CO2 Levels. NSERC–Green Crop Network.

**VIRAG, BALINT.** Chair in Mathematics and Statistics. NSERC–CRC.

**VIRAG, BALINT.** Random Matrices and Processes. NSERC.

**VIRAG, BALINT.** Work in Random Walks and Random Matrix Theory. Rollo Davidson Prize.

**WANG, VICTORIA SL., WU, HELEN X.** Co-Curricular and Extra-Curricular Mandarin Chinese Development (MCD) Initiatives. Faculty of A&S, Curriculum Renewal Initiatives Fund.

**WANIA, FRANK.** A Gas Chromatograph/Mass Spectrometer for Environmental Organic Trace Analysis. NSERC.

**WANIA, FRANK.** Creation, Evaluation and Application of an Integrated Environmental Fate and Human Food Chain Bioaccumulation Model for Polar and Non-Polar Organic Substances. Cefic/IMPS.

**WANIA, FRANK.** Development, Application and Evaluation of Model Based Screening Procedures for PBT Chemicals and POPs (SCREEN-POP). Cefic.

**WANIA, FRANK.** Evaluation of the Predictability and Reversibility of Environmental Accumulation for Substances with POP/PBT-Like Properties. Cefic.

**WANIA, FRANK.** Quantitative Characterisation of the Impact of Environmental Factors on the Performance of Passive Air Samplers for Semi-Volatile Organic Compounds. CFCAS.

**WANIA, FRANK.** Quantitative Investigations of Organic Contaminant Distribution along Environmental Gradients. NSERC.

**WANIA, FRANK.** Screening CMP Chemicals for the Potential to be Persistent Organic Pollutants. Environment Canada.

**WAY, LUCAN A.** Competitive Authoritarianism: The Origins and Evolution of Hybrid Regimes in the Post-Cold War Era. SSHRC.

**WEI, JASON.** Option Trading and Dynamics of Option Liquidity. SSHRC.

**WELLS, MATHEW.** Equipment for the Integrated Study of Environmental Fluid Dynamics in the Laboratory and Field. CFI and Ontario MRI.

**WELLS, MATHEW.** Stirring and Mixing of Chemicals in Environmental Flows. NSERC.

**WELLS, MATHEW.** The Effect of Hydrodynamics at Select Port Locations on the Great Lakes Upon Propagule Fate After Release of Ballast Water. CAISN.

**WILLIAMS, D. DUDLEY.** DNA Analysis of Ciliates in Groundwaters. Sigma Xi Grant-in-Aid of Research (GIAR).

**WILLIAMS, D. DUDLEY.** Invertebrate Functional Ecology at Ground-Surface Water Interfaces. NSERC.

**WILSON, JESSICA M.** Hume's Dictum and the Causal Connection. SSHRC.

**WU, HELEN X.** "Poetic Justice" for Official Corruption in China: Corrupt Officials and Women as Reflected in Rhymes. SSHRC.

**WU, HELEN X.** McGraw-Hill–CLTA Conference Fellowship. McGraw-Hill.

**ZAKZANIS, KONSTANTINE.** Development of a Systematic and Objective Study to Improve the Diagnostic Accuracy of Malingering in Litigating Patients. NCE–MITACS.

**ZAKZANIS, KONSTANTINE.** On the Nature of Executive Functioning in Clinical Neuropsychology: The Utility of Virtual Reality and the Multitasking in the City Test. NCE–MITACS.

**ZHAO, RONGMIN.** Investigation of the Molecular Chaperone Hsp90 and its Interacting Proteins in Plant Arabidopsis. Connaught Fund.

**ZHAO, RONGMIN.** Investigation of the Molecular Chaperone HSP90 in Arabidopsis: Its Function in Plant Development, Organelle Physiology and Biogenesis. NSERC.

**ZHAO, RONGMIN.** Strategic Training Program in Protein Folding and Interaction Dynamics: Principles and Applications. CIHR.

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*Entre deux larmes* (2006), an art installation by Lucie Chan

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