

# McMaster Review

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New Faculty members of McMaster's Biology Department, Ita O'Kelly and Ian Fearon.

## Faculty renewal brings *new energy* to McMaster

Increasing student enrolments, faculty retirements, budget reductions from the mid '90s, quality of life issues and a continuing dedication to securing the highest quality faculty are all key drivers for McMaster's faculty renewal.

**C**urrent faculty renewal rivals the pace of expansion of the campus during the 1960s and early '70s, and mirrors the changes taking place at universities across the province and the country, says Provost Ken Norrie. Take the bulge of current and pending retirements among faculty members who arrived during that earlier boom, add in the budget cuts and hiring retrenchments of the mid-1990s, and you've set the stage for another hiring boom. Across all six Faculties, net new hires (meaning tenured or tenure-track appointments

and contractually limited appointments minus retirements and resignations) equaled more than 60 in 2001-02, led by Engineering, Health Sciences and Science. Last year's net increase was 45 people, concentrated again in those three areas. Explaining that he expects growth to continue in coming years, Norrie says that goals for net new faculty are set within individual Faculties – and he hopes to see the University's faculty complement return to the numbers of the early 1990s.

*For the full story, see pages 4-6.*

McMaster  
University 

## FOSTERING INNOVATION

A McMaster alumnus and successful entrepreneur hopes to foster another generation of innovation with a \$1-million gift to support the creation of a new research chair in engineering entrepreneurship and innovation.

The gift from Woodstock businessman Walter G. Booth will be used to establish the Walter G. Booth Chair in Engineering Entrepreneurship and Innovation in the Faculty of Engineering. Booth is Chairman and CEO of the Timberland Group, a group of three companies that specialize in winching and hoisting products that are sold around the world. Booth graduated from McMaster with a bachelor of engineering in mechanical engineering in 1962 and obtained his master's in engineering in 1965.

## TRAINING THE BRAIN

McMaster University vision scientists have discovered that the ability to recognize someone from different points of view – when they look down at a tray of food or turn their head to the side as a friend arrives – is dependent upon seeing things during the first few weeks of life. Their study's findings were published in the November issue of the journal *Developmental Science*.

## DEAN MAKES CAPITAL MOVE

Ian Harrison, dean of the Faculty of Social Sciences, has been appointed vice-president academic and provost at Carleton University in Ottawa.

Focusing on improving the student experience and developing Carleton's research profile attracted Harrison to the position. "Putting students first is something that is personally close to my heart and something I have consistently tried to do at McMaster in my time as dean," Harrison says. "It is something that I will continue to focus on at Carleton."

Harrison will assume his new position at Carleton on July 1, 2003.

## MINI MED

The community will have the chance to explore the scientific basis of topical medical issues in a new program being offered at McMaster. Beginning in March, faculty members will give seven public seminars similar to those given to medical students, using the world-renowned McMaster approach of problem-based learning.

The concept of a mini-medical school for the public was developed in the U.S. and recent programs at McGill and University of Toronto have been sold-out events. At McMaster, the mini-medical school is being organized by a group of five third-year medical students.

## POPULAR CHOICE

The number of McMaster students listing McMaster as their first choice is up more than 50 per cent, according to figures released by the Ontario Universities, Application Centre. As of Jan. 15, 2003, 6,748 students listed McMaster as their first choice compared to 4,482 last year. Students who have listed McMaster as their second or third choice also increased more than 50 per cent from last year at this time. About one-third of all Ontario high school students or 35,000 applicants who want to go to university in the province next year applied to McMaster.

*These stories are excerpted from the McMaster Daily News Web site.*

*For additional details or to read other McMaster news, visit <http://dailynews.mcmaster.ca>.*

## SCIENCE COMES TO THE CITY

BY DANELLE D'ALVISE



Whether they're using giant telescopes to explore the farthest reaches of the universe or miniature cameras and surgical robots to assist in delicate surgeries, McMaster University researchers are involved in exciting science.

McMaster University, in partnership with The Hamilton Spectator, is sponsoring the Science in the City Lecture Series, an opportunity for the community to come out and hear what some of our fine minds are doing in engineering, science and health sciences.

This exciting new series is the result of collaborations between psychology professor Allison Sekuler and Nick Marketos, senior advisor to the Office of the Vice-President, Research & International Affairs.

Before coming to McMaster, both Sekuler and Marketos had experience with science outreach activities: Sekuler as past president and board member of the Royal Canadian Institute, an organization that enhances the public awareness of science by offering weekly public lectures, and Marketos, in his previous job as manager for the Ontario government's science and technology awareness and innovation initiatives.

"We looked at a public lecture series as an opportunity for the university to reach out to the community and offer people a chance to hear McMaster scientists talk about what they do. We wanted something interesting and free of charge, that offered an opportunity for questions and discussion – a fun and informative evening out," says Marketos.

The Hamilton Spectator was approached with the idea and Judi Partridge, manager of community relations and corporate donations, was immediately receptive to a partnership. Partridge offered the use of The Spectator auditorium as well as free advertising for the series.

All lectures will be held monthly on Tuesday evenings at The Hamilton Spectator Auditorium, 44 Frid Street, Hamilton. Doors open at 6:30 pm; lectures are from 7-9 pm.

For reservations, call 905-525-9140, ext. 24934 and leave your name and phone number or e-mail [sciencecity@mcmaster.ca](mailto:sciencecity@mcmaster.ca).

### Lecture Overviews:

#### ■ February 11: Competition, inequity and homicide

What do social policies, income inequality and unsuccessful young men have to do with murder? Join Martin Daly, professor of psychology, to hear about the factors that can be used to predict the homicide rate.

#### ■ March 4: The Role of the Engineer in Healthcare

Discover how today's engineers are involved in creating "off-the-shelf" blood vessels and corneas in the new and exciting field of biomaterials and tissue engineering. Heather Sheardown, assistant professor, chemical engineering, will discuss the process, rationale and need for these tissues, as well as recent developments from her laboratory.

#### ■ April 8: Telementoring and Telerobotic Surgery

*Time* Magazine describes Mehran Anvari as "sculpting the next frontier of medicine." Anvari, professor of surgery and the director of the Centre for Minimal Access Surgery, will discuss telementoring and telerobotic surgery, technologies that link experienced surgeons with surgeons in remote regions to offer advice, guidance and actual surgical assistance. His lecture will explore how these technologies have the potential to change the face of health care in Canada.

*continued on page 6*

## Progressive times in engineering

BY ANDREW VOWLES

**W**ho says engineers are all men with no environmental conscience? Two events co-ordinated recently through McMaster's Faculty of Engineering – a visit by Canadian environmentalist David Suzuki and a conference to promote engineering studies among female high school students – showed that engineers have a feminine side and an environmental sensibility.

Up to 1,200 people, including area high school students, were expected to visit the campus to hear one of Canada's most recognizable figures in environmental education speak about environmental sustainability. Suzuki's talk was the keynote address for a two-day gathering of engineering students at McMaster on January 31 and February 1.

Commenting on the presentation by the guest speaker, Civil Engineering chair Dieter Stolle says, "Many engineers are strong supporters of Dr. Suzuki's way of looking at things."

Both current and prospective engineers were among the delegates attending the ninth annual Canadian Society for Civil Engineering student conference at McMaster. Besides the Suzuki presentations, visitors heard about the connections between civil engineering and environmental issues during talks by McMaster Profs. Brian Baetz and Cameron Churchill, and by Rob Strang representing Professional Engineers of Ontario.

Increasing students' awareness of the environmental impacts of civil engineering projects was the purpose of the conference, which was expected to attract up to 80 engineering students from McMaster, Queen's University, Carleton University, the University of Guelph, the University of Toronto and the University of Western Ontario.

"Sustainability is part of engineering and we are future engineers," says conference co-ordinator Aaron Ward, a fourth-year student in Civil Engineering. A member of the Hamilton Naturalists Club, he's interested in environmental engineering topics such as protection of groundwater resources.

Stolle says his department will introduce an environmental engineering stream for second-year students in the program this fall, intended to equip graduates with knowledge of municipal engineering, water quality engineering, water and wastewater treatment, and environmental policy and sustainability. "At McMaster we want high school students to recognize the importance of environmental engineering."

Down the hall from Stolle's office in the John Hodgins Engineering Building, Prof. Heather Sheardown, Chemical Engineering, is the organizer of another Engineering event targeting female high school students to campus to hear about environmental engineering as well as all Faculty programs.

Sheardown still remembers the high school physics teacher who told her in Grade 11 that she was too young for his OAC course and that, anyway, physics was "a man's world." She got her own

back by nailing the highest mark in the class along with another girl.

More encouraging was the lone female chemistry teacher who suggested that she pursues an engineering career.

Those early experiences are never far from mind



CIVIL ENGINEERING CONFERENCE GUEST SPEAKER DR. DAVID SUZUKI. PROFESSOR HEATHER SHEARDOWN, CO-ORDINATOR OF "WOMEN'S ENGINEERING EXPERIENCE."

as she confronts another generation of students enrolled in her undergraduate classes at McMaster. And those memories remain at the forefront of her memory as she prepares to welcome a group of female high school students on February 8 for the first annual McMaster Women's Engineering Experience.

With sponsorship from Dow Chemical Canada

Inc. and the Faculty of Engineering, the inaugural event is aimed at female students from the Greater Toronto Area and the Golden Horseshoe for a day-long series of activities designed to encourage girls in high school to consider engineering as a career path. "We want to target Grade 9 and 10 students before they start dropping science courses they need for engineering at university," says Sheardown, who organized the event along Prof. Sarah Dickson, Civil Engineering, and Prof. Marilyn Lightstone, Mechanical Engineering.

A highlight of the event is the opportunity for students to take part in an environmental engineering design project guided by Dickson, including a chance at a \$1,000 scholarship prize from the dean of the Faculty of Engineering toward engineering studies at McMaster.

During the morning speakers' series, four professionals will discuss their engineering careers, including three McMaster graduates:

- Angela Sieloff (Chem. Eng. '86), GPE activity leader, Dow Chemical Canada Inc.
- Erin McClintock (Civil Eng. '94), project manager, Construction Department, McDonald's Restaurants of Canada
- Eleanor Stainsby (Master's in Mech. Eng. '98), University of Toronto
- Lisa Maki, president, Maki Golf Course Design

Afternoon sessions include a presentation on engineering studies at McMaster by associate dean Peter Smith, followed by a panel discussion involving in-course students moderated by Sheardown.

Undergraduate enrolment in McMaster engineering programs by female students is close to the average of about 20 per cent across most university engineering schools. Female enrolment also varies by department; about half of the undergraduates in Sheardown's department are women.

Not so long ago, she was one of those undergraduates herself, having been one of two women enrolled in chemical engineering among a class of about 25. She completed her degree at McMaster in 1989, and then finished her PhD at the University of Toronto in 1995.

Three years later she returned to McMaster, where she studies the use of polymers for making biomaterials, including artificial corneas. She says many engineers work behind the scenes in making materials and designing processes that might yield useful treatments or drugs for doctors.

She's one of five female faculty members in McMaster's roughly 120-strong Faculty of Engineering.

Both the Suzuki talk and the Women's Engineering Experience have another mutual goal: to raise the profile of McMaster's Faculty of Engineering among prospective students. The payoff? Look in a couple of years for that female student to arrive eager to pursue an engineering degree – and to change our world as a result.

# Faculty renewal brings *new energy* to McMaster

BY ANDREW VOWLES

**N**orrie and others say renewal is key to coping with growing waves of students expected through the double cohort and long-term enrolment demands. It's also important for maintaining and strengthening McMaster's reputation as a research-intensive university that fosters interdisciplinary links and encourages creative teaching and learning approaches. Estimating that McMaster now spends up to \$500,000 a year to recruit new faculty, Norrie says the expense is necessary for the University to continue to attract top researchers.

Prof. Mo Elbestawi, dean of the Faculty of Engineering, says he has hired about 50 new faculty since 2000 (balanced against some 15 retirees); his current complement is about 130 and he's aiming for a total of about 140 by 2004. Industry and endowed chairs as well as several appointments under the Canada Research Chairs program have helped to offset salary costs for up to one-third of the appointments. Those programs are critical to help with competing for faculty members, says Elbestawi: "It's a massive competition." But it's one that McMaster appears to be meeting through faculty renewal, for reasons ranging from prospective research collaborations and facilities, to teaching opportunities, to quality of life on and off campus.

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Psychology professors Allison Sekuler and Patrick Bennett had found themselves at the proverbial career crossroads. After working together at the University of Toronto for about a decade, the husband-and-wife team had had enough of funding restraints and increasingly scarce resources. They'd been considering a move, even back to the United States, when McMaster came calling, along with the prospect of funding through a Canada Research Chair. They packed up and headed to Hamilton in July 2001. Today, having just finished a lab renovation in the Department of Psychology, including

installation of sophisticated eye trackers and scanning machines, they're ensconced in what Sekuler calls "one of the best places in North America" for studying their field of face and object recognition.

Longtime absentees returning to McMaster today might need to borrow some of their equipment to make sense of the changing faces in faculty offices and labs.

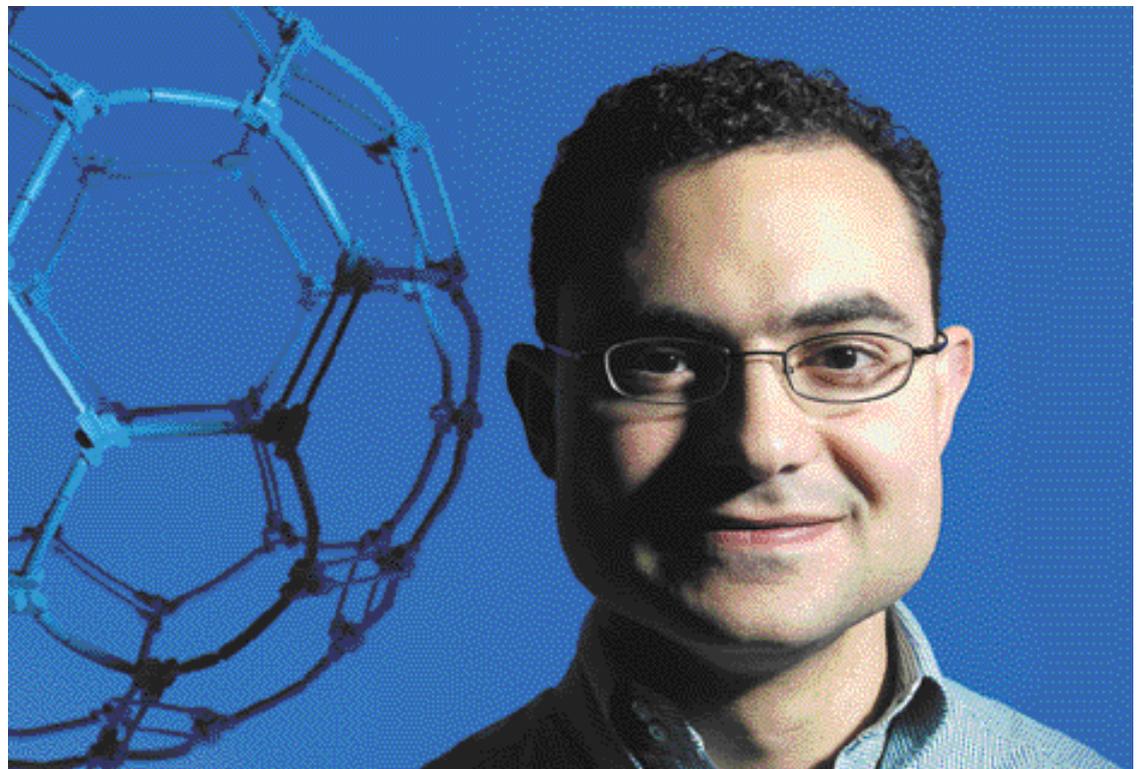
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New opportunities attracted Prof. Paul Higgs to McMaster's Department of Physics and Astronomy last year. Having arrived after seven years as a faculty member at the University of Manchester, Higgs received a Canada Research Chair in Biophysics. He's particularly enthusiastic about the opportunities

for research collaborations here at McMaster, not just within his department but in various places across campus from biology to biochemistry. Forging those kinds of connections has been relatively easy at McMaster despite recent growth, says Higgs. "I feel that I know people in this department," he says, contrasting the unit with the roughly 100 biologists at Manchester, where "you never really got to know everybody. It was a bit too big."

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Professor Lisa Schwartz, Clinical Epidemiology and Biostatistics (CEB), confesses that, if things had gone according to plan, she'd still be at Glasgow University. She came reluctantly to McMaster, after



Chemistry professor and Polanyi Prize winner Alex Adronov, a Windsor native who returned from California last summer, always wanted to come back to Canada because he feels the quality of life here is ideal.

her husband decided that he wished to return to his native Hamilton. In fact, she had only recently been promoted to help develop a problem-based learning approach in the faculty of medicine at Glasgow, where she had completed her PhD. But maybe something else had been in the cards all along. The Montreal native recalls a visit she paid to the University some seven years ago, when she met C&EB professor emeritus Arnold Johnson, who had helped to develop a program in health care ethics here. When Schwartz arrived at McMaster in spring 2001, she took up her research as the holder of the Arnold L. Johnson chair in health care ethics (she also has a part-time position as a bioethics consultant with Cancer Care Ontario). She expects to develop collaborations with two other chairs in the Faculty of Health Sciences and weave more role-playing into the curriculum, drawing upon her lifelong background as an actor in theatre, film, television and radio.

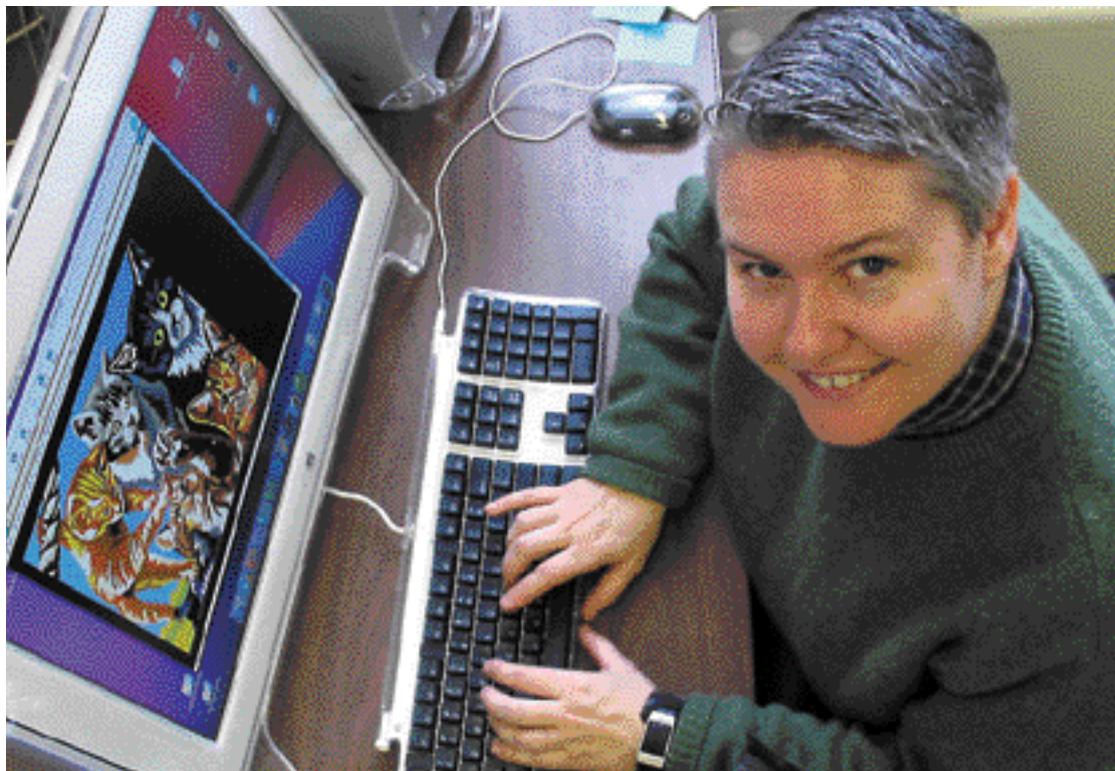
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It was the chance to work directly with an acknowledged expert in his field that attracted professor Ian Fearon to the Department of Biology. He was appointed last fall, two years after arriving from Leeds as a post-doctoral fellow with biology professor Colin Nurse. "Colin is a world-renowned expert in oxygen sensing and that was what drew me to McMaster for the post-doctoral fellowship," says Fearon, who studies ion channels in cell membranes. Although he could have returned to England, he says infrastructure and equipment funding for research is superior in Canada. He's also excited about the chance to collaborate with fellow researchers and an opportunity to develop a specialized course in his field for students.

Admittedly, serendipity also played a role in his choice. Ita O'Kelly had landed a contractually limited appointment in the department at the same time. Having met as doctoral students at Leeds, they had gotten married; she was working at Yale and had completed two years of her own post-doctoral fellowship. She was interested enough in teaching to cut short her studies of ion channels to take up a post that came open here in Hamilton. She's now teaching a fourth-year inquiry course and a graduate course in molecular biology. "McMaster was recruiting specifically for people who would teach and not many universities do that at this point," says O'Kelly, who says the campus reminds her of Ireland's University of Galway, where she completed her undergraduate degree. Growth continues apace in her department – almost too much growth: early this year she was moving her office to accommodate yet another new arrival.

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Her new dean knows all about the accommodation challenge. Renewal has brought opportunities and challenges for the Faculty of Science, says dean Peter Sutherland, referring to 20 new appointments since July 2001 that have boosted his total complement to about 184 members, including about 15 contractually limited appointments. Before the provincial budget-cutting of the mid-1990s, the Faculty numbered about 150 people; in two years it lost



Liss Platt, a film and video artist and photographer, arrived at McMaster last summer to teach digital video and image-making in the School of the Arts. She gave up a tenure-track job after five years at Rutgers University in New York partly to find a cheaper place to live and to bring balance to her life.

some 35. There have been regular retirements since then. "We haven't built back absolutely everything but we've been hiring at a pretty regular rate," says Sutherland, adding that more than 12 positions are currently being advertised in his Faculty. All that activity has given a boost to the Faculty, says Sutherland, who has been at McMaster since 1976. Referring to the earlier budget cuts, he says, "We were at risk in the mid-1990s of falling into a kind of despair because we had lost so many excellent colleagues. Faculty renewal has revitalized or brought new energy into the departments. Everyone's confidence is completely back." Challenges? "We're absolutely jammed up for space. There's constant skirmishing around office space and research lab space. The Faculty no longer has a meeting room for department chairs so today we're over in the student centre."

Agreeing that space is at a premium around campus, Norrie points to recent and current building projects intended to accommodate not just more students but more faculty. He says several deans are exploring creative ways to house emeritus professors and free up valuable space, including bringing together retired faculty in common offices that might look like a throwback to their graduate student days. The other pressing challenge is the need for sophisticated and costly equipment in those offices and labs around campus – resources that might be out of reach without access to such funding programs as the Canada Foundation for Innovation and the Ontario Research and Development Challenge Fund. "Probably the major issue that deans and others face is not salary affordability. If you want top researchers, especially in science, medicine and engineering as well as in other areas, there's a large demand for equipment and labs."

In addition to the need for research facilities and collaborations, Norrie notes that other common themes for faculty candidates include McMaster's central geographical location, relative affordability, and broader cultural and social amenities in the city and region. Pointing out that McMaster ends up competing not just with universities down the road, but with institutions around the world. He says, "First they talk about research strengths and teaching facilities or laboratories or library collections, but we usually end up talking about other things. Quality of life is very important."

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That was the case for Professor Liss Platt, a film and video artist and photographer who arrived last summer to teach digital video and image-making in the School of the Arts. She gave up a tenure-track job after five years at Rutgers University in New York partly to find a cheaper place to live. She also wanted to balance her life: she'd found herself working all the time, including taking on consulting jobs, just to pay the rent. And she had less time than she wanted for a passion that had developed relatively late: hockey. Now 37, she's been playing only since 1994. Today she has time to fit in three games a week in women's leagues in both Burlington and Hamilton. Self-described as an above-average player, she fills in at left wing or centre in the top tier of four competitive levels in Hamilton. "I can have a better quality of life and that includes recreation being accessible, inexpensive and everywhere. It's all about balance," says Platt, who says she was cheering for both the Canadians and the American during the men's and women's hockey championships last year.

Coming from the United States, she also has a perspective on the treatment of artists and academics

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## Faculty Renewal continued from page 5

on both sides of the border. For all that Canadians may complain about lack of public funding for art and artists, Platt finds federal support more generous and equitable here than in the States – not to mention relatively fewer artists scrabbling for the pot. “There’s lots more money per artist.” And McMaster specifically is more generous in research funding, she adds, referring to the space and multimedia equipment she has received here. Her second choice had been a position in Buffalo but they’d been looking for someone with robotics expertise.

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Across campus, that sentiment is also voiced by chemistry professor Alex Adronov, a Windsor native who returned from California last summer. “I always wanted to come back to Canada because I think the quality of life here is ideal for me.” Having completed his PhD at Berkeley in polymer chemistry, he had been invited to give a seminar at McMaster just as a position came open in the Department of Chemistry. “Just before I came, the job was advertised, so I transformed my visit into an interview,” says Adronov, who completed his undergraduate here at McMaster.

In hindsight, he says choosing a faculty post here was a better move than a chance at a post-doctoral fellowship in Wisconsin. “McMaster is one of Canada’s leading universities especially in materials and polymer science. It was really the right place for me to end up,” he says. Besides receiving research funding through a CFI grant, he was one of four McMaster faculty awarded a Polanyi Prize last year – what Adronov calls “icing on the cake.”

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Psychology professor Sekuler says she finds that things can get done faster and easier at McMaster than in her past experiences. She happened to mention an idea she had for a series of public lectures in conversation with a colleague in the University’s research office. “The thing happened so quickly. It went from being an idea to ‘it’s starting in a couple of weeks.’ It’s nice to be in a place where things happen instead of just being talked about.”

Bennett says McMaster offers the promise of further collaborations within his department and with the Brain-Body Institute at St. Joseph’s Healthcare. “The department has a lot more people in areas closer to what I do.” Referring to his Canada Research Chair, he says, “The main attraction for me was the research money that’s associated with it. There’s a quantum leap in the equipment I could get.” One example is his access to equipment for brain scan-



Psychology professors and husband-and-wife team Allison Sekuler and Patrick Bennett, who worked together at the University of Toronto for about a decade, packed up and headed to Hamilton in July 2001. Today, they’re ensconced in what Sekuler calls “one of the best places in North America” for studying their field of face and object recognition.

ning. In Toronto, there would have been a lineup of researchers for such equipment. He says he and Sekuler were approached by other universities but “it never went very far because McMaster had everything in hand.”

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“Cautiously optimistic” is how Prof. Alan Harrison, dean of Social Sciences, regards prospects for faculty renewal for his Faculty. Most hiring during the past several years in social sciences has been funded by money provided for specific programs and initiatives, including funding from the Social Sciences and Humanities Research Council. Although the Faculty has replaced faculty resignations, he says renewal has not generally kept pace with retirements, a particular concern for an administrative unit that will see about one-third of its faculty members retire by 2010. A human resources plan (for staff as well as faculty) that he hopes will be accepted early this year calls for strategic appointments to be linked to retirements in order to maintain and enhance areas of teaching and research strength. Assuming that up to 40 faculty will have retired during this decade, Harrison wants to ensure that enough people are hired to at least keep the total complement at about 110 people, which was the

number within the Faculty in 2000 when he began the planning exercise.

For many longtime McMaster faculty, there’s something infectious about the sense of optimism engendered by the renewal efforts during the past few years. Biochemistry professor Brian McCarry, holder of the Stephen A. Jarislowsky Chair in Environment and Health, allows that all of the recent growth has entailed costs, both in recruitment dollars and in legwork but it’s a crucial investment in McMaster’s future. Currently chair of the budget committee, a subgroup of the University Planning Committee, he estimates it takes at least six months from the time a position is advertised until the date of hire – six months worth of visits and interviews involving a range of faculty and administrators. Still, McCarry, who joined McMaster 26 years ago, says the new faces have given the campus a boost. He’s not the only one to feel that way: one of those recent faculty candidates described the “electricity” she felt during her visit to campus. “McMaster’s faculty renewal creates a real sense of energy and excitement about opportunities here,” says McCarry. “It contributes greatly to McMaster’s continued success and helps ensure a very bright future.”

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## Lecture Overviews continued from page 2

### ■ **May 13: Moving Beyond the Visible Universe: Dark Clouds, Galaxy Collisions and the Origin of Stars**

Known internationally for her work on star formation in nearby galaxies, astronomer Christine Wilson will provide a unique view into the cold, dark regions of space where stars form. Wilson will discuss her work on a spectacular collision between two spiral galaxies that has triggered the formation of massive clusters of stars.

### ■ **June 10: Sustainable Communities**

From green spaces to buildings using green design principles, find out what would make Hamilton a truly sustainable city. Civil engineering professors Brian Baetz and Cameron Churchill will tell you about their research and what other researchers are proposing to develop liveable communities, and will ask the audience to share their ideas on what would make Hamilton a truly liveable, sustainable community.

### ■ **Special Event! Science in the City for Kids: Saturday March 8 1pm to 3pm**

The Junior Fireball Show and McMaster’s Solar Car Racing Team will entertain and inform.

For more information about the lecture series, visit <http://www.mcmaster.ca/research/ScienceintheCity.htm>

## Eric Brown battles super bugs one microbe at a time

### Biochemist uses new laboratory to study molecules and screen chemical compounds for therapeutic use

BY ANDREW VOWLES

It's a new age in drug discovery. So says professor of biochemistry Eric Brown, who is among a new breed of researchers straddling the borders of microbiology, genetics and chemistry to develop new therapies intended to counter the growing threat of bacterial drug resistance to existing antibiotics.

Using the tools of molecular genetics and enzyme science, Brown and his fellow scientists in McMaster's Antimicrobial Research Centre (ARC) are going after new pathogens by picking genetic targets in infection-causing bacteria and building drugs one protein at a time to disable them. "What's needed now are targets and small molecules that block the function of those targets," says Brown, who holds a Canada Research Chair in Microbial Biochemistry.

A Flamborough native, he came back to Hamilton in 1998 after several years working in antibacterial drug discovery at a pharmaceutical company in Boston. Although he was arguably closer to the front lines there, he wanted to pursue ideas through a research program of his own.

Today he's studying new bacterial targets along with fellow ARC biochemists Gerry Wright, John Brennan, Justin Nodwell and Paul Berti. Much of their work is taking place in a near-pristine, fourth-floor lab set up late last year in McMaster's Health Sciences Centre, where they collaborate with researchers at area hospitals and further afield as members of the Ontario Genomics Institute.

The lab, called the McMaster High Throughput Screening Laboratory (MAC-HTS), is designed to help in screening thousands of chemical compounds for potential therapeutic use. The only one of its kind in Canada, MAC-HTS was outfitted with funding from the Ontario Research and Development Challenge Fund and additional fund from the University and the private sector.

A quick tour of the lab reveals a bewildering array of equipment, from conventional flasks and petri dishes to computers and a bench-top robotic handling system.

The new lab puts McMaster "ahead of the curve" in screening small molecules and functional genomics for potential use against disease-causing microbes, according to Brown, director of MAC-HTS. "It's the envy of a lot of biotech companies in places like Boston. What we're running is as good as anything at any university in the United States right now."

At the same time, and like other researchers in the field, the McMaster team is scrambling to keep up with the extraordinary resilience of strains of disease-causing bacteria. The past 20 years have seen a decline in the introduction of new antibacterial agents even as bacterial resistance grows to



er or even malfunctioning.

Looking for novel drug targets, Brown is pursuing two related research routes.

In one project, he's studying teichoic acids found on the surface of certain pathogenic bacteria. Until recently, researchers dismissed these substances but Brown's work suggests that they're essential in the daily lives of bacteria. He's studying how those enzymes work and how they might be disabled.

In a second project that sees him playing DNA detective, he's studying large stretches of genetic material that enable bacteria to make so-called "mystery proteins." Despite the explosion of information about microbial genomic sequences, Brown says, we still know little about many proteins made by those stretches of DNA.

"The Holy Grail for antibacterial research is to understand bacterial physiology and the molecular details of protein function."

Brown studied biochemistry at the University of Guelph, including graduate studies of an enzyme important in milk clotting. That first taste of enzyme science and the reductionist approach to understanding how proteins work was fascinating for Brown. (Guelph and its agricultural roots also made sense for family reasons: his grandparents met there as students in agriculture and home economics, and his brother studied microbiology.)

He moved closer to medicine with his post-doctoral work on medically important proteins at Harvard. "I bought into the idea that I would do fundamental research on projects of high relevance to some medical problem."

He wasn't the only one connecting biochemistry, molecular biology and medicine. By the late 1980s and early 1990s, physicians were exploring remedies for the problem of infection during organ replacements, for example, and biotech companies were increasingly interested in the uses of biochemistry for drug discovery.

Referring to the convergence of different fields represented by his own research and by the new screening facility, Brown says, "Science these days is all about what's going on around the edges." He believes biochemistry, in particular, will allow medicine to "uncover the molecular details of a target and provide more opportunity to be intelligent about building drugs" to combat the new generation of super bugs.

Using the tools of molecular genetics and enzyme science, Brown and his fellow scientists in McMaster's Antimicrobial Research Centre (ARC) are going after new pathogens by picking genetic targets in infection-causing bacteria and building drugs one protein at a time to disable them.

existing antibiotics. Drug resistance is a mounting health threat that can cause infection and even death especially for people in hospitals and nursing homes whose immune systems are often weak-

## Commonwealth games bid holds great promise

BY JULIA THOMSON

State of the art sport facilities, cutting edge research, and world-class athletes. What do these have in common? In 2010, the answer may just be McMaster.

This is the vision of Thérèse Quigley, Director of Athletics & Recreation and member of the Canadian committee campaigning to bring the Commonwealth games to Hamilton in 2010.

In December, Commonwealth Games Canada (CGC) chose Hamilton as the location for the Canadian bid. Now, local committee members will partner with CGC in preparing the bid for international competition where Hamilton will be up against New Delhi.

If Hamilton is successful in winning the bid, the Games will bring new and updated facilities to many parts of the City. For McMaster, the bid provides an opportunity to transform the University's athletics facilities and provide world-class athletic centres for students, faculty, staff, and the community. Some of the developments that may be seen on campus may include a new stadium, aquatic centre, and multi-sport athletic complex.

Explains Quigley, "These are facilities that we have been planning for over five years. The Commonwealth games legacy is very consistent with McMaster's long range planning." However, with financial contributions from Commonwealth Games Canada and the federal and provincial governments, the Commonwealth games will serve as a once in a lifetime opportunity for facility development.

Along with facility development, the Commonwealth Games would create international recognition for McMaster. "You can't bring this attention to McMaster any other way," says Quigley. Attracting outstanding national and international athletes, coaches, and trainers, developing new research opportunities, and having the potential to host future international events are just some of the benefits the games would bring to McMaster.

Quigley cites building community as one of the main legacies of the Commonwealth Games. "Victoria hosted the Games in 1994, and, talking to people out there, they all immediately say that they'd do it again." Calgary, Winnipeg, and Edmonton have also hosted international events. "Once these cities have the infrastructure to manage international events, they continue to host other competitions," explains Quigley.

The educational impact the Games would have on McMaster would also be significant. "We have an equal potential to Calgary to match their involvement in sports medicine," states Quigley, who also foresees research on high performance athletes in McMaster's future. "There are benefits to researchers, students, faculty, and staff." Through hosting international events, cities create more

opportunities to serve their internal communities.

Quigley believes that the 2010 Commonwealth Games are a natural fit for Hamilton and McMaster, first because of local multiculturalism and second because of Hamilton's history as the first host for the



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British Empire Games (now the Commonwealth Games). 2010 marks the 80th anniversary of the Games.

Currently, Canada's bid committee is creating a formal strategic plan for the international phase. The job of the new committee and its board of directors will be to lobby and make presentations to the international voting committee. Until the final decision is made in November, all stakeholders, including the City of Hamilton and McMaster University, will work together to ensure the Games' success.

The cooperation between the City, the University, the province, and the private sector has

been a major factor contributing to Hamilton's success thus far. Bid co-chair and publisher of the Hamilton Spectator, Jagoda Pike, stated in the Spectator that Hamilton's bid model will "take Canada to the next level." She also cited the athletes' village, which would be housed at McMaster, as one of the deciding factors that made Hamilton the site of the Canadian bid.

President Peter George was extensively involved in preparing Hamilton's bid for presentation to CGC. He is very excited that Hamilton has been chosen to represent Canada in the international round of competition. "This successful bid will bring tremendous international attention and benefits to Hamilton and to McMaster. This is an exciting chance not only to work closely with the City to bring the very best to Hamilton, but also to create a legacy for McMaster."

Quigley lauds the Hamilton bid committee and the McMaster community. "We have had outstanding leadership, and that leadership inspires other people to get involved. All of these people [involved in the initial presentation to CGC] were volunteers. The work that they did was above and beyond their regular jobs. We had an extraordinary level of commitment from everyone... I was very proud to be an employee of McMaster during the bid process and to have the opportunity to work with so many gifted people and see the passion that people have for this University."

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