THE UNIVERSITY OF BRITISH COLUMBIA

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UBC REPORTS

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By John Hepburn, Vice President, Research

UBC is one of Canada's leading research universities, consistently ranked amongst the top 40 universities in the world, and we are justifiably proud of our impressive research accomplishments: research funding for more than 5,700 projects totalled upwards of $485.6 million in 2005/06.

UBC ranked ninth among North American research universities as a "patent powerhouse" in a 2005 U.S. survey of the life sciences conducted by *The Scientist*, and was the only Canadian institution in the survey.

In addition, UBC holds the top position for overall Canada Foundation for Innovation funding among the country's research universities, and ranks second nationally for Fellowships of the Royal Society of Canada, Steacie Fellows and Guggenheim Award recipients.

While we celebrate the impressive accomplishments of individual researchers, important research accomplishments usually result from a team effort. In addition to the local collaborations amongst faculty and students at UBC, UBC researchers work with investigators across Canada and around the world, extending the scope and impact of UBC research, and ensuring that it serves the citizens of British Columbia, Canada, and the world.

The fact is, research matters. It enriches our lives, drives our economy, and contributes to greater global understanding. We are proud to have researchers spanning all disciplines, fuelling important, meaningful and inspirational research that advances knowledge and informs teaching. And we have recruited top talent to keep that momentum going – new faculty members, graduate students and post-doctoral fellows. They form, along with our curious and accomplished undergrads, the next generation of researchers.

RESEARCH AWARENESS WEEK ACTIVITIES – page 2

This issue of *UBC Reports* is published on the eve of Celebrate Research Week. As you will see from the stories that follow, we have much to celebrate. I congratulate all our investigators, thank them for their contribution to this university and encourage them in their pursuit of new knowledge. R

Undergrads Jump Disciplines in the Discovery Game

By Hilary Thomson

Parties, pizza, and late-night cramming may be common images of undergraduate life, but for some UBC undergrads, the picture also includes designing and conducting original research.

Close to 60 students from all disciplines are involved in UBC's Multidisciplinary Undergraduate Research Program (MURP), which also includes participation in the Multidisciplinary Undergraduate Research Conference (MURC), to be held March 3.

"We want to make students' research experience more cohesive," says Ingrid Price, an instructor in the Faculty of Pharmaceutical Sciences whose vision led to both the program and the conference. "We also want to demystify the research process and enrich the academic experience of our undergrads."

Developed in 2004, MURP is a non-credit program that involves students in research through directed studies, honours programs, co-op placements, volunteer work or research assistantships.

In addition to time spent on the project itself, students spend about four to six hours per month participating in MURP workshops that include library research skills, study design and scholarly writing and presentation. In addition, there is an optional service learning component where students serve as mentors to high school students enrolled in the International Baccalaureate program at Vancouver's Britannia Secondary School.

Approximately 130 students – MURP students and others – will be presenting at MURC. There will be $100 prizes for the five top presentations in each of the oral and poster categories, as well as for the two top fine arts presentations.

Goldis Chami, a fourth-year double major Arts and Science student, is examining coping behaviours among Rwandan genocide survivors. She had volunteered at a medical clinic in neighbouring Uganda in 2005 where she encountered Rwandan refugees.

"In just 100 days groups of Hutu militia killed between 800,000 and one million people," says Chami of the genocide that erupted in 1994. "Yet there is very little information about the people who survived this genocide."

Chami is reviewing testimonies gathered by a psychology grad student, who is studying other aspects of the genocide. She is also reviewing personal accounts that form part of a memorial website established by non-governmental organizations that support genocide survivors.

Chami will also compare the coping behaviours of Rwandans with those of Holocaust survivors, an area of expertise for her supervisor, Psychology Prof. Peter Suedfeld. Behavioural comparisons will be made according to gender and age groups.

"If we can figure out how coping can work for these people, we'll be better able to help them, to offer interventions and support," says Suedfeld.

Laura McMillan is a fourth-year human kinetics student who is exploring connections between the desire to appear perfect, confidence in athletic ability, satisfaction with body image and exercise dependence. She's interested in cases where a strong desire for physical activity can lead to mental distress and physical injury.

She will use questionnaires to measure the variables among more than 200 female university students.

"We think that exercise dependence is more likely to be a consequence of these variables rather than simply a route

continued on page 5

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A Week to Celebrate Research

Youth Culture & Identity: Challenging Current Stereotypes – an interactive display session and panel presentation by Faculty of Education experts Shelley Hymel, Deirdre Kelly, and Michelle Stack who will look at youth subcultures, identities and emotional/social development. March 5, 6-10 p.m. @ UBC Robson Square

Eat your words – UBC Okanagan Psychology Asst. Prof. Michael Woodworth offers a linguistic profile of psychopathic and non-psychopathic homicide offenders' accounts of their crimes.
March 5, 2:30- 3 p.m. @ UBC Okanagan Arts Bldg.

The State of the Media on Climate Change – a panel discussion on climate change and the role of the media. Panelists include Hadi Dowlatabadi, Professor - Liu Institute for Global Studies and the Institute for Resources, Environment and Sustainability; Chris Mooney, Washington correspondent for Seed Magazine; Ross Gelbspan, Pulitzer Prize-winning editor and author; Bill Blakemore, ABC National news correspondent on global warming; Kirk LaPointe, managing editor of the Vancouver Sun; Jim Hoggan, founder of DeSmogBlog.com, and moderator Stephen J. Ward, director of the UBC School of Journalism. March 6, 6-8 p.m. @ UBC Robson Square

Perceptions of Africa: A Dialogue – three evenings of reflection on themes of Africa, AIDS, and representation of Africa by the West. The dialogue is presented with the exhibition, The Village is Tilting: Dancing AIDS in Malawi. Visit www.moa.ubc.ca for admission fees.
March 8 to 10, 7-9 p.m. @ UBC Museum of Anthropology – 6393 NW Marine Dr.

An Evening with a Nobel Laureate – A Nobel laureate with a passion for science education, UBC Prof. Carl Wieman joined UBC in January, 2007 to lead the Carl Wieman Science Education Initiative to reshape science education at UBC.
March 9, 7:30-9:30 p.m. @ UBC Robson Square

Wine Library Open House – Visit and tour the UBC Wine Library, part of the Wine Research Centre at UBC. The centre provides feedback to B.C. wineries to improve wine production.
March 9, 10 a.m.- 2 p.m. @ UBC Point Grey, Food, Nutrition & Health Bldg., 2205 East Mall, Room 10

The Heart of Diabetes – Join CKNW's Dr. Art Hister's House Calls live from a public forum and province-wide webcast where researchers present what's new in the fight against diabetes and its cardiovascular complications.
March 10, 9-11a.m. @ UBC Life Sciences Centre, 2350 Health Sciences Mall, Theatre 2

A complete listing of events can be found at www.research.ubc.ca/CRW

For access to In The News please visit: www.publicaffairs.ubc.ca/ubcreports

UBC REPORTS

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PHOTO: MARTIN DEE

The first two elections are crucial for shaping the habits of new voters, say UBC political scientists.

Competition Drives Poll Results

By Lorraine Chan

Did an entire generation of Canadians learn not to vote?

A study by UBC political scientists would say yes. *Alienation, Indifference, Competitiveness and Turnout: Evidence from Canada, 1988-2004* looks at voting patterns within Canadian federal ridings over a decade and a half, especially among 18-26 year-olds.

The authors suggest that a massive decline in turnout was directly linked to a massive decline in political competitiveness. And when competitiveness increases so will voter turnout, they argue, as was the case during Canada's most recent federal election in 2006.

"The first couple of elections are crucial for shaping the habits of new voters," says Amanda Bittner, a UBC doctoral candidate in the Dept. of Political Science. "The evidence suggests that people who start out in a non-competitive political environment don't ever become regular voters."

The study investigates the widespread and steep falloff in voter turnout, charting the years before and after one of the most dramatic federal elections in Canada's history. In 1993, the Liberals defeated Kim Campbell's Progressive Conservative (PC) government, which lost all but two of its 151 seats. Until 2003 when the Conservative Party of Canada rose from the ashes of the PC and Reform parties, no effective opposition had challenged the Liberals.

Bittner says the frustration of Canadians translated into a fragmented popular vote. She compares the 1988 federal election, which drew 75 per cent of registered voters, to the 2000 national election, which saw 61 per cent turnout.

The 2004 federal race had an even lower voter turnout with about 13.5 million from a total of 22.3 million eligible Canadians. At 60.5 per cent, this was the worst electorate response to a national election since Confederation in 1867.

"Some of that damage has been repaired," says Bittner, pointing out that 65 per cent of registered voters turned up at the polls during the 2006 federal election.

The study co-authors are recent UBC PhD grad Scott Matthews, now a political science professor at Queen's University, and Richard Johnston, who left UBC as political science department head to direct election studies at the University of Pennsylvania.

They found that between 1988 and 2000, the decline among middle-aged voters – the median age being 50 years old – was about two percentage points. In comparison, voter turnout in the youngest age groups dropped by about 20 points.

"Put another way," says Bittner, "a voter coming of age in 1988 was about 20 percentage points less likely than a 50-year-old to claim they have voted. In 2000, the gap was almost 40 points. This is a huge shift in only a short period of time."

Bittner adds, "Our models predict that even once things become more competitive, a lag occurs because those who have already been socialized as non-voters don't just suddenly start voting. Basically, the cause is structural, and the cure is also structural – but it may never fix the damage that was done for the '90s generation of non-voters."

The research incorporated other variables such as the voters' education, income, gender and marital status.

"For a long time there was never any real sense that the Liberals would lose an election," says Bittner. "Voters who began coming of age to vote in the 1990s were exposed to a political world in which competition was weak, in which the local result was commonly a foregone conclusion. Only in 2004 was some of that damage repaired."

The researchers found that British Columbia exhibited bigger shifts, with voter turnout falling below the national average and then bouncing well above it.

"Much of the B.C. pattern reflects the fortunes of the NDP, which collapsed in 1993 and recovered in 2004," explains Bittner.

She adds Canadians didn't see real change until the 2004 election. "The party system became more competitive with the Reform and PC party merging. That caused something new to happen. Voter levels haven't dropped further. They've leveled off."

> **"We're saying it's not that simple. There's no quick fix," she says. "Parties aren't going to convince a young person to vote through commercials with rappers on stage."**

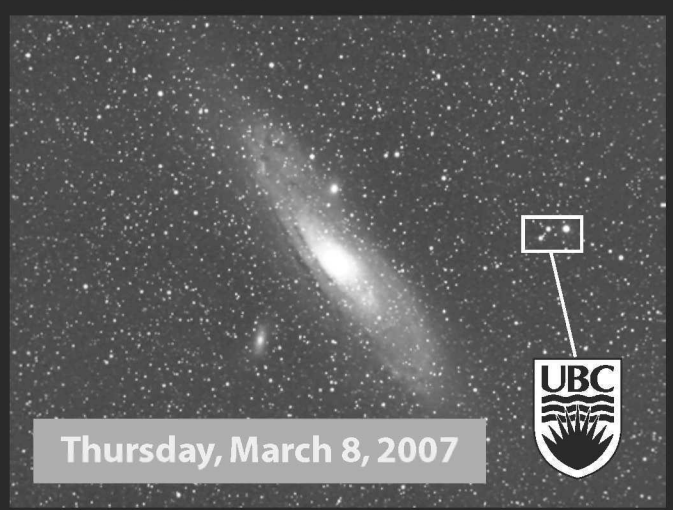
Bittner and her colleagues suggest that if politicians are seeking to win the hearts and minds of young voters, true competition is a strong draw. She says political theory often attributes the low turnout among young people to culture, "that unlike older generations, they don't feel a sense of duty."

"We're saying it's not that simple. There's no quick fix," she says. "Parties aren't going to convince a young person to vote through commercials with rappers on stage."

The researchers argue that a cultural explanation doesn't account for a huge drop in turnout over the past 10 years. "The massive decline is so large a shift and it just happens to coincide with a shift in the party system," says Bittner.

The study has received funding from the Social Sciences and Humanities Social Sciences Council of Canada. ■

SCI TREK



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Water Probe Optimizes Treatment Plants

By Brian Lin

Pierre Bérubé doesn't think twice about drinking water straight from the tap and shuns consumer water filters and bottled water as "gimmicks."

One of only a handful of Civil Engineering professors specializing in drinking water treatment in Canada, Bérubé has now developed a tiny tool that could see the rest of us as confident of the purity of tap water as he is. He is working with the City of Kamloops to test his idea.

"We're very lucky here in the Lower Mainland because our water comes from small, well protected watersheds fed by snow-melt and rain," says Bérubé. "In other municipalities such as Kamloops, it is impossible to completely protect the water since it often comes from rivers that can be hundreds of kilometres long and as a result, there are more opportunities for impurities such as pathogens to be introduced into the water."

"In those cases, treatment using conventional sand filtration may fall short, with a large amount of impurities quite literally falling through the cracks."

In the past decade, membrane-based water filtration systems have become the predominant technology to replace sand-based systems. They cost about the same to install and require a lot less space – a unit capable of treating water for 5,000 residents is about the size of a large closet. They can also be much cheaper to operate over the long run.

PHOTO: MARTIN DEE

Pierre Bérubé is working to ensure affordable and cleaner drinking water for all.

The leading technology in membrane-based systems was developed in Canada by a company called Zenon (which has since been acquired by GE). Dubbed the ZeeWeed®, it is capable of filtering out up to 99.999 per cent of impurities, as opposed to 99.9 per cent for sand filtration systems.

Despite these obvious advantages, membrane-based systems remain out of reach, especially for small municipalities that can't afford a sand-based system in the first place. Now Bérubé and his team of undergrad and graduate students have developed a microprobe that could make membrane systems cheaper to operate, and in turn make it possible for smaller communities to provide more affordable and cleaner drinking water.

The membrane-based systems consist of thousands of polymer-coated fibres – hollow tubes 2m in length and about the girth of cooked spaghetti – vertically submerged in large tanks of water and fixed to the bottom. As source water flows through the tank, suction is applied to the top of the fibres, forcing water to enter through tiny pores on the fibres' surface, leaving impurities behind.

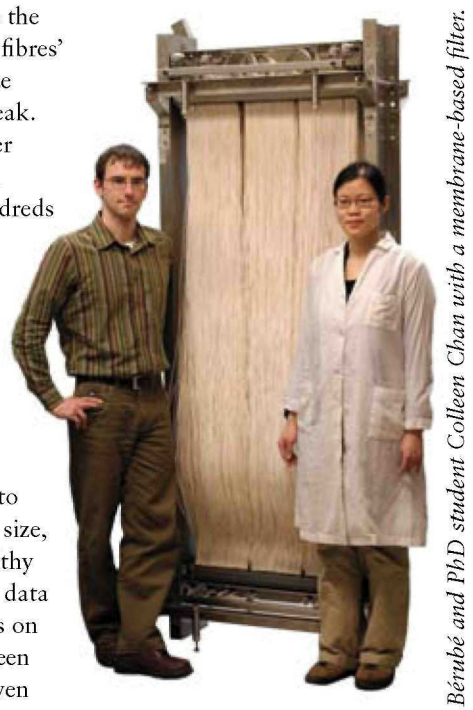
Meanwhile, air is pumped into the bottom of the tank and as the bubbles rise, they cling to the fibres' surfaces and the shearing force scrapes off the gunk, so to speak.

"Aeration alone is 30-40 per cent of the operating cost and optimizing it could mean hundreds of thousands of dollars in savings for communities such as Kamloops that use membrane treatment," says Bérubé.

And that's where the microprobes come in. Made of platinum and embedded in Teflon-coated fibres identical to their polymer counterparts in size, the microprobes serve as stealthy detectives, collecting valuable data to back up current hypotheses on the complex interaction between air bubbles, water flow and even the bumps-and-grinds among the fibres themselves.

"Up to now, optimizing the system involved a lot of expensive trials and errors," says Bérubé. "Since we could only measure how pure the water was coming out of the other end, we had no idea which part of the process – the bubble size, flow path or fibre denseness, for example – was contributing to better filtration."

In fact, preliminary data suggests the fibres "clean themselves" more effectively simply by bumping into each other. "If this is true, we may be able to replace the aeration system with an inexpensive mechanical device that promotes fibre contact and achieve the same outcome" says Bérubé, who is working with Zenon and the city of Kamloops to use the microprobes to monitor a full-scale system this summer. ■



Bérubé and PhD student Colleen Chan with a membrane-based filter.

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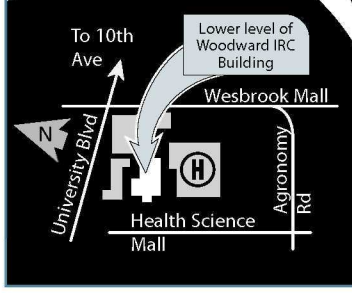

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KUDOS

Biely, McDowell, Somerset and Black Awards Announced

School of Library, Archival and Information Studies professor Luciana Duranti has been awarded the Jacob Biely Faculty Research Prize, and Prof. Jorg Bohlmann of the Michael Smith Laboratories and Departments of Forest Science and Botany has received the Charles A. McDowell Award for Excellence in Research.

Prof. Keith Maillard from the Dept. of Theatre, Film and Creative Writing receives this year's Dorothy Somerset Award for Performance and Development in the Visual and Creative Arts. The Sam Black Award for Education and Development in the Visual and Creative Arts goes to School of Music professor Michael Tenzer.

Winners of the UBC Killam Research Prizes are:

Junior Arts Category
Siwan Anderson, *Economics*
Fei Xu, *Psychology*

Senior Arts Category
Joshua Mostow, *Asian Studies*
Michael Peters, *Economics*
Mark Schaller, *Psychology*

Junior Science Category
Liisa Galea, *Psychology*
Robert Schober, *Electrical & Computer Engineering*

Senior Science Category
Brian MacVicar, *Psychiatry*
Dave McClung, *Geography*
Julio Montaner, *Medicine*

2006 UBC Killam Faculty Research Fellowships go to:

Junior Fellows
Jinhua Chen, *Asian Studies*
Jo-Anne Dillabough, *Educational Studies*
Rachel Fernandez, *Microbiology & Immunology*
Marcel Franz, *Physics & Astronomy*
Steven Heine, *Psychology*
Karon MacLean, *Computer Science*
Cynthia Nicol, *Curriculum Studies*
Diane S. Srivastava, *Zoology*

Senior Fellows
Lawrence McIntosh, *Biochemistry & Molecular Biology & Chemistry*
Leonie Sandercock, *Community & Regional Planning*

The Biely and McDowell awards are named for former distinguished UBC researchers: Prof. Emeritus Charles McDowell who headed UBC's chemistry department for 26 years, and Jacob Biely, an international poultry scientist and UBC faculty member from 1935-68.

The Black and Somerset awards pay tribute to two illustrious figures in fine arts at UBC. Sam Black's 41-year association with the university began in 1958 as a professor of fine arts and art education. Dorothy Somerset became director of the UBC Players' Club in 1934 and served as first artistic administrative head of the Fredric Wood Theatre until her retirement in 1965.

PHOTO: MARTIN DEE

UBC men's volleyball team members Jared Krause, international student Christoph Eichbaum and coach Richard Schick (right to left) spiked their way through Asia and the U.S. en route to March's CIS national championships.

UBC's Wide World of Sports

By Basil Waugh

The UBC men's volleyball squad took a couple of major detours on the way to the Canadian Interuniversity Sport (CIS) national championship in Hamilton, Ontario from March 2-4.

No, there were no missed flights or wrong exits on the Trans-Canada Highway.

However, twice this season, the team left the hypercompetitive CIS Canada West – which boasts five of the country's six top men's volleyball teams – for the chance to spike, block and serve to professional and varsity teams in Korea and Hawaii.

With a roster that includes international students Christoph Eichbaum of Schwerin, Germany, and William Liu of Dalian, China, the members of UBC's men's volleyball are poster boys for UBC's commitment to an international varsity experience – one that includes international recruiting, exchanges, international coaching credentials and interaction with high-calibre national team players and coaches.

Heading to the CIS nationals for the first time in 18 years, they have also become spokespersons for the benefits of this international approach.

"These trips were so important for us as a team," says Eichbaum, who arrived at UBC on an exchange with Berlin's Humbold University just weeks before the Korea trip.

Having played professional volleyball in France and Germany, and in more than 60 matches for Germany's national junior team, Eichbaum brings a resume of high-level international experience and is one of the team's scoring leaders.

"That first trip allowed us to get to know each other as a team, and the second trip really gave us the confidence that we can really play with top competitors," Eichbaum says of a Christmas trip in which UBC swept NCAA volleyball powerhouse University of Hawaii.

In addition to his travels with the team, third-year setter Jared Krause spent two months training in Korea this summer thanks to another long-standing exchange relationship with Sung Kyun Kwan University (SKKU). He says these experiences have helped his understanding not only of his sport, but also of other cultures.

"The Korea trip really opened my eyes to different playing styles and strategies, says Krause. "Koreans are sort of known as expert defenders and that side of my game definitely improved while I was there."

Krause says the highlights from the team's recent travels include visiting the border between North and South Korea, scooting through the cliffs and beaches of Hawaii on mopeds, and the "rock star" treatment around the island after the team's televised victories over the University of Hawaii.

In addition to supporting international tours, exchanges and tournaments, UBC places equal emphasis on coaching as the only Canadian university to hire full-time assistant coaches for sports other than football. Most UBC coaches come with international experience, including the Olympics (swimming, women's basketball, track and field), national teams (volleyball, field hockey) and the World University Games (baseball, basketball and golf).

"We want UBC to be a pipeline to great international experiences," says UBC men's volleyball head coach Richard Schick, 2005 CIS Coach of the Year, who attributes international experience as a key element of the five national titles he has won as a volleyball player and coach.

"And not just while they're here," Schick adds. "We want to help our athletes achieve their goals after university, whether it's the Olympics, national teams, pro teams – even outside of sport."

Schick says former UBC varsity stars, who include more than 214 Olympians, can be a rich resource for current athletes. With the 2007 nationals approaching, Schick recently brought members of UBC's championship volleyball teams from the 1980s together to give today's Thunderbirds insights on the experience and life in general.

"These guys can tell you a lot about what it feels like to win the highest prize in Canadian university sports, the connections they made through sport and some ideas for how to make the transition from university to what comes next," said Schick.

In addition to emotional support from their predecessors, UBC's ability to support its athletes through additional coaching, international experience and full scholarships, is made possible through a strong commitment to fundraising.

The TELUS Millennium Scholarship Breakfast on Feb. 27 is one of the best examples of athletic fundraising at UBC. Having raised $4.6 million in eight years, the annual event is the single-most successful fundraiser ever staged by a university athletics department in Canada.

UBC Athletics is closing in on the University of Toronto for the most national championships in the 46-year history of CIS and its antecedent, the Canadian Interuniversity Athletic Union. Prior to the 2007 CIS national championships, in which UBC volleyball, basketball and swimming teams will compete throughout March, UBC has 68 titles and U of T has 72. R

For more on the UBC global athletic experience, including team tours, international student athletes and T-Birds who've competed abroad for Canada, visit www.publicaffairs.ubc.ca/sports/international.

UNDERGRADS JUMP *continued from page 1*

to achieve physical perfection," says McMillan, who has just received research ethics approval to start the project.

Fourth-year psychology major Pralle Kriengwatana is studying hormonal influences on song sparrows.

A veteran of two previous research projects, Kriengwatana is looking at effects of melatonin on territorial aggression and hormone levels in wild song sparrows.

Male song sparrows are territorially aggressive year-round. During their winter, or non-breeding, season aggression is regulated by the hormone estradiol. However, gonadal production of estradiol is low during this season.

So where does the aggression come from?

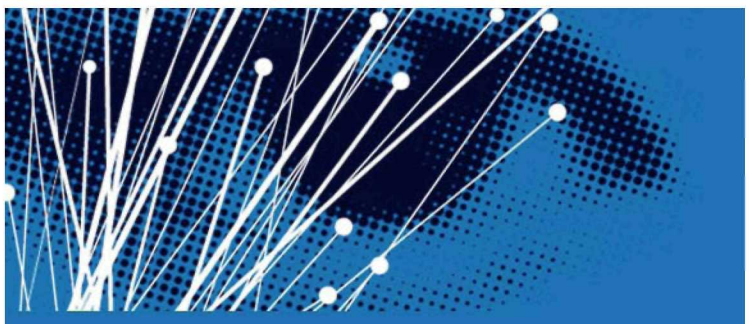
Kriengwatana hypothesizes that melatonin, a hormone whose production is inhibited by light and increased in darkness, is implicated in converting a steroid hormone called dehydroepiandrosterone into testosterone and then estradiol.

Kriengwatana, who is planning a career in research, says she appreciates the opportunity to go into more depth on a topic.

"Also, the idea that this work could be contributing to scientific literature is very motivating and exciting. The best part, though, is that the process of research is never-ending; by answering questions posed in this project, I discover even more questions that are equally fascinating."

Findings from the study will contribute to understanding about the neural basis underlying song sparrows' aggressive behaviour as well as the brain's ability to synthesize its own hormones. It may also have implications for the effect of melatonin – an over-the-counter substance – in humans, says Kriengwatana's supervisor, Asst. Prof. Kiran Soma.

For more information on the undergraduate research program visit www.murp.ubc.ca; for conference information visit www.research.ubc.ca/murc. R



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The Faculty of Education celebrates its 50th Anniversary during the gala weekend of events March 30 - April 01, 2007. For further event and registration details, please visit www.educ.ubc.ca/anniversary or call 604-827-5553

Opening Ceremony
Installation of Musqueam Artwork and Arts Festival
Friday, March 30th 2007 • 4:00 p.m. – 7:30 p.m.
Scarfe 100, 2125 Main Mall, UBC • Everyone welcome

Reunion/Recognition Event
Alumni and Emeriti Reunion and Donor Recognition Event and luncheon
Saturday, March 31st 2007 • 11:00 a.m. – 1:00 p.m.
Scarfe foyer, 2125 Main Mall, UBC

Public Forum
"The World We Have, The World We Want - Education for an Enduring Future"
Saturday, March 31st 2007 • 2:00 p.m. – 4:00 p.m.
Scarfe 100, 2125 Main Mall, UBC • Everyone welcome

Gala Dinner
A reunion celebration for faculty, emeriti and staff
Saturday, March 31st 2007 • 6:00 p.m. – 9:30 p.m.
SAGE Bistro, 6331 Crescent Road, UBC, Vancouver, BC

Run/Walk for Education
10/5K Run and 2K Walk for Education
Sunday, April 1st 2007 • 9:00 a.m. – 12:00 p.m.
UBC campus and Pacific Spirit Park • Everyone welcome

Faculty of Education
THE UNIVERSITY OF BRITISH COLUMBIA
50 Years

Faculty of Education Timepiece

By Clare Ford, Communications and Special Projects Coordinator, Faculty of Education

The Faculty of Education's first 50 years

When UBC established the Faculty of Education in 1956, it came as part of a broader Canadian and North American trend to prepare all public school teachers at a university. Now marking its 50th anniversary, the Faculty celebrates the role this institution has played in shaping the past and present of education, both on the local stage and globally.

Over the past half-century, the Faculty has won world-wide recognition for leadership in teaching, pedagogy, research and service to communities at large. It operates scholarly and service projects across the country and around the world, through all sectors of society. Its activities are not limited to schools and school boards, but encompass adult learning centres, counselling centres, prisons, hospitals, clinics, preschools, community centres, Indigenous territories and work places from corporate settings to industrial plants to farms.

The 50th Anniversary affirms the Faculty's commitment to innovation, diversity and social justice. The Faculty extends an open invitation to help celebrate this important milestone at its Opening Ceremony, Public Forum and 10/5k Run and 2k Walk during its Gala weekend Friday, March 30th – Sunday April 1st 2007. For further event and registration details, visit http://educ.ubc.ca/anniversary/

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Bugging Bugs the Natural Way

By Brian Lin, with files from Jennifer Honeybourn

PHOTO: MARTIN DEE

Murray Isman has helped develop a natural pesticide effective both in homes and in the field.

UBC Entomology and Toxicology Prof. Murray Isman has helped develop a new line of organic pesticides set to hit the shelves at Wal-Mart across the U.S. this spring.

Marketed under the brand EcoSMART® by a Nashville, Tennessee-based botanicals company of the same name, the line of consumer home and garden products features a specific blend of plant oils that bugs pests but are harmless to humans.

"EcoSMART had come up with a product that killed insects but they didn't understand how or why it was working," says Isman, who was approached by the company to assist with its basic research and product development.

Isman, who is also Dean of UBC's Faculty of Land and Food Systems, found that the patented concoction of common essential oils such as rosemary, clove, thyme and peppermint targets a key receptor for a neurotransmitter called octopamine, which is found in all invertebrates, including insects, but not in mammals.

Octopamine regulates an insect's heart rate, movement and metabolism and interrupting its function can produce a total breakdown of the insect's nervous system. "Basically it has a calming effect on the insect, like its own supply of Valium. Blocking octopamine causes hyperactivity and quickly leads to death of the insect," says Isman.

The product effectively kills ants, cockroaches, dust mites, flies, wasps, hornets and other common pests including pets fleas. Isman's lab has also found it effective against a wide range of agricultural pests.

Natural pesticides are gaining popularity in the marketplace with the increase of awareness surrounding toxic chemicals in consumer products. Wal-Mart, the largest retailer in the world, recently announced that it's phasing out products containing any of 20 toxic chemicals over the next two years.

"For consumers, these natural ingredients have a long history of safety based on their use as flavourings in foods and beverages and as fragrances in cosmetics," says Isman. "We also suggested the company market the product for agricultural purposes since they're non-toxic to fish – they breakdown naturally within 24 hours in water – and therefore can be used around waterways."

In the U.S., certain natural pesticides can bypass costly and lengthy Environmental Protection Agency registration and approval procedures because the ingredients are exempt. In Canada, all pest-control products, including those made of natural ingredients, must be approved by Health Canada. Isman is conducting further tests, which he hopes will support the product's registration in Canada to be used on greenhouse vegetables.

EcoSMART has also been licensed to Sergeant's, a leading pet care company based in Omaha, Nebraska.

"It's rewarding to see my research produce something people can and actually want to use," says Isman. R

Real Life Texts for Real Life Reasons

By Lorraine Chan

PHOTO: MARTIN DEE

Victoria Purcell-Gates hopes to steer literacy instruction toward new models: from the eyes of learners.

Receipts, bills, bus schedules, maps and birthday cards – these humble, everyday objects can actually open doors for those who are struggling to read and write.

That's the overwhelming evidence that Victoria Purcell-Gates has found in her research on helping communities overcome cycles of low literacy or illiteracy. Purcell-Gates heads Cultural Practices of Literacy Study (CPLS), an international research team with projects in Canada, the U.S., Costa Rica, Bolivia, Malaysia and Africa.

Their findings underscore the power of authentic literacy instruction, or "using real life texts that are read or written for real life reasons," says Purcell-Gates, a professor in the Faculty of Education and Canada Research Chair in Early Childhood Literacy.

One of the overarching goals for CPLS is to understand how schools can better serve children who are from marginalized communities and what changes need to be made to existing curriculum and educational policy.

Purcell-Gates says the starting point for any literacy instruction is to see the world through the eyes of learners – what they experience and what makes sense to them.

CPLS researchers are looking at the most effective language and literacy practices and instruction for such diverse cultural and social groups as Sudanese immigrant families in the U.S. and Nicaraguan immigrants living in Costa Rica.

In a pilot project with the Costa Rica's Ministry of Education, CPLS is helping teachers deliver curriculum that's more culturally responsive to the Nicaraguan communities.

"For Nicaraguan families, one of the most common forms of textual use would be signage that advertise foods or products they're selling from their homes," explains Purcell-Gates. "We suggested that teachers could have the children creating and reading different signs for the classroom or cafeteria, or make up 'store signs' during play.

In Purcell-Gates' view, literacy studies and curriculum worldwide are often designed from a middle class perspective. "There's lots of effort that goes into trying to make children from other cultures – whether that's socio-economic, religious, ethnicity or country of origin – fit this middle class model."

A case in point, says Purcell-Gates, is the emphasis many schools place on parents reading to their children. "There's no solid data to support this claim that kids will do better if they have storybook time at home. Lots of cultures don't read storybooks to kids and those children do well in school." She adds, "More than anything, this idea reflects a cultural practise that's owned by people who run schools."

In her study of migrant farm workers, a largely Spanish-speaking population in Michigan, Purcell-Gates spent time in the homes of workers observing and interviewing families about their literacy practices. In the classroom, she saw that many children in the program did not easily understand the notion of books or stories.

"It was very hard to keep the pre-school children engaged. Storybooks meant little to them. In the pre-school classrooms, the books were used as toys, building blocks, hats."

However, they responded to print that was familiar in the context of their homes such as letters from family members in Mexico, birthday cards, legal or work-related papers. These and other CPLS observations will be used to inform the curriculum at Migrant Head Start, a federally funded program in the U.S. that provides daycare and literacy instruction for migrant workers' children.

To learn more about Cultural Practices of Literary Studies, visit: http://educ.ubc.ca/research/cpls R

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