

UBC REPORTS



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PHOTOS: MARTIN DEE

Research that Transforms Our Lives

Why UBC is the best in Canada at translating discoveries into practical, everyday advances

What do Visudyne®, a world-leading treatment for age-related blindness and Web CT, a web learning tool used by 10 million university students, have in common? They both incorporate breakthrough innovation developed at the University of British Columbia. And they are each compelling examples of UBC's unusual success at translating research discoveries into real-life uses that benefit millions of people — a process we examine in this issue of UBC Reports.

Since 1997, UBC research funding has more than doubled to \$343 million in 2004. But the hurdles to translating that research into practical advances can be significant. They include

applying for patents, licensing technology, attracting venture capital, and organizing and staffing new companies. It's a process that few faculty researchers could tackle on their own.

That's where UBC's University-Industry Liaison Office comes in. Thanks to its success at coming alongside researchers, UBC ranks first among Canadian universities, and 11th in North America, for numbers of U.S. patents granted. In total, UBC has created 117 spin-off companies. Last year, these efforts generated \$16 million in technology licensing revenue for UBC. To learn more about the UILO's technology transfer programs, visit www.uilo.ubc.ca. □

New Device Promises Relief for Those Facing Bladder Disorders

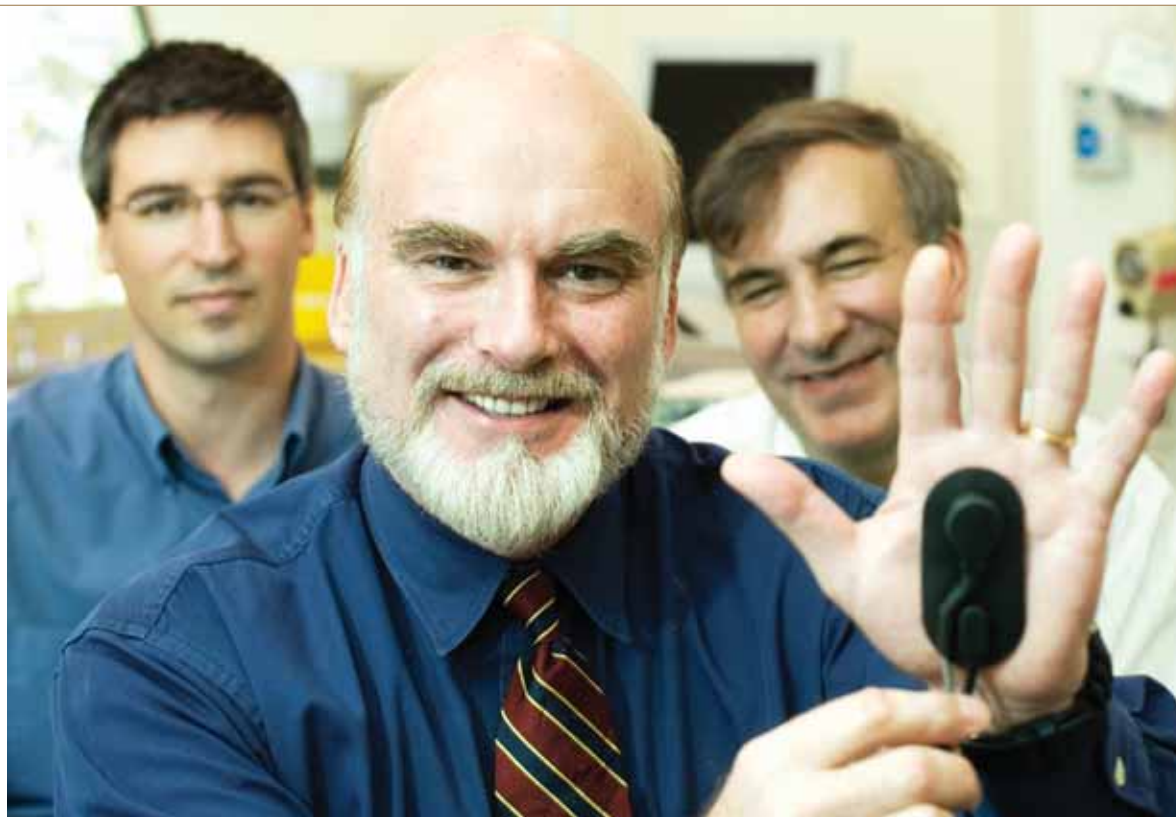
BY HILARY THOMSON

A new diagnostic device developed by a UBC research team has got people — including investors — talking about urinary incontinence (UI).

An interdisciplinary research trio of technician, pediatrician and urologist has developed a non-invasive diagnostic tool that uses near infrared spectroscopy (NIRS) to test bladder function. The tool will be available for sale within two years and experts in innovative medical technologies predict that soon after, it will be the new “gold standard” for diagnosing bladder disorders.

Pediatrics critical care professor Andrew Macnab and research technician Roy Gagnon are the most experienced Canadian researchers using NIRS to measure blood flow to the brain, particularly in infants. In 2003, they were temporarily sharing lab space at Vancouver General Hospital with urologist Dr. Lynn Stothers and, over coffee, described the difficulties they were having because signals related to bladder function were interfering with their NIRS study of the spinal cord.

Stothers recognized that what was a problem for Macnab and Gagnon could offer a solution for the hundreds of thousands of patients who undergo an uncomfortable, invasive and humiliating bladder function test. The current technique involves catheters inserted in the rectum and urethra to gauge bladder pressure and create an indirect measure of bladder



UILO manager Brad Wheeler (l) and co-inventor Roy Gagnon (r) are set to commercialize monitor shown by Dr. Andrew Macnab.

function. It is estimated about 40 per cent of patients with clinical symptoms aren't properly diagnosed because they refuse to take the test.

Based at Children's & Women's Health Centre of British Columbia, Macnab and Gagnon, with Stothers' guidance, developed an external monitor, like a large adhesive patch, that sticks on the abdomen over the site of the bladder. The painless exam uses energy from light (NIRS) to gather data about bladder health and function.

“A non-invasive technology means more individuals will comply with testing,” says Stothers, who directs the

new Bladder Care Centre at UBC Hospital, where the NIRS methods are undergoing trials. “Also, the data is more comprehensive — it takes the guesswork out of diagnosis. Working as a team and seeing the possibilities for patients — that's been very motivating.”

NIRS technology is based on sophisticated physics. It uses photons, or units of energy from different wavelengths of light, diffused through tissue. Different constituents of tissue, such as oxygen-carrying blood cells, absorb light differently. The difference can be measured and analyzed to monitor changes in oxygen levels and

blood supply.

Blood flow to the bladder is important because the organ is susceptible to ischemia, or blood deficiency, due to constriction or obstruction of a blood vessel. Ischemia can permanently impair how an organ functions.

Almost 42 million people in North America suffer from UI and the numbers are expected to double within 20 years as the population ages. UI most often affects middle-aged women, long-term care residents, and those with spinal cord injury. The condition is a particular problem in the developing world where childbirth

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Electronic Paper One Step Closer

Display companies testing prototypes that use new technology

BY BRIAN LIN

Anyone who's ever had trouble reading their cell phone or PDA display will appreciate a new technology being developed at UBC's Structured Surface Physics Laboratory (SSP) that promises to deliver electronic displays as clear as ink on paper.

Based on an invention of UBC Vice President Academic and Provost Lorne Whitehead — who is also chair of SSP — the “electronic paper” has received 15 U.S. and international patents and provided the foundation of a spin-off company — aptly named CLEAR Display Inc.

Conventional liquid crystal displays (LCDs), which use fluorescent backlighting and layers of liquid crystals against a glass-like surface to create images, show up poorly in strong, external light sources.

“This is why in the sun, it's really hard to read your PDA or cell phone,” says Michele Mossman, a research associate in the Department of Physics and Astronomy, and the primary UBC researcher developing the technology.

Several years ago, Mossman and Whitehead invented an approach that takes advantage of a well-known physics phenomenon called Total Internal Reflection (TIR) that enables the display to create crisp, high-contrast and high-resolution images comparable to ink on paper.

By adding microscopic optical hemispheres on the back of a thin, plastic film, they have created a

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UBC ranks first among Canadian universities, 4th among all Canadian organizations and 11th among North American universities for U.S. patents granted between 2000 and 2004.

In Canada:

- Nortel Networks: 2,161 patents
- Siemens: 259
- National Research Council: 154
- **University of British Columbia: 140**

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IN THE NEWS

Highlights of UBC Media Coverage in June 2005. COMPILED BY AI LIN CHOO



Dairy products help you lose weight. Fact or myth?

Drink Milk and Lose Weight?

The Physicians Committee for Responsible Medicine is challenging the scientific validity of the claim that dairy products help one lose weight — as seen on TV and print ad promotions from the milk industry and sellers of yogurt and cheese.

Susan Barr, a UBC professor of nutrition, told *The New York Times* that it's still unclear whether milk or other dairy products do in fact help individuals lose weight.

"More studies need to be done

to try and confirm this."

Bacteria Photosynthesize Without Sunlight

UBC's Prof. J. Thomas Beatty and his colleagues have found a photosynthetic bacterium that doesn't live off the light of the sun. It instead uses the dim light given off by hydrothermal vents some 2,400 metres below the ocean's surface.

The research team first encountered the bacterium, GSB1, in samples collected from a vent field located off the coast of Mexico, reports *Scientific American*.

DNA analysis identified the organism as a member of the green sulphur bacteria family that relies solely on photosynthesis to survive. Scientists say the results are startling as it allows them to consider other places where one might find photosynthesis on Earth, as well as other planets.

Ballooning to the Stars

The adventure portion of the mission known as the Balloon-borne Large Aperture Submillimetre Telescope (BLAST) is now over, and if the science part of the experiment goes as well as the first, scientists expect to

provide answers to a major cosmological mystery, reports *The Toronto Star*.

"We're basically looking at dirt. It seems quite unglamorous. It's like snow and ice and carbonaceous stuff all mixed together into very fine grains, smaller than anything you'd get in a snowstorm," says team member **Mark Halpern**, a UBC astronomy professor.

BLAST, a Canada-U.S. telescope, cruised all the way over from Sweden in just four days this past month, carried 40 kilometres high by a 33-storey balloon.

Pedophile-Tracker was Inappropriate

Brad Willman, a self-described computer geek, spent four years tracking down pedophiles by hacking into peoples computers from his parents' home in Langley.

Willman was ultimately responsible for the arrests of about 40 pedophiles across Canada and the United States, but some think Willman himself should be punished.

"The way the information was collected is not appropriate," Prof. Hasan Cavusoglu from the Sauder School of Business told *Maclean's Magazine*. "It may challenge the foundation of many institutions we all rely on if everybody starts to do what they deem to be right. We should all abide by the laws." □

Electronic Paper One Step Closer

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surface that is receptive to coloured pigment particles, which absorb rather than reflect light.

"We can use an electric field to cause the pigments to gather in desired regions to form images. In a way, it is a bit like the children's toy called the Etch-a-Sketch," says Mossman. "By selectively removing particles from a surface, an image can be created. But in our case, this happens in just milliseconds and yields strong contrast.

"Since TIR is essentially 100 per cent efficient and the hemispheres reflect ambient light, very little power is required and the quality of the display is good under a wide range of lighting conditions."

"We're now working with a few display companies in prototype development and to explore the potential of incorporating the technology into existing displays," says Mossman, who adds that the paper-like quality of the display will



Michele Mossman is developing an electronic display that is as clear as ink on paper.

enable tools such as electronic books to become much more user-friendly.

A Massachusetts Institute of Technology spin-off company called E-ink is working on one of the competing technologies on the market. While commercial products are already being sold based on the MIT technology, it only achieves about half the maximum reflectance of CLEAR displays, which under common lighting conditions exceeds

that of white paper.

"One of the most exciting aspects of this technology is its positive environmental potential," says Whitehead. "In today's world of electronic information it is a shame that so much paper is wasted in order to display information in an easy-to-read, portable form. We hope this work will bring 'electronic paper' one step closer to reality." □

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UBC's Serial Entrepreneurs

Some faculty have been unusually productive in earning patents and starting spin-off companies. BY AILIN CHOO

Robert Hancock will readily admit it was romance that guided him to become a scientist. He remembers he was in his last year of high school when he became struck by what he saw in a magazine.

The object of his affection: penicillin. "I had decided I was going to be a scientist before, because I felt a scientist is someone who produces something useful," said the UBC professor of microbiology and immunology.

"But after I read the article on the discovery of penicillin, which seemed to me the most romantic adventure I had ever read, I was certain. And I never thought of anything else."

What certainly never crossed his mind was that his love affair would one day reach beyond antibiotics to encompass business.

He certainly never planned on becoming one of the most successful entrepreneurs at UBC.

Hancock, who has become renowned for his work in trying to boost the body's natural immunity to combat infection, says that when he was growing up, a scientist would never have considered working with industry.

Still, it was about 15 years ago that Hancock filed his first patent, and his technologies have since been licensed to four companies. Currently, the latest company he co-founded, Inimex Pharmaceuticals, a UBC spin-off company, is working on treating infections without solely relying on chemicals, but by trying to boost natural immunity.

"Scientists back then never really formed companies. The academic climate was hostile towards it," explained Hancock. "You would quite simply be considered a 'sell-out.'"

He says initially he was quite content to publish articles and contribute by advancing knowledge without thoughts of seeing his research through in an overtly practical fashion.

"It was only when I got involved with Canada's Network of Centres of Excellence in 1989, which was designed to try move technology from the university sector into industry, that I started thinking about it," he said.

"I suddenly realized that if you're going to see your work turn into something useful, you have to take a bit more responsibility for it."

Over the past two decades, UBC has been witness to a new trend that has not only disrupted longtime academic principles, but has also taken the field of academia to a whole new level.

Like Hancock, other researchers have also been inspired to market their technologies to secure higher amounts of funding for their work, and turn their ideas into practical spin-offs.

Steven Pelech, UBC professor of neurology and founder and president of Kinexus, is another successful serial entrepreneur who tells a similar career-changing tale.

Unlike Hancock, working with industry began quite early for him, when he realized he was more interested in systems biology and discovery-based research than the more traditional scientific method of testing hypotheses based on limited information.

Pelech says his kind of research was simply "not in vogue" at the time. He was trying to discover new types of protein kinases, enzymes that have been implicated in hundreds of diseases.

He explains this type of discovery is



Serial entrepreneur Robert Hancock is a professor in Microbiology and Immunology.

an integral step in drug development as investigating these proteins can lead researchers to find drug compounds that may control their activity.

"So, soon after I began research at UBC, I was approached by a company who offered me a deal. We were isolating antibodies and they said that if I gave them some of our antibodies, they would give us a royalty," he said.

Pelech felt that selling antibodies would be a good way to increase the amount of funding he received for his work.

Now, two companies later, the first of which, Kinetek Pharmaceuticals Inc., was recently bought by Vancouver-based QLT PhotoTherapeutics Inc., Pelech has filtered his interests into a unique type of proteomics service that has aided more than 600 drug companies and academics in measuring how kinases behave in the context of cells.

His present company, Kinexus, will also be launching an online database this summer that will enable subscribers to compare these proteins across hundreds of different model systems.

"By continuing to steer our research toward practical outcomes, we can maximize the prospect that our efforts can benefit the scientific community and the public the most," Pelech explained.

"The university has been great and supportive of us, but things still haven't changed completely. There's still hesitation for many who can't accept us working with industry."

The two professors say there exists no blueprint, training program or set of strategies that they can pinpoint as integral to a research entrepreneur's success.

"I just simply love my day job," said Hancock. "I had no plan when I got into this. Who knows what I'll be when I eventually grow up." □

Other UBC Serial Entrepreneurs Include:

- **Prof. Emeritus A. Chaklader**, *Materials Engineering*
- **Prof. Dale Cherchas**, *Mechanical Engineering*
- **Prof. Pieter Cullis**, *Biochemistry*
- **Prof. Nicolas Jaeger**, *Electrical and Computer Engineering*
- **Prof. Karim Qayumi**, *Surgery*
- **Prof. and Chair Hennie van Vuuren**, *Food Biotechnology*
- **Prof. Lorne Whitehead**, *Physics and Astronomy*
- **Prof. Ian Yellowley**, *Mechanical Engineering*

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To date, UBC has created 117 spin-off companies. Royalties and technology licensing revenues flowing back to UBC in 2005 were nearly \$16 million. □



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The Iona Building at Vancouver School of Theology on the UBC campus. Photo: Perry Danforth

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Angus Livingstone: building consensus among venture capitalists, government and academia.

PHOTO: MARTIN DEE

UILO Director Pilots Great Ideas to Market

But it's about much more than money, says the guiding force behind Canada's most successful technology transfer office. BY LORRAINE CHAN

Gliding would strike any sane soul as a pastime rife with risk. But somehow it makes sense that flying an engine-less aircraft features high on Angus Livingstone's favourite to-do list.

"To understand it, you get in a sail plane and you get hooked behind a power aircraft and they tow you to 2,000 feet and they release you," explains Livingstone, managing director of the UBC University-Industry Liaison Office (UILO), who describes himself as "a good reasoned risk taker."

"You're looking to find areas of lift, where the air is rising. You want to get yourself to an altitude where you can set out and move abroad, and eventually land, typically at an airport, but sometimes in a farmer's field," says Livingstone, who with a laugh recounts how he once landed "falling out of the sky like a lawn dart" in the middle of some unimpressed golfers in Salmo,

B.C.

Soft-spoken and articulate, Livingstone draws parallels between gliding and his mandate to translate great ideas into marketable ventures.

"The ability to be out there, to take a calculated risk, to read the air currents and yet still find your way forward so you get from one point to another is probably very similar to the kinds of things I'm doing now."

Livingstone joined the UILO in 1988, only four years after he had earned a UBC computer science degree. Since then, he has helped UBC establish the premier technology transfer office in Canada, gaining a worldwide reputation for innovative research incubation and company spin-off.

"Angus has an almost unique and very valuable capability to understand and build bridges between the researchers in academia and investors

in the financial world," observes Basil Peters, co-founder of BC Advantage Funds and Fund Manager of the BC Tech Fund, an early-stage investor in UBC spin-off company Sunnybrook Technologies.

Livingstone says he joined UILO because of his "vicarious pleasure in the research achievements of others." This in no small part has been one of his strengths coupled with a principled approach to business.

"I've always thought of Angus as the heart and soul of tech transfer in B.C.," says Dr. Donald Rix, chair and one of the founders of MDS Metro Laboratory Services, the largest independent community laboratory in B.C.

"He asks very good questions, difficult questions about conflict of interest. It's a small community here and he's always very good at reminding us to keep on the right path," says Rix, who

was an investor in UBC spin-off company QLT and the recent donor of \$4 million that will help support UBC medical students.

"Everybody knows he's fair, but also they know he's not a push-over. He defends the university side, he's a good negotiator," says Dr. Rix, a B.C. entrepreneur and medical professional who over the past 15 years has served on several biotech company advisory boards with Livingstone.

Livingstone agrees that he has a knack for building consensus among venture capitalists, government and academia. He lives by the tenet, "We'll all win, if we create a bigger pie for everybody."

One such bigger pie is Genome BC, a large-scale research organization that has garnered \$173 million in federal, provincial and other funding for projects and core facilities. Genome BC founding president Roger Foxall says that Livingstone brought welcomed expertise on setting up a framework to manage intellectual property rights.

"With input from Angus, Genome BC put forward the clear management terms under which the Genome Canada funds would flow through us to the institutions," says Foxall, new Genome BC's executive vice president of corporate development.

"There was concern across the country regarding intellectual property rights and we were the first to tackle the problem, and to an extent, acted as a model for other centers," he says, explaining that since its creation in 2000, Genome Canada has distributed \$386 million among five regional centers.

"I've got a great mind in terms of puzzling," reflects Livingstone. "I can

take a relatively complex mix of emotions, facts and situations and see my way clear to a resolution, and then put it out in a non-confrontational way. That way people can feel like their needs are honoured, instead of being challenged."

Fractal Capital Corp President Haig Farris, a well-known venture capitalist and investor, praises Livingstone for his canny pragmatism.

"Angus has a good sense that there are way more ideas at UBC than UBC has the money or time to commercialize. History shows that rich graduates give more money back to the university so you might as well license technology out to graduates who are starting new businesses."

But Livingstone says he always looks at the greater value when backing a new venture.

"If there were a money-making scheme just to see how much cash we can crank out of this and I don't see an innate advancement for society, or quality of life, or any kind of benefits that we can think of, I'm just not interested in it."

Livingstone refers to a utopian vision of Earth shown in the *Star Trek* television series — "not in the original series, but in *The Next Generation*."

"They've eradicated hunger, and they've eradicated disease. We're no longer warring with each other, and we're not producing just to consume, but we're producing to meet our needs in some sort of harmony with the environment."

"Those are pretty noble goals — probably not going to get reached in my lifetime," says Livingstone, "but if I can make a contribution towards that then that's really the ultimate in personal fulfillment." □

New Device Promises Relief for Those Facing Bladder Disorders

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complications leave many women with damaged bladders.

"I couldn't really believe the potential impact of our modification of NIRS and I wasn't sure about switching my research career focus from brain to bladder," says Macnab. "I wasn't completely sold on the whole idea of commercialization — I needed some convincing."

That was Brad Wheeler's job. As a University-Industry Liaison Office (UILO) technology transfer manager, he led the commercialization effort and worked with Stothers, Macnab and Gagnon to assess the market for the technology and explain how they would be supported through the patenting and commercialization process.

"Licensing the use of NIRS in urology is a great example of commercialization being the most effective way to get new technology to physicians and their patients," says Wheeler.

Last month MDX Medical, a

Vancouver-based company that commercializes medical device technologies, announced the finalization of the licensing agreement with UBC and acquisition of rights to the technology, which they will develop and sell worldwide.

"Because we've worked with NIRS for years, we've been able to adapt it quickly and inexpensively," says Gagnon, who has worked with Macnab for 15 years. "It's exciting for me to develop a device that directly benefits patients. Eureka! We finally did it."

MDX has termed the technology "disruptive," which means that the current diagnostic technology for UI will be made obsolete when NIRS hits the market. Further validation came from the American Urological Association, which last year gave their top research award to Macnab, Stothers and Gagnon.

Macnab says one of the most satisfying parts of the commercialization

journey is knowing for sure that his research will translate rapidly into a benefit for patients.

He, Gagnon and Stothers will further refine the technique and software. MDX is building a clinical prototype of the equipment and sponsoring the clinical trials required for Health Canada approval before the technology is made available for regular clinical use.

Research at Vancouver General Hospital is part of Vancouver Coastal Health Research Institute (VCHRI). A joint venture between UBC and Vancouver Coastal Health, VCHRI promotes development of new researchers and research activity.

Children's & Women's Health Centre of British Columbia is an agency of the Provincial Health Services Authority, and includes BC Children's Hospital and Sunny Hill Health Centre for Children, and BC Women's Hospital & Health Centre. □

Economic Impact

Five of the largest public traded technology companies in B.C. are UBC spin-offs. Another two are based on UBC-developed technology. The total market capitalization of these companies is \$5.8 billion.

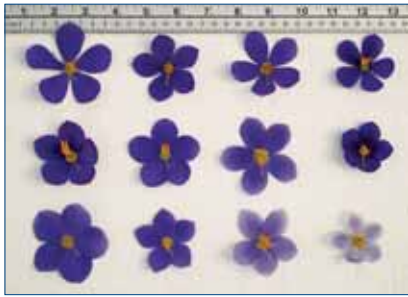
A 2003 survey showed that UBC spin-off companies employed 2,000 people, and had a combined revenue of more than \$300 million. □

Endangered Sri Lankan Plants Live on in New Flower

BY BRIAN LIN

If you think naming your pet is stressful, try naming an entire species of flowers.

That's the task faced by UBC assistant professor Andrew Riseman at the Botanical Garden in the Faculty of Agricultural Sciences. But you won't hear him complain, because it took him a lot more work to create the flower he now has the privilege to name and is about to commercialize.



Each of the six genotypes of the *exacum* Riseman developed yields large blue flowers with bright yellow anthers, and is suitable for either the greenhouse, cut flower or house plant markets.

From this point on, Riseman says, it's up to growers to determine what precise environmental conditions maximize the plant's growth potential. "We're probably two to three years away from seeing them on the market."

"For the common name, I'm thinking of using something that has to do with the flower's vibrant colour, maybe a play on words from the blues genre," says Riseman. "However, I'd also like a name that honours Sri Lanka, where the five species of *exacum* used to create the new flower originated."

Riseman began studying *Exacum affine* — or Persian violet, a common ornamental plant available in most grocery stores — as an undergraduate student at Pennsylvania State University.

Since then, he has crossed five endangered wild species from the *gentian* family and cultivated 13 generations of interspecific hybrids to arrive at a commercially viable plant — something Japanese and Dutch researchers have not been able to accomplish in 30 years.

"It's still very much a work in progress," says Riseman, who came to UBC five years ago with the germplasm, or genetic information, he had worked on throughout his Master's and PhD studies. "But we feel the crop is now strong enough to introduce to growers and the public."

With plant patents pending on several advanced selections, Riseman, who is involved in commercialization for the first time, acknowledges the expertise provided by the University-Industry Liaison Office.

"They have been instrumental in identifying and protecting the intellectual property, in helping create a business model for introduction, and in developing and managing Material Transfer Agreements, which are required before sending the *exacum* to growers for commercial trials."

As exciting as it is to create a whole new plant classification for the public's enjoyment, Riseman says a better understanding of its underlying biology will be the blue blossoms' lasting legacy to academia.

"*Exacum* is reported to be one of the fastest evolving group of plants," says Riseman. "Understanding the evolution of its genome, and its interactions and synergies with other plants may prove to be very interesting to many areas of biology beyond horticulture." □

Prof. Andrew Riseman has developed six genotypes of a new breed of *exacum* for commercialization.

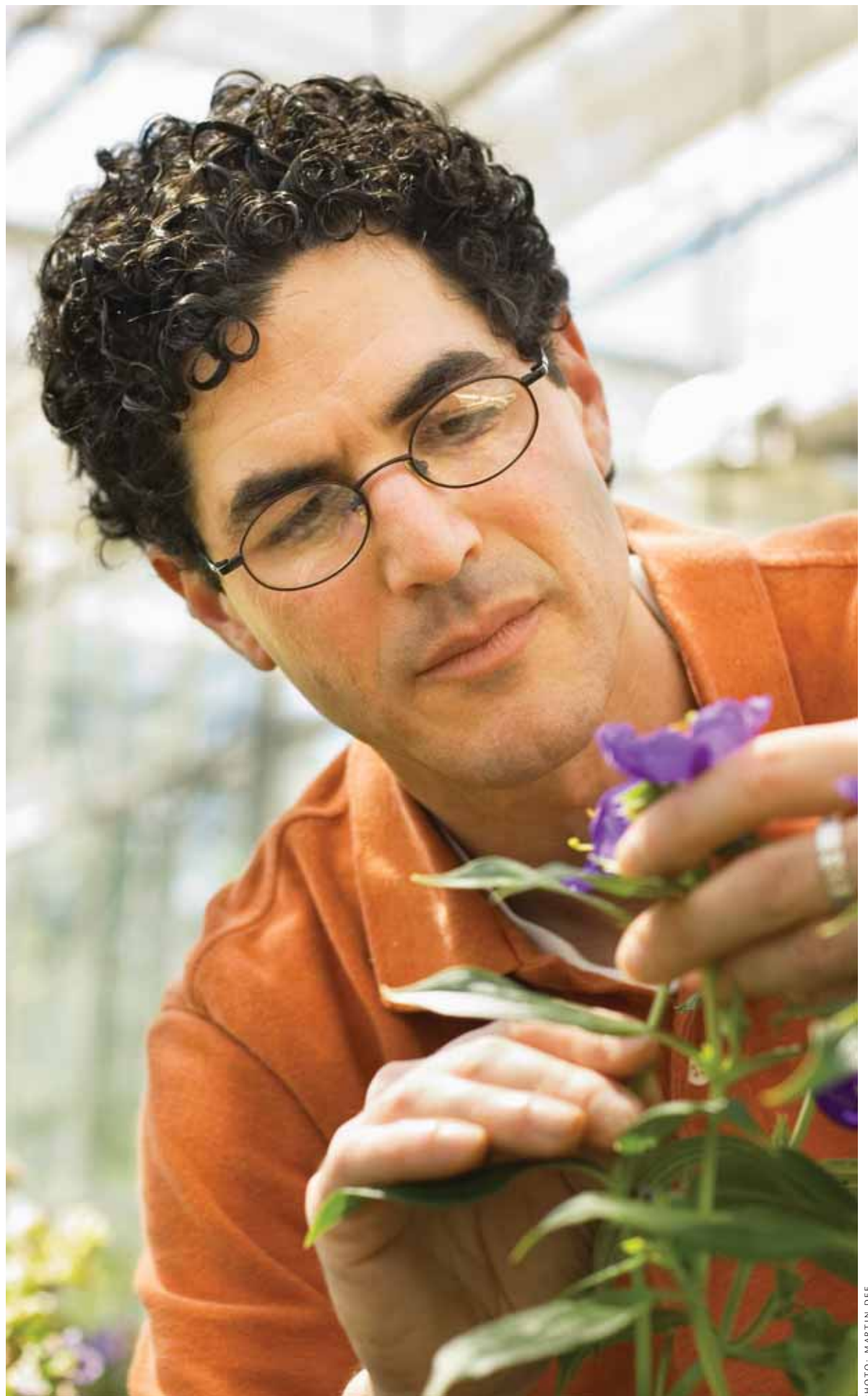


PHOTO: MARTIN DEE

An Alternative View: Prof Makes Innovative Animation Codes Open Source

BY BRIAN LIN

PHOTO: MARTIN DEE



Prof. Robert Bridson's animation software modules will simulate toothpaste movement.

If you were convinced that British child actor Daniel Radcliffe really could fly when he straddled the magic broom in *Harry Potter and the Chamber of Secrets*, you have Robert Bridson to thank.

Bridson, 28, from the Imager Lab for Graphics, Visualization and Human Computer Interaction at UBC's Dept. of Computer Science (see sidebar), was instrumental in developing software modules that

made Potter's cape appear to fly naturally as he whipped through the air in a fierce game of Quidditch.

The modules allow animators to quickly and realistically simulate the movement of cloth and were developed by Bridson while working on his PhD at Stanford University. The effects were so realistic that the codes were immediately adopted by animation powerhouse Industrial Light + Magic — founded by George

Lucas — to make the last two Harry Potter movies and *Star Wars: Episode II – Attack of the Clones*.

Now Bridson is putting that experience to good use in perfecting modules that simulate water and other complicated fluid movement. Based on the laws of physics, Bridson's codes are poised to make waves in an industry where the yardstick for excellence is looking "normal."

"It will save animators a tremendous amount of time," says Bridson. That's because movement of everything from surf to toothpaste could be modeled quickly and realistically with the click of a button.

"Despite the advances in graphics technology, modeling simple movements of cloth and water remains one of the biggest challenges for animation software programmers," says Bridson, who once aspired to be an animator himself. "And if they're not realistic, the

audience would instantly sense that something looks odd because we're so used to seeing the correct version."

While there is no doubt about the potential commercial value of Bridson's codes — which he has slaved over in the two years since he arrived at UBC — he'll make them readily available over the Internet when he completes the project at the end of the summer.

"Visual effects studios are not paid according to how well the movies do in the box office," explains Bridson as to why he won't go the conven-

tional commercialization route. "The truth is most of them are struggling just to stay in the black, so there isn't a huge amount of money to be made here.

"By making the codes open source, animation software programmers can immediately make use of the modules to develop better tools, and other researchers in the field will be able to reference my work and create even better modules," adds Bridson.

"I think it's a healthier approach for the industry as a whole."

For more information, visit www.cs.ubc.ca/~rbridson. □

Established in 1989, the *Imager Laboratory for Graphics, Visualization and Human Computer Interaction* at the Dept. of Computer Science is one of North America's top research groups in the area of computer graphics.

With an impressive list of clients and supporters in the entertainment, engineering design and e-commerce industries — including Pixar, DreamWorks, IBM and Sun Microsystems — researchers at the Imager Lab conduct groundbreaking research in both the physical and psychological aspects of our increasingly intimate relationship with technology.

The Lab's close industry ties means timely application of the research to animation and visual effects of blockbuster movies, the design and construction of skyscrapers and airplanes, and even medical education.

For more information, visit <http://www.cs.ubc.ca/labs/imager/> □

Research CEO aims to Shorten Drug Development Process BY HILARY THOMSON



PHOTO: MARTIN DEE

Natalie Dakers is CEO of the Centre for Drug Research & Development that will mature early stage technologies.

To find a unique perspective on how UBC commercializes research, just talk to Natalie Dakers.

Having been a research scientist, technology transfer manager, spin-off company co-founder and CEO, chair of BC Biotech, vice-president of the Association of University Technology Managers and now CEO of the Centre for Drug Research and Development,

Dakers feels she's grown up with the biotechnology industry.

After graduating from University of Guelph with an honours degree in marine biology, Dakers worked as a research biologist for a B.C. salmon aquaculture company. In 1989, she joined UBC's University-Industry Liaison Office (UILO) where, as senior manager for life sciences technology transfer, she

learned about venture financing, licensing agreements and the complex world of commercialization. "I was lucky enough to work with creative people in an office that was leading the way in tech transfer in Canada," says Dakers.

She acknowledges that there are strong and polarized feelings on commercialization — some believe it doesn't fit with the research and education mandate of a university. "If you do it right, you can enhance a university's reputation," she says. "A spin-off is the vehicle to enable discovery." After eight years and helping to create more than a dozen spin-offs, Dakers decided she "had done enough facilitating and wanted to get in the game."

She had worked with UBC neurobiologist Terry Snutch on some research contracts and was impressed with his "stellar science." He has developed compounds to block calcium channels in the brain that transmit pain

signals. The drugs are aimed at patients with chronic pain and other severe neurological disorders, such as epilepsy.

The pair — with no formal business training between them — launched Neuromed Technologies Inc. in 1998 to commercialize Snutch's ideas in developing pain-killing drugs.

"Early on I could have simply licensed out the technology and walked away," says Snutch. "It's been a very long road but the experience has been worth all the effort — there hasn't been a dull moment. And although there's still a long way to go, we based Neuromed on solid scientific rationale and never wavered from the original concept of drug development as the best way to create and maintain value."

"I jumped in and never looked back," says Dakers. "We were passionate about what we were doing. We never lost faith."

But their faith was tested. In January 2002, the first compound failed at a critical point in the financing process. It was one of the sickening plummets in what Dakers calls the roller-coaster ride of running a spin-off. She spent a year getting investors excited once again about the venture and the second compound they were set to try.

By January 2003, she had raised a total of \$70 million for Neuromed, which propelled it toward what she describes as her proudest moment — when the first clinical trial participants received doses of calcium channel blockers.

But with that success came a very difficult decision. In October

2003, Neuromed had secured the third round of financing. The agreement with lead investor, MPM Capital, meant the company would have a new CEO operating from the U.S. Dakers had to let go of Neuromed, although the research base remains in Vancouver and Snutch continues as vice-president and chief scientific officer.

Now CEO of the Centre for Drug Research & Development (CDRD), Dakers has a new vantage point on commercializing research.

The UBC-based centre is responding to new demands in the investment environment. Investors now want ideas at a later stage of development. Activities at the centre will mature early stage technologies, adding value and reducing risk.

"The centre represents an important stage in the evolution of B.C.'s biotech industry," Dakers says. "We want to bridge the commercialization gap between new technologies and investment. The centre will enable us to attract and keep investors for our spin-offs."

Drug development is an exercise in patience, she says, noting that it takes 10-12 years to get a discovery to market.

"We need more than talk and four-year funding cycles to maintain an environment of innovation in Canada. We need long-term commitment and action to realize our potential. The centre is a proactive part of that," says Dakers. "We've had spectacular ventures like [UBC's most successful spin-off company] QLT and we can have them again. I've always believed it's possible." □

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New Ovarian Cancer Test on Horizon

Rejection of first discovery, spurs development of better technique

BY AI LIN CHOO

A medical researcher's desire to help others can often be a painstaking adventure in patience, says Nelly Auersperg, a UBC professor in Obstetrics and Gynaecology.

She learned this the hard way nine years ago when she realized her newly discovered technology — one that could tell if a woman had an increased chance of getting ovarian cancer and possibly help prevent it — would never make it as common procedure.

In 1998, Auersperg found that tissue cultures taken from some women with family histories of ovarian cancer were significantly different from others. She was certain that if developed into a test, there could be a way to predict if these women would fall prey to the disease at a future date.

"I was so thrilled. There's currently no way to detect early stages of ovarian cancer because there are no early symptoms of it. That's why it's known as deadly, because it's almost always diagnosed at too late a stage," she explained.

Auersperg, who has been researching cervix and ovarian cancer all of her career, immediately contacted the University-Industry Liaison Office (UILO) and patented the technology.

The office was similarly hopeful, but soon found that getting companies to share in their excitement would prove slightly more challenging.

Because the test would require scraping the ovaries to get a tissue sample, there was an overall reluctance on the part of companies to get involved, says Barbara Campbell, a UILO technology transfer manager. "When we tried to contact them to market the idea and develop it, we kept getting asked the same questions. Could the average hospital technician perform the procedure? Could it be put into a test kit? Could it be done as a non-invasive procedure? The answer was 'no' to all of them," said Campbell.

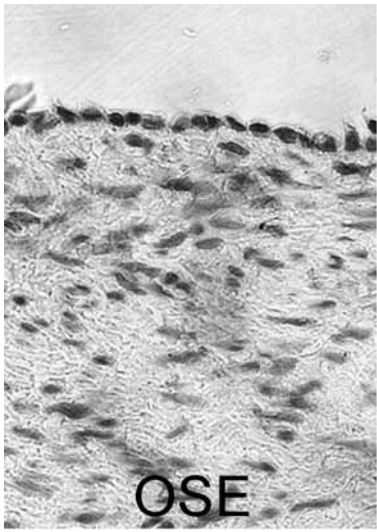
The office realized that unless the idea could be turned into a quick and easy kit, there would be little interest in developing the technology.

"Commercial off-shoots are great because researchers get to see their work materialize into public use," said Campbell. "But this technology was a simple reminder that even though UBC researchers come up with the most innovative of ideas, they do not always lend themselves to the marketplace."

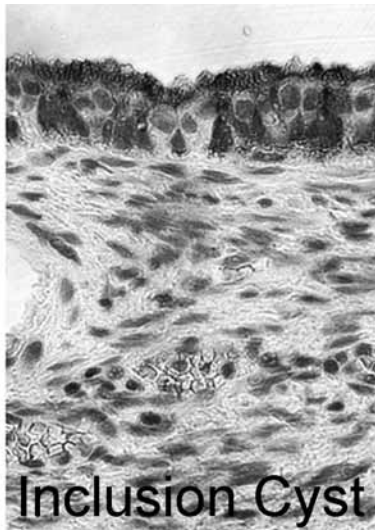
Campbell explained that even when companies do come on board, an idea can take anywhere from two to 10 years to materialize. At UBC, the technology must first go through a thorough assessment by the UILO, and the office will only take it to the development stage if it is proven to be both marketable and patentable.

Researchers are often left frustrated because soliciting company interest and investment can often be the make or break point of a new discovery, said Auersperg. While her results have been tremendously successful from a journal-publishing point of view, she says scientists have to rely on industry to take their research to the next level.

"We simply do not have the resources to do any further development on our own. A medical technology company, for example, will have maybe 20 to 30 scientists working on one thing with considerable sums of money backing



OSE



Inclusion Cyst

Histologic sections through normal ovarian surface epithelium (OSE) (left) and a region of OSE with early premalignant changes (right). The protein is currently being investigated as a cancer diagnostic marker.

their efforts," she explained. "Yes, I was disappointed that my research couldn't be marketed, but no, I didn't give up."

And Auersperg's efforts may still pay off. With the help of Michelle Woo, a PhD student, she says she recently made a new discovery that may potentially detect early-stage ovarian cancer by means of a blood test.

Five years ago, Auersperg was approached by Woo at a conference in Hong Kong. Intrigued by the professor's work, Woo asked if she could come to Vancouver and pursue ovarian cancer research under her wing.

Since then, Woo has identified a protein expressed in low grade ovarian cancer that is different from non-cancerous tissue and late, high grade cancers. She explained that because this protein is secreted by the cancer cells, it may show up in blood serum and it might be possible to detect through blood testing.

"The idea is that if we can develop this into a blood test that would be performed on high risk women, we

might be able to save more lives," said Woo. "We're also beginning to find that this procedure could also be useful in detecting cancer of the uterus."

The two have since approached UILO, and their technology is now being shown to investors.

For her part, Auersperg hopes companies may have fewer reservations about the new procedure. Despite two previous failed patent applications, she has also previously obtained two commercial agreements with the help of UILO, both in the field of ovarian cancer detection, and feels all her efforts have been worthwhile.

"I've been using public funds to support my research for decades and I'd like to feel useful. This isn't all just for my personal entertainment. I'd like to give back in some way and this is the best way I feel I know how," she said.

"If nothing else, even if it doesn't work, it still helps us understand ovarian cancer and may help other researchers figure out how we can go about diagnosing and treating it." □

2005 UBC Tech Transfer Overview

- \$364 million total estimated UBC research funding
- 143 technology disclosures
- 276 patents filed; 136 U.S. patents filed
- 55 patents issued; 22 U.S. patents issued
- 2 new spin-off companies (total of 117)

KUDOS

Professor Emeritus Receives Order of B.C.

Felix A. Durity, a recently retired member of UBC's clinical medical faculty, received the Order of British Columbia June 29.

The order recognizes the accomplishments of outstanding citizens who have contributed to strengthening the province in a variety of exceptional ways.

Durity, a neurosurgeon and humanitarian, has dedicated his life to seeking out the best possible neurosurgical care for British Columbians. He founded the first Canadian intracranial (brain) pressure monitoring unit at Vancouver General Hospital and has served on numerous hospital, university, community, national and international committees for neuroscience.

He also founded a Centre of Excellence Project in Clinical Neuroscience in Ghana, West Africa.

UBC Head Awarded Meritorious Service Medal

The Canadian Government has awarded Garth Warnock and his research team a Meritorious Service Medal in recognition of their breakthrough work in diabetes treatment.

Warnock, head of the Dept. of Surgery at VGH and UBC,

developed a new diabetes treatment, internationally known as the Edmonton Protocol, with six other colleagues.

The technique, which consists of injecting healthy pancreatic islet cells into diabetics to restore control of blood glucose without further need for daily insulin injections, is now being taught by health facilities around the world.

The group was presented with one of 45 Medals, which distinguishes achievements that bring honour to the country.

Professor Elected to Academy of Microbiology

James W. Kronstad, a professor in microbiology, has been elected to Fellowship in the American Academy of Microbiology.

The academy, an honorific group within the American Society for Microbiology, the world's oldest life science organization, recognizes scientific excellence and elects fellows annually based on their scientific achievement and original contributions that have advanced the field.

Kronstad has been recognized for this leadership in the field of molecular mycology and expertise in basidiomycete pathogens of plants and humans. □



Peter Wall Institute for Advanced Studies

Major Thematic Project Grant

The PWIAS Major Thematic Grant Program will be accepting applications for the Fall 2005 competition. It is expected that only one award will be made this year. The deadline is October 1.

The program provides major funding over three years or more to a broad interdisciplinary team of UBC and external scholars to research a new area of basic research. Prospective applicants should contact the Institute Director, Dianne Newell, at the early stage in planning.

Visit our web site at www.pwias.ubc.ca, or contact the Wall Institute at (604) 822-4782. For specific program details, visit www.pwias.ubc.ca/programs/mtg.php



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UNIVERSITY TOWN



Did you know that the University Town permanent population is now close to 3000 people? When the Logan Lane co-development project is completed in August another 120 faculty and staff people will join the University Town community.

times



ISSUE NO.1 JULY 2005

- UNIVERSITY BOULEVARD
- HAWTHORN PLACE
- THUNDERBIRD
- HAMPTON PLACE
- SOUTH CAMPUS
- EAST CAMPUS
- CHANCELLOR PLACE
- NORTH CAMPUS
- GAGE SOUTH

Welcome to the new University Town Times (the publication formally known as the University Town Report). Along with this new look and name we have a new editorial mission: to put the issues related to the development of University Town in a form that folks who do not hold a degree in urban planning might understand and actually find interesting. A bold mission, we know! In addition to planning updates we thought you might like to know more about the history of UBC, community events, favorite spots on campus, student and resident feedback, tips on getting around and the like.



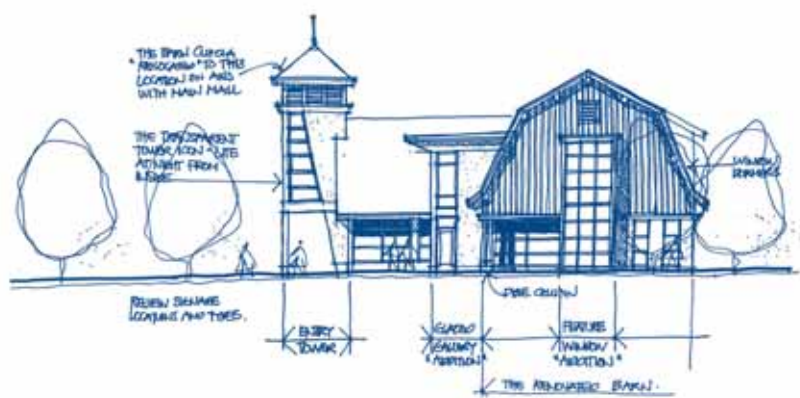
communicate these values and gives an additional voice to the University Town community.

Like the previous Reports we will publish every second month. What's new is that we will be doing it within the V6T News, the Ubyssy (Sept. – April) and UBC Reports. Of course your feedback is an essential ingredient to everything we do, so please give us your thoughts on this new version by e-mailing us at info.universitytown@ubc.ca.

Have a wonderful summer!

UBC is undergoing a major transformation. Eight new neighbourhoods are proposed and several are already under construction. Our residential population is increasing and, in many respects, and brand-new set of community values is emerging. We hope this new publication helps

The University Neighbourhoods Association (UNA) hosted a BBQ with live music at the UBC Botanical Gardens for University Town residents on May 26.



Barn Raising

Nothing brings a community together like a good old-fashioned barn raising. Scheduled for completion in early 2006 on the site of The Old Horse Barn – a well-known UBC landmark – the Old Barn Community Centre will be the dynamic new heart of the Hawthorn Place neighbourhood. A contemporary architectural interpretation of the original 1920's Pennsylvania Dutch style dairy barn, the community centre will be 10,000 square feet of expansive, light-filled space and will include a gym and exercise room, several multi-purpose rooms, a 2,000 sq. ft. café, and an outdoor performance stage. Plans also include a spacious daycare facility and outdoor play area for 3-5 year old children.

UBC Picks a Winner for University Boulevard

Following six months of heated competition and 12 hours of debate by an internationally renowned jury of architects UBC has chosen Team A – Santa Monica's Moore Ruble Yudell Architects and Planners (MRY) and Vancouver's Hughes Condon Marler: Architects (HCMA) – as the team that will redesign University Boulevard and create a signature gateway and new social heart for UBC. The campus community also voted Team A as the favourite design by an overwhelming 79 per cent.

"We are absolutely thrilled by this outcome," said Dennis Pavlich, Chair of the jury and UBC Vice-President, External and Legal Affairs. "The jury's decision reflects a thoughtful and professional review of all the three submissions - each unique and daring. Team A stood out for its exceptional richness and vibrancy. The university community thought so too."

The competition jury concluded that Team A best addressed the functional program requirements and the spirit of University Boulevard. For more information please visit www.universitytown.ubc.ca/archcomp

Public Hearing: South Campus Land Use Changes

The GVRD has approved a date for the public hearing for the by-law to amend land use designations in the UBC Official Community Plan (OCP). The public hearing will take place on Wednesday, June 27, 2005 from 7pm to 9pm in room 216 in UBC's Student Union Building.

The proposed by-law would change the location of the school, community centre and commercial centre to be consistent with locations proposed in the South Campus Neighbourhood Plan. The amending bylaw would also delete the research land use designation in the South Campus neighbourhood. All persons whose interests are affected by the by-law can make oral or written submissions at the public hearing. To register as a delegation or submit a written presentation to the GVRD Communities Committee please contact the GVRD Corporate Secretary at 604-432-6250.



The Stories Behind the Names

UBC is proud of its rich history and the personalities that have shaped it. Many of the neighbourhoods and streets in University Town bear their names. Here are just a few that reside in Hawthorn Place.

1 THE HAWTHORN'S

Drs. Harry and Audrey Hawthorn, founders of the UBC Museum of Anthropology. Founded in 1947, the Museum was directed in its early years by Harry Hawthorn, the first anthropologist appointed to the University faculty. Harry's wife Audrey Hawthorn served as the first curator.



2 DR. PETER LARKIN

Dr. Larkin was an eminent fisheries biologist, well-known and respected for his expertise in the areas of conservation, resource management, and environmental impact assessment. He joined the faculty of UBC in 1955 as professor of zoology and Director of the Institute of Fisheries and retired in 1990 as professor in both the Institute of Fisheries and the Department of Zoology.

3 DR. HARRY TREMAINE LOGAN

Dr. Logan began teaching at the University of British Columbia in 1920 where he was successively Instructor, Assistant Professor, Associate Professor, Professor of Classics and Head of the Department of Classics until 1952. Dr. Logan served in many capacities at UBC, but is most remembered for his history of the university, Tuam Est (1958).