



UNIVERSITY OF ALBERTA

VOLUME 17, No 1, SPRING 2006

SCIENCE

contours

FACULTY OF SCIENCE ALUMNI MAGAZINE

www.ualberta.ca/science



Building for the future

Centennial Centre for
Interdisciplinary Science

Move over
T.rex

Rock
Stars

Going
Coastal

Not Without
a Trace

Star
Quality



Welcome to a new extended edition of Science Contours. So much is happening - with students, faculty and alumni - we needed more room to share it.

Perhaps the most exciting news came in the Alberta Government's spring budget, where we saw a commitment of \$285 million over the next three years towards the construction of the Centennial Centre for Interdisciplinary Science (CCIS). Visit page ten for a full update on the project and the exciting times to come.

CCIS was just one of the good news stories of 2006. Our researchers continue to capture national and international recognition. On a national level, Dr's Todd Lowary (Chemistry) and Andrzej Czarnecki (Physics), were awarded Canada's top science and engineering research prize, the NSERC Steacie Fellowship. This is the first time two members of the same faculty have received this honour in the same round. On an international level, Dr David Bundle (Chemistry) was recognized with a lifetime achievement award from the Alexander von Humboldt Foundation in Germany. The research of our faculty also continues to make headlines. Dr Philip Currie's (Biological Sciences) discovery and

naming of a new dinosaur put the faculty and the university at the forefront of national and international news.

We continue to recruit and graduate outstanding students – our science leaders of tomorrow. Spring convocation saw 886 undergraduate students join the ranks of Faculty of Science alumni, along with over 50 graduate students. Because of the size of the undergraduate class and the recent renovations to the Jubilee Auditorium, spring convocation was divided into a morning and an afternoon celebration, with our traditional convocation breakfast for graduands and their families moving to the dinner hour.

Convocation also saw us award two honorary doctorates of science to Kenneth Thompson and Dr William Fyfe. Kenneth Thompson is well known for developing the UNIX operating system, still widely regarded as one of the most powerful, versatile, and flexible operating systems in the digital world. He joined the computing science research department of Bell Laboratories from 1966 until he retired in 2000, and developed the UNIX operating system in 1969 with colleague Dennis Ritchie.

A Companion of the Order of Canada, Canadian geologist Dr William Fyfe will also be receiving an honorary degree from

the University of Alberta. He is widely considered one of the world's most distinguished geoscientists and has contributed groundbreaking research on the environmental implications of human energy consumption.

Of course all these activities were shared with our new President, Dr Indira Samarasekera, who was installed as President in September 2005. With an exciting new leader at the helm, and her Dare to Discover vision, I have no doubt the rest of the year will be just as exciting.

Please let us know what you think of the new Contours format. Visit "Where in the world?" on the last page of this Contours and tell us where you are and what you've been up to. We always enjoy hearing from our alumni and would really like to add a "Class Notes" page in future editions.

All the best over the summer.

Gregory Taylor
Dean of Science

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Schindler scores Tyler Prize



The man who sounded the alarm on acid rain has been awarded one of the most prestigious international awards for environmental research. Dr David Schindler has received the Tyler Prize for Environmental Achievement.

He joins such luminaries as primatologist Jane Goodall, Sir Richard Doll, who

established the link between lung cancer and cigarette smoking, and Nobel Laureates Paul Critzen and Mario Molina.

In a series of landmark experiments conducted during the 1970s and 1980s, Schindler demonstrated that acid rain could begin destroying freshwater lakes at far lower levels than previously thought, and that phosphorus was the major cause of uncontrolled algae growth. Schindler's findings had a decisive influence in the policy wars over sulfur oxide emissions and phosphorus use and led to a ban on the use of phosphorus in detergents.

Stanford University biological sciences professor Peter Vitousek said Schindler's approach - the fertilization of entire

lakes in an Ontario research reserve - provided incorruptible findings. "Dave Schindler did the right set of experiments . . . demonstrating beyond any reasonable doubt that phosphorus controls the eutrophication of temperate lakes," Vitousek wrote in a letter supporting Schindler's award.

"His experiments were key to the ban of phosphorus in detergents and to the understanding of the impacts of sulfuric acid in lakes," Wallace Broecker, professor of earth and environmental sciences at Columbia University, wrote in a letter nominating Schindler for the award.

"It's amazing to be in this kind of company - I just can't believe it," said Schindler, who holds the U of A's Killam Memorial Chair in Ecology and is a previous winner of the Gerhard Herzberg Gold Medal for Science and Engineering - the highest honour for Canadian researchers. He is the only Canadian to receive both the Stockholm Water Prize (1991) and the Volvo International Environment Prize (1998).

University

- **Jillian Buriak** (*Chemistry*) Faculty of Science Research Award
- **Zbigniew Gortel** (*Physics*) SALUTE Award (Students' Union Award for Leadership in Undergraduate Teaching)
- **Larry Heaman** (*Earth and Atmospheric Sciences*) McCalla Professorship
- **Sunrose Ko** (*Computing Science*) Faculty of Science Service Award
- **David Lawrie** (*Physics*) Undergraduate Teaching Award for Instructors of Service Courses from outside the Faculty of Engineering
- **Paul Lu** (*Computing Science*) Faculty of Science Award for Excellent Teaching
- **Mike MacGregor** (*Computing Science*) Faculty of Science Teaching Innovation Award
- **Robert Rankin** (*Physics*) McCalla Professorship
- **Bruce Sutherland** (*Mathematical and Statistical Sciences*) McCalla Professorship
- **John Vederas** (*Chemistry*) Kathleen W. Klawe Prize for Excellence in Teaching of Large Classes

National

- **Mike Belosevic** (*Biological Sciences*) Alberta Centennial Medal

- **Duane Froese** (*Earth and Atmospheric Sciences*) J. Ross Mackay Award (Canadian Geomorphological Research Group)
- **Todd Lowary** (*Chemistry*) NSERC E.W.R. Steacie Fellowship
- **Richard Peter** (*Biological Sciences*) Fry Medal (Canadian Society of Zoologists)
- **Andrzej Prus-Czarnecki** (*Physics*) NSERC E.W.R. Steacie Fellowship
- **Jonathan Schaeffer** (*Computing Science*) Alberta Centennial Medal
- **Nicole Tomczak-Jaegermann** (*Mathematical and Statistical Sciences*) CRM Fields PIMS Prize
- **John Vederas** (*Chemistry*) Alberta Centennial Medal

International

- **Mike Belosevic** (*Biological Sciences*) Harvey M. Rosen Award (International Ozone Association)
- **David Bundle** (*Chemistry*) Alexander Humboldt Foundation Research Award
- **Arturo Sanchez-Azofeifa** (*Earth and Atmospheric Sciences*) Aldo Leopold Leadership Fellowship (Woods Institute for the Environment)
- **David Schindler** (*Biological Sciences*) Tyler Prize for Environmental Achievement

Move over **T.rex**, there's a **bigger**



While most of us grew up with *Tyrannosaurus rex* as the ruler of the dinosaur kingdom, a new generation of dino enthusiasts will come to know a new species that is perhaps the largest carnivorous dinosaurs known.

Dr Philip Currie, from U of A's biological sciences department, and professor Rodolfo Coria of the Museo Carmen Funes in Argentina have identified and named the new species, *Mapusaurus rosea*. "Over the last decade, people have become increasingly aware of a group of gigantic meat-eating dinosaurs called carcharodontosaurids," said Currie. "These animals include *Giganotosaurus*, which was larger than the largest-known specimen of *Tyrannosaurus rex*. After four years of

dino in town

working in a dinosaur quarry in Argentina, we discovered that we had a new species of carcharodontosaurid that we called *Mapusaurus roseae*”.

Hundreds of *Mapusaurus* bones were found in 100-million-year-old sandstone. The remains include what may be one of the biggest meat-eating dinosaurs known, slightly larger than its older cousin, *Giganotosaurus*. The discovery, made 24 kilometres south of the city of Plaza Huincul in 1995, took five years of excavation under the direction of Coria and Currie, who removed 90 tonnes of sandstone from a desert hilltop.

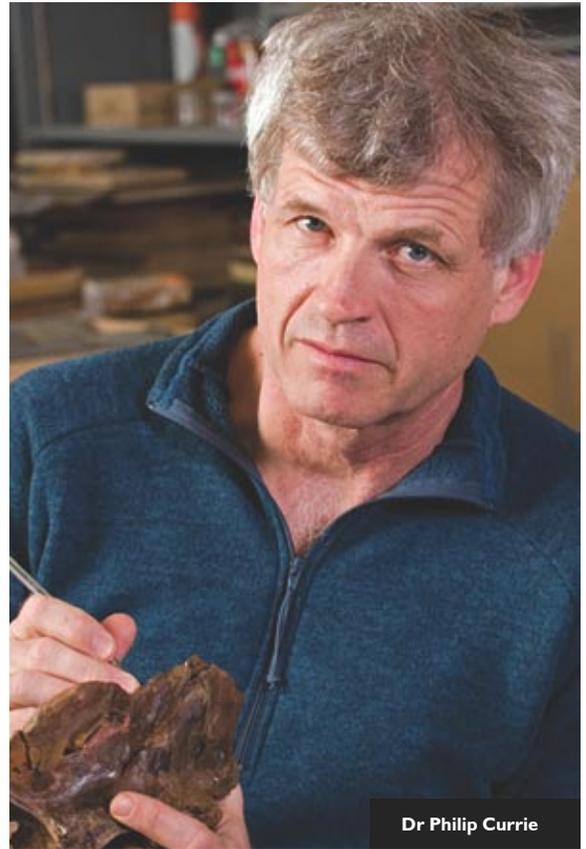
For a century, giant meat-eating dinosaurs such as *Tyrannosaurus rex* were assumed to be solitary animals. Family groupings of large meat-eating dinosaurs have only recently been identified, and could provide paleontologists with information on its behaviour, the probable ways the creature ate and what can be learned about changes during growth.

“The presence of so many animals in one quarry suggests that they were living together in a pack at the time leading up to

their catastrophic death,” said Currie. “Similar sites found recently in Alberta, Mongolia and the United States suggest that this kind of social behaviour may have been relatively common in late cretaceous (65 - 90 million years ago) times.”

Currie speculated that by co-ordinating movements, the *Mapusaurus* pack or family might have been able to hunt the largest dinosaur that ever lived - *Argentinosaurus*, the 40-metre plant-eater which shared its habitat in central South America 100 million years ago. Currie and Coria described this new species in the journal *Geodiversitas*.

The *Mapusaurus* individuals found ranged in size from slender juveniles 5.5 metres long to a robust adult that exceeded 12.5 metres in length. The fossils include the longest known tibia (shin) bone for any meat-eating dinosaur, slightly longer though than that of its close cousin, *Giganotosaurus*. The skull of *Mapusaurus* is lower and lighter than that of the *Giganotosaurus*, with similar sharp, blade-shaped teeth.



Dr Philip Currie

“This is fresh information about the social lives of the largest carnivores on Earth. And it’s one of the most remarkable of a dozen new species discoveries, many of them gigantic, in the last decade from this region of western Patagonia,” said dinosaur enthusiast and dig participant, “Dino” Don Lessem, one of several excavation sponsors, along with the Museo Carmen Funes, the Direccion de Patrimonio de Neuquen and Amblin/Universal Pictures (via royalties from Lessem’s *Jurassic Park* exhibitions).

Mapusaurus is named for the word “Earth” in the language of the Mapuches, the native American tribe of western Patagonia. Its species name *roseae* refers to the rose-coloured rocks that the specimens were found in, and honours the first name of the principal donor of the Argentina-Canada Dinosaur Project.



The *he*

Dr Arturo Sanchez-Azofeifa is part of an international research team proving, for the first time, that global warming is behind an infectious disease epidemic wiping out entire frog populations and forcing many species to extinction.

at is on

“There is absolutely a linkage between global warming and this disease - they go hand-in-hand,” said the earth and atmospheric sciences professor and co-author of a research paper appearing in the January edition of the prestigious journal *Nature*.

Sanchez-Azofeifa worked with an international research team led by Dr Alan Pounds from Costa Rica's Monteverde Cloud Forest Preserve and Tropical Science Centre. Accounting for such things as deforestation, the scientists investigated how the Monteverde harlequin frog vanished along with the golden toad 17 years ago from the mountains of Costa Rica. The researcher say about 67 per cent of the 110 species of the harlequin frog, which only existed in the American tropics, have met the same fate due to a pathogenic fungus called *Batrachochytrium dendrobatidis*.

The researchers discovered that between 1975 and 2000, air temperature for the tropics increased by 0.18 degrees per decade, triple the average rate of warming for the 20th Century. The paper states this warming has reduced mist frequency at Monteverde by raising the heights of cloud formation which may promote the survival, growth and reproduction of the fungi.

After analyzing the relationship and timing between the demise of the species and the changes in surface and air temperatures, the scientists conclude “with high confidence,” that large-scale warming is a key factor in the disappearance of many of the amphibian populations present in cloud forest environments.

“With this increase in temperature, the bacteria has been able to increase its niche and wipe out large populations of amphibians in the Americas,” said Sanchez-Azofeifa, who analyzed satellite images to extract deforestation rates and forest cover extent data used on the modelling component of the study.

“Once a species is gone we can't do much to bring it back. What we need to do is worry about what will be happening in the future. How many species in tropical environments are going to disappear before people realize how serious climate change is? This is not an esoteric thing that is only important to the scientific community - it affects all of us. We are showing that there are real consequences to inaction.”

The study comes at a time of growing concern about the future of amphibians. The Global Amphibian Assessment, published in 2004, found that nearly one-third of the world's 6,000 or so species of frogs, toads, and salamanders are threatened with extinction - a figure that is far greater than that for any other group of animals.

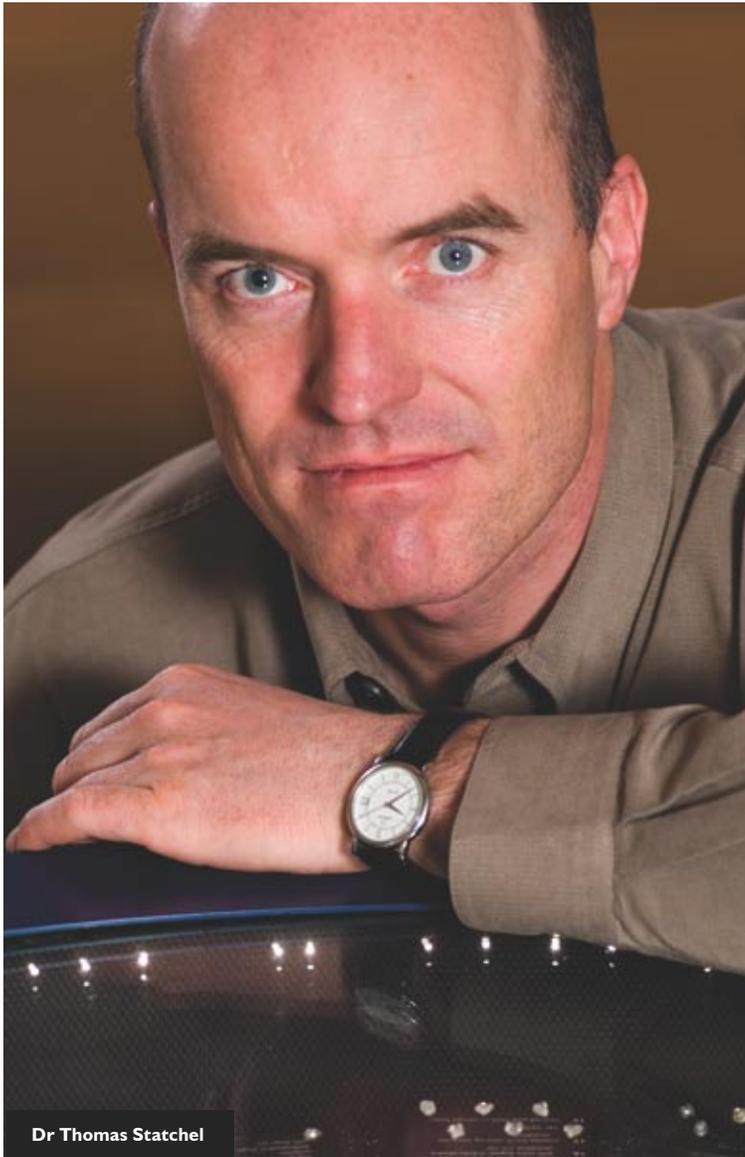
“When we talk about climate change, there is so much focus on industrialized countries, but people are ignoring other ecosystems that may be extremely sensitive to climate change, such as dry and cloud forest environments,” said Sanchez-Azofeifa. “Its impact goes beyond what we can observe here in Canada and the north, and the situation is obviously very grave.”

In addition to this groundbreaking research, Sanchez-Azofeifa was named the director of the newly-formed TROPI-DRY, a research network housed in the Faculty of Science with members from the US, Cuba, Venezuela, Costa Rica, Panama, Brazil, Mexico and Canada. TROPI-DRY's goal is to try to help translate research into tools countries can use as policies to save the dry forests.

Tropical dry forests once made up 42 per cent of all forests in the tropics, yet less than one per cent is protected. The most diverse of these forests exist in southern Mexico and the Bolivian lowlands, and the level of endemism - species unique to that area - is higher than in rainforests. Half of Costa Rica's dry forests have already been cut down, and others face a similar threat, jeopardizing such resources as native mahogany and rosewood trees, which are in danger of extinction.

“There is this romanticized view of rainforests, yet the tropical dry forest is being forgotten even though the most fertile soils are there,” said Sanchez-Azofeifa, who hails from Costa Rica. “It's a mystery to me why, when both ecosystems are in danger, one is ignored over the other.”

Sanchez-Azofeifa's work and untapped talent for communicating scientific ideas has earned him a prestigious Leopold Fellowship. Based at Stanford University's Woods Institute for the Environment, the Aldo Leopold Leadership Program offers mid-career academic environmental scientists intensive communications and leadership training to help them deliver scientific information more effectively to policy makers, the media, business leaders and the public.



Dr Thomas Stachel

Long before it sparkles and shines in a box from Tiffany's, a diamond undergoes a journey lasting billions of years and hundreds of kilometres. A new permanent exhibit of more than 60 rough diamonds opened at the University of Alberta's Mineralogy and Petrology Museum, illustrating that journey.

The only one of its kind in Canada, and one of a few such exhibits

anywhere, the collection demonstrates the striking variations found in raw diamonds.

Located in the Mineralogy and Petrology Museum in the Earth and Atmospheric Sciences Building, the uncut diamonds, while pretty, aren't worth much money at all. Cut diamonds are expensive, but it's the rough stones that interest Dr Thomas Stachel.

"Unpolished diamonds tell a much different story than a cut stone," said Stachel, a professor in the U of A Department of Earth and Atmospheric Sciences and Canada Research Chair in diamonds. "Their rough features tell us their history - how they grow and where they were stored deep in the Earth, as well as how they were transported to the surface."

It turns out diamonds survive a far more hostile environment than the settings we're accustomed to seeing them in. Formed in the Earth's upper mantle, about 140 kilometres underground, diamonds are brought to the surface or closer to the surface in kimberlite volcanoes, Stachel explained.

"It's a time capsule, because the diamond is three billion years old. You can get information from it about what formed the continents."

The research that has uncovered the conditions that existed when the diamonds were formed also provides geologists with valuable information about the location, grade and quality of these rare gems.

The exhibit was funded in part by the Alberta Museums Association and by the Friends of the University of Alberta Museums. The majority of diamonds are on permanent loan from the Diamond Trading Company in London, a branch of the diamond mining giant De Beers. Richard Molyneux, president and CEO of De Beers Canada, was instrumental in securing the samples for the collection.

"De Beers is delighted to continue its support of the work being done by the University of Alberta De Beers Diamond Research Laboratory," he said. Apart from their rarity and beauty, their origin at great depth provides valuable insights for increasing our understanding for the Earth."

Rock stars



Dr Christopher Herd

The University of Alberta is welcoming a very, very old rock star into its hallways. No, it's not Keith Richards. It is, perhaps, the most important rock on the face of the Earth.

The Tagish Lake meteorite is the only one of its kind known to exist on Earth, and may contain insights into the beginnings of our solar system, said Dr Christopher Herd, a professor in the Department of Earth and Atmospheric Sciences. Because the space-born rock fell on the frozen surface of a northern B.C. lake in the middle of January and was collected without being touched by human hands, it represents the most pristine sample of minerals from outer space.



"No other meteorite's ever been collected in this manner and I suppose that arguably makes it the most important rock that's ever been found anywhere on the Earth," said Herd. "It can tell us new information about the birth and evolution of our solar system, and the very fact that it's been kept frozen, essentially pristine, uncontaminated by human hands, gives us an unprecedented opportunity to explore new scientific avenues that were heretofore impossible. We can do things with this meteorite that nobody's ever done before."

The meteorite came to the U of A through a partnership between the university, Canadian Heritage, the Royal Ontario Museum, Natural Resources Canada and the Canadian Space Agency.

"We are also very fortunate to have a group of very passionate and dedicated scientists who have worked on this project for many years to ensure that it comes to this institution as well as the others," said Janine Andrews, executive director of the University of Alberta Department of Museums and Collections Services.

For Herd, this is the something he's been waiting a long time for.

"Shortly after I started here, I thought this would be a great meteorite to have because of its scientific value. It also fell in Canadian territory. It's a Canadian meteorite and it really needed to be in a Canadian institution in order to maximize the science and to demonstrate that we could do great science on this," he said.

While the Tagish Lake meteorite will not be on display to the public, visitors can enjoy thirteen ancient meteorites-space rocks-have been pulled from the U of A's longstanding collection for permanent public display in the museum.

The extraterrestrial rocks date back as far as 4.5 billion years, when the solar system was born. They showcase some of the best of the university's 1,150-specimen collection, which is second in size only to the National Meteorite Collection in Ottawa.

At one time, there was a collection of meteorites on display in the old Arts Building on campus, but it was decided they were too valuable to be left out, Herd said. But when he was appointed curator of the collection last year, he knew it deserved some public exposure.

"This is a world-class exhibit. You get a good idea of what meteorites look like and what they can tell us. We've picked really good samples to show various features."

The display of 13 specimens shows the variety of colours and textures in the meteorites that crashed into farmers' fields in Alberta or other places around the globe and were, by some miracle, picked up by keen-eyed observers.

The U of A collection began in 1915 with a piece of what is known as the Brenham Kansas Meteorite, and grew over the years as more finds were added. The Edmonton Meteorite was discovered in the '30s north of the city. In 1960, the Bruderheim Meteorite fell to Earth, and Dr Bob Folinsbee, a U of A geology professor, took his students, staff, volunteers and colleagues out into the field-literally-to hunt for pieces of the rock. He also purchased fragments from farmers and collected more than 300 kilograms of material.

Building for the Future –

Centennial Centre for Interdisciplinary Science



View of CCIS and new lecture theatre from Saskatchewan Drive



View of south west entry



View of Saskatchewan Drive from lecture theatre

When Gregory Taylor took the reins from former Dean of Science Richard Peter four years ago, he knew the Centennial Centre for Interdisciplinary Science (CCIS) would be at the forefront of his tenure. With plans for the project well underway, Taylor's focus would be transforming the plans into the world-class facility that would soon be home to thousands of students, staff and faculty and the new face on the University quad.

While the last few years have been a blur of project meetings, schematic drawings, stakeholder presentations, architectural plans, and budgeting, a recent announcement by the Alberta government committing \$285 million over the next three years towards CCIS has put it all in focus.

“It is truly a thrill for me to see this initiative come to fruition,” comments Dean Taylor. “So many people have been instrumental in getting this project off the ground, and it is encouraging to know the Alberta Government shares this important vision, one that will not only open the doors to more students, but will also facilitate innovative research and foster discoveries happening at the interface of disciplines.”

CCIS will be one of only a few of its kind in the world to house interdisciplinary research teams in one facility. The expectation is that these teams of scientists will undertake research at the interface between traditional disciplines, paving the road to innovation and discovery.

Dr Todd Lowary ('93 PhD), the recent recipient of an NSERC Steacie Fellowship - one of Canada's premier science and engineering research prizes, understands the importance of the interdisciplinary approach for scientific discovery.

“It is difficult to overstate the importance of chemical biology and proteomics to the future of research at the chemistry-biology interface,” he explains. “CCIS will put key researchers from both fields in close proximity, thus facilitating research projects that are key to the development of a technology-based economy in the Province of Alberta”

It will also attract and retain world-class teaching and research talents – from Alberta, Canada, and across the globe. Established scientists will interact with a new generation of world-class researchers and outstanding students, sharing sophisticated tools and state-of-the-art facilities.

University of Alberta President Indira Samarasekera believes “this state-of-the-art facility will enhance our research reputation and foster interdisciplinary collaboration. It is a brilliant and visionary investment by Albertans in the future of science and knowledge.”

From the government's perspective, the CCIS will go a long way to help meet the access to advanced education targets of 60,000 new post-secondary spaces by 2020, a number that would move Albertans to the highest rate of post-secondary education in the country.

“This funding demonstrates our government's commitments to ensuring Alberta is a leader in research, increasing the number of student spaces in the post-secondary system, and making sure students receive an education that is dynamic and of the highest quality,” said then Advanced Education Minister Dave Hancock.

The increased capacity in lecture halls and teaching labs will provide an unprecedented learning experience for

students' campus wide and open the door for 1,100 more undergraduate students and 478 more graduate students. It will also provide over 2800 new lecture and lab seats.

CCIS will be a signature building in terms of architecture, functional design and sustainable design. Measuring in at just over 52,000 m² gross, it will provide the space, environmental control, and technological capacities to meet teaching, research and technology transfer needs of the Faculty of Science over the next 10 years.

Dean Taylor acknowledges the challenges in creating a structure that will reshape the university landscape. “There is no doubt CCIS will be a signature building on the University quad, perhaps the most prominent site on campus and the hub of much campus activity,” he says. “We were looking for architecture that captures landmark technology and stimulates research, innovation and discovery while at the same time respecting the architecture of nearby historical buildings.”



CCIS, signature building on quad

Going Coastal



View of BMSC from harbour



Green anemone

Looking around it is easy to believe you've been transported to a wilderness paradise. The Pacific Ocean at your doorstep, mountains looming in the distance, and the occasional sighting of grey whales migrating from the Baja Peninsula to journey north to Alaska. Look a little closer and you'll see this wilderness paradise is also a teaching and research haven.

Bamfield Marine Science Centre (BMSC), located in Barkley Sound on Vancouver Island, offers a unique research environment to Canadian scientists and students. Run by a consortium of five universities (U of A, Simon Fraser, UBC, U of C, and UVic), BMSC has attracted world-class research biologists, ecologists and oceanographers for almost 35 years, pioneers pushing back the frontiers of knowledge in marine and coastal science.

"Bamfield is a fantastic place to get excited about science - the setting is perfect," comments Gabrielle Tompkins, a PhD candidate in biological sciences.

"Our cabins look onto the ocean, students are up before breakfast to catch low tides for collecting trips, community members and tourists are on station for public education activities, and there are plenty of opportunities to talk with students and researchers about your interests."

Despite being landlocked, the U of A's Faculty of Science has always had a strong presence at Bamfield. Dr Andy Spencer spent 10 years as its director, and Dr Rich Palmer, perhaps the biggest BMSC champion, encourages undergraduate and graduate students to explore science in the pristine natural environment.

With a playground over 4000 meters deep and covering one third of the earth's surface, there is no shortage of exciting research to be had. Dr Sally Leys worked at BMSC during her doctorate. Now a professor and Canada Research Chair in Evolutionary Developmental Biology, she continues to travel to the coast to study rare glass sponges.

"Glass sponges live in deep water," she said. "And the only laboratory tanks where they'll survive are at BMSC, because the water comes from about the same depth (30 m). I have to use this system to do any sort of controlled experiments."

With sunglasses, sandals and scuba gear the lab coats of choice, the open and relaxed environment allows innovation, creativity and numerous opportunities for interaction between students and researchers, comments Alison Page, an undergraduate student in animal biology who has spent the past few summers taking courses at Bamfield. The undergraduate teaching program offers summer and fall courses, ranging from fisheries to forests, evolution to ecology, and marine mammals to marine-terrestrial interactions.

For Naomi Manin't Veld ('02 BSc), a six-week summer invertebrate zoology course turned into a four-month project, which turned into a full time position with the Public Education Department.

"I don't feel I actively pursued or fully realized I wanted to be in Bamfield," recalls Naomi, "but as soon as I had been here a full summer, I knew I wanted to stay."

Each year, BMSC's public education program reaches out to more than 4,000 children, young adults and adults, offering experiential learning opportunities and the chance to explore this unique wilderness paradise. Naomi works with the various student groups, coordinating labs, lectures, slideshows, workshops, field trips to the beach, boat trips, and rainforest walks.

While the love of marine science came naturally to Naomi, she finds with some of the students it may take some encouragement, but eventually they come around.

She recalls one student who was visiting with an elementary class. He was uninterested with almost everything she showed him and was distracting others.

"Fifteen minutes into the plankton lab he had yet to even look through his microscope," explains Naomi. "I walked over to him and said, just look at plankton for five minutes and then we will do something else. An hour later, I walked by his chair, he unglued his eyes from the microscope and said in the most genuine way, 'plankton is so cool!'".



View from the newly constructed Rix Centre

not without

a trac





Richelle Booker (BSc'00, MSc '02), will tell you there's no such thing as getting away without a trace. As a toxicology services specialist with the forensic laboratory services of the RCMP, it is her job to find the invisible evidence left behind at a crime scene.

From cases of homicides and suspicious deaths, to impaired driving and poisonings, Richelle analyzes body tissues and fluids looking for the presence or absence of alcohol, drugs or poisons. And while some of her day-to-day activities may replicate those of Gil Grissom or Horatio Caine, the glamour-sodden bosses of the infamous CSI forensic squads, her passion for the science behind the crime began long before the hit shows.

"Going into high school I knew I wanted a career in forensic science with the RCMP," recalls Richelle from the RCMP lab in Winnipeg. "I read a lot of mystery-type books by Millie Benson, Mary Higgins Clark, and then eventually James Patterson, Thomas Harris, and Jonathan Kellerman. I was always fascinated with the science side of the crime."

Richelle's early interest in forensics flourished during her time at the University of Alberta. She tailored her course load, building a strong foundation in physiology and pharmacology on route to an undergraduate science degree. Wanting more, she enrolled in a masters program in the Faculty of Medicine's Department of Psychiatry. Here she interacted with scientists and medical professionals in an environment that encouraged new challenges and fostered independent thinking.

Despite the heavy course load, Richelle wasn't giving up on her RCMP dream. "All through university I would submit my resume and transcripts to the RCMP in Ottawa hoping for an opening," she says. "Once I finished my masters I applied again, and six months later I got the call."

After a lengthy interview Richelle was offered a position at the Winnipeg Forensic Laboratory, home to the Centre of Specialization for Toxicology Services for the Northwest Region. Once engaged as a civilian member with the RCMP, Richelle underwent comprehensive training to prepare her for the position.

"The understudy program involved basic orientation to the RCMP and the Forensic Laboratory Services, reading of historical and current scientific and medical literature, practical exercises, casework, research projects, and written and oral examinations," she explains.

Richelle also takes part in mock trial exercises, aimed at preparing her in the event she is called to court. Results from lab tests are quantified and the evidence may be entered in criminal proceedings and other hearings by way of written reports or by testimony, she explains. She may also be called upon to examine over-the-counter pharmaceutical and prepared food products to determine evidence of tampering, or analyze chemicals found in tear gas canisters and interpret their toxic effects for court purposes.

While Grissom and Caine scour crime scenes for evidence, most of Richelle's time is spent in the lab where she eagerly awaits the clues that will let her do what she's always known she would -uncover the science behind the crime.

e



St★r quality

Look up, look way up. That is where you will find Neil Siemens (BSc '66) on most spring and summer days, cruising at 200-km/hour comfortably guiding his Cessna 172 at 10,000 feet - a long way from where he started.

Born on a farm in southern Manitoba, Neil moved around as a child, living in numerous foster homes from the age of eight to fifteen. As a result, his education was continually interrupted. When he joined the Canadian military he realized the limited opportunities available with only a grade eight education.

"I took advantage of the correspondence courses offered by the military, as well as whatever night courses were offered in the location where I was stationed," he explains, and by 26 he had obtained his high school diploma.

More importantly, Neil had gained the confidence to continue his thirst for knowledge. The next year he enrolled in the Faculty of Engineering at the University of Alberta with financial assistance from the military, but soon switched to the Faculty of Science to pursue a math major and economics minor. In 1966 Neil graduated with a Bachelor of Science.

"Looking back, I wish I had more time to get involved in different faculty activities," he reflects. "Unfortunately, funding was a critical issue for me and I was forced to work a considerable number of hours each week."

Neil's journey inspired him to establish a Faculty of Science Rising Star Entrance Scholarship that supports the efforts and abilities of our first-year students.

"The reason for the setting up a scholarship was not only to share the satisfaction of being an alumnus, but also to offer a ray of hope to someone else who is undoubtedly struggling financially the way I did," he says. "The alumni should be an excellent source of scholarship funding to ensure that the flow of students that attend and graduate is uninterrupted."

In his final year at school, Neil left the military and took a job with Ford Motor Company of Canada. While he retired from full time work in 1998, he has stayed on with the company as a part-time employee.

An avid pilot, Neil flies his own aircraft for recreation and with Edmonton Search & Rescue, and he is the designated Chief Tow Pilot for the Edmonton Soaring (Gliding) Club. Each year he and his wife put about 20,000 km on their motorcycles while still managing to fit in a kayak or canoe trip in the north.

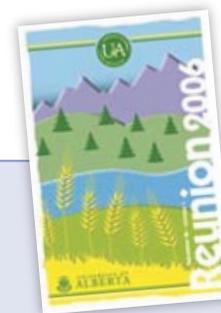
Even with his many adventures, Neil finds time to take part in alumni events to reconnect with the faculty and friends, and to share with others his passion for education.

"The opportunity to attend university has meant a great deal to me," he explains. "It opened many doors, prompted me to become interested in topics that I never thought of before, and has provided a very satisfactory standard of living."



REUNION 2006

September 28 – October 1



You are invited to join us at Reunion 2006, a four-day celebration held from September 28 to October 1. This event provides a wonderful opportunity for you to bring your friends and family back to campus to remember your varsity days. For a full listing of events and how to register, visit www.uofaweb.ualberta.ca/alumnireunion.

Friday, September 29

Dean's Wine & Cheese Reception

Time: 5:00 p.m. – 7:00 p.m.

Place: Faculty Club

Contact: Krystal Harvey at (780) 492-5864; e-mail: krystal.harvey@ualberta.ca RSVP: Register online

Cost: Free

Gregory Taylor, Dean of Science, invites all science alumni and their guests to join him in toasting wonderful memories and great accomplishments. The Dean will be on hand to chat about exciting developments in the Faculty. Optional tours will follow the reception.

Saturday September 30

Dean's Forum

Time: 11:00 a.m. – noon

Place: Telus Centre Auditorium RM150

Contact: Shannon Swan at (780) 492-9452; e-mail: shannon.swan@ualberta.ca RSVP: Register online

Cost: Free

The Faculty of Science welcomes parents of first-year students to an information session with the Dean. Alumni are welcome to attend. Refreshments will be served.

Reunion Dinner

Time: *Reception*: 6:00 p.m.; *Dinner*: 7:15 p.m. Place: Hall A, Agri-Com, Northlands

Park Contact: Office of Alumni Affairs RSVP:

Register online

Cost: \$45/person

Celebrate your reunion at the marquee event of Reunion 2006—sit with your classmates and enjoy the nostalgia of this evening celebration. There will be photographers set up to take photos of you and your classmates as mementos of the occasion. *Parking at Northlands Park is free for dinner attendees. Let the parking attendant know you are there for the University of Alberta's Reunion Dinner.*

Sunday October 1

President's Breakfast

Time: 10:00 a.m. – noon

Place: Hall D, Shaw Conference Centre, 9797 Jasper Avenue NW

Contact: Office of Alumni Affairs RSVP: Register online

Cost: \$15/person

Join us at this breakfast to meet our President, Dr Indira Samarasekera. Learn of her "Dare to Discover" vision and how the four main cornerstones will anchor your alma mater and continue to provide the foundation for a great university. *Paid parking is available in the Canada Place Parkade (9700 Jasper Ave), Grierson Hill Parking Lot or parking meters on Jasper Avenue.*

Music Alumni in Concert

Time: 3:00 p.m.

Place: Convocation Hall Contact: Jamie Burns at jamie.m.burns@gmail.com or the Music Department Publicity Desk at 492-0601

RSVP: Register online or contact the Department of Music, 3-82 Fine Arts Building, University of Alberta, 492-0601

Cost: \$20/adults, \$15/student or senior

Complete your Reunion 2006 experience by attending this concert in the beautiful setting of Convocation Hall. Proceeds from the concert will benefit the Music Department's scholarship programs.

Important dates to remember

- July 28 Deadline for Reunion 2006 10% discount
- Aug. 30 Last day to book accommodations at the discounted rates offered by the hotels listed above
- Sept. 4 Mailing of registration packages will cease for registrants who reside outside of North America
- Sept. 22 Mailing of ALL registration packages will cease
- Sept. 22 Reunion 2006 registration deadline
- Sept. 27 Refund deadline



Where in the world...

Wherever you are, whatever you are doing, we want to hear from you. We would like to feature your news and accomplishments in future issues of Contours.

Mail, fax or email us your news!

Name: _____ Notes: _____

Address: _____

City/Province: _____

Postal Code: _____ Telephone: _____

Email: _____

Faculty of Science Rising Star Scholarships

... making a difference

Did you know that for \$1,000 – (that's less than \$20 a week), you can create a named scholarship to honour a friend, colleague or loved one while becoming a hero to one of our students?

Scholarships are key to our ability to attract and retain outstanding students, who in turn contribute to the proud tradition of the University of Alberta.

Our **Faculty of Science Rising Star Entrance Scholarships** provide every first year student with entrance marks of 90% or better with a \$1,000 scholarship, helping to relieve some of the financial burden of earning an advanced education. The Faculty of Science is committed to increasing the number and value of scholarships available each year – and your gift can help make it possible.

For more information on how you can support our students, contact Claudia Wood at 780.492.6662 or claudia.wood@ualberta.ca.

Help us support our future science stars!

I would like to make a gift of:

- \$500
- \$250
- \$100
- \$25
- Other

This gift is to be:

- One time
- Monthly for _____ months via credit card or monthly bank debit (please enclose a cancelled cheque)

Payment

- Visa
- Mastercard
- Cheque (enclosed) made out to the University of Alberta

Credit Card Number: _____

Expiry Date: _____

Cardholder Signature: _____

Please direct my gift to:

- Centennial Centre for Interdisciplinary Science
- Undergraduate Scholarships
- Graduate Scholarships
- C.R. Stelck Chair
- Strathcona County/R.U. Lemieux Chair
- Faculty of Science - Area of Greatest Need
- Other _____

I would like more information on:

- Scholarship naming opportunities
- CCIS naming opportunities
- Including the Faculty of Science in my will
- Including the Faculty of Science in my estate plans
- Faculty of Science alumni events

Please send your donation to:

External Relations, Office of the Dean, Faculty of Science
CW 223 Biological Sciences Building
University of Alberta
Edmonton, AB, Canada T6G 2E9



Faculty of Science Office
CW223 Biological Sciences Building
University of Alberta
Edmonton, Alberta
Canada T6G 2E9



Computing Science Summer Camps 2006

The department of computing science is offering two, one-week summer camps in August, giving hands on computing science experience to city youths.

The *CS Introduction* camp is designed for 12 to 15 years old, and introduces them to creating computer applications using Alice, an easy to use visual tool. Students will create their own animated movie or graphical application of their choice, a hands-on experience that will teach them fundamental concepts of computing science. In addition, throughout the week they will have the opportunity to explore several interactive activities in other areas of computing science, including artificial intelligence, robotics, theory, and tools for on-line collaboration and research.

The *Build-your-own Computer Game* camp is exactly that. Students from 15 to 17 years old will create a computer game using the game infrastructure from BioWare Corp's multimillion selling *Neverwinter Nights* game. They will create their own virtual world (e.g. a castle), populate it with props (e.g.,

magic chests, armor) and characters (e.g. guards, enemies), and specify the game plot.

Throughout the course of week, campers will be exposed to a range of computing-science areas. With nearly unlimited access to the department's computing science resources and the variety and depth of the computer topics offered, campers will get a broad and deep exposure to computing science, unlikely to be found in any other computing camp in the Edmonton area.

For more information, visit <http://www.cs.ualberta.ca/events/summercamps/> or contact the Camp Coordinator, Britta Nielsen by phone (780.492.2849), fax (780.492.6393) or email camps@cs.ualberta.ca.

For general information about the outreach program of the Computing Science Department, contact Dr Eleni Stroulia, Associate Professor and Outreach Program Director, by phone (780.492.3520), fax (780.492.1071) or email outreach@cs.ualberta.ca.



Science Contours is published twice a year by the Faculty of Science Office to provide current information on the many activities of the Faculty. The newsletter is distributed to alumni and friends of the Faculty.

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Publications Mail Agreement No: 40063605

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