EUREKA!

NEWSLETTER OF THE FACULTY OF SCIENCE

FALL 2011

A voyage of discovery:

Students journey to the Antarctic

- Neuroscience joins Faculty of Science
- Fishing for answers in rivers, lakes and oceans

Carleton UNIVERSITY | Faculty of Science

From the Dean's perspective

Photo: Chris Strangemore

It is hard to believe that my first year as Dean of the Faculty of Science at Carleton has come and gone. It certainly has been a fascinating year.

When I first came here, I was aware of the excellent research that was coming out of Carleton and the reputation of some of its award-winning faculty. I realize now that was just the tip of the iceberg.

Over the last year, I have been amazed and inspired by the numerous successes of our faculty and students as they pursue their goals in research, teaching and learning. I am pleased to be able to share with you some of their stories today.

As you will see in these pages, our students have experienced incredible learning opportunities, which for some included sailing through rough seas to get answers to their questions. In the coming year, we hope to continue to provide this kind of research training and educational opportunities for all our students – both undergraduate and graduate.

For our faculty, their expertise in a particular field of study has enhanced the classroom experience and garnered them international recognition. We will continue to work with our faculty members to augment teaching and research support which can lead to more discoveries and innovations relevant to the scientific issues of the day.

As often happens, success breeds success and we've seen this first hand with our increased enrolment numbers this fall in the Faculty of Science and the overwhelming interest we receive at student recruitment events.

This growth and vibrancy will bring challenges, but they are good ones to have. As a new school year unfolds, we encourage you to drop in and watch our progress by following our news and events postings at **carleton.ca/science**. All our contact information is there as well, so please do not hesitate to contact us as we are always pleased to hear from you.

Malcolm Butler
Dean, Faculty of Science

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Newsletter Mission Statement
EUREKA! is published for the alumni, faculty, staff, friends and partners of the Faculty of Science. The newsletter is intended to communicate the Faculty's goals, strategic direction and activities in order to connect alumni to each other and the university. It is published in collaboration with the Department of University Advancement.

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On the cover

The *MV Ushuaia*, an ice-strengthened polar ship, sails into view carrying seven Carleton students and two faculty members who are part of the Students on Ice 2011 Expedition to Antarctica. Read the full story starting on Page 3.

Photo: Students on Ice

Your input is important!

Please send your feedback, letter to the editor or story ideas to ann_anderson@carleton.ca.

carleton.ca/science

A classroom on the open seas

If you really want to learn about a place, there's no better way than to travel there and see for yourself.

That's what seven Carleton students and two faculty members did last February when they set off to explore the Antarctic Peninsula and surrounding Southern Ocean. The group signed up with Students on Ice, an organization that has been taking students, scientists, explorers, educators and polar experts to the Arctic and the Antarctic for the last 10 years. The impetus for the expedition came from Carleton's Earth Sciences professor Claudia Schröder-Adams who knew Geoff Green, the founder of Students on Ice, and had on several occasions discussed the possibility of taking Carleton students on one of their trips.

"You cannot transfer Antarctica into the classroom. The immenseness of it, the role of Antarctica in global climate — all that is so much more intense when you are actually there," said Schröder-Adams.

In the spring of 2010, she held an information session for those interested in a field course to the Antarctic. Forty students showed up. The cost was estimated at $12,000 each, a sum out of reach for many of them. In the end, seven students confirmed they were going. For one of them, Travis Mitchell, a graduate student in Earth Sciences, the cost, though hefty, was not going to deter him. He'd already been on three Arctic expeditions with Schröder-Adams and Natalia Rybczynski, a researcher at the Canadian Museum of Nature who would co-lead the Antarctic field course with Schröder-Adams, but had always dreamed of visiting the other Pole.

A few months before they were to set sail, the students received the news that three donors had come forward to help cover some of the students' expenses. Mitchell couldn't believe their good fortune. "The generous gifts by the Gainey Foundation and alumni J.C. Potvin and Jim Sullivan lifted a huge burden off our shoulders," Mitchell says. "We could now fully concentrate on our studies and prepare for the upcoming journey."

For the Carleton group, the fourth-year field course would examine the history of the Antarctic continent, including the evolution of Antarctica's terrestrial and marine ecosystems, which can tell us a lot about our planet's extraordinary history while offering us a glimpse of its future. On-board workshops and presentations, covering such topics as fossils, volcanoes, Antarctic glaciology, marine mammals, climatology, oceanography and icebergs, would be supplemented with land excursions.

The hands-on component of the Earth Sciences program is what sparked Mitchell to pursue studies in this field. "Field courses make the subject matter come alive," says Mitchell.

Photos: Students on Ice

ANDREW MACUMBER

ADAM PUGH

TRAVIS MITCHELL

THOMAS CULLEN

What follows is excerpted from the blogs of our intrepid explorers or from the daily bulletins (in italics) posted by the expedition staff.

Day 01- Monday, February 14

First day of the official Antarctic University program. Students and staff have flown into Ushuaia, Argentina, from all parts of the world and are busy getting to know each other and readying themselves for the journey. The group ranges in age from 18 to 74, with 16 countries and 30 universities represented.

Day 02 - Tuesday, February 15

Adam Pugh: After almost two full days of travel by air, we have finally made it. I am thoroughly excited. Tonight we share dinner with the student body, expedition crew and professors that will lead this expedition. With so many different fields of study, this expedition is one of the most diverse field school-type courses I have ever taken. Tomorrow, there is a hike scheduled, following which we board our ship, the *MV Ushuaia*. The reputation of the Drake Passage has made even the most sure of us question our ability to gain our sea legs for this part of the expedition.

Day 03 - Wednesday, February 16

At 17:30, we will throw off the lines, push away from the pier and set sail down the Beagle Channel! We expect to leave the Channel and enter the Drake Passage around midnight tonight and the forecast is currently looking good for our two-day Drake crossing. Many fingers are crossed for a Drake 'Lake'!

Day 04 - Thursday, February 17

Logan Seaman: Today we had two wake-up calls, one from Geoff at 7:30, and one about four hours earlier from the Drake Passage. Although I was lucky enough to keep from rolling off the top bunk, sailing the rolling waters was quite an experience. The roughest seas in the world lived up to their name. Everyone seems to have their own solution for sea sickness. When things got especially dicey, a catnap in the sun on the upper deck with the fresh ocean air seemed to be the magic remedy, with the added bonus of getting to fully appreciate the seven-foot wingspan of a wandering albatross as it flies low directly over top of you.

Day 05 - Friday, February 18

Andrew Macumber: The end of the Drake was near. Solitary albatross were joined by swarms of small black and white speckled Cape Petrel that turned and dived across the bow of the ship. On the horizon a jet of water into the air set the deck abuzz. WHALE. Everyone scrambled to the sides of the ship, with the sea calm and the sun bright, chances of spotting one of these majestic beasts was high. The surface of the ocean remained unbroken, then all of sudden, just off the port side, a blow of water into the air, followed by a long smooth dark back with a small bent fin arched out of the water. A fin whale, the world's second largest animal, stopped by to say hello.

Day 06 - Saturday, February 19

Adam Pugh: What a phenomenal day it's been today! So much has happened and not a moment has gone by when something hasn't been happening. Our day today was planned to have a few landings: Snow Island and Seymour Island. Snow Island was unfortunately unaccessible as the wind was much too strong to anchor safely or Zodiac into shore safely. Seymour Island, however, was a go, and at about 12:30 p.m. we boarded the first Zodiacs and had a two mile cruise into shore, landing near Cross Bay (near Penguin Point). There was much anticipation for this island as it exposes one of the world's few sections of the K-T boundary, a mass extinction event that divides the Cretaceous and the Tertiary periods, dividing the dinosaurs from the mammals, 65 million years ago. On the island, we began a hike up to this boundary, and we geologized all afternoon.

Day 07 - Sunday, February 20

Jeremy Powell: We started our day off with an early morning Zodiac trip to shore. Brown Bluff, as it is called, was our first real trip on to Antarctica proper as our previous landing was on a volcanic island. Even from a distance we could clearly see a lot of penguins waddling around the shore. Our morning was spent walking up and down the coastline getting up close and personal with the friendly penguins and keeping our distance from the not-so-friendly fur seals.

Day 08 - Monday, February 21

Logan Seaman: Another unbelievable day. We started out on Couverville Island where we saw some recently hatched penguin chicks being fed, climbed a glacier where their temperatures and snow densities were measured, and saw some wild looking icebergs. After lunch we sailed through what I'm convinced is the most beautiful stretch of land on the planet, into the aptly named Paradise Bay. The water was like glass and we could see the reflections of the mountains and the 20 story ice cliffs that kept calving icebergs. Enormous crab eater seals, another leopard seal and an enormous bluff that we hiked up and slid down after sitting at the top and looking out onto the bay were just some of the highlights.

JEREMY POWELL

MICHEL DESJARDINS

LOGAN SEAMAN

Day 09 - Tuesday, February 22

Andrew Macumber: As the day nears its end, I find myself sharing jokes with team members out on the bow of the ship. The cold wind keeps us moving, but the scenery keeps us outside until the sun goes down. A humpback whale mother and her calf swim by the ship. The moon hangs low in the sky over glacier-covered mountains. There is nothing like this land. And with the second last day coming to an end, the boundless joy for the next day takes on a sort of melancholic feel. None of us will want to leave. But there is still one more day, and we'll all make the most of it.

Day 10 - Wednesday, February 23

Logan Seaman: It was our last day in Antarctica, and it was jam-packed. We started with a 6 a.m. landing at Deception Island, which is an active volcano that buried the most active whale station in the Antarctic 40 years ago. Only the tops of the buildings and oil tanks are visible above the ash. It was eerie cruising through the fog looking at the ruins and thinking about how busy the port once was. After lunch we were ready for our swim in the Southern Ocean, which would have been awesome because of the geothermic hot pools you could dig in the sand. Unfortunately the tide was especially high, so there were no hot pools. Because we had already swim-suited up we were not about to back down, and dove into the 2 degrees Celsius water anyway.

Day 11 - Thursday, February 24

We have officially left Antarctic waters and are on our way home! Students are staying strong through some sea sickness and there has been great attendance at meals and workshops.

Day 12 - Friday, February 25

The seas have calmed significantly since last night and students and staff are making the most of their day! Today, course work is wrapping up and students are challenged to think about how they might begin to share their incredible experiences with their home communities. The day will close with a celebration here on the ship!

Day 13 - Saturday, February 26

Thomas Cullen: It has been an interesting couple of days. We said farewell to Antarctica and set course for Tierra del Fuego. The weather reports were not particularly favourable, with talk of a storm in the Drake Passage. On our return trip through the Drake, the seas were angry. We were sailing into a storm, and eventually the Captain ordered our course diverted to the east in order to avoid the brunt of the waves. Even with that, we were hit with winds sustained at 50 knots (gusting to 70) and waves over 8 m high. From the bridge, one could see the waves crashing over the bow, and from the lounge (in the aft section), people and furniture were falling left and right. It was certainly exciting, and shows the price nature requires of those visiting the southern polar regions.

Day 14 - Sunday, February 27

After a wonderful evening of food, music and celebration at Kuar last night, the students and staff are all saying goodbye this morning. Many of the participants are beginning their journey home today.

Update: *Professor Schröder-Adams has just announced that due to the success of the 2011 expedition, she will be leading, in collaboration with Students on Ice, another field course to the Antarctic in February 2013.*

Neuroscience finds new home

By Susan Hickman

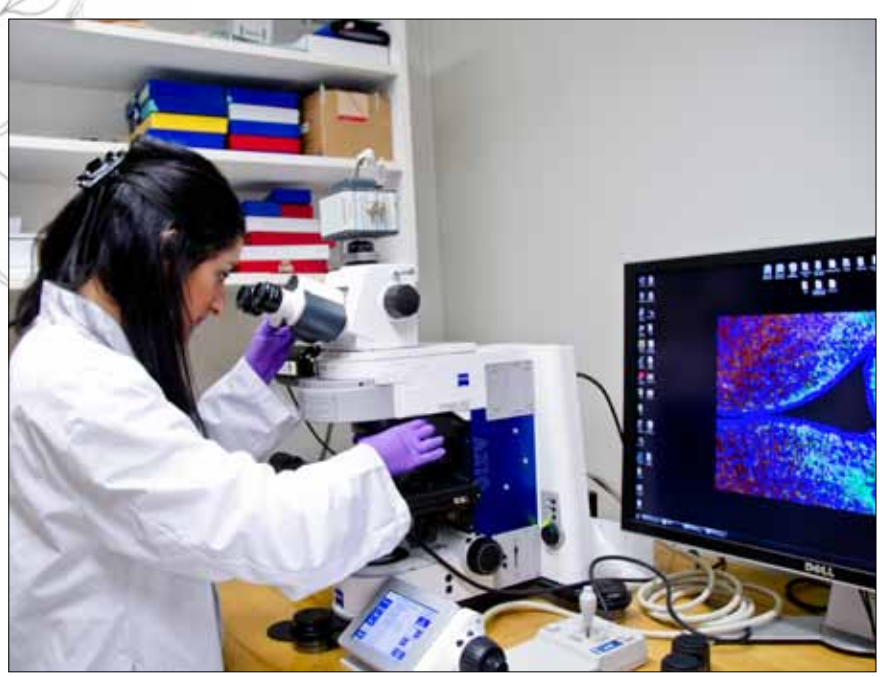


Photo: Nanci Jolicoeur

For her Master's in Neuroscience degree, student Nazneen Rustom is focusing her research on the areas of neurodegeneration, Parkinson's disease and early life exposure to environmental toxins. Here she uses a state-of-the-art Zeiss microscope to examine animal brain tissue.

We've come a long way since the time when Aristotle's contemporaries believed the heart was responsible for our thoughts and other functions of our brain. Nevertheless, it's surprising how little we still know about the brain, the most complex organ in the human body.

While still a pioneering field of study, neuroscience, the study of the brain, has blossomed to the extent that the number of graduates in the discipline has increased from a mere handful 25 years ago to more than two thousand today, according to a study of universities in the United States.

Catering to this growth, Carleton established a new Department of Neuroscience, within the Faculty of Science, on May 1, 2010. This decision and the introduction of new programs has doubled the number of graduate students in its master's and doctoral programs.

"The move was timely," says department Chair John Stead, "as the number of undergraduate enrolments in Neuroscience at Carleton has more than tripled in the past 10 years. The third-year Neuroscience course, *Drugs and Behaviour*, for example, has pulled in four times as many students since 2007."

Formerly located within the Faculty of Arts and Social Sciences' (FASS) Department of Psychology, Neuroscience's faculty members "were always a little bit of a strange fit," says Stead, "in terms of how we conduct our research."

Neuroscientists, whose studies have emerged out of the disciplines of biology and psychology, generally work in life sciences "wet" laboratories with animals as well as humans, whereas psychology labs tend to be computer centric. Located in the Life Sciences research building, the department was also geographically separated from other FASS departments.

Stead, whose background is in genetics research, notes that neuroscience is a growing academic discipline, with provincial and federal governments committed to pumping research money into the field.

Since its formation as a distinct academic unit and its official move to the Faculty of Science, Stead foresees the Department of Neuroscience will attract a whole new crop of students – those scientifically oriented – and a higher quality of student from a larger pool.

"It's a better fit. Our needs are standard within this Faculty. For example, it's understood that supervision of students is particularly time-intensive in a wet lab, where there are animals or dangerous chemicals. And there's a better understanding of what goes into a neuroscience research paper."

The department's new master's and doctoral programs admitted their first students this September and new general, major, minor and honours undergraduate programs in Neuroscience and Mental Health will start up in September 2012. Over the next three or four years, 15 new courses will fill out the new programs – courses such as *Sex and the Brain*, *Neuroscience and Creativity*, and *Genetics and Mental Health*.

The new programs will better reflect the research going on in the department, all of which reflects one aspect or another of mental health, addiction, spinal cord injury, Parkinson's and Alzheimer's diseases.

Canada Research Chairs Hymie Anisman and Shawn Hayley respectively work in neuroscience and behavioural neuroscience. Anisman is a prolific researcher of stress in humans and mice, and focuses on coping styles and depression. Hayley is studying

interactions between the brain and the immune system and their potential to create psychiatric and neurological conditions.

Alfonso Abizaid expects his research on the hormone ghrelin will lead to novel treatments for cravings; Amedeo D'Angiulli is working on aspects of perception, memory and mental imagery; Matthew Holahan is involved in a five-year project funded by an NSERC Discovery Grant that focuses on the neurobiological underpinnings of learning and memory; Patrice Smith researches traumatic brain injury; and Kim Hellemans is exploring how early adverse experiences, for example prenatal exposure to alcohol, influence later susceptibility to mental illness.

"I feel good about our unit," says Stead. "It's a really exciting time for us. We are small and we are pretty young, but we are planning to be here for a long time and building something special."

Stead, currently on a one-year sabbatical, is reconnecting with his gene association study into the effects of stress on brain function, using genomic markers. His genetic analysis of susceptibility to depression and problem gambling has attracted funding from the Ontario Problem Gambling Research Centre.

With research funding for neuroscience and mental health likely to remain a national and international priority, Carleton currently has $1.35 million in research grants from such institutions as NSERC, SSHRC and CIHR, and anticipates a bright future for researchers trained in neuroscience and mental health.

Photo: Nanci Jolicoeur

Graduate students conduct their research in the lab run by their supervising faculty member. Here Neuroscience graduate students Martin Wellman (left) and Pierce McKennirey (right) check test data in the Neuroscience lab headed by the Chair of the department, Professor John Stead.

That was then, **this is now**

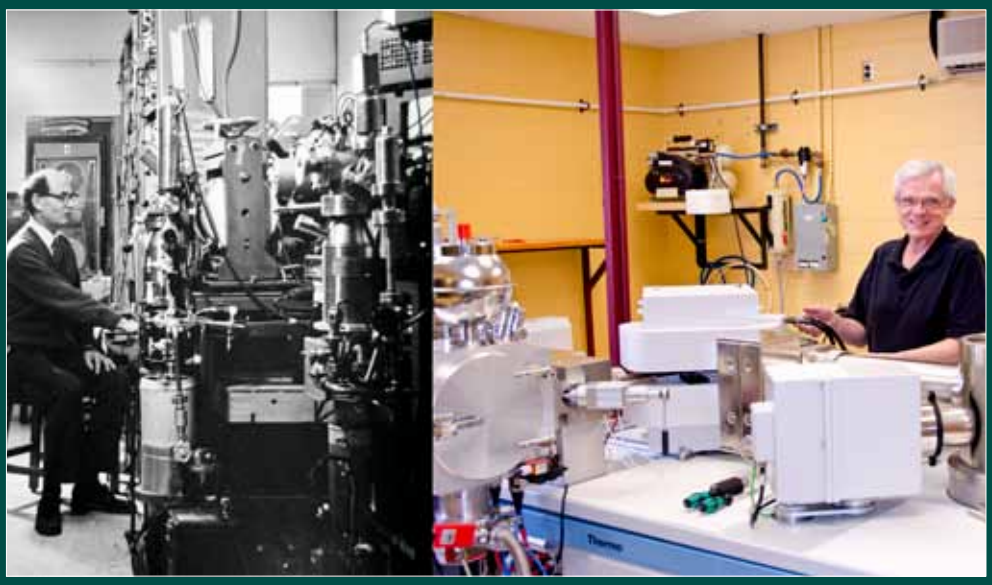
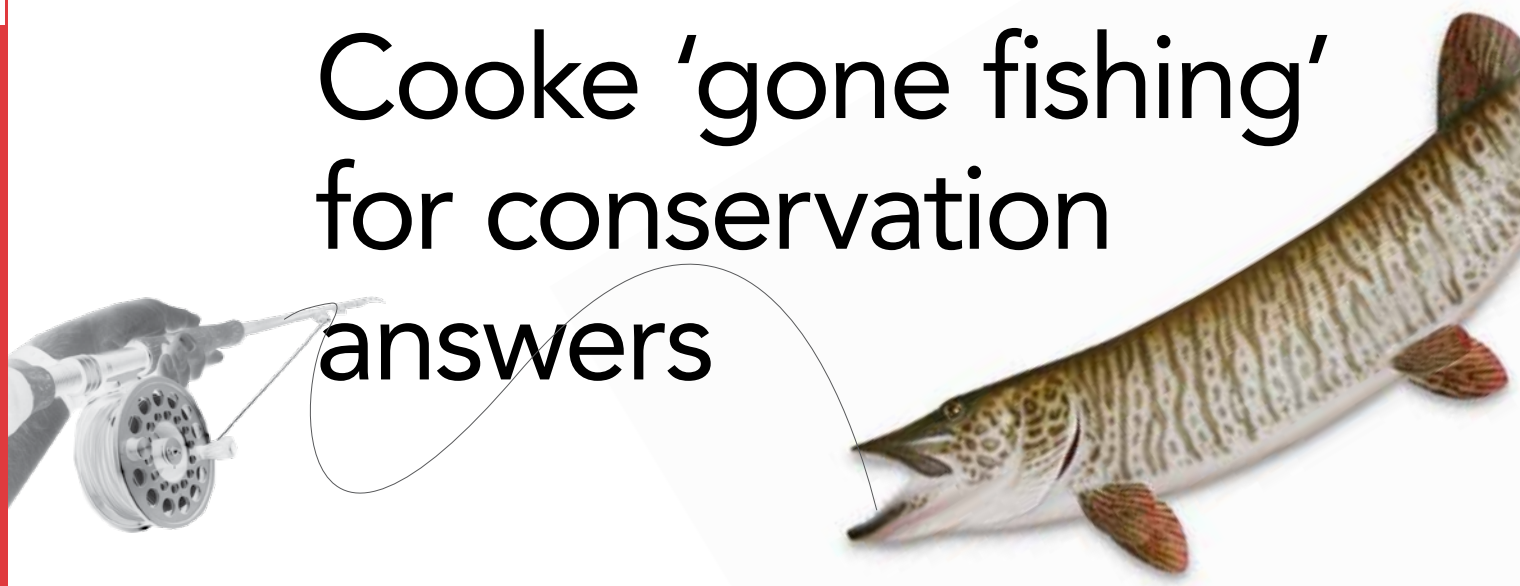


Photo: Nanci Jolicoeur

In 1972, after completing his PhD at UBC, John Blenkinsop took up a position in Carleton's Geology department (now called Earth Sciences) so he could work with Professor Keith Bell. He also got to work on a thermal ionization mass spectrometer instrument built by instructor Doug Menagh and Professor Jim Cole from the Physics department. That mass spectrometer (seen here in the photo on the left with Cole at the controls) measured the isotopic abundances of certain elements for two main areas of research – geochronology and isotope geochemistry. These measurements allowed researchers to determine the age of the elements, helping us decipher the history of the rocks and minerals that contained them. Today, Blenkinsop is retiring from Carleton and leaving behind a more sophisticated version of the equipment due to advances in design, electronics and computerization. (Blenkinsop is seen here in the photo on the right standing next to the spectrometer of today.)

Cooke 'gone fishing' for conservation answers



By Susan Hickman

On the eve of his departure for Japan, associate biology and environmental science professor Steven Cooke is chatting about angling to Hedrik Wechelka, education director for Muskies Canada Ottawa. Wechelka has just slipped a cheque for $5,245.90 onto the table. The gesture is but a sample of how Cooke and his 25-member fish ecology and conservation physiology laboratory engage stakeholders in his important research into fish behaviour.

Muskies Canada has raised upwards of $40,000 over the past couple of years and its enthusiastic members assist Cooke and his team to catch the fish they need for their work. Federal agencies, non-governmental organizations, fisheries managers, angling clubs, the community in general, and NSERC have also contributed monies. The Ontario Ministry of Research and Innovation (OMRI) alone put up $150,000 over three years (2008 to 2011) for Cooke's work on inland recreational fisheries.

Cooke, who has been teaching environmental science, aquatic restoration, marine biology and fish conservation at Carleton since 2005, mostly studies fish in the field, but his laboratory also researches freshwater and marine fishes in tanks and experimental ponds. Three post-doctoral fellows, a lab manager and biologist, at least a dozen graduate students and several more undergraduate thesis students and research assistants primarily focus on determining the consequences of natural and human-induced stressors on fish. Their aim is to apply this fundamental knowledge to aquatic conservation and management.

Cooke is dedicated to the new discipline of "conservation physiology," which seeks to understand the mechanisms underlying conservation issues.

He has been interested in fishing since he was, well, a tadpole. He inherited his grandpa's tackle box and watched intently when his fishing heroes appeared on television. When he was in high school, he spent a summer working with the Grand River Conservation Authority in southwestern Ontario.

"I realized at some point," Cooke says, "that I couldn't be a professional fisherman, so I turned to university and research. Now, I can legitimately use grant funds to buy fishing equipment!"

Indeed, Cooke's fishing (that is, research) equipment mostly comprises boats and nets and fishing rods, a handful of trucks and a pile of camping gear.

"Our lab is known for studying fish in the wild," adds Cooke. "We work with tools we can use in the field, like radio and acoustic tags, and underwater cameras to monitor fish. We go to where the fish are, take blood samples and monitor their heart rates in some cases."

And so, if you ask Cooke where his lab is, he'll tell you the Bahamas, the Georgia Strait off Vancouver Island or the Lower Fraser River. Surprisingly, there are common challenges experienced by fish in all these environments.

According to Cooke, when it comes to recreational fishing, the problems occurring in fish populations generally fall through the cracks.

"People think of big boats and huge nets and think that is where the bulk of fish come from, whereas recreational fishing is quite large. We estimate globally that 40 billion fish are caught by recreational anglers each year and 10 per cent of the population participates in this."

Anglers may not be aware of the effects of catching and releasing their "big ones," Cooke adds.

"At least in the developed world, about two-thirds of the fish that are caught are released. Depending on how anglers handle the fish, there can be mortality. We are trying to determine the air exposure threshold. In a study of bonefish in the Bahamas, we found that 40 per cent of the fish caught and released were eaten by predators within 30 minutes because of loss of equilibrium caused by air exposure."

Passionate about enhancing conservation initiatives and management, Cooke is embarking on a one-year sabbatical to build collaborations and initiate pilot projects, particularly in such countries as Brazil and India.

In the past year, Cooke's expertise has spread far and wide. Last December, he represented Canada in Laos at a United Nations (UN) international workshop on the status of inland fisheries. He has been commissioned by the UN to work with two others to develop a global code of conduct for recreational fisheries and by the Privy Council Office to be a peer reviewer for the Cohen Commission on the 2009 sockeye salmon collapse in B.C. Since March, he has been Chair of the Sea Lamprey Research Board, a scientific committee of the Great Lakes Fishery Commission, and he has recently been appointed as a science editor for the major American Fisheries Society journal, *Fisheries*. His co-authored paper on the use of genomics to identify signatures of Pacific salmon that die en route to spawning grounds was published in *Science* last January.

Biology and environmental science professor Steven Cooke's research on fish often takes him out in the field so he can observe his subject matter in their natural environment. He and the other researchers on his team primarily focus on determining the consequences of natural and human-induced stressors on fish.

More research and faculty recognized...

Research facilities at Carleton receive $1.9 million from the Canadian Foundation for Innovation

Of those facilities recognized by CFI, two were research facilities headed by Chemistry professor Sean Barry and Physics professor Gabriel Sawakuchi.

Science faculty awarded Ontario Research Grants

Chemistry professor Jeffrey Smith received a Research Infrastructure grant from the provincial government for his work on investigating lipids, a major building block of cells. His work could lead to new treatments for diseases. Also recognized with an Early Researcher Award was Biology and Computer Science professor Michel Dumontier. His team is developing data-sharing communities among biologists that will help accelerate scientific discoveries.

Professor David Sinclair awarded the inaugural CAP-TRIUMF Vogt Medal

Carleton's David Sinclair received the inaugural Canadian Association of Physicists (CAP) -TRIUMF Vogt medal for his exceptional vision and contributions to the study of neutrino physics in the pioneering Sudbury Neutrino Observation (SNO). Named in honour of top Canadian researcher and nuclear physicist, Erich Vogt, the CAP-TRIUMF Vogt Medal recognizes and encourages outstanding experimental or theoretical contributions to subatomic physics.

Computer Science professor nominated for the 2011 Manning Innovation Award

Dwight Deugo, associate professor at the School of Computer Science, has been nominated for the 2011 Manning Innovation Award for his iParked.ca parking system. Since 1982, the Ernest C. Manning Awards Foundation has been recognizing and encouraging innovation in Canada.

Professor Ken Storey honoured by the Canadian Society of Zoologists

Ken Storey, Canada Research Chair in Molecular Physiology, and a Biology and Biochemistry professor, was awarded the prestigious Fry Medal from the Canadian Society of Zoologists. The award is given to a Canadian zoologist who has made an outstanding contribution to knowledge and understanding of an area in zoology. This award follows on the heels of Professor Storey's being awarded the prestigious Flavelle Medal from the Royal Society of Canada late last year. Established in 1924, the Flavelle Medal is biennially awarded for an outstanding contribution to biological science during the preceding 10 years or for significant additions to a previous outstanding contribution to biological science.

Physics professor David Rogers received the William D. Coolidge Award, only the fourth Canadian ever to receive this award.

The Coolidge award is the highest honour given out by the American Association of Physicists in Medicine. Rogers, Canada Research Chair in Medical Physics, also received a 2011 Research Achievement Award from Carleton.

Distinguished research professor named Royal Fellow

Donald Dawson, professor emeritus in Carleton's School of Mathematics and Statistics, was elected a Fellow of the Royal Society of London. Professor Dawson is one of the world's leading researchers in probability and random processes.

Computer Science professor elected to the Royal Society of Canada

Professor Paul Van Oorschot has been elected to the Royal Society of Canada for his "exceptional contribution to Canadian intellectual life and advancing knowledge and scholarship in Canada"

Finding your way

Medical school is the ultimate goal for many first-year science students, but sometimes other opportunities come along that can make a student consider another path.

For Neuroscience student Bryan Luu, future plans always included applying and hopefully going to medical school. Even when he was in elementary school back in Ajax, Ontario, he knew he wanted to work in a profession where he could help others. Fast forward to the summer of 2010 and Luu, now a fourth-year student at Carleton, is working on his medical school applications which are due at the beginning of October.

"First thing I did was meet with three students who had successfully gotten into medical school, and got their advice. Then I researched everything about the MCAT (the Medical College Admission Test) and took the online practice test. I also worked hard on my letter outlining why I wanted to be a doctor, which is a requirement for many of the applications." He also made sure that his list of extra-curricular activities and awards was up to date.

Luu wrote the day-long MCAT exam at the end of that summer. For many medical school applications, the results on the MCAT can carry as much weight as the candidate's university marks and can be used as a cut-off. Since the test can be so important, a variety of organizations offer test preparation courses and many students begin studying for the test months in advance.

After applying to several medical schools, both in Ontario and elsewhere, and also applying to Carleton's Master of Science program in Biology, Luu pushed the applications to the back of his mind as he concentrated on his fourth-year studies.

Besides course work, his studies included conducting research in the lab, something that Luu has become passionate about since he arrived here in first-year. "When I started my studies and got into a lab, I realized how much I enjoyed this part of the program. I started to think about pursuing a career in medical research, particularly stem cell research." In the summer of 2008, after finishing his first year, Luu was hired by the Dean of Science at the time, George Iwama, to do molecular biology work. For the next two summers, he was awarded NSERC summer research awards to work in the research lab of Professor Ken Storey, who holds a Canada Research Chair in Molecular Physiology. Luu is grateful for the learning opportunities he's had to date and has said that "the chances of getting a better research experience elsewhere in the country as an undergraduate student are slim. Dr. Storey allowed me to work at my own pace, try new things and mold my own project. Graduate students or Dr. Storey were always there to guide me and answer my questions."

Photo: James Park

Alongside his studies and research work, Bryan Luu makes time to volunteer at the Science Student Success Centre where he mentors other students and hosts MCAT-related study groups.

This past winter, Luu attended Carleton's 'Med Night,' an event put on by Carleton's Science Student Success Centre which brings together a variety of health professionals from across the city to meet with students interested in pursuing a career in health care. Here Luu met a plastic surgeon in his 70s who was dividing his time between teaching at the University of Ottawa medical school and travelling to Nicaragua to volunteer his services as a doctor.

This got Luu thinking about expanding his horizons beyond Canada's borders. He turned to the Internet, looking for international research opportunities in his field of interest. "I was particularly looking for a lab where they were using the same techniques that I had been exposed to in my research work here at Carleton." says Luu. "This way I can contribute something to the group and build my own skills further."

He applied for three summer placements. One of them was to the Vienna Biocenter Summer School which offers undergraduate students from around the world the opportunity to work with eminent scientists from the life sciences field. The Vienna school received over 400 applications and took 25 students for the summer. Luu was one of those 25 – the first time a

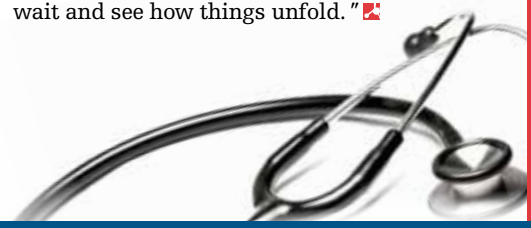
Canadian has been selected for this program which typically accepts students from Cambridge, Oxford, Columbia and Yale.

The scholarship that came with the placement would cover his accommodation, airfare and an additional 800 euros a month.

Just as his fourth-year was winding down, Luu got the news that he had been selected for an interview at the University of Ottawa's medical school. Each year, the school receives around 3,500 applications. Of that number, 500 applicants get an interview and 150 are accepted into the program. "The interview was conducted by a panel made up of a faculty member, a senior medical school student and a practicing doctor. They didn't ask me much about my biographical information, though they seemed to be fully aware of who I was and what I had done already, but instead presented me with hypothetical cases to gauge my response to situations. A lot of the situations involved ethical questions which I then had to speak to. The interview was intense, but I think it went well."

A month later, he heard that he had not made the first cut but had made it to the wait list. Two weeks later he flew off to Vienna where he spent an incredible summer conducting research on genes that can play important roles in our immune system.

This fall Luu began his graduate studies in Biology and plans to reapply to medical school after completing his master's degree. "This is all good," says Luu. "I'm still doing what I love and I'll wait and see how things unfold."



Students helping **students**

Though volunteering is mandatory in most high school programs, many students continue to look for volunteer opportunities during their university years even though they don't have to. That's something Biology professor Sue Bertram realized when she was setting up a centre at Carleton to help first-year science students make a successful transition to university.

"In 2008, I was asked to set up a one-stop shop for first-year science students," says Bertram, "a place where they could go to get all their questions answered." To help her run the Science Student Success Centre (SSSC), she hired John Nelson as a full-time paid co-ordinator. They both felt the centre could provide more than just information on the campus services available. Instead they envisioned a place where new students could drop in for advice on course work, exam preparation, lab report writing, time management skills and more. The centre would not offer specific academic advising as that is done by departmental undergraduate advisors, but would offer just about everything else. As John Nelson puts it: "It's kind of like performing triage in a hospital; students come to the SSSC and centre personnel assess the situation and guide them to the next steps."

But Bertram and Nelson couldn't provide all these services on their own and thought who better to help students than those who had already successfully navigated first year. So in advance of the start of the 2009-2010 academic year, they sent out a call for volunteer student mentors. Sixteen students applied and almost all were 'hired,' though the work is strictly volunteer. The following year, 30 students answered the call and joined the centre as student mentors. This fall, almost all returned for another year.

For mentors, the commitment to the centre includes meeting with students one-on-one or in a group, participating in training sessions and attending team meetings. Mentors usually volunteer five to ten hours a week during regularly scheduled shifts. Mentors are assessed weekly and given feedback by the centre staff. At the end of each term, mentors submit a report detailing how they contributed to the centre and any suggestions for improvements.

For Bertram, the SSSC has become "a central place for mentors to belong. Here they can meet their peers, share information, and learn from each other. We set out to help first-year students, but along the way we are also helping the students on the other side of the desk as well."

Photo : Nanci Jolicoeur

Student mentors gather in the Science Student Success Centre to assist incoming students but also to brainstorm at team meetings, propose new initiatives and help co-ordinate Centre-run events.

Looking back: Snapshots from our year

Faculty of Science students stream out of the Fieldhouse after receiving their degrees at the June 7 Convocation ceremonies.

The 2010 A. D. Dunton Alumni Award of Distinction was awarded to Dr. Ivan Fellegi, Chief Statistician emeritus, Statistics Canada, and a graduate of the School of Mathematics and Statistics. Dr. Fellegi is shown above with his wife and granddaughter, a current Carleton student. Each year, fourth-year Honours students showcase their theses projects at Poster Day shown in photo below.

Neuroscience student Kristina Dunbar won a Leading Women/Leading Girls Building Communities Recognition Program award from the provincial government.

If you are in the Ottawa area, come and join us at one of our upcoming events

During the academic year, the Faculty of Science hosts a series of **Science Cafés** at the Wild Oat Café near the university campus. Free and open to the public, the Cafés run every other Wednesday from 6:30 to 7:30 p.m. and are a wonderful opportunity to hear about the latest research news from our faculty members. An open question and answer period follows every talk. Check out this year's schedule and the list of topics to be discussed at **sciencecafe.carleton.ca**.

The **Herzberg lecture**, one of Carleton's premier public lectures, will be held on Wednesday, November 9. This year's speaker is Dr. John Cassidy, a Research Scientist with the Geological Survey of Canada, Natural Resources Canada (Victoria, BC) and Head of the Earthquake Seismology Section. Through his lecture, Dr. Cassidy will show how modern earthquake science is working to protect society from the potentially devastating effects of earthquakes. For more information about this event, visit **carleton.ca/science**.

Want to connect with your fellow alumni? Visit the alumni website at **carleton.ca/alumni** to find out about all our **alumni events** in town and out. While there, don't forget to update your contact information so you can continue to get news, special offers and invitations from your faculty.

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Giving to Carleton

The generous support of donors has helped to make experiences such as our 2011 Expedition to Antarctica possible. To explore how a gift from you can make a difference to science students, contact Steve Trites at **stephen_trites@carleton.ca** or 613-520-2600 ext. 1052.

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