



Close to Home News from the Dean's Office

Dear Alumni,

I'm very pleased to provide you with the first Science newsletter to accompany *The Torch*. As alumni of Science, you are part of a community of over 11,000 who continue to make significant and distinctive contributions to our profession and many related fields.

It is an exciting time for us. By mid-2008, we'll have sorely-needed new space: two magnificent structures—the Ocean, Earth and Atmospheric Sciences Building and the Social Sciences and Mathematics Building—are under construction and will provide sparkling new laboratories and teaching spaces for the Department of Mathematics and Statistics, the School of Earth and Ocean Sciences, our organic chemists, and our observational astronomers.

There is much more. Our reputation for outstanding research and highest-quality teaching continues to strengthen and is leading to increased support from the community. In June, we received an \$11 million gift—UVic's largest-ever single cash donation—from Bob Wright, President and CEO of the Oak Bay Marine Group of Companies. Mr. Wright's remarkable generosity will help us complete the Ocean, Earth and Atmospheric Sciences Building, as well as provide scholarship support for deserving students. And on the research front, we have just begun the installation of the world's first regional, instrumented sea-floor ocean observatory, Project NEPTUNE (Northeast Pacific Time Series Underwater Networks Experiment). Eight hundred kilometres of powered fibre-optic cable are being laid from Alberni

Inlet west to the spreading centre on the Explorer Ridge and back. Our faculty members across all departments continue to set a very high standard, receiving national and international awards for their research—recognition of the excellence that you, as students, experienced during your time with us. Please check out the details and keep up with faculty developments by logging on to <http://science.uvic.ca>

I hope you enjoy the newsletter. As always, I'd be delighted to hear your thoughts and suggestions about things we can do better, along with what we're doing well. Please feel free to drop me a line at sciidean@uvic.ca.

Best wishes,
Tom Pedersen, FRSC, FAGU —Dean

Great Chemistry! Busy as Ever

If you're part of our family of UVic Chemistry alumni, students, faculty, staff, and retirees, you know that the Department has "great chemistry"—and not just in the labs!

The Chemistry Department is a collection of remarkable people working and learning together collegially and enthusiastically. The resulting optimism provides ideal conditions for creativity, innovation, and ground-breaking science. Evidence of success in these areas can be seen by the many and varied honours awarded to Chemistry people over the years.

A smattering of recent examples includes: teaching awards received by Dr. Dave Berg, Kelli Fawkes, Horace Luong and Dr. Tom Fyles; accolades for research excellence bestowed upon Dr. Robin Hicks, Dr. Cornelia Bohne, and



photo: UVic Photo Services

The UVic Chemistry Family.

Dr. Fraser Hof; Canada Research Chair appointments awarded to Dr. Frank van Veggel and Dr. Natia Frank; entrepreneurship awards for Dr. Tom Fyles; various communication awards for Dr. Reg Mitchell; distinguished service recognized for Walter Balfour, Dr. David Berry, and Rosemary Pulez; and, Women of Distinction awards received by Dr. Bohne and Dr. Codding. An impressive list; and it's just a sampling. The pursuit of excellence is a long standing tradition in the Chemistry Department, and it's exciting to see our youngest members taking the baton and "running with it"!

The future indeed looks bright. Student enrolment is high, research is booming, renovations to improve both teaching and research space are underway, and the new Science Building is nearing completion. Most of the synthetic research chemists in the Department will move into Chemistry's 1200 m² in the new building. The facilities will be spectacular—environmentally friendly, and technically state-of-the-art—with high efficiency fume hoods, vented chemical-storage rooms, air-driven lab vacuum systems, large lecture rooms designed for science teaching, and so on. Following the shift to the new building, vacated space in the old buildings will be upgraded to enhance teaching, research and administrative functions. We're looking forward to the next few years and all of the opportunities arising from these major changes.

To find out more about our winning ways, and the Chemistry Department in general, see: www.chemistry.uvic.ca Our newsletter, "Elements", can be found under "News and Events".



The Department of Biochemistry and Microbiology 2007

Busy as Ever

The Department of Biochemistry and Microbiology is as busy as ever and continues to thrive. Enrolments in all our courses and graduate programs are up from previous years and we seem to have outgrown our space for teaching and research. The steady increase in the number of students with interests in the cellular and molecular life sciences continues to be a great encouragement to faculty and staff.

Several faculty and staff were recognized with awards this year. Dr. Alisdair Boraston's research program earned him the Faculty of Science Award for Research Excellence and Dr. Bob Olafson was awarded the Craigdarroch Gold Medal for Career Achievement in Research. Barb Currie was the first Laboratory Instructor to receive the Faculty of Science

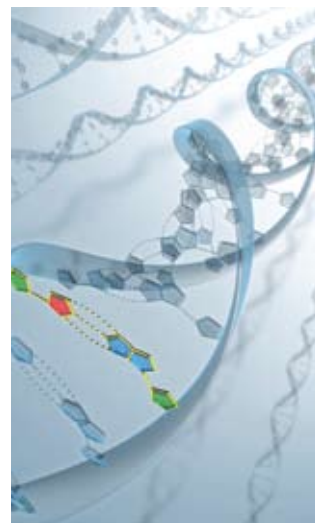
The Petch Building, home of the Faculty of Science.



photo: UVic Photo Services

Award for Excellence in Teaching. All of these are well deserved and the Department took great pride in these achievements.

The Department has several new faces. Dr. Christoph Borchers has come to head the UVic-Genome British Columbia Proteomics Centre. Dr. Marty Boulanger is a new Assistant Professor who is interested in molecular interactions particularly the structural basis of parasite-host cell attachment and cytokine-receptor recognition. Dr. Caroline Cameron has been appointed as a Canada Research Chair in Molecular Pathogenesis. We also have two new Laboratory Instructors, Melissa Doyle (B.Sc. University of Victoria) and Erika Wall (MSc University of Victoria).



This year also saw retirements of longstanding and valued colleagues and friends. Dr. Vern Paetkau, who came to UVic from the University of Alberta as Dean of Science, has retired but will be back to teach BIOC 300B in the spring of 2008. Dr. Tom Buckley, who for many was the Department of Biochemistry and Microbiology, is going to devote his considerable energies to Protox Therapeutics Inc. If you would like to honour these and other recent retirees, please consider contributing to Departmental Scholarships. For more information, please contact Christine Roome at (250) 472-4210 or croome@uvic.ca.

Salmon, Neuroscience and Trees Biology News Update

What do salmon, neuroscience and trees all have in common? They are three central themes to some of the cutting edge research currently being carried out in the Biology department.

Salmon Research



Fish & Chips is a new technology that lets scientists like Ben Koop watch salmon genes switch on or off in response to alterations in the environment. The cGRASP, (consortium for Genomic Research on All Salmon Project) based at UVic and Simon Fraser University, has identified nearly all the genes in salmon and has made these genes available to basic and applied researchers through gene chips or microarrays. Researchers use the chips to examine how the nervous, immunological

and reproductive systems, among others, are affected by exposure to disease, parasites, chemicals, temperature or other physical change.

Neurobiology

Neuroscience at UVic is growing thanks to the recent recruitment of Dr. Raad Nashmi to the Biology Department. Dr. Nashmi, whose research focuses on nicotine addiction, arrives from Caltech in October. He joins two other neuroscientists in Biology, Dr. Bob

Chow and Dr. Kerry Delaney. The campus-wide neuroscience community also includes Dr. Paul Zehr, Dept. of Education, and Dr. Brian Christie, Island Medical Program. Dr. Chow is a Canada Research Chair, while Dr. Delaney, Dr. Zehr and Dr. Christie are Scholars of the Michael Smith Foundation for Health Research. The University's support for, and commitment to, neuroscience research at UVic is clearly demonstrated by the recent allocation of two new Canada Research Chairs in this area, a Tier I position to Biology and a Tier II position to Psychology.

Forest Biology

In January, 2008, Dr. Jürgen Ehlting will join the Centre for Forest Biology. Dr. Ehlting, currently at the Institute for Plant Molecular Biology, Strasbourg, France, uses genomics to unravel the intricacies of plant natural product biosynthesis. Plant natural products include floral pigments, floral attractants, antimicrobial and antifungal compounds, and signaling molecules in plant-pathogen interactions. Plant natural products are used to manufacture dyes, oils, perfumes and medicines. They have enormous potential for the development of new phytopharmaceuticals, antibiotics, insecticides, herbicides and biomaterials.



For more information and news about the Biology Department, please visit our website at: <http://web.uvic.ca/biology/index.htm>.

School of Earth and Ocean Sciences

A Booming Department

This year, the School of Earth and Ocean Sciences (SEOS) celebrates its 16th year. We have enjoyed much success and have gained a solid international reputation as the first School in Canada to combine the disciplines of earth, ocean and atmospheric sciences in one program.

New for 2007 is the Ocean Sciences Minor. This program is designed to emphasize the interdisciplinary nature of oceanography in a way that is accessible to any student interested in science. Core courses in biological, chemical, geological, and physical oceanography are offered over a single intensive summer term that includes at-sea fieldwork as an important component of the program.

SEOS research is booming. Our researchers have led the development of ocean observatories NEPTUNE Canada and VENUS. Powered, fibre-optic cables and seafloor-mounted instruments placed across the Juan de Fuca plate in the North-east Pacific (NEPTUNE) and in coastal waters of the Strait of Georgia and Saanich Inlet (VENUS) will enable scientists to monitor tectonic activity, including undersea earthquakes and volcanoes, and the physical, biological and chemical state of the sea over the next 30 years. Information gathered from NEPTUNE and VENUS will flow continuously and in real time to land-based stations, and then via the Internet to classrooms and laboratories around the world.

The SEOS Climate Modelling Group and SEOS adjunct faculty at the Canadian Centre for Climate Modeling and Analysis (co-located with SEOS) were major contributors to the 2007 UN Intergovernmental Panel on Climate Change.

SEOS was rated first in impact (number of citations per publication) among all Canadian Geoscience departments, and third nationally in total number of citations in a recent survey by Thomson Scientific.

EARTH & OCEAN



photo: Diana Nethercott

Right to left: Dr. David Turpin, President and Dr. Martin Taylor, VP Research, Dr. Chris Barnes, NEPTUNE Canada's Project Director, Benoît Pirenne, Assoc. Director IT, and Dr. Mairi Best, Assoc. Director Science standing next to the 30 tonne Ile de Sein plough which will be used to bury the cable.

By September, 2008, SEOS faculty, staff and students will come together in a new Science Building from our present seven locations spread across campus. The new building will include specially designed research and teaching laboratories, and the co-location of all personnel at one site will enhance interactions at all levels and improve students' sense of identity with the School.

People and Projects

A Physics Update



photo: X-ray: NASA/CXC/UMic/A. Mahdavi et al. Optical/lensing: GH1/UMic/J. Hoekstra et al.

■ A multi-wavelength image of Abell 520 shows the aftermath of a complicated collision of galaxy clusters.

the XMM and Chandra satellite observatories. This research will help us understand how the tremendous complexity of the present day universe arose from relatively simple conditions at early times.

Dr. Pavel Kovtun joins the particle theory group. One of Kovtun's areas of focus is string theory and applications of its mathematical framework that overcome the notoriously intractable calculational problems of the "strong interaction"—that force which holds protons and neutrons together in the atomic nucleus.

Justin Albert brings his expertise as an experimental particle physicist to bear on particle

The Department of Physics and Astronomy welcomes new faculty members in several areas. Dr. Rogerio de Sousa specializes in spintronics and the physical implementation of quantum computers. His theoretical studies into electrical control of magnetism could well lead to the next generation of high-density magnetic storage devices.

Dr. Jon Willis studies the properties of the large scale structure of the universe as seen in X-rays using

astrophysics questions. Justin has received a CFI grant to develop instrumentation to assist with determination of the properties of "dark energy", a feature of the universe discovered in the past decade which seems to be causing accelerated expansion of the universe.

Other recent news:

- Dr. Henk Hoekstra received an Alfred P. Sloan Fellowship.
- Dr. Arif Babul was appointed "Distinguished University Professor" at Uvic in recognition of his outstanding contributions to teaching and research.
- Together with postdoctoral researchers, Andi Mahdavi and David Balem, Dr. Henk Hoekstra and Dr. Arif Babul made headlines around the world for their "cosmic train wreck" paper that introduces a new dark matter puzzle.
- Dr. Greg Poole is this year's Governor General's Gold Medal for his PhD dissertation on galaxy clusters.
- The department, through Dr. Randy Sobie, hosted a large international conference on Computing in High Energy Physics in early September 2007.
- Particle physics theorist Dr. Maxim Pospelov made headlines by incorporating "Super Symmetry" into the theory of lithium production rates in the Big Bang.
- Dr. Michel Lefebvre is one of three award-winning teachers featured in a new video created by Uvic's Learning and Teaching Centre entitled: "Integrating Research and Teaching".

Monday, November 26, 2007 from 5:30 – 7:30 pm
Downtown Toronto, location details to follow
Presentation to be given by Dr. Tom Pedersen, followed by a Q & A and Door Prizes!

Hold the Date Alumni Wine & Cheese

Stay in Touch New Alumni Group



photo: Christine Roome

Finnerty Gardens, Spring 2007.

Ever wondered what happened to your lab partner from second year organic chemistry? We are initiating an alumni group for the Faculty of Science. For more information and to keep us posted on where you are and what you are doing, please email Christine Roome at: croome@uvic.ca

Dr. Bill Pffafenberger recently retired from the Department of Mathematics and Statistics after a 38-year career which included teaching and serving as Chair of the Department. He also initiated Math Mania and was passionate about his work with highschool students. We

are currently mounting a campaign to raise money for the Excellence in Math Scholarship fund that he created in 1991. The money we raise will be matched by two private donors dollar for dollar. If you would like to make a contribution in honour of Dr. Pffafenberger, please contact Marion Grau at 250-721-6003 or mgrau@uvic.ca.

Financial contributions of our alumni represent a vital resource for the Faculty's programs and services. If you would like to make a contribution, or have an idea for an innovative gift, please contact Christine Roome at: 472-4210 or at croome@uvic.ca.

Mathematics 2007 New Building, New Program, New Horizon

The Department of Mathematics and Statistics is eagerly awaiting its move into the new Social Sciences and Mathematics Building in early 2008. In our new, upgraded space we will finally have adequate room for the visitors, post-docs and graduate students who enrich the research environment and life in the Department.

We have recently joined together with Economics to create a new B.Sc. program in Financial Mathematics and Economics. Even though it has not been advertised, this program has already attracted considerable interest among our students. Other new programs in the development phase are Mathematics Education, leading to a B.Sc. and a teaching certificate, Computational

Mathematics, Bioinformatics, and an M.Sc. in Statistics and Econometrics.

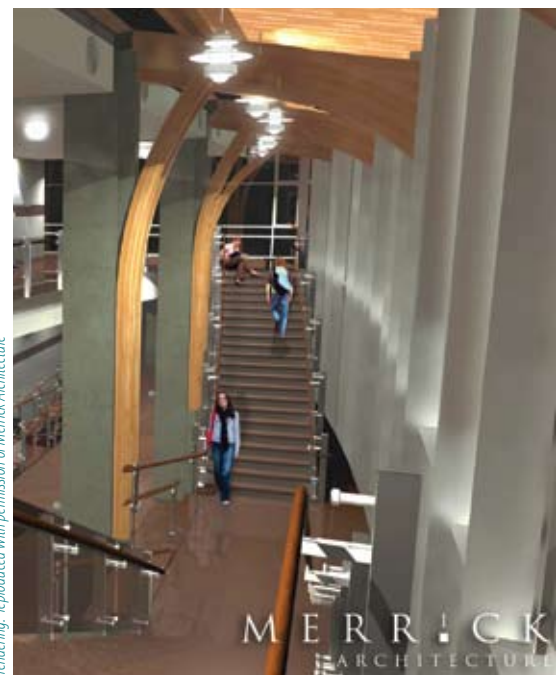
Math Circles, which brings high school students to campus for math enrichment activities every two weeks, is the most recent addition to the Department's collection of outreach events. We continue to hold Math Mania nights at elementary schools and are involved in staging various math contests. To further our work with secondary students, we are talking to the Computer Science Department in the Faculty of Engineering about becoming more involved in each other's outreach activities.

Dr. Robert Steacy and Dr. Rod Edwards have each recently made some notable contributions to medical research. Motion control algorithms that Dr. Steacy originally developed for a Canadian robotics firm and several manufacturers located in Southeast Asia have been selected for use in the newest, minimally invasive, micro-surgical robots. Some of Dr. Edwards' recent work with a group in Bordeaux warranted an editorial in the January 2007 issue of the Journal of Neurosurgery. It is one of the first quantitative attempts to identify the optimal location to implant an electrical stimulator within a structure in the brain called the Subthalamic Nucleus (STN) to alleviate symptoms of Parkinson's disease.



Don Smith, Uvic Geography

The new home of Mathematics is nearing completion.



rendering: reproduced with permission of Merrick Architecture

Artist's Rendering of the new lobby by Merrick Architecture.

Visit our website at <http://www.math.uvic.ca/> to keep up-to-date on the news and events in our department.



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