

Summer 2013

ZYGOTE PLUS



A newsletter for alumni of the College of Biological Science

Lecturer Uses Humour in the Classroom

AS A MARINE BIOLOGIST, Shoshanah Jacobs could have studied sea creatures in tropical climates, but she chose to focus her research on the Earth's polar opposites: the Arctic and the Antarctic. Why? "I hate spiders," she says. "The world is full of wonderful places, and I could be happy anywhere, but I was interested in extreme places. I was fascinated by the cold, and from a biological perspective, extremes are where you can study adaptation."

Jacobs now finds herself in Guelph's warmer climate as a lecturer in the Department of Integrative Biology. She describes her lectures as a "stand-up routine" filled with jokes, games and stuffed toys that look like bacteria.

"There's no cooler feeling in the world than leaving the lecture hall and knowing that you nailed it," says Jacobs, whose parents are both professors at Algonquin College in Ottawa. "Teaching has always been a thing in my family."

She says she doesn't consider education to be a



rite of passage to employment, but rather a means of passing on knowledge to younger generations.

Her current research focuses on biomimetics, which looks at how humans can apply lessons from nature to their own lives. We could learn a lot from birds, she says, because they conserve resources such as body fat in tough times, and their reserves constantly fluctuate in response to their environment. "It's kind of like an insurance policy for them," says Jacobs.

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Research Helps Students Learn

AS WE BEGIN the spring/summer term, I feel particularly proud of the summer research opportunities CBS makes available to our undergraduate students. On behalf of our students, thank you to our alumni donors who help make these experiences happen.

We know that these positions make an impact on the career decisions and professional growth of our students. This year we will offer 20 opportunities for students to work on research initiatives in cancer, preventive medicine and biodiversity.

Our CBS students always amaze me. It is not just their pursuit of academic success that is impressive; it is their ongoing extracurricular and creative achievements that make our students so special.

Some of you may have heard of the CBS student “lip-dub” that went viral in January. Our enthusiastic CBS Student Council (CBSSC) brought together about 250 students in our Science Complex to create a fantastic video promoting CBS and its students.

It was first shown at the CBS career night, and our alumni volunteers loved it! This is just one example of how CBS students are raising the bar. I encourage you to watch it (search for “CBSSC lip-dub” on YouTube).

For those alumni celebrating reunions in 2013, I look forward to meeting you at Alumni Weekend in June. Join us for tours of the human anatomy program and the Science Complex, followed by our milestone dinner. Alumni Weekend is always a great time to reconnect with old friends and faculty. You’ll be amazed to see the progress and changes on campus – I hope you can make it.

MICHAEL EMES,
DEAN, CBS



Lab work provides students with practical experience.



Balloons fall on dancing students.

YouTube Video a Hit

THEY CAME, THEY SANG, they danced. That was the premise behind a “lip-dub” video featuring the College of Biological Science Student Council. About 250 students took part in the video, which was filmed throughout the Science Complex.

The video has received more than 37,000 hits on YouTube since it was posted in January. In one scene, viewers are guided through an “ocean” hallway draped in blue plastic, complete with a shark-shaped balloon. Another scene takes place in a lab where students shimmy in white lab coats while peering through microscopes. The video concludes with balloons and confetti showering the atrium.

“We wanted to show you can take biosciences and be well-rounded,” says Fatima Chleilat, a third-year microbiology student and member of the student council’s executive. She organized the six-hour recording session Jan. 11. The video was shot by Toronto videographer Film4View.

Fatima Chleilat



The Better Planet Project





Nicole Pinto, M.Sc. '12, works in a Science Complex lab.

CBS Alumni Association Supports Students

EVERY GIFT TO The BetterPlanet Project makes a difference – that’s why the CBS Alumni Association (CBSAA) decided to renew its scholarship program to help students achieve their academic goals.

“So many students have to work jobs, volunteer, keep their grades up and are struggling financially on top of it all,” says CBSAA president Kim Bretz, B.Sc. '97. “This scholarship can help with a bit of the burden. Our VP of finance, Cyndie Horner, was key in keeping us on track and moving forward with this project.” The first annual scholarship of \$1,000 will be awarded in fall 2013 to a second-year student.

Bretz says many U of G grads are inspired to give because they care about the next generation of students and because they understand what students are going through.

“We remember trying to balance out school, a social life, financial concerns and trying to figure out what to do in life, and the challenges certainly haven’t gotten easier for the students of today.” She reminds grads that they can get involved with U of G in many ways, such as attending a career night or mentoring a student.

Giving Back Makes a Difference

SOMETIMES ALL YOU CAN SAY is thank you, and this is definitely one of those moments. It was my absolute pleasure to have worked with about 40 grads and 200 students at the CBS career and networking night on Jan. 23. We have the most amazing alumni, and this evening came together with support and excitement from our graduates. They gave their time to speak to current students about their experiences and made it a night to remember. Thank you again to everyone who attended and made the night an amazing success.

Our next alumni event is coming up quickly and it’s always well-attended by grads and their families. Join us May 26 for our annual day at Royal Botanical Gardens (RBG) in Burlington, Ont., a fantastic event filled with good food, great people and fun activities around the grounds, including the gardens, fishway and hiking trails. We’re looking forward to seeing you there!

Our final event before the summer is our AGM. If you’d like to attend the RBG event or the AGM, please contact Annie Benko at abenko@uoguelph.ca.

KIM BRETZ, B.Sc. '97
CBSAA PRESIDENT



Grad Goes Into the Wild

WOLVERINES are so elusive they're hard to spot in the wild, even by those who study them. "I actually haven't seen one yet," says Frances Stewart, a field assistant at Wolverine Watch, an organization that tracks the animals in the Canadian Rockies. "If you come across one, you should consider yourself extremely lucky."

Stewart and her team spend most of their time cross-country skiing through the wilderness looking for wolverine footprints, droppings and fur.

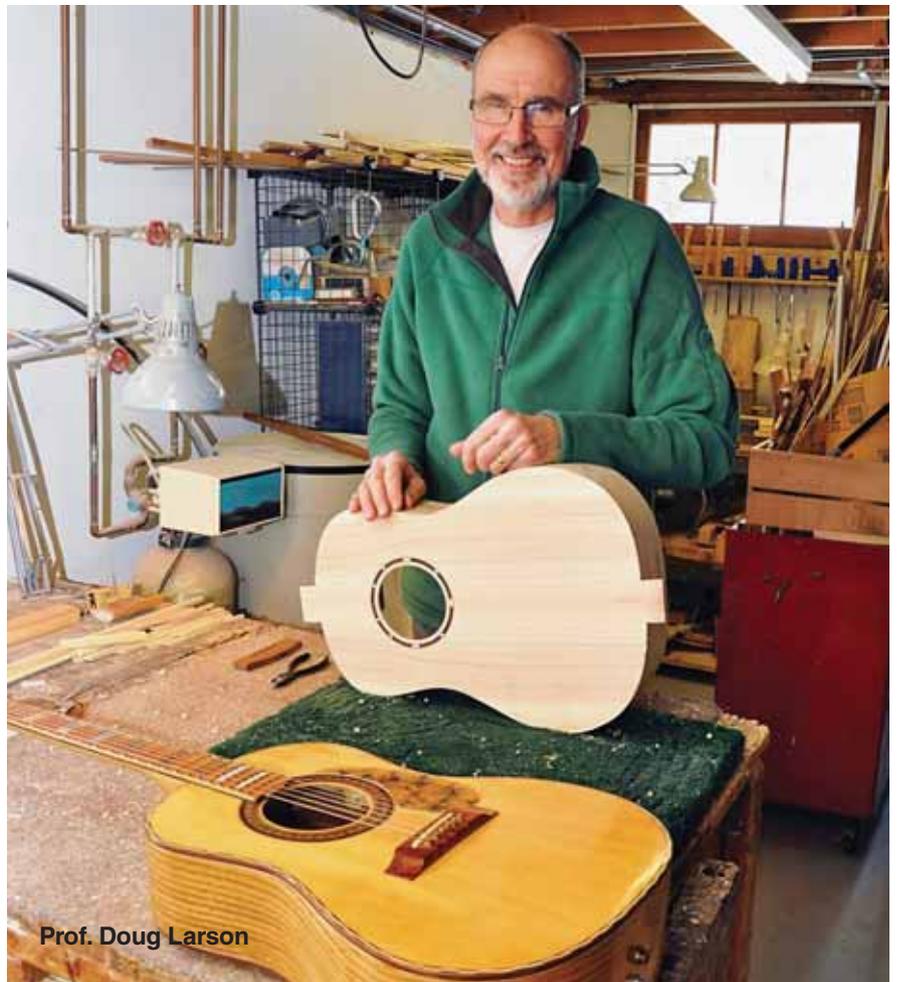
"Using the hair as a DNA sample, we can see how many animals there are in the area and where those animals are moving across the landscape," says Stewart, B.Sc. '09 and M.Sc. '12. "They're definitely a species of special concern, because we know almost nothing about them."

After she finishes with the project, she will join integrative biology professor Andrew McAdams on the Kluane red squirrel project, a long-term population monitoring program in the Yukon.



Frances Stewart

Music is the Message



Prof. Doug Larson

Retirement hasn't been easy for Doug Larson, professor emeritus in the Department of Integrative Biology. He's always busy doing something, such as building musical instruments, working on his next album and volunteering. "It's like being a student again," he says.

After more than three decades spent studying cliff ecology, Larson decided to retire and devote more time to music: composing, performing and recording. "The goal for retirement was very simple: to do nothing unless it was fun and useful. Fun for me and useful for others." His volunteer work includes serving on the boards of Hillside Festival in Guelph and the Rare Charitable Research Reserve in Cambridge, Ont., and performing at local schools up to 50 times a year.

His most prized instrument is the "storyteller guitar" he made from materials donated by Guelph residents, including ivory from a woolly mammoth and part of a fossilized dawn redwood. He uses another guitar, made from a wooden Clementine box, to teach children about recycling waste materials into fun and useful objects.

Omega-3s Help Fight Breast Cancer

Eating foods rich in omega-3 fatty acids can inhibit growth of breast cancer tumours by 30 per cent, according to a new U of G study.

“We show that lifelong exposure to omega-3s has a beneficial role in disease prevention – in this case, breast cancer prevention,” says Prof. David Ma, Department of Human Health and Nutritional Sciences, one of the study’s authors.

Breast cancer remains the most common form of cancer in women worldwide and is the second leading cause of female cancer deaths.

For their study, the researchers created a novel transgenic mouse that both produces omega-3 fatty acids and develops aggressive mammary tumours. The team compared those animals to mice genetically engineered only to develop the same tumours.

Mice producing omega-3s developed only two-thirds as many tumours – and their tumours were 30-per-cent smaller – as the control mice did.

“The difference can be solely attributed to the presence of omega-3s in the transgenic mice – that’s significant,” says Ma. “The fact that a food nutrient can have a significant effect on tumour development and growth is remarkable and has considerable implications in breast cancer prevention.”

Treatment Offers Hope for *C. difficile* Patients

CLOSTRIDIUM DIFFICILE is a bacterium that often strikes people when antibiotics have knocked out their beneficial intestinal bacteria. A synthetic stool developed by U of G researchers can help repopulate those friendly bacteria and fight the infection.

The “super-probiotic” stool, called RePOOPulate, was created by Prof. Emma Allen-Vercoe, Department of Molecular and Cellular Biology. It’s intended to replace human fecal matter used in stool transplants to treat *C. difficile* infections. The synthetic stool can also be custom-made to suit the needs of each patient.

“It’s an exciting finding,” says Allen-Vercoe. She made the super-probiotic from purified intestinal bacterial cultures grown in



Prof. Emma Allen-Vercoe, left, in her lab.

“Robo-gut” equipment that mimics the environment of the large intestine.

C. difficile infection causes a variety of gastrointestinal problems, including severe diarrhea, and often leads to outbreaks in hospitals and long-term care facilities.

Treatment options are limited for people with recurring *C. difficile* infections. Stool transplants are among the more effective therapies, says Allen-Vercoe, but human fecal matter may contain unknown pathogens. “That puts people at risk for future disease.”



The CBS career night on Jan. 23 was another huge success, thanks to the participation of about 40 alumni and 200 students. Pictured are Gbolahan Olarewaju, left, B.Sc. '11, and David Rekker, B.Sc. '96.

Celebration of Life Honours Donors

FOR THE FAMILIES of people who have donated their bodies to Guelph's human anatomy program, attending the celebration of life ceremony in April is an opportunity to see the impact of their loved ones' gift.

"The celebration of life gives students and staff some closure and gives them a way to say thank you for this very special gift," says Premila Sathasivam, who manages the human anatomy and body donation programs in Human Health and Nutritional Sciences (HHNS). "It gives the families a lot of happiness to attend a celebration of their loved ones and also gives the families closure."

Students in the human anatomy program share their knowledge through outreach activities for high school and college students as well as emergency first responders. "The level of maturity we see in the students is incredible," adds Prof. Lorraine Jadeski, HHNS. "They develop both academically and personally from this experience."

Grace Glofcheskie is a fourth-year human kinetics student in the program. "There is no other program at Guelph that has had such an impact on my learning and education. The learning is far beyond any classroom learning I received."

Oleksiy Zaika, a fifth-year biomedical science student, says the skills he learned can be applied throughout his career. "It's hard to put into words how much it's appreciated," he says. "It's not just the students who receive the gift, but the family members who decide to make the gift because of how much they love the program and the invaluable experience it provides us."

For the families of donors, knowing that their loved ones' legacy lives on through the education of students is often comforting.

When Michael Halley passed away in December 2012, his body was donated to the human anatomy program. He and his wife, Tricia, heard about the program through home-care staff, and since they both attended Guelph, they decided to make a gift to their alma mater.

"We had a lot of connections with Guelph," says Tricia, who also worked at U of G for 22 years. "He was very happy to be contributing to education and research in some way. It's just another way of connecting with the University."

She plans to attend next year's celebration of life ceremony and says the gratitude expressed by students in the program is especially meaningful. "It's wonderful to see that."



Students light candles in memory of the donors.



Students perform at the celebration of life.



Emergency workers attend the ceremony.

Water Contamination Stresses Fish



Rainbow trout

RAINBOW TROUT are getting stressed by pollution, which can affect their growth and breeding habits. “There are associated behavioural characteristics with being stressed,” says Steve Cho, M.Sc. ’12. “If these fish are stressed, they’re not able to reproduce as well; they’re not able to grow at the same rate.” Stress can also affect the survival of young fish.

For his master’s thesis in integrative biology, Cho looked at how a carcinogen called benzo(a)pyrene affected the stress response of rainbow trout. The pollutant is a by-product of incomplete combustion and is found in car exhaust and factory emissions.

After injecting the trout with a low dose of benzo(a)pyrene, researchers found the fish produced higher levels of the stress hormone cortisol. They also studied the effects of the chemical on brown bullhead catfish in Windsor, Ont.

“We wanted to study if these pollutants had a long-term effect,” says Cho. The catfish required four times as much benzo(a)pyrene than the rainbow trout to become stressed. Cho says their higher tolerance may reflect living in contaminated sediment at the bottom of lakes and ponds, where they are exposed to the pollutant more frequently and at higher levels than rainbow trout.

As an undergrad in biological sciences, Cho studied the effects of oil sand effluent on the reproductive physiology of minnows in Fort McMurray, Alta. “It was a good introduction for me to aquatic toxicology,” he says, adding that the project inspired his interest in environmental science.

Grad Keeps in Touch

AS A BIOSCI UNDERGRAD, I always envied the Aggies for their easy camaraderie. Everywhere I went on campus, there they were, wearing their iconic leather jackets, laughing and having a good time.

In the early 1980s, CBS students didn’t have that same easy connection. Although we all took introductory zoology together, we quickly separated into specialized streams of study.

I can’t really say that memories of “the good old days” called to me when classmate Sylvia Main, B.Sc. ’82, and I sat down in early 1992 to plan a 10-year BioSci ’82 reunion. It was curiosity: What had other people done with their degrees? What did their lives look like?

We compiled the results of a one-page survey into a newsletter and invited our classmates to join us for Alumni Weekend in 1992. Our reunion was so much fun that we did it again in 2002, 2007 and 2012. I wonder if we should get leather jackets for 2022?

JENNIFER AITKENS, B.Sc. ’82



Gryphons get together at Alumni Weekend.

Doctor Grateful for Human Anatomy Program

Ever since Monica Wolnik dissected a pig's heart in Grade 9, she was fascinated by how the body works. She knew that getting into medical school wouldn't be easy, so she decided to keep her options open. "I specifically chose Guelph, knowing that I would get a solid bachelor of science education, which would open lots of doors for me, not just slot me into the pre-med mode," says Wolnik, B.Sc. '90.

She didn't need a backup plan for medical school after all. After graduating from Guelph, she studied medicine at McMaster University, completed a family residency at Queen's University and spent an extra year in emergency medicine. She is now an emergency room physician at the Royal Victoria Hospital and director of the Huronia Urgent Care Clinic in Barrie, Ont.

The human anatomy program at U of G further fueled her interest in the human body. "I'm still so grateful for that opportunity," says Wolnik. "The ability to do full cadaver dissections right from day one and have a whole year of that was amazing. I think it really did solidify the fact that I wanted to learn more about the human body and how it all worked together, and the manifestations of disease."

Although most of Wolnik's friends and family live near Toronto, she wanted to work in a smaller community with access to specialists. The hospital in Barrie has a family medicine residency program affiliated with the University of Toronto.

Wolnik's fascination with medicine and the human body continues. "When you find a passion for something," she says, "you're motivated to learn, and you still like learning 20, 30 years later. That's how I know I picked the right field."

She tells students interested in medicine to keep their options open, because a science degree can lead to many types of health-care professions.

Monica Wolnik with her husband, Gene, and sons Joshua, and David



Upcoming Events

May 26

CBSAA Day at Royal Botanical Gardens
Visit www.alumni.uoguelph.ca to register.

June 14 and 15

Alumni Weekend
Visit www.alumni.uoguelph.ca/alumniweekend to register.

Reunions include the CBS physical education Class of '73 and all CBS Class of '88 grads.

All CBS alumni are welcome to join the CBSAA AGM Saturday morning.

Zygote Plus

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