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This is a pivotal juncture in the Life Sciences Program, an exciting time during which new courses, new streams and new spaces will roll out over the next two years. I have only a glimpse of what’s to come, but from my vantage point, things are already looking pretty good. With continued feedback from you, it can become really great. So, I invite you all to communicate your impressions to the Life Sciences faculty and staff as the new program unfolds. The LifeSci Dispatch will play a key role in keeping us all informed and connected. Join the Dispatch team—we need your ideas, your aspirations, your energy. In the words of Mahatma Gandhi, “You must be the change you wish to see in the world.”

Letter From the Director of the Life Sciences Program

March 2015 - Issue 2

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- Mahatma Gandhi

LifeSci Dispatch

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Letter From the Editor

Jasmine Gite
Editor of the Life Sci Dispatch

Hi everyone! Welcome to the second issue of the LifeSci Dispatch. Here you’ll find the latest information about the new and exciting directions that our program is headed towards. The Life Sciences program mandates a philosophy of interdisciplinary learning, allowing students to explore a variety of fields in science while achieving a holistic connectedness in their learning. Over the past four years, I’ve seen this program grow and evolve to continuously offer opportunities and experiences that cater to student growth. From new courses, to the new co-op program, to the experiential learning placement opportunities, the Life Sci student body has a wide breadth of experiences to choose from. The aim of the Dispatch is to relay these opportunities to you and enliven the Life Sci community by keeping it connected. Our inaugural issue was a road map of the changes coming to the program; this second issue takes the front seat in introducing these changes and making them available for you to wholeheartedly embrace. I invite you to have a look, be inspired, and most importantly, get involved! Your experience in the program is most enriched by what you make of it, and I assure you that the opportunities are endless.

In the Community:
Promoting Sustainable Living

Dr. Patrick Deane, McMaster University’s President and Vice-Chancellor, identified community engagement as being part of an academic culture of service that must be central to the university’s legacy. Dr. Deane’s Forward with Integrity document outlines the importance of integrating outreach components meaningfully into the work of the academy. We highlight here one such course in the Life Sciences Program that provides students with the opportunity to experience community-based applied learning and align themselves with this ideal.

Life Sci 3D03 (Environment and Global Sustainability) focuses on studying current environmental problems resulting from an unsustainable use of the biosphere. Course concepts range from consumerism and neuromarketing ethics, to sustainable food, to dead zones and invasive species. A component of the course allows students to carry out a group project that will help the community live more sustainably. Students are challenged to identify a sustainability problem and design a solution to implement. The project is graded on its overall effectiveness and its lasting impact. Projects have been varied, ranging from sustainable waste management within the McMaster community to engaging high school students to understand the pros and cons of neuromarketing.

One group, “Hazzle Free Sustainability” (A. Maruncic, H. Bakhshi, and Z. Monfaredi) identified the unacceptable situation of food being thrown out when there were hungry people in the city. They created a food share network where food destined for the dumpsters (baked goods and bread) at Fortinos in Hamilton would instead be transported to the Salvation Army in Burlington to feed their clients (up to 630 people in 21 days). They raised awareness about the need for food donations, and provided a sustainable way to feed the hungry while avoiding food wastage.

MIREx 2015

The McMaster Interdisciplinary Research Exposition (MIREx) was initiated to showcase innovative and interdisciplinary research at McMaster University and to connect Life Sciences students with research on campus. Initiated in 2013, the conference emphasizes collaboration and highlights the interdisciplinary aspects of innovative researchers.

MIREx 2015 showcased globally acclaimed research at McMaster by hosting Andrew King, a PhD candidate in the lab of Dr. Gerry Wright, working to disarm antibiotic-resistant superbugs; Dr. Salim Yusuf, who was recently inducted into the Canadian Medical Hall of Fame for his contributions to the field of cardiology and population health research; and Dr. Mick Bhatia, an innovator in haematopoietic stem cell research. McMaster alumna Dr. Milica Radisic delivered the keynote address. She discussed her interdisciplinary work in cardiac tissue engineering to treat heart conditions using novel biomaterials.

A new addition to MIREx this year was an interactive workshop by Andrew King, designed to introduce students to the process of analyzing rough data and converting it into comprehensive results. The conference also incorporated an interactive research panel segment, “A Day in the Life of a Researcher”, comprised of undergraduate thesis, PhD and MD/PhD students who provided a personalized take on careers in research.

A post-conference social held at Phoenix Pub on campus allowed students to interact with presenters and panellists in a casual setting. Students unanimously found the research panel and post-conference social most beneficial in providing insight into careers in research.

MIREx attendance by undergraduate Life Sci students has increased exponentially this past year, primarily due to the growing presence of the Life Science Society on campus. With an attendance of over 200 students this year, the conference has become an integral part of the Life Science Society’s annual programming. In subsequent years, the conference will continue to cultivate a long term research culture within the Life Science student body, and flourish in tandem with the developing goals of the remodelled Life Sciences program.
Experiential & Research Placement Opportunities in Life Sciences

Experiential placement or research practicum courses give students the unique opportunity of getting hands-on experience and exploring career options.

Danielle Corcoran, Life Sci 3EP3
My name is Danielle and I am a third year Honours Life Science student. I have been trying to decide my career path and to properly make this life-changing decision, I decided to get some hands-on experience. I enrolled in Life Sci 3EP3, and I did my placement at Aim Physiotherapy Clinic in Hamilton where I shadowed a certified physiotherapist for four months. At the clinic, I had the chance to learn about various pieces of therapeutic equipment and the science behind how each works. I was given the opportunity to perform ultrasounds, traction exercises, and manual therapy techniques. I learned how injuries are caused, diagnosed, treated and most importantly how they can be prevented. Being able to interact with patients one-on-one, was the key factor that gave me a sense of what it is really like to be a physiotherapist. I found my placement course to be very manageable with my other courses and would highly recommend it to all students. The hands-on experience and knowledge I gained at Aim Clinic cannot be learned through a textbook. My advice: ensure you choose a field you are really interested in for your placement. When you are passionate about the work, the workload seems effortless.

Daniel Rusiecki, Life Sci 3RP3
I’m in third year Honours Life Sciences student and my Life Sci 3RP3 was done at Hamilton General Hospital with Dr. Lach, an experienced neuropathologist. My project focused on Lhermitte-Duclos Disease (LDD), a rare but benign tumour of the cerebellum. The focus of my research was to write a case report for publication about a unique incidence of LDD that Dr. Lach encountered many years ago, but never had the chance to publish.

Tell us what you think!
“The secret of change is to focus all of your energy, not on fighting the old, but on building the new”
– Dan Millman, Way of the Peaceful Warrior.

Introducing: The Life Sci Co-Op

Like many students I know in the Life Science Program, I spend a lot of time wondering what lies ahead of me when I graduate. I am constantly asking myself questions like ‘will my degree matter to a potential employer?’, ‘how can I build a stronger professional network?’ and ‘what can I do to gain relevant experience in my field of study before I graduate?’ The answers to these questions have come to me in the form of my Life Science Co-Op. The past 5 months of my Co-Op have been some of the most eye opening and enriching months of my undergraduate career. Not only have I been exposed to a variety of new and exciting opportunities in my new job, but the application process has taught me so many lessons about navigating the job market and networking with my peers and potential employers (not to mention how to write a killer cover letter). For the next 8 months, I will be working as a Research Student in the department of Genetics and Genome Biology at the Hospital for Sick Children (SickKids) in Toronto. In my role, as a research assistant in the Palment lab, I will be investigating the genetic basis behind sex specific timing of pubertal onset in mouse models, and studying the effects of genetic and environmental perturbations on sex-specific pubertal timing. In my first month alone I have already been exposed to a variety of molecular biology and animal handling techniques that I might never have seen in my program. These are transferable skills that I will be able to apply towards my future career path. It astounds me how much learning can happen beyond a classroom and I am so excited to see what the next 7 months hold. My advice: I would highly recommend the Life Sci Co-Op program. The experience you will gain will be invaluable, and will likely give you a competitive edge in the job market!

– Christian Bellissimo (H. Life Sci, Level III)
Zinnia Batliwala, Master of Public Health
Zinnia is a 2014 Honours Life Sciences graduate currently completing a Master of Public Health at Western University. She feels the interdisciplinary nature of the Life Sciences program played a crucial role in preparing her for a career in this domain: “I was given the opportunity to develop transferable skills such as critical thinking, oral communication, and writing and research skills. [...] I am able to think beyond one specific discipline and consider the big picture.”

The Honours Life Sciences program also provided her with ample opportunities to get involved: while earning her degree, Zinnia was a Teaching Assistant for Research Methodologies in Life Sciences (LIFE SCI 2A03) for two semesters.

Ravi Shergill, Medical School
“The Life Sciences Program really invites students to explore a variety of educational disciplines and develop individuals that have plenty to offer beyond their profound understanding of biological science.” After having completed his third year in Life Sciences, Ravi is now attending medical school at McMaster University. He appreciates that students in his program are not only taught the complex science and pathology behind each disease, but are also introduced to both the historic and future policies that will go far in preventing them. He says, “We are all united towards a common goal, and that’s what I appreciate most about my program.”

Monica Molinaro, MSc. Kinesiology
As an undergraduate student in the Honours Life Sciences program, Monica’s multidisciplinary experiences led her to pursue a Master of Science in Kinesiology at Wilfrid Laurier University, where her thesis centers around the long-term effects of paediatric cancers on adult survivors. She attributes part of her current success to Life Sciences courses such as LIFE SCI 3A03 where she honed the ability to apply her knowledge to scientific writing and inquiry. But one of Life Science’s “biggest hurrah’s,” Monica says, is that you “are given the freedom to choose courses you are interested in and passionate about.”

Why did you choose to study psychology, neuroscience & behaviour (PNB)?
A: My interest is based on a fierce curiosity as to how neurons work and communicate with each other. To this day, I continue to be excited by neurotransmitters and their receptors, and am fascinated by how environmental signals are converted into biological signals that are interpreted by the brain.

What is one of the most exciting discoveries you have made in your research?
A: As a graduate student, I studied a group of putative sensory cells in the peripheral nervous system, called aortic body chemoreceptors. Located near the heart, these cells had been hypothesized to sense oxygen levels in the blood in the early 1900’s; however, as the techniques became available to actually test this hypothesis, other oxygen-sensing cells dominated research in the field. Using intracellular calcium levels as a measure of cell signalling, I was the first person to show that aortic body cells directly respond to oxygen, reigniting interest in a hypothesis that had been forgotten for almost a century!

What drew you to the Life Sciences Program here at McMaster?
A: The interdisciplinary nature of the Life Sciences Program makes it an ideal place to study neuroscience. This is because neuroscience is itself interdisciplinary, bringing together anatomy, biology, biochemistry, physics and psychology to answer questions about how the nervous system functions, develops, and generates behaviour. With a strong background in many disciplines, Life Sciences students are ideally positioned to integrate their diverse knowledge into a coherent understanding of neuroscience.

What is your favourite accomplishment from your time as a McMaster professor?
A: My most important accomplishments are the small victories that I realize every day. For example, when a student says, “I never understood this topic before, but you’ve made it seem so easy,” it reinforces my passion for teaching science.