The ORT Times

A monthly newsletter featuring UHN Trainees

www.uhntrainees.ca

For information on UHN training courses, scholarships, seminars happening around the city and so much more, visit www.uhntrainees.ca.

Editorial

Internships: A great way for trainees to enhance their scientific career and CV

Part II: internships in industry

Completing an internship in the private sector, even for a short period of time, provides trainees with invaluable experience and contacts to help them land their first job outside of academia. Internships are also a great way for trainees to determine whether they are better suited, given their personality traits and preferences, to conducting research in industry or academia. David G. Jensen, who writes for Science Magazine, has assembled a list of questions trainees should ask themselves to determine in which sector they would be happiest working; see **article 1** and **article 2**.

In this article, ORT describes several valuable industry internship opportunities available to trainees.

Mitacs is a private, national, not-for-profit organization that is funded by the federal and provincial governments. Several Mitacs research and training programs exist to support the development of future innovators in all areas of applied research.

Cont'd, see PAGE 02

April 2013

Inside this issue....

UHN Toronto General Toronto Western Princess Margaret Toronto Rehab

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Cont'd from PAGE 01

To learn more about Mitacs and its programs, ORT spoke with Dr. David Kideckel, who completed his PhD in neuroimaging statistics under the supervision of Dr. Paul Sandor at TWRI. Toward the end of his studies, David himself completed two internships before moving into the pharmaceutical industry as a Medical Science Liaison at Janssen Inc. Presently, David is working as the Director of Business Development at Mitacs, while completing an MBA through the CIHR Science to Business program, at U of T's Rotman School of Management.

Dr. David Kideckel, UHN Alumnus and Director of Business Development at Mitacs

Mitacs offers several programs that provide UHN trainees a glimpse of what it might be like to have a career in industry, such as Mitacs' flagship *Accelerate* internship program, as well as *Elevate* and *Enterprise*. UHN trainees are eligible for all three of these programs.

As Canada's premiere research internship program, *Accelerate* enables trainees to gain industry experience while conducting research that will contribute to their thesis or post-doctoral research program. Project proposals that succeed the peer-review process, will receive $15,000, provided by Mitacs and the industry partner, to finance a four-month internship. Interns are expected to split their time equally between their academic and industry partner's lab. The internships are scalable according to the requirements of the project: an intern can participate in multiple, sequential internships or multiple interns can work together on the same project. The *Accelerate InDev* internship program supports projects aiming to improve products, processes, materials, systems or services. For more information about the *Accelerate* program, and all of its permutations, click **here**.

Some UHN trainees have already benefited from the *Accelerate* program:

Mirna Guirgis, a trainee supervised by Dr. Peter Carlen (TWRI), completed an eight-month internship with Neurochip Corp., a company founded by Dr. Carlen and his collaborator, Dr. Berj Bardakjian at U of T. Click **here** to learn more about Mirna's internship experience.

Through the *Accelerate* program, Masoud Hashemi, a UHN trainee supervised by Dr. Narinder Paul (TGRI), teamed up with Toshiba Medical Systems to reduce the noise that blurs CT scans, thereby decreasing the amount of time patients need to be exposed to harmful x-rays to obtain clear, interpretable diagnostic images. For his contribution to the project, Masoud earned the Mitacs Award for Novelty in Application. Follow this **link** to read an interview with Masoud about his internship experience.

Cont'd, see PAGE 03

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Future UHN trainees will also benefit from the internship program. In July 2012, it was announced that Mitacs has allocated over **$5 million over 5 years** for Techna trainees to participate in the *Accelerate* program—corresponding to approximately **80 internships per year**. Techna, as UHN's newest research institute, aims to contribute to the development of new health technologies in partnership with U of T. Techna trainees will undertake research projects, in collaboration with industry partners, to make innovative health technologies available to patients sooner. Click **here** to read the full press release.

Mitacs offers recent PhD graduates two-year postdoctoral fellowships through the *Elevate* program. Postdoctoral fellows (PDFs) participating in the program design and lead a peer-reviewed research project, while being co-supervised by academic and industrial partners. These PDFs also receive specialized training in project management, communications, industrial networking, commercialization and entrepreneurship. The fellowship is paid to the academic supervisor as a research grant to cover project and salary costs. PDFs must spend 50% of their time working on site with their industry partners. In Ontario, Mitacs is especially interested in funding projects to advance the health sciences and health technologies. For more information about the Mitacs *Elevate* program, click **here.**

Science, technology, engineering and mathematics (STEM) graduates participating in the *Enterprise* program complete a six-month internship at a small or medium-sized company operating in a STEM sector, located in southern Ontario. During the internship, interns receive three days of intensive business and management training and a salary, half of which is funded by Mitacs. Interns can participate in projects in corporate services, project management, business administration, as well as product and service development. Unfortunately, the *Enterprise* program at Mitacs will be discontinued, with the final start date set for September 2013. For more information about the *Enterprise* program, click **here**.

Graduate Enterprise Internship (GEI)

GEI is an internship program run by U of T and funded by the Federal Development Agency for Southern Ontario (FedDev Ontario). Similarly to the Mitacs *Enterprise* program, STEM graduates complete a six-month internship at STEM-focused companies operating in southern Ontario, during which GEI will provide 50% of the intern's salary. GEI interns will also benefit from individual career counselling and workshops. The program runs till March 2014. Click **here** to learn more about GEI.

The Ontario Brain Institute (OBI) is partnering with the GEI program to provide internships specifically for neuroscience graduates at companies in southern Ontario that develop new brain technologies. According to a press release published by OBI, Ontario ranks fourth in the world for neuroscience research. To learn more about OBI and its internship programs, click here.

Industrial R&D Fellowships

To encourage recent Ph.D. graduates to join the industry workforce, NSERC offers Industrial R&D Fellowships, tenable at a Canadian company, for up to two years. **NSERC will provide $30,000 in salary, with the company adding at least another $10,000**. For more information about this program, click **here**.

Author: Dr. Carrie-Lynn Keiski, Interim Coordinator, ORT

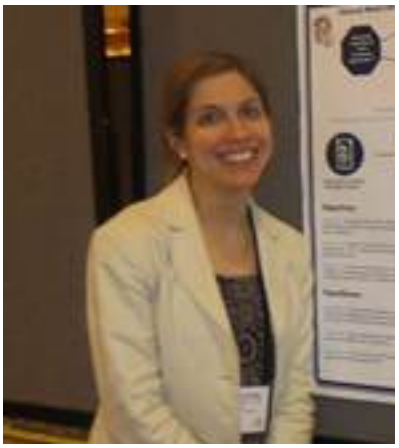
conference reports

ORT Conference Travel Awardees

This section of The ORT Times includes research highlights from recent ORT Conference Travel Awardees. In this issue, learn about the latest developments in tumour cells, neuropsychiatry, and stem cells.

Alexandra Arnold-Oatley, a Ph.D. candidate in Dr Robin Green's lab at TRI, recently attended the 41st Annual Meeting of the International Neuropsychological Society in Waikoloa, HI, and presented an abstract entitled "Using eye-tracking to develop emotion perception treatment and tackle the challenge of community integration after traumatic brain injury (TBI) ".

Click **here** to read Alexandra's conference report.



Dr. Peter Mullen is a postdoctoral fellow in Dr. Linda Penn's lab at OCI; he attended the Keystone Symposia—Tumour Metabolism (X4) 2013, in Keystone, CO, and had the opportunity to present a poster entitled "Fluvastatin alters metabolites in a subset of breast cancer cell lines".

Click **here** to read Peter's conference report.

Postdoctoral fellow, Dr. Sarah Steinbach, working with Dr. Mansoor Husain at TGRI; attended the Keystone Symposia—Stem Cell Regulation in Homeostasis and Disease in Banff, AB, and presented a poster entitled: "Embryonic origins of multi-potent aortic stem cells".

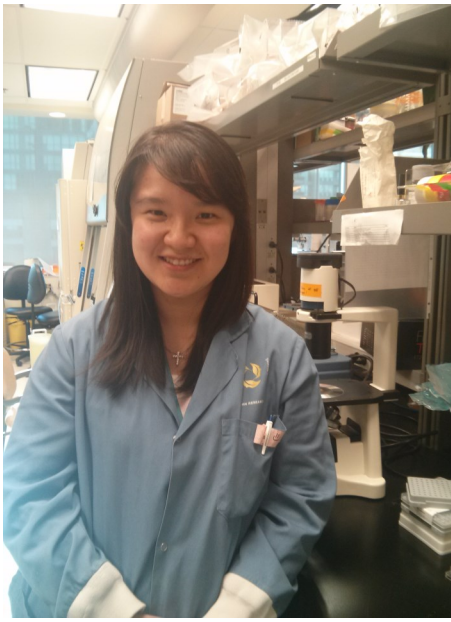
Click **here** to read Sarah's conference report.

Dr. Zahi Touma, a clinical research fellow in Dr. Murray Urowitz lab at TWRI, recently attended the Canadian Rheumatology Association National Scientific Meeting in Ottawa, ON and presented an abstract entitled "Measuring partial and complete recovery in active organ systems of lupus patients on standard of care treatment".

Click **here** to read Zahi's conference report.

latest & greatest

Solid tumors share the common feature of a hypoxic environment, a characteristic that presents challenges to chemo-, photo- and radiotherapies. The two main types of phototherapies, photodynamic therapy (PDT) and photothermal therapy (PTT), operate via different mechanisms. PDT depends on the interaction of photosensitizers with oxygen to create highly reactive oxygen species, which are toxic to targeted tissue. In contrast, PTT acts in an oxygen-independent manner, by heat-induced localized tissue damage. PTT's lack of requirement for oxygen provides it with an advantage over PDT in the treatment of hypoxic tumours. However, differences in the irradiation parameters and contrast agents used for PDT and PTT have made accurate comparisons difficult.



A recent report by Jin and colleagues (2013) described the first comparative study of PDT and PTT using an *in vivo* hypoxia tumour model with nanostructured self-quenched porphysome nanoparticles as the light-absorbing agent. The authors used a protocol whereby they directly compared PDT and PTT using matched light doses and porphyrin photosensitizer doses. The results revealed that the nanostructures drive conversion of the singlet oxygen generating mechanism of porphyrin (applicable for PDT) to the entirely thermal mechanism (suitable for PTT). This nanotechnology offers a highly advantageous alternative to PDT, in that it bypasses the obstacle of the hypoxic tumour environment to produce efficient tumour ablation.

Reference: Jin CS, Lovell JF, Chen J, Zheng G. Ablation of Hypoxic Tumors with Dose-Equivalent Photothermal, but Not Photodynamic, Therapy Using a Nanostructured Porphyrin Assembly. ACS Nano. 2013 Feb 12. [Epub ahead of print]

ORT spoke with Cheng Jin, a Ph.D. candidate in Gang Zheng's lab (Techna/OCI), to ask a number of questions about her latest publication.

In which direction do you see this work progressing?

As a proof of the concept, we have confirmed the advantage of PTT over PDT in treating hypoxic tumours and the excellent PTT function of porphysomes. Future studies will investigate the translational applications of porphysome for cancer treatment. In addition, porphysomes are capable for multimodal imaging, including photoacoustic, fluorescence, and even PET imaging when chelated with ^{64}Cu. Therefore, this work further develops porphysomes for image-guided therapy to treat hypoxic tumours, as well as other cancers.

What was your greatest influence and motivation during the course of this work?

Curiosity of developing nanoparticles as novel pharmaceutics, and a passion for translational research provided motivation to pursue this study. Nanoparticles have captured my interest since my undergraduate years. I found it highly interesting to explore the nanostructures and their therapeutic functions. I am also highly encouraged by preclinical studies using this translational research. To be involved in the bench-to-bedside development of porphysomes has been an exciting experience, especially since it gives hope for the development of more effective treatments for hard to treat cancers.

What technical challenges did you encounter and how did you deal with them?

Establishing suitable hyperoxia/hypoxia treatment conditions *in vivo* was really challenging at the start. Fortunately, UHN provides great facilities, support and opportunities to interact with many experienced researchers. As a result, we had a great pool of experience and were able to design and test several approaches before choosing the best.

Author of this summary: Dr. Iris Kulbatski, Science Writer, ORT

alumnus career profile

Dr. Yunghan Au

Patient Access Associate
Eli Lilly Canada

Describe your education and training at UHN.
For my undergraduate degree, I studied Biochemistry at Imperial College London. My field of research was Structural Biology for my PhD at University College London, where I studied muscle proteins. Next, I did a postdoc in Dr. Mitsu Ikura's lab at OCI, where I studied proteins involved in DNA transcriptional regulation. My project at OCI involved a combination of molecular and structural biology to investigate how proteins in the mediator complex interact to control transcription. It was fun to work within such an international institution and I was glad to have access to the world-class facilities at OCI and U of T. After returning to the UK to work in sales for Life Technologies, I studied for my MBA at the University of Cambridge.

What is a Patient Access Associate?
Our department's mission is to enable patients to gain access to the innovative medications Lilly creates from our R&D by seeking reimbursement by public/private payers. To achieve this, we submit a "Health Technology Assessment" dossier for each medication to the appropriate government agency or health insurer. These groups then decide whether or not to fund our medications based on our submission. Currently, I am working on gaining access for our cancer medications.

What is a typical day like for you?
I spend a lot of time researching the burden of disease and how it is currently treated with the aim of understanding how our medications fit in to the current standard of care in Canada and their potential benefits. I do a lot of project management and long-term and short-term planning. One of my current projects is to examine the current standard of treatment in Canada for pancreatic cancer, with the aim of guiding our clinical research scientists in the design phase III clinical trials such that once these studies are complete they will yield relevant results within Canada. Other than that, lots of meetings, emails and general office work!

What is the best part of your job?
Working in a company that truly cares about the needs of our patients and is devoted to improving their lives through innovation. Also, working with the talented people at Lilly Canada; it's been great to converse with cross-functional teams that include medics, pharmacists, seasoned marketers and communicators—people who are all working together to develop products that have the potential to improve patient quality of life.

…..Click here to read the remainder of Yunghan's interview and learn more about what a Patient Access Associate does.

Canadian Society for Molecular Biosciences Annual Meeting

Cellular Dynamics During Development, Regeneration and Cancer

June 3-7, 2013
White Oaks Resort and Spa
Niagara-on-the-Lake, Ontario

Abstract and Early Registration deadline: April 29th

For more information visit: http://www.csmb-scbm.ca meetings/56th_Annual_Conference.aspx

A committee headed by Dr. Senthil Muthuswamy (OCI) is organizing this year's Canadian Society for Molecular Biosciences (CSMB) Annual Meeting. This small conference will bring together experts in experimental model systems and advanced imaging platforms, studying cellular dynamics. The highly dynamic nature of cell biological processes makes essential and pervasive contributions to normal development, regeneration and cancer. Dr James Nelson, a pioneer in cell polarity, will be giving the keynote lecture. This meeting will create an opportunity for discussing the technical and intellectual progress in this field and to highlight future challenges.

Topics include, but are not limited to:

- Super resolution microscopy
- Cell polarity development and cancer
- Cell-microenvironment interactions
- Cytoskeletal dynamics
- Neuronal morphogenesis and development
- Tissue regeneration

The conference offers trainees several exciting opportunities:

- Sessions, provided by GE, Nikon and Zeiss, to inform attendees about new developments in super resolution microscopy
- Workshops to train scientists in super resolution microscopy
- Numerous talks selected from submitted abstracts
- Poster sessions giving trainees an opportunity to share their results and develop collaborations
- Ample social opportunities to network with other scientists

Confirmed Speakers

Keynote: James Nelson (Stanford University)

Shernaz Bamji (UBC)
David Bilder (UC Berkeley)
Gary Brouhard (McGill)
Brian Ciruna (HSC)
Gregory Emery (UdeM)
Andy Ewald (John Hopkins University)
Bo Huang (UCSF)
Ian Macara (Vanderbilt University)
Amy Maddox (UdeM)
Paul Maddox (UdeM)
Keith Mostov (UCSF)
Ben Ohlstein (Columbia)
Bret Pearson (HSC)
David Solecki (St. Jude Children's Hospital)
Josephine Ursini (McGill)
Val Weaver (UCSF)
Steve Weiss (UMich)
Zena Werb (UCSF)
Jeff Wrana (LRI)

UPCOMING EVENTS & FUNDING CALENDAR:

04/23-24 MITACS STEP

Foundations of project management I

Join MITACS for this two-day workshop to learn effective strategies to better organize and complete your work and research. From academia to industry to your personal life, these skills will help you succeed! Click **here** for more information.

04/30 CRS—

Next Generation Scientists Award

The Cancer Research Society (CRS) is pleased to announce the launch of its new program: Scholarships for the next generation of scientists. For more information, click **here**

05/07 Grant Writing Seminar

Julie Mendelson, Ph.D, will be delivering a grant writing seminar for those applying for CIHR grants this year. It will be applicable to all fields, so all are welcome. Location: TRI UC Lecture Theatre. Time: 11am-12pm. Please RSVP to Julie.Mendelson@uhn.ca .

05/14 CPDB Annual Scientific Meeting 2013

The Collaborative Program in Developmental Biology will be holding their annual research retreat at Old Mill Inn. All those interested in developmental biology are welcome. For more information, click **here**.

05/15 TWRI Research Day 2013

Join us to learn about the exciting research trainees are conducting at TWRI. Dr. Daniel Drachman will be delivering the keynote lecture. For more information, click **here**.

Visit www.uhntrainees.ca for more events and funding information.

QUESTIONS?

Please contact:

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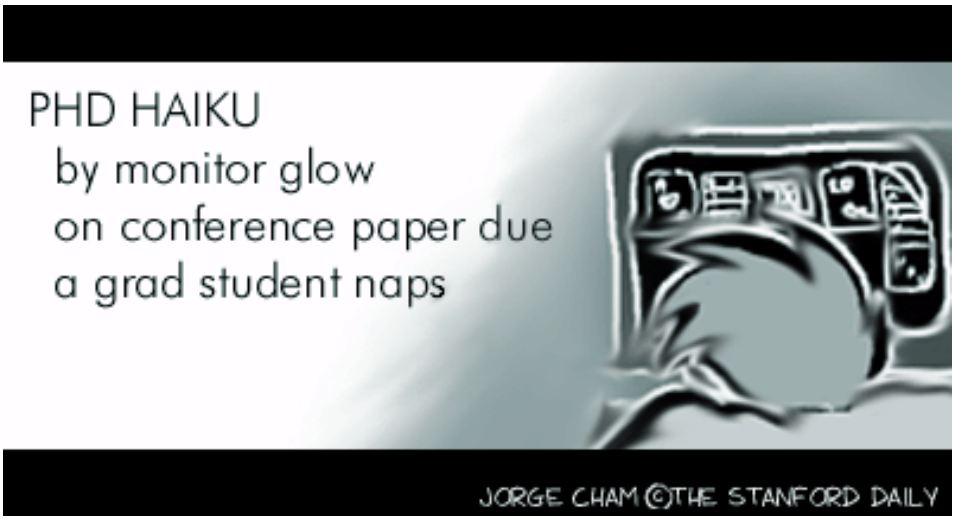
Emporium Latino 243 Augusta Avenue

Carrie-Lynn (ORT) and Crystal Ruff's (PDF @ TWRI) choice

FOOD FOR THOUGHT

Emporium Latino is a small grocery store located in Kensington Market, where you can order hand-made tamales, pupusas and plantain empanadas, best accompanied by a bottle of Jarritos, a brightly-coloured Mexican soft drink. The food is tasty and cheap. Unfortunately, there's only a small seating area at the front of the store that looks out onto Augusta Avenue. Don't forget the hot sauce. Enjoy!

(Photo: Courtesy of C-L Keiski ORT)



"Piled Higher and Deeper" by Jorge Cham www.phdcomics.com