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.

Call for Stories

Would you like to contribute to The ORT Times?

Your story could be featured here! The Office of Research Trainees (ORT) invites UHN Principal Investigators, graduate students and postdoctoral fellows to contribute to its monthly newsletter *The ORT Times*. This is your opportunity to showcase your writing skills and report on issues important to you and fellow trainees. Lab groups are also encouraged to write about their research and scientific discoveries.

The ORT Times features editorials related to trainee life, how to make the most of your research experience at UHN and furthering your career development. Issues also showcase recent awardees, UHN trainee alumni and highlight the contribution of UHN trainees to high impact research publications.

In the past, we have featured contributions to sections including:

- Editorial Series
- Tutorial Series
- Spotlight Series – Training Programs & Shared Facilities
- Trainee Alumni Focus
- Career Profiles
- Latest & Greatest – Recent UHN publications
- Success – Recent Awardees
- In Focus – Spotlight on Trainees and Their Research
- Upcoming Events Calendar

The Editorial Series is a great way to expand your experience in writing and to communicate your ideas to the trainee community. Articles that have been previously featured in *The ORT Times* include: "What is the value of a PhD in today's society?" written by Dr. Megan Nelles in our December issue, and "What is the value of a Postdoctoral Fellow?" written by Dr. Evan Lind in our January issue. Trainees can also share their advice on technical or transferable skill development in our Tutorial Series. To contribute to the Editorial or Tutorial Series, please send us your proposed title and a request for further information.

We are eager to hear from you—Contact The ORT today!

April 2012

Inside this issue....

Spotlight on: UHN's Shared Facilities

The Microarray Centre

The UHN Microarray Centre (UHNMAC) was established in 1998 with the original mandate of supporting genomics research for the Toronto research community. In 2000, we started shipping microarrays to customers in laboratories worldwide. Since starting out as a manufacturer of DNA microarrays, we have evolved to a full-service genomics solution provider. This year, we begin our rebranding to the Ontario Cancer Institute Genomics Centre (OCIGC), a name that we feel demonstrates our larger mandate of supporting genomics rather than simply microarray technologies.

1. What types of research are supported by UHNMAC/OCIGC?

The UHNMAC/OCIGC supports research in virtually any life sciences field. Because we are affiliated with UHN and OCI, health sciences and cancer research have been strong areas of focus.

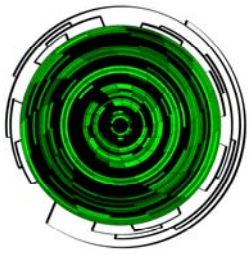
Our group has supported a number of different research areas, including:
- Tumour profiling (solid and hematological malignancies)
- Cardiac disease
- Autoimmune diseases (arthritis, lupus, multiple sclerosis)
- Psychological disorders
- Developmental biology and reproduction
- Drug efficacy and mode of action

2. What services and training opportunities are provided at UHNMAC/OCIGC?

Our services are well-suited to discovery based applications, technology development and custom assay design. The UHNMAC/OCIGC has always taken a position of "platform agnosticism". In this way, we provide a number of complementary platforms and work with customers to decide the most appropriate solution for the task at hand.

Our platforms support a variety of research techniques, including:
- Whole transcriptome gene expression profiling
- Exon and splice variants analyses
- miRNA and ncRNA expression studies
- ChIP-on-chip and DNA methylation
- Comparative genome hybridization
- SNP and genotyping
- Biomarker assay development
- ChIP-seq, Exome-seq, and RNA-seq (coming soon)

We are also equipped to provide custom services, such as:
- Scanning of slide-based and microtitre plate-based microarrays
- Microtitre-plate format plate reading
- Fabrication of protein, reverse-phase and antibody arrays using non-contact inkjet printer



Circular cluster representation showing the degree of homology and expression of protein tyrosine phosphatases across breast cancer cell lines.

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Cont'd. Spotlight on: UHN's Shared Facility

Affymetrix fluidics stations used for processing expression and SNP chips.

The UHNMAC/OCIGC is a *fee-for-service* core facility. We were Canada's first Agilent Certified Service Provider and continue to undergo an annual certification program. We are also authorized service providers for Affymetrix and a core facility for Illumina, NanoString and Luminex xMAP services. Our sequencing services, launching in quarter three of 2012, will be run on the Illumina HiSeq 2000 platform.

In addition to wet-lab services, the UHNMAC/OCIGC provides comprehensive bioinformatics support. Services include preliminary consultation on experimental design as well as data management, storage, analysis and visualization using commercial and in-house tools. Data analysis services can also be provided on data generated at other service facilities. We also assist in the preparation of manuscripts or supporting letters for grant applications.

3. What are the unique features of UHNMAC/OCIGC?

The UHNMAC/OCIGC stands apart from our competition in several ways. First, our laboratory spaces are outfitted with ozone filtering systems to prevent photobleaching of the fluorophores used, which is a common problem in the summer months. This ensures that the data obtained is consistently of high quality year round. We are also technically proficient in the use of very small biological samples, for instance, obtaining full transcriptome profiles from as little as a single cell.

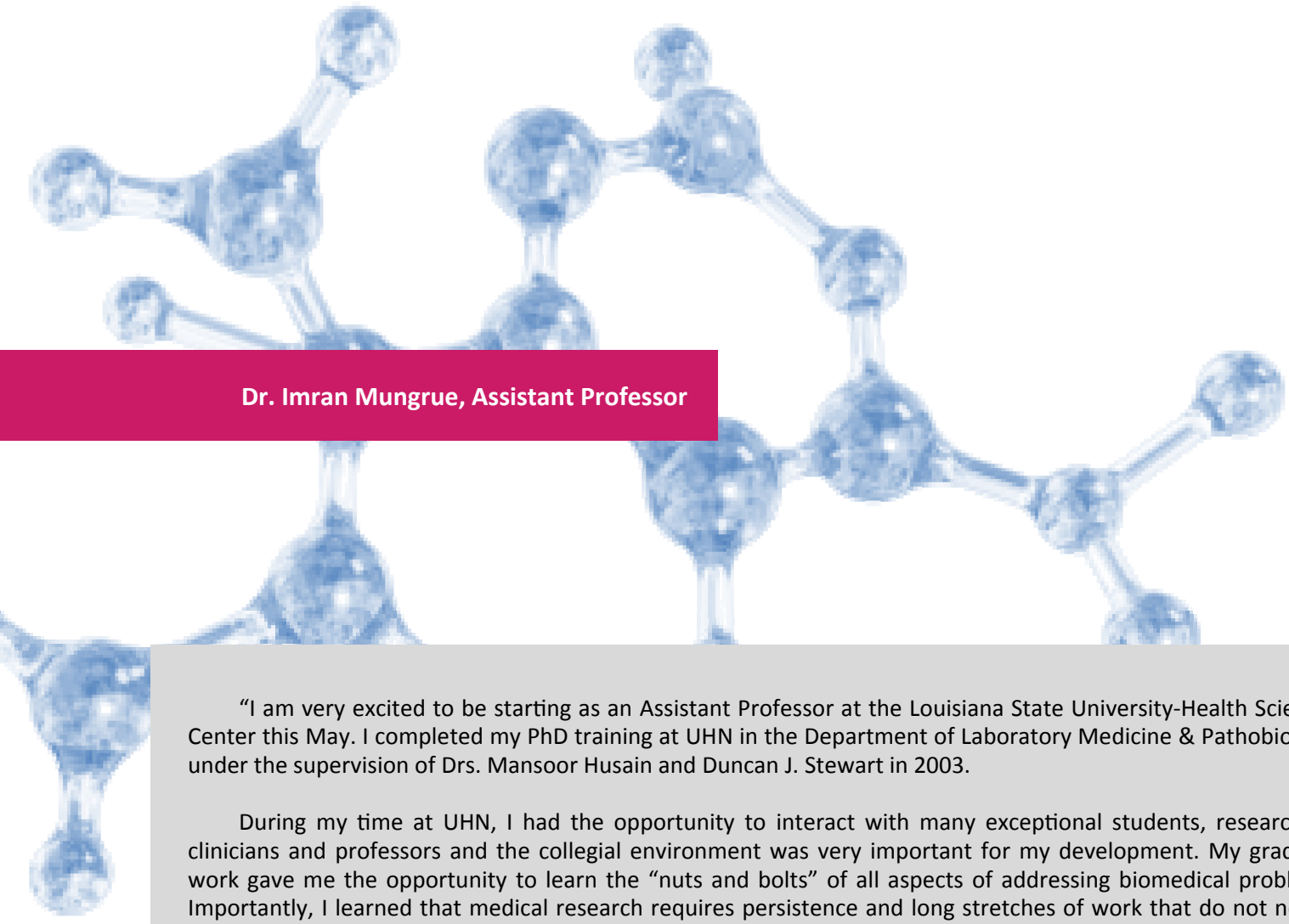
Our position of platform agnosticism also differentiates us. Our initial free consultation with the customer ensures that we choose the best possible platform based on the needs of the researcher. Furthermore, whereas many core facilities restrict themselves to processing samples using only the recommended manufacturer's protocols, we realize that science is continually evolving and that new approaches are sometimes necessary to gain new insights. We therefore tailor our approaches to the question at hand.

We are further differentiated by our integrated bioinformatics group, which provides expert assistance to customers during the experimental design and data analysis phases.

4. How can trainees access and contact MAC?

Information on all our services is available on our website at <www.microarrays.ca> or can be requested by e-mailing us at <geneservice@microarrays.ca>. Our Services Manager, Patrick Yau, can be contacted directly at <pyau@uhnresearch.ca>.

alumni focus



Dr. Imran Mungrue, Assistant Professor

"I am very excited to be starting as an Assistant Professor at the Louisiana State University-Health Sciences Center this May. I completed my PhD training at UHN in the Department of Laboratory Medicine & Pathobiology, under the supervision of Drs. Mansoor Husain and Duncan J. Stewart in 2003.

During my time at UHN, I had the opportunity to interact with many exceptional students, researchers, clinicians and professors and the collegial environment was very important for my development. My graduate work gave me the opportunity to learn the "nuts and bolts" of all aspects of addressing biomedical problems. Importantly, I learned that medical research requires persistence and long stretches of work that do not necessarily lead to immediate results or rewards. I also experienced the satisfaction of generating a body of work that had potential value. Since then, I have had the opportunity to work in two laboratories at the University of California, San Francisco and Los Angeles (UCSF and UCLA), and have been successful in obtaining postdoctoral fellowships and funding from the National Institutes of Health.

I am curious in nature and have always been interested in solving problems for as long as I can remember and I believe that this type of personality is well-suited to a career in the field of research, where one has to work on problems that are daunting, but not impossible. I cherish coming into the lab on a daily basis to solve important problems that may have a great impact, and try not to be disappointed when exciting avenues turn into dead ends. My mentors at UHN were invaluable in developing these traits and, by example, demonstrated the value of perseverance and careful work.

I also try to remind myself that there is life outside of the lab and try to leave it behind for at least short stretches. I enjoy travelling, experiencing different cultures first-hand and in particular, sampling diverse food. I am also a developing runner, having completed my second marathon recently."

latest & greatest

Left: Dr. Douglas Cook
Right: Dr. Michael Tymianski

Treatment of stroke with a PSD-95 inhibitor in the gyrencephalic primate brain

Cook DJ, Teves L, Tymianski M.
Nature, 2012; 483(7388):213-7.
Toronto Western Hospital Research Institute (TWRI)

Strokes, caused by disrupted blood flow in the brain, are the third leading cause of death in Canadians. Given that half of all stroke patients are left impaired or disabled, therapeutic approaches to minimize brain damage are necessary. Although >1,000 experimental therapeutics have shown preclinical promise in cell or rodent models, none have achieved success in human clinical trials. This has led to the belief that the effects of such "neuroprotective" drugs on rodents do not translate effectively to animals with higher-order brains, such as humans and non-human primates.

Renewed optimism is emerging in the field, however, due to a seminal study challenging this view published in *Nature* in March. In this study, led by postdoctoral fellow Dr. Douglas Cook, Lucy Teves, and Dr. Michael Tymianski at TWRI, controlled strokes were induced in cynomolgus macaques as non-human primate models with higher-order brains.

The macaques received either placebo treatment or an experimental therapeutic with promising preclinical data in rodents, administered in several scenarios paralleling how human strokes are treated clinically. The experimental neuroprotectant was an inhibitor of PSD-95, a protein required for propagation of neurotoxic signalling. Remarkably, in all scenarios tested, the PSD-95 inhibitor reduced the volume of damaged brain tissue and preserved neurological function in the macaques following stroke. This positions PSD-95 inhibitors as exciting neuroprotectants meriting evaluation in human clinical trials.

Click here to read.

We asked Dr. Douglas Cook to give us more insight into the project:

ORT: What were the greatest challenges in working with non-human primate models, in comparison with rodents?
DJC: Working with non-human primates is challenging from both technical and personal points of view. From the technical side, non-human primates are intelligent and require close observation, a variety of enrichment activities, opportunities to socialize and play and a diverse diet. From a medical and surgical standpoint, non-human primates require meticulous surgical procedures followed by around-the-clock intensive care, close monitoring and treatment for prevention of post-surgical pain and close collaboration with veterinary staff for all medical issues. Because of these issues, there is a large team of technical staff, veterinarians and researchers that care for the colony. The staff of the UHN Animal Research Centre is exceptional in doing this. From a personal perspective, it is difficult to work with a sentient species as one develops a relationship with the non-human primates after spending hours with them on a daily basis. This is an issue that many of my primatology colleagues both here and in other centres describe and deal with by performing experiments with careful regard to optimizing the subject's comfort, by undertaking experiments that are designed to maximize statistical power and minimize the number of subjects, by reserving these species for work that cannot be done adequately in other species and by only undertaking research in these species when it will have a major impact on human health.

Because the perspective of this work is so interesting, we continued the discussion of the technical aspects of what gave Dr. Cook the confidence to challenge a widely held belief in the field. Click here to continue reading.

UPCOMING EVENTS CALENDAR:

04/12 **Workshop.**
"Communicate effectively with PowerPoint presentations." Event co-hosted by EIRR, MBP, and the ORT. RSVP required.

04/12 **Symposium.**
"New Genomic Approaches for Gene Discovery & Personal Treatment in Cancer". Location: Medical Sciences Building, University of Toronto. Free Registration. Visit website for more info.

04/13 **TWRI Seminar Series.**
Dr. J.G. Burneo from University of Western Ontario will be presenting "The influence of seizures in stroke care" on April 13th as part of the TWRI Seminar Series. TWH, 399 Bathurst St, Rm. WW 2-401.

04/14 **Toronto Rehab Student Award.**
The Mark Rochon Leadership Award in Rehabilitation Sciences for first year of full-time studies in a MSc or PhD program in rehabilitation sciences. Visit TRI for more info.

05/01 **Toronto Rehab Scholarship.**
Toronto Rehab is awarding scholarships for rehabilitation-related research to graduate students with disabilities. Visit TRI for more info.

05/03 **OCI Seminar Speaker Series.**
Dr. Adrian Harris from the University of Oxford will be presenting "Targeting tumour adaptation to hypoxia and enhancement of anti-angiogenic therapy" on May 3rd as part of the OCI Seminar Series. PMH, 610 University Ave, Rm. 6-604.

QUESTIONS?

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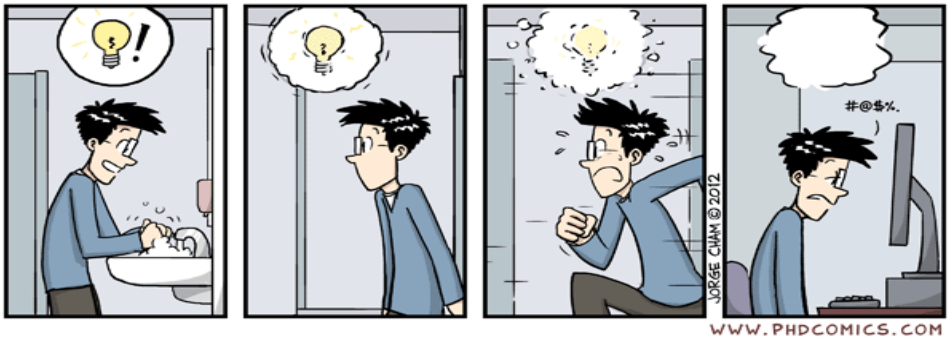
A resource for Postdoctoral Fellows

The National Postdoctoral Association.
The Office of Research Trainees (ORT) is a member of the National Postdoctoral Association (NPA). Located in Washington, DC, the NPA is a member-driven organization that provides a unique, national voice for postdoctoral fellows (PDFs). If you are a PDF at UHN, membership is free.

Benefits of joining:
Joining the NPA not only will give you access to an extensive PDF network but you also will receive a growing number of benefits:
♦ Subscriptions to the NPA E-Alerts, a periodic e-mail announcement, and the POSTDOCket, a quarterly newsletter;
♦ Reduced registration fees to meetings;
♦ Discounts on selected products and services;
♦ Access to members-only web content;
♦ Leadership and professional development opportunities through volunteer service;
♦ NPA's commitment to be your national voice on postdoctoral issues.

For more information, visit: http://www.nationalpostdoc.org/.



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