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Feature article

Looking forward: Career planning with Dr. Philip S. Clifford

By Carolyn Goard

The beginning of each academic year presents trainees with a good opportunity to reflect on their short- and long-term career goals. On July 19th, UHN students and postdoctoral fellows were given a unique opportunity to do this by joining Dr. Philip S. Clifford in an interactive workshop entitled, "Begin with the end in mind - planning for a successful career in science". Dr. Clifford, Associate Dean of the Graduate School of Biomedical Sciences and Professor of Anesthesiology and Physiology at the Medical College of Wisconsin, is an enthusiastic proponent of trainee individual development plans (IDPs), which define achievable goals by guiding trainees toward personally compatible scientific careers.

During the workshop, trainees performed self-evaluations of three key variables – personal skills, values and interests – as applied to careers in the field of science. Many trainees noticed unexpected trends in their responses, identifying skill areas where they would like to improve, and personal values that should be considered when seeking satisfying careers. The next exercise included defining realistic, specific, measurable and time-sensitive goals to propel trainees toward their ideal career. Dr. Clifford closed the session with a discussion of several publications and resources to help trainees achieve their goals, and left many in the audience with a renewed sense of optimism and enthusiasm regarding the challenging but rewarding search for a satisfying science career. Dr. Clifford also announced that an extensive

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online resource for career development and IDPs, called myIDP (<http://myIDP.sciencecareers.org/>) - developed in partnership with ScienceCareers.org - has been launched. Through this portal, trainees around the world are able to create their own IDPs through a similar process as in the UHN workshop and gain access to an extensively curated library of career planning information and resources.

As science evolves, the number of “non-traditional” career opportunities continually increases. By starting the process of career planning and goal setting, trainees are more likely to obtain a position that is personally rewarding. When beginning the career hunt, the message to trainees is clear, as summarized in a trainee response to a workshop video clip, “Help yourself!”



About the author: Carolyn Goard is the interim ORT science writer and a PhD candidate in Dr. Linda Penn's Lab at OCI. Contact info: cgoard@uhnres.utoronto.ca

Continue the Discussion!

If you would like to comment on this article, please visit 'My ORT' at www.uhntrainees.ca

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. 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 idea to ort.admin@uhnres.utoronto.ca. Go to www.uhntrainees.ca for examples of past newsletter issues.

We are eager to hear from you—Contact [The ORT](#) today!

success

recent awardees

CIHR Banting & Best Graduate Scholarship Award

Through the prestigious Banting & Best Graduate Scholarship Award, Mr. Alex Laliberte, a PhD student in Dr. Michael Fehling's laboratory, is able to support his research entitled, "MicroRNA induction of survival increases cell transplantation efficacy in spinal cord injury."

Alex describes his research: "MicroRNAs are small nucleic acids that regulate gene expression in a variety of biological processes. MicroRNA expression is rich in the spinal cord, a feature that changes following traumatic injury. The goal of this study is to use pro-survival and pro-homeostatic microRNAs to improve the viability of endogenous and transplanted cells in the toxic environment resulting from spinal cord trauma."



Graduate Student: Alex Laliberte
(PhD Candidate)
Supervisor: Dr. Michael Fehlings, TWRI

CIHR Fellowship



Postdoctoral Fellow: Dr. Gloria Lin
Supervisor: Dr. Tak W. Mak, CFIBCR/OCI

Dr. Gloria Lin, a Postdoctoral Fellow in Dr. Tak Mak's laboratory at the Campbell Family Institute for Breast Cancer Research (CFIBCR), was recently awarded a Canadian Institutes for Health Research (CIHR) Fellowship for her research entitled, "Identification and cloning of the biological receptors for B7-H3 and B7-H4."

Describing her work, Dr. Lin explains: "B7-H3 and B7-H4 are co-inhibitory ligands that are widely expressed on tumor cells. Increased expression of these molecules correlates with poor prognosis and low lymphocyte infiltration. Although many studies have demonstrated their negative roles in modulating T cell responses, their cognate receptors remain unknown. My research goal is to identify the physiological receptors for B7-H3 and B7-

Canadian Breast Cancer Foundation Fellowship

Dr. Paul Sobol, a Postdoctoral Fellow in Dr. Linda Penn's laboratory at OCI, was recently awarded a fellowship from the CBCF for his research entitled, "Investigating a role for the mevalonate pathway and isoprenoid biosynthesis in breast cancer."

Dr. Sobol describes his research: "Although the contributions of metabolic signaling pathways towards cellular transformation have been appreciated for many years, the specific roles they play in oncogenic signaling are not yet fully understood. One such metabolic pathway is the mevalonate (MVA) pathway, which is required for the generation of isoprenoids, cholesterol and other endproducts necessary for oncogenic signaling by Ras-related Rho GTPase family members. I am interested in researching how the MVA pathway promotes cellular transformation and how statins, which target the MVA pathway, can be exploited as effective chemotherapeutics."



Postdoctoral Fellow: Dr. Paul Sobol
Supervisor: Dr. Linda Penn, OCI

success

recent awardees

OSOTF UNILEVER/LIPTON Awardees



The ORT is pleased to announce the recipients of the 2012-2013 Ontario Student Opportunity Trust Funds (OSOTF) Unilever/ Lipton Graduate Fellowship in Neuroscience. Thanks to Dr. Charles Tator's stewardship, funds were made available from Unilever/Lipton to support graduate students in Neuroscience at UHN. Congratulations to our Awardees!

Awardees (from Left to Right):

- ◆ Gray Moonen— MSc program, Dr. Charles Tator Lab, TWRI; "Optimal differentiation of neural stem progenitor cells *in vitro* towards a specific lineage promotes survival of transplanted cells in the injured spinal cord"
- ◆ David Qixiang Chen—MSc program, Dr. Mojgan Hodaie Lab, TWRI; "Altered diffusivity of the trigeminal fibers in multiple sclerosis related trigeminal neuralgia"
- ◆ Tamjeed A. Siddiqui—PhD program, Dr. Lyanne C. Schlichter, TWRI; "Microglia podosomes: Components, regulation and potential role in migration"
- ◆ Danielle D. DeSouza—PhD program, Dr. Karen Davis Lab, TWRI; "Evaluating the analgesic effects of gamma knife radiosurgery on trigeminal neuralgia using structural MRI and quantitative sensory testing"
- ◆ Luka Srejc—PhD program, Dr. William D. Hutchison Lab, TWRI; "Neurophysiology of the subcallosal cingulate and medial prefrontal cortices in depressed human and normal rodent"
- ◆ Kevin Sam—PhD program, Dr. David Mikulis Lab, TWRI; "Impaired vascular autoregulation in the cerebral white matter predicts future leukoaraiosis"

Missing:

- ◆ Mr. Nicolas Howell—MSc program, Dr. William D. Hutchison Lab, TWRI; "Reward modulated activity of human globus pallidus interna and subthalamic nucleus neurons"
- ◆ Mr. Vladislav Sekulic—MSc program, Dr. Frances Skinner Lab, TWRI; "Using model databases to determine dendritic distributions of I_h channels in oriens-lacunosum/moleculare hippocampal interneurons"

conference reports

ORT Conference Travel Awardees

This section of The ORT Times includes research highlights from recent ORT Conference Travel Awardees. In this issue, read about the latest advances in glaucoma, pancreatic cancer, and head and neck cancer. Learn about the latest technologies in stem cell research and the state-of-the-art research on the application of lasers in biological and medical sciences.

Dr. Kinga Szydłowska is a Postdoctoral Fellow at the TWRI Neuroprotection Lab, led by Dr Michael Tymianski. She attended the XX Biennial Meeting of the International Society for Eye Research in Berlin, Germany (July 21st-25th, 2012). Dr Szydłowska was invited to give a talk regarding use of the novel PSD-95 inhibitor, NA-1, in *in vitro* and *in vivo* glaucoma models.

[Click here to read her report on recent advances in glaucoma.](#)

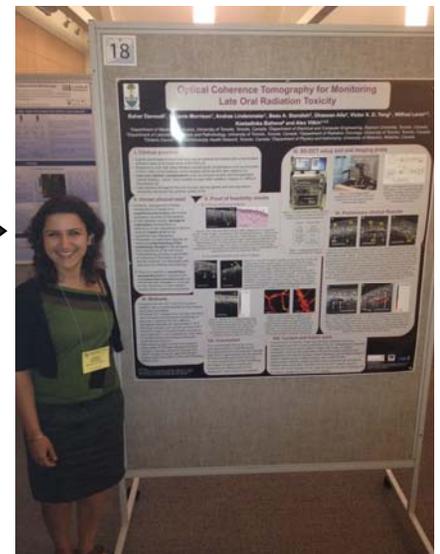


Dr. Qing Chang is a Postdoctoral Fellow in Dr. David Hedley's laboratory who recently attended the American Association for Cancer Research (AACR) special conference "Pancreatic Cancer: Progress and Challenges" in Lake Tahoe, Nevada. She presented an abstract entitled, "Targeting Wee1 in primary pancreatic cancer xenografts."

[Click here to read about what she finds intriguing about the latest discoveries in pancreatic cancer.](#)

Ms. Bahar Davoudi, a PhD candidate in Dr. Alex Vitkin's laboratory at OCI, recently attended the Gordon Conference: Lasers in Medicine and Biology in New Hampshire.

[Click here to read about the world wide state-of-the-art research on the application of lasers in biological and medical sciences.](#)

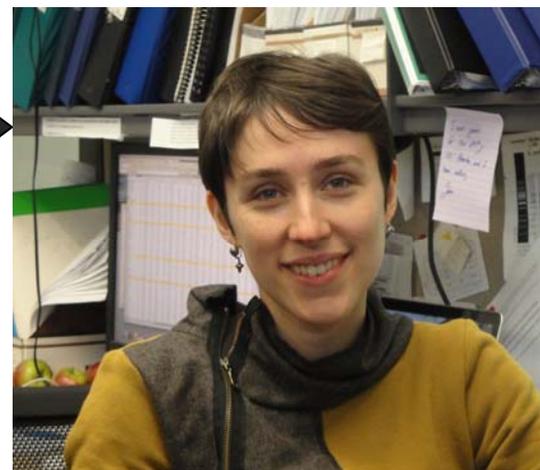


conference reports

CONT'D.....ORT Conference Travel Awardees

A Postdoctoral Fellow in Dr. John Dick's laboratory at OCI, Dr. Elisa Laurenti presented her research findings to international experts at the Quantitative Stem Cell Biology conference in a presentation entitled: "High resolution transcriptome of the early human hematopoietic hierarchy identifies novel lymphoid lineage determinants."

Find out here what how new technologies are being used to capture the dynamics of stem cell biology.



Lusia, a graduate student in Dr. Thomas Kislinger's laboratory at OCI, recently attended the 8th International Conference on Head and Neck Cancer held in Toronto. Lusía's abstract titled "Integrated Proteomic and Transcriptomic Profiling of Head & Neck Cancer Cell Lines" describes research done by her and her colleagues on the identification of secreted biomarkers for head and neck squamous cell carcinoma. Their findings have recently been published in the Journal of Molecular and Cellular Proteomics (PMID: 22918226).

[Click here to read the latest developments in head and neck cancer.](#)

Spotlight on: Advanced Optical Microscopy Facility (AOMF)

By James Jonkman, Manager of AOMF

UHN's AOMF is Canada's largest optical microscopy facility and one of the largest in the world. With over 30 instruments between the TGH and PMH sites, the AOMF's 4 staff members are equipped to help you with nearly any optical microscopy application including:

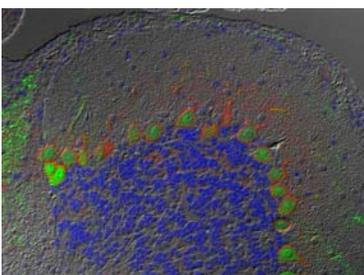
- **Widefield fluorescence** for routine imaging of live and fixed cells and tissues
- **Confocal/Multiphoton** for high resolution optical sectioning and 3D imaging
- **Spinning Disk Confocal** for fast live-cell imaging
- **Phase Contrast/DIC/Darkfield** including cell tracking and wound healing
- **Whole slide scanning/tiling** for virtual microscopy and whole tissue quantification
- **Laser Capture Microdissection** for extracting single cells or small tissue sections of interest
- **TIRF (Total Internal Reflection Fluorescence)** microscopy for high resolution imaging of near-surface phenomena
- ***In vivo* bioluminescence and fluorescence** for non-invasive small animal imaging
- **Intravital imaging** including window chamber models
- **Laser Scanning Cytometry** for high content image acquisition and analysis

Our 4 image analysis workstations are equipped with:

- **ImagePro Analyzer, Metamorph, and ImageJ** for routine 2D image processing and analysis
- **Imaris and Volocity** for 3D visualization and quantitation
- **Aperio's Genie Pattern Recognition software** and **advanced algorithms** for whole slide histological quantification
- **Illustrator, Photoshop, and Powerpoint** for formatting images and movies for publications and presentations

The AOMF places a particular emphasis on teaching and training. We'll help you get started with our one-on-one Fundamentals of Microscopy course; teach you how to run specific microscopes such as the confocals; and finally show you how to analyze and format your images to generate quantitative data and images for presentations or publications. Thoroughly immerse yourself in microscopy with our week-long comprehensive course on Fluorescence Microscopy, or join us for our monthly Optical Microscopy Users Group (O-MUG) meetings.

Get started today by booking a free tour and consultation with one of the AOMF staff. For full details and contact info, visit: www.aomf.ca.



Mouse cerebellum, labeled with Alexa594-IP3R (red); Alexa488-Calbindin (green); and DAPI (blue). The green and red labeling are specific to Purkinje cells.
(Sample courtesy of Fuzi Jin)

alumni focus



Dr. Jesse Gillis, Assistant Professor
Cold Spring Harbor Laboratory



“I’m excited to have just joined the prestigious Cold Spring Harbor Laboratory in Long Island, New York this June as an Assistant Professor of Computational Genomics. While working on my undergraduate degree in Biophysics at the University of Toronto, I had the good fortune to meet Dr. Frances Skinner from TWRI, who was my supervisor throughout my graduate training. Working under her supervision at UHN, I received an MSc in 2003 and a PhD in 2007 in Computational Neuroscience.

My graduate work involved close collaboration with the lab of Dr. Liang Zhang, also at UHN in TWRI, and I think the valuable interaction between the two labs typifies one of the strengths of UHN, which is the possibility for collaboration. Productive collaboration requires not just a collegial atmosphere but a real investment in developing a joint perspective; otherwise, it’s just two separate but related pieces of work stitched together. I learned the most as a graduate student from hearing Frances and Liang discuss ways of bridging the computational-experimental divide. And in general, I always felt at UHN that there was a strong interest in integrating disparate ideas; something I particularly appreciated as a computationally inclined student.

After my time at UHN, I was twice lucky, and joined the lab of Dr. Paul Pavlidis, at UBC, as a Postdoctoral Fellow where I had been until recently, working in computational biology with a focus on gene networks and neuropsychiatric disease (particularly schizophrenia). While there are research themes continuing from my time at UHN until now, I think the most important aspect during my time at UHN was gaining an appreciation of the degree to which research is a communal activity: collaboration, talks, lab meetings, conferences, poster sessions, etc, all play a critical role in keeping you pointed in the right direction in your field, and serve as the best source of inspiration for ongoing work. It’s nice to know UHN students and Postdoctoral Fellows will continue to enjoy a research environment that will engender the same appreciation in them.”

latest & greatest



Electrophysiological correlates of changes in reaction time based on stimulus intensity

Lakhani B, Vette AH, Mansfield A, Miyasike-daSilva V, McIlroy WE.

PLoS One 2012;7(5):e36407

Toronto Rehabilitation Institute (TRI)

Whether one is quickly retracting their hand from a hot surface, or exploding out of the blocks at the start of a race, reaction time is a neurophysiological feature many would like to preserve, if not improve. Reaction time in response to a controlled stimulus is often used as a proxy measure for the integrity of the central nervous system (CNS). This can vary due to several factors, including age-related neurodegeneration or neuronal injury such as that caused by strokes. Reaction time is also known to vary in response to stimuli of different intensities. One outstanding research question has been how much time is needed for the CNS to process a stimulus and coordinate a motor response i.e. processing time and what contributes to this reaction time.

Bimal Lakhani, a PhD candidate in Dr. William McIlroy's laboratory at TRI, has been advancing our understanding of the sequence of sensory and

motor events in the cerebral cortex during simple reaction time tasks. In a report published in the July issue of PLoS One, the group used electroencephalography (EEG) and electromyography (EMG) techniques to study sensory and motor activity, respectively, in volunteers subjected to such a task. A nerve in the subject's non-dominant hand was electrically stimulated, signalling them to press a button as quickly as possible with the other hand. As expected, a stimulus of higher intensity was associated with a faster reaction time. Interestingly, differences in responses to low- or high-intensity stimuli did not seem to be reflective of a faster sensory processing time but rather differences in subsequent motor activity. This could be due to differences in motor preparation or planning and execution.

From this study and further work, Bimal and Dr. McIlroy hope to improve the ability to interpret changes in reaction time caused by aging and disease, and possibly identify rehabilitation strategies to combat these changes.

[Click here to read the full article.](#)

We contacted Bimal to further discuss the implications of this work.

ORT: [What implications might this work have on rehabilitation opportunities?](#)

BL: The ability to react quickly in potentially threatening situations is an extremely important one. In particular, stepping and reaching responses to external balance disturbances have been a keen area of study for our lab due to their ability to be generated in an extremely rapid timeframe, while maintaining a sophisticated level of spatial control. We have previously demonstrated that individuals who have suffered a stroke are typically delayed in their ability to generate these important balance responses and this may be linked to an increased risk of falling. The current work, along with future investigations, intends to uncover the central nervous system mechanisms associated with rapid responses in healthy young adults in order to aid in the development of novel intervention strategies to assist with speeded responses in individuals with stroke and brain injury.

ORT: [What are the major outstanding questions that arise from this work?](#)

BL: Although we were able to determine that the immediate sensory pathway is not likely altered in response to a high intensity stimulus, a number of questions arose regarding the propagation of that stimulus information throughout other motor cortical centres. We are currently interested in systematically assessing how particular characteristics of a stimulus affect reaction time and where along the sensorimotor pathway changes occur. Motor cortical centres are likely involved in the transformation of the sensory stimulus, but how they are involved remains an outstanding question. Reaction time is frequently cited as an indicator of sensorimotor tract integrity and gaining a better understanding of the mechanisms behind the generation of reaction time is a critical step towards decoding the delayed responses observed in individuals with brain injury.



UPCOMING EVENTS & FUNDING CALENDAR:

09/21 **CIHR Travel Awards.**
Through the Institute Community Support (ICS) Program, the CIHR Institutes are launching the ICS Travel Awards competition for students, postdoctoral fellows, new investigators and knowledge users. See the CIHR website for more details.

10/01 **Career Awards for Medical Scientists.**
Through the Burroughs Wellcome Fund, this grant provides \$700,000 over five years to bridge advanced postdoctoral/fellowship training and the early years of faculty service. For more details, click here.

10/01 **Postdoctoral Fellowship.**
Provided by the Cancer Research Institute-Irvington, this fellowship program supports qualified young scientists around the world who wish to receive training in cancer immunology. For more details, click here.

10/01 **CIHR Fellowships.**
CIHR is offering a highly competitive fellowship for post-PhD or post-health professional degree stages. See the CIHR website for more information.

10/04 **SSHRC Postdoctoral Fellowship.**
The Social Sciences & Humanities Research Council (SSHRC) Postdoctoral Fellowships support recent PhD graduates who are undertaking original research in any discipline, thematic area, and approaches eligible to SSHRC funding. For more information, click here.

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

QUESTIONS?

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Acknowledgements: C. Goard, PhD Student and ORT Science Writer



The ORT encourages trainees and scientists to send us pictures of the lab, departmental events, or eye-catching scientific images. Your submission may appear in *The ORT Times'* next issue.

(Photo: Courtesy of C. Bros, Penn Lab, OC/PMH)

Summer's almost over!
Time to check...

YOUR SUMMER TO DO LIST

THAT ONE THING YOU DID AT THE BEGINNING OF SUMMER.

STUFF YOU FORGOT YOU HAD TO DO.

STUFF YOU WOULD HAVE DONE IF YOU HADN'T TAKEN UP A NEW HOBBY THIS SUMMER.

STUFF YOU HAD NO CHANCE OF GETTING DONE.

STUFF YOU COULD HAVE DONE... BUT DIDN'T.

STUFF YOU ARE WAITING ON OTHERS TO DO.

STUFF YOU DIDN'T REALLY WANT TO DO.

STUFF THAT IS NOW IN YOUR FALL TO DO LIST.

- Submit reimbursement claim for last year's conference.
- Clean up desk area
- Calibrate instrument
- Sort reference papers
- Finish draft of chapter
- Work on seminar presentation
- Resubmit rejected paper(s)
- Start class notes
- Literature review
- Design new data analysis
- Roam around and click on things on the internet
- Scrap old lab equipment
- Install new operating system
- Eat well, sleep
- Become more organized
- Investigate jobs outside academia
- Learn LaTeX/SAS/Python
- Graduate

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