Canadian Society for Pharmacology & Therapeutics (CSPT)
Pre-Conference Course in Pharmacogenomics and Precision Medicine:
Focus on Clinical Implementation.

June 11, 2019
Calgary, Alberta

Course Coordinators:
Bruce Carleton, Professor, Faculty of Medicine, UBC (bcarleton@popi.ubc.ca)
Colin Ross, Assistant Professor, Faculty of Pharmaceutical Sciences, UBC (colin.ross@ubc.ca)

Content:

This highly interactive course is intended to involve participants in:

- A dynamic didactic experience of the foundational principles of pharmacogenomics.
- An appreciation for the different methods used in pharmacogenomics research.
- Examination of real-world examples of pharmacogenomics.
- Application of methodology to designing pharmacogenomics studies.
- Interpretation of the data found in the pharmacogenomics literature, and understanding wider implications of the results for implementation into clinical care.

Educational objectives:

- To understand the genetic and pharmacogenomic terminology and how cellular and molecular biology informs pharmacogenomic studies at the level of analysis.
- To better understand the study design and methodologic approaches, their strengths and weakness used in pharmacogenomics.
- To understand the latest statistical approaches used in pharmacogenomics studies.
- To understand the role that pharmacogenomics can play in pharmacovigilance.
- To understand how pharmacogenomics relates to the current focus of Personalized Medicine
- To have an overview of clinical utility of pharmacogenomics and associated regulatory issues as well as policy-relevant research, including policy relevant to Big Data

BRING YOUR COMPUTER FOR THE AFTERNOON SESSION.
There will be a hand-on workshop with genomic databases!

SCHEDULE 2019

Session 1: Pharmacogenomics - From Discovery to Validation
(Moderator: Bruce Carleton)

12:30-12:40 pm	**Welcome and Introduction to the Course** Bruce Carleton, Colin Ross (University of British Columbia)
12:40-1:10 pm	**Precision Medicine in Alberta** Jon Meddings (University of Calgary)
1:10-1:40 pm	**From *A*lleles to *Z*ygosity, an A to Z Introduction to Genomics** Colin Ross (University of British Columbia)
1:40-2:10 pm	**Pharmacogenomics Success Stories** Michelle Hildebrandt (The University of Texas MD Anderson Cancer Center)
2:10-2:40 pm	**Validation of Pharmacogenomic Discoveries** Amit Bhavsar (University of Alberta)
2:40-3:00 pm	***Coffee Break***

Session 2: Working with the Data
(Moderator: Colin Ross)

3:00-4:30 pm	**Pharmacogenomic Tools and Resources** Britt Drögemöller, Galen Wright (University of British Columbia)
4:30-4:50 pm	***Break***

Session 3: Implementation of Pharmacogenomics
(Moderator: Amit Bhavsar)

4:50-5:20 pm	**Challenges and Opportunities of Pharmacogenomics in Drug Risk Assessment: Why Pharmacogenomics Helps Us Treat Patients Better** Bruce Carleton (University of British Columbia)
5:20-5:50 pm	**Comparative Pharmacogenomics in Practice** Alastair Cribb (University of Calgary)
5:50-6:20 pm	**Clinical Utility and Clinical Adoption: A Real-World Example of Fetal Trisomy Testing and Pharmacogenomics** Jorge Ganopolsky (Dynacare Laboratories)
6:20-6:50 pm	**Real World Pharmacogenomic Examples and Case Reports** Bruce Carleton, Rod Rassekh, Reo Tanoshima (University of British Columbia), Greg Guilcher (University of Calgary)
6:50-7:50 pm	**Networking Dinner** Dinner with an Alberta colleague to discuss your work and collaborations
7:50-8:00 pm	**Closing remarks** Bruce Carleton, Colin Ross (University of British Columbia)

COURSE FACULTY BIOS (Alphabetical)

Amit Bhavsar, PhD
Amit Bhavsar is an Assistant Professor in the Department of Medical Microbiology and Immunology at the University of Alberta. He is a Canada Research Chair (Tier 2) in Functional Genomic Medicine and his research aims to improve the safety of childhood cancer treatment. His group uses *in vitro* and *in vivo* models to study the biological mechanisms that link pharmacogenes and adverse drug reactions, with the goal of developing novel therapies that prevent chemotherapy ADRs while preserving anti-cancer effectiveness.

Bruce Carleton, PharmD, FISPE
Bruce Carleton is Professor and Chair, Division of Clinical Pharmacology, Department of Pediatriics, University of British Columbia. He is a Senior Clinician Scientist at the BC Children's Hospital Research Institute. He is also the CEO of the Canadian Pharmacogenomics Network for Drug Safety. He has a keen interest in advancing the safe and effective use of drugs, particularly in children. He is passionate about caring for kids.

Alastair Cribb, DVM PhD
Alastair Cribb is Professor of Clinical Pharmacology in the Faculty of Veterinary Medicine and adjunct professor in the Faculty of Medicine at the University of Calgary. Dr. Cribb's primary research interests are in the molecular basis of individual and species difference in response to drugs and other xenobiotics. He has a particular interest in idiosyncratic drug reactions.

Britt Drögemöller, PhD
Britt Drögemöller is a postdoctoral fellow at the Canadian Pharmacogenomics Network for Drug Safety, University of British Columbia. Britt's research is focused on employing bioinformatic analyses to interrogate high throughput pharmacogenomic data to facilitate the identification genetic variants that contribute to the development of severe adverse drug reactions caused by cancer treatments. The identification of these variants allows for the ability to predict which patients are at risk of experiencing adverse drug reactions before therapy begins so that alternate treatment strategies can be considered in these patients.

Jorge Ganopolsky, PhD
Dr. Ganopolsky is Manager of Scientific Affairs at Dynacare Next. Dr. Ganopolsky works in the development and commercialization of specialized diagnostic tools for personalized medicine in order to provide actionable solutions for patients and healthcare providers. He has performed research in blood coagulation, inflammation, wound healing and in the role of the microbiome in metabolic disorders both in academia and industry settings.

Greg Guilcher, MD, FRCPC, FAAP
Dr. Guilcher is an associate professor of oncology and pediatrics at the University of Calgary. His clinical and research focus is hematopoietic cell transplantation (HCT) for leukemia and non-malignant diseases. He also studies acute and late effects of oncologic and HCT therapies. He serves as the Co-Chair of the HCT Late Effects Taskforce for the Children's Oncology Group and the Vice Chair of the Board of Directors and Clinical Operations for the Sickle Transplant Alliance for Research (STAR). STAR aims to make HCT safer and more accessible for sickle cell disease.

Michelle Hildebrandt, PhD
Michelle Hildebrandt is an Assistant Professor of Epidemiology at MD Anderson Cancer Center. She received her Ph.D. in Molecular Pharmacology and Experimental Therapeutics from the Mayo Clinic training under Dr. Richard Weinshilboum. Her research program focuses on identifying genetic and phenotypic factors associated with outcomes following cancer diagnosis, including treatment-related late-effects. She directs two parallel epidemiology follow-up studies to investigate risk and outcomes long-term childhood cancer survivors. These efforts bridge epidemiology and clinical research in the growing cohort of survivors to basic/laboratory-based studies of anthracycline-response in induced pluripotent stem cell (iPSC)-derived cardiomyocytes.

Jonathan Meddings, MD, FRCPC, FCAHS
Jon Meddings is currently Dean of the Cumming School of Medicine, University of Calgary. He has been honoured with several awards and distinctions for his research innovations in celiac disease, inflammatory bowel disease and bowel permeability. He is dedicated to excellence in research and education, and improving patient care in Calgary and beyond.

Colin Ross, PhD
Colin Ross's research aims to save and improve the lives of patients by developing new safer and more effective therapeutic options for patients based upon an individual's genetic blueprint. Adverse drug reactions are a striking problem. In the treatment of childhood cancer, for example, 42% of patients develop permanently disabling or life-threatening adverse drug reactions (ADRs) from their treatment. Dr. Ross's research program is developing new strategies for safer, genome-guided, therapeutics through ADR-predictive pharmacogenomic tests and novel ADR-protective interventions.

Reo Tanoshima, MD, PhD
Reo Tanoshima is a research associate at the Canadian Pharmacogenomics Network for Drug Safety (CPNDS), University of British Columbia. As a pediatric oncologist and clinical pharmacologist, his research interests include pediatric clinical pharmacology, pharmacokinetics, precision medicine, and clinical implementation of pharmacogenomics, especially for oncology medications.

Galen Wright, PhD
Galen Wright is a Postdoctoral Research Fellow at the Canadian Pharmacogenomics Network for Drug Safety, University of British Columbia. He is interested in applying novel computational approaches to analyze large pharmacogenomic datasets in an effort to identify robust clinical biomarkers of treatment outcomes. His current research projects include investigating serious adverse drug reactions caused by chemotherapeutic agents and medications used to treat neurologic conditions.