Program – APCaRI Fall Symposium 2017
Oct. 27-28, 2017
Banff Park Lodge, Alberta

Friday, October 27, 2017 (*Black Bear Room)*
2:00 – 2:20 pm Welcome and Introduction (John Lewis)

Proteomics, Genomics, and Prostate Cancer

2:20 – 3:10 KEYNOTE: Prostatic proteases - Hannu Koistinen PhD (Adjunct Professor, PI, Academy Research Fellow at Haartman Institute, University of Helsinki)

3:10 – 3:30 *Break*

3:30 – 4:00 Understanding the role of zyxin in cell proliferation - Trushar Patel, PhD (Assistant Professor at University of Lethbridge - Dept of Microbiology, Immunology & Infectious Diseases)

4:00 – 4:30 Mutational profile of circulating and metastatic single prostate cancer cells - Juan Jovel, PhD (D of Medicine, U of A)

4:30 – 5:00 Targeting ATM-deficient tumours with PARP inhibitors - Susan Patricia Lees-Miller, PhD (Professor, D of Biochemistry and Molecular Biology, Oncology and Biological Sciences, U of Calgary)

5:00 – 5:30 Characterizing novel genetic signatures and biomarkers in prostate cancer: update toward clinical implementation - Tarek Bismar, MD (Professor, D of Pathology and Laboratory Medicine, U of Calgary)

Short talks

5:30 – 5:40 GARS and SRRT: novel potential driver genes for aggressive prostate cancer - Hatem Abou-Ouf, PhD (D of Pathology and Laboratory Medicine, U of Calgary)

5:40 – 5:50 Intravital discovery of miRNA drivers of human cancer cell directional invasion – Konstantin Stoletov, PhD (D of Oncology, U of Alberta)

6:10 – 11:00 *Cash bar – Dinner – Poster Session - Networking (Glacier Salon)*

Saturday, October 28, 2017 (*Black Bear Room)*
8:00 – 8:30 am Breakfast Buffet (Carve Mountain Grill)

Cancer Therapy, Drug Delivery & Theranostics

8:30 – 8:50 Silicon/Fluorine-18/PSMA: A winning team for PET imaging of prostate cancer – Frank Wuest, PhD (Professor, D of Oncology, U of Alberta)

8:50 – 9:10 Stabilized fluorescent ghrelin for cancer imaging - Len Luyt, PhD (Professor, D of Oncology, Western University)

Short Talks

9:10 – 9:20 Development and characterization of nanospheres loaded with nanoscintillators and photosensitizers for photodynamic therapy in prostate cancer management - Jayeeta Sengupta, PhD (D of Oncology, U of Alberta)

9:20 – 9:30 Enhancing reproducibility of microflow cytometry data processing by standardizing light scatter and fluorescence signals - Robert Paproski, PhD (D Oncology- U of Alberta)

9:30 – 9:45 Ultrasound Enhanced Fusogenic p14-LNP Drug Delivery and PSMA Targeted Magnetic and SERS Nanoparticles for Liquid Biopsy Applications – Pradyumna Kedarisetti BSc. (Electrical & Computer Engineering, University of Alberta)

9:45 – 9:55 Clinical Outcomes and Late Toxicity of Hypofractionated Intensity-Modulated Radiotherapy for High-Risk Prostate Cancer - Michael H. Wang, MD (Division of Radiation Oncology, U of Alberta)

9:55 – 10:05 CR42-24, a Novel Colchicine Derivative, As a Therapeutic For Bladder Cancer - Clayton Bell BSc. (D of Oncology and Science, U of Alberta)

10:05 – 10:15 Comparison of post-radiotherapy Prostate Specific Antigen (PSA) drop kinetics between external beam radiotherapy and brachytherapy – Deepak Dinakaran, MD (D of Oncology, U of Alberta)

10:15 – 10:25 Suicide gene therapy as a treatment for prostate cancer - Douglas Brown, BSc. (D of Oncology, U of Alberta)

10:25 – 10:40 Break

Biomarkers, metastasis and Clinical Cohorts

10:40 – 11:30 KEYNOTE: Not all extracellular vesicles are the Same: from Function to Biomarker. Dolores Di Vizio, MD, PhD (Associate Professor of Surgery and Pathology, Cedars-Sinai Medical Center and UCLA)

11:30 – 12:00 Moving beyond pixie dust to pixel math: leveraging image analysis to predict clinical outcome - Andries Zijlstra, PhD (D of Cancer Biology, Vanderbilt University)

12:00 – 12:30 New sights into the role of PSA and the related prostatic KLK peptidases in the prostate tumour microenvironment - Judith Clements, PhD (School of Medicine, University of Queensland)

12:30 – 1:40 Lunch & Team picture (La Terraza)

1:40 – 1:50 Advancements and new opportunities in microflow cytometry - Desmond Pink, PhD (D of Oncology, U of Alberta)

1:50 – 2:20 John Lewis, PhD (D of Oncology, U of Alberta)

2:20 – 2: 50 Updates on Alberta PCa Cohorts: Registry & Biorepository, Catalina Vasquez (Dept. Onc., UofA)

2:50 – 3:10 Break

Commercialization

3:10 – 3:30 Don’t let your IP grow legs and walk out the door: strategies for capturing IP in an academic setting - Christopher Bown, PhD (Gowling LLP)

3:30 – 4:00 Discussion, closing remarks and adjourn

Executive and Science & Data Quality Committee meeting *(Crave Private)*

4:30 – 6:00 Executive Committee and Science and Data Quality Committee meeting

6:00 – 7:00 Dinner for committee

Invited Scientists

Hannu Koistinen, PhD

Adjunct Professor, PI, Academy Research Fellow at Haartman Institute, University of Helsinki

During my doctoral thesis I identified diverse tissue specific glycoforms of glycodelin. Our findings demonstrated that the glycodelins represent one of the foremost examples of how glycosylation dictates the function of a glycoprotein. Recently, my group went on to show that glycodelin differentiates endometrial cancer cells towards a less aggressive phenotype, resulting in reduced tumor growth in a preclinical animal model. Our glycodelin studies have generated 54 publications in journals such as Endocrine reviews and Diabetes. Four of these papers have been cited >100 times. After finishing my D.Sc. degree, I worked in GlaxoSmithKline (UK) as a Postdoctoral Research Fellow for 2.5 years. In addition to scientific work, which resulted in a discovery of a potential novel mechanism for amyotrophic lateral sclerosis, this exposure to the drug discovery process will be helpful when research innovations are translated to the benefit of patients. Both my D.Sc. work and postdoctoral period resulted novel findings that were unexpected by the prior art and could offer novel diagnostic and treatment opportunities.

During the last 13 years, as a senior scientist in Department of Clinical Chemistry, University of Helsinki, my main research focus has been on the functions and diagnostic potential of prostatic proteases PSA and KLK2. So far this has yielded three successfully completed doctoral theses and some 30 publications. We showed that the antiangiogenic activity of PSA is dependent on its proteolytic activity. We have developed small molecule- and peptide-based stimulators of PSA activity, aiming to slow down prostate cancer growth. Currently, in an international collaboration which I coordinate, we are testing these peptides in model systems and optimizing their pharmacokinetic properties prior to preclinical in vivo studies.

Education of postgraduate students, including supervision of PhD projects, and postdoctoral researchers, and organization of student seminars and international symposia have been an integral part of my academic life. I feel that scientists have the responsibility to communicate science to a wider audience. For that purpose, I have taken on the role of Chairman of the Societas Biochemica, Biophysica et Microbiologica Fenniae (Biobio-society), a scientific society that promotes biological research in Finland. I am also a Chairman of the Finnish National Committee for Biosciences and the Finnish Peptide Society.Bio

Find publications at https://tuhat.helsinki.fi/portal/en/persons/hannu-koistinen(ec680daa-e8ce-4aca-a124-2d2f73f60356)/publications.html

Trushar Patel, PhD
Assistant Professor, Chemistry & Biochemistry and Arts & Science
University of Lethbridge

My diverse research background spans more than 16 years, since earning a B.Sc. (2000) and an M.Sc in Biotechnology from the Sardar Patel University, India. Subsequently, I joined the Harding Laboratory (Nottingham, UK) to study therapeutic molecules and received my Ph.D. in 2007. My Postdoctoral Fellowship in the Stetefeld laboratory (Manitoba, Canada), focused on macromolecular assemblies of extracellular matrix proteins. During this time I also worked with the McKenna group on host protein-viral RNA interactions. Later, I studied the effect of zyxin on cancer in the Hotchin laboratory (Birmingham, UK) and now I am an Assistant Professor at the University of Lethbridge (Canada), focusing on RNA/protein Biophysics. I have been awarded Marie Sklodowska-Curie, Canadian Institutes of Health Research and Manitoba Institute of Child Health Postdoctoral Fellowships to pursue my postdoctoral studies. Since my first publication in 2006, I have published 44 peer-reviewed articles (h index of 15) including 19 articles as a first or co-first author and 8 as a corresponding author.

Biomolecular Interactions: The unifying theme of my research is to study multi-domain proteins, RNA-protein and protein-protein complexes that affect various cellular processes. Our lab studies host protein-viral RNA interactions to understand how viruses employ cellular machinery to their benefit. We are also investigating the role of focal adhesion proteins - zyxin and WTIP in gene regulation, cell signaling, and cancer.

Find publications at http://www.uleth.ca/research/centres-institutes/alberta-rna-research-and-training-institute/trushar-patel

Susan Patricia Lees-Miller, PhD

Professor, Departments of Biochemistry and Molecular Biology, Oncology and Biological Sciences, University of Calgary

Dr. Lees-Miller is a fellow of the Royal Society of Canada, holder of the University of Calgary/Alberta Cancer Foundation Engineered Air Chair in Cancer Research and the lead of the Robson DNA Science Centre (RDSC) at the Arnie Charbonneau Cancer Institute at the University of Calgary. She obtained her PhD from the University of Wales then carried out post-doctoral training at the University of Alberta and Brookhaven National Laboratory (US). In 1993, she joined the Faculty at University of Calgary and is currently a full professor in the Departments of Biochemistry and Molecular Biology and Oncology in the Cumming School of Medicine.

The Lees-Miller lab studies how mammalian cells detect and repair DNA double strand breaks (DSBs). DSBs are caused by exogenous DNA damaging agents such as ionizing radiation (IR), reactive oxygen species (ROS) and topoisomerase poisons. They also occur as a consequence of natural cellular processes such as oxidative metabolism and V(D)J recombination. Cells that are unable to detect and/or repair DSBs are highly radiosensitive and exhibit genomic instability.

One of the major projects in the Lees-Miller lab is to understand the mechanism of Non Homologous End Joining (NHEJ), which is the major pathway for the repair of IR-induced DSBs in human cells. Her recent work has focused on the role of the DNA-dependent protein kinase (DNA-PK) in NHEJ and other cellular processes. The lab is also studying how small molecule inhibitors of poly ADP ribose polymerase (PARP) can be used to selectively target human tumours with deficiencies in DNA damage response proteins such as ATM (ataxia telangiectasia mutated) and more recently has embarked on a new research project with Dr Corinne Doll in the Tom Baker Cancer centre to investigate the effects of mutations in the phosphatidyl inositol 3 kinase (PI3K) pathway on cellular response to IR and other DNA damaging agents.

Find publications at https://www.ncbi.nlm.nih.gov/pubmed?cmd=Search&term=Lees-Miller%20SP

Len Luyt, PhD
Professor, Department of Oncology, Western University, London, Ontario

Dr. Len Luyt graduated with a B.Sc. (Eng.) from Queen's University and did his Ph.D. at The University of Western Ontario. Later on, he did a Post-Doctoral Fellowship at the University of Illinois Urbana-Champaign and is now the Director of Radiochemistry/Synthetic Chemistry at Lawson's Imaging Program. He is also an Assistant Professor in Oncology, Medical Imaging and Chemistry, at Western University, London, Ontario.

Dr. Luyt's research program involves the design, preparation, and evaluation of new compounds for the imaging and treatment of cancer. Many cancer tumours have an abundance of peptide receptors located on the surface of the tumour cells, mostly belonging to the G protein-coupled receptor (GPCR) superfamily. By using the peptides that normally bind to these receptors as the starting point, his team is designing variations of these compounds such that they will contain a radioactive component, yet still bind to the intended peptide receptor, and have appropriate in vivo behaviour. Thus, a radioactive peptide-like compound will be injected into a patient, will localize in the cancer tumour, and using an external camera an image of the tumour will be viewed. This approach also has potential use as a method of treatment for cancer.

As part of Dr. Luyt's program of creating new cancer imaging and therapeutic agents, new chemical methods and technologies for the preparation of these novel compounds are being developed. While radiopharmaceuticals are a primary focus of our research, his group is also pursuing probes for other molecular imaging modalities (such as optical imaging), and small molecule cancer therapeutics.

Students involved in research in Dr. Luyt's group acquire synthetic organic chemistry, solid-phase organic chemistry, peptide/peptidomimetic design, bioconjugation, and radiolabelling skills. This research requires interaction with cancer and imaging scientists and group members are able to take projects from the basic chemistry stage through to animal model studies.

Find publications at http://www.ncbi.nlm.nih.gov/pubmed?cmd=PureSearch&term=Luyt+LG[Author]

Dolores Di Vizio, PhD

Associate Professor of Surgery and Pathology, Cedars-Sinai Medical Center and UCLA

Dr. Dolores Di Vizio is a pathologist and a molecular and cell biologist trained at Albert Einstein College of Medicine, and Harvard Medical School. Dr. Di Vizio holds an academic appointment as associate professor at Cedars-Sinai Medical Center, and at the University of California, Los Angeles. She is an Executive Chair of the International Society of Extracellular Vesicles (ISEV).

Her group studies the molecular mechanisms of progression to advanced disease in human tumors, with a particular emphasis on large oncosomes, extracellular vesicles (EVs) shed into the extracellular space from fast migrating and metastatic amoeboid cancer cells. Her lab is currently profiling the large oncosomes and other EV populations by NGS and proteomics for functional and molecular characterization. She employs molecular, cellular, animal and human tissue models to perform molecular and functional analysis of circulating Large Oncosome (LC) in prostate cancer and other tumors. Molecular profiling is based on large scale quantitative LC/LC-MS/MS, and NGS.

Find publications at https://www.cedars-sinai.edu/Research/Research-Labs/Di-Vizio-Lab/Publications.aspx

Andries Zijlstra, PhD

Assistant Professor Department of Pathology, Microbiology, and Immunology

Dr. Zijlstra is Assistant Professor at Vanderbilt University, where he is researching the invasion and metastatic dissemination of malignant neoplasias. Dr. Zijlstra was trained at The Scripps Research Institute in La Jolla, CA, where he developed quantitative metastasis and angiogenesis assays. Prior to joining Innovascreen Inc., he worked to develop preclinical technology for cancer screens at Philogen Inc. Dr. Zijlstra holds a Ph.D. in Genetics and Cell Biology from Washington State University and is a prolific author in the field of cancer biology.

Dr. Zijlstra's research is primarily dedicated to understanding the molecular mechanisms of cell motility and how they contribute to the metastatic dissemination of solid tumors. For most tumor types it is the metastasis to distant organs that becomes the primary cause of cancer-related deaths. In order to metastasize, a tumor cell must become able to dissociate and leave the tissue of origin, travel across tissue barriers that designed to confine normal tissue and travel to a distant organ. Since the dysregulation of cell migration enables tumor cells to escape their tissue of origin, mechanisms of migration are both a target for therapy and an indicator of disease progression.

The laboratory investigates molecular mechanisms of adhesion and their (dys)regulation in tumor progression. His team dissect's their molecular mode of action and how it is altered during metastasis. Dr. Zijlstra's objective is to understand how the changes in migration contribute to cancer metastasis, how they can be disrupted to prevent or treat metastasis and how they can use the detection of cell migration to identify patients at risk of developing metastatic disease.

Find Publications at
https://www.mc.vanderbilt.edu/root/vumc.php?site=vmcpathology&doc=15119&facultyid=16784&mi=true

Judith Clements, PhD

Scientific Director, APCRC-Q, Distinguished Professor and Head, Kallikrein Protease & Tumour Microenvironment Group, IHBI, QUT, Adjunct Professor, School of Medicine, University of Queensland

Distinguished Professor Clements has over 30 years of experience as a molecular and cell biologist in the endocrine field with expertise in neuroendocrine functional peptides and proteases – particularly the kallikrein-like serine protease family - in hormone dependent cancers, with a major emphasis on prostate cancer. Her areas of expertise include prostate and ovarian cancer, with respect to the Kallikrein proteases and their utility as biomarkers and therapeutic targets for cancer progression. She has over 190 publications in scientific journals and collaborates widely with colleagues in the US, Canada, the UK and Europe.

Her research covers the spectrum of biochemistry, cellular and molecular biology, using both in vitro and in vivo cell models, and includes proteomic, transcriptomic and genetic studies and the development and use of 3-dimensional cell culture systems better mimicking the tumour microenvironment. Her work encompasses understanding the regulation of endocrine/paracrine and autocrine mechanisms underpinning prostate cancer maintenance and progression and the identification of potential new diagnostic, prognostic and therapeutic targets. She is internationally recognized as an expert in her field and has been awarded the Silver and Gold medals of the international Frey-Werle Foundation for her work. She leads the Queensland node of the international PRACTICAL consortium, has led the Australian Prostate Cancer BioResource (tissue bank) for more than 10 years and is Chair of the Queensland Board of the PCFA.

Distinguished Professor Judith Clements is a Principal Research Fellow of the National Health and Medical Research Council (NHMRC) of Australia and leads the Cancer Program at the Institute of Health and Biomedical Innovation, QUT, based at the Translational Research Institute on the Princess Alexandra Hospital Biomedical Precinct. She is also Scientific Director of the Australian Prostate Cancer Research Centre-Queensland located on this campus. She is the Chair of the national prostate cancer tissue bank – the Australian Prostate Cancer BioResource, which is a key resource that underpins prostate cancer research nationally and is co-leader of the Queensland node of the international genome wide association study consortium for prostate cancer, PRACTICAL. She is Chair of the Queensland Board of the Prostate Cancer Foundation of Australia (PCFA) and a member of the PCFA National Board. She has been a member of the QIMR Berghofer Medical Research Institute Council since 2002. She was recently elected as a member of the International Proteolysis Society Council for 2014-2017. She was awarded the Queensland Women in Technology Biotech Outstanding Achievement Award for 2012, and the prestigious title of Distinguished Professor at QUT in 2013.

Find Publications at https://www.tri.edu.au/staff/judith-clements

Christopher Bown, PhD

Chris obtained his PhD from the Department of Medical Sciences at McMaster University and his B.Sc. (Hons. Genetics) from the University of Western Ontario. His postdoctoral research at the Neuroscience Research Institute in Ottawa focused on the transcriptional regulation of the genes encoding proteins involved in neurotransmission and the development of a diagnostic test to detect SNPs associated with major depressive disorder.

Dr. Christopher Bown is a partner and patent agent you can trust to protect your most valued intellectual property. Based in Gowling WLG's Ottawa office, he has over 10 years of strategic IP portfolio management experience.

He has considerable experience drafting and prosecuting difficult patent applications, in all areas of technology, including life sciences, biotechnology and mining industries. He also provides litigation support for cases involving these types of technologies.

Chris assists entrepreneurs and SMEs, as well as multinational corporations, in the protection and management of their IP assets. In addition to having considerable experience in protecting inventions related to biologics, diagnostic methods, medical devices and pharmaceuticals, he has an in-depth knowledge of a wide variety of different disciplines, including ultra-deep mining technologies, viniculture, radio transmission technologies, cosmetic chemistry, and inventions related to aerospace and defence.