Dear Friends & Colleagues!

In this issue of the Chair’s report we are celebrating some exceptional accomplishments of our faculty members. Dr. Steve Hrudey was appointed as a new Member to the Order Of Canada for his contributions to environmental health sciences and for his advocacy of safe drinking water. This is an exceptional and more than appropriate recognition of Steve’s career and contributions. Please join me in congratulating Dr. Hrudey! Also, Dr. Xing-Fang Li received the 2020 Canadian Society for Chemistry Ricardo Aroca Award in recognition for her distinguished contributions to analytical chemistry for water research and environmental health. The Division of Analytical and Environmental Toxicology has done very well – Way To Go!

Dr. Harry Vinters has been recognized to be among the highly cited scholars with an h-index of greater than 100 – not many at our institution can claim that level of scholarly productivity and peer recognition. Congratulations Harry! In addition, our faculty members again secured grants despite the very competitive funding environment (page 5) and presented / published numerous papers (page 11-15). We also had another (the 18th) very successful Extreme Cryo Symposium organized by our faculty (see page 6). This event is leading in its area and every year attracts an international audience to foster cutting-edge knowledge exchange in the area of biopreservation.

Please also see our Spotlight on Research. For this issue Dr. Carmen Charlton is providing insights into her research focused on virology in particular related to HPV and CMV. Carmen successfully established a research group in the area of clinical virology and is translating her discoveries into clinical applications.

Thank you for all your hard work and outstanding research productivity and contributions to teaching and education across the department. In particular, to Dr. Laura Canterbury for digitizing and annotating our off-service residents teaching slide collection which is now preserved and accessible for multiple generations of learners to come. To support and sustain such educational initiatives, we are working on building a departmental education fund, the Dr. Larry Jewel Education Fund. If you wish to contribute or become aware of anybody who wants to support our educational mission, please let me know.

Continued ...
Letter from the Chair (cont’d)

All the above has been achieved despite the recent intense but successful Connect Care go live – Congratulations to all faculty! With Wave 1 behind us, we are now preparing for Wave 2 and 3. Once fully implemented the system will offer even greater capabilities and opportunities for research and education.

Please mark your calendars for 2020 DRIvE days on Friday April 24 & Saturday April 25. I very much look forward to see you all there!

Sincerely,

Dr. Michael Mengel, MD
Professor and Chair
Department of Laboratory Medicine & Pathology, University of Alberta
North Sector Medical Director, Alberta Public Laboratories

Smile for the day ...

THAT MOMENT WHEN YOU WANT TO CHANGE YOUR GLOVES
 BUT DON'T WANT TO loose ALL YOUR NOTES
Spotlight on Research

Dr. Carmen Charlton
Assistant Professor
Division of Diagnostics and Applied Microbiology
Department of Laboratory Medicine & Pathology

Dr. Carmen Charlton is a board-certified Clinical Microbiologist at the Public Health Laboratory (ProvLab) and an Assistant Professor in the Division of Diagnostics and Applied Microbiology in the Department of Laboratory Medicine and Pathology. She is a Diplomat of the American Board of Medical Microbiology (D(ABMM)), a Fellow of the Canadian College of Microbiologists (FCCM), and holds an American Society of Clinical Pathology Certification in Clinical Microbiology (ASCP™) and a California Clinical Microbiology Scientist License. Since joining ProvLab in 2013, Dr. Charlton has focused her research on the field of diagnostic virology and improving health outcomes for women and children.

One active area of research of our laboratory is to improve diagnosis of Hepatitis C in prenatal patients and their infants. Hepatitis C is a virus that attacks the liver and can cause significant disease including liver scarring and liver cancer. Because it takes a long time for Hepatitis C to cause symptoms, it often goes undiagnosed, and an individual who is infected may not know they have the virus. If a woman is infected with Hepatitis C she can pass on the infection to her baby during pregnancy. Highly effective treatment is available, but only to individuals who know they are infected with the virus.

In our previous research, we found that even if a woman is diagnosed with Hepatitis C, she may not receive the appropriate treatment and follow-up to cure her disease and prevent transmission to her baby. In fact, only 34% of people who were diagnosed with Hepatitis C were seen by a specialist physician capable of prescribing treatment. Our goal is to identify all pregnant women who are infected with Hepatitis C and to link them and their babies to specialty care. To this end, we have implemented a universal screening program for Hepatitis C for all pregnant women in Alberta to start in March 2020. This program will allow us to assess the prevalence of Hepatitis C in the prenatal population, identify areas where the current risk-based-screening system is missing diagnoses, and develop a referral system to ensure all infected women and their infants see a specialist for appropriate care and treatment.

Our group has been extremely fortunate to work with a highly diverse and specialized team to tackle this ambitious project, including partnerships with the viral hepatitis clinics (Drs. Karen Doucette, Joan Robinson, Steve Martin, Carla Coffin), public health CD nurses (Joy Jaipaul, Angela Jacobs, and Lori Henneigh), epidemiological surveillance (Dr. Sabrina Plitt), Medical Officers of Health (Dr. Kristin Klein), graduate students (Alexa Thompson), and Alberta Health (Sumana Fatima, and Mugove Manjengwa).
Another area of research in our laboratory is to assess the level of protection amongst vaccinated individuals for rubella and varicella infection. In highly vaccinated populations, the level of antibody produced against vaccine-preventable diseases has been waning overtime. Susceptibility to infection is particularly concerning for prenatal populations, where exposure to rubella or varicella during pregnancy can result in congenital infection, causing significant morbidity and mortality in the infant. We are investigating whether a third dose of vaccine would improve the immune response in women, and prevent congenital infection in our population. We are extremely fortunate to work closely with Dr. Troy Baldwin and Dr. Sabrina Plitt to better understand this patient population.

Additionally, our group is working on understanding the prevalence of different Human Papillomavirus (HPV) genotypes in Alberta women, and assessing the economic impact of vaccine implementation. Worldwide, over 500,000 women with documented HPV infection are identified each year, and approximately 250,000 die from HPV-associated cancers. These cancers are associated with specific oncogenic HPV genotypes, which can vary geographically. We have determined the prevalence of HPV genotypes associated with abnormal cytology in women undergoing routine cytology screening, and are currently using this prevalence data to determine the economic impact of vaccine implementation in Alberta. With our collaborators Dr. Michael Li in the Department of Mathematical and Statistical Sciences, Dr. Sabrina Plitt in the School of Public Health, and Public Health practicum student Jessica Round, we are creating modeling projections to examine the potential quality life years added and projected economic cost savings from vaccine uptake.

We have been busily engaged with a number of other projects, including exploring the prevalence of Pegivirus in cerebral spinal fluid samples with Dr. Christopher Power, Matthew Doan, and Dr. Frank van Landegham, examining breakthrough CMV infection in lung transplant patients with Dr. Carlos Cervera, improving diagnostic capacity of cerebral spinal fluids using next generation sequencing with Dr. Matthew Croxen, Dr. Nathan Zelyas and undergraduate student Tyce Culp, and understanding clinical testing uptake for Chlamydia and Gonorrhea following new guideline implementation with undergraduate student Linda Mbajiorgu.

Much of this work has been possible with funding from Alberta Health, Merck, the MSI Foundation, the University Hospital Foundation, and the Kaye Foundation. Students in the group have received scholarships and awards from Alberta Innovates Health Solutions (AIHS), the Public Health Laboratory (ProvLab), the Women and Children’s Health Research Institute (WCHRI), and the department of Laboratory Medicine and Pathology.
Awards & Honours

Congratulations to Dr. Steve Hrudey for his appointment to the Order of Canada. Her Excellency the Right Honourable Julie Payette, Governor General of Canada, made 120 new appointments, including 5 Companions, 38 Officers, and 77 Members. Dr. Hrudey is one of the new Members (C.M.) of the Order of Canada, announced on December 28, 2019. Dr. Hrudey is Professor Emeritus in the Division of Analytical and Environmental Toxicology. He is honored "for his contributions to environmental health sciences and for his advocacy of safe drinking water".

Dr. Harry Vinters continues his presence on Google Scholar 'highly cited' list, h-index of 100 + (December 2019 rank #1594 of approx. 2500 scientists over past 120+ years)

Grants

Dr. Jason Acker: Acker, J.P. and Clarke, G. “Implementation of non-invasive prenatal testing for RhD to predict fetal RhD blood type.” WCHRI Clinical / Community Research and Integration Support Program (CRISP), $20,000, 2 year.

Dr. Carmen Charlton received a grant from Merck for a grant entitled “Is a third dose of MMRV vaccine beneficial in the adult population in Alberta?” on January 17, 2020 for $132,675.50 this is with Dr. Troy Baldwin and Dr. Sabrina Plitt as collaborators.

Dr. Matthew Croxen: “Identification of etiological agent(s) in undiagnosed respiratory infections and microbial encephalitis”. PI = Dr. Matthew Croxen, Co-PI: Dr. Carmen Charlton, Co-applicant: Dr. Nathan ZelyasUniversity Hospital Foundation Medical Research Competition, 2019. $35,000

Dr. Esme Dijke: “Immunogenicity of therapeutic regulatory T cells derived from human thymus” funding agency: University Hospital Foundation Medical Research Competition, Jan 1 - Dec 31, 2020, $35,000

New Appointments

Effective October 27, 2019, Dr. Sumit Das has been appointed as Neuropathology Section Chair.

Dr. Steven Drews has been appointed effective November 2019 as an Advisor on the Canadian National Case Definitions on West Nile Virus, Babesiosis and Anaplasmosis

Dr. Iyare Izevbaye has been promoted to Associate Professor, effective July 1, 2020

Effective Feb 1, 2020 Dr. Kareena Schnabl has moved from Interim to Permanent Section Chief for Biochemistry Alberta Precision Laboratories North Sector.

The Department welcomes Dr. Ghazala Radwi as Clinical Lecturer, Hematology/Transfusion Medicine, UAH Site

Congratulations to Professor Xing-Fang Li for receiving the 2020 Canadian Society for Chemistry (CSC) Ricardo Arceo Award. Dr. Li, Professor in the Division of Analytical and Environmental Toxicology, is recognized for her distinguished contributions to analytical chemistry for water research and environmental health. The award, which consists of a framed scroll, $1,000 cash and up to $1000 for travel expenses to this CSC Conference, will be presented during the 103rd Canadian Chemistry Conference and Exhibition which is taking place in Winnipeg on May 24-28, 2020.
Extreme Cryo 2020  
“Survival of the Frozen: An Avalanche of Ideas in Cool Biomedical Research”

We welcomed over 70 delegates from universities and organizations across Canada, the United States and other countries to the University of Alberta, Edmonton, Canada for the 18th (almost) annual Extreme Cryo Symposium on January 31 and February 1, 2020. The purpose of Extreme Cryo is to promote interdisciplinary discussion and collaboration among research groups interested in the broad area of biopreservation, an enabling technology for the use of cells, tissues, and organs in clinical transplantation and regenerative medicine and in many biotechnologies. Methods to preserve biological materials include the use of moderately low temperatures (hypothermic storage), very low temperatures (cryopreservation), vitrification (ice-free cryopreservation), desiccation, and normothermic culture, maintenance, repair, and conditioning.

This year’s topic “Survival of the Frozen: An Avalanche of Ideas in Cool Biomedical Research” brought together researchers in biopreservation of a vast range of cells, tissues, and organs, and related areas for broad interdisciplinary conversations. The keynote speakers were Dr. Darren Freed, Associate Professor of Surgery, Physiology and Biomedical Engineering, University of Alberta who spoke on “Normothermic organ perfusion: dovetailing with cryobiology”, and Dr. John Bischof, Distinguished McKnight University Professor and Kuhrmeyer Chair in the Departments of Mechanical and Biomedical Engineering, and the Medtronic-Bakken Endowed Chair, and Director, Institute for Engineering in Medicine, University of Minnesota who spoke on “Nanowarming for Regenerative Medicine”. The oral presentations by participants (students, technicians, researchers, clinicians, and scientists) included research at any stage (planned, ongoing, or finished) with plenty of time for discussion after each presentation.

The symposium was organized by Drs. Jason Acker, Janet A. W. Elliott and Locksley E. McGann, together with students and staff from the Departments of Chemical and Materials Engineering, Laboratory Medicine and Pathology and Surgery. We acknowledge the financial support from these departments, as well as from the Faculties of Medicine and Dentistry, and Engineering, Office of the Vice-President of Research and Innovation, and Alberta Innovates. We also appreciate our industrial sponsors, Praxair, Sylvatica Biotech and VWR. Sponsorships have allowed us to invite external experts as keynote speakers and open the symposium to attendees for free. More information on Extreme Cryo 2020 including the full program schedule can be found on the website http://cryosymposium.wixsite.com/2020.
Teaching sets for the UAH LMP off-service resident rotation in Anatomical Pathology have gone digital:

The UAH teaching set composed of glass slides and supporting explanatory paper files, formerly known as the ‘blue binders’, used by off-service residents and other learners in the department have been scanned and now are available in digital format, helping to preserve the teaching set for years to come. The slide set, composed of 141 digital slides, is organized into 12 separate organ systems and is fully digitally annotated with attached pdf files discussing each entity. The digital slide set is also now available to learners rotating through DynaLIFE. The off-service residents at UAH have been successfully using the online system over the past few blocks and have provided positive feedback regarding the change. For each organ system, the residents may login anywhere and take a pre-test (supported by testmoz.com), then login to eSlide Manager supported by DynaLIFE to review the slides and documents, then take a post-test. The online tests have been expanded to include additional questions over the previously used paper quizzes and allow use of color photomicrographs taken directly from the teaching slides. The testing platform presents the questions in randomized order as well as randomizing the multiple choice answers and automatically grades results for instant student feedback and enhanced learning.

The move to all digital was no small task. Please extend a BIG thank you to Dr. Mengel for approving funding for the project, and to Sarah Fontes who generously volunteered much time to help Dr. Canterbury complete the digital slide project, as well as Richelle Edward, Brenda Galbraith and Mary Melnyk who were also instrumental in the slide scanning and successful completion of this project.

Dr. Laura Canterbury
Assistant Clinical Professor
Department of Laboratory Medicine & Pathology
Graduate Studies

Milestones

We are proud to announce that the following students have completed their programs:

♦ **Mu Hao (Jack) Hsu** (supervisors, Banu Sis and Sambasivarao Damaraju) completed his PhD program. His thesis is titled “Identification and Validation of a Common Molecular Signature of Progressive Fibrosis in Human Livers.”

♦ **Maram Hulbah** (supervisor, Gregory Tyrrell) completed her PhD program. Her thesis is titled “Exploration of novel factors associated with Group B Streptococcus virulence.”

Awards

Congratulations to these students who each received the Alberta Graduate Excellence Scholarship:

♦ Lillian Feng
♦ Angela Ma
♦ Ashley Newbigging
♦ Jeffrey Tao
♦ Nishaka William
**Presentations**

**Dr. Jason Acker:**
   - “Ice Recrystallisation Inhibitors: A New Approach for Improving Post-Thaw Quality of Cryopreserved Platelets”. 2019 Poster
   - “Platelet Vesicles Are Potent Inflammatory Mediators in Red Blood Cell Products and Washing Reduces the Inflammatory Phenotype”. Poster
   - “RBC Subpopulations in Stored Concentrates Have Different Quality Characteristics”. Poster
2. “Cryopreservation - A critical technology for enabling the delivery of cell therapies to patients”. MD Andersen Cancer Centre, Houston, TX, October 18, 2019. Invited Rounds Speaker
3. “Validation of direct PCR for non-invasive prenatal testing to determine fetal RhD type”. Royal Alexandra Hospital Ground Rounds, October 25, 2019. Invited Oral
5. “Taking good business ideas out of the lab….” Alberta School of Business Executive MBA Program, Edmonton, AB, November 15, 2019. Invited Presentation

**Dr. Ben Adam:**
**Presentations**
1. Canadian Transplant Summit, Banff AB, October 18, 2019: “Banff 2019 Update – Lung and Heart”
3. NanoString Webinar Series (online broadcast), January 30, 2020: “Next Generation Molecular Transplant Pathology: Early Experiences with the NanoString nCounter Platform in Transplantation”

**Abstracts**

Esmé Dijke, Tess Ellis, Ingrid Larsen, Ivan Rebeyka, Darren Freed, Mohammed Alaklabi, Megan Levings, Lori West. “Human leukocyte antigen (HLA) class II expression on thymic regulatory T cells (Tregs) is induced by expansion conditions”. Poster. 2019 Canadian Transplant Summit. Banff, AB, 18 October 2019

**Dr. Steven Drews:**
**Postgraduate and clinical fellows presentations**
**Presentations**

**Abstracts**

AABB Session planner and coordinator. “How Do We Improve Our Vigilance for Malaria While Retaining Donors?”, AABB, San Antonio TX, USA October 22, 2019.

**Invited Addresses**

Presentations (cont’d)

Dr. Steven Drews (cont’d):

2. “Safety initiatives: Hepatitis E virus and Chronic Wasting Disease” Scientific Research and Ethics Committee, Canadian Blood Services, December 4, 2019, Ottawa ON, Canada

3. Canadian Blood Service Testing Face to Face Meeting. November 27, 2019, Toronto, ON
   - “A case series of inactivated Japanese Encephalitis virus vaccination associated with positive West Nile virus nucleic acid testing”.
   - “Threats and unknowns of transmissible diseases safety”

3. Canadian Blood Service Scientific Research and Advisory Committee. November 26, 2019, Toronto, ON
   - ”Lookback/Traceback: When to restrict activities in the era of molecular transmissible disease testing”
   - “Babesia update”
   - “Chronic wasting disease”
   - “Parvovirus testing of plasma”
   - “Malaria – improving hemovigilance while retaining donors”


Abstracts

Dr. Judith Hannon:
AABB, San Antonio, TX, October 19 – 22, 2019.
   - Judith L. Hannon, MD FRCPC, Philip Berardi MD, PhD FRCPC, Kirsten Hannaford, MLT. “Significance of “Possible D” Variant on BioArray Beadchip™ RHD Genotyping of Prenatal Patients”. Poster/Abstract
   - K. Hannaford, M. Yan, L. Ciurcovich, J. Hannon, G. Clarke. RHD Genotyping of patients with serological weak D: 2444 “Patient samples with no anti D on follow up of 428 with a variant RHD”. Poster/Abstract

Dr. Jelena Holovati:
Abstracts/Presentations
1. J.L. Holovati, B. Letcher, K. Murphy, T.Petraszko, H. Elmoazzen. “Extending refrigerated storage of autologous peripheral progenitor stem cells prior to cryopreservation does not adversely affect post-thaw quality”. Transfusion 2019;59(S3):103A Poster presentation at the American Association of Blood Banks annual meeting, San Antonio, TX (October 2019)

2. C. Crossie, G. Dowling, J.L. Holovati. “Allograft bio-burden reduction as a tissue banking process”. Poster presentation at the Canadian Transplant Summit, Banff, Canada (October 2019)

Dr. Chris Le:


5. “DNA-protein binding assays and signal amplification techniques”. Faculty of Pharmaceutical Sciences, Southwest University, Chongqing, China. November 11, 2019.


Presentations (cont’d)

Dr. Chris Le (cont’d):

Dr. Michael Mengel:
Invited lectures:
1. European Society of Transplantation, EKITA-ESOT session on Treatment of Antibody-mediated rejection (September 15.) 2019, Copenhagen, DEN: “Antibody-mediated rejection: Banff Up-date”
2. 2019 ASH1-Banff meeting (Sept. 23.-26) 2019, Pittsburgh, USA: “Molecular assessment for Precision Diagnostics and Prognostication”
3. American Society of Transplantation Fellows Symposium on Transplant Medicine (September 26. – September 28.) 2019 Dallas, TX, USA: “Histopathologic features of Antibody Mediated Rejection”
4. Annual meeting of the American Society of Nephrology. (Nov. 06. – 10.) 2019, Washington DC, USA: “Precision diagnostics and Next generation clinical trials”
5. The 2nd Histocompatibility & Solid Organ and Transplantation conference & workshop (Nov. 12. – 14.) 2019, Dammam, Saudi Arabia:
   - “Pathology of Antibody Mediated Rejection and recent updates in the Banff classification”
   - “The value of protocol biopsies”
   - “HLA antibodies and the pathogenesis of antibody-mediated rejection”

Dr. Susan Nahiriak:

Dr. Artur Szkotak:

Dr. Harry Vinters;
Invited lectures/presentations:
1. “The fate of small vessels within the brain with aging….microvascular disease: Arteriolar sclerosis, CAA, and beyond….” Roy Walford Memorial Endowed Lecture, UCLA, October 01, 2019
2. Pathology Grand Rounds presentation on “Cerebral microvascular disease”, Keck School of Medicine, USC, Los Angeles, CA, January 31, 2020

Recent Publications

Dr. Jason Acker:

Dr. Ben Adam:
Peer-reviewed papers

Dr. Julinor Bacani:
Recent Publications Cont’d ...

Dr. Linda Chui:

Dr. Matthew Croxen: Peer-reviewed:

Dr. Sumit Das:

Book contributions:
2. Sumit Das and Frank K.H. van Landeghem. “Clinicopathological Spectrum of Bilirubin Encephalopathy/Kernicterus”. In: Consolato Sergi. Diagnosis and Management of Pediatric Disease; Basel, Switzerland 2019; 109-120.

Dr. Andy De Souza:

Dr. Esmé Dijke:

Dr. Tanis Dingle:
Recent Publications Cont’d ...

Dr. Steven Drews:
Peer reviewed publication


Dr. Iyare Izevbaye:
Publications:


Dr. Chris Le:


Dr. Michael Mengel:
Peer-reviewed publications


Dr. Susan Nahiriak:

Recent Publications Cont’d …

Dr. Susan Nahiriawi (cont’d):

Dr. Joshua Raizman:

Dr. Laura Schmitt:

Dr. Kareen Schnabl:
Andy De Souza 1,2,†, Vanessa Wolan 1,4, Angie Battochio 1, Susan Christian 3,4, Stacey Hume 3,4, Grace Johner 5, Margaret Lilley 3,4, Ross Ridsdale 1,4, Kareena Schnabl 1,2, Chi Tran 1, Jolene Yuen-Jung 1 and Iveta Sosova 1,2. “Newborn Screening: Current Status in Alberta, Canada”. Int. J. Neonatal Screen. 2019, 5(4), 37; https://doi.org/10.3390/ijns5040037 October 2019

Dr. Consolato Sergi:
Recent Publications cont’d ...

Dr. Consolato Sergi (cont’d):

Dr. Iveta Sosova:

Ms. Vanessa Wolan:

Dr. Harry Vinters:
2. C Cepeda, S Levinson, H Nariai, VW Yazon, C Tran, J Barry, KD Oikonomou, HV Vinters, A Falah, GW Mathern, JY Wu. 2019. “Pathological high frequency oscillations associate with increased GABA synaptic activity in pediatric epilepsy surgery patients”. Neurobiology of Disease. (October, 2019; epub ahead of print) PMID 31629890
The Banff Pathology Course is a collaborative effort of the Canadian Association of Pathologists (CAP-ACP), Department of Laboratory Medicine and Pathology, University of Alberta and the Department of Pathology and Laboratory Medicine, University of Calgary to provide a continuing medical education activity for practicing pathologists, residents and pathologists' assistants.

Next course: Sept 3-5, 2020 - Molecular/Lymphoproliferative

Future Courses:
- Sept 9-11, 2021 - Urogenital Pathology
- Sept 8-10, 2022 - Gynecological Pathology