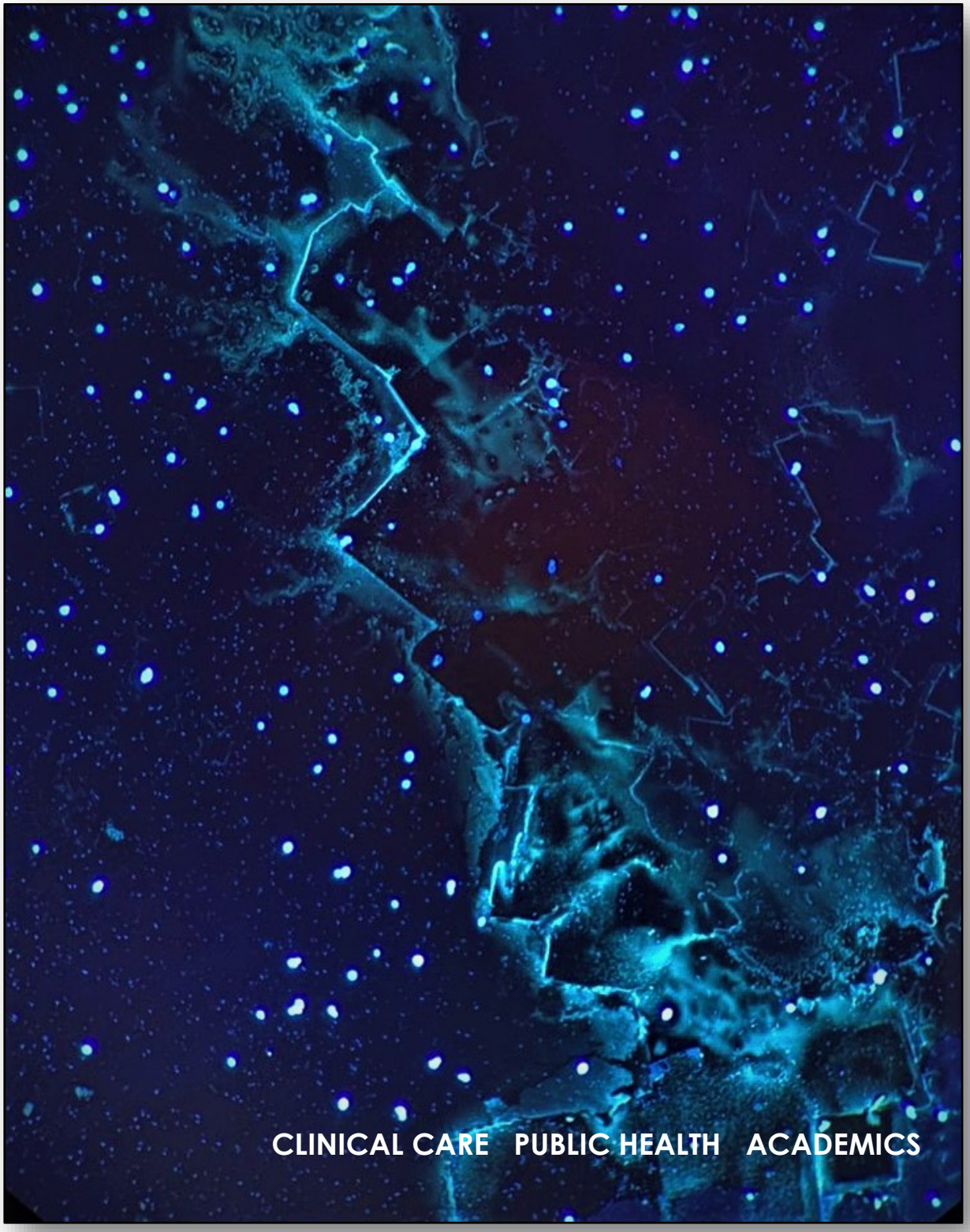
Laboratory Medicine Saskatchewan Health Authority

Pathology & Laboratory Medicine College of Medicine



Annual Report 2020 / 2021

Department Vision

We will deliver high quality services that are integrated, accessible and appropriate for all patients in Saskatchewan.

Department Mission

We work as a respectful, collaborative and committed team which values transparency and inclusion to ensure a patient-centered and sustainable laboratory medicine service.

Laboratory Medicine is an integrated provincial organization with a membership that includes clinicians (MD and PhD specialists) who are faculty of the College of Medicine and staff of the Saskatchewan Health Authority. Membership also includes medical laboratory technologists (MLTs), medical laboratory assistants (MLAs), combined X-ray/laboratory technologists (CXLTs), scientists, phlebotomists, and staff in LIS and Regulatory Affairs among others.

The Department members work collaboratively, in 200 locations across the province and serve three mandates – clinical care, public health and academics. The entire department is dedicated to excellence in patient care as expressed in the Department vision, mission and values, articulated above.

We would like to acknowledge that we are gathering on treaty 2,4,5,6,8, & 10 territory and the Homeland of the Métis.
Recognizing this history is important to our future and our efforts to close the gap in health outcomes between Indigenous and non-Indigenous peoples.
We pay our respects to the traditional caretakers of this land.

Saskatchewan
Health Authority

Vision

Healthy People, Healthy Saskatchewan.

Mission

We work together to improve our health and well-being. Every Day. For everyone.

Values

Safety
Accountability
Respect
Collaboration & Compassion
Patient & Family Centred Care

Vision

We are leaders in improving the health and well-being of the people of Saskatchewan and the world.

Mission

As a socially accountable organization, we improve health through innovative and interdisciplinary research and education, leadership, community engagement, and the development of culturally competent, skilled clinicians and scientists. Collaborative and mutually beneficial partnerships with Indigenous peoples and communities are central to our mission.

Values & Principles

We're committed to:

- collegiality
- fairness and equitable treatment
- inclusiveness
- integrity, honesty and ethical behaviour
- respect

We believe in:

- academic freedom
- collaboration
- commitment to community
- different ways of knowing, learning and being
- diversity, equality and human dignity
- excellence
- a healthy work and learning environment
- innovation, curiosity and creativity
- openness, transparency and accountability
- reconciliation
- sustainability

Message from the Provincial Dyad Leadership

It is our pleasure to welcome you to the fifth Annual Report of the evolving Provincial Department of Laboratory Medicine (Saskatchewan Health Authority) and the Department of Pathology and Laboratory Medicine (University of Saskatchewan).

This is the third report to be produced under the auspices of a single health authority and provides a provincial lens of the three mandates *(clinical care, public health and academics)* of the integrated medical laboratory system for the period July 1st, 2020-June 30th, 2021.

This report is the work of a newly created Departmental Annual Report Committee who have been working hard for many months to develop a document which provides an accurate review of all those activities that have been the focus of our energies for the past twelve months. We thank the members of that committee for their hard work and innovation. It has been a pleasure to work with them.

During that period, we have continued to live with COVID-19, and become all too familiar with terms like COVID toes, cytokine storm and variants of concern but, with the recent arrival of vaccines, hopefully, we can look forward to happier times. We would like to take this opportunity to ask us all to celebrate the incredible work performed by this Department, whether it be in the area of COVID diagnostics or delivering all of the other diagnostic work necessary to ensure the safety of all patients in this province.

The varied accomplishments featured in this report attest to a Department displaying growing capacity in both the clinical and academic areas. These include, but are not limited to technological upgrades in the Marc Baltzan Histocompatibility Laboratory in St Paul's Hospital, the validation and deployment of instrumentation such as the BD Max platform in Prince Albert or Blood Gas Analyzers through-out the province, the expansion of Newborn Screening in Roy Romanow Provincial Laboratory, repatriation and expansion of genomic diagnostics, implementation of Liquid Based Cytology (Regina and Saskatoon) or the development of a partnership between the Northern Intertribal Health Authority (NITHA), Indigenous Services Canada (ISC), the Saskatchewan Health Authority (SHA) and the National Microbiology Laboratory/Public Health Agency of Canada (NML/PHAC), an increasing footprint in medical student education and many research initiatives presented in this report.

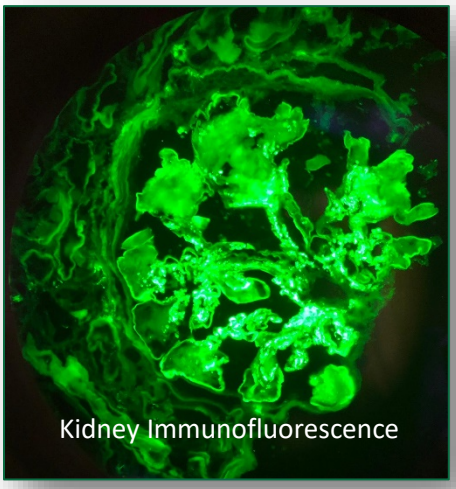
This Department has successfully embraced the concept that success in dealing with the pandemic and our other challenges is based on a culture of collaboration as opposed to one of jurisdiction.

We would like to take this opportunity to thank each and every member of Provincial Laboratory Medicine for their dedication, innovation and work ethic during this challenging time.

J. Fergall Magee, MD FRCPC MHSc
Provincial Head, U of S College of Medicine
Department of Pathology
& Laboratory Medicine

Lenore and I hope that you enjoy our Annual Report and we wish us all a bright future.

Lenore Howey
Executive Director, SHA Laboratory Medicine



Message from the College of Medicine

It is my pleasure to acknowledge the incredible work of the Department of Pathology and Lab Medicine (PaLM) in 2020-21 on behalf of the College of Medicine.

Marilyn Baetz MD FRCPC CCPE
Vice-Dean Faculty Engagement
College of Medicine,
University of Saskatchewan,
Saskatoon

This year might also be known as the year of pandemic 2.0 as it has continued to consume so much time and energy for a second year. PaLM continues to be a key contributor to the successful fight against COVID-19 on many fronts.

PaLM is an integral clinical department within the college, led, with boundless energy, by Provincial Department Head Dr. Fergall Magee. The provincial department straddles both the health system and the College of Medicine. Provincial physicians and clinical scientists are part of the faculty within the college and bring an academic lens to their work through their teaching, research and innovation.

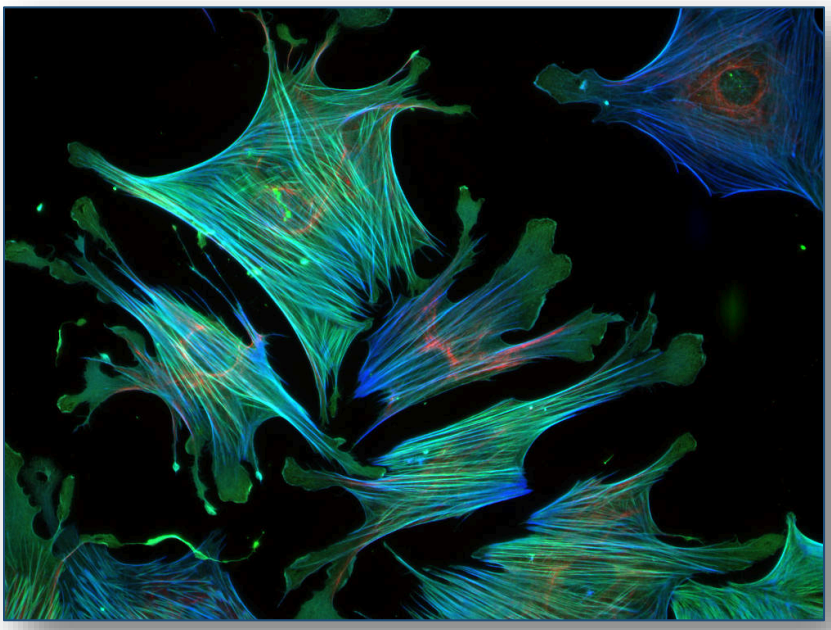
As COVID dominated our lives, the department members not only provided the unending clinical work required, but took an active role in educating our learners, colleagues, and the general public. Thanks to your efforts, we all became versed in concepts such as polymerase chain reaction (PCR), antigen testing, single nucleotide polymorphism (SNP) testing, and variants. We heard regular, informative and reassuring updates through the media and in-depth reviews through town halls courtesy of PaLM faculty who have become local celebrities.

Despite the department's enormous investment of time and resources in supporting Saskatchewan through the pandemic, there were so many other activities either initiated or continued. Of significance was the Departmental Review, conducted during the department head's penultimate year. This is a wide-ranging review of every aspect of a provincial department and not only reflects the advances in the last five years but provides groundwork for continued growth. Dr. Magee ably led this effort and the result was great endorsement for his continued leadership and a roadmap for the future.

This year we have seen a concerted effort to address wellness and equity, diversity and inclusion concerns, and PaLM has been a leader in establishing committees that tackle these tough issues, in alignment with college and university priorities. Academic endeavors and career advancement continue to be of importance, and many are eager to discuss opportunities for involvement in education, research and promotion through the academic ranks. Many on the PaLM faculty provide

significant leadership in education, governance, and collegial processes. Others have well-regarded research labs and have had a very successful year for external funding too. Members of faculty and staff play key roles in feedback to continue to modernize processes within the college, including academic payment structures and expanded educational offerings for learners.

Once again, a thank you to all the members of the department for your contributions. In the midst of ongoing challenges, your resilience, creativity and continued pursuit of academic and clinical excellence is an inspiration.



Cell Developmental Biology
www.upstate.edu

SOCIAL

Saskatoon City Hospital Lab Team at Halloween

Dr. Janine Benoit
Anatomic Pathologist-SCH

"It's me doing my hobby of lampwork beading."

Dr. Archana Kakadekar
PGY3

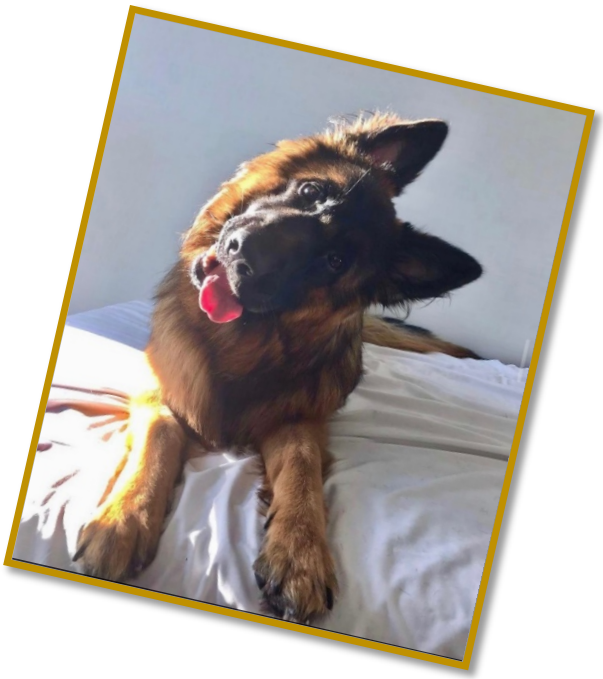
"One of my hobbies includes exploring Vancouver (pre-pandemic) with my dog, Kiki. I adopted her from a lovely woman in Calgary when she was only 7.5 months. She is 2.5 lbs and will be turning 2 this May! She is my bundle of joy 😁. We would take the bus and/or SkyTrain to the city proper and check out local shops and cafes. I am looking forward to resuming that once it is safe to do so!"

Dr. Donna Ledingham
Hematopathologist-RGH

"One of my hobbies is gardening - mostly the vegetable variety (picture is of me harvesting potatoes). Even though I am a city kid (Saskatoon), some of my first memories are of being in the gardens of my mom and grandmother.
There is something about gardening that really connects you to place and seasons. I find it deeply satisfying to eat what we grow."

Dr. Deepti Ravi
Anatomic Pathologist-SCH

"Hi, y'all! My name is Kirra and I am a long coat German Shepard. I love hiking, mud baths and exploring the most... and of course driving my mum crazy!! Head tilts r the bestest too..."



Dr. Henrike Rees
Anatomic Pathologist-SCH

"When conditions allow, I love going for long road bike or mountain bike rides with a group of like-minded individuals, usually a group of female bikers (we call ourselves the "Pedal Wenches"). One of the highlights of last summer was a road bike trip to Petrofka Bridge with a visit and snack at the orchard/bakery on the other side of the bridge (September 20, 2020) and then a hard ride back to Martensville with a 35 km headwind. The last big ride of the season was a gravel ride which took us across the Saskatchewan river on a ferry near Aberdeen (October 4, 2020) This photo was taken near the end of this ride on the riverbank in Saskatoon."

Lenore Howey
Ex. Director, SHA Laboratory Medicine

"I have participated in many sports with a preference to group sport activities but over the past year I have explored a few new individual sports to stay active.

Last summer I took lessons to paddleboard down the South Saskatchewan River, entering upstream and paddling about 12kms into Saskatoon."

Hobbies; board/card games, travel, gardening (both vegetable and flowers)

Harold Shiffman
Department General Manager

"For me, mountain biking is the hobby I enjoy most. I appreciate the dirt trails, climbs and descents of this style of riding, and it helps me to connect with nature. Paths are often equally exhilarating as they are treacherous, but nothing clears my mind and makes me appreciate life more."

Dr. Phillipe Price
PGY2

"I recently bought a dog, he's 6 months old, and he's quickly becoming one of the best parts of my life! His name is Beemo, after a beloved cartoon character. In this picture we're in my back yard, sitting by the fire pit and enjoying the warm(ish) weather after the polar vortex finally broke. It was a great day!"

Dr. Ramesh Saeedi
Medical Biochemist RGH

"Hiking is one of my hobbies that I enjoy very much, as it improves both the mind and the body. Back in BC, I used to hike almost every weekend, even in the winter. But I should say that winter over there is not as cold as here."☺

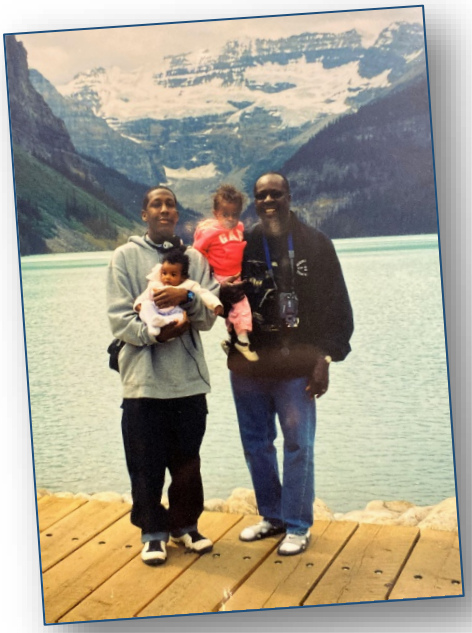
Dr. Fergall Magee
Provincial Head

We don't just kayak in Hawaii – We snowshoe as well!

This photo: Silver Star Mountain in Vernon BC

Dr. Sarisha Naidoo
Hematopathologist, RGH

"I wanted to share my hobby of oil painting. I especially love painting portraits. One of the paintings here is a portrait of a lady in traditional South African attire, entitled "Lesedi", which means light. This was particularly meaningful to work on during the past year of quarantine, as it represented the "light" at the end of the tunnel."



Dr. Erick McNair
Researcher, Health Sciences

"Lake Louise, me and my three children:
Erick Jr., Kali and Lauryn"

"Lab Humor" Pinterest.com

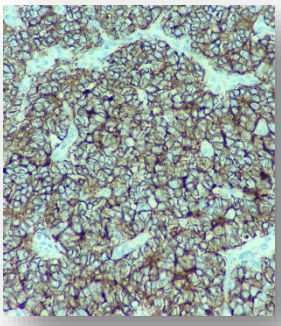
Undergraduate Medical Education

Submitted by Dr. Fergall Magee

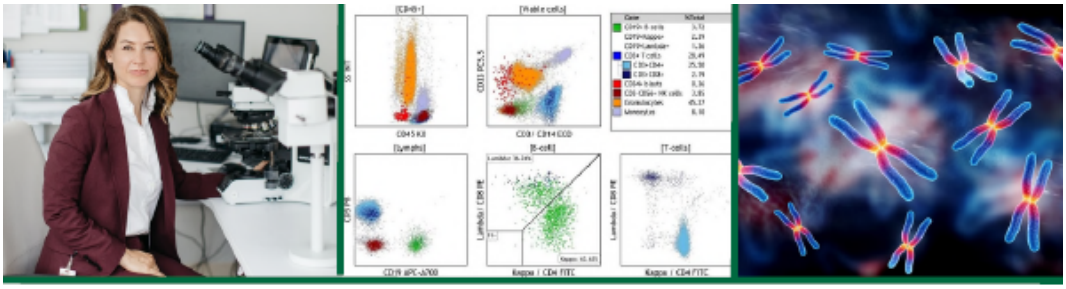
The Department values undergraduate medical education and continues to expand its footprint within the medical school curriculum. On September 1st, 2020, Department members introduced a new course for third-year medical students entitled Laboratory Medicine Bootcamp. This comprised eight 30-minute presentations during September on topics including a general introduction to lab med, cancer diagnostics, investigation of cardiac chest pain, point of care testing, principles of transfusion medicine and hematopathology, investigations of sepsis and laboratory utilization. On behalf of the Department, I would like to express a sincere thank you to those who presented these topics *(Drs. N. Baniak, J. Blondeau, C. Hamula, A. Lyon, M. Lyon, S. Rutledge Harding, R. Saeedi and E. Torlakovic)*. This module was well-received and all have been invited back for presentation to the current third-year students.

The UGME Career Fair was a virtual event (Wednesday, March 3rd - Class of 2024). Members of the department again participated in a spirited and highly entertaining virtual event. I wish to thank Drs. N. Baniak, M. Kinloch, O. Prokopchuk-Gauk and H. Rees for the dedication to this event. One extremely disruptive effect of COVID on UGME was the cancellation of out-of-province electives. Provincial Departments were asked to broaden elective opportunities locally to provide extra local options for our students. This led to the creation of more customized lab med options for medical students as outlined below. Over 8 students availed of this experience. The evaluations of this new opportunity were extremely positive and we hope that it will be as successful in the coming year. Again, on behalf of all who accepted students through this initiative, I express my sincere gratitude on behalf of our Department.

We are extremely grateful to all who contributed to the above and to summer student research opportunities as all of these initiatives continue to raise the Department profile within the medical school



A new elective option created to lead our medical school through COVID-19:



BE WHAT THE WORLD NEEDS

Medical Student Electives

Laboratory Medicine

General Pathology is a broad-based specialty that bridges clinical and laboratory medicine. The Department of Pathology and Laboratory Medicine is one of the clinical departments within the USask College of Medicine providing laboratory medicine services throughout the province. Laboratory Medicine is an integrated provincial department, operating from various sites throughout the province that provides diagnostic services for all patients served by Saskatchewan Health Authority. Clinical divisions include Anatomical Pathology, Biochemistry, Hematology, Microbiology, Transfusion Medicine, Immunodiagnostics, Molecular Diagnostics, HLA, and Cytogenetics.

Treatment of a patient diagnosed with cancer, sepsis, coagulation abnormalities, and genetic or metabolic disease is determined by laboratory investigation. 'Customized' elective time in laboratory medicine affords the student the opportunity to spend focused time on a particular subspecialty. This not only enhances patient care, but also provides students with a deeper understanding of the specialty that, ultimately they wish to pursue (oncology, surgery, medical genetics, infectious disease, dermatology etc.). The elective can be customized to meet the career goals of the individual student. Areas available within the department include gyne-oncology, breast pathology, genito-urinary pathology, renal pathology, dermatopathology, neuropathology, pediatric pathology, transfusion medicine, tissue transplantation, genomics, microbiology, chemistry and hematopathology.

Work is supervised on an individual basis by faculty. Students have an opportunity to attend departmental conferences, lectures, and tumor boards, and will be expected to deliver a 10-minute presentation at the end of the rotation.

Grand Rounds

Submitted by Dr. Viktor Zherebitskiy

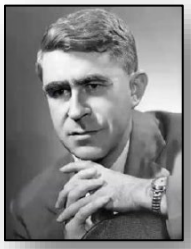
Pathology and Laboratory Medicine Grand Rounds (PaLMGR) were temporarily placed on hold in the spring of 2020 due to COVID-19.

However, in the fall of 2020, the Grand Rounds Committee *(Dr. Maruti Uppalapati from basic medical research, Dr. Viktor Zherebitskiy from anatomical and clinical pathology, and Dr. Phillip Price from the general pathology residency program)* decided to resume the Departmental Grand Rounds using an on-line format utilizing WebEx.

Mr. Max Lyons from the U of S College of Medicine IT support group was very helpful in providing technical support and troubleshooting, particularly for out-of-province invited speakers.

During the 2020-2021 academic period, we were able to recruit several exceptional invited speakers from various places in Canada and United States:

1. **Dr. Marc Del Bigio**, a world renown neuropathologist from the University of Manitoba, Winnipeg, MB, Canada presented "**Jerzy Olszewski (1913-1964)**: brief biography of an extraordinary neuropathologist", September 28, 2020. In his talk, the presenter emphasized a founding role of Dr. Jerzy Olszewski in creation of clinical neuropathology service at the Royal University Hospital and neuropathology research program at the University of Saskatchewan between 1955-1959. This included supervision of several prominent medical students, PhD students, residents and fellows such as Drs. **Bohdan Rozdilsky**, Ugo Schacherl, Joseph C-Y Lee, Peter Dyck, Robert Haslam, etc. The presentation was supported by the Mrs. J. Olszewska Neuropathology Endowment Fund/PaLM Department and the Saskatchewan Association of Laboratory Medicine (SALM).



2. **Dr. Jason Karamchandani,** neuropathologist from the McGill University/Montreal Neurological Institute (MNI), Montreal, QE, Canada presented "Advanced diagnostics in neuro-oncologic neuropathology: the integrated report", November 27, 2020. In his presentation, the presenter went over past, present and future of MNI research neuropathology program and used a few cases to illustrate the application of an

integrated multi-layered approach in the workup and reporting of adult and pediatric CNS and PNS tumors. The presentation was also supported by the Mrs. J. Olszewska Neuropathology Endowment Fund/PaLM Department and the Saskatchewan Association of Laboratory Medicine (SALM).

3. **Dr. Consolato Sergi**, a world renown pediatric pathologist from the University of Ottawa/Children's Hospital of Eastern Ontario, ON, Canada presented "Hirschsprung's disease: current views and future perspectives", April 26, 2021. The lecture outlines a brief history of Harald Hirschsprung's discovery, current pathologic criteria and guidelines on the diagnosis of Hirschsprung's disease (HD), its pitfalls and potential for use of miRNAs in investigation of signaling pathways during the development of HD as well as exploring its possible diagnostic value. The presentation was supported by the Pathology Department and the Saskatchewan Association of Laboratory Medicine (SALM).

4. **Dr. Zhen Zhao**, Weill Cornel Medical Centre, New York, NY, USA presented "Quantity and quality of antibody responses to SARS-CoV-2: the importance of timing and age", June 7, 2021. In her talk she described in details various methods and techniques of characterization of qualitative and quantitative aspects of antibody responses in hospitalized patients, children and non-hospitalized adults with particular emphasis on TOP-SNAb assay that was adopted by her laboratory for COVID19 antibody monitoring. The presentation was also supported by the Pathology Department and the Saskatchewan Association of Laboratory Medicine (SALM).

On top of having the above-noted invited speakers, we also had several outstanding local speakers from our own PaLM Department who presented the following topics:

1. **Dr. Nicholas Baniak**, GU pathologist, SCH, Saskatoon "Diagnostic controversies in GU pathology: mostly prostate plus a few quick extras", October 26, 2020.

2. **Dr. Deepti Ravi**, GI pathologist, SCH, Saskatoon "Recent updates in GI pathology: WHO, IARC and PSOGI guidelines updates, new procedures and their impact on reporting", January 25, 2021.

3. **Dr. Marilyn Kinloch**, gynecologic pathologist, SCH, Saskatoon "Biting off more than expected: diagnosis of unsuspected malignancy on hysteroscopic intrauterine morcellation", February 22, 2021.

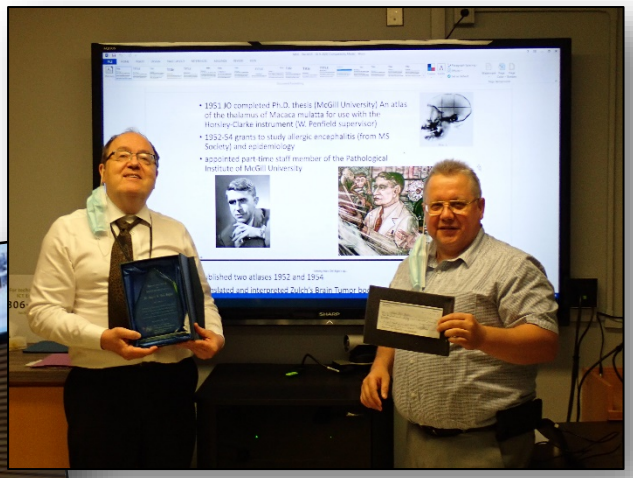
4. **Dr. Alysa Poulin**, pediatric pathologist, RUH, Saskatoon "Perinatal and placental pathology: a local experience on infection", March 29, 2021.

5. **Dr. Donna Ledingham**, transfusion pathologist, RGH, Regina together with Dr. Oksana Prokopchuk-Gauk, transfusion pathologist, RUH, Saskatoon "Prevention of

alloimmunization in mothers of Saskatchewan (PRAMS): development of a provincial program structure in transfusion medicine laboratories", June 28, 2021.

A new development with PaLMGRs in this reporting cycle was, in addition to the academically-oriented grand rounds, an introduction of clinically-oriented grand rounds in the late spring of 2021. This was spearheaded by **Dr. Bruce Murray**, SHA lead pathologist for Northern Saskatchewan, Battlefords Union Hospital and supported by provincial SHA/PaLM leadership team (Dr. Fergall Magee and Ms. Lenore Howey). The first presentation was Dr. Oksana Prokopchuk-Gauk "Transfusing wisely: appropriate blood use in patient care" on June 8, 2021 with participation of more than 50 physicians, MLTs, MLAs and other related health care professionals. Currently, it is planned to have those clinically-oriented grand rounds on a quarterly basis in addition to the already established monthly PaLMGRs that are more academically-oriented.

Since the COVID-19 pandemics is not over yet, the plan is to have academic and clinical PaLMGRs on-line with potential to resume in-person rounds when the epidemiologic situation permits. Our portfolio of PaLMGRs for the 2021-2022 cycle has been almost completed and represents a mixture of local faculty members and residents across the province and invited speakers from Canada and USA.



Drs. Roland Auer and Viktor Zherebitskiy presenting (on-line) a PaLMGR appreciation award for invited speaker, to **Dr. Marc Del Bigio**, on September 28, 2020

Dr. Roland Auer presenting (on-line) a PaLMGR appreciation award to **Dr. Jason Karamchandani** on November 27, 2020

Residency Program

UNIVERSITY OF SASKATCHEWAN

Pathology & Lab Medicine Residents 2020 -2021 Academic Year

Alicia Andrews
PGY5

Hui Wang
PGY5

Jana Suresh
PGY4

James Macpherson
PGY4

David Li
PGY4

Suresh Tharmaradinam
PGY3

Archan Kakadekar
PGY3

Phillipe Price
PGY2

Karan Vats
PGY2

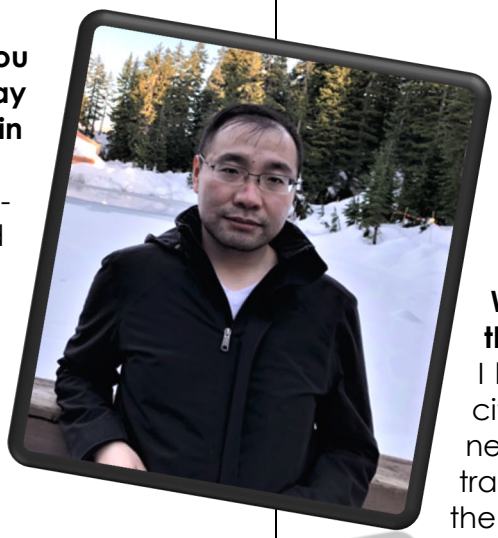
Ingrid Tam
PGY1

Yayuan Zhao
PGY1

Dr. Yayuan Zhao, PGY1 Resident

Interviewed by Dr. Archana Kakadekar, PGY3
MAY 2021

Where did you grow up and how was your experience there?
I grew up in the Northern part of China and the cozy city where Confucius lived. The city and people are still highly influenced by his philosophy. I am planning to visit the city, including the Temple of Confucius, after the pandemic.



When did you decide you wanted to move away and pursue a career in pathology?
It was right after my ten-year medical and scientific pieces of training. My mentor during the training really inspired me to learn genitourinary pathology.

Is there anyone that motivated you to take such a big step in your move to Canada?
My greatest motivation is actually to provide a better environment for my daughter.

What is your favourite dish from your home country?
Roasted Peking Duck (fair taste here) and Kung Pao Chicken (no authentic one that I have discovered in North America).

Alternatively, what is your favourite dish in Canada?
Roasted beef with mashed potato.

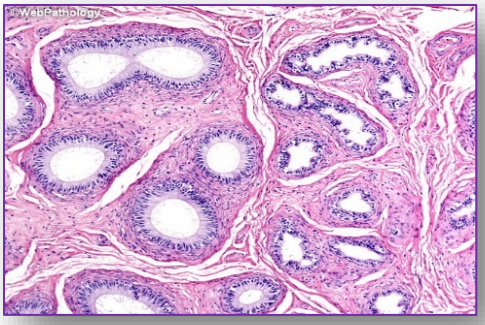
What has been the biggest challenge moving to Canada?
Language barrier. Because I had never planned on moving, I didn't have time to prepare myself for a different continent.

Surprisingly, I feel the culture barrier is not what others have described. People are very similar within my social circle.

How has the pandemic impacted you over this last year?
It's super hard to make new friends in a new city with no social gatherings.

What has been your favourite thing about Saskatoon?
I like Saskatoon as it is a cozy city with lovely neighbourhoods and no traffic. I also like walking near the river which never totally freezes.

Genitourinary Slide (Testes)



Dr. Ingrid Tam

PGY1

Interviewed by
Dr. Archana Kakadekar
PGY3

"The pandemic has been such a challenging time for so many. I have been very fortunate over the last year. While moving to a brand new place was quite daunting, I've really enjoyed building a new community here in Saskatoon."

Where did you grow up and how was your experience there?

I grew up in Newmarket, Ontario, just north of Toronto. It is a small and very friendly town – I have many memories of biking to the lake and walking down the Main Street.

What is your favourite dish to cook?

I love trying new recipes that celebrate different cultures. A favourite over the past few years is bibimbap, a Korean rice dish with mixed vegetables and meat, traditionally served in a stone bowl. I recently received several bowls as a gift and am excited to put them to the test!

What is your dream vacation spot?

Japan, during cherry blossom season, hopefully complete with a dinner at Jiro's famous restaurant.

What is a hobby you picked up during the pandemic?

I have been a plant mom for many years but have recently gotten into outdoor gardening on my balcony.

If you could have any superpower, which one would you choose and why?

The ability to selectively slow down time in order to cherish moments with those who mean the most to me.

What has been your favourite thing about Saskatoon?

Walks along the river – Bulk Cheese Warehouse is a very close second!

Canadian Resident Matching Service (CaRMs) 2020 General Pathology

Submitted by Dr. Archana Kakadekar, PGY3

The 2020 CaRMs match was extremely unique this year in the sense that the first iteration of our general pathology interviews were in-person at the University of Saskatchewan. However, things took an unexpected turn when the COVID-19 pandemic swept the world. We knew too little about this novel virus and to ensure everyone's safety, online WebEx interviews soon became the appropriate solution for conducting residency interviews. Although it had not been our ideal situation, the CaRMs committee had to make it work, and we did!

We unfortunately did not match any applicants in our first iteration but were lucky enough to match Dr. Ingrid Tam and Dr. Yayuan Zhao. Dr. Tam graduated from the medical school of Limerick and is coming to us from New Market, Ontario. Dr. Zhao has been working as a pathologist assistant in Vancouver, British Columbia and graduted from Xi'an Jiatong University College of Medicine, Xi'an, China. We are excited to have them join the program!

New Resident Offices – SCH 6th Floor

Photos Submitted by Deb Quirion, Resident Program Administrator

Resident Wellness

Pathology Resident Disc Golf Championship, in the Summer of 2020

Submitted by Dr. David Li, PGY4

The disc golf tournament idea was the winner in the survey among three ideas for a resident wellness event in the summer of 2020. The other two were mini tennis and outdoor yoga with coaches.

An Amazon delayed delivery of the discs almost disrupted the event. Luckily, I was able to get enough from Canadian Tire the evening before the tournament.

The event was held in the football field beside the University of Saskatchewan's Education Building. A nine-hole course was decided-upon and cardboard boxes were used as the disc baskets. We had full house participation. All 11 residents from fifth-year seniors, Hui and Alicia, two brand new first-year residents, Ingrid and Yayuan, and everyone in-between, participated!

It was a blast—from the long and short distance throws, the gimmies, the walking on the green, the misses and the target hitting thrills, for one hour the pandemic was forgotten. The fun and competition were on full swing.

Phillipe was the winner of the Championship, and Yayuan was the winner of the best shot in the tournament. Overall, it was great to get everyone together to enjoy the warm weather and play some sports!

Pathology Resident “Paint Nite”

Submitted by Dr. Ingrid Tam, PGY1

While incredibly exciting, residency training can be challenging and overwhelming at times — particularly during a pandemic! As a first-year resident, I'm so glad that these are sentiments that are well-recognized by our training program and department. To combat this, we aim to hold quarterly wellness events where we can be creative, get active, be mindful, or any in combination — in order to achieve balance, develop skills of resilience, and facilitate emotional and physical well-being.

One of the events we held earlier in the year was a Paint "Nite", where we all unleashed our inner Bob Ross and followed along with a painting tutorial of mountains near a lake. The results went beyond what any of us were expecting! We enjoyed some sushi together as a mid-painting lunch break. On the horizon, we have an outdoor activity in the works, and will hopefully be able to soon have a Resident Retreat.

New Microscopes

Submitted by Dr. Phillipe Price, PGY2

Hello, my name is Phillipe Price, and I am in PGY-2 General Pathology. I was asked a few months ago to help put together a list of equipment that would benefit the residency program here at the University of Saskatchewan. I've spent the last year and a half tinkering with our microscopes, digging up old parts from our equipment grave yard, and pleading with the Gods of Webex to grant us with some semblance of a working video conference (a daunting task at the best of times). So, I felt like I had picked up some skills and knowledge that could help.

The first item on the list was to buy some new microscopes. It seemed that it was time that we started getting new microscopes. All of the scopes that we have now are quite old, and when speaking with one of the repair technicians, they were either prone to, or actively undergoing mechanical failure. He told me that a microscope had to be quite old for the grease to dry up in the focusing track, which causes a grinding that you can feel and hear. We are grateful for the equipment we have, but it really makes you feel appreciated when the program is willing to invest in good equipment that makes your life just a little bit easier. Secondly, there are new features that are now available requiring a microscope camera. The scopes that we have can be fitted with cameras, but the compatible cameras do not interface directly with a computer. This precludes most of the software that we would look to use. In the burgeoning age of digital pathology, and especially during the COVID pandemic, we are starting to see how valuable a camera feed from your microscope to your computer can really be! And I feel privileged that we can start to learn how to use these technologies early in our career so that they might benefit us for decades to come.

Deb Quirion, Resident Program Administrator, and I worked closely together to coordinate the purchasing of new microscopes. She was able to get quotes from three vendors, representing Leica, Nikon and Olympus. This meant that we had to, to the best of our abilities, try and compare the relative benefits and drawbacks to these three companies. Eventually we settled on Olympus, who many of our staff are familiar with for the great quality of their products. An added bonus is that the compatible cameras function natively with a manual scanning software that we may consider purchasing in the future (manualWSI from Microvisioneer). This would allow us to scan whole slide images (WSI) of our cases from our very own microscopes, providing new opportunities for interdepartmental rounds, teaching, and building a slide library.

Lastly, it was time to put the microscopes together. The plan was to have an Olympus technician come and put them together for us. But, like with everything else, man makes plans and COVID laughs. So, it was up to us to put them together. The Olympus rep assured me that the setup couldn't be easier (I was not assured). That said, I was able to put them together, with help from my colleagues Archana, Ingrid, Karan, and James! We are now using these new microscopes and believe me when I tell you that they are a welcome addition to our program. I want to restate how fortunate we feel to have a program that is willing to invest in our success!

We would like to thank everyone who was able to make this possible including Deb Quirion, Resident Program Administrator, Harold Shiffman, General Manager, Dr. Fergall Magee, Provincial Head, and the residents who helped put together these microscopes.

Resident Farewell Lunch – 18 JUN 2021

Photos Submitted by Deb Quirion, Resident Program Administrator

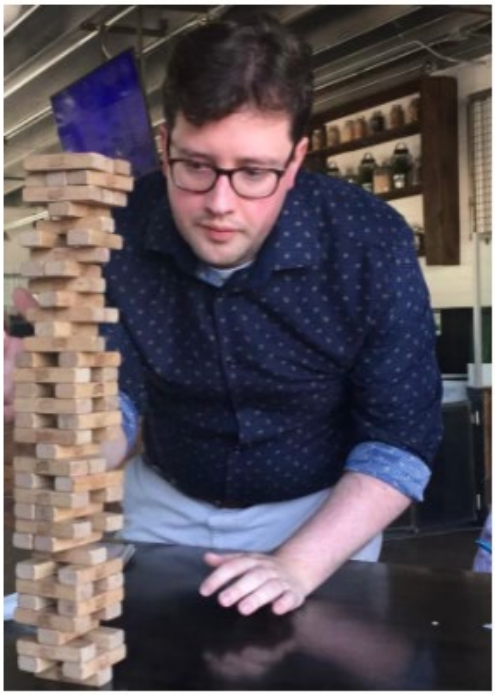
Back: Ingrid Tam, James MacPherson, Karan Vats, Louise Quenneville, David Li, Yayuan Zhao
Front: Alicia Andrews (Rowan), Archana Kakadekar, Phillipe Price, Hui Wang

On behalf of the Residents, and presented by Dr. Louise Quenneville, a Farewell Gift for Dr. Hui Wang, PGY 5

RESIDENT DOCTORS of SASKATCHEWAN

Congratulations to James Macpherson, Resident of the Month!

James Macpherson, PGY4, General Pathology



Thanks for the nomination. I'm General Pathology resident just finishing my fourth year. I'm from Saskatoon originally, and completed medical school at the U of S. My interest is in forensic pathology, so I'll be completing a fellowship in Edmonton after my fifth year.

Outside of work, I enjoy cooking, squash, documentaries about dinosaurs, and tabletop roleplaying.

Here are some of the reasons James was chosen as Resident of the Month (As quoted from the nomination letter):

"James is a wonderful colleague, physician, and loyal friend in our pathology resident group. He is kind, humble, and always professional."

"He never hesitates to share knowledge with other learners, and is an enthusiastic and engaging teacher - we have all benefited from his expertise! He also has an aptitude for research, and has presented his work at conferences, published in peer-reviewed journals, and recently won a departmental research award."

"It is clear that so many people enjoy working with James, a testament to who he is as a person and a physician."

"He truly is an example of what a great resident should be, and is a strong role model to his colleagues, junior residents, and medical students alike."

Congratulations, James!

JUN 2021

DEPARTURES

Submitted by Dr. J. Fergall Magee

Dr. Katayoon (Kathy) Jafari, MD FRCPC

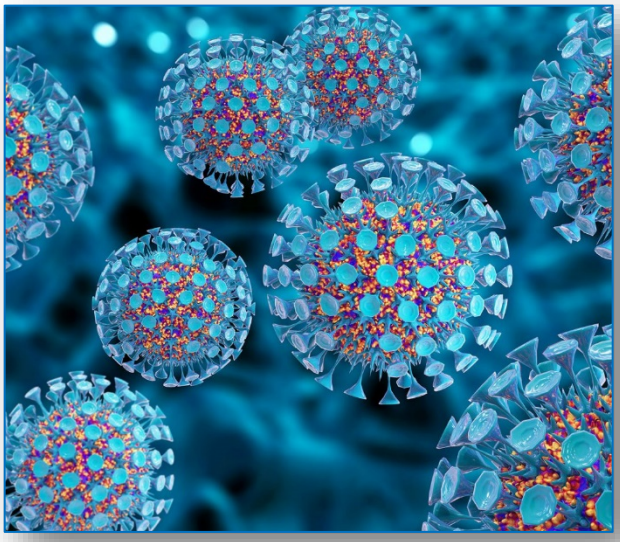
I would like to express sincere thanks and all success to Dr. Kathy Jafari, who left Saskatoon in early December 2020 to relocate to Calgary. Kathy had worked as a Staff Hematopathologist in the Division of Hematopathology at RUH since July 2018. She obtained her Medical Degree at the Shahid Beheshti University of Medical Sciences, Iran, followed by a Hematopathology Residency at the University of Ottawa, Ontario and a Fellowship in Clinical Hematopathology at the University Health Network in Toronto, Ontario. She subsequently worked as a Blood Bank Consultant at the Peterborough Regional Health Centre, ON and later as a Staff Hematopathologist at Cross Cancer Centre, Edmonton, AB and St. Paul's Hospital, Vancouver, BC, before joining our faculty in RUH. Kathy was a highly trained and dedicated clinician who made significant contributions to multidisciplinary and hospital grand rounds, journal clubs, academic and research days and who displayed a passion for one-on-one medical student and resident education. We were extremely sorry that she left Saskatoon but wish her and her family all success in Calgary.

Dr. Kathy Malejczyk, MD FRCPC

I would like to express sincere thanks and all success to Dr. Kathy Malejczyk who left Regina in May 2021 to relocate to Kelowna, BC. Kathy had worked as a Medical microbiologist in Regina General Hospital since 2014, having obtained her Medical Degree at the University of Alberta (2008) followed by a Medical Microbiology Residency, also at the U of A (2009-2013). Kathy provided amazing expertise and knowledge in an extremely busy microbiology practice in Regina, but also made significant contributions in the areas of antimicrobial stewardship, provincial laboratory utilization, computerized practitioner order entry (CPOE), quality assurance, Rapid Process Improvement Work (RRIW), SWOT Analysis, and undergraduate and resident education. (Pathology Education Committee, Student Academic Management Committee and the AMMI Canada Education Committee). While we are extremely sorry to see her leave and will seriously miss her significant contributions to the Department, we wish her and her family all success and have no doubt that she will be a star in Kelowna.

David McKinnon, MBA MSc BSc

David joined the then Saskatoon Health Region as Manager of Microbiology, Virology, Diagnostic Molecular Pathology and Immunodiagnostics in 2014. In 2018, in the now SHA, he accepted a position as Director of Pathology and Laboratory Medicine for Saskatoon. David brought to both of these positions drive and innovation in areas of strategic planning, quality improvement and data analysis, allied to a great sense of humour. We will miss his great effectiveness but wish him well in his new larger role - dealing with Animal Health, Plant Health and Food Protection as Director of Laboratories with the Canadian Food Inspection Agency, located on the U of S campus. As Director, his role is to provide leadership for the Agency in Western Canada in its dealings with provincial government agencies, universities, producer groups and other federal agencies. We wish him all success but hope to still see him sometimes on the SHA campus.



Molecular Diagnostics
www.genengnews.com

ARRIVALS

"Pathologist in Training!"

Welcome to **Rowan**,
son of Dr. Alicia Andrews.

Dr. Nicholas Baniak, MD FRCPC

Dr. Baniak was born and raised in Saskatchewan. He completed a B.Sc in Physiology, his medical degree, and then General Pathology residency all at the University of Saskatchewan. Subsequently, he completed a fellowship in Urologic pathology at Brigham and Women's hospital in Boston before moving back to Saskatoon and commencing practice in July 2021.

Diane Haugrud, MLT

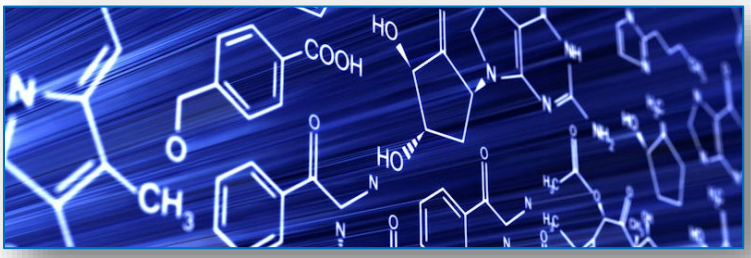
Diane was born & raised in Saskatchewan. She completed her Medical Laboratory Technology training in 1981 at Kelsey Institute in Saskatoon, then worked as a MLT mainly in the Hematology division until 2001 at which time she started her management career at SPH. Diane has managed various disciplines and has seen many changes in her career, from having the opportunity to plan new facilities, such as SCH and JPCH to developing new lab disciplines, ie: HIL (Histocompatibility and Immunogenetics Laboratory). Diane is currently serving as the Laboratory Director for Saskatoon. Married to Allan, with two children-Melissa and Brenan. Diane enjoys spending time with her family, especially her two granddaughters-Harlow & Oaklynn. She has volunteered in many roles in her community over the years and is very passionate in serving as a Medical Volunteer First Responder Team Lead and has been dedicated to this role for over 25 years.

Dr. Ramesh Saeedi, MD PhD FRCPC

Dr. Saeedi was born in Tehran, Iran and received her Medical Degree at the Gillan University, Iran. She moved to Canada (Vancouver) and received her PhD from the Department of Pathology Laboratory Medicine at the University of British Columbia (UBC). It followed by a Postdoctoral Fellowship in the BC Centre for Excellence in HIV/AIDS at UBC. Dr. Saeedi completed her Medical Biochemistry residency at UBC in 2015. She worked as a Medical Biochemist at the Fraser Health Authority before she joined Saskatchewan Health Authority (SHA). She joined the Biochemistry team in Regina JUL 2020.

Dr. Zafar Zawaz, PhD FACMGG

Dr. Zafar Nawaz has joined the Genomics Laboratory in RUH. He is a diplomat of the American Board of Medical Genetics and Genomics and Fellow of the American College of Medical Genetics and Genomics. Dr. Nawaz was trained in clinical molecular and cytogenetics at Hospital for Sick Kids, Toronto, Canada, Emory University, Atlanta and Rochester University, New York, USA. Dr. Nawaz has experience in developing comprehensive testing strategies for different aspects of genomic diagnostics using multiple platforms.



Medical Biochemistry
www.courses.leeds.ac.uk

PROFILES

Submitted by Dr. Deepti Ravi

Dr. Donna Ledingham,

Hematopathologist &
Interim Area Department Lead, Regina

What was your inspiration/motivation to choose Lab Medicine?

I was already a parent when I entered medical school, so work-life harmony was always a priority for me. I decided to try out pathology after having seen how much some of the teachers in the Pathology course enjoyed their work. I did an elective with Drs. Angel, Chibbar and Kanthan, and really enjoyed both the diagnostic challenges as well as the time and space to properly address them. I followed Dr. Jill Wooff out to Dalhousie, and the rest is history…

What was the high point of your time in Saskatchewan?

Well, I am a fourth generation Saskatchewanian on both sides of my family, so there is quite a bit to choose from. Probably giving birth to my two sons in the same hospital (RUH) where I was born.

How has the pandemic impacted your work?

The pandemic has unified the SHA and given us a common purpose to work towards. This has been extremely rewarding in many ways, both locally in Regina and with the Provincial Laboratory team.

What is the most challenging aspect of your job in this pandemic and how do you work on it?

Sustainability has been the biggest challenge for me during the pandemic. People talk about how they caught up on their reading / house cleaning / sourdough bread baking during the lockdowns last spring. The laboratory was busy the whole time. In my case, it involved design and implementation of a screening process for blood and blood component orders for Saskatchewan. Fortunately (or not), the threatened shortage never materialized. However, the pandemic response has showed me how little surge capacity our laboratory system has. I hope that the efforts of the SALM Workload Committee can contribute to a more sustainable system for the future.

What is the greatest learning event in your career?

There have been many, but the greatest has to be the critical incident regarding systematic error in INR results in one of the smaller facilities of the former RQHR. That occurred less than a year into my career, and it taught me the value of so many things in the laboratory quality system. It really helped me own my authority as a medical director at an early "age" as a pathologist. People get to have the authority when they have the responsibility of going on the news if something goes wrong.

What is the best advice given to you and by whom?

Again, so many examples. I'll stick with a classic from an Ob/Gyn I met a conference: "*Good judgement comes from experience. Experience comes from bad judgement.*" An important reminder of the value of our mistakes in growth.

On a social / personal side – what is one thing that you pursue?

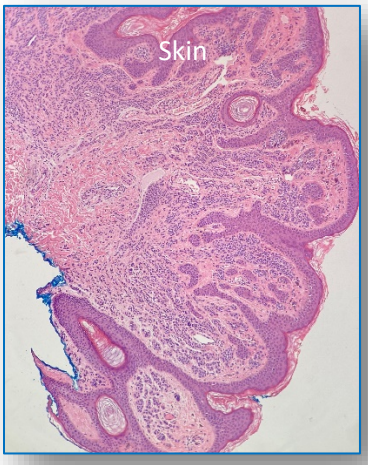
Gardening, as featured in your new "social section" of the report – looking forward to others' responses!

How do you work on your social and work life in order to achieve a balance, especially during this pandemic?

I am trying to take one day per week completely off, including most household chores. I find that this day of rest is helping me be more efficient the rest of the week.

Any closing comments…

I am looking forward to working with the teams that were developed during the pandemic to improve the function of the "enduring" structure. We have the ability to do great things!



Dr. Amanda Lang,

Clinical Microbiologist, Regina

What was your inspiration/motivation to choose Lab Medicine?

For me this started at a fairly young age when the movie "Outbreak" came out in 1995. This sparked an instant interest in infectious diseases and microbiology. Even though watching the movie now I can see all of the inaccuracies, I'm still grateful that I saw it as it was definitely the thing that set me on my path. Growing up in Prince Albert (SK), I was always aware of Saskatchewan's' strong public health network; this also sparked an interest in public health for me and a desire to 'give back' to the people of our province. During my undergraduate degree at the University of Saskatchewan (Microbiology & Immunology) I discovered the world of Clinical Microbiology. The ability to work on all pathogens and solve new problems on a daily basis was instantly appealing to me. To further that goal, after completing my PhD (University of Saskatchewan - Veterinary Microbiology at VIDO) I began applying to the Clinical Microbiology programs every year during my postdoctoral fellow years.

What was high point of your time in Saskatchewan?

Being from Saskatchewan, I have a lot of high points… Summers up north at the lake, graduate school in Saskatoon, and times with friends and family. But I think the most exciting thing was when I was offered the job at the Roy Romanow Provincial Lab in 2016. I never thought that I would get my dream job as a public health and virology focused Clinical Microbiologist in Canada, let alone my home province!

How has the pandemic impacted your work?

The pandemic has impacted my work significantly. As a virology sub-specialist, my job has become 99% COVID-19 related. While my job used to involve consults and lab direction on all manner of pathogens, since January 2020 it has been purely focused on a singular virus – SARS-CoV-2. Workload has also increased significantly, as there are many aspects of lab medicine (quality control, procedure manuals, validation of new assays) that cannot be ignored. The other pathogens and duties did not go away, COVID-19 was just piled on top and almost everything COVID-19 related was considered an emergency that needed to be solved "yesterday". The entire discipline of Microbiology within lab medicine in Saskatchewan had to divvy up work in different ways than previous and come together as a seamless team to ensure the needs of the entire province were met for COVID-19 diagnostics. Another incredible aspect was the amount of tests that were validated and implemented for diagnosis of COVID-19 provincially. Normally, a clinical lab would have one or maybe two testing platforms to diagnose a specific disease. Because of supply, staffing, and general capacity limitations, it was

necessary for us to implement as many testing modalities as possible. Within the SHA we have SEVEN different testing platforms and are about to add an eighth.

What is the most challenging aspect of your job in this pandemic and how do you work on it?

I have two answers for this question, actually; they are both stress related. The first being the emergency nature of everything and the fast pace in which decisions needed to be made and plans implemented. This was especially taxing during the beginning of the pandemic when little was known about the virus: new assays and plans were having to be developed on the fly, and our supply chain for reagents was regularly compromised due to global shortages. There were many times where we were a few days away from running out of something critical to the diagnosis of COVID-19, and all hands were on deck scrambling for alternative suppliers and reagents. The second was the workload. There's no question that the pandemic has been stressful for everyone. As my job became hyper focused on all things SARS-CoV-2, it became very easy to slip into working too much and taking on too many challenges. This on top of general life pandemic changes and being faced with anti-science sentiments in the community was at times extremely difficult and led to burnout which was difficult to recover from. The solution to both of these was working on resiliency, sharing the workload more, staying connected (digitally) with friends and family but disconnecting from social media more, and in general working towards a healthier work-life balance.

What is the greatest learning event in your career?

Since I'm still early on in my career, the pandemic has been the greatest learning event (aside from my training).

What is the best advice given to you and by whom?

This may seem a bit cliché, but: "You can't change how other people act, only how you react." Many people throughout my life have said variations of this to me and I've found it to be very helpful, especially lately when dealing with those who are propagating conspiracy theories around the pandemic.

On a social / personal side – what is one thing that you pursue?

During times when small sport gatherings are allowed, I do agility with my Australian Cattle Dog mix: Indy. It's basically dog obstacle courses – it's good exercise for both of us, and fun! Indy gets so excited when I pick up her agility stuff to head out.

How do you work on your social and work life in order to achieve a balance especially during this pandemic?

This has been quite difficult during the pandemic for me as I am an extravert! I've had to learn to work harder on work-life balance to maintain my mental health and be sure to reach out to friends on a regular basis. For me, this means setting up regular digital game nights. My husband and I have three different online gaming groups that we are involved in: World of Warcraft, Dungeons and Dragons, and a board game group. I try to make sure I do at least one of these a week to connect with friends. Now that it's summer I also try to connect with a friend or two once a week for masked/socially distanced dog walks.

Any closing comments…

It's been a privilege to contribute to the world of diagnostic and public health microbiology in my home province of Saskatchewan. While difficult at times, it's been rewarding to have been involved in our response to the pandemic.

Microbiology-Inspired Artwork
www.biowars.com

Dr. Marc Baltzan Histocompatibility & Immunogenetics Laboratory (HIL)

Submitted by Dr. Ahmed Mostafa, Laboratory Director &
Gisele Sakowski, Laboratory Manager

The Dr. Marc Baltzan Histocompatibility and Immunogenetics (HIL) Laboratory in Saskatoon, formerly known as the HLA laboratory, is the only provincial laboratory that provides services to support deceased and living donor transplant programs, including bone marrow and solid organ transplantation. The HIL is one of the 14 Laboratories in Canada that is internationally accredited by American Society of Histocompatibility and Immunogenetics (ASHI). The HIL performs state-of-the-art, innovative histocompatibility and genetic testing. Testing includes HLA typing, antibodies, and cross matching to assess donor-recipient compatibility for transplantation. The laboratory also provides histocompatibility testing for Other Clinical Purposes (HLA disease association and HLA-pharmacogenetics and platelet antibody).

Ms. Gisèle Sakowski joined the lab as the manager in January 2019 after having worked in the role of MLT II in the RUH Hematology Laboratory. She also manages the Transfusion Medicine Laboratory, the Human Genomics Laboratory and the RUH Hematology Laboratory.

Dr. Ahmed Mostafa joined the laboratory in August 2019 as a clinical associate laboratory director after he completed his Histocompatibility and Immunogenetics fellowship training in Calgary. In October 2019, Dr. Mostafa passed the American board of Histocompatibility and Immunogenetics (ABHI) exam and in June 2020 completed the ASHI Director exam. Dr. Mostafa is now serving as the new ASHI Clinical Laboratory director and the laboratory is ASHI accredited for the following areas:

- Solid Organ Transplantation: Deceased Donor
- Solid Organ Transplantation: Live Donor
- HSC/BM Transplantation: Related Donor
- HSC/BM Transplantation: Unrelated Donor
- Histocompatibility Testing for Other Clinical Purposes

During the past year, the laboratory had passed two rounds of ASHI inspections. The first inspection in November 2020 was a focus inspection due to change of the ASHI clinical director, and the second inspection in May 2021 was the biennial ASHI inspection. In both inspections, the laboratory recorded zero deficiency. The HIL staff worked very hard to fulfill the stringent ASHI standards and requirements. Now the HIL has a very strong team with quality assurance agents to assess, implement, and maintain approved quality control and quality assurance procedures. The laboratory designed and implemented a custom built quality assurance variance data base to track all pre-analytical, analytical and post-analytical deviations from the ASHI standard.

The successful outcome of bone marrow transplantation depends significantly on the high resolution HLA typing matching. HLA typing of both potential related and unrelated donors can be both time-consuming and laborious and yet does not always resolve accurately the true level of histocompatibility required. The Dr. Marc Baltzan HLA laboratory located at St Paul's hospital started high resolution HLA typing in 2016. At that time, the laboratory didn't have the capability to do sequence based high resolution typing, and HLA typing was performed by Sequence Specific Oligomer (SSO) and confirmed by Sequence Specific Primer (SSP) only for ambiguous alleles and the highly polymorphic loci. With the expansion of the adult stem cell program, and the pediatric hematology program, this outdated method failed to fulfil the requirement for high resolution typing. There was an increase in the turnaround times of up to 8 weeks in some occasions due to the laboratory testing methodologies with limited staffing. This can hugely impact our patient safety and survival rate. The active donor search performed by the bone marrow coordinator is an extensive process that involves multiple international and national bone marrow registries. This process can take several weeks to find a suitable donor and that will add to the waiting time for our Saskatchewan cancer patients, and ultimately will decrease the survival rate. In addition, thousands of new HLA alleles are added every year to IMGT database. For that, the national marrow donor program (NMDP) mandated the use of only sequence-based HLA typing for bone marrow recipient and donors. The laboratory has recently received generous funding from the SPH foundation to purchase the next generation sequencer (NGS), which is considered the gold standard for HLA typing. Recent advancements in NGS technologies significantly impacted the HLA-typing process, significantly decreased the turnaround time to 2 weeks, and reduced the overall cost. The reduction in the turnaround time will have a higher impact on our Saskatchewan cancer patients waiting for bone marrow transplantation and will increase the survival rate. The RFP for the NGS was publicly advertised on May 2020 and the two NGS MiniSeq Sequencers were received by the HIL on September 2020. COVID-19 did not prevent the HIL from receiving the necessary NGS training from the vendor due to international travel restriction. The training was successfully performed virtually using live sessions over several days. The HIL staff worked hard to receive the full ASHI accreditation for the NGS before the deadline set by NMDP of February 27th, 2021.

Hematopoietic chimerism, is a diagnostic test that is performed to measure the ratio of recipient to donor cells. This test is essential for monitoring engraftment of donor cells and to assess graft failure or relapse of disease after allogeneic stem cell transplantation (SCT). Serial analysis of chimerism enables determination of the trend of engraftment over time and helps in early therapeutic interventions. Full chimerism refers to a recipient with exclusively donor hematopoietic cells post-transplant. Mixed chimerism (which can be classified as transient, stable, or progressive) describes the presence of both recipient and donor hematopoietic cells. This test is not currently performed in our province; thus, all samples are referred out of province. Due to this, the turnaround time has the potential to take up to 21 days. As a result of this long turnaround time, intervention therapy that can rescue the engraftment will be delayed and graft failure may occur. In the last two years (2019-2020), the province has sent over 600 samples for out of province testing. The out of province laboratory charges approximately $1000 per test which brings to a total charge of $600,000. Our laboratory in Saskatchewan is considering bringing the engraftment monitoring back in house, which will allow flexibility of testing, decreased turnaround times, improve patient survival and save over $300,000/ year for the province. The laboratory has started the validation of the chimersm testing in March 2021 and will be completed within the next six

months. On that note, the HIL in SPH will be the first Canadian laboratory to implement engraftment monitoring by NGS, which is considered to be the most sensitive method available on the market.

Kidney transplantation holds much promise as a treatment of choice for patients with end-stage kidney disease. The impact of cold ischemia time is associated with an increased risk of an acute renal transplant rejection and death-censored graft loss. In the last decade the HIL in SPH was performing HLA typing by SSO for deceased donors and relied on it for virtual crossmatch. This whole process can take up to 7 hours to be completed, especially in the presence of an ambiguous HLA typing. The laboratory has just recently received a generous funding from the SPH foundation to purchase the Real-Time PCR method for HLA typing, which is considered the gold standard for HLA typing for deceased donors. HLA typing by real-time PCR can be performed in 90 minutes, which will significantly reduce the cold ischemia time for solid organ donation. The RFP was started in December 2020, a vendor was picked in March 2021 and we are in the process of sending in a purchase order. Validation of real time PCR is expected to be completed within 3 month and will go live by September 2021.

The Dr. Marc Baltzan HIL Laboratory is vital to the SHA Saskatchewan Transplant Program and the Saskatchewan Cancer Agency Stem Cell Transplantation program. The updated technology that was validated during this year will provide a more accurate diagnosis for our patients in a shorter period of time allowing for earlier treatment of rejection and leading to greater patient survival. In conclusion, we would like to remind everyone of this statement:

"Teamwork is the ability to work together toward a common vision. The ability to direct individual accomplishments toward organizational objectives. It is the fuel that allows common people to attain uncommon results." **- Andrew Carnegie**

L-R: Karey Gorkoff, Destinie Webster, Twyla Pearce, Gisele Sakowski, Carla Saworski, Cathy Shanofer, Dr. Ahmed Mostafa

RURAL LABORATORY

Establishing A Massive Hemorrhage Protocol in Prince Albert: A Team Effort!

Submitted by Dr. Erwin Chao (Anesthesiology, Prince Albert), Edith Hein (MLT II, Prince Albert), Dr. Oksana Prokopchuk-Gauk (Transfusion Medicine, Saskatoon)

There had been informal discussions around developing and implementing a Massive Hemorrhage Protocol (MHP) at the Victoria Hospital in Prince Albert (PA) since 2019, although until recently, pursuing this initiative seriously had not gained any traction.

The first serious push to have an MHP for PA came after a local critical incident in late June 2020. After the case debriefing meeting, experts from Saskatoon and Regina became involved in a multidisciplinary committee dedicated to the formulation of an MHP for PA. The first official meeting of the MHP Subcommittee, as an arm of the former PA Parkland Health Region (fPAPHR) Transfusion Committee, occurred at the Victoria Hospital on August 18, 2020. Co-led by Dr. Prokopchuk-Gauk, Transfusion Medicine Physician, and Mark Rosin, Clinical Perfusionist from Saskatoon, this initial meeting was well attended and served as an education session and an opportunity to begin designing a PA site specific MHP.

The PA MHP Subcommittee was ultimately comprised of clinical nurse educators (CNEs) from OR, ICU, Emergency & Obstetrics, physicians from respective departments and blood bank services in PA, with consultative participation from transfusion medicine physicians and clinical perfusion. The team was co-lead by Chantelle Zelensky (CNE) and Edith Hein (MLT II).

Numerous meetings followed in the 3 months thereafter. We were fortunate to build upon the work by members of the provincial Transfusion Medicine Discipline committee, using MHP resources available on the SaskBlood website. Specifically, the Advanced Testing Site MHP Algorithm Framework was used as primary resources for local protocol development. This template was modified to suit PA's site-specific resources, with consideration of in-house staff presence (both during the days and in the evenings) and available equipment.

PIC A

As a part of this process, small-scale simulation sessions were arranged by MHP Subcommittee clinical nurse educators to test the protocol functionality, including access and availability of infusion devices, and review of any needed items on carts or in pre-packaged kits on the obstetrical unit and in the emergency department.

There were important lessons learned from these simulations about the protocol and roles of personnel during an MHP activation, which used to inform the final MHP algorithm and process.

PIC B

The review of existing equipment led to identified needs to ensure an optimal care process. Acquisition of new and replacement of outdated equipment for hospital departments was equally important to the success of the MHP rollout. A result of the MHP development process, equipment purchases included a Belmont Rapid Infuser, an additional Ranger fluid warmer, forced air warming blankets and trauma catheters. The addition of the Belmont Rapid Infuser to the PA armamentarium has been indispensable.

Once the MHP protocol was finalized by the fPAPHR Transfusion Committee in on November 24, 2020, the next stage was to educate departments that would most likely be using the MHP. This involved small-group education as well as the introduction of the MHP at a local RMA meeting. Multidisciplinary stakeholder participation was included in a large scale, actual simulation which was essential to iron out any system flow obstacles. The blood bank even made mock RBC units, to enhance the simulation experience!

Prior to approval of the PA MHP by the area Medical Advisory Council (MAC), the MHP algorithm was used in real-life situations on 3 occasions. The preparedness and familiarity of team members with the MHP led to an organized and coordinated approach to patient resuscitation and blood availability, which ultimately benefitted patient care. The MHP was approved by MAC without any hesitation on January 18, 2021 and has since been fully implemented throughout the Victoria Hospital.

Even more important than equipment purchase, was the implementation of an overhead "Code Transfusion" announcement to mobilize extra staff with MHP activation. After hours, a call-back process of physicians, nursing staff and lab technicians is used. With the MHP activation, wards have been educated that all non-emergent labs are deferred until the "Code Transfusion" has been discontinued, which has taken an immense burden off of lab services. The logistics of having all this come together could not have been achieved without the help of our nursing educators and local transfusion medicine team. To ensure a maximum outcome, interdepartmental collaboration has been absolutely essential, including regular reviews of massive hemorrhage cases at quarterly transfusion committee meetings.

On the ground level, there have now been countless educational opportunities, including didactic lectures, table-top and live simulations, sessions to ensure everyone has become aware of the MHP and how to apply it in a real-life activation. Education processes have included an in-service on use of the new equipment, and communication essentials for handover

of patients and blood bank awareness to ensure proper site delivery of blood products.

Since official implementation of the PA MHP, our confidence in the management of the acutely bleeding patients has dramatically improved. The protocol has now been used in the operating rooms, on obstetrics, in the emergency department and in ICU. Our current "Code Transfusion" team includes the department that initiated the MHP protocol, a staff member from the ICU, Emergency, Obstetrics and transfusion medicine lab. The operating room staff are also included should the patient require surgical intervention. We use consultation services available in Saskatoon, to discuss unique patient cases and ensure that we arrange transfer out, if patient clinical care needs exceed our available resources.

PIC C

We recognize that the MHP is truly a living document and may require modification or optimization with time. We have plans for quarterly case review and regular audits to ensure the PA MHP continues to function and serve our patient needs, as intended.

Going forward, implementation of the protocol in other Saskatchewan rural communities is possible, but as we have demonstrated, requires a local multidisciplinary team commitment and collaboration with tertiary care site experts. Education through on-site simulation exercises is essential to consider logistical and resource aspects unique to facilities. There is no 'one size fits all' MHP or process that can simply be adopted without being tailored. We encourage other centers to consider the steps that may be necessary for MHP development for their facilities and connect with their local transfusion committees to discuss next steps!

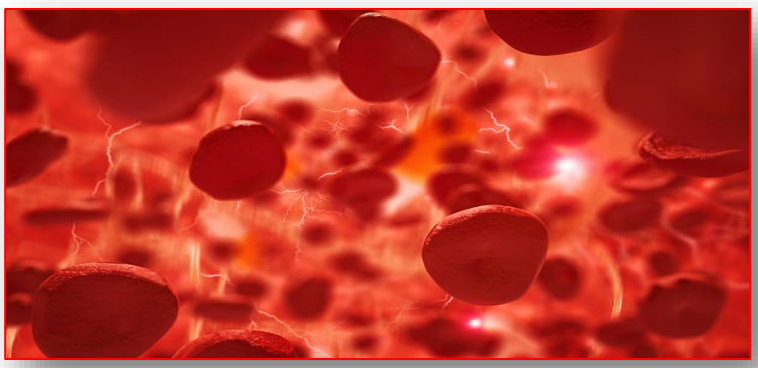
A sincere *Thank You* to the multidisciplinary team members who participated in the MHP development and consultation process in PA! The contribution of each team member is deeply valued. A sincere *Thank You* to the multidisciplinary team members who participated in the MHP development and consultation process in PA! The contribution of each team member is deeply valued.

Clinical Staff	Lab Staff
Chantelle Zelensky, Nurse Educator - ER* (Co-Lead)	Edith Hein, MLT II* (Co-Lead)
Jolean Dyck, Nurse Educator - ICU	Jill Allen, MLT I
Carmen Krawec, Nurse Educator - OR	Brittany Ferguson, MLT I
Joanna Guidinger, Nurse Educator - Obstetrics	Kala Dragseth, MLT I
Sharon Griffin, Nursing Director	Dawn Callaghan, Lab Information Systems
Dr. Viji Udayasankar, Obstetrics	Michelle Harris, Lab Manager
Dr. Matt Parsons, ER	Elaine Blais, Transfusion Safety Manager, North SK
Dr. Erwin Chao, Anesthesiologist	Dr. Rathi Sabaratnam, General Pathology
Samuel Alara – PA Quality Improvement (Observer)	Dr. Ryan Lett, Anesthesiologist - Regina
Mark Rosin, Clinical Perfusion – Saskatoon	Dr. Oksana Prokopchuk-Gauk, TM Physician - Saskatoon

PIC A – PA MLTs **Brittany Ferguson** (MLT 1) and **Kala Dragseth** (MLT I) with mock RBC units for the MHP simulation exercise

PIC B – PA TML techs showing off the PA MHP Coolers: **Jill Allen**, **Brittany Ferguson** and **Kala Dragset**.

PIC C - The PA MHP team who participated in the live simulation. Pictured left to right: **Dr. Erwin Chao**, **Joanna Guidinger** (CNE Obstetrics), **Chantelle Zelensky** (CNE Emergency Room), **Brittany Ferguson** (MLT I), **Edith Hein** (MLT II), **Carmen Krawec** (CNE Operating Room); Missing: **Jolean Dyck** (CNE Intensive Care) **Dr. Matt Parsons** (Emergency Physician)



Working together while staying apart: How SHA and NITHA provided timely testing in remote First Nations communities

Submitted by Heather Keith, NP (Nursing Program Advisor, NITHA), Nnamdi Ndubuka, MD, MPH, PhD (Medical Health Officer – NITHA), Tara Campbell, MPA (Executive Director, NITHA)

With the COVID-19 pandemic on the horizon in early 2020 it was going to be a matter of time before cases began to reach remote First Nations communities in northern Saskatchewan. Due to barriers with timely accessibility to testing and subsequent results, a partnership was struck between Northern Inter-Tribal Health Authority (NITHA), Indigenous Services Canada (ISC), Saskatchewan Health Authority (SHA) and National Microbiology Lab/Public Health Agency of Canada (NML/PHAC).

In April 2020 the first GeneXpert for COVID-19 point of care testing was implemented in northern Saskatchewan and by August the same year, seven additional machines had been rolled out. The initial instrument was for a SHA site, but given case numbers and the time of turn around from obtaining a swab to receiving a result, the instrument was re-routed to a remote First Nations community, with an agreement to provide the SHA with an alternate GeneXpert when NITHA received their allotment. This change proved beneficial as the First Nations community was able to begin testing in community sooner and the SHA hospital site received a GeneXpert that could run four tests at once instead of two. Given the catchment area and need for in-hospital/out-patient testing this benefitted all involved.

With assistance from lab personnel from SHA, the first GeneXpert in remote northern Saskatchewan was successfully deployed. The SHA provided assistance with the set up, education and training for nursing staff along with the provision of initial cartridges. Not being an SHA site meant there wasn't the Lab Information System (LIS) connection, so initially an excel line list was developed to report and track client results. Shortly thereafter the completion and implementation of an electronic data base was incorporated and information could be entered and submitted electronically. Gaps still exist with results not being uploaded to the eViewer system, but the benefit to clients, direct care providers and communities out-weighs this gap.

With work loads increasing due to the pandemic the addition of the testing equipment was appreciated, however, this also increased workloads for already stretched lab personnel. It is important to note that remote communities rely heavily on nursing and community staff for all their health care needs. In addition, Physicians often provide visiting clinics, many of which were halted and changed to virtual clinics during the pandemic and lab personnel are not employed within many of our sites. Working in conjunction with the Saskatchewan Registered Nurses Association (SRNA) and Saskatchewan Association of Licensed Practical Nurses (SALPN), it was deemed that operating the GeneXpert was within the scope of practice and documents were developed for management of results for RNs.

Although operating the equipment and performing duties normally within the scope of lab personnel increased the nursing workload initially, it provided timely access to care based on reliable results and in the end both clients and entire community benefitted. Having access to COVID-19 point of care test polymerase chain reaction (PCR) results within 60 minutes ensured timely initiation of contact tracing investigation and isolation of cases and close contacts. For those without symptoms, cases were picked up much more quickly and the impact upon communities greatly assisted to curb several outbreaks.

With lab personnel being utilized at an all time high, finding someone to train new users became an obstacle. This is where SHA and NML/PHAC worked together to ensure standard of care and quality assurance components were met. These two organizations worked together to ensure documents from different organizations aligned to meet the needs of training the users, using equipment properly and reporting results in alignment with both federal and provincial requirements and regulations. Over time, NML/PHAC took over the training piece – with incorporation of SHA developed documents. Pre-reading packages were sent out, self-study completed and virtual sessions with NML/PHAC staff took place. Validation panels were sent out from RRPL and results returned and interpreted before deeming sites capable of reporting confirmed positive results. In addition to the validation panels, sites opted into the Quality Assessment and Standardization of Indicators QASI proficiency testing provided via NML/PHAC and in order to meet lab licensing criteria, staff also complete the quality assurance (QA) piece routinely as provided via OneWorld Accuracy.

Fast forward one year later, we are still in the midst of a global pandemic. By April 2021, an addition of 11 new GeneXpert instruments were deployed to NITHA partner communities. As we've learned lessons over the past year, the training is now provided with virtual self-directed learning by NML/PHAC with a teleconference Q&A session with each site's users following their submission of a training checklist. Validation panels are sent from NML/PHAC due to shipping logistical issues from Roy Romanow Provincial Laboratory (RRPL) and results are sent to both NML and RRPL for approval. At present we have 11 of 19 GeneXperts fully operational and 8 are in the process of implementation.

Given the global shortage, GeneXpert cartridge supplies have fluctuated over the past year creating some challenges at times. Despite this, NITHA sites and the SHA were able to work together to share

amongst the various sites to ensure all parties could continue testing despite shortages.

With the initial implementation of the GeneXperts and the fact that only 1 of the 33 NITHA sites has a contracted lab technologist we relied heavily on outside assistance for many of our lab questions. We would like to formally acknowledge the work of Brandi Keller, MLT – Director, Pathology and Laboratory Medicine, North, SHA in walking alongside us in this journey, providing her wisdom and guidance and removing barriers for First Nations communities to be able to implement testing within several of our communities.

Thank you to all involved in this process- from RRPL, NML, SHA, PHAC, ISC, NITHA and of course our partner communities who agreed to undertake this initiative and the staff that have continually risen to the challenge and undertaken the additional learning and workload to help fight COVID-19.

About NITHA

Northern Inter-Tribal Health Authority (NITHA) is the only First Nations Organization of its kind in the country. NITHA is comprised of the Prince Albert Grand Council, Meadow Lake Tribal Council, Peter Ballantyne Cree Nation, and Lac La Ronge Indian Band and each has extensive experience in health service delivery. The Partners formally joined together in 1998 to create NITHA to deliver a service known as "Third Level."

Rural Laboratory Medicine – Improving Access to Laboratory Testing

Submitted by Brandi Keller, Director, North

It has been another successful year for rural laboratory medicine as we continue the transition into one provincial laboratory medicine program.

Through system-wide coordination, the SHA aim of high quality, timely health care for all for the patients in Saskatchewan can be achieved. In Laboratory Medicine this equates to providing the right test in the right location at the right time.

Bringing lab testing closer to the client allows for quicker result availability, expedites diagnosis and subsequent treatment from which our rural clients and the health system both benefit.

This year, the pandemic increased the urgency of providing testing closer to home for the patients across Saskatchewan. Through new instrumentation and enhancement of transportation routes, patient access to testing and turn around times has been greatly improved.

<u>Transportation</u>

Rapid and robust movement of samples throughout the province has historically been a challenge. COVID emphasized exactly how important timely transportation is for laboratory testing.

The pandemic was the catalyst in moving forward with improving transport of COVID samples initially and also allowed the opportunity to add on other additional laboratory samples to these routes.

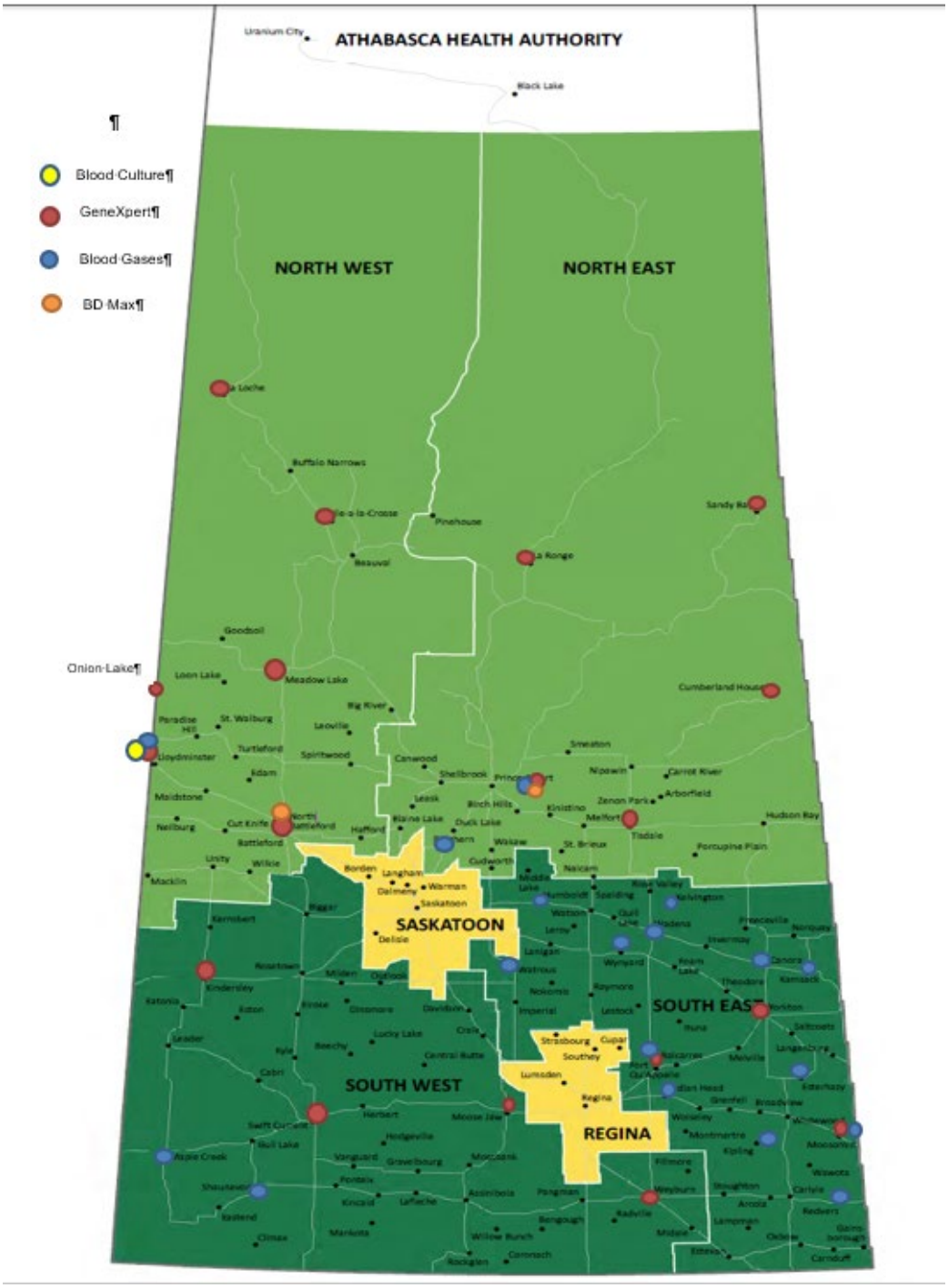
Adding transportation routes across the province allowed for Laboratory Services to change referral patterns, which in turn has significantly improved not only turn around times but also the ability to collect time sensitive samples in remote locations.

Through the evolution of the pandemic, the subsequent strategic placement of GeneXpert machines and kits in other northern communities (including Ile a la Crosse, La Ronge, Sandy Bay and others) has really been a game changer for us! I am very grateful for the coordinated effort and support from our laboratory partners. It has been an invaluable contribution towards better health outcomes for our northern population during this challenging period".

Dr. Moliehi Khaketla, FRCPC, Medical Health Officer

Each year the benefits of Laboratory Medicine becoming one Provincial Program are significant and done through collaboration and teamwork from across the province. Through increased availability and access to high quality testing, our program is continually striving to improve care for all patients of Saskatchewan!

Location/Analyte	Previous Turn Around Time	Improved Turn Around Time
LaLoche -Quantitative Beta HCG	3 days (to Saskatoon)	< 24 hours (to Meadow Lake)
Onion Lake - HBA1C	5 to 7 days (to Regina)	2 to 3 days (to Regina)
Meadow Lake - CD4/CD8	48 hours – if sample received on time. 40-50% were cancelled due to specimen transport time	24 hours. No cancelled specimens due to transportation



Instrumentation

There was a collaborative effort from across the province to install, validate and go live with over thirty-five instruments in rural laboratories.

This was no small feat and would not have been possible without the expertise and leadership of many clinicians, scientists, lab managers, LIS staff and technologists in Regina, Saskatoon and Rural laboratories. The success of these implementations was truly through provincial coordination and collaboration!


BIG RIVER
HEALTH CENTRE
ROSTHERN HOSPITAL
YOU SHOULD NOT
HAVE X-RAYS IF YOU
SPIRITWOOD & DISTRICT
HEALTH COMPLEX
SPIRITWOOD & DISTRICT

A Day in the Life of a MLA…

Submitted as a provincial group effort

The role of a **Medical Laboratory Assistant (MLA)** is integral to the delivery of Laboratory Services in the Saskatchewan. The contribution they make to the delivery of our services is broad and varied based on the site and setting they are working in.

What doesn't vary, however, is that they are integral members of the Laboratory team and that they make an invaluable contribution to the successful delivery of high-quality Laboratory services that meet the needs of all patients in Saskatchewan!

A day for an MLA at Roy Romanow Provincial Laboratory (RRPL) starts very differently than most. At RRPL MLAs do not have a line of people waiting outside the door to have blood drawn, instead their morning starts with 80% of the sites samples coming in the door before 8:00 a.m. That is up to 4,000 samples in a full day (excluding COVID-19 samples) arriving from across the province. The team of MLAs unpack and sort samples based on priority, testing area and sample type. Other areas the RRPL MLA teams support include the referrals section where they are responsible for sending out samples for specialized testing that is not available in Saskatchewan, Colorectal Cancer Screening kits, accessioning, frozen sample receiving and Customer Service where the focus is on answering phones to field questions about specialized tests, collection protocols, results etc.

MLAs at St. Paul's Hospital in Saskatoon contribute in many areas of this high volume, referral laboratory and critical care site. The MLA role at this site includes phlebotomy, processing blood samples on arrival to the Lab as well as the sending out of samples for testing at various labs in Canada as well as internationally. At St. Paul's Hospital, MLAs will make a range of decisions in support of pre-analytical processing. This goes from making sure samples are processed within their appropriate time limits to ensuring the safe handling of CJD samples, to supporting critical issues that arise such as transplant samples that require testing in the middle of the night. St. Paul's Hospital MLAs are behind the scene twenty-four hours a day, making sure that all patient samples are processed accurately, meeting quality assurance standards of the laboratory and expediting results that the clinical team depends on.

In contrast, MLAs working in rural and northern Saskatchewan at sites such as the Battlefords Union Hospital (BUH) in North Battleford, also utilize the knowledge and skills developed during their educational program which includes both medical

laboratory theory and clinical practice. One of the highlights of being an MLA in this setting is closely working with other laboratory professionals which include; Medical Laboratory Technologists (MLTs), Combined Laboratory and X-Ray Technicians (CLXTs), as well as other health care professionals. While perhaps the most common and important skill of an MLA in the rural and northern setting is phlebotomy, other responsibilities and skills required at these sites include receiving patient samples such as blood, body fluids and microbiology specimens and accessioning, labelling and loading them onto various analytical instruments for testing. They are also responsible for the sorting and preparation of samples for shipment to referral laboratories. As well, in many of these sites, MLAs also perform electrocardiograms (ECGs).

St. Paul's Hospital

Roy Romanow Provincial Laboratory

Advanced Diagnostics Research Laboratory (ADRL)

Submitted by Dr. John DeCoteau, MD FRCP(C)
ADRL Medical Director

The Advanced Diagnostics Research Laboratory (ADRL) was created in 2012 with a mission to contribute to optimal cancer care in Saskatchewan by providing sustainable, state-of-the art acquired cancer diagnostic and monitoring laboratory services, responsive to the evolving needs of patients and members of their care team, through the integration of research and clinical reporting activities.

Since its inception, the lab has developed and validated key high complexity cancer tests to ensure that standard of care testing is made available to Saskatchewan pathologists and SCA clinicians involved in managing a variety of solid tumors and hematologic malignancies. The ADRL is also actively engaged in the development of emerging minimally invasive and blood based ('liquid biopsy') testing approaches to improve patient comfort and safety.

The ADRL works closely with the Divisions of Anatomic Pathology and Hematopathology to streamline pre-analytical tissue processing and post-analytical test reporting to ensure that accurate results are delivered to pathologists, hematologists, and oncologists in a timely manner. Related to this process improvement work, a new opportunity to collaborate with the Roy Romanow Provincial Laboratory (RRPL) has arisen to enhance the coordination of tumor and germline testing in ovarian and prostate cancer patients. Efforts are underway to create a new Division of Molecular Cancer Pathology to help grow and sustain these vital patient care activities.

The ADRL relies on a robust R&D capacity to keep pace with cancer discovery and rapidly respond to clinical demands for developing, validating, and implementing new high complexity tests. All test development activities are directed by the multidisciplinary Biomarker Quality Assurance and Development Committee comprising pathologists, hematologists, oncologists, pharmacists, and lab management to ensure that resources are focused appropriately and utilized efficiently.

The Biomarker Committee has also been successful in facilitating ADRL test development and implementation through pharma-sponsored programs to provide Saskatchewan cancer

patients with access to the latest targeted therapies. Most recently, PIKC3A mutation testing has been launched to identify patients with advanced or metastatic HER2 negative breast cancer that can benefit from treatment with a PIK3CA inhibitor in combination with hormonal based endocrine therapy; and EGFR mutation testing, needed to identify lung cancer patients eligible for EGFR inhibitors, has been expanded to include early-stage patients.

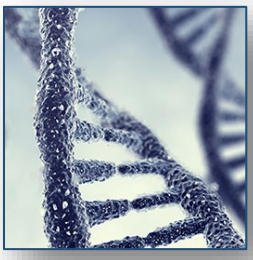
The ADRL is also a key local resource that supports clinical trial activities; translational and patient oriented research; and the training of pathology residents, graduate students, and highly qualified technical personnel. The ADRL continues to work closely with the Center for Biologic Imaging Research and Development (C-BIRD), directed by Dr. Ron Geyer, to support biologic imaging research projects and clinical trials.

Some ADRL Staff Members (left to right): **John DeCoteau, Tracey Wichert, Wayne Hill, Carolina Gonzalez Zuluaga, Holly Giasson, Yvonne Beaudry, Karen Mochoruk**

RUH Genomics Laboratory

Submitted by Dr. Yanwei Xi
Clinical Lead, Genomics Laboratory, RUH

There have been dramatic changes in the RUH Genomics Laboratory over the last couple of years. Both the former Cytogenetics Laboratory and Human Molecular Genetics Laboratory were relocated to the 5th floor at the Royal University Hospital, amalgamated to form a clinical Genomics Laboratory with a shared vision. This merger has enhanced communication, optimized workflow, created efficiencies and ultimately improved patient care.



Along with this move, we welcomed new staff including Clinical Lab Director, Dr. Zafar Nawaz, three Clinical Genetic Technologists (Surbhi Mahajan, Natalie Fedorak, and Drew Mellow), and one Laboratory Scientist (Nelly Abdelfatah).

The RUH Genomics Laboratory is providing comprehensive molecular and cytogenetic testing for inherited and acquired conditions in prenatal, pediatric and adult care. Clinical cytogenetic tests include chromosome karyotype, fluorescence *in situ* hybridization (FISH), and chromosomal microarray (CMA). During the last year even through the period of essential services due to COVID, the lab workload continued to be comparable to the average of previous years. In alignment with the whole provincial amalgamation of laboratory services, the RUH Genomics lab is currently in the process of standardizing cytogenetic testing to ensure equal and appropriate patient care is available throughout the province.

The Molecular section of RUH Genomics Lab has shifted the focus from somatic pathology testing to germline molecular diagnostics. Rapid Aneuploidy Detection (RAD) and Maternal Cell Contamination (MCC) assays have been developed and validated in-house. These tests compliment the Cytogenetic services and help to meet urgent clinical needs, save cost by testing in-house, and also follow the national standards regarding prenatal diagnosis of fetal aneuploidies.

With the recent introduction of next generation sequencing (NGS) technologies, the cost of DNA sequencing has declined rapidly and many disease-causing genes can be sequenced simultaneously in less time. This has changed the landscape of clinical genetic testing from a single gene test to multiple gene panel testing in order to interrogate a patient's genome at multiple targets in a cost-effective and efficient manner. Currently, Saskatchewan is experiencing increasing demands for such genome-wide testing for the diagnosis of heterogeneous genetic disorders. With the support from RUH Foundation, an Illumina MiSeq NGS instrument was purchased and implemented in the Genomics Laboratory. Currently, a comprehensive Cardiovascular gene panel is being validated with the aim to provide state of the art genome-wide sequencing tests to all patients in Saskatchewan.

With support from the RUH Foundation, an Illumina MiSeq NGS instrument was purchased and implemented in the Genomics Laboratory

Biochemistry Discipline Specific Group

Submitted by Dr. Andrew Lyon, Clinical Lead, Biochemistry Dyad
& Keri Crawford , SHA Director, Biochemistry Dyad

This past year our staff indicated their abilities to be flexible and adapt to changing environments. In the initial months of the covid-19 pandemic elective patient visits and surgeries were suspended and traditional biochemistry test volumes declined by ~25%. Staff were loaned to rapidly growing covid-19 testing labs, planned field hospitals and other lab services and we also developed new courier routes to extend services across the province 7 days/week. By the autumn of 2020 clinical services resumed and biochemistry testing quickly ramped up to pre-pandemic test volumes.

Biochemistry services are distributed across the province in over 80 locations in a wide range of large & small laboratories with hundreds of staff.

- Regina staff in hospitals and RRPL are in the process of installing and validating new automated chemistry and immunoassay analyzers. This large project will require ~18 months to complete and the team has been very successful at keeping to schedule in spite of the pandemic.

The amalgamation of Regina Labs has allowed for a joint Request for Proposal (RFP) process for replacement of the very aged High-Volume Chemistry analyzers at all three labs - RGH, Pasqua Hospital and RRPL. The present systems served well but have been experiencing high rates of repair. A couple of the benefits to implementing Abbott Alinity's are reducing the number of analyzers at RRPL from 7 to 3 and introduction pre-analytics at RGH.

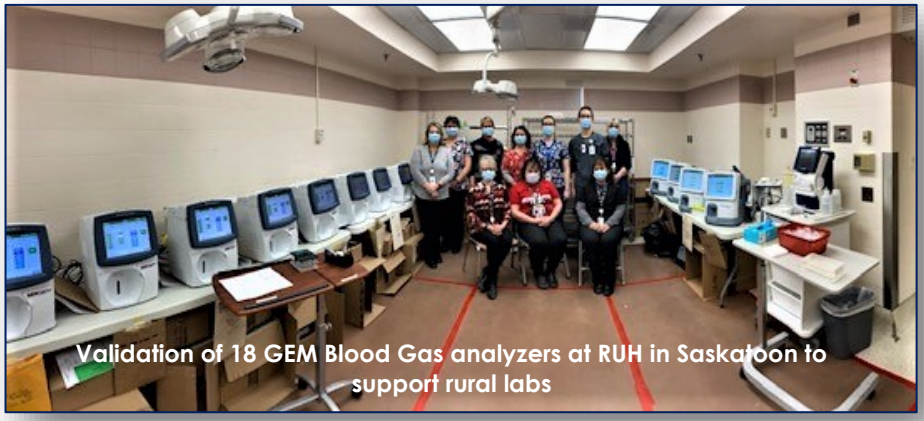
Validation of Abbott Alinity instruments are presently underway by Chemistry Staff in anticipation of summer 2021 go live dates for all three sites in Regina. The instrument and assay verification were completed at RRPL in March 2021, with initial LIS testing completed

in April and May 2021. An updated serology rule set will be implemented for the Alinity instruments to align with manufacturer's recommendations to reduce the number of repeat analyses required.

Pasqua's Alinity instrument and assay verification is nearly complete, with all remaining verification processes at Pasqua being performed in conjunction with the instrument and assay verification at RGH to maximize efficiency. RGH started their Alinity instrument and assay verification in May. Further renovations are underway to make space for the final location of the Alinity's and the track system. Installation of the GLP tracks at RRPL and RGH will be in the fall and winter. LIS updates and instrument connectivity continue to be completed for all three sites and will result in improved standardization of reporting. Involvement of all Chemistry staff has been very much appreciated; whether finding time to complete the actual validations or providing assistance to each other so that those validations can be done.

New Alinity analyzers undergoing validation at RRPL and RGH

- The ministry of health funded 18 blood gas analyzers and 10 immunoassay analyzers for basic sites to augment the ability of clinical teams to manage pandemic patients. As a provincial team effort, the instruments are being validated in Regina and Saskatoon prior to distribution. Teams are also developing SOPs and training documents and the LIS changes required for some locations. This huge effort will also be a lasting benefit to patients and clinical teams after the pandemic.


Validation of 18 GEM Blood Gas analyzers at RUH in Saskatoon to support rural labs

- A sub-committee to acquire high volume urinalysis analyzers for Saskatoon and Regina was led by Dr. Josh Buse. This project will transition into an implementation project during the next year.

Validation of AQT analyzers at RGH in Regina to support rural labs

New Vitros 3400 in Humboldt

Hematology Discipline Specific Group

Submitted by Dr. Donna Ledingham, Regina Area Department Lead

With Acknowledgement to Sheri McCorriston, Manager of Hematology, Regina

Currently, the Hematology Discipline is focused on standardizing our practices provincially. The biggest barrier to provincial standardization is that the needs and wants vary greatly between the rural and urban laboratories, highlighting the challenge of aligning these differences to ensure that the needs of all Saskatchewan Laboratories are being met.

The Hematology Discipline has standardized the following over the past year:

-Work Standards were developed outlining the Validation Process for both CBC and Coagulation Instrumentation for the Rural and Northern Labs, in support with their urban counterparts.

-Provincially standardized D-DImer reporting, including standardizing units and comments reported.

-Released a memo to all Physicians regarding the appropriateness of ordering Erythrocyte Sedimentation Rates (ESR's) when looking for inflammation in patients with undiagnosed conditions. The use of a C-Reactive Protein (CRP) is the recommended test to measure systemic inflammation. Since releasing this memo, the ordering of ESR's in Regina Laboratories has decreased by 30%. Saskatoon Laboratories had already implemented this communication with Physicians in 2012.

-Regina General Hospital Lab has implemented Anti-Beta-2-Glycoprotein-1 testing which was previously being referred out to the Mayo Clinic. The Special Coagulation Lab at RGH is now the provincial referral site for this test which has decreased costs and more importantly, turnaround times for the patients of Saskatchewan.

Upcoming Provincial Standardization includes:

-Provincial standardization of Pediatric Reference Ranges for CBC's, from birth to age 18. Currently have completed the data analysis for birth to 6 years and are working on the 6 to 18 year age group.

-Have sent out a RFP Tender to replace the Flow Cytometry equipment in both Regina and Saskatoon.

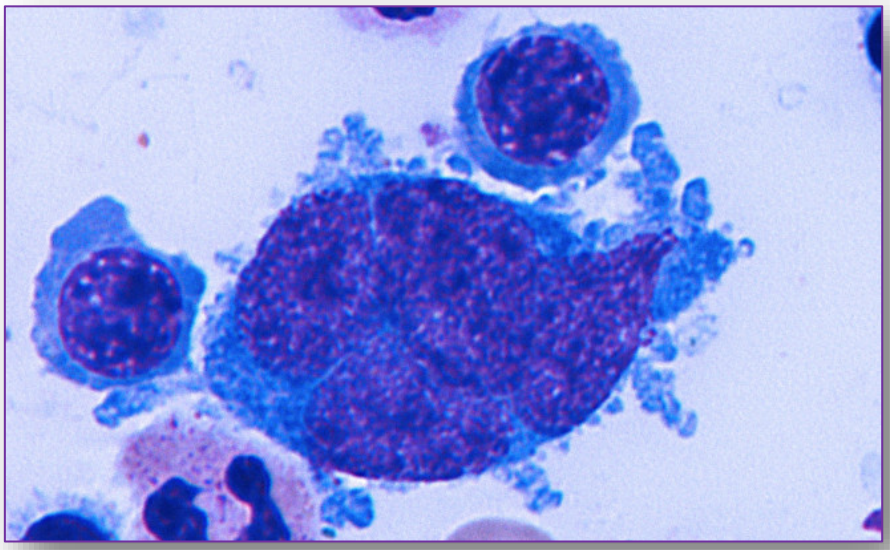
-Have sent out a RFP Tender to automate the process of performing blood cell differentials at our lower volume Hematology Labs in Saskatchewan by purchasing

Digital Morphology Analyzers for Yorkton, Weyburn, North Battleford, Prince Albert, Lloydminister, and Pasqua Hospital, Regina. These analyzers would have the capability to send slide images directly to the Regina and Saskatoon Laboratories and/or Hematopathologists for confirmation of cell type or diagnosis.

Currently working on:

-A RFP for CBC Testing Platforms that will include low, mid and high volume analyzers to distribute provincially, along with larger digital cell morphology analyzers and slide maker/ stainers for the urban sites.

The Hematology Discipline has accomplished a lot over the past year in regards to Provincial Standardization, and there is a lot more to come in the upcoming year! It has been an exciting time working with so many people, all dedicated to the common goal of delivering high quality services to all of the people of Saskatchewan.



Neoplastic hematopathology
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Transfusion Medicine Discipline Committee (TMDC)

Submitted by Tammy Mason, MLT MT(H)
Director, Laboratory Medicine, Rural

Written by
Drs. Oksana Prokopchuk-Gauk and
Sheila Rutledge Harding

The COVID-19 pandemic has posed unique challenges and opportunities for the Transfusion Medicine Discipline Committee (TMDC) throughout 2020-21. Our work has been focused on priority projects in these unprecedented times and includes progress of pre-existing initiatives and the introduction of new initiatives driven by the COVID-19 pandemic impacts.

Due to the concern of blood shortages, the Interim Saskatchewan Blood Contingencies Plan was published in April 2020. This led to the convening of a multidisciplinary Provincial Emergency Blood Management Committee (PEBMC) beginning in mid-2020. The establishment of this communication network throughout Saskatchewan enabled nimble communication of information throughout the province. To help ensure optimization of red blood cell utilization in all sites, technologist screening of red blood cell orders was implemented in rural sites, to parallel actions already ongoing in Saskatoon and Regina.

Throughout the 2020 summer months, the PEBMC was kept apprised of the status of blood component supply provincially and received messaging from the National Emergency Blood Management Committee as it became available. Fortunately, blood component shortages never progressed beyond a Green Advisory Phase (warning phase), largely related to the reduction in blood utilization within hospitals. We continue to monitor inventory levels carefully within local facilities. Redistribution programs in provincial *Hold Blood* sites help to minimise group O negative outdates and the close communication of the TMDC Chairs with National Emergency Blood Management Committee members ensures that we remain apprised of national blood inventory

status.

The active RBC screening program served as a means of educating clinical care providers about the importance of a restrictive transfusion strategy in patient care. The renewed energy about the importance of patient blood management has since had an ongoing impact in improving patient
care. Hospitals providing inpatient blood transfusions in Saskatchewan accepted the national Using Blood Wisely (UBW) challenge as an initiative co-led by Choosing Wisely Canada and Canadian Blood Services.

We can be proud of our success as, in the 2020-21 fiscal year, Saskatchewan had the lowest RBC issue rate in Canada, at 19.4 units (vs the national average of 23.7 units) per 1000 population. To-date, five hospitals in Saskatchewan have achieved a UBW Designation, successfully meeting benchmarks for single unit RBC transfusions and restrictive hemoglobin thresholds. Hospitals continue to collect data towards achieving their UBW designations.

Unlike blood component supply stabilization, there has been looming concern of a national intravenous immunoglobulin (IVIg) supply shortage nationally. As a result of recommendations made by the National Plan for Management of Shortages of Immunoglobulin (Ig) Products published in September 2020, there has been ongoing work for establishment of an Ig Stewardship Program in Saskatchewan, primarily focused on ensuring the availability of Ig for patients who have no other therapeutic alternative. Given that the greatest number of public dollars in the blood budget are spent on Ig, we are obliged to ensure this supply-constrained and expensive product is used appropriately.

In February 2021, the Prevention of Alloimmunization in Mothers of Saskatchewan (PRAMS) Program celebrated its first anniversary of in-province prenatal testing operations. The collaborative spirit which led to the PRAMS program establishment is a tremendous example of a how multidisciplinary and multisite collaboration can result in a successful program. In addition to the foundational prenatal blood group and screen testing (at Victoria Hospital, St. Paul's Hospital, and Regina General Hospital) and antibody identification and titration services (Royal University Hospital), we are delighted that two Clinical Nurse Coordinators have joined the PRAMS team as of October 2020. These nurses are able to maintain electronic patient charts through the Accuro electronic medical record system and support care providers in Saskatchewan to ensure Rh negative women receive their Rh Immune Globulin and that alloimmunized women are appropriately connected with specialist care.

Efforts to ensure that high quality Transfusion Medicine services could be provided consistently to all Saskatchewan patients, regardless of location, included the procurement of four additional Ortho WorkStations® for Kindersley, La Ronge, Moosomin and Rosetown. An additional 10 sites updated their processes to take full advantage of this automated testing platform. These enhancements facilitated the adoption of a common Work Standard for basic Transfusion Medicine testing across the province.
There are several projects currently on the horizon for the Transfusion Medicine Discipline Committee, including: consultative support for the establishment of massive hemorrhage

protocols in centers holding blood throughout Saskatchewan; perioperative blood management education to optimize patient hemoglobin without transfusion prior to surgery; and furthering discussions about transitioning former health region Transfusion Safety Committees to align with current SHA IHICC geographic territories. We look forward to a time when we can meet again in person – but for now, continue to work diligently within our virtual environment to ensure the safest possible care in transfusion medicine for the people of Saskatchewan.

Clinical Microbiology Discipline Specific Group

Submitted by Dr. Joseph Blondeau,
& Brandi Keller
Provincial Clinical Microbiology Dyad

The past year and ongoing has been most interesting for Clinical Microbiology province wide due to the COVID-19 pandemic. The labs at Royal University Hospital and the Roy Romanow Provincial Laboratory are the 2 main testing laboratories for the Province of Saskatchewan and shared the COVID-19 testing. Many obstacles were overcome to meet testing demands and with as short as possible turn-around-times. New technology for both COVID-19 and non-COVID-19 testing was needed province-wide in both urban and rural labs and the Government of Saskatchewan provided the necessary funding and in short time lines in order to fast track our preparedness. Such technology has put our microbiology laboratories in a good position for the coming years, however, new technology to replace older instruments is an ongoing process.

Staffing remains on an ongoing concern as a shortage in trained medical laboratory technologists is ongoing. Staff hired to help with COVID-19 testing are temporary as they are term positions for up to 18 months. Supply chain has been and continues to be an ongoing challenge and we have stockpiled supplies as a component of our preparedness - both for COVID-19 and non-COVID-19 testing. As an example, requests for blood cultures and fungal cultures remain elevated. There is good clinical evidence to support this as a number of individuals who died from COVID-19 were found to have secondary infections.

The Provincial Microbiology group has remained active throughout the pandemic dealing with new pandemic challenges as they arise – sometimes on a daily basis. As well, we have worked hard to move forward some provincial non-COVID-19 initiatives that will lead to provincial standardization of testing / reporting. All members of the provincial microbiology group have been active with each member taking on lead responsibilities for different projects. Collectively, the group works very well together and in collaboration with the Public Health portfolio, led by Dr. Jessica Minion, as many infectious diseases have public health importance.

A priority going forward is developing business cases for total laboratory automation for the labs in Regina and Saskatoon. As this is a multi-million-dollar purchase, we anticipate this process will take some time to complete, have approved and then operationalize.

Rural Saskatchewan is facing staffing challenges that are of great concern. The Provincial Microbiology Group are concerned about the long-term viability

of clinical microbiology services at some rural sites and are doing what we can to secure long-term viability. In the event that rural microbiology services are not sustainable, specimens would be transfered to the closest largest center that can accommodate the additional volumes. Functionally, Regina is the center for Southern Saskatchewan and Saskatoon is the center for Northern Saskatchewan.

The dedication and resiliency of our clinical, technical and administrative staff during the pandemic has been incredible.

Clinical Microbiology SARS CoV2 (COVID-19)

December 2019, the Chinese government reported a mysterious respiratory illness in a number of patients in Wuhan, China. In early January, 2020 a novel Coronavirus was identified as the cause and this was subsequently named SARS CoV2 or COVID 19 and by March, 2020, the World Health Organization declared a global pandemic and this has been ongoing since that time. The impact the pandemic has had on society, individuals, the economy and health care was felt immediately and will continue to have an impact for years to come.

All aspects of Pathology and Laboratory Medicine were impacted by the pandemic and perhaps the greatest impact was in clinical microbiology where testing for COVID-19 needed to be implemented and ultimately offered 24 hours/day, seven days/week. Shortened turn-around-times TATs) were seen as essential for patients being assessed in the emergency department, for admittance to different clinical services and for the intensive care unit. Presurgical/invasive procedures screening for COVID-19 was a constant demand. Public Health had a requirement for reduced TATs in order to quickly identify COVID-19 positive patients and to get them and significant contacts into quarantine.

During the early days of the pandemic, as testing was being implemented at the Roy Romanow Provincial Laboratory in Regina and subsequently at Royal University Hospital in Saskatoon, we faced considerable struggles regarding supply chain for necessary reagents and plastics, the need for additional technology and a shortage of staff to handle the increased capacity for COVID-19 testing. As the universities were closed and research work came to grinding halt, we put out an urgent distress request to the Presidents of the University of Regina and University of Saskatchewan to ask investigators if they had either technology or supplies that we could "borrow" that could be used for COVID 19 testing. The response was incredible and in Saskatoon we were able to borrow 2 Kingfisher Nucleic Acid extractors: one from Dr. Janet Hill in Veterinary Microbiology and the 2nd from The Global Institute for Food Security. Additionally, Michael Thompson at the University of Saskatchewan was designated to coordinate this effort and was instrumental in identifying investigators and supplies/technology that we could access until our supply chain was stabilized and new technology arrived. Engraved plaques recognizing their important contributions have been given to Dr. Hill and The Global Institute for Food Security.

The investment in technology across the province has been incredible since the onset of the pandemic. Funding made available through the Government of Saskatchewan was used to acquire nucleic acid extractors, blood culture instruments, bacterial identification systems, antimicrobial susceptibility testing systems, biological safety cabinets, an instrument for galactomannan testing, thermocyclers, liquid handling instruments, numerous pipettors and the stockpiling of reagents/plastics to ensure adequate supplies to meet daily testing demands.

Staffing presented a unique problem for a number of different reasons. In Saskatoon alone daily specimen volumes in microbiology (pre-COVID) at Royal University Hospital ranged between 1000-1400 daily. COVID-19 daily testing volumes often exceeded 1000/day and on many days exceeded 1500/day. Additionally, blood culture specimens, respiratory tract specimens for non-COVID-19 pathogens and requests for fungal cultures increased and some of these requests remain elevated to this day. Complicating factors included a shortage of trained medical laboratory technologists (MLTs) province wide. To address this, the government approved the hiring of individuals with a B.Sc. degrees in term positions and that could be trained to perform molecular based assays for COVID-19. We hired 16 such people and they along with our MLTs were instrumental in providing COVID-19 testing 24 hours a day, 7 days a week. Similar staffing issues were also an issue at RRPL and as with RUH, they hired a number of B.Sc. trained individuals into term positions to assist with the COVID-19 testing demands.

"Our COVID-19 testing efforts in Saskatchewan were nothing short of amazing and the resiliency of our clinical and technical staff and administrative leadership and their ability to change in a heartbeat as COVID-19 demands changed is a testament to the dedication of the Clinical Microbiology team throughout the province."

At our peak we had enough stockpiles for 240,000 COVID-19 tests. Going forward we will maintain stock for approximately 1500 COVID-19 tests/day for 3 months and this will either increase or decrease based on testing demands throughout the fall and winter.

A unique component of the COVID-19 testing strategy was the placement of Genexpert technology at multiple urban and rural locations throughout then province. Such technology was initially place in a limited number of sites for testing for Mycobacterium tuberculosis but was subsequently expanded to include COVID-19. Instruments were placed at more provincial locations and provided for "STAT" testing of high-risk patients with results available in ~1 hour from receipt within the laboratory.

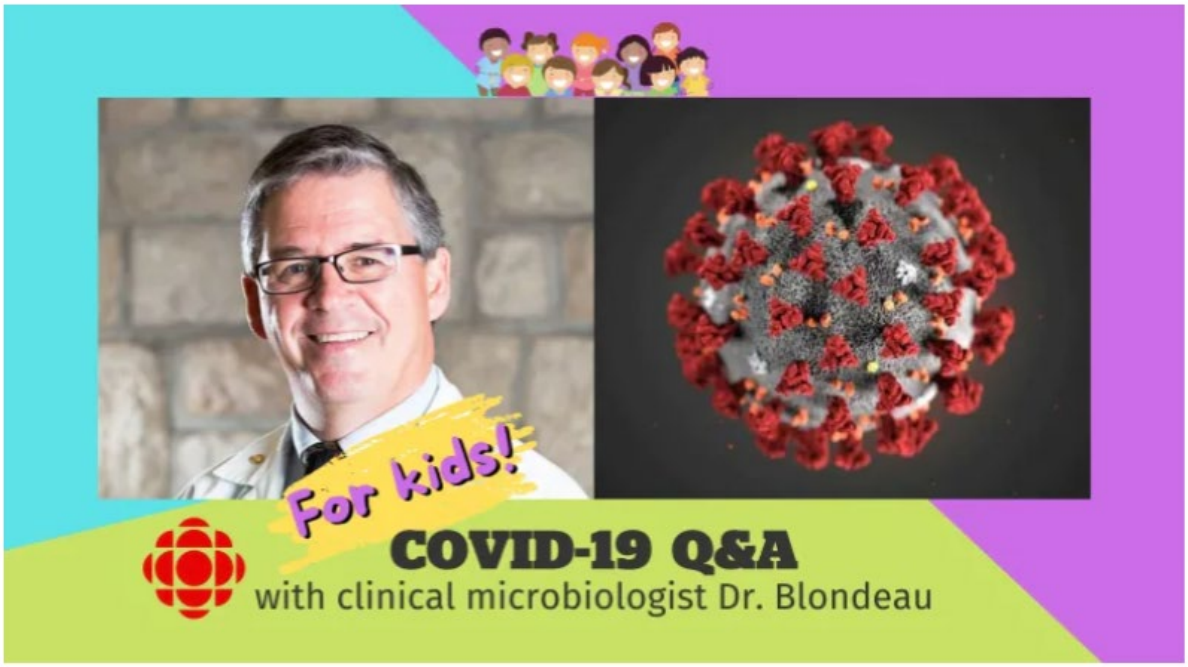
RRPL and RUH are the two main testing laboratories for COVID-19 in Saskatchewan and RUH carried the bulk of the non-COVID-19 molecular testing assays. RUH on any given day tested

between 1/3 to >1/2 of the daily specimens for COVID-19. RUH was responsible for acute care testing/symptomatic patients for COVID-19 for the North and RRPL was responsible for acute care testing/symptomatic patients for the South and for testing of asymptomatic patients for the entire province. RRPL was also the lead laboratory for new method/assay development and validation.

Of the many metrics we are measuring at RUH during the pandemic and testing, is the impact of testing and reporting of COVID-19 results between 11:30pm and 08:00 hours. In a snapshot of 3 months of reporting, the night shift reported between 16-53% of daily positives thereby influencing the emergency room, ICU, surgery and inpatient services and patient flow/diagnosis etc.

Saskatoon clinical microbiologist Dr. Joseph Blondeau answers questions from students

CBC News · Posted: May 19, 2021 10:00 AM CT | Last Updated: May 19



Dr. Joseph Blondeau fielded COVID-19 questions from Saskatchewan students. (CBC)

Regina Anatomic Patholgy

Submitted by Dr. Angus Kirby

Regina AP Division Head

We are now more than one year into working under conditions of the COVID-19 pandemic, though with a return to more usual conditions foreseeable in the next few months.

Programme development under the new single Health Authority has proceeded over the past year, albeit a bit more slowly than might otherwise have been the case. Co-ordinating of services with Saskatoon is advancing, and more assays, particularly for biomarkers, are being repatriated to the province from elsewhere or being developed. Medical renal biopsy interpretation has until recently been offered only in Saskatoon, but Regina will be taking on more of a role as needs evolve.

Renovations in the laboratory to accommodate the progressively increasing number of specimens processed annually have been completed and three new specimen grossing stations have been installed. Two new IHC machines have also been employed. Renovations to accommodate the equipment for liquid-based cytology are pending.

Liquid based cytology for gynecologic cytology is in the process of being introduced, with training for technologists and pathologists in process. A contract has been signed for a specimen tracking system but no timeframe for installation has been settled.

Workload issues with current staffing levels have been relatively muted under the pandemic. A backlog in specimen grossing has, however, persisted. One pathologist assistant left last year and, although replaced recently, another will be leaving this year.

No pathologists have been hired in the last year, but two positions will be filled shortly. Dr. Alport stepped down from his position as Laboratory Director last year, and Dr. Ledingham has recently taken on the role as interim Lead.

Dr. Angeles continues as Cytopathology Lead. Dr. Al-Agha continues to oversee resident education. The pandemic has affected teaching, but this has resumed as services have been re-introduced. The Regina Lead position (paired with Dr. Kinloch for Saskatoon) of the Anatomic Pathology Discipline Committee of the Saskatchewan Health Authority is currently unfilled. Development of a Provincial Quality Assurance Programme and efforts to obtain a digital pathology system are ongoing.

Site visits for accreditation with the College of American Pathologists have not yet resumed.

Endowment Funds

Submitted by Dr. Fergall Magee

Members of the Department have access to ten different Funds:

Dr. Thomas A. Cunningham Memorial Fund
Maureen Fuller Memorial Lecture Fund
Barbara Moore Memorial Trust Fund
D.F. Moore Memorial Lecture Fund
Mrs. J. Olszewska Neuropathology Fund
SHR Pathologists Fund in Medicine
Dr. Rajendra K. Sharma Resident Research Award in Pathology
Saskatchewan Asssociation of Laboratory Medicine Award
Dr. Marc Omar Shokeir Memorial Fund
Pathology & aboratory Medicine Research Fund

Information concerning application dates, and Terms of Reference for each fund is available on the Department webpage under the heading 'Endowment Funds/Apply for an Endowment'
Pathology and Lab Medicine - College of Medicine - University of Saskatchewan (usask.ca)

The current Endowment Committee is composed of: Dr. F. Magee (Chair), Lenore Howey (SHA Executive Director, Laboratory Medicine), Dr. J. Kalra, Dr. S. Tehseen, Dr. D. Yu, Dr. I. Tam (Resident), Harold Shiffman (General Manager).

Endowment Funds Committee Terms of Reference:

Purpose

- To manage, generally and financially, the dispersal and appropriate use of Endowment Funds designated to the Department of Pathology & Laboratory Medicine
- To review and decide on initiatives and allocation of resources based on the Endowment Funds Committee's recommendations and financial resources available
- To develop and approve guidelines relating to the determination of value and conditions related to the initiatives being supported
- To review the activity of each Endowment Fund and ensure that the intent and objectives of each fund is being met

Membership

- Provincial Head as Committee Chair
- Executive Director, Laboratory Medicine, SHA
- Residency Program Director

- One member of each Division as appointed by the Provincial Head
    - Anatomic Pathology
    - Hematopathology /Transfusion Medicine
    - Biochemistry
    - Microbiology
- Department Finance & Administration Manager
- One Senior Resident as appointed by the Residency Program Director
- One Support Staff as appointed by the Provincial Head

Terms of Office

- Each Division member shall serve a two-year term which may be renewed
- Resident members will serve a one-year term with possible reappointment for a second year
- Members unable to complete their terms will be replaced by a new member from their Division
- Terms for Provincial Head, Residency Program Director, Executive Director, Laboratory Medicine, SHA, and Finance & Administration Manager are unending

Quorum and Voting

- Quorum will be five (5) members
- Members of the Committee may not vote on motions related to their own submissions to the Endowment Funds Committee
- The Committee Chair will cast the deciding vote in the event of a tie

Attendance and Meetings

- The Endowment Funds Committee will meet triannually in January, June and October
- In addition to the established members of the Committee, staff and external participants may be invited to attend on an ad-hoc basis for agenda items

Given that Drs. Kathy Jafari and Hui Wang have moved away from the city, the PH is currently in the process of recruiting replacements-to be announced at the Department Meeting scheduled for September 2021.

In the academic year of 2020-21, The Endowment Committee allocated funding of approximately $92,000. A list of projects/events which have been funded is below:

Guest Lecturers, Safety Testing of focused beam therapy for treatment of brain tumors, Laboratory staff continuing education opportunities, Conference attendance by our Residents, Laboratory staff training, Laboratory staff conference attendance, Resident publication funding, UGME students attendance/presentations at conferences, Operational funding for a COVID-19 biobank, Faculty registration at Harvard Macy Institute Program for Educators in Health Professions, Clinical research in neuropathology, Department Wellness survey, Resident Library Books, Hiring on a term-basis of a data scientist, Hiring of a Biobank Coordinator, Coaching Expert for Divisional training, Visiting Summer Research student.

On behalf of Department members, I would like to acknowledge our deep appreciation of the generosity of all donors who continue to support our Department in this manner. to all our Endowment supporters-without whom many of our initiatives would not be possible. I would also like to thank all of the Committee members for their on-going dedication and hard work in honouring the individual terms of reference of each endowment.

UNIVERSITY OF SASKATCHEWAN
College of Medicine
DEPARTMENT OF PATHOLOGY AND LABORATORY MEDICINE
MEDICINE.USASK.CA

Department Research Day (Virtual)
TUE, 27 OCT 2020
0800-1500h

Morning Moderator: **Dr. Roland Auer** / Afternoon Moderator: **Dr. Henrike Rees**

Final Schedule 22 OCT 2020

0800-0815	**OPENING COMMENTS (Dr. Fergall Magee, Provincial Head)**	
0815-0845	**Guest Speaker: Dr. Marek Radomski, Vice-Dean, Research - *College of Medicine Research During COVID-19***	
	Undergraduate Students	
0845	**Haley Eckel** (UGME YR 2, Dr. Marilyn Kinloch's Dean's Project Student)	*Time Between Cervical Biopsy and Excision for high-grade precursor lesions and the effect of Access to Tertiary Care*
0900	**Cassidy Bell** (Dr. Marilyn Kinloch Presenting on behalf of her Dean's Project Student)	*A Patient's Best Chance: Statistical Modeling Regarding Precision Medicine in Lung Cancer*
0915	**Patrick Seitzinger** (Supervisor: Dr. J. Kalra)	*Quality Assessment and Management: Autopsy as a Quality Improvement Tool in Diagnostic Medicine*
0930	**Zoher Rafid-Hamed** (Supervisor: Dr. J. Kalra)	*Quality Care and Patient Safety: A Best Practice Model for Medical Error Disclosure*
	Resident Postgraduate Students	
0945	**Dr. Egiroh Omene** (PGY5 Neurology) (Supervisor: Dr. R. Auer)	*Can Ganglioglioma have IDH mutation? Two Cases With Vanished Tumor After No Treatment*
1000	**Drs. Alicia Andrews / Archan Kakadekar**	*An update on the histologic findings seen in surgical pathology specimens from transgender patients*
1015	**Drs. James Macpherson / Jana Suresh** (Supervisor: Dr. M. Kinloch)	*Trends in hysterectomies in patients under 30 - A six-year analysis from a single tertiary care centre*
1030	**Dr. Suresh Tharmaradinam** (Tharmaradinam S., Diudea, D., Kanthan S., Kanthan R.)	*Uncommon Mucosal Metastases In Endoscopic Colorectal Biopsies: A 20-year Single-Institution Review From 13,564 Specimens*
1045-1100	**BREAK**	
1100	**Dr. Jana Suresh** (Supervisor: Dr. R. Chibbar)	*Incidence of endometrial Mesonephric like carcinoma in recurrent low-grade endometrial adenocarcinoma*
1115	**Dr. David Li** (Supervisor: Dr. Janine Benoit)	*Clinico-pathological Correlation of Thyroid Nodule Between the Ultrasound TIRADS and Cytology Bethesda Classifications: Saskatoon experience (2018-2020)*
1130	**Dr. Phillipe Price** (Dr. Phiillipe R. Price Dr. Hyun J. Lim, Dr. Janarthanee Suresh, Dr. Carol C. Cheung, Dr. Zoran Gatalica, Dr. Allen Gown, Dr. Elzbieta Slodkowska, Dr. Emina Torlakovic)	*Standardized Nuclear H-Score; A Pilot Study of Inter-observer Reproducibility*
1145	**Dr. Karan Vats** (Supervisor: Dr. P. Dokouhaki)	*Obtaining adequate kidney biopsies with bedside assessment: a quality assurance study of the kidney biopsy practice in Saskatchewan*
	Graduate Students	
1200	**Jaline Broqueza** (Supervisor: Dr. M. Uppalapati)	*Developing radioimmunotherapy for osteosarcoma using comparative oncology*
1215	**Sukanya Pati** (Supervisor: Dr. R. Sharma)	*A quest for novel inhibitors of methionine aminopeptidase 2*
1230-1330	**BREAK**	
	Faculty	
1330	**Dr. Emina Torlakovic**	*New Immunohistochemistry Standards Using Linked Traceability Identify The Reason For Discrepancies Between Breast Cancer Testing Laboratories*
1345	**Dr. Roland Auer**	*Interstitial Pneumonia in Infants and Toddlers who Stop Breathing - A Series of 40 Medico-Legal Cases*
1400	**Dr. Jay Kalra**	*Medical Error Disclosure: A Professional Obligation and Ethical Dilemma*
1415	**Dr. Marilyn Kinloch**	*Comparison of p53 Immunohistochemical Staining in Differentiated Vulvar Intraepithelial Neoplasia (dVIN) to Inflammatory Dermatoses and Benign Squamous Lesions in the Vulva*
1430	**Dr. Anurag Saxena** (Anurag Saxena, Loni Desanghere, Tim Claypool, Keith Walker)	*Grit, Resilience and Professional Quality of Life: Exploring well-being in medical education*
1445	**Dr. Ahmed Mostafa**	*Monocyte Flow Cell Crossmatch As An Alternative Approach for Patient Under Rituximab Therapy*
1500-1515	**AWARD PRESENTATIONS (Judges: Dr. Deepti Ravi, Dr. Ramesh Saeedi, Dr. Rani Kanthan)** **Awards: Best UGME (Casidy Bell, Haley Eckel, Zoher Rafid-Hamed, Patrick Seitzinger); Best Sr. Resident (Drs. J. MacPherson & J. Suresh);** **Best Jr. Resident (Dr. Vats); Best Resident Interdisciplinary (Drs. A. Andrews & A. Kakadekar); Best Graduate (Jaline Broqueza, Sukanya Pati)**	

Dr. Andrew Freywald

PhD

Dr. Franco Vizeacoumar

BSc PhD.

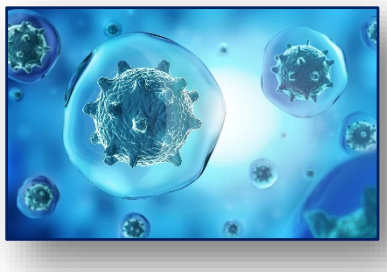
Interviewed by Dr. Erick McNair

BSc MSc PhD CCP

What is your background and how did you end up at the U of S?

AF I have completed my PhD studies at the Weizmann Institute of Science under the supervision of Dr. Yosef Yarden, a scientist, who initiated the development of the therapeutic anti-HER2 antibody, Herceptin, which is currently broadly used in breast cancer treatment. I did my postdoctoral work at the Hospital of Sick Children in Toronto, studying molecular mechanisms that govern normal and malignant T cells. Following this, I was recruited as an assistant professor by the University of Regina, where I initiated my independent cancer-related research program and eventually, as an associate professor, re-located my research team to our Department here at the U of S.

FV I did my PhD at the University of Alberta followed by post-doctoral training at the University of Toronto. Saskatchewan Cancer Agency recruited me as a Scientist with an adjunct affiliation to U of S.



In non-technical language, explain your program of research.

Our research teams work in a tight collaboration and in our research program we use our combined expertise in cancer genomics, cancer cell biology and tumor biology to identify key molecular mechanisms that are crucial specifically to cancer cells. We then use our collaborations with biotech industry partners to generate and validate reagents that target these mechanisms and effectively eliminate cancer cells and tumors. The ultimate goal of our investigations is to support the development of new effective approaches to treating human malignancies.

What are the discoveries that have resulted from your work?

Recently, we have dissected the mechanism of action of some cell surface receptors that belong to the Eph family and play an important role in cancer. We have also worked with Biomirex Inc located in MA, USA to generate and characterize a synthetic antibody that targets one of these molecules and produces strong anti-tumor responses in preclinical models of human breast, and pancreatic cancers. In addition, we filed a patent for a new method of treating cancer, which is based on genome-wide screens in cancer cells that lost expression of an Eph family member, EphB6.

What are your key research-related accomplishments over the past year?

We have co-authored several papers during the last year and co-edited a book, "Biological Mechanisms and the Advancing Approaches to overcoming cancer drug resistance" with the Elsevier publishing house. We believe this book will serve as an important source for cancer researchers, oncologists and medical students.

How has your research been received nationally and internationally?

We routinely publish our findings in high-impact research journals, get invitations for national and international research conferences, have a broad network of national-level and international collaborations, and serve as members of a grant review panel for a federal granting agency, CIHR. We believe all this reflects a recognition of our research program by national and international research communities.

Grant writing is a skill in which you have been tremendously successful. Can you please share your secrets to successful grant writing?

As you well know, the situation with research funding is currently not very good and all health research grants are extremely competitive at this stage. Our main secret in getting funds is to develop a "thick skin", to not get disappointed when our applications do not get funded and do our best to improve them for future competitions. This, of course, requires a lot of time and hard work from us and all members of our research teams. A lot of pressure also…

Do you have a favorite quote that has had continued significance in your lives?

Hard work never fails.

Dr. Marilyn Kinloch

MD BSC FRCPC

Interviewed by Dr. Erick McNair

BSC MSC PHD CCP

"My long-term vision is to try and provide a niche of research that nowhere could do better than Saskatchewan . . . My research in the future should focus on longitudinal aspects of diagnostic accuracy in gynecologic pathology and how that affects patient outcomes."

Where are you from, what is your background and why did you choose the U of S for a career?

I was born in Saskatoon with my parents having met at the University (my dad went to the U of S and my mother worked at the University). We moved to Belleville, Ontario when I was 5 until I was 16 when we moved back to Saskatoon. We made the drive back on Canada Day and I remember crying with my sister in the back of the Honda until about Sudbury. From there it was easy to go to the U of S for undergrad (microbiology and immunology). I lived downtown (2 blocks from where I currently live) and could go to my parent's house for dinner a few times a week. In second year, my parents moved my sister in with me. It was during my 4th year of undergrad that I decided to apply to medicine at the U of S. I was 3% below what the cut-off was for an interview and I remember asking OK?, what do I do now and they said to take another year towards another degree and I remember thinking, but I am just finishing a degree! So, I went to Europe for 6 months and then moved to Vancouver to work as a lab tech at the Children's Hospital. In a serendipitous way, I ended up at University College Dublin (that's another story) the next year and spent 5 glorious years in Europe which, at the time, I didn't appreciate as much because you blink and it has been 10 years since medical school and I spent most of it back in Saskatoon. I met a boy the first summer I was home from Dublin and he was going into law school, which meant when it came time for him to graduate and pick articling and a job in Saskatoon, I was a year away from residency matching. He chose a Saskatoon law firm, which meant I chose Saskatoon for residency and pathology as my number one pick. Fast forward to after my fellowship and 6 years into practice, there aren't many places that offer as much opportunity in Saskatoon for career satisfaction and development.

In non-technical language (as much a possible), explain your program of research.

Mostly what I have published in is the molecular classification of endometrial cancer compared to the traditional classification methods of histotyping. The past research has been about the differences between how patient tumours would be classified in molecular versus traditional ways and how their adjuvant treatment would have changed. We have also done work to classify how different histotypes work in a molecular classification.

If any, please outline your key research related accomplishments over the past year.

Because a lot of my research has to do with Mismatch Repair deficient (MMRd) tumours, my friends and I submitted a short course to USCAP on MMRd and DNA repair in daily practice and it was picked up as a short course for 2022.

What excites you about your research?

One of the things my fellowship director told me about research is that it is the only time you get to pick who you choose to work with, so work with your friends. And that has been the best part; working with friends that speak the same "nerd" language and can deep dive into the topic and let ideas swirl around and see what lands. Then your reward is that you get to visit with them when you present your research somewhere exotic. I have been so fortunate that John (DeCoteau), Nick (Baniak), Omar (Al-Nourhji) and Alicia (Andrews) have been so wonderful to work with, it has been such a pleasure.

How has your research been received nationally and internationally?

My first international presentation was in Belgrade, Serbia and I was 6 months pregnant. I highly recommend being visibly pregnant while presenting as the audience questions are very flattering. Gynecology pathology, as a subspecialty, is a cohesive group of supportive colleagues and we work together as a special interest group at CAP-ACP and at ISGyp.

Are there any other differing veins of research that you are pursuing or want to pursue?

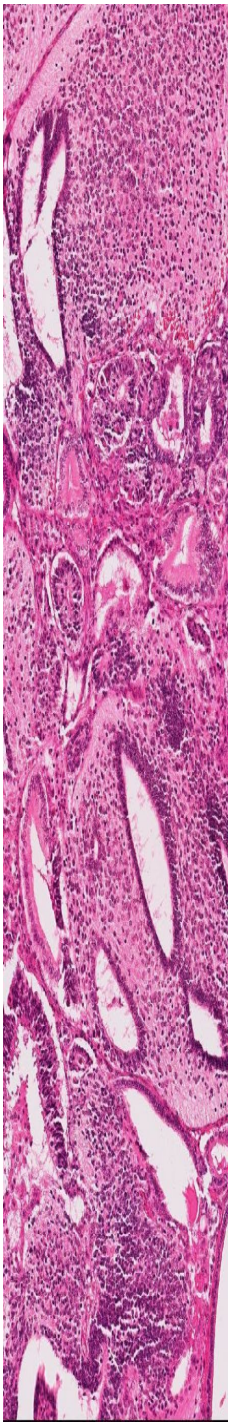
I have an interest in vulvar carcinoma and the non-HPV pathways to cancer and how practically we can employ IHC to accurately diagnose pre-cursor lesions.

What is your long-term vision of your research program?

My long- term vision is to try and provide a niche of research that nowhere could do better than Saskatchewan – so I have to examine what features we have that no one else does. There are benefits to being in huge cancer centers that can do next generation sequencing of 500 genes to every tumour that walks through the door, but I think there is value in what we have that can be studied and utilized for practical daily sign-out. Specifically, Saskatchewan has a wonderful longitudinal population because most people stay here! My research in the future should focus on longitudinal aspects of

diagnostic accuracy in gynecologic pathology and how that affects patient outcomes. I would also like to try to address some health inequities, which in pathology is access to molecular diagnostics.

What is the main difficulty in pursuing research while working as a busy Clinician?



Just figuring out all the support networks. Like practicing medicine, the actual medical expertise is the easiest part, the infrastructure, other people, bureaucracy and getting it done is the hard part. It has been a long lag time for me; figuring out ethics, and the operational approval, the University policies, and then what the funding opportunities are have all been separate challenges. It's like making your way through a dark house and each room you feel around to turn the light only to get out and find another room where you need to find the light switch again. But now that I have done it a few times it has got a lot easier and it is easier to help the new pathologists out with it too.

What is the best advice you were ever given and by whom?

My fellowship director, Blake Gilks, has given me so much advice that has worked, been immensely helpful or just rang true for me it is hard to pick one. But, he told me when I first accepted division head for Anatomic Pathology to "have fun with it" and that has been central to how I approach the role. I spend more time at work than I do at home and even when I am at home I think about the division, but I try to remember how fortunate I am to work in Saskatoon, and have a position as a pathologist, and every "problem" that comes up it is so lucky that I get to try and help and it has helped create fun within the work.

What is your favorite pastime when you are not at work?

I used to play a lot of Frisbee (which is how my husband and I met). We were city champs for probably 8 years straight on our mixed team. I played while in Dublin for the University and traveled to tournaments all over the UK and Ireland. I have been to nationals for Frisbee once and was an observer at the Canadian National Ultimate tournament for masters-level (no referees in Frisbee). But now I am scared to get hurt in a group sport, and I don't care about winning anymore, so I do weight training now and just focus on how to undo all the kyphotic positions working at a microscope does to a person.

Transfusion Medicine Researcher Profiles

Dr. Oksana Prokopchuk-Gauk

MD

Dr. Donna Ledingham

MD FRCPC

Interviewed by Dr. Erick McNair

BSc MSc PhD CCP

What is your background and how did you end up at the U of S?

Both of us are from Saskatoon. Donna did her undergraduate and Masters' degree in the Faculty of Science at Dalhousie University in Halifax, then took time to work and start her family. She completed her medical degree at the U of S in 2007, followed by a Hematopathology residency at Dalhousie. Oksana completed her undergraduate and medical training at the U of S, graduating in 2009. She then completed her adult Hematology residency at the University of Calgary and Transfusion Medicine Fellowship at the University of Alberta in Edmonton.

After completing our post-graduate training out of province, we are happy to have returned to Saskatchewan to practice! Currently, Donna is a Hematopathologist at the Regina General Hospital and Interim Area Department Lead of Pathology & Laboratory Medicine for the Regina ISA. Oksana is a Transfusion Medicine Physician and Clinical Hematologist with the Saskatchewan Bleeding Disorders Program based at Royal University Hospital in Saskatoon.

In non-technical language, please explain your program of research.

START Study: Open in 2018-19 in Saskatoon and Regina, the goal of the **S**creening by **T**echnologists and **A**uditing to **R**educe **T**ransfusions study was to show that blood bank technologists could be involved in optimizing red blood cell utilization in a safe and reliable way. Technologists were asked to review pre-transfusion hemoglobin levels and the number of units requested prior to blood issue; any questions were managed by the on-call Transfusion Medicine Physician. "Less is more" in the world of blood transfusion. By following defined algorithms, the study has proven an improvement in transfusion appropriateness, reduced red blood cell utilization

and health system cost savings without any signals of patient harm. The principles of the START study continue to be maintained in our centers. During COVID-19, we leveraged the work of the START study to expand best practices throughout Saskatchewan. This included province-wide standardized technologist screening of red blood cells ordered based on pre-transfusion hemoglobin and issue of only 1 unit at a time in non-bleeding hospitalized patients. As a result, Saskatchewan has one of the lowest red blood cell issue rates in Canada. *(Saskatoon site lead: Dr. Prokopchuk-Gauk, Regina site lead: Dr. Ryan Lett)*

CONCOR-1 Study: COVID-19 led to the rapid organization of a Canadian-based, multi-center randomized controlled trial to determine if COVID-19 Convalescent Plasma (the plasma with COVID-19 antibodies from people recovered from COVID-19 infection) helps to lessen the severity of COVID-19 respiratory illness and complications in hospitalized patients. We were site principal investigators in Regina and Saskatoon for this study, along with the support of local research coordinators. This was the first study to begin recruiting human subjects with COVID-19 in Saskatchewan! A total of 11 patients were randomized province-wide, and results are soon to be published by the study authors. *(Saskatoon site lead: Dr. Prokopchuk-Gauk, Regina site lead: Dr. Donna Ledingham)*

What are the discoveries that have resulted from your work?

As clinical researchers, we have enjoyed participating as collaborators in multi-center trials – and have learned a great deal throughout this process! Site participation in these studies and remaining apprised of current literature in transfusion practice have helped us to develop the Transfusion Best Practice Recommendations in Adult Patients – Saskatchewan. Most recently updated in November 2020, this document serves as foundational resource guiding appropriate blood transfusion for Saskatchewan patients.

What is your key research-related accomplishment over the past year?

Establishment of Regina and Saskatoon hospital sites as participants in the CONCOR-1 study is our greatest accomplishment – and was completed at warp-speed! The Research Ethics Board applications, contracts establishment, training and clinical support confirmation (which would normally take at least 6 months to establish!) was completed in 8 weeks to ensure patient enrolment could begin as soon as possible. We are so grateful to all of our clinical and lab colleagues who supported us through this process.

What excites you about your research? What is your favorite part of being a clinical research scientist?

It is truly exciting to know we are working to improve patient safety and optimal stewardship of blood. Minimizing patient complications is essential to ensuring positive patient outcomes.

What is the main difficulty being a Clinician Scientist?

Our greatest challenge is finding time to participate in research. As clinical faculty associated with the College of Medicine, we do not have any protected research time

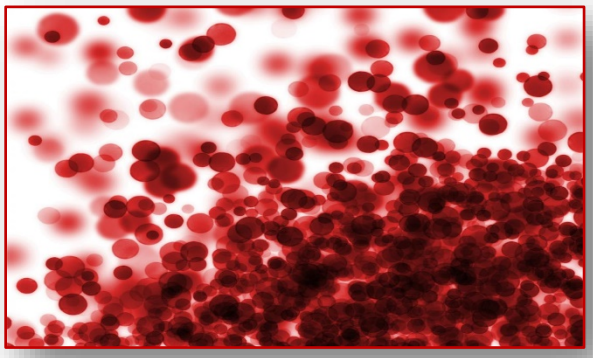
– but we participate as we are able to because we recognize the importance of research in guiding patient care.

How has your research been received nationally and/or internationally?

The participation of our sites in multi-centre studies has been well received, allowing for western Canadian population representation and contribution of trial participants. Larger participant numbers always help to strengthen study conclusions!

Are there any other differing veins of research that you are pursuing or want to pursue?

Along with our colleagues (including Dr. Ryan Lett, Anesthesiologist in Regina), we would love to gather data on patient outcomes following Massive Hemorrhage Protocol (MHP) activations in Saskatchewan. In 2019, there was a Canadian guidance document published outlining recommendations for regional MHP development. We hope that in the next few years, standard approaches to bleeding patients or MHPs can be established in rural hospitals province wide – especially as frozen plasma is phased out of these centers in favor of other clotting factor concentrates. As a part of the rural MHP development process, pre-defined quality indicators will be established to facilitate standardised data collection as a means of auditing and guide process improvements, as necessary.



Do you have any secrets to successful grant writing?

It is very important to clearly answer the questions being asked. It is standard to explain your study objective and budget clearly – but for success, your must make your project 'stand out' as innovative or transformative! You must convince reviewers of the reasons that *your* project is worth receiving funding over others.

Do you have a favorite quote that has had continued significance in your lives?

Oksana: *If a thing is worth doing, it is worth doing well…if it is worth attaining, it is worth fighting for.* (Oscar Wilde)

Donna: *Sometimes we are blessed with being able to choose the time, and the arena, and the manner of our revolution, but more usually we must do battle where we are standing.* (Audre Lorde)

Special Project: Familial hypercholesterolemia (FH) Registry

Submitted by Dr. Ramesh Saeedi, Medical Biochemist
& Dr. Colin Yeung, Assistant Professor, Cardiology

Familial hypercholesterolemia (FH), an autosomal co-dominant disease, is among the most common genetic disorders in humans causing significant morbidity and mortality.

Worldwide, FH is under-recognized and under-treated. National registries play a key role in identifying patients with FH, understanding gain Yeungps in care, and advancing the science of FH to better treat these patients. Nationwide FH registries have been successfully implemented in Netherlands, UK, Spain, France, and the US. In Canada, the first FH registry was established in British Columbia in 2013. Since that time, the FH Canada National registry has expanded to include 19 academic centers across Canada, as well as numerous peripheral sites, in a 'hub and spoke' model to increase awareness and access to standard-of-care therapies.

Dr. Colin Yeung, Medical Director of the Saskatchewan Health Authority's Lipid Clinic in Regina and Dr. Ramesh Saeedi, Medical Biochemist in Regina, are working collaboratively to create and implement Saskatchewan's first FH registry. Dr. Ramesh Saeedi is also a co-investigator of BC/Canada FH registry. Through the creation of a Canada-wide network of academic clinics, integrating lipid specialists, endocrinologists, cardiologists and general practitioners, the FH registry leads to significant benefits for FH patients, clinicians and researchers.

Dr. Ramesh Saeedi, Medical Biochemist and Dr. Colin Yeung, Medical Director of the Saskatchewan Health Authority's Lipid Clinic in Regina, are working collaboratively to create and implement Saskatchewan's first FH registry.

PRESENTATIONS, PUBLICATIONS, GRANTS, AWARDS

Dr. Mohey Alawa, MD PhD

Congratulations to Dr. Alawa, Medical Microbiologist, RRPL, on obtaining an MD License.

Dr. Roland Auer, MD PhD FRCPC

Publications

Rajput AH, Rajput EF, Bocking SM, **Auer RN**, Rajput A. (2019) Parkinsonism in essential tremor cases: A clinicopathological study. *Mov Disord* **34**(7):1031-1040 https://doi.org/10.1002/mds.27729 PMID: 31180613

Rajput AH, Rajput EF, Bocking SM, **Auer RN**, Rajput A. (2019) Reply to: Parkinsonism in essential tremor cases: A clinicopathological study-were they really essential tremor? *Mov Disord* **34**(11):1750 https://doi.org/10.1002/mds.27868
PMID: 31743513

Olivier CJ, Li H, Auer RN, Dixit D. (2019) Disseminated alveolar echinococcosis in a 74-year-old woman presenting with focal seizure. Can Med Assoc J **191**(34):E940-E943 https://doi.org/10.1503/cmaj.181258 PMID: 31451525

Hernandez-Ronquillo L, Miranzadeh Mahabadi H, Moien-Afshari F, Wu A, **Auer R**, Zherebitskiy V, Borowsky R, Mickleborough M, Huntsman R, Vrbancic M, Cayabyab FS, Taghibiglou C, Carter A, Tellez-Zenteno JF. (2020) The Concept of an Epilepsy Brain Bank. *Front Neurol* **11**:833 http://doi.org/10.3389/fneur.2020.00833 PMID: 32973652

Students supervised: Vedashree Meher, M.Sc. June (2020)

Dr. Nick Baniak, MD FRCPC

Publications

Baniak N, Sholl L, Mata D, D'Amico A, Hirsch M, Acosta A. Clinicopathologic and Molecular Characteristics of Prostate Cancer Diagnosed in Young Men Aged up to 45 Years. Histopathol. 2021 May;78(6):857-870.

Cole A, Garber J, **Baniak N**, Hirsch M, Chang S, Kibel A. 'Case of the Month' from Harvard Medical School, Boston, MA, USA: a 70-year-old man with lung cysts and bilateral renal masses. BJU Int. 2020. Oct;126(4):428-432.
Baniak N, Tsai H, Hirsch M. The Differential Diagnosis of Medullary Based Renal Masses. Arch of Pathol and Lab Med. 2021 Jan 7. Online ahead of print.

Acosta A, Sholl L, Fanelli G, Gordetsky J, **Baniak N**, Barletta J, Lindeman N, Hirsch M. Intestinal Metaplasia of the Urinary Tract Harbors Potentially Oncogenic Genetic Variants. 2021 Feb;34(2):457-468.

Baniak N, Flood T, Buchanan M, Dal Cin P, Hirsch M. Carbonic Anhydrase IX (CA9) Expression in Multiple Renal Epithelial Tumor Subtypes. Histopathol. 2020. Oct;77(4):659-666.
Ramakrishnan V, Ozambela Jr. M, **Baniak N**, Hirsch M, Kathrins M. Secondary Adenocarcinoma of the Urinary Bladder Attributed to Metastatic Gastroesophageal Cancer. Can J Urol. 2020 Oct;27(5):10415-10417.

Baniak N, Gilks CB, DeCoteau J, Kinloch M. Diagnostic Variation in p53 Usage for Endometrial Carcinoma Diagnosis: Implications for Molecular Subtyping. Int J Gynecol Pathol. 2020 Nov;39(6):514-521.

Dr. Joseph Blondeau, BSc MSc PhD

Papers

1. Alsaeed A, Wright G, Deneer H, Rubin JE, Sanche SE, Blondeau JM. Methicillin-resistant *Staphylococcus aureus* replication in the presence of high (≥32 µg/ml) drug concentration of vancomycin as seen by electron microscopy. Journal of Chemotherapy 2020; 32(4):179-187.
2. Blondeau LD, Rubin JE, Deneer H, Kanthan R, Morrison B, Sanche SE, Rypien C, Dueck D, Beck G, Blondeau JM. Persistent infection with *Staphylococcus pseudintermedius* in an adult oncology patient with transmission from a family dog. Journal of Chemotherapy 2020; 32(3):151-155.
3. Blondeau JM, Fitch SD. *In vitro* killing of canine strains of *Staphylococcus pseudintermedius* and *Escherichia coli* by cefazolin, cefovecin, doxycycline and pradofloxacin over a range of bacterial densities. Veterinary Dermatology 2020; 31(3):187-e139.
4. Blondeau LD, Rubin JE, Deneer H, Kanthan R, Sanche SE, Beshard N, Mpofu C, Blondeau JM. Bacteremia with *Staphylococcus pseudintermedius* in a 4 month old pediatric oncology patient. Journal of Chemotherapy 2020; 32(5):260-262.
5. DeCory HH, Sanfilippo CM, Proskin HM, Blondeau JM.Characterization of baseline polybacterial versus monbacterial infections in three randomized controlled bacterial conjunctivitis trials and microbial outcomes with besifloxacin ophthalmic suspsension 0.6%. Plos One 2020; 15(8): doi: 10.1371/journal.pone.0237603.
6. Blondeau JM. Clinical microbiology laboratories and COVID-19: The calm before the storm! Future Microbiology 2020; 15: 1419-1424.

7. Wright GR, Osmond A, Blondeau JM, Peermohamed S. A case of multilocal cutaneous alternariosis in a patient with hairy cell leukemia. Canadian Journal of the Association of Medical Microbiology and Infectious Disease Canada 2020; 5(4):251-255. DOI:10.3138/jammi-2020-0019.
8. Blondeau JM, Rankin SC. Diagnostic Clinical Microbiology. Journal of Veterinary Pharmacology and Therapy 2021; 44(2):250-269. Doi:10.1111/jvp.12962.
9. Blondeau LD, Sanche SE, Sauder DJ, Deneer H, Kanthan R, Rubin JE, Morrison BJ, Blondeau JM. Recovery of borderline oxacilliln-resistant *Staphylococcus aureus* (BORSP) from bone and soft tissue of a rheumatoid arthritis patient with severe osteoporosis: transmission from the family dog. Journal of Chemotherapy 2021; 1-6. DOI: 10.1080/1120009X.2021.1879581.
10. Blondeau JM, DeCory H. *In vitro* time-kill of common ocular pathogens with besifloxacin alone and in combination with benzalkonium chloride. Pharmaceuticals 2021. In Press.
11. Blondeau JM, Fitch SD. *In vitro* killing of canine urinary tract infection pathogens by ampicillin, cephalexin, marbofloxacin, pradofloxacin and trimethoprim/sulfamethoxazole. Veterinary Medicine and Science 2021. Submitted.

Abstracts

1. Zhanel GG, Baxter M, Golden A, Hink R, Lagace-Wiens P, Fuller J, Davidson R, Blondeau JM, Karlowsky JA, Walkty A, Gilmour M, Bay D, Schweizer F, Berry L, Henni AS, Mulvey MR, Golding GR, Canadian Antimicrobial Resistance Alliance (CARA), Adam H. Antimicrobial susceptibility of 52,372 pathogens isolated from patients in Canadian Hospitals: 13 years of the CANWARD Study 2007-2019. ASM 2020 Online.
2. Alsaeed A, Rubin JE, Sanche SE, Deneer H, Blondeau JM. Reduced *in vitro* killing of methicillin-resistant *Staphylococcus aureus* blood culture isolates by vancomycin as the bacterial inocula increases. 30th European Conference on Clinical Microbiology and Infectious Diseases. Paris, France, April 18-21, 2020. Poster # P3323. On-line.
3. Blondeau LD, Rubin JE, Kanthan R, Sanche SE, Deneer H, Blondeau JM. Mutant prevention concentration values of linezolid, moxifloxacin and vancomycin against *Staphylococcus pseudintermedius* strains recovered from humans. 30th European Conference on Clinical Microbiology and Infectious Diseases. Paris, France, April 18-21, 2020. Poster #P2248. On-line.
4. Blondeau JM, Sanche SE, Hamula CL, Deneer HG, Paulson K. The impact of COVID-19 on clinical microbiology laboratories. The calm before the storm. ESCMID Conference on Coronavirus Disease (ECCVID). September 23-25, 2020. Oral Presentation.
5. Blondeau JM, Sanfilippo C, Proskin H, DeCory H. Characteristics and outcomes of polybacterial conjunctivitis infections in studies with besifloxacin ophthalmic suspension 0.6%. American Academy of Pediatrics, San Diego, CA, October 2-6, 2020.
6. Zhanel GG, Baxter M, Golden A, Legace-Wiens P, Fuller J, Davidson R, Blondeau JM, Poutanen S, Lavallee C, Karlowsky J, Taylor R, Walkty A, Bay D, Schweizer F, Berry L, Mulvey MR, Golding G, The Canadian Antimicrobial Resistance Alliance (CARA), Adam H. Antimicrobial susceptibility of 54,603 pathogens isolated from patients in Canadian hospitals: 14 years of the CANWARD Study 2007-2020. World Microbe Forum (WMF), June 20-24, 2021.

7. Blondeau JM, Keller B, David L, Sanche SE, Hamula C, Deneer H. The ongoing impact of COVID-19 on the clinical microbiology laboratory at a University Medical Center. 31st European Conference on Clinical Microbiology and Infectious Diseases. Paris, France, July 9-12, 2021. On-line.
8. Blondeau LD, Lim B, Deneer, H, Rubin JE, Kanthan R, Sanche SE, Blondeau JM. Recovery of *Staphylococcus kloosii* from an ankle lesion of an 85 year old female patient. 1st European Conference on Clinical Microbiology and Infectious Diseases. Paris, France, July 9-12, 2021. On-line.
9. Blondeau LD, Deneer H, Rubin JE, Kanthan R, Sanche SE, Blondeau JM. *Staphylococcus pseudintermedius* recovered from human infectious diseases: a summary of cases. 1st European Conference on Clinical Microbiology and Infectious Diseases. Paris, France, July 9-12, 2021. On-line.
10. Blondeau JM. Has COVID-19 changed clinical microbiology laboratories forever? International Conference on Immunology and Micribiology (ICIM), Luxembourg City, Luxembourg. November 15-17, 2021.
11. Blondeau JM, Keller B, David L, Sanche SE, Hamula C, Deneer H. The ongoing impact of COVID-19 on the Clinical Microbiology Laboratory at a University Medical Center. 31st European Congress of Clinical Microbiology and Infectious Diseases (ECCMID), July 9-12, 2021 On-line.
12. Blondeau L, Lim B, Deneer H, Rubin JE, Kanthan R, Sanche SE, Blondeau JM. Recovery of *Staphylococcus kloosii* from an ankle lesion of an 84 year-old female patient. 31st European Congress of Clinical Microbiology and Infectious Diseases (ECCMID), July 9-12, 2021 On-line.
13. Blondeau L, Deneer H, Rubin JE, Kanthan R, Sanche SE, Blondeau JM. *Staphylococcus pseudintermedius* recovered from human infectious diseases: a summary of cases. 31st European Congress of Clinical Microbiology and Infectious Diseases (ECCMID), July 9-12, 2021 On-line.

Invited Presentations

Coronaviruses and COVID-19. Webex Presentation to healthcare workers in Saskatchewan, April 7, 2020.

Preservations in Eye Drops. Webex Presentation, April 9, 2020.

Preservations in Eye Drops. Webex Presentation, April 21, 2020.

Coronaviruses and COVID-19. Webex Presentation to University of Saskatchewan Retirees Association, May 13, 2020.

Diagnostic Clinical Microbiology Laboratories and COVID-19. Webinar on Microbiology and Future Applications, Longdom Conferences, July 22, 2020.

Diagnostic clinical microbiology laboratories and COVID-19: Are we really prepared? Webinar on Microbiology and Parasitology, August 22, 2020.

Preservation in Ophthalmic. Virtual Presentation to Ophthalmologists, October 6, 2020.

Clinical Microbiology laboratories and COVID-19: Successes, failuresand preparation for what's to come. 14th Professor Alborzi International Clinical Microbiology Congress and 3rd International Congress on Prevention Strategies for Health-associated Infections. Mashhad, Iran, November 11, 2020.

COVID-19: An overview. Saskatchewan Kiwanis Club, November 13, 2020.
COVID-19: An overview. Saskatchewan Polytech Schools of Health Science and Nursing Students, December 3, 2020.
COVID-19: An overview. Saskatchewan Polytech Schools of Health Science and Nursing Students, December 4, 2020.

COVID-19: Overview and and vaccines. Provincial Broadcast, Saskatchewan, December 18, 2020.

COVID-19 and vaccines. Retired Physicians of the Saskatchewan Medical Association, May 6, 2021.

COVID-19 and vaccines. Sask Polytech Faculty, May 13, 2021.

Dr. Harry Deneer, PhD MSc BSc

Publications

Blondeau, Leah D, Sanche, Stephen, Sauder, David J, **Deneer, Harry**, Kanthan, Rani, Rubin, Joseph E, Morrison, Beverly J, and Blondeau, Joseph M. "Recovery of Borderline Oxacillin-resistant *Staphylococcus pseudintermedius* (BORSP) from Bone and Soft Tissue of a Rheumatoid Arthritis Patient with Severe Osteoporosis: Transmission from the Family Dog."*Journal of Chemotherapy* (2021): 1-6. – Published on-line 01 February 2021

Presentations

Unique Cases of *S. pseudintermedius* identified in humans compared to family pets - Tenth International Conference on Antimicrobial Agents in Veterinary Medicine (AAVM), Brussels, Belgium, 23 – 25 November 2020 – Virtual Conference
Presentation Type: Free Communication

Supervision

Blondeau, Leah. PhD Program. Project title: "Use of novel technologies to characterize bacterial pathogens transmitted from animals to humans". Supervised by Dr. H. Deneer from 2018 - present.

Dr. Pouneh Dokouhaki, PhD MD FRCPC

Presentations

Pathology of kidney transplant; Fellows workshop, Canadian Transplant Congress, October 21, 2020.
Laboratory diagnosis of autoimmune encephalitis, Saskatchewan pediatric grand rounds, Jan 14, 2021.

Summer student

Karki, Eva. Identifying patterns of local laboratory testing utilization and implementation of choosing wisely Canada recommendations for laboratory tests, Deans Summer student. Jul.-Aug 2020, Supervised by Dr P Dokouhaki and Dr F Wu.

Dr. Andrew Freywald, PhD

Publications

Freywald A* and Vizeacoumar FJ*. Invited editors of Book Series for **Elsevier Publications**. Biological Mechanisms and the Advancing Approaches to overcoming cancer drug resistance. Volume 12, 1st Edition. Hardcover ISBN: 9780128213100; eBook ISBN: 9780128213117. Imprint: Academic Press. Published Date: 18th November 2020. ***Editor and Corresponding Author**.

Vizeacoumar FJ* and **Freywald** A*. Invited editors of Book Series for **Springer Nature** Publications. Genetic Interactions Mapping: Methods and Protocols. Volume 2381, ISBN: 978-1-0716-1739-7. Date of Publication: Currently in Production (In Press). ***Editor and Corresponding Author**.

Mining the plasma-proteome associated genes in patients with gastro-esophageal cancers for biomarker discovery. Vizeacoumar FS, Guo H, Dwernychuk L, Zaidi A, **Freywald A**, Wu FX, Vizeacoumar FJ, Ahmed S. Sci Rep. 2021, 11(1):7590.

Structure of the EphB6 receptor ectodomain. Mason EO, Goldgur Y, Robev D, **Freywald A**, Nikolov DB, Himanen JP. PLoS One. 2021, 16(3):e0247335.

Protein Tyrosine Kinases: Their Roles and Their Targeting in Leukemia. K Bhanumathy K, Balagopal A, Vizeacoumar FS, Vizeacoumar FJ, **Freywald A**, Giambra V. Cancers (Basel). 2021, 13(2):184.

The CINs of Polo-Like Kinase 1 in Cancer. Cunningham CE, MacAuley MJ, Vizeacoumar FS, Abuhussein O, **Freywald A***, Vizeacoumar FJ.* Cancers (Basel). 2020, 12(10):2953. ***Corresponding Author**.

Supervised Trainees (A. Freywald – supervisor)

Post-doctoral fellows

- Dr. Renuka Dahiya, "Development of new effective combination therapy for triple-negative breast cancer", November 2018 – in progress. Supervisor – Andrew Freywald.
- Dr. Tetiana Katrii, "The role of mitochondrial fission in triple-negative breast cancer tumor-initiating cells", November 2018 – in progress. Supervisor – Andrew Freywald.

Ph.D. students

- Frederick Vizeacoumar, "Mapping the interactome of the Eph family of receptors in cancer", January 2020 – in progress. Supervisor – Andrew Freywald.

M.Sc. students

- Glinton Hanover, "Functional Crosstalk Between the EphB6 receptor and the EGFR receptor",September 01, 2018 – in progress. Supervisor – Andrew Freywald.
- Raveena Nair, "Analysis of the crosstalk between the EphB6 and ErbB2 receptors", May 2018 – April 2021 (Raveena defended her thesis in April 2021). Supervisor – Andrew Freywald.
- Malkon Sanchez Estrada, "Combination treatments for suppressing EphA2 and EGFR expressing tumors", January 2021 – in progress. Supervisor – Andrew Freywald.
- Alain Morejon Morales, "Analysis of EphB6-mediated modulation of EGFR and ERBB2 action in cancer cells", January 2021 – in progress. Supervisor – Andrew Freywald.
- Hardikkumar Patel, project title- to be determined, May 2021 – in progress. Supervisor – Andrew Freywald.

Honors students

- Avani Saxena, "Mining the Proteomic Landscape of Eph Receptors and Ephrins in Cancer", September 2020 – March 2021. Supervisor – Andrew Freywald.

Advisory Committee

- Jessica Sharpe, M.Sc. program. "EphB receptors expression and function in canine and human osteosarcoma", College of Veterinary Medicine, U of S, 2020-present.
- Gabrielle Mercier, M.Sc. program. "Understanding the Role of the Anaphase Promoting Complex in Breast Cancer Progression" College of Medicine, U of S, 2020-present.
- Hussain Elhasasna, M.Sc. program. "Drug re-purposing to eradicate prostate cancer". College of Medicine, U of S, 2018-present.
- Hanan Babeker, Ph.D. program. "Development of small protein domain affinity reagents targeting cancer biomarkers MUC16 and MUC4". College of Medicine, U of S, 2017-present.
- Omar Abuhussein, Ph.D. program. "Targeting Telomerase overexpression by synthetic dosage lethality". College of Pharmacy and Nutrition, U of S, 2016-December, 2020 (defended his thesis).
- Aditya Mandipati, Ph. D. program. "The Role and Mechanism of Action of BRK in Tamoxifen Resistant Breast Cancer". College of Medicine, U of S, 2017-present.

- Franklyn De Silva, Ph.D. program. "Tyrosine kinase inhibitor, Ibrutinib, discovery and targeting of multiple pathways within primary and metastatic breast cancer". College of Pharmacy and Nutrition, University of Saskatchewan, 2016-present.
- Kiranmayee Budharaju, ""Validation and targeting of cancer vulnerabilities in PPARγ-Telomerase signalling pathway". College of Pharmacy and Nutrition, University of Saskatchewan, 2020-present.

- Sara Luiza Banerjee, external examiner, PhD defense, Laval University, 2021/02.

University and College Committees (served in 2020 (July 01) – 2021 (June 30))

1. Internal CIHR grant reviewing (4 grants) – Committee member
2. Consulting New Faculty for CIHR grants – (1 grant)
3. Saskatchewan Cancer Res Institute Foundation Committee – Committee member
4. College of Medicine Bylaws Committee – Committee Chair
5. College of Medicine Faculty Council – Vice Chair
6. PICS Genomics Facility - Scientific Director
7. Two (2) young faculty advisory committees – Committee member
8. PCRC-TFRI Breast Cancer group – Committee member

Outreach, public service and service to professional organization activities (April- June 2021)

- CPT/CT2 CIHR project grant review panel – panel member (8 grants reviewed)
- Reviewing manuscripts (3 manuscripts reviewed)

Grants Received

1. 2020/09 - 2021/08

Co-Investigator
Identification of therapeutically relevant targets in telomerase overexpressing prostate cancers.
Funding Sources:
University of Saskatchewan College of Medicine
Bridge funding
Total Funding - $50,000
Funding Competitive?: Yes

2. 2021/1 - 2021/12
Principle Investigator
Re-purposing existing FDA-approved compounds for treating EphB6-deficient triplenegative
breast cancer
Funding Sources:
CoMRAD operating grant
University of Saskatchewan College of Medicine

Total Funding - 29,278
Funding Competitive?: Yes

Dr. Ronald Geyer, MSC PhD

Publications

Bernhard W, Barreto K, El-Sayed A, Gonzalez C, Viswas RS, Toledo D, Casaco A, DeCoteau J, Fonge H, **Geyer CR**. Pre-clinical study of IRDye800CW-nimotuzumab formulation, stability, pharmacokinetics, and safety. BMC Cancer. 2021 Mar 12;21(1):270. doi: 10.1186/s12885-021-08003-3.

Alizadeh E, Behlol Ayaz Ahmed K, Raja Solomon V, Gaja V, Bernhard W, Makhlouf A, Gonzalez C, Barreto K, Casaco A, **Geyer CR**, Fonge H. 89Zr-Labeled Domain II-Specific scFv-Fc ImmunoPET Probe for Imaging Epidermal Growth Factor Receptor In Vivo. Cancers (Basel). 2021 Feb 1;13(3):560. doi: 10.3390/cancers13030560.

3. Solomon VR, Barreto K, Bernhard W, Alizadeh E, Causey P, Perron R, Gendron D, Alam MK, Carr A, **Geyer CR**, Fonge H. Nimotuzumab Site-Specifically Labeled with 89Zr and 225Ac Using SpyTag/SpyCatcher for PET Imaging and Alpha Particle Radioimmunotherapy of Epidermal Growth Factor Receptor Positive Cancers. Cancers (Basel). 2020 Nov 20;12(11):3449. doi: 10.3390/cancers12113449.

4. Solomon VR, Alizadeh E, Bernhard W, Makhlouf A, Hartimath SV, Hill W, El-Sayed A, Barreto K, **Geyer CR**, Fonge H. Development and preclinical evaluation of cixutumumab drug conjugates in a model of insulin growth factor receptor I (IGF-1R) positive cancer. Sci Rep. 2020 Oct 29;10(1):18549. doi: 10.1038/s41598-020-75279-z.

5. Sutherland AR, Owens MN, **Geyer CR**. Modular Chimeric Antigen Receptor Systems for Universal CAR T Cell Retargeting. Int J Mol Sci. 2020 Sep 30;21(19):7222. doi: 10.3390/ijms21197222.

Pastushok L. **Geyer CR**. A molecular passport authorizes intracellular travel for a potential cancer therapy antibody, Atlas of Science, April 12, 2021

Supervision

Sutherland Ashley, Generation of novel chimeric antigen receptor (CAR) T cells through post-translational assembly and glycoengineering against tumour-associated antigens HER3 and N-glycolyl GM3, PhD student, 2016- current, Supervised by Dr. C.R. Geyer

Livingstone David, Immunoreactivity of the 14F7 Monoclonal Antibody against N-Glycolyl GM3 Ganglioside in Multiple Myeloma for use in Diagnostic and Targeted therapies, MSc Student, 2020-current, Supervised by C.R. Geyer

Andres Medina, Design and Characterization of Antibody-Conjugated T-Cells for Cancer Therapy, MSc student, 2021-current, Supervised by C.R. Geyer

Brijesh Parlekar, Design and characterization of in vivo nanovesicle immune cell activators, MSc student, 2021-current, Supervised by C.R. Geyer

Kimberly Chute, 18FGA PET imaging of tumor necrosis, PDF, 2021-current, Supervised by C.R. Geyer
Wendy Bernhard, Anti-EGFR Fluorescent probes for image-guided lung cancer surgery, PDF, 2020-current, Supervised by C.R. Geyer

Kris Barreto, Clinical evaluation of PET and Optical imaging probes for lung and colorectal cancer, Research Scientist, 2021-current, Supervised by C.R. Geyer

Committees

Viseocoumar, Frederick, PhD Program. Mapping the genetic landscape of the Eph family of receptors and their ligands in cancers, Health Sciences, College of Medicine, University of Saskatchewan.
2020-present

MacAuley, Mackenzie, PhD Program. Mapping the Functional Relationships Amongst the DNA Repair Genes, Health Sciences, College of Medicine, University of Saskatchewan.
2020-present

Grants

2021/1 - 2026/1 Co-applicant
Simultaneous targeting of multiple domains of HER2 and EGFR using domain-specific alpha particle labeled radioimmunoconjugates
Funding Sources: Canadian Institutes of Health Research (CIHR)
Project Grant Total Funding - 970,000

"Endometriosis shows its real nature in a Pathology Slide"
Dr. Guilhermekaram – Reddit.com

Dr. Jawahar (Jay) Kalra, PhD MD FRCPC FCAHS

USASK'S KALRA RE-APPOINTED TO PRESTIGIOUS NATIONAL BOARD - One of Canada's premier public policy organizations has again called on Dr. Jawahar (Jay) Kalra (MD) of the University of Saskatchewan (USask) to serve on its board of directors.

(Article reprinted from "news.usask.ca" 25 FEB 2021 with permission by the author, James Shewaga, Editor, Communications Specialist)

Kalra has been re-appointed to the board of the Council of Canadian Academies (CCA), an influential non-profit organization of leaders from across the country dedicated to informing Canadian public policy development.

"It is an honour and a privilege for me to be re-appointed and I am proud to be serving on this board, where our mission is to look at evidence-based expert assessments globally," said Kalra, who was re-appointed for a second three-year term and is also chairing the audit, finance and human resources committee. "This is a privilege for me, and it is an honour to represent the university. I am a proud member of the faculty of the University of Saskatchewan and we have many talented and extraordinary people and this is all credit to our university."

Kalra is an award-winning professor of pathology and laboratory medicine in USask's College of Medicine, now in his 36th year in the college since joining USask in 1985. He previously served as head of the Department of Pathology (1991-2000) and head of the Department of Laboratory Medicine, Saskatoon District Health (1994-2000). In addition to being an active researcher and educator at USask, Kalra has filled major leadership roles, including serving six years as chair of University Council and as a member of USask's Board of Governors after being re-elected in 2019 for a second three-year term.

Kalra has also served as national president of numerous medical associations, including the Intersociety Council of Laboratory Medicine of Canada, the Canadian Chairs of Pathology and Laboratory Medicine, and the Canadian Association of Pathologists. He is also the former treasurer and a board member of the Canadian Academy of Health Sciences, one of the three founding academies of the CCA, along with the Royal Society of Canada and the Canadian Academy of Engineering.

Kalra said he is looking forward to the opportunity to continue to work with the distinguished members of the CCA board, featuring national and international leaders in the fields of natural, social and health sciences, as well as engineering and the humanities. "This is a marvellous board to work with," said Kalra, who is also a Fellow of the Royal College of Physicians and Surgeons of Canada, the

Canadian Academy of Health Sciences, an Elected Fellow of the Royal Society of Medicine, U.K, and a Canadian Certified Physician Executive leader. "It is a privilege to serve on this board with people like (Dr.) David Dodge (PhD), who was the governor of the Bank of Canada, (Dr.) Donna Strickland, a Nobel Laureate in physics, and (Dr.) Bartha Knoppers (PhD), who is a prominent lawyer and research ethics expert. It is an honour for me."

Locally, Kalra volunteers with a number of local and provincial community organizations, including having served as president of Saskatoon Folkfest, the Multicultural Council of Saskatchewan, Saskatchewan Intercultural Association and the Saskatoon Nutana Rotary Club, as well as chair of the Canadian National Institute for the Blind (Saskatchewan Division) and a board member of Heart and Stroke Foundation of Saskatchewan. For his service to the community and country, he received a variety of awards, including named Saskatoon's Citizen of the Year in 2016 and honoured along with former NBA all-star Steve Nash in the 2013 RBC Top 25 Canadian Immigrant awards.

"I still very much enjoy teaching and doing scholarly work," said Kalra. "And I am just putting, as a co-editor, a couple of conference proceedings books together and continue to be active in research and clinical services in the Saskatchewan Health Authority.

The University of Saskatchewan has a lot of great people and it is an honour to work with them."

Edited Books

Kalra, J., Lightner, N. J., (Ed.) (2020). *Advances in Human Factors and Ergonomics in Healthcare and Medical Devices*. Springer Nature Switzerland AG 2020. USA.

Chapters in Books

Seitzinger, P., Rafid-Hamed, Z., **Kalra J.** (2020). The Value of the Medical Autopsy as a Quality Improvement Tool in Modern Diagnostic Medicine. In: Kalra J. and Lightner N. (Ed.) *Advances in Human Factors and Ergonomics in Health Care and Medical Devices*. Springer Cham, p 77-82.

Kalra J., Rafid-Hamed, Z., Seitzinger, P. (2020). Disclosure of Medical Error: A Necessary Step in Healthcare Improvement. In: Kalra J. and Lightner N. (Ed.) *Advances in Human Factors and Ergonomics in Health Care and Medical Devices*. Springer Cham, p 11-16.

Papers in Refereed Journals

Kalra J., Rafid-Hamed Z., & Seitzinger P. (2020). Autopsy Data to Refine Healthcare Quality: A Fresh Perspective. *Pathology and Laboratory Medicine*, 1(1): e11-e13.

Contributed Presentations (Virtual)

Seitzinger, P., Rafid-Hamed, Z., **Kalra J.** (July 2020). The Value of the Medical Autopsy as a Quality Improvement Tool in Modern Diagnostic Medicine. International Conference on Advances in Intelligent Systems and Computing. Advances in Human Factors and Ergonomics in Health Care and Medical Devices (AHFE). USA. July 16, 2020.

Kalra J., Rafid-Hamed, Z., Seitzinger, P. (2020). Disclosure of Medical Error: A Necessary Step in Healthcare Improvement. International Conference on Advances in Intelligent Systems and Computing. Advances in Human Factors and Ergonomics in Health Care and Medical Devices (AHFE). USA. July 16, 2020.

Kalra J. (October 2020). Medical Error Disclosure: A Professional Obligation and Ethical Dilemma. Department of Pathology and Lab Medicine Research Day. Saskatoon, Saskatchewan. October 27, 2020.

Rafid-Hamed, Z., **Kalra, J.** (October 2020). Quality Care and Patient Safety: A Best Practice Model for Medical Error Disclosure. Department of Pathology and Lab Medicine Research Day. Saskatoon, Saskatchewan. October 27, 2020.
Seitzinger, P., **Kalra, J.** (October 2020). Quality Assessment and Management: Autopsy as a Quality Improvement Tool in Diagnostic Medicine. Department of Pathology and Lab Medicine Research Day. Saskatoon, Saskatchewan. October 27, 2020.

Graduate Student

Kopargaonkar, Ashish, Master's Thesis, College of Pharmacy and Nutrition, (Co-Supervisor), Thesis Topic- "Effect of Clinical Pathways on Interprofessional Collaboration and Patient Care: A Systematic Review" 2021 – (Completed)

Summer Student

Okonkwo, Chiamaka, "*Quality Care and Patient Safety: A Best Practice Model for Medical Error Disclosure*", Deans summer student. May – July 30, 2020, Supervised by Dr. J Kalra

Parekh, Rahul, "*Quality Management: Assessment tools in Clinical Diagnostic Laboratories*", Deans summer student. May – July 30, 2020, Supervised by Dr. J Kalra

Rafid-Hamed, Zoher, "Disclosure of Medical Error: A Necessary Step in Healthcare Improvement", summer student. May – August 30, 2020, Supervised by Dr. J Kalra

Seitzinger, Patrick, "The Value of the Medical Autopsy as a Quality Improvement Tool in Modern Diagnostic Medicine", summer student. May – July 30, 2020, Supervised by Dr. J Kalra

Advisory Committee

Advisory Committee Co-Chair
Babekar, Hanan, Ph.D. Student, "Development of small protein domain affinity reagents targeting biomarker, MUC16/CA125, Health Sciences Graduate program, 2020-present

Recognition and Awards

UGME Research Presentation Award (Certificate of Appreciation) - Seitzinger Patrick, Supervisor - Kalra Jay. Quality Assessment and Management: Autopsy as a Quality Improvement Tool in Diagnostic Medicine. Department of Pathology and Lab Medicine Research Day, Sask Health Authority, October 27, 2020.

UGME Research Presentation Award (Certificate of Appreciation) – Rafid-Hamed Zoher, Supervisor - Kalra Jay. Quality Care and Patient Safety: A Best Practice Model for Medical Error Disclosure. Department of Pathology and Lab Medicine Research Day, Sask Health Authority, October 27, 2020.

AHFE 2020 Best Student Paper Award – Seitzinger Patrick, Rafid-Hamed Zoher, Kalra Jay. The Value of the Medical Autopsy as a Quality Improvement Tool in Modern Diagnostic Medicine. Applied Human Factors and Ergonomics 2020 and Its Affiliated Conferences. July 2020.

Dr. Rani Kanthan, MBBS MS FRCS FRCPSC FCAP M.ED

Publications in Refereed Journals

Leah D. Blondeau , Stephen Sanche , David J. Sauder , Harry Deneer , **Rani Kanthan,** Joseph E. Rubin , Beverly J. Morrison & Joseph M. Blondeau **(2021)**: Recovery of borderline oxacillin-resistant *Staphylococcus pseudintermedius* (BORSP) from bone and soft tissue of a rheumatoid arthritis patient with severe osteoporosis: transmission from the family dog. Journal of Chemotherapy, DOI: 10.1080/1120009X.2021.1879581
I am a co-author for this study based on the Ph.D. project work by Leah Blondeau

Tharmaradinam S, Kanthan S and ***Kanthan R* (2020).** Hyperganglionosis in Pneumatosis Cystoides Intestinalis- A Clinicopathological Review in Adults Gastroint Hepatol Dig Dis. 2020; 3(2): 1-7.
I am the senior author with S. Kanthan, surgeon and S.Tharmaradinam, senior pathology resident as co-authors

Tharmaradinam S, Brits N and ***Kanthan R* (2020).** Non-Traumatic Rupture of Splenic Metastases as the First Presentation of Clinically Occult Disseminated Primary Lung Cancer. American Journal of Surgery and Clinical Case Reports: 2(4):1-5
I am the senior author with Brits as the co-pathologist and S.Tharmaradinam, senior pathology resident as co-authors

Kanthan R, Tharmaradinam S, Asif T, Ahmed S, Kanthan SC **(2020).** Mixed epithelial endocrine neoplasms of the colon and rectum – An evolution over time: A systematic review**.** World J Gastroenterol 2020 September 14; 26(34): 5181-5206
I am the first author with S.Tharmaradinam, senior pathology resident, Asif T and Ahmed S medical oncologists, and S. Kanthan, surgeon as co-authors

Tharmaradinam S, Kanthan S and ***Kanthan R* (2020).** Cytokeratin 20 Positive with HepPar-1 Negative in Hepatocellular Carcinoma - A Potential Diagnostic Pitfall in the Pathological Interpretation of Needle Core Liver Biopsy. Gastroenterology & Hepatology International Journal 2020, 5(2): 000173
I am the senior author with S. Kanthan, surgeon and S.Tharmaradinam, senior pathology resident as co-authors

Refereed Conference Publications

Suresh J, Chibbar R, Lai R, Cheng-Han Lee, Förstner S, Chibbar R, Agrawal A, ***Kanthan R***, Kundapur V **[2021]** Clinical, Pathological and Molecular Correlates of Recurrent/Metastatic Low Grade Endometrial Endometrioid Carcinoma Abstract # 627 Modern Pathology 2021; 34 (suppl 2): pages 749-50.
This was delivered as a virtual poster presentation by the senior pathology resident listed as first author at the USCAP virtual meeting in March 2021
Tharmaradinam S, Kanthan S, Diudea D, ***Kanthan R* [2021]** Uncommon Mucosal Metastases in Endoscopic Colorectal Biopsies: A 20-year Single Institution Review From 13,564 Specimens abstract #393 Modern Pathology 2021; 34 (suppl 2): pages 480-82
This was delivered as a virtual poster presentation by the senior pathology resident listed as first author at the USCAP virtual meeting in March 2021

Kanthan R, Kanthan S, Tharmaradinam S **(2020).** Mixed Tumors of the Rectum. 32nd Congress of the European Society of Pathology and XXXIII International Congress of the International Academy of Pathology 06th-08th December, PS -21-039 Virchows Archiv (2020) 477 (Suppl 1):S1–S390 [S187]
This was delivered as a virtual poster presentation by me at the IAP meeting in Dec 2020

Kanthan R, Tharmaradinam S, Kanthan S **(2020).** Hyperganglionosis in pneumatosis coli-cause or effect - chicken or egg-a case series 32nd Congress of the European Society of Pathology and XXXIII International Congress of the International Academy of Pathology 06th-08th December, PS-21-040 Virchows Archiv (2020) 477 (Suppl 1):S1–S390 [S187]
This was delivered as a virtual poster presentation by me at the IAP meeting in Dec 2020

Kanthan R, Swaminathan R, Sundaram S, Nagarajan P **(2020)**. The evaluation of homegrown digital scanner as learning and assessment tool of haematoxylin and eosin stained slides in pathology. 32nd Congress of the European Society of Pathology and XXXIII International Congress of the International Academy of Pathology 06th-08th December, PS-17-004 Virchows Archiv (2020) 477 (Suppl 1):S1–S390-[S152]
This was delivered as a virtual poster presentation by me at the IAP meeting in Dec 2020

Presentations

Invited faculty Speaker at KAPCON 2020 Pediatric Conference -The pathological landscape of thyroid lesions in pediatrics on Oct3rd 2020 **Virtual Live presentation**

Supervision and Advisory Activities

2020	Henry Pan	Undergraduate Medical Student Elective
2020	Suresh Tharmaradinam	General Pathology Resident - *working on research projects*

Graduate Student and Thesis supervision

Ms. Leah Blondeau **PhD candidate** - Department of Pathology and Laboratory Medicine, College of Medicine. Supervisors Dr Harry Deneer, Joe Rubin, Sanche and myself: One Health - Role of organisms as pathogens from animals to humans. **My role- Member of the Advisory Committee 2018- present**

Committee Membership

Royal University Hospital -Grant Review Committees
Women's Leading Philanthropy
RUH Foundation Grant

College Committees

2020- 2023 PGME Standing Committee for Appeals [1st July 2020 for 3 year term]
2020 -2023 College Review Committee for Tenure & Promotions [1st July 2020 for 3 year term]

Department Committees

2021June	Residency First Year Transition Academic Advisor
2020	Tenure and Promotions Committee
2019, 2020	Salary Review Committee
2019, 2020	Division of Oncology Promotions Committee -Member
2019-present	Residency Competency Committee Member
2000-present	Residency Program Training Committee

Associate Memberships at the U of S

2007 - Present Faculty, School of Physical Therapy
2003 - Present Faculty, College of Graduate and Postdoctoral Studies -renewed five-year term (2023)

Affiliations

2018 - Present	Visiting Professor-Department of Pathology, Saveetha Medical College and Hospital, Chennai, India -Term 3 years and then renewed annually
2016 – Present	Visiting Professor **–** Department of Pathology, Sri Ramachandra Medical College & Research Institute, Chennai, India -Term 3 years and then renewed annually

Baniak N, Gilks CB, DeCoteau J, **Kinloch M.** Diagnostic Variation in p53 Usage for Endometrial Carcinoma Diagnosis: Implications for Molecular Subtyping. Int J Gynecol Pathol. 2020 Nov;39(6):514-521..

Thompson, E., Leung, S., Lum, A., Senz, J., Huvila, J., **Kinloch, M.**, ... & Gilks, C. B. (2020, March). Endometrial Carcinoma Molecular Subtype is Associated with Pathologic and Prognostic Indices: Findings from a National Study. 2020. Laboratory Investigation. (Vol. 100, No. SUPPL 1, pp. 1146-1147).

Molecular classification of endometrial carcinoma across Canada: Variation in practice and opportunities to move towards consistency of care
EF Thompson, S Leung, A Lum, J Irving, SA Scott, L Helpman, S Salvador, D Vicus, C Wohlmuth, V Samouëlian, **M Kinloch**, SL Offman, M Sur, A Lytwyn, C Parra-Herran, K Grondin, C Morin, FW Gougeon, M Plante, WH Gotlieb, A Talhouk, B Gilks, JN McAlpine. 2020. Gynecologic Oncology 159, 241-242

Thompson E, Lum A, Huvila J, S Scott, V Lui, E He, T Salisbury, S Keane, V Samouelian, J Irving, S Salvador, L Helpman, C Wohlmuth, **M Kinloch**, S Offman, D Vicus, K Grondin, W Gtlieb, M Plante, D Huntsman, A Talhouk, CB Gilks, G Hanley, J McAlpine. Variation in practice in endometrial cancer (EC); can molecular classification direct care and reduce costs associated with management? International Journal of Gynecologic Cancer 2020;30:A5.

Thompson E, Huvila J, Leung S, J Irving, N van der Westhuizen, **M Kinloch**, A Lytwyn, M Sur, C Parra-Herran, A Yasmeen, F Gougeon, C Morin, K Grondin, S Offman, T Salisbury, E He, J Lawson, J Vanden Broek, C Bell, K Ennour-Idrissi, C Wohlmuth, D Vicus, W Gotlieb, L Helpman, A Lum, J Senz, D Huntsman, B Gilks, JN McAlpine. Refining pathologic interpretation of endometrial carcinomas: lessons learned from a nationwide study in a new era of molecular classification. International Journal of Gynecologic Cancer 2020;30:A3-A4.

Supervision

Eckel, Haley, Dean's undergraduate student, Factors Affecting Cervical Biopsy-LEEP Turnaround Time, July-Aug 2020, supervised by Dr. M. Kinloch

Fitzpatrick, Madeline, visiting PGY-4 resident from NFLD, May 2021, Supervised by Dr. M. Kinloch

Committee Membership

Vice-President, Saskatoon Regional Medical Association

Pathology Delegate, Saskatchewan Medical Association Representative Assembly

Co-Chair, Provincial Cervical Cancer Task Force

Co-Chair, Anatomic Pathology Provincial Discipline Specific Group

Volunteer Chair, Women Leading Philanthropy, Royal University Hospital

Member at Large, Executive, Canadian Association of Pathologists

Executive Member, National Special Interest Group in Gynecologic Pathology
Canadian Association of Pathologists

Grants

Tumour Testing and Ovarian Cancer Drug Prediction Program. Saskatchewan Ministry of Health (managed through Ovarian Cancer Canada and the University of Saskatchewan) in the amount of 721 K to carry out creation of our tumor bank and to initiate tumor testing for all women with ovarian cancer in this province.

Dr. Amanda Lang, PhD FCCM D(ABMM)

Publications

Burak KW, Law S, Rice C, Hu J, Fung CI, Woo AKH, Fonseca K, **Lang ALS**, Kanji JN, Meatherall BL. COVID-19 outbreak among physicians at a Canadian curling bonspiel: a descriptive observational study. CMAJ Open. 2021 Jan-Mar;9(1):E87-E95.doi: 10.9778/cmajo.20200115. Print 2021 Jan-Mar. PubMed PMID: 33563638; PubMed Central PMCID: PMC8034378.

Phillips ZC, Holfeld KI, **Lang AL**, Richels LD. A case of milker's nodules in Saskatchewan, Canada. SAGE Open Med Case Rep. 2020;8:2050313X20984118. doi: 10.1177/2050313X20984118. eCollection 2020. PubMed PMID: 33447389; PubMed Central PMCID: PMC7780170.

LeBlanc JJ, Gubbay JB, Li Y, Needle R, Arneson SR, Marcino D, Charest H, Desnoyers G, Dust K, Fattouh R, Garceau R, German G, Hatchette TF, Kozak RA, Krajden M, Kuschak T, **Lang ALS**, Levett P, Mazzulli T, McDonald R, Mubareka S, Prystajecky N, Rutherford C, Smieja M, Yu Y, Zahariadis G, Zelyas N, Bastien N. Real-time PCR-based SARS-CoV-2 detection in Canadian laboratories. J Clin Virol. 2020 Jul;128:104433. doi: 10.1016/j.jcv.2020.104433. Epub 2020 May 13. PubMed PMID: 32405254; PubMed Central PMCID: PMC7219382.

Carmen Charlton1,2,3*, Jamil Kanji1,2,4, Vanessa Tran5,6, Julianne Kus5,6, Jonathan Gubbay5,6, Carla Osiowy7 , Jason Robinson8 , Inna Sekirov9 , Michael Drebot7 , Todd Hatchette10, Derek Stein11,12, Nadia El-Gabalawy7 , **Amanda Lang**13, Lei Jiao10, Paul

Levett11, Heidi Wood7 , Christian Therrien14, L Robbin Lindsay7 , Muhammad Morshed9 , Jessica Forbes6 , Antonia Dibernardo7 on behalf of the Canadian Public Health Laboratory Network (CPHLN) Serology Working Group May 2021 Practical guidance for clinical laboratories for SARS-CoV-2 serology testing Canada communicable disease report = Relevé des maladies transmissibles au Canada 47(04):171-183

Dr. Andrew Lyon, PhD FCACB DDABCC

Publications

Lyon ME, **Lyon AW**. N-Acetylcysteine Interference with a Glucose Dehydrogenase Linked Glucose meter. J Sci Diabet Technol - 2021 Mar 14; DOI: 10.1177/1932296821999416

Lyon ME, Bajkov A, Haugrud D, Kyle BD, Wu F, **Lyon AW**. COVID-19 Pandemic Planning: Simulation models to predict biochemistry test capacity for patient surges. J Appl Lab Med. DOI.org/10.1093/jalm/jfaa231

Stephenson N, Hornaday K, Doktorchik C, **Lyon AW**, Tough SC, Slater D. Quality assessment of RNA in long-term storage: The All Our Families biorepository. PLOS One. 2020; DOI: 10.1371/journal.pone.0242404.

Inman M, **Lyon AW**, Lyon OAS, Lyon ME. Estimated Risk for Insulin Dose Error Among Hospital Patients Due to Glucose Meter Hematocrit Bias in 2020. Arch Pathol Lab Med.2020; 144: 1204-8.

Zhao Y, Izadnegahdar M, Lee M, Kavsak P, Singer J, Scheuermeyer F, Udell J, Robinson S, Norris C, **Lyon AW**, Pilote L, Cox J, Hassan A, Rychtera A, Johnson D; Mills NL, Christenson J, Humphries K. High-Sensitivity Cardiac Troponin - Optimizing the Diagnosis of Acute Myocardial Infarction/Injury in Women (CODE-MI): Rationale and Design for a Multi-centre Stepped-Wedge Cluster Randomized Trial American Heart Journal. 2020; 229: 18-28.

Lyon AW, Delayen K, Reddekopp R. "No lab tests" when you are born in *The Twilight Zone*: A Clinical Informatics Case Report J Appl Lab Med. 2020; 5(6): 1395-1400.

Supervision

Vuong, Stephanie, Development of Liquid Chromatography-Tandem Mass Spectrometry Methods of Cannabinoids for Pediatric Patient Samples
MSc program. Defended Oct 16, 2020. Supervised by Drs. Jane Alcorn and Andrew Lyon.

Leis, Benjamin. Focused cardiac ultrasound in stroke: a feasibility study. MSc Program 2019-Present. Supervised by Drs. Andrew Lyon and Jawed Akhtar.
Advisory Committees

Vuong, Stephanie, Development of Liquid Chromatography-Tandem Mass Spectrometry Methods of Cannabinoids for Pediatric Patient Samples

MSc program, Pharmacy and Nutrition, University of Saskatchewan, Supervised by Drs. Jane Alcorn and Andrew Lyon.
2018-2020

Leis, Benjamin. Focused cardiac ultrasound in stroke: a feasibility study. MSc Program, Health Sciences, University of Saskatchewan. Supervised by Drs. Andrew Lyon and Jawed Akhtar.
2019-present

Dr. J. Fergall Magee, MD MRCPC FRCPC MHSc

Invited Presentations

Bioethics for Laboratory Physicians, Dalhousie Division of Hematopathology, April 9, 2021

Advisory Committee Membership

Advisory Committee Chair – Bezaire, Jennifer, Novel biomarkers of acute kidney injury following cardiopulmonary bypass-supported cardiac surgery, Summer student. Jul.-Jul.2020-21.

Credentials Committee, Royal College of Physicians and Surgeons of Canada, Chair 2017 - present

Assessment Committee, Royal College of Physicians and Sureons of Canada, Member (2017 – present)

SaskPolytech Lab Med Curriculum Committee, Member 2021

Dr. Erick McNair, BSC MSC PhD CCP

Publications

McNair E, Bezaire J, Moser M et al. The association of matrix metalloproteins with acute kidney injury following cardiopulmonary bypass supported cardiac surgery CJKHD. 2021 8: 1–13 DOI: 10.1177/20543581211019640

Moser M, Schmidt S, Banerjee T**, McNair E**, Sawicki G. Pre-arrest doxycycline protects donation after circulatory death kidneys. Sci Rep **10,** 22272 (2020).

McNair ED, McKay WP, Mondal PK, Bryce RD. Transfusion Use and Hemoglobin Levels by Blood Conservation Method Post Cardiopulmonary Bypass. Ann Thorac Surg. 2020 (20)30541-5.

Presentations

Krieger E, Shavadia J, **McNair E**, Harding S, Orvold J.Correlation between point-of-care activated clotting times and laboratory-determined anti-Xa unfractionated heparin levels to guide management of sheath removal. Canadian Cardiovascular Congress, CCC 2020 Virtual

McNair E. The Association of Matrix Metalloproteins with Acute Kidney Injury following CPB-supported Cardiac Surgery. Virtual Poster presentation. Saskatchewan Health Research Showcase. November 16 – 18, 2020
Poster presentation. Saskatchewan Health Research Showcase. November 16 – 18, 2020

Spurr S, Bally J, **McNair E.** The Prevalence of Undiagnosed Prediabetes/Type 2 Diabetes, Prehypertension/Hypertension and Obesity Among Ethnic Groups of Adolescents in Saskatchewan. Virtual Poster presentation.
Saskatchewan Health Research Showcase. November 16 – 18, 2020

Graduate student

Bezaire, Jennifer, Novel biomarkers of acute kidney injury following cardiopulmonary bypass-supported cardiac surgery, Summer student.
Jul.-Jul.2020-21, Supervised by Dr E. McNair

Committee Work

PaLM Annual Repot Committee
Provincial Department of Laboratory Medicine-Equity, Diversity, and Inclusion Committee
PaLM Department Salary Review Committee

Dr. Jessica Minion, MD MSC FRCPC D(ABMM)

Congratulations on being awarded the 2021 Nutrien Women of Distinction Award in the Pandemic Innovator category.
Dr. Minion's work in microbiology has been the silent driver behind quick and accurate COVID-19 testing in Saskatchewan. Her expertise and research, as Provincial Clinical Lead at the Roy Romanow Provincial Laboratory, has ensured Saskatchewan's lab is one of the top labs in Canada for detecting and testing for COVID-19.

Papers

1. Tsang, Raymond SW; Shuel, Michelle; Ahmad, Tauqeer; Hayden, Kristy; Knox, Natalie; Van Domselaar, Gary; Hoang, Linda; Tyrrell, Gregory J; Minion, Jessica; Van Caeseele, Paul. Whole genome sequencing to study the phylogenetic structure of serotype a *Haemophilus influenzae* recovered from patients in Canada. Canadian Journal of Microbiology, 2020; 66(2): 99-110.

2. Tsybina, Polly; Hennink, Maurice; Diener, Tania; Minion, Jessica; Lang, Amanda; Lavoie, Stephanie; Kim, John; Wong, Alexander. Repeated false reactive ADVIA centaur® and bio-rad Geenius™ HIV tests in a patient self-administering anabolic steroids. BMC Infectious Diseases, 2020; 20(1).
3. Demczuk, Walter; Martin, Irene; Sawatzky, Pam; Allen, Vanessa; Lefebvre, Brigitte; Hoang, Linda; Naidu, Prenilla; Minion, Jessica; VanCaeseele, Paul; Haldane, David. Equations to predict antimicrobial MICs *in Neisseria gonorrhoeae* using molecular antimicrobial resistance determinants. Antimicrobial Agents and Chemotherapy, 2020; 64(3): e02005-19.
4. Sin, Phyllis; Siddiqui, Muhammad; Wozniak, Rashell; Minion, Jessica; Sanche, Stephen; Udell, Jacob; Lavoie, Andrea; Dehghani, Payam. Heart failure after laboratory confirmed influenza infection. Journal of the American College of Cardiology, 2020; 75(Supple.1): 827-827.
5. Parmar, Nidhi R; Singh, Reema; Martin, Irene; Perera, Sumudu R; Demczuk, Walter; Kusalik, Anthony; Minion, Jessica; Dillon, Jo-Anne R; Genomic analysis reveals antibiotic-susceptible clones and emerging resistance in *Neisseria gonorrhoeae* in Saskatchewan, Canada. Antimicrobial Agents and Chemotherapy, 2020; 64(9): e02514-19.
6. Mitchell, Robyn; Mataseje, Laura; Boyd, David; Al-Rawahi, Ghada; Davis, Ian; Ellis, Chelsey; Embree, Joanne; Hota, Susy; Kibsey, Pamela; Leis, Jerome. A Growing Concern: The Emergence and Dissemination of Carbapenemase-producing *Enterobacterales* (CPE) in Canada. Infection Control & Hospital Epidemiology, 2020; 41(S1): s454-s454.
7. PHAC, CNISP; Silva, Anada; Thampi, Nisha; Choi, Kelly Baekyung; Pelude, Linda; Frenette, Charles; Chow, Blanda; Lee, Bonita; Taylor, Geoffrey; Hota, Susy. Epidemiological and Molecular Characterization of Clostridioides difficile Infection in Canadian Outpatient Settings, 2015–2019. Infection Control & Hospital Epidemiology, 2020; 41(S1): s472-s473.
8. Jabs, Corrine; Giroux, Maria; Minion, Jessica; Karreman, Erwin; Faires, Meredith. Evaluation of Adjunctive Azithromycin Prophylaxis in Women Undergoing Cesarean Delivery in a Setting With Low Baseline Incidence of Surgical Site Infection. Journal of Obstetrics and Gynaecology Canada, 2021.
9. Silva, Anada; Katz, Kevin; Thampi, Nisha; Golding, George; Choi, Kelly Baekyung; Du, Timothy; Pelude, Linda; Frenette, Charles; Chow, Blanda; Lee, Bonita. Epidemiological and Molecular Characterization of *Clostridioides difficile* Infection in Canadian Outpatient Settings, 2015-2019. Infection Control & Hospital Epidemiology, 2020; 41: S472-S473.

Dr. Ahmed Mostafa, MD PhD D(ABHI) F(ACHI)

Peer-Reviewed Publications

Nelly Abdelfatah, **Ahmed A. Mostafa**, Curtis R. French, Lance P. Doucette, Cindy Penney, Matthew B. Lucas, Anne Grin, Valerie Booth, Christopher Rowley, Jessica E. Besaw, Lisbeth Tranebjærg, Nanna Dahl Rendtorff, Kathy A. Hodgkinson, Leichelle A. Little, Sumit Agrawal, Lorne Parnes, Tony Batten, Susan Moore, Pingzhao Hu, Justin A.

Pater, Jim Houston, Dante Galutira, Tammy Benteau, Courtney MacDonald, Danielle French, Darren D. O'Rielly, Susan G. Stanton, Terry-Lynn Young. A Pathogenic Deletion in Forkhead Box L1 (FOXL1) Identifies the First Otosclerosis (OTSC) Gene. Human Genetics **(Tentatively Accepted)**

Published Abstracts

Davidovic F, Dokouhaki P, Pearce T, **Mostafa A**. Overutilization of HLA Testing for Celiac Disease Screening. September 27-October 1st, 47th American Society of Histocompatibility and Immunogenetics annual meeting, Orlando, FL, USA

Mostafa A, Webster D, Twyla Pearce T , Gorkoff K , Shanofer C, Seasonal Influenza vaccine impacted HLA antibody formation in a kidney transplant recipient with history of blood transfusion: A case study. September 27-October 1st, 47th American Society of Histocompatibility and Immunogenetics annual meeting, Orlando, FL, USA

Mostafa AA, Berka Y, Kalra A, Khan K, Berka A. The Significance Of Monocyte Crossmatch In Solid Organ Transplantation. October 2020 Human Immunology

Invited Seminars/Presentations

Mostafa AA AllType™ FASTplex™ NGS and MiniSeq: Our Lab Combo for HLA Typing. ASHI 2021 Regional Educational Virtual Workshops June 4th 2021.

Mostafa AA, Berka Y, Kalra A, Khan K, Berka A. Monocyte Flow Cell Crossmatch As An Alternative Approach for Patient Under Rituximab Therapy. Annual Department of Pathology and Laboratory Medicine Residents' & Graduate Students' Research Day. 2020 October 26th, College of Medicine, University of Saskatchewan, Saskatoon, SK, Canada. Through WebEx.

Teaching Experience

2021 ASNRT Fellowship program in clinical transplantation Courses for PostGraduate Medical Students:

- Basics of Transplant Immunology
- Histocompatibility and Immunogenetics

Supervisory and Teaching Experience

2021 **Deans Project Summer student:** Appropriateness of laboratory test utilization for diagnosis of Celiac disease Filip Davidovic second year medical student at U of S.

2021 **Deans Project Summer student: Choosing Wisely: Thyroid Function Testing** Shravan Murthy second year medical student at U of S.

2021 **Rheumatology Resident rotation:** Dr. Khan, Ambreen, R4 Rheumatology Residents from our U of S Program. Introducing the basic of Histocompatibility laboratory techniques

2021 **General Pathology Resident Transfusion/Coagulation rotation:** Dr. Macpherson, James, R4 General Pathology Residents from our U of S Program. Introducing the basic of Histocompatibility laboratory techniques

2021 **Solid Organ Transplant Elective:** Stephen Patrick, fourth year medical student at University of Saskatchewan. Introducing the basic of Histocompatibility laboratory techniques

2021 **Solid Organ Transplant Elective:** Bashir Daud Shah, fourth year medical student at University of Saskatchewan. Introducing the basic of Histocompatibility laboratory techniques

2021 **Solid Organ Transplant Elective:** Schick, Kaitlyn fourth year medical student at University of Saskatchewan. Introducing the basic of Histocompatibility laboratory techniques

Professional Service

Accreditation Review Medical School Survey (MSS) Working Group member
2020 - Current - College of Medicine, University of Saskatchewan.

Journal Reviewer

2021 - Present - Transplantation (official Journal for the transplantation society)

Academic Judge and Reviewer

2020 Poster Judge for College of Medicine Summer Research for undergraduate student 2020 Deans Research Symposium.

2020 Review operating grants for faculty members at the University of Saskatchewan for the Rapid Response COVID-19 Research Funding Guidelines

2020 Review student application for 2020 Biomedical Summer Research Project

Leadership and Volunteer Experience

2021 - Present Member of the ASHI Directors' Affairs Committee

2020 - Present Member of MSS work group for college of medicine at U of S Accreditation Review board

2019 - Present Member of the Canadian National HLA Advisory committee

2020 - Present Canadian HLA Dictionary updates committee

Memberships

2021 - Current Arab Society of Nephrology and Renal Transplantation (ASNRT)

2021 - Current European society of workers in the field of Immunogenetics and histocompatibility

Certificates

American Society of Histocompatibility And Immunogenetics (ASHI) accredited Director

for the following areas (2020):

- Solid Organ Transplantation: Deceased Donor
- Solid Organ Transplantation: Live Donor
- HSC/BM Transplantation: Related Donor
- HSC/BM Transplantation: Unrelated Donor
- Histocompatibility Testing for Other Clinical Purposes

Awards

2020 Recognition of contribution award from the College of Medicine, University of Saskatchewan, Saskatoon SK, Canada

Operating Grants

2021 Precision Medicine Can PREVENT AMR: Applying Precision Medicine Technologies in Canada to Prevent Antibody Mediated Rejection and Premature Kidney Transplant Loss. Total Budget are $10,834537 for four years.
My role is part of the research team to conduct the research in Saskatoon.

Dr. Alysa Poulin, PhD MD FRCPC

Publications

Severe hypercalcemia and a pelvic brown tumor in an adolescent with primary hyperparathyroidism: a case report.
Legault O, Inman M, Moolman N, Wiebe S, **Poulin A**, Nour MA. BMC Pediatr. 2020 Dec 5;20(1):547. doi: 10.1186/s12887-020-02445-7. PMID: 33278878

Congenital Myenteric Hypoganglionosis.
Kapur RP, Bellizzi AM, Bond S, Chen H, Han JS, LeGallo RD, Midgen C, **Poulin A**, Uddin N, Warren M, Velázquez Vega JE, Zuppan CW. Am J Surg Pathol. 2021 Jan 22. doi: 10.1097/PAS.0000000000001670. Online ahead of print. PMID: 33492848

Dr. Michael Presta, MD FRCPC

Congratulations to Dr. Presta on successfully passing the Royal College AP exam (and on becoming a new father once again)

Dr. Deepti Ravi, MBBCHBA) (RCSI) FRCPC FCAP

- College of American Pathologists (invited contributor)
- Western Canadian Gastrointestinal Consensus conference (Invited speaker on PDL1 testing)
- Completed Harvard Macy Course for Educators 2020 - 2021
- Selected for CQIP program, Saskatchewan

Dr. Claribeth (Marcela) Ruano, MD FRCPC

Congratulations to Dr. Ruano on successfully passing the Royal College AP exam

Dr. Sheila Rutledge Harding, MD MA FRCPC

Peer-Reviewed Publications

Kron, AT, Collins A, Cserti-Gazdewich C, Pendergrast J, Webert K, Lieberman, L, Zeller MP, **Harding SR**, Nahirniak S, **Prokopchuk-Gauk O**, Lin Y, Mendez B, Armali C, Lee C, Watson D, Arnott D, Xun F, Blain H, Panchuk H, Hughs H, Chorneyko K, Angers M, Pilutti N, Lett R, Dowsley S, Ruijs T, Cupido T, Kichinko T, Thompson T, Afshar-Ghoti Z, Callum J. A prospective multi-faceted interventional study of blood bank technologist screening of red blood cell transfusion orders: The START study. *Transfusion*. 2021;61:410-22; DOI: https://doi.org/10.1111/trf.16243

Presentations

Harding SR, **Thomson K**, **Hindmarsh K**, Ciurcovich L, **Prokopchuk-Gauk O**, **Tehseen S**, Clarke G. Validation of a gel-based red blood cell alloantibody titration method for prenatal testing. AABB Virtual Annual Meeting. Poster Presentation. October 3-5, 2020.

Harding SR. Provincial immune globulin stewardship and shortage planning.

- Provincial Neurosciences, January 8, 2021
- Area Practitioner Affairs Committee, Saskatoon, January 11, 2021
- Provincial Hematology, January 26, 2021
- Provincial Rheumatology, February 2 and June 14, 2021

Prokopchuk-Gauk O and **Harding SR**. Transfusion appropriateness in patients with cancer. Saskatchewan Cancer Agency, Oncology Grand Rounds. May 6, 2021.

Paulson K, **Prokopchuk-Gauk O, Ledingham D**, **Tehseen S, Harding SR**. Prevention of Alloimmunization in Mothers of Saskatchewan (PRAMS): Development of a hospital-

based provincial prenatal testing program structure. Canadian Society of Transfusion Medicine Virtual Conference. Administrative Abstracts: Oral Presentation. May 15, 2021.

Advisory Committees

Harding, SR. Committee on Accreditation of Canadian Medical Schools. Field Secretary, Full [virtual] Survey, University of Toronto, November 2020-January 2021

Harding, SR. Provincial Immune Globulin Stewardship and Shortages Planning Committee – Co-Chair, January 2021-present
Harding, SR. Prairie Collaborative Immune Globulin Utilization Management Framework Project, part 2 – Chair, Interprovincial Medical Expert Committee. April 2021-present

Dr. Oksana Prokopchuk-Gauk, MD

Peer-Reviewed Publications

Kron, AT, Collins A, Cserti-Gazdewich C, Pendergrast J, Webert K, Lieberman, L, Zeller MP, Harding SR, Nahirniak S, **Prokopchuk-Gauk O**, Lin Y, Mendez B, Armali C, Lee C, Watson D, Arnott D, Xun F, Blain H, Panchuk H, Hughs H, Chorneyko K, Angers M, Pilutti N, Lett R, Dowsley S, Ruijs T, Cupido T, Kichinko T, Thompson T, Afshar-Ghoti Z, Callum J. A prospective multi-faceted interventional study of blood bank technologist screening of red blood cell transfusion orders: The START study. *Transfusion*. 2021;61:410-22; DOI: https://doi.org/10.1111/trf.16243

Valiani S, Terrett L, Gebhardt C, **Prokopchuk-Gauk O**, Isinger M. Development of a framework for critical care resource allocation for the COVID-19 pandemic in Saskatchewan. *CMAJ*. 2020;192: E1067-E1073; DOI: https://doi.org/10.1503/cmaj.200756

Book Chapter

Prokopchuk-Gauk O and Sohl Z. Chapter 15: Irradiated, Washed and CMV Seronegative Blood Components. In: Clinical Guide to Transfusion. March 2, 2021. https://professionaleducation.blood.ca/en/transfusion/clinical-guide-transfusion

Presentations

Prokopchuk-Gauk O. COVID-19 Coagulopathy and Hemophilia. Hemophilia Saskatchewan Annual General Meeting and Education Day. November 7, 2020.

Prokopchuk-Gauk O. Choosing Wisely Canada Series: Transfusion – Using blood wisely. Continuing Medical Education Rounds, University of Saskatchewan. December 2, 2020.

Prokopchuk-Gauk O and Rutledge Harding S. Transfusion appropriateness in patients with cancer. Saskatchewan Cancer Agency, Oncology Grand Rounds. May 6, 2021.

Prokopchuk-Gauk O. The National Emergency Blood Management Committee Construct. Canadian Society of Transfusion Medicine Virtual Conference, Scientific Session Presentation. May 13, 2021.

Paulson K, **Prokopchuk-Gauk O,** Ledingham D, Tehseen S, Rutledge Harding S. Prevention of Alloimmunization in Mothers of Saskatchewan (PRAMS): Development of a hospital-based provincial prenatal testing program structure. Canadian Society of Transfusion Medicine Virtual Conference. Administrative Abstracts: Oral Presentation. May 15, 2021.

Prokopchuk-Gauk O. Transfusing wisely: Appropriate blood use in patient care. Department of Pathology and Lab Medicine, University of Saskatchewan, Provincial Grand Rounds. June 8, 2021.

Supervision of Post-Graduate Students

Chin, Kelly and Murthy, Vignesh. Retrospective audit of group O-negative red blood cell transfusion appropriateness. University of Saskatchewan, Internal Medicine PGY3 Resident Research Project. Jul 1 2020-Mar 31, 2021. Supervised by **Dr. O. Prokopchuk-Gauk**.

Advisory Committees

Prokopchuk-Gauk, O. National Advisory Committee on Blood and Blood Products – Chair, April 2019-March 2021

Prokopchuk-Gauk, O. Emergency Blood Management Committee – Co-Chair, March 2020-March 2021

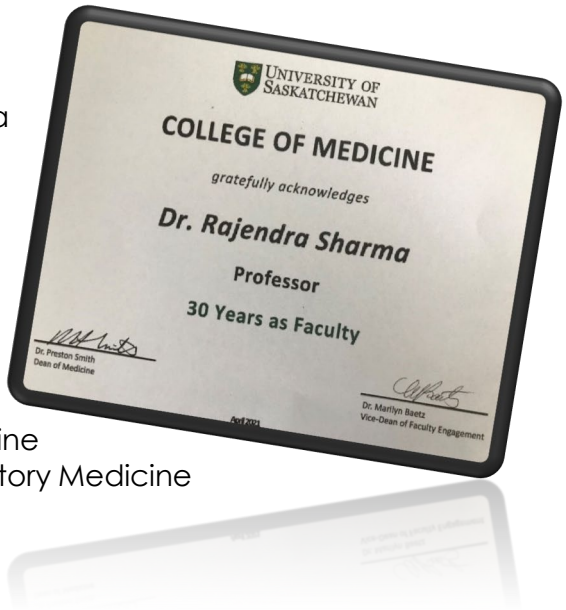
Prokopchuk-Gauk, O. National Plan for the Management of Shortages of Immunoglobulin (Ig) Products – Interim Guidance. Steering Committee Member. May-July 2020.

Prokopchuk-Gauk, O. Canadian Blood Services Recombinant Factor Request for Proposal (RFP) Selection Committee, National Advisory Committee on Blood and Blood Products Representative. January-June 2021.

Prokopchuk-Gauk, O. Saskatchewan Transfusion Medicine Discipline Committee, Member. 2019-present.

Genomic Medicine: Cracking genomes to cure "incurable" diseases
www.drugtargetreview.com

Dr. Rajendra Sharma, SOM PhD DSC FRSA



Publications

Lakhani K, Borrego EA, Cano KG, Dimmock JR, Aguilera RJ, Das S, Roayapalley PK, **Sharma RK**, Das U (2021) Design, syntheses and bioevaluations of some novel N2-acryloylbenzohydrazides as chemostimulants and cytotoxic agents. Medicines 8, 27. https://doi.org/10.3390/medicines8060027

Presentations

Dr. Sukanya Pati, A quest for novel inhibitors of methionine aminopeptidase 2, Department of Pathology & Laboratory Medicine Research Day, October 27, 2020.

Dr. Sukanya Pati had also taken part in GSA thesis competition in 2020 and 2021.
Assessment of potent cytotoxic thiol alkylating agent agents as MetAP2 inhibitors for treatment of colorectal cancer, March 27, 2020.
Cytotoxic curcumin analogs as methionine aminopeptidase 2 (MetAP2) inhibitors: Potential use in treating colon cancers, March 26, 2021.

Supervision

Dr. Swagatika Das, The Evaluation of potent cytotoxic curcumin analogs as methionine aminopeptidase, Post-doctoral Fellow. Supervised by Drs. J R Dimmock and R K Sharma.
Mr. Praveen Kumar Roayapalley, The evaluation of novel conjugated unsaturated ketones as candidate antineoplastic agents, PhD Student. Drs. J R Dimmock and R K Sharma.

Dr. Sukanya Pati, Dockings studies of curcumin analogs against methionine aminopeptidase 2 and biological evaluation of lead molecules in colon cells, MSc Student. Supervised by Drs. J R Dimmock and R K Sharma.

Scholarship

Dr. Sukanya Pati received an Interdisciplinary Graduate Scholarship (January 2020-December 2021), University of Saskatchewan.

Awards

Sukanya Pati, Best Graduate Student Research Presentation at the Department of Pathology & Laboratory Medicine Research Day, October 27, 2020.

Administrative service including committee membership

College of Medicine – Faculty Council Member.

Editorial Board

Editor-in-Chief: Journal of Molecular Biology and Therapeutics.
Visit our website: www.innovapublications.com

Sabbatical Leave

I was on sabbatical leave from July 1, 2020 – December 31, 2020.

The purpose of my sabbatical leave was to promote my scholarly activity and enhance academic knowledge in the areas of chemistry and medicinal chemistry.

The main objective of my sabbatical leave was to learn about the curcumin-based analogs and docking study. My initial time was devoted to learning about synthesis of curcumin-based analogs and how to carry out a docking study.

What is Docking Study: Docking is a computational procedure of searching for an appropriate ligand that fits both energetically and geometrically to the protein's binding site. In other words, it is a study of how two or more molecules e.g., ligand and protein, fit together. Molecular docking has become an increasingly important tool for drug discovery.

In simpler terms, molecular docking can be explained as "lock-and-key" study, in which one wants to find the correct relative orientation of the "key" which will open the "lock". The protein can be thought of as the "lock" and the ligand can be thought of as a "key". In our study, MetAP2 is the protein, and the ligand are the curcumin-based analogs. The protein adjusts their conformation to achieve an overall "best-fit".

During sabbatical leave, I learned about medicinal chemistry and docking study. Therefore, I will continue in my research endeavors to investigate the potential role of curcumin-based analogs as anticancer agents.

Furthermore, my experience during sabbatical leave may lead to the development of new therapeutic agents for treatment of colon cancer. In the near future, it will shed insight into further drug design and development of MetAP2 inhibitors as potential anticancer agents. This study will also provide a better understanding of MetAP2-ligand interactions.

Unfortunately, due to the pandemic, it was not possible to carry out the benchwork in the laboratory at the University. Due to these unprecedented circumstances, I took lockdown as an opportunity to further reflect and gain insight on the planning and execution of research. Armed with an abundance of knowledge I have started to begin

practical experiments in drug design and development of MetAP2 inhibitors as potential anticancer agents.

Furthermore, I have utilized my valuable time to write few review articles which are under process.

I am grateful the University of Saskatchewan to provide such a great opportunity. It has been a very fruitful learning curve.

Dr. Viktor Skihar, MD PhD FRCPC

Dr. Chunjie Wang, PhD MD FRCPC FCAP

Publications

Agaimy B., Bonert M. , Naqvi A, **Wang C.** , Trpkov K., Dettmar P, Wintzer HO, , Stoehr R., Hes O, Williamson SR**,** Gibson IW., MD, and Hartmann R. Langerhans Cell Histiocytosis Associated With Renal Cell Carcinoma Is a Neoplastic Process Clinicopathologic and Molecular Study of 7 Cases Am. J. Surgical Pathology, 2020, Dec 44(12): 1658-1665

Awards

2021 Resident Doctors of Saskatchewan Excellence in Teaching Award

Dr. Hui Wang, MD PhD FRCPC BScN

Congratulations to Dr. Wang on successfully passing her Royal College GP Exam

Dr. Yue Wu, MD PhD FRCPC

Supervision

Daniel Markewich medical student Hematopathopology elective (peripheral blood smear morphology and diagnosis), November 23 – November 27, 2020, supervised by Dr. Y Wu

Dr. Viktor Zherebitskiy, MD FRCPC (AP/NP) Dipl ABP (AP/NP) FCAP FASCP

Peer-Reviewed Publications

Tso M., Zherebitskiy V., Nosib S. (2020) "Myocarditis and Raw Meat Consumption: Strange Bedfellows!" Can J Cardiol.(ahead of print) [PMID: 33096200]

Hernandez-Ronquillo L., Mahabadi H.M., Moien-Afshari F., Wu A., Auer R., Zherebitskiy V., Borowsky R., Mickleborough M., Huntsman R., Vrbancic M., Cayabyab F.S., Taghibiglou C., Carter A., Tellez-Zenteno J.F. (2020) "The Concept of an Epilepsy Brain Bank", Front. Neurol., 11 (833): 1-11 [PMID: 32973652].

Ramani B, Gupta R, Wu J, Barreto J, Bollen AW, Tihan T, Mummaneni PV, Ames C, Clark A, Oberheim Bush NA, Butowski N, Phillips D, King BE, Bator SM, Treynor EC, Zherebitskiy V, Quinn PS, Walker JB, Pekmezci M, Sullivan DV, Hofmann JW, Sloan EA, M Chang S, Berger

MS, Solomon DA, Perry A. (2020) "The immunohistochemical, DNA methylation, and chromosomal copy number profile of cauda equina paraganglioma is distinct from extra-spinal paraganglioma", Acta Neuropathol., 140(6):907-917 [PMID: 32892244].

Presentations & Posters

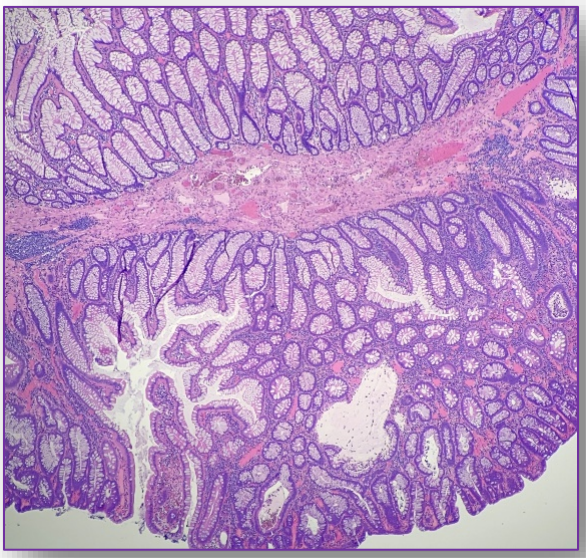
Omene E., Liewluck T., Milne A., Schellenberg K., Zherebitskiy V. (2020) "Potentially Treatable Late Onset Myopathy: SLONM case and review of literature" (platform, CANP-2020, Saskatoon, SK, Canada, October 15-17, 2020/on-line).

Omene E., Blondeau J., Sanche S., Takaya S., Nosib S., Zayed R., Ndubuka N., Jenkins E., Kafle P., Lobanov V., Zherebitskiy V. (2020) "Unexpected passenger in the muscle: Trichinella Nativa induced myopathy case and review of literature (platform, CANP-2020, Saskatoon, SK, Canada, October 15-17, 2020/on-line).

New Administrative Positions

Co-director, General Pathology Residency Program, University of Saskatchewan (2021 – current)

Member of College of Medicine Equity, Diversity & Inclusion Committee, University of Saskatchewan (2021 – current)



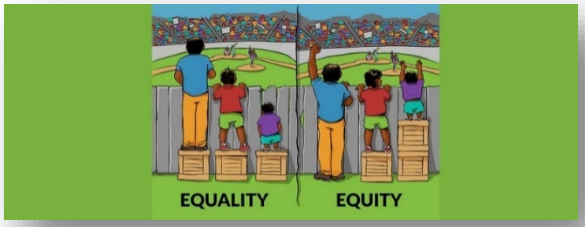
Colon: Tubular adenoma

Equity, Diversity and Inclusion (EDI)

Submitted by Dr. Fergall Magee

Equity at its heart is about removing barriers, biases and obstacles, while diversity is fundamentally about valuing human and institutional differences and recognizing diverse talents to advance institutional excellence. Inclusion is the active engagement of equity and diversity.

It is time for our Department to promote EDI in our work culture and clinical and academic practice. On 08 APR 2021, the newly formed Departmental EDI Committee held its inaugural meeting. Members comprised Dr. Archana Kakadekar (Resident), Dr. Martha Lyon (Clinical Chemist, RUH), Dr. Erick McNair (CoM, Research) and Dr. Ramesh Saeedi (Medical Biochemist, Regina). Dr. Rathi Sabaratnam is also a Committee member but was unable to attend that first meeting. The Committee was joined by a special guest, Dr. Erin Prosser-Loose, Research Equity and Diversity Specialist, College of Medicine. The plan for the Committee is to display a commitment to the implementation of the principles of equity, diversity and inclusion (EDI) in the culture, practice and scholarship of the Provincial Department of Pathology and Laboratory Medicine. Specific deliverables referred to include, but are not limited to, the prioritization of principles and practice of equity – defined as the quality of being fair and impartial, diversity – defined as the practice or quality of including or involving individuals from a range of differing social and ethnic backgrounds and inclusion – defined as the practice of quality of providing equal access to opportunities and resources for individuals who might otherwise be marginalized – in all aspects of departmental activities. It is anticipated that the Committee will develop a "constant presence" of EDI throughout the Department. The Committee will "host" one Departmental Grand Rounds per year, beginning APR 2022 and will compile a catalogue of potential Advocacy Initiatives for resident involvement and completion, submit short reports on its activities to all Departmental Meetings and to the Annual Report and consider developing a module around the successful implementation of an EDI culture in a department – for presentation at a future national conference. The Committee is currently refining its terms of reference and will meet in summer to begin its work in earnest. On behalf of the Department, I wish to express my sincere gratitude to Committee members and look forward to hearing of their future plans.



Wellness

Submitted by Dr. Fergall Magee

A Department Wellness Committee was formed JUL 2020.

Currently the Committee Members are-Dr. H. Rees, Dr. P. Dokouhaki, Dr. M. Lyon, Dr. J. MacPherson and Dr. K. Vats. In addition to this, Dr. Rees has been allocated a formal role (0.1 FTE) to function as a Department Wellness Officer.

This Committee has been extremely busy. In collaboration with McLean and Company. (a research advisory firm) it developed and conducted a Department Wellness Survey which tabulated the responses of 66% of Department members, the results of which were presented at a special Departmental Meeting on June 16th. The Committee will use the information obtained from this survey to inform prioritized next steps for the Committee and Department.

On-going initiatives being discussed/implemented by the Committee include a lab app wellness chat group, 'snack-baskets', the development of a Departmental cookbook and a series of Lunch and Learn planned for the third Tuesday of each month. To-date, these have included an introduction to Mindful Professional Practice presented by Dr. Anita Chakravarti (two sessions - one on April 20, the second on May 18). Both recorded an attendance of 25 participants. A third session occurred on June 15th - Sleep, insomnia and strategies for managing sleep disruption (presented by Dr. Rahana Bodani) and attracted an audience of > of 30 individuals! Department members have been surveyed recently for suggested topic/presenters for future presentations. Some of the suggestions include Civility (Dr. Peter Butt), Resiliency (Dr. Alana Holt), Nature/Parks Rx (Dr. Melissa Lam) and Racism (Dr. Manuela Valle-Castro). We all look forward with interest to this great new addition to our activities.

The Committee is also considering other possibilities ranging from daily stretching, and weekly walks to virtual interactive art sessions and peer-to-peer recognition programs. On a national level, discussions are occurring with other departments in the country (Toronto - Dr. Julia Keith, and Dalhousie - Dr. Laurette Geldenhuys), around the potential for a national wellness symposium that could be hosted by CAP-ACP.

On behalf of the department I would like to commend this group for the hard work and tremendous capacity for innovation. Our Department will derive great benefit from their efforts and dedication.

Saskatchewan Association of Laboratory Medicine

Submitted by Dr. Viktor Zherebitskiy, President

COVID19 pandemics had a significant adverse impact on SALM functioning in the 2020-2021 cycle, including physical isolation due to shift to on-line practice, intermittent lockdowns and restrictions on face-to-face communication, etc. In this situation, SALM leadership decided to keep the current leadership structure in place: president – Dr. Viktor Zherebitskiy (RUH, Saskatoon; since 2018), vice-president – Dr. Michael Presta (Pasqua Hospital, Regina; since 2019) and secretary-treasurer – Dr. Roland Auer (RUH, Saskatoon; since 2019), SMA RA/Saskatoon representative - Dr. Mary Kinloch (SCH, Saskatoon; since 2016) and SMA RA/Regina representative - Dr. Donna Ledingham (RGH, Saskatoon; since 2017). This move, together with constant support from PaLM and SMA leadership, allowed SALM to keep vital operations more or less intact. Moreover, following SMA resumption of semi-annual SMA RA meetings, SALM also had two semi-annual meetings: on October 26, 2020 and on April 15, 2021. During those meetings, main issues of SALM were discussed including regional and section reports (Drs. B. Murray, R. Sabaratnam, V. Skihar, M. Kinloch, J. Wooff, D. Ledingham, J. Minion, E. Torlakovic and J. Kalra), perspective planning and future developments of pathology and laboratory medicine in the province (Dr. F. Magee), provincial molecular biomarker program (Drs. M. Kinloch and J. DeCoteau), financial report (Dr. V. Zherebitskiy), general pathology residency update (Drs. J. Benoit, V. Zherebitskiy, D. Li and S. Tharmaradinam), SALM negotiation Committee/SMA Intersectional Committee (Drs. S. Angel and V. Zherebitskiy) and PALM Wellness Initiative (Dr. H. Rees). Representatives of SMA (Ed Hobday and Marcel Nobert) were also regular participants of all SALM meetings, providing valuable input regarding various aspects of SMA support to its sections and providing updates on the current situation with negotiations between the Ministry of Health, Saskatchewan Health Authority and SMA.

Despite the above-noted difficulties related to COVID-19, SALM was able to accomplish many things. This included continuous support of PaLM Grand Rounds (honorarium for invited speakers), PaLM endowment funds (Dr. Marc Omar Shokeir Memorial Fund and Saskatchewan Association of Laboratory Medicine Award for MLT's/MLA's/BSc's), general pathology residents funding (sponsoring attendance of CAP-ACP and ASPC resident review courses) and PaLM annual report publishing (covered all printing costs), establishing a SALM life-long achievement award (first recipient – Dr. Bahera Mali, a biochemist from Regina) and supporting departmental wellness initiatives, among other

deeds. SALM leadership including/cg RA representatives (Drs. M. Kinloch and D. Ledingham) and SALM president (Dr. V. Zherebitskiy) during SA meetings were very vocal supporting provincial PaLM leadership (Dr. F. Magee and Ms. Lenore Howey) and advocating for implementation of new laboratory medicine technologies in the province (e.g., liquid-based bytology, prenatal NGS screening, Nanostring for transplantation program, digital pathology project, molecular virology and serology equipment for COVID diagnostics, etc.). SALM Negotiation Committee/SMA Intersectional Committee together with SMA was able to secure a 5% increase in the base grid salary/compensation for the 2017-2022 payment cycle and participation of pathologists and laboratory medicine physicians in SMA sponsored CMPA reimbursement program.

A new initiative spearheaded by Dr. D. Ledingham was the creation of a SALM Workload Committee. This committee includes representatives from all major pathology and laboratory medicine sites (Dr. M. Presta, Regina is a current chair of the committee after Dr. D. Ledingham assumed the PaLM area lead (Regina) position). SALM provides constant secretarial support for current operations (Ms. Lindsay Sellar) and allotted some funds (together with SMA) for possible hiring of a project manager.

SALM membership is fairly stable (about 38-40 full members and 10-12 residents) with a few people retired (e.g. Dr. B. Mali) or left for other Canadian provinces (e.g. Dr. K. Jafari went to Alberta, Dr. K. Malejczyk took a position in BC, etc.), and others replacing them (Drs. R. Campbell, K. Campbell, G. Wright, etc.).

The priority of SALM remains the same – promotion and popularization of pathology and laboratory medicine across Saskatchewan, and support of professional advancement and good care about the personal well-being of SALM members. We are still working on the negotiation of benefit packages for incorporated SALM members, continuing to support the departmental wellness program and resident wellness projects, working on the SALM website and eager to support other SALM members initiatives.

Dr. Donna Ledingham, PaLM Area Lead, Regina, presenting a painting by Bhupinder Singh, a Regina professional artist, to Dr. Bahera Mali, Biochemist, Regina, as part of the SALM Life-long Achievement Award. (JAN 2021)

Acknowledgement

Submitted by Dr. Fergall Magee

In the year 2020/21, Hospital Foundations continued to provide funding support for many Provincial Laboratory initiatives. Laboratory Medicine received over 16 separate "gifts" from the following Foundations – Lloydminster, North Battleford, Prince Albert, Saskatoon (RUHF, SCHF and SPHF), Yorkton, Weyburn and Esterhazy. These funds supported the acquisition of such diverse items as a genomic platform for earlier detection of solid organ rejection (Nanostring), genomic platforms for COVID-19 detection (BD Max), on-going implementation of an extending the Cell Image Analysis System (CellaVision) and Fellowship Support for one of our residents, among other items. A list of some contributions is provided below:

FACILITY	AREA	SOURCE OF FUNDING	DESCRIPTION;
RUH, SCH, SPH	Saskatoon	COVID-19 Hospital Fund (RUHF,SCHF, STPHF, JPCHF)	COVID-19 Initiatives
RUH	Saskatoon	RUHFoundation	Fellowship Funding
SCH	Saskatoon	SCHFoundation	Multihead Microscope, Scanner and Digital Camera
Rosthern Hospital	Rosthern	Rosthern Hospital Foundation	Improved LIS Interface
Victoria Hospital	Prince Albert	Victoria Hospital Foundation	BD Max for COVID-19 Detection
Battlefords Union Hospital	North Battleford	Battlefords Union Hospital Foundation	Hematology Analyzer; Cell Image Analysis System (CellaVision)
St. Anthony's Hospital	Esterhazy	St. Anthony's Foundation	LIS Full Interface; U411 with Interface; Bariatric Phlebotomy Chair
St. Paul's Hospital	Saskatoon	St. Paul's Hospital Foundation	Cell Image Analysis System (CellaVision) MiSeq NGS Sequencing Platform
Humboldt District Health Complex	Humboldt	Humboldt District Health Foundation	Chemistry Analyzer-Vitros XT 3400
Yorkton Regional Health Centre	Yorkton	Health Foundation of East Central Saskatchewan	3-Door Chemistry refrigerator; Beckman Coulter Cellavision & Interface; Blood Gas & Carboxyhemoglobin Analyzer with Interface; Platelet Incubator and Agitator
Weyburn General Hospital	Weyburn	Weyburn Health Foundation	Cell Image Analysis System (CellaVision) DC1
Lloydminster Hospital	Lloydminster	Lloydminster Region Health Foundation	Biological Safety Cabinet Cell Image Analysis System (CellaVision)
Meadow Lake Hospital	Meadow Lake	Meadow Lake Hospital Foundation	Lab Freezer

We wish to acknowledge the continued support that Provincial Laboratory Medicine has received from Saskatchewan's Hospital Foundations.
Our Department is extremely grateful for the deep and continuing support that these institutions have provided, without which we would struggle to deliver the high quality, integrated services that the citizens of this province deserve.

Royal University Hospital Foundation

BOARD OF DIRECTORS

Thank you to Royal University Hospital Foundation's Board of Directors! This incredibly generous and hard-working group of volunteers provided leadership throughout a challenging year while remaining focused on the Strategic Plan of the Foundation. COVID-19 required everyone to work differently including our Board who pivoted to virtual meetings to maintain their strong governance to enhance health care through philanthropy during these extraordinary times.

Thank you!

1. Member at Large **Kaylynn Schroeder**, Retired Senior Executive
2. Ad Hoc Member **Arla Gustafson**, CEO, Royal University Hospital Foundation
3. **Dr. Marek Radomski**, Vice-Dean of Research, College of Medicine, University of Saskatchewan
4. **Grant Grenier**, Manager of Infrastructure Building Services, Saskatchewan Health Authority
5. **Valerie Arnault-Pelletier**, Aboriginal Coordinator, College of Medicine, University of Saskatchewan
6. **Mark Loeppky**, President, FFUN Motor Group
7. Vice-Chair **Doug Osborn**, Retired Lawyer
8. **Dr. Marilyn Baetz**, Vice-Dean of Faculty Engagement, College of Medicine, University of Saskatchewan
9. **Nilesh Kavia**, CPA, CMA, MBA, Executive VP of Operations, Affinity Credit Union
10. **Joe Vidal**, President, Bioriginal Food & Science Corp.
11. **Tyler Pochynuk**, Director of Operations, Clark Roofing (1964) Ltd.
12. **Emmanuelle Morin**, Management Consultant, CAMBIAR Consulting
13. Chair **Irene Boychuk**, FCPA, FCA, Partner, EY LLP
14. **Sharon McDonald**, Private Banker, RBC Wealth Management


Thank you
Salamat
Go raibh maith agat
Tapadh leat
Merci
Thank you RUH Foundation
For Supporting Laboratory Medicine
Thank you
From
RUH
Phlebotomy
Team
Microbiology
Immunodiagnostics


Thank you
From
RUH
Phlebotomy
Team

RUH Chemistry Lab

RUH Foundation Therapy Dog Cut-Outs made for staff areas in the labs. Reminders for staff to "Paws" their stress. They are a patient bunch, well-trained.

St. Paul's Hospital Foundation

Foundation Board of Directors 2020-2021

Standing centre (l-r): **Dr. Bruce Berscheid**, St. Paul's Hospital Local Council; **Neil Weber,** Board Chair
Back row (l-r): **Nicholle Povhe**, Treasurer; **Dr. Vivian Walker**, Vice-Chair; **Leah Schatz**; **Lecina Hicke**, CEO; **Ron Hyggen**; **Chris Boychuk**, Past Chair; **Tracy Muggli**, S. Paul's Hospital Executive Director
Seated (l-r): **Steeg Holmes**; **Doreen Howlett**; **Arlene Jorgenson**; **Gwen Dueck**; **Shari Watson**, Secretary; **Kevin Sharfe**
Missing: **Larry Long**

Lloydminster Region Health Foundation

CEO (Malcolm Radke) and Board Chair (Jeff Kerr)

Foundation Board of Directors 2020-2021

Jeff Kerr, Chair
Darrel Howell, Vice-Chair
Glenda Spenrath, Finance Chair (aka treasurer)
Dr. Mark Akerman
Roger Anderson
Dowsan Antonio
Donnie Atkinson
Jim Clarke
Brad Lake
Dawn McKenzie-Weinhandl
Akhtar Mirza
Dr. Alfin Mukhi
Rhonda Sather
Rob Saunders

Battlefords Union Hospital Foundation Inc.

Foundation Board of Directors 2020/2021

Sue Pruden-McIvor, Chairperson
Joelle Kuntz, Vice-Chairperson
JoAnne Iverson, Treasurer
Jerry Wintonyk, Secretary
Donnica Bernier
Stacey Caldwell
Darren Erbach
David Fan
Dr. James Lawrence (resigned DEC 2020)
Cheryl Mitchell
Tracy Voigt
Roni Zakresky (resigned OCT 2020)

Battlefords Union Hospital Lab Staff

(The BUHFoundation's capital campaign "Diagnostic Detectives: Solving your Health Mysteries" purchased equipment for the Lab)

Grateful
BATTLEFORDS UNION HOSPITAL FOUNDATION INC

Battlefords Union Hospital (BUH) Foundation raised over $385,000 to purchase new equipment and technology for the Laboratory. This included a Digital CellaVision funded through BATC Community Development Corporation. The CellaVision allows for microscopic images to be sent digitally for review rather than through a physical courier, eliminating delays and providing read-time support for faster results and quicker turn-around time for patients. Working with the CellaVision is the Hematology (CBC) Analyzer that provides sample results while improving and upgrading the current technology available. The BD Max completes testing for COVID-19, is more automated and has a higher processing volume than current testing units available at BUH. The campaign also helped to purchase three new fridges to increase storage volume and allow for increased capacity of tests.

Weyburn & District Hospital Foundation

WEYBURN & DISTRICT HOSPITAL FOUNDATION INC.

Updated: April 25, 2021

Member		Position	Occupation
Jeff	Hayward	Chair	COO - Weyburn Credit Union
Alain	Lenferna	Past-Chair	Physician - Weyburn Health Centre
Melissa	Swayze	Vice-Chair	Partner - MNP
Dale	Renz	Treasurer	Retired - Weyburn Credit Union
Dan	Cugnet	Secretary	Panther Drilling /Valleyview Petroleums
Mal	Barber	Member	Owner - Barber Motors
Michael	Hoffman	Past-Chair	Owner - Investors Group
CJ	Mainil	Member	Self-Employed
Scott	Moffat	Member	Lawyer - Holliday & Co
Laura	Resler	Member	Partner/Pharmacist - Pharmsasave
Derrell	Rodine	Member	Retired - SunCountry Health Region
Stephanie	Schmidt	Member	Paramedic - Weyburn EMS

Moose Jaw Health Foundation

Ryan Hrechka, Chairman
Ken Hawkes, Treasurer
James Murdock, Past Chair
Barry Gunther
Laurie Kosier
Dale Tuplin
Mike Prestie
Cam Howe
Brenda Brodie
Vi Reaman

The Health Foundation (Representing East Central Saskatchewan)

Diane Rusnak, Co-Chair
Kris Sapara, Co-Chair
Doug Jones, Treasurer
Brad Bazin, Director
MaryAnne Trischuk, Director
Warren Kotzer, Director
Christina Denysek, Director
Don Hood, Director

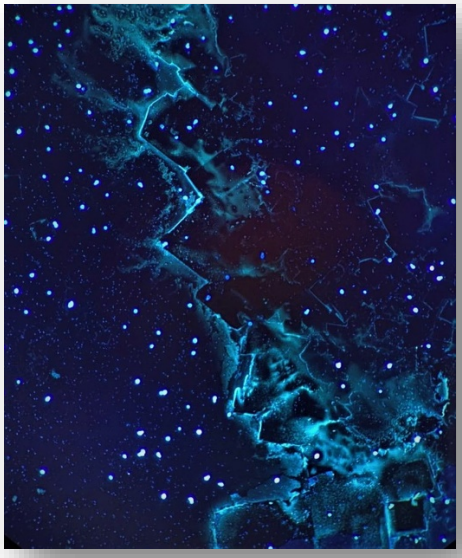
Victoria Hospital Foundation

Victoria Hospital Foundation
Enriching the Heart of Northern Health Care

Chair – **Lyle Karasiuk**
Vice Chair- **Patricia Weir**
Secretary/Treasurer- **Nicole Joy**
Joe Bexson
Dr. Khami Chokani
Ross Ethier
Colette Harnett
Loganee Moodley
Matthew Mirasty
Susan Prakash
Tannice Thompson

PaLM Annual Report Committee 2020/2021

Dr. Fergall Magee (Chair)
Dr. Archan Kakadekar
Ms. Brandi Keller
Dr. Erick McNair
Dr. Deepti Ravi
Dr. Ramesh Saeedi



Cover Photo of Candida species under fluorescent microscopy
Cover Photo selected by the General Pathology Residents
Cover Photo Credit: Dr. A. Kakadekar (PGY3) under supervision of Dr. C. Hamula (Microbiologist)

Laboratory Medicine – the science behind the cure.

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College of Medicine
DEPARTMENT OF PATHOLOGY AND
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Health Authority