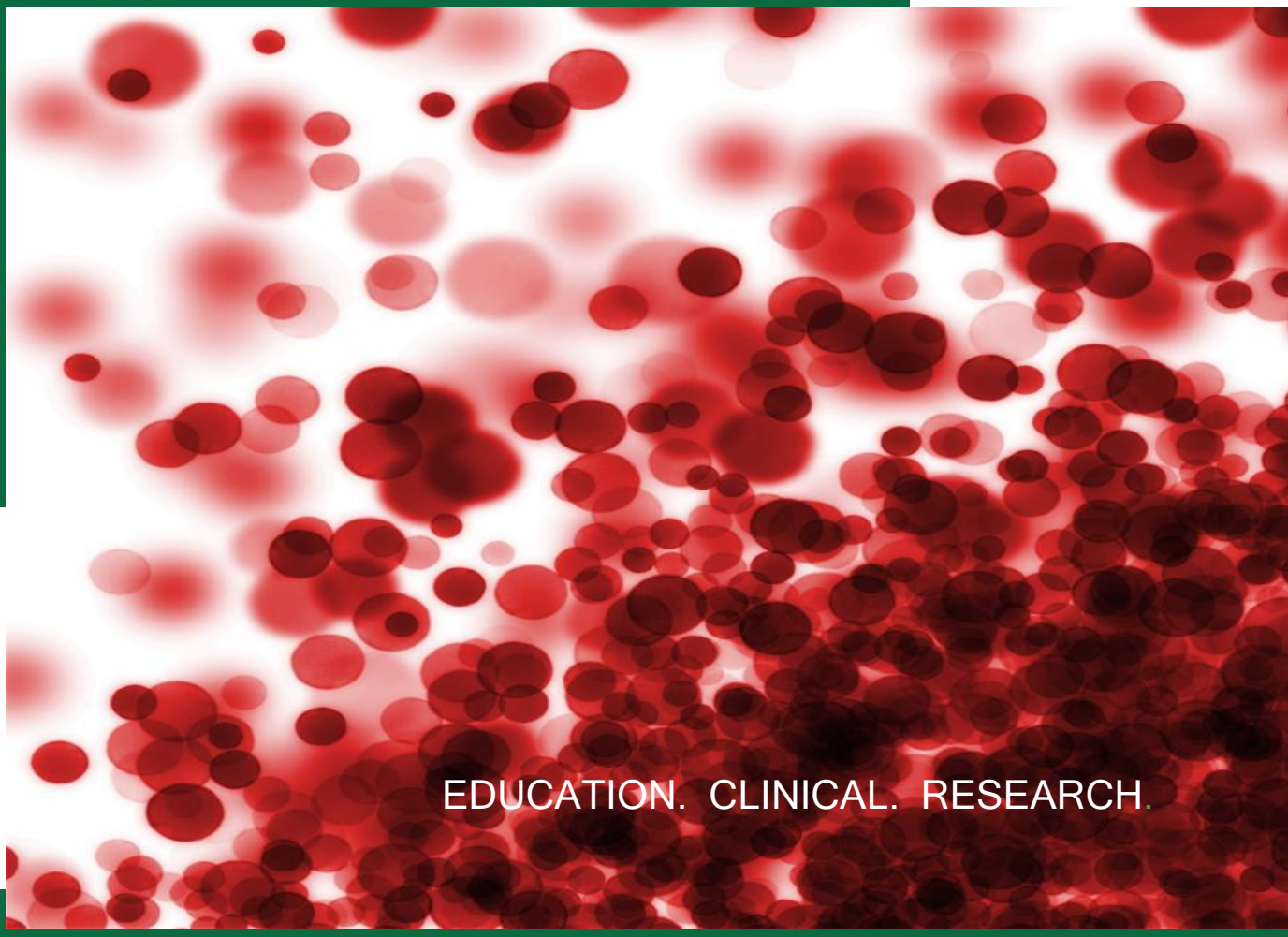
Department of Pathology & Laboratory Medicine



Annual Report 2018 / 2019

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

Saskatchewan Health Authority

CONTENTS

ABOUT US

UNIVERSITY OF SASKATCHEWAN
College of Medicine
MEDICINE.USASK.CA

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
- diversity, equality and human dignity
- excellence
- a healthy work and learning environment
- innovation, curiosity and creativity
- openness, transparency and accountability
- reconciliation
- sustainability

We believe in:

- academic freedom
- collaboration
- commitment to community
- different ways of knowing, learning and being

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

PROVINCIAL HEAD

Message

I AM PLEASED TO WELCOME OUR READERS to the third edition of the Annual Report for the Department of Pathology and Laboratory Medicine, Saskatchewan Health Authority and the University of Saskatchewan. This edition moves away from a review of a calendar year to a longer period (JAN 2018-JUN 2019) and is part of a transition to an annual academic year report for future editions. This is also the first report to occur under the auspices of a single health authority and an integrated provincial laboratory service – which performs up to 25 million tests per year across the province. The intent of this report is to review and celebrate the events and activities that have been the focus of our energies for the past 18 months. This has been an extremely busy period of transition and change. Significant events for the College of Medicine include the reappointment of Dean Smith for a second term, the creation of a group of provincial department heads and the International ASPIRE award presented to the College, recognizing its effective contributions to social accountability.

As Provincial Head for the College of Medicine, and Interim Provincial Medical Director of Pathology & Laboratory Services for the Saskatchewan Health Authority (SHA), Dr. Fergall Magee oversees academic and clinical activity under the University of Saskatchewan umbrella, as well as provincial laboratory integration initiatives within the SHA, in a multi-faceted collaborative partnership that reaches across the province.

Dr. J. Fergall Magee

In our own Department, the General Pathology Residency Program has just embarked on a Competence By Design (CBD) mode of educational delivery. I would like to express sincere thanks to all Department members who have worked hard to effect this implementation.

The region has developed a group known as Provincial Programs that include Diagnostic Imaging, Child & Maternal Health, Tertiary Care, Community Care, Pharmacy and Laboratory Medicine. Laboratory integration proceeds with the introduction of a Dyad Leadership, new Directors, Discipline-specific Groups and Managers. This work is still on-going, but I wish to commend all the efforts put forth by both clinical and laboratory staff, without whose hard work this initiative would not be possible. We look forward to the first Provincial Laboratory Executive Council meeting in September 2019.

During this period, the Department has been a proud sponsor of two *Choosing Wisely Conferences* (June 2018 and June 2019) in Saskatoon. These conferences focused on Choosing Wisely Canada elements as relates to in-hospital care and models of care that are linked to safer patient outcomes. Both were well attended and received excellent

reviews. I wish to express thanks to this Department's members involved in planning or presenting at these events.

The Department also hosted two Saskatchewan nights at the Canadian Association of Pathologists (CAP) in Quebec City 2018 and in Niagara Falls 2019. These evening events were designed to present career opportunities in Saskatchewan to residents attending the CAP from centres outside this province. Both were well attended and received excellent reviews. The next step in this process is to host the 2021 annual CAP Conference in Saskatoon as an even more effective way of selling the idea of a career in pathology and laboratory medicine in this province!

Recruitment has been successful and is on-going. I direct you to the section entitled "Welcome" to view recruitments throughout the province.

I hope you enjoy this report on activities in the Provincial Department of Pathology and Laboratory Medicine for the College of Medicine and Saskatchewan Health Authority. I thank you all for your efforts for the Department during 2018 and 2019, and hope that you and your families experienced a wonderful summer.

Here's to individual and collective success in the next year.

Fergall Magee, MD FRCPC MHSc
Provincial Head, Pathology & Laboratory Medicine, University of Saskatchewan
Interim Provincial Medical Director of Pathology & Laboratory Services, SHA

Medical Medical Education Research and Scholarship Day, Regina, 07 JUN 2019

The Power of our Provincial Team

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

SINCE THE FORMATION OF THE SASKATCHEWAN HEALTH AUTHORITY, time now seems to pass in a blur! It definitely has been a very busy time for all in the SHA, especially everyone within Pathology and Laboratory services! As a provincial health authority, we have started amalgamating our services across the province, establishing new connections and information flow. We have developed ourselves as an organization with our mission statement, one that recognizes our united strengths and our compassion. Additionally, we have selected SHA values that help guide us in our daily work. Re-fashioning a new organization out of the prior health regions is certainly a wonderful and unique opportunity but not surprisingly, also intense work and for that, I must start by thanking the members of the Pathology/Laboratory team including the leadership dyad of Dr. Magee and Ms. Lenore Howey, for all the dedication, energy and enthusiasm demonstrated over the past months.

Personally, over the past year, I have had the wonderful opportunity to travel across the province to learn about the fascinating world of Pathology and Laboratory services with Saskatchewan. I have seen wonderful laboratory facilities performing cutting edge testing such as the newest addition to our family, The *Roy Romanow Provincial Laboratory*. This facility and staff should be a highlight of any tour to Regina! I have also seen some incredible equipment such as the mass-spectroscopy unit at Royal University Hospital within Microbiology along with a number of fascinating work processes with integrated quality assurance throughout the province. The most impressive by far has been the amazing people that I have had the opportunity to meet. The team and leadership within the Pathology/Laboratory Department is truly dedicated to providing excellent patient care and to the daily improvement of that care. There is also the evident willingness to stand up and say, "We can do this work better". I have seen great initiatives now springing forward from all disciplines and so many staff, including our clinicians as they come together to share ideas and best practices from across the province. We all have much to learn and much to share!

Dr. Paul Babyn

Physician Executive
Provincial Programs
Saskatchewan Health Authority

EDUCATION

Residency

INTERVIEW with our new Resident Program Director, Dr. Tamalina Banerjee

By Deb Quirion, Resident Program Administrator

"What have you completed for education thus far, Dr. Banerjee?"
I attended medical school at Trinity College in Dublin after completing a BSc (cum laude) from the U of S. After that, I returned to Saskatchewan to complete a residency in Family Medicine. I then commenced the general pathology residency training in Saskatoon, afterwhich I spent 6 months in London ON doing further training in renal pathology.

"Where have you worked?"
Well, my first job was at a Co-op in Calgary. Seriously, though, I practiced family medicine for a brief time at a clinic in Saskatoon but after completing my pathology residency, I worked as a pathologist for 8 months in North Battleford. Then, I returned to Saskatoon and joined the College of Medicine's Department of Pathology and Laboratory Medicine. I've been here ever since.

"In which job would you be terrible?"
Flight attendant. I'm not a good flyer!

"Is there a particular instance that made you choose Pathology?"
Reading Robbins during my pathology course in medical school. At one point in my life I had the entire book memorized!

"I'm curious – what stimulated your interest in post-graduate medical education?"
I spent 2 years in academic family medicine in Regina. The family physicians there were dedicated to resident teaching and every patient was first seen by a resident. Here, I gained a true appreciation for excellence in teaching. Also, I had a very positive experience at Western University in London ON. I saw first-hand how organized and effective their pathology program was at teaching and I wanted to introduce elements of that to our pathology program here at the U of S upon my return.

"Always pass on what you have learned..."
Yoda

"Be honest now, how do you like being program director?"

I enjoy it. I had thought about the idea of being program director for a few years, and when the opportunity came up, with Dr. Wilde moving to BC, I took it. The first year was a steep learning curve! I've had my share of frustrations, but have a vision for the program and can now start to see that vision materialize. Being program director has reinvigorated my love of pathology and of teaching. I don't think that I have had a single moment of boredom since commencing this position last September.

"What is this vision for the program you mention? Your goals?"

I would like to set the bar high for the general pathology program. This means creating a culture of excellence within the program, with respect to both learning and teaching.

General pathology is, in my opinion, the most challenging residency program out there. These residents must learn and retain an infinite amount of information from seven major sub-specialties. They must synthesize, interconnect and apply this knowledge for two different purposes: for the daily workload as a prospective practicing pathologist and for their Royal College exam. We need extremely apt residents who can cope with this amount of material, and we need teachers who can help to structure this information and direct learning in an efficient, yet stimulating manner. We have some brilliant people here in the province. We need them to continue sharing their knowledge and experience with the next generation. *"Always pass on what you have learned" – Yoda.*

"Dr. Banerjee, what is the best advice you were ever given?"

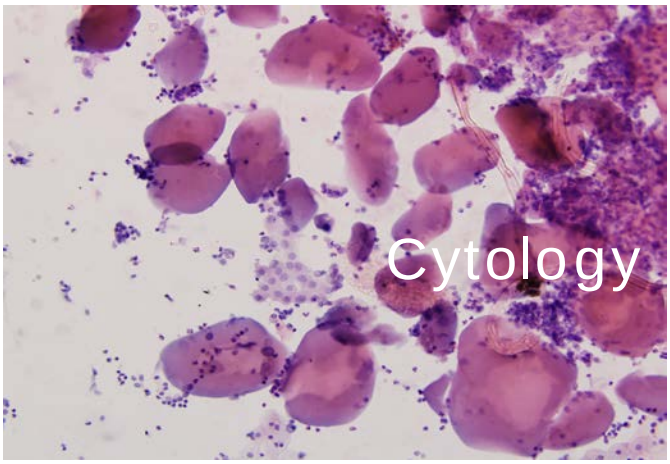
From the "Eagles" – Take it easy. Take it easy. Don't let the sound of your own wheels drive you crazy.

"And finally, what is on your bucket list that you have yet to accomplish?"

I'd like to vist the Galapagos Islands.

"Thank you for sitting down with me, Dr. Banerjee – our Department looks forward to this new chapter in our residency program."

Deb



"...creating a culture of excellence within the program, with respect to both learning and teaching"

Competence By Design (CBD) is scheduled by the Royal College of Physicians and Surgeons of Canada for Canadian General Pathology training programs in July 2019. Subsequently, the Department of Pathology has been gearing up for this transition for the past year. Dr. Tamalina Banerjee, Resident Program Director, and myself, Dr. Janine Benoit, CBD Lead for General Pathology, as well as Dr. Alicia Andrews, CBD resident lead for General Pathology, have coordinated our efforts to ease the transition of the department into this new culture of assessment.

The Competency Committee has been formed and includes: J. Benoit (chair), T. Banerjee (Program Director), R. Kanthan, K. Malejczyk and P. Dokouhaki as well as Harold Shiffman (lay member). We have met on several occasions to establish terms of reference and strategies for assessment. Drs Brent Thoma and Lyndsey Martin from .the Emergency Department shared their insights with our group. Dr. Brian Ulmer has been instrumental in sharing his experience with e-portfolio.

Sean Polreis - "Everyday Bias for Healthcare Professionals" Workshop - Department Retreat MAY 2019

The residents have each been equipped with an I-Pad to facilitate frequent feedback and communication. The faculty have been instructed on logging into e-portfolio and its use.

A recent half-day faculty retreat focused on CBD with our guest speaker, Dr. Sharon Card (PGME Lead for CBD), providing a session on Feedback. Sean Polreis, in turn, spoke about Bias and faculty reflected on how this affects not only our work, but our daily interactions in general.

The residents entering our program on July 1st, 2019 will start with a "BootCamp" to orientate themselves to the various areas and subspecialties of General Pathology. They will also have sessions on microscope use and maintenance with efforts to fulfill the EPA's (Entrusted Professional Activities) towards their "Transition to Discipline" phase of training.

The engagement of the faculty and enthusiasm towards this change has been greatly appreciated. Grand Rounds are scheduled in September 2019 to provide further updates on the progress that we are making with CBD and to have some discussion regarding coaching our residents in this new culture.

Janine Benoit, MD FRCPC
CBD Lead for General Pathology

UNIVERSITY OF SASKATCHEWAN

Pathology & Lab Medicine Residents 2017 -2018 Academic Year

Yanping Gong
PGY4

Hoda Elshoni
PGY5

Nick Baniak
PGY4

Glenda Wright
PGY3

Nina Thompson
PGY2

Jana Suresh
PGY2
ON LEAVE

Alicia Andrews
PGY2

Hui Wang
PGY2

James Macpherson
PGY1

David Li
PGY1

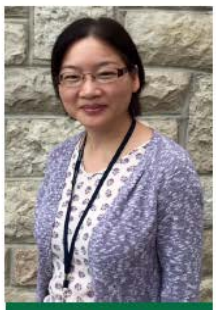
Suresh Tharmaradinam
PGY1

Pathology & Lab Medicine Residents 2018 -2019 Academic Year

Nick Baniak
PGY5

Glenda Wright
PGY4

Alicia Andrews
PGY3



Hui Wang
PGY3

Jana Suresh
PGY2

James Macpherson
PGY2

David Li
PGY2

Suresh Tharmaradinam
PGY2

Archan Kakadekar
PGY1

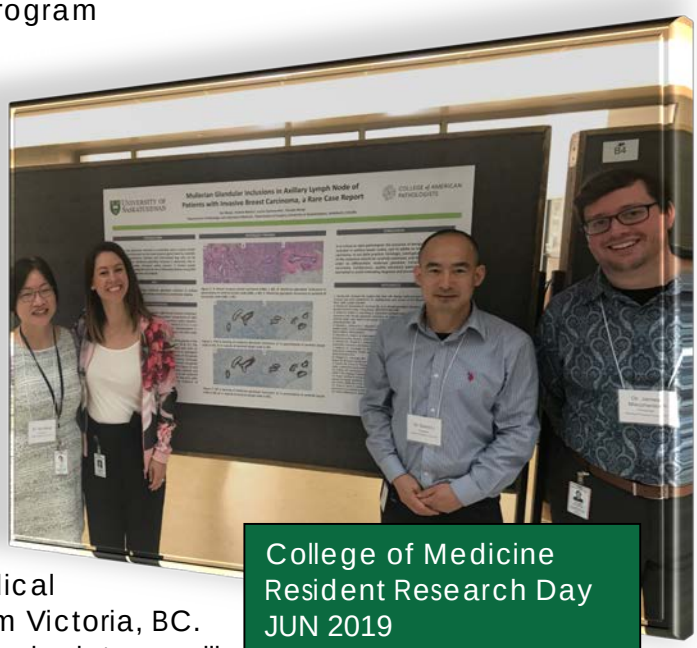
Sharlyn Khan
PGY1

2018-2019 was a year of change for our residency program. We said goodbye to Dr. Brent Wilde (former Resident Program Director), also to Dr. Yanping Gong who took a position in Kingston, ON and to both Drs. Nina Thompson and Sharlyn Khan. The TAC library also received a facelift; removal of the book cases, new paint, new countertop and new furniture…just waiting for some art!

Farewell for Dr. Brent Wilde

September 2018 brought us a new Resident Program Director, Dr. Tama Banerjee. The residents participated in Transfusion Camp (five full day sessions), run by the University of Toronto and facilitated by Dr. Sheila Rutledge Harding.

The program has been getting ready for CBD this last year with the help of our CBD Lead, Dr. Janine Benoit and CBD Resident Lead, Dr. Alicia Andrews; along with our Competency Committee: Dr. Tama Banerjee, Dr. Rani Kanthan, Dr. Kathy Malejczyk, Dr. Pouneh Dokouhaki and Mr. Harold Shiffman. All faculty received a one-on- one with Dr. Benoit regarding EPortfolio (the new evaluation system). The residents were also recipients of Ipads, which will surely help with CBD and other program needs. The residents also joined the faculty for the Department Retreat at the Willows.



College of Medicine Resident Research Day JUN 2019

In January 2018 the residents received endowment funding to attend the American Society for Clinical Pathology Conference in Phoenix, AZ (September 2019) from the Mrs. J. Olszewska Neuropathology Fund.

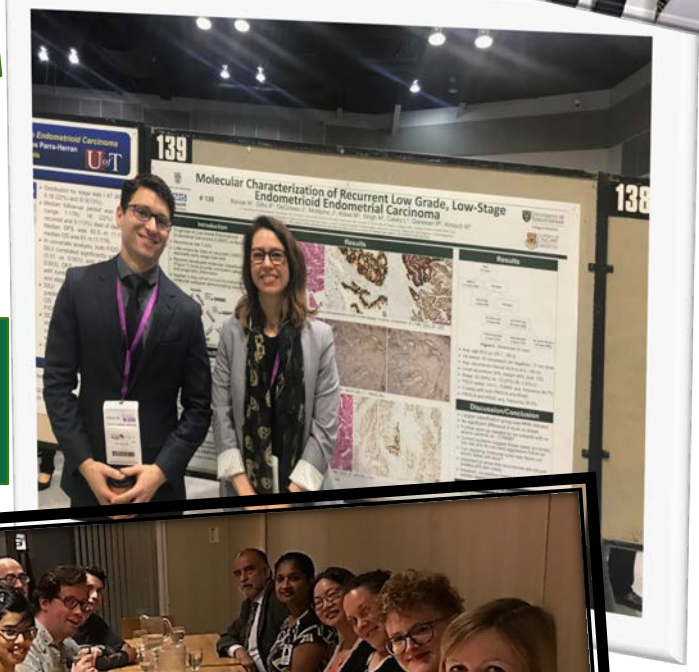
We had a successful CaRMS Match, in which we matched with Dr. Phillipe Price and Dr. Karan Vats. Phillipe Price hails from Barrie, ON and attended medical school at the University College Cork School of Medicine. Karan Vats attended Edinburgh Medical School, University of Edinburgh, and he hails from Victoria, BC. Welcome to the University of Saskatchewan! Their pictures will appear in our 2019-20 Annual Report.

We also had one resident complete his residency program and pass his Royal College exam: Congratulations to Dr. Nick Baniak who is now off to Boston for a Genitourinary Pathology Fellowship.

Multi-head Microscope

Last Academic Half-Day JUN 2019

Dr. Baniak's Farewell Dinner



Dr. Baniak & Dr. Kinloch
U.S. & Canadian Academy of Pathology MAR 2018

Lunch with RPC JUN 2019

PEOPLE

INTERVIEW with
Dr. Rajendra Sharma
"Exploring the Man Behind the Science"

By Dr. Rani Kanthan, MBBS MS FRCS FRCPSC FCAP M.Ed

"Still working in my laboratory" says Dr. Sharma. So what's the secret behind this Saskatchewan Order of Merit recipient? Let's start at the very beginning . . .

"Where did your life begin? And how did you end up in Saskatoon SK Canada?"
I was born and raised in Hathras, a small town in Uttar Pradesh, India. Fulfilling my father's wish that "one of his sons must become a scientist", I completed my M.Sc. in Biochemistry in 1965.

I was awarded a research fellowship for a Ph.D. in Biochemistry at the All India Institute of Medical Sciences, New Delhi, India (the *Harvard of Asia)* followed by a postdoctoral fellowship in the Dept. of Biochemistry & Pharmacology, Tufts University School of Medicine, Boston, Massachusetts, USA. I moved to Canada in 1976 and joined the Department of Biochemistry, Faculty of Medicine, University of Manitoba, Winnipeg, Manitoba and later the Department of Medical Biochemistry, University of Calgary, Calgary, Alberta.

It is important for me to share that I had two opportunities to join the University of Saskatchewan; firstly, as a student for Ph. D. (1965) and secondly, as an HSUR Scholar (1979); however, these two opportunities never materialized.

The third time, I applied to the Department of Pathology & Laboratory Medicine, College of Medicine, the University of Saskatchewan in 1991 as the Department was looking for a Ph.D. candidate with "proven abilities in basic fundamental and applied research, to develop basic and clinical research programs related to experimental pathology". With my vast research portfolio, I was appointed to stimulate and rejuvenate basic science research in this department. I joined the department with full enthusiasm and found out within a short time that "things work differently in this department compared to other academic institutions". This transition was highly demanding and a rather stressful time in my career. Due to various preexisting fabric of the department, I considered moving to Ontario. However, being a strong believer in destiny, I persevered and 28 years later, I am still here today, working in my lab, learning and researching new ideas.'

"What are the discoveries that have resulted from your work?"

My research has contributed significantly to the discovery of calmodulin-dependent cyclic nucleotide phosphodiesterase (PDE1) isozymes, and the identification of increased N-myristoyltransferase (NMT) activity in colonic carcinogenesis [J. Natl. Cancer Inst. (1995), 87, 1630-35], a major breakthrough in understanding the pathogenesis of colorectal cancer. [US Patent Number: 7892758; Date: Feb 22, 2011: Use of NMT on non-tumor tissue for cancer diagnosis].

> "...my research work has gained an international reputation over the last 40 years for innovations and original procedures"

"Please explain your work to me in simple language."

In a nutshell, it is basic bench work research leading to a better understanding of the pathology of disease states, their prevention and treatment - with each discovery further enhancing and bringing the world closer to understanding the unknown.

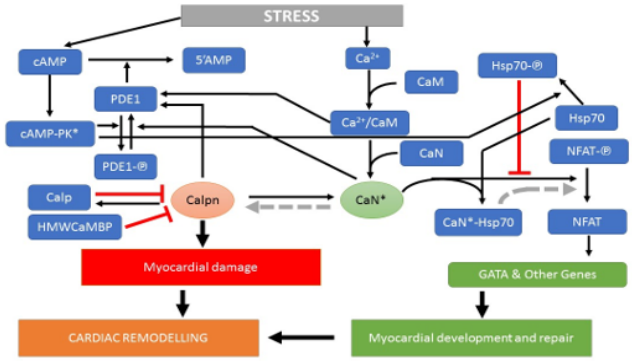
"What are the most surprising/exciting findings you have encountered in your research?"

a) The discovery of protein kinase VI by manipulating salt concentration on column chromatography
b) Purification of calmodulin-dependent protein kinase II in a single step.

"What kind of response have you received for your research findings?"

My research work has gained an international reputation over the last 40 years for innovations and original procedures involving enzymology and signal transduction with application to cardiovascular system and colorectal cancer.

My favorite slide simplifying the complex interaction between calcium ions and calmodulin in cell signaling



Schematic representation of calmodulin-regulated protein pathways studied in my laboratory in the past 40 years. CaN – Calcineurin; Calpn – Calpain; Calp – Calpastatin; HMWCaMBP – High molecular weight calmodulin binding protein; CaM – Calmodulin; PDE1 – Calcium/calmodulin-dependent cyclic nucleotide phosphodiesterase1 ; Hsp70 – Heat shock protein 70; NFAT - Nuclear factor of activated T-cells; cAMP-PK – cAMP-dependent protein kinase; * - Active form;

"What was the biggest challenge in your discovery?"

Anticipated failure of the experiment at hand not working.

"What is your favorite aspect or coolest thing about your research?"

I get a 'high' when my experiment is successful.

> "...research leading to a better understanding of the pathology of disease states, their prevention and treatment - with each discovery further enhancing and bringing the world closer to understanding the unknown"

"Share a turning point or defining moment in your work as a scientist?"
Currently not receiving operating grants for continued research exploration.

"What did you feel when you were told that you will receive the Saskatchewan Order of Merit?"
I was totally surprised and nervous; grateful to God for this achievement, and went home to share this news with my family. Serendipity and surprises such as these are reflective of one's success as the world sees it.

"As a scientist, why did you choose to be a faculty in the Department of Pathology?"
I was appointed to stimulate and rejuvenate basic science research in the department. I feel very proud this has been accomplished successfully as our department currently has several scientists who are doing outstanding research work.

"Briefly, what excites you about your work?"
I get really excited when I see the citations of my published research.

"What is a typical day like for you as a scientist then and now?"
THEN – working in the lab with students. **NOW** - as I have no research money, I write reviews and stay away from gossip.

"What makes you still get up in the morning and come to work?"
Of course morning coffee in the office. And, I still enjoy learning and working in my laboratory.

"What is your favorite part of being a scientist?"
Attending national/international meetings and learning from other scientists. I have visited more than 15 countries as a scientist and indeed the 'perk' was that I did not have to pay out-of-pocket for any of these trips.

"What is the best advice you were ever given and by whom?"
"There are two kinds of people, those who do the work and those who take the credit. Try to be in the first group; there is less competition there." (late Prime Minister, Mrs. Indira Gandhi at my convocation in 1970)

"In an alternate life, what would you have liked to become?"
As you know, I am a strong believer in destiny. Perhaps in an alternate life I would be some sort of an artist, as both the researcher and the artist have profound imagination with no limits (though my drawing skills are really terrible).

"Tell me what you like to do when you aren't working on research?"
Great question! Research is an addiction that never stops. You may not be by the bench side, but your mind is continuously churning out ideas and ironing out the "what ifs". However, when I do decide to leave research, I plan to spend unscheduled time with my family (wife, daughters and grandchildren), volunteerism and provide mentorship.

"What would you change to improve how research is done in your field?"
I would advocate for continued support with providing operating funds for researchers.

"Is there anything left undone? What happens next in this process of discovery?
Research never stops. So many ideas – but no operating grants to enable exploration.

"Do you have any advice for young people interested in science today?"
You must be dedicated and persevere, regardless of how hard the circumstances. Patience is a key aspect of research. Don't get discouraged as it is often the last experiment that leads to an outstanding discovery.

"Last, but not least, share some tips for sustainability in the field of science for over 40 years."
Enjoy the moment but always work hard and wonder what is next. As Winston Churchill said: "Success is not final, failure is not fatal: it is the courage to continue that counts".

"It's been a pleasure. Thank you, Dr. Sharma."

Dr. Rani Kanthan

INTERVIEW with
Dr. Bahera Mali
"Reflections on a Career in Medical Biochemistry"

By Dr. Fergall Magee, MD FRCPC MHSc

"I enjoy implementing innovative technologies in our laboratory that result in improved patient care…"

Biography

Dr. Bahera Mali obtained her medical school training from Dow Medical College, Karachi University (Pakistan) and then began residency training in Pathology at St. Helier Hospital, Carshalton, Surrey (UK). She had initially intended to specialize in Hematopathology but after rotating through Medical Biochemistry decided to specialize in Chemical Pathology. Dr. Mali continued her training in Manchester and London (Charing Cross and Royal Berkshire Hospital, Reading). She also spent 14 months in General and Renal Medicine in Brighton. She obtained her FRCPath (UK) in Chemical Pathology before moving to a position in Regina General Hospital in 1990. Certification in Medical Biochemistry was obtained in September 1992 (she actually liked this exam!) and LMCC in January 1993. While her initial appointment was to Regina General Hospital Laboratory, she has lived and worked through many changes that included the organizational evolution through Regina Health District Laboratories, Regina Qu'Appelle Health Region and now Saskatchewan Health Authority. Her career experience to-date has involved integration and consolidation of separate laboratory technologist teams, institutional closure (Plains Health Centre) and the implementation of multiple innovative laboratory technologies. Currently, she is actively involved in POCT, analyzer evaluation, utilization management, clinical liaison and the development of an RFP for chemistry laboratories in Regina while maintaining a keen interest in endocrinology.

"What are the "highs" of your career in Laboratory Medicine in Regina?"

I enjoy implementing innovative technologies in our laboratory that result in improved patient care. I have a particularly fond memory of introducing HPLC for HbA1c to Regina shortly after my arrival.

"What is a "low" that occurred during your laboratory career here?"

Solitary practice for 7 months and being on-call every day. It is extremely difficult to work without colleagues with whom one can interact. Happily, since the arrival of Dr. Buse, this is no longer the case.

"What was the greatest learning event in your career?"

Moving to Regina without knowing anyone, and experiencing winter and a different culture. I have no family in Regina but have made new friends.

"If you had not become a Medical Biochemist, what alternate career would you have pursued?"

I would still choose Medical Biochemistry. I had thought of Hematopathology but, following my rotation through biochemistry in my first year of residency training,

"What would you advise for future leaders in Laboratory Medicine?"
Communicate, be a team player, help build a better team, establish and earn trust, always strive to improve. Remember, everyone on the team is essential to success.

"What are some of your favorite books ?"
I love reading books to do with my Baha'I Faith. (*Let your vision be world embracing..)*
Specific books:-Wisdom Man (Camilla Chance), The Maxwells of Montreal (Violette Nakhjavani), From Copper to Gold (Dorothy Freeman Gilstrap), The Priceless Pearl (Ruhiyyih Khanum), Angus, from the Heart (Patricia Verge).

"What books might people be surprised to find in your collection?"
My many cookery books, perhaps!

"On the world stage, what is your great worry?"
I have two major concerns. One is Climate Change and the other is about the possibility of War.

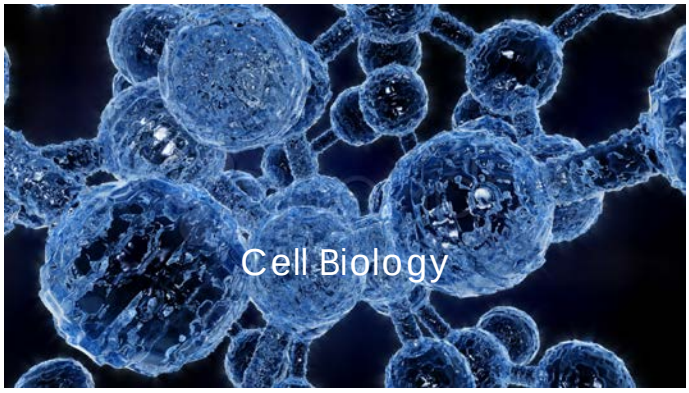
"What do you see as the greatest success on the world stage that you have lived through?"
The end of Apartheid in South Africa.

"You are planning a meal and can invite three guests from any background or period of history. Who would you invite?"
The Dalai Lama, Queen Elizabeth II (UK) and Otto Donald Peters, Canadian painter and sculptor. I have met him on many occasions. (He passed away 28 APR 2019).

"Finally, what advice would you have for recent graduates starting a career in Laboratory Medicine?"
I would ask that they listen to people and not always assume that they have the right answer. Be open to your experienced technologists and learn from them. Understand yourself, be yourself and always strive to improve yourself.

"Thank you, Dr. Mali."

Dr. Fergall Magee

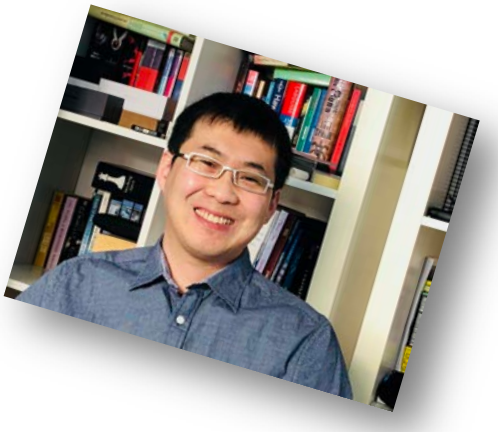


Arrivals to our Department

Dr. Zohreh M. Taheri, MD FRCPC
Hematopathology

Dr. Zohreh M. Taheri joined the department in DEC 2018 as a Hematopathology and Nephropathology consultant. Previously, she was an Associate Professor of Pathology at the University of Medical Science in Tehran, Iran. She completed 2 fellowships in Hematopathology and Renal & Transplant pathology at the U of C where she held the title of Clinical Assistant Professor and worked as a General pathologist and consultant Hematopathologist for Alberta Hanealth Services since 2014.

Dr. Yanwei Xi, MSc PhD FACMG
Division Head – Cytogenetics and Human Molecular Genetics Laboratories



Dr. Allison Osmond, MSc MD FRCPC
Dermatopathology (JAN 2019)

Dr. Allison Osmond joined the department in January 2019 as a Dermatopathologist. Previously, she worked as Dermatopathologist at Lakeridge Health and Toronto General Hospital/UHN, after completing her Dermatopathology Fellowship at Toronto General Hospital, UHN (2018). Prior to this year, she worked for one year with Western Health, in Corner Brook, Newfoundland as an Anatomic Pathologist. She completed her Anatomical Pathology residency and first fellowship (Gastrointestinal and Breast) at Western University in London, ON. Dr. Osmond completed her medical degree in her beautiful home province of Newfoundland, at Memorial University of Newfoundland.

Harold Shiffman, BA, MBA
Finance and Administration Manager (APR 2018)

Loreen Trautmann
Clerical Support to Provincial Head (MAY 2018)

Dr. Katayoon (Kathy) Jafari, MD FRCPC
Hematopathology

Dr. Katayoon (Kathy) Jafari joined the Division of Hematopathology in MAY 2019. After her hematopathology residency in Ottawa, she pursued a fellowship in malignant hematopathology in Toronto, where she worked with remarkable scholars including Dr. Emina Torlakovic and Dr. Jan Delabie. She has developed an aptitude for flow cytometry under the mentorship of Dr. Anna Porwit, a world class expert in this field. Dr. Jafari's special interest in high dimensional data visualization in flow cytometry. Her article on "Visualization of Cell Composition and Maturation in the Bone Marrow Using Radar Plots" is one of the journal's top downloaded recent papers.

David McKinnon
Director, Pathology & Laboratory Services
Saskatoon, SHA

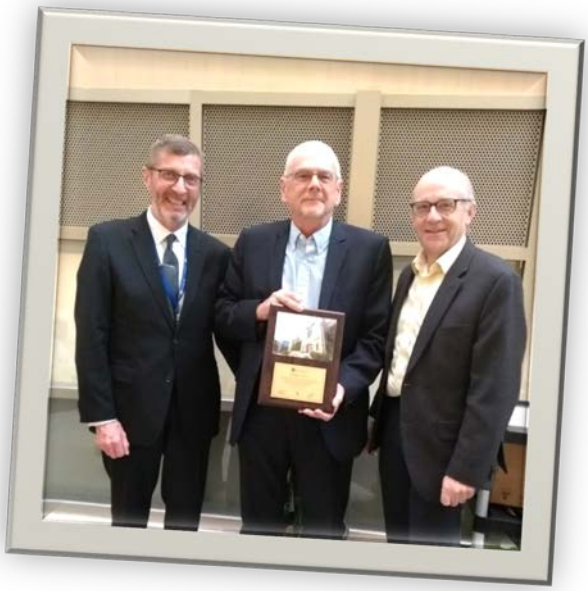
Sheri Sheetka
Administrative Assistant, SHA

Dr. Quentin Nakonechny
Dermatopathology (JUN 2018)

Dr. Sarah Tehseen
Pediatric / Hematology (JUL 2018)

Departures from our Department

Dr. Brent Wilde (NOV 2019 to Kamloops)
Dr. Mark Podberezin (OCT 2018 to Boston)
Dr. Catalin Taraboanta (MAY 2019 to BC)
Dr. Abdul Mabood Qureshi (DEC 2018 Retirement)
Dr. Barry Ziola (MAY 2019 Retirement)



Dr. Barry Ziola at the College of Medicine's Retirement Farewell 28 MAY 2019
Dr. Fergall Magee (Provincial Head), **Dr. Barry Ziola**,
Dr. Preston Smith (Dean)

Dr. Omar Shokeir

Dr. Shokeir most recently held the positions of Medical Director of Laboratory Services for Integrated Northern Health with the Saskatchewan Health Authority and Northwest Clinical Lead, Pathology. He was a brilliant pathologist who was privileged to practice in Vancouver, Bellingham, Red Deer, Calgary, Prince Albert and North Battleford. During his 27 years as a physician he helped innumerable people, mentored many, served in medical associations in the U.S. and Canada, published many scientific papers and helped establish several pathology laboratories.

Dr. Shokeir was well known and respected throughout the Saskatchewan medical community and across Western Canada. His warm and friendly personality, leadership, clinical and collaborative skills will be deeply missed. His death on 28 MAR 2019 in Battleford SK at the age of 49 is a loss to the province and medical community.

He will be remembered for his passion for his work, his great capacity to engage with colleagues and staff and his high regard for all members of the health care system.

Dr. Valerie Godsalve

Dr. Godsalve worked at Saskatoon City Hospital as a pathologist for more than 15 years. During this time, she managed to combine her passion for travelling and her work as a pathologist.

Dr. Godsalve was born in Chester UK, her parents moving to Corner Brook Newfoundland when she was 11. Dr. Godsalve completed her medical degree in 1975 and started residency in Pathology at UBC. She spent a 5th year training in clinical pathology in Vancouver and did a rotating internship in Ottawa from 1980-1981. She then moved to PEI and worked in Charlottetown for a year before spending 8 months in a forensic pathology fellowship at McMaster General in Hamilton ON. After working in the Maritimes for a few years, she spent an extended period travelling in 1987. Valerie lived in every province, except Quebec, at some point of her life. Her main extracurricular interests included languages, photography and travel. She was described as being very courageous and resilient.

Dr. Godsalve made a difference in the lives of all of the patients who received her pathology reports. Dr. Godsalve died on 15 JUN 2019 after a short battle with pancreatic cancer.

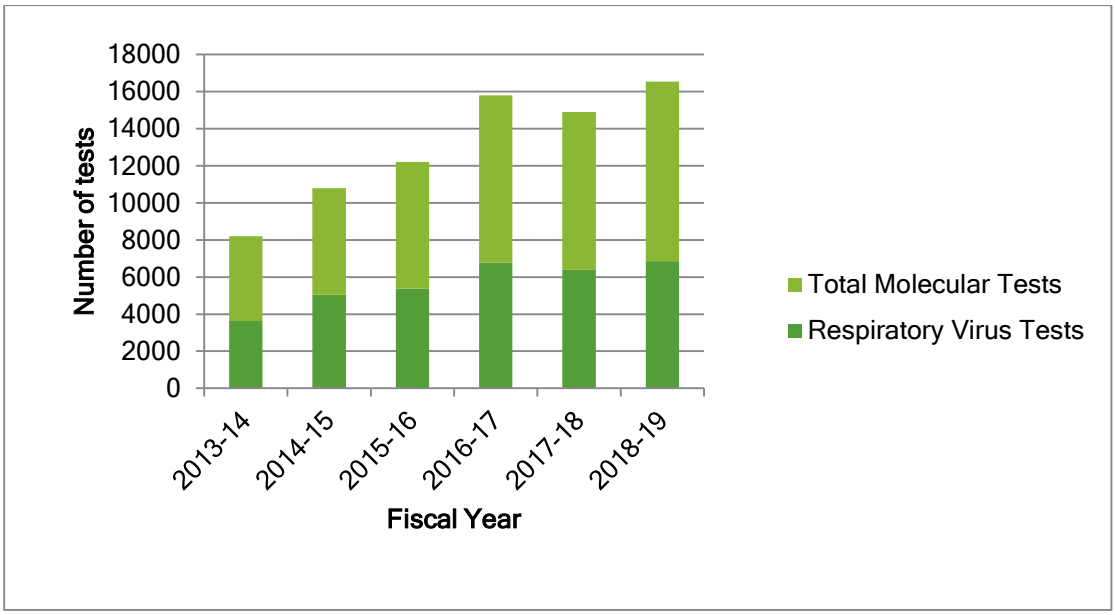
DIVISIONS

DIAGNOSTIC MOLECULAR PATHOLOGY

Dr. Harry Deneer, Division Head

The Division of Diagnostic Molecular Pathology is responsible for the operation of the molecular diagnostic laboratory associated with Clinical Microbiology. The laboratory performs real-time PCR nucleic acid amplification testing for a variety of microbial pathogens and has developed a menu that now includes over 18 separate tests covering more than 40 unique bacterial, viral and fungal targets.

The past 18 months have seen both challenges and opportunities. The workload in the laboratory has steadily increased over the past several years, driven largely by significant increases in requests for PCR-based respiratory virus testing (mainly Influenza A, Influenza B, and Respiratory Syncytial Virus) and the concurrent expectation that the results of these tests be reported even more rapidly in order to facilitate patient management. In fact, respiratory virus testing accounts for over one-third of the total number of molecular tests performed by the laboratory each year. This, coupled with the difficulty in accurately predicting the timing and severity of upcoming "Flu Seasons", places a tremendous burden on the laboratory from both an operational and a forward-planning perspective.



At the same time, the rapid evolution of molecular technology and instrumentation has meant that several critical pieces of laboratory equipment became obsolete and required

replacement. We have invested a significant amount of time and resources in evaluating, validating, and deploying new equipment in order to maintain the operational capabilities of the lab – a trend which will continue into the future.

Despite these challenges, we have made substantial progress over the past year towards improving the delivery of molecular diagnostic services. For example:

- We have added several new molecular microbiology tests to our menu, including:
  - Two new viral load assays for the quantitation of Cytomegalovirus (CMV) and Epstein-Barr Virus (EBV) in the transplant patient population. These tests are now offered for patients throughout the Province as opposed to only those in the former Saskatoon Health Region.
  - A new bacterial meningitis panel able to detect six different meningitis-associated bacteria, as opposed to the three targets detected by an earlier version of the test.

- We have revised our laboratory test requisition form to encourage proper test utilization and minimize the need to cancel tests due to the submission of improper specimens, failure to provide complete information, etc.

- In collaboration with the Clinical Microbiology group, we have developed a business plan to acquire a new automated molecular instrumentation platform which will further expand our test menu and simultaneously improve our efficiency by greatly reducing the amount of hands-on time required to generate results.

- We continue to cross-train a number of Medical Laboratory Technologists from the Bacteriology section so as to expand our pool of highly-qualified personnel able to work in the lab. At the same time, we have provided a very basic level of molecular training to MLT students from Saskatchewan Polytechnic – over the past year, 10 SaskPolytech students have spent a total of 30 days in the laboratory.

- The molecular laboratory has achieved full accreditation for the next 4 years from the College of Physicians and Surgeons of Saskatchewan as a result of the 2018 accreditation inspection.

Graphis: Mayo Clinic Laboratories "INSIGHTS "Diagnostic Molecular Pathology webpage
https://news.mayocliniclabs.com/2018/11/20/diagnostic-molecular-pathology/

ANATOMICAL PATHOLOGY

Dr. Marilyn Kinloch, Division Head

"Anatomical pathology (AP) is the branch of medicine concerned with the study of the morphologic aspects of disease. Anatomical pathologists specialize in examining tissues removed by needle aspiration, surgical procedures or autopsy. They are responsible for diagnosing diseased tissue and investigating the mechanisms and development of disease. AP includes subspecialties that deal specifically with organ systems including gynecological pathology; dermatopathology; gastrointestinal pathology; cardiovascular pathology; respiratory pathology; musculoskeletal pathology; renal pathology, genito-urinary pathology; endocrine pathology; ophthalmic pathology; ENT pathology and neuropathology. It also involves specific laboratory methods such as cytopathology, immunopathology and electron microscopy, or certain types of clinical cases including pediatric pathology and forensic pathology. "
Source: https://www.cma.ca/sites/default/files/2019-01/anatomical-pathology-e.pdf

External Speakers

Dr. Nick Myles – St. Paul's Hospital, breast pathologist and President of the evidence-based medicine Special Interest Group of the Canadian Association of Pathologists
Grand Rounds: Diagnostic Accuracy Statistics Made Easy; Feb 2018
Dr. David Schaeffer – Vancouver General Hospital, GI pathologist, Department Head and Regional Head of pathology Vancouver Coastal Health
Grand Rounds with Dr. Mary Kinloch – Practical Approaches to Mismatch Repair Analysis in Gynecologic and GI Pathology; October 2018
Dr. Anjelica Hodgson and Dr. Carlos Parra-Herran – University of Toronto, gynecologic pathologists
Grand Rounds: Updates on Endocervical Adenocarcinomas – April 2019

Events
CAP-ACP Recruitment dinners 2018, 2019
Dr. Rees went to Haiti with Team Broken Earth for the 4th time!

Appointments
Dr. Henrike Rees was appointed to the SHA Practitioner Staff Review Panel

Projects
Specimen tracking was the most impactful project we had launch in 2019. Thank you to an anonymous donor from the Saskatoon City Hospital Foundation, we now track every slide of every patient at every step of their journey in the lab. This would not be operational without the full investment and collaboration from the technologists, tech supervisors Shannon and Karen and, of course, Rhonda the lab manager.

Dr. Yu, Dr. Torlakovic and Dr. Decoteau have transformed our biomarker offerings for lung cancer patients. Since 2018, we now provincially offer EGFR, ROS-1, ALK-1, BRAF, p53 and PDL-1 to patients. This is a significant transformation for the therapies offered to patients and we appreciate their dedication.

TRANSFUSION MEDICINE

Dr. Sheila Rutledge Harding, Division Head

Key Divisional Activities and Accomplishments

Clinical service activities:

- Enhancement of patient safety with the development and implementation of a local *ABO Confirm* policy prior to issue of group-identical red blood cell units, which has since been rolled out provincially.
- Participation of RUH and SPH transfusion medicine laboratories in the multicenter START Study (**S**creening RBC orders by **T**echnologists and **A**uditing to **R**educe **T**ransfusion) since October 2018, with ongoing red blood cell order screening to optimize utilization of red blood cell transfusion. A huge thank-you to Heather Panchuk (Transfusion Safety Officer) and to all of our technologists for their great work on this!
- Hiring of Ms. Kalen Paulson as the Project Manager for the *Prevention of Alloimmunization in Mothers of Saskatchewan (PRAMS) Program*. This program will establish an in-province prenatal transfusion medicine testing program for expectant mothers, linked to a clinical care program to prevent Rh D alloimmunization and to effectively manage sensitized pregnancies.
- Development and establishment of an intravenous immunoglobulin order set for both adult and pediatric patients.
- Ongoing engagement with transfusion medicine laboratories in Northern Saskatchewan to optimize transfusion practice.

Educational initiatives:

- Ongoing dedicated resident rotations in transfusion medicine
  - 1-week rotation for Anesthesia residents during their clinical Hematology rotation
  - 1-month rotation for General Pathology residents
- Facilitation of *Transfusion Camp* 2018-19 (five full days of lectures and case-based seminars) to General Pathology Residents, available via WebEx from the University of Toronto

National engagement:

- Dr. Prokopchuk-Gauk has served on the National Advisory Committee on Blood and Blood Products (NAC) since her appointment to the committee as a Saskatchewan representative since 2016. She became Chair of NAC as of April 1, 2019, for a two-year term.

Hellos and Goodbyes

July 2018: Dr. David Sheridan stepped away from his clinical practice in the Saskatoon Cancer Centre to facilitate more Arizona time. When he is in Saskatoon, he continues in his role as a medical consultant to the Transfusion Medicine service in Saskatoon and Northern Saskatchewan.

July 2018: Dr. Sarah Tehseen stepped into a one-year part-time *locum* position in Transfusion Medicine. Dr. Tehseen trained in Pediatrics at Wayne State University and studied Pediatric Hematology Oncology at Emory University School of Medicine. In June 2017, she completed a clinical fellowship in Transfusion Medicine at the Blood Centers of Wisconsin/Medical College of Wisconsin. She then came to Saskatoon to pursue opportunities in General Pediatrics and Pediatric Hematology. She has successfully completed her RCPSC examinations in both Pediatrics and Pediatric Hematology Oncology – congratulations, Dr. Tehseen! We are delighted to report that Dr. Tehseen will continue with us after July 2019, dividing her time between Transfusion Medicine and Pediatric Hematology. Her Pediatric lens is a deeply appreciated addition to our Transfusion Medicine work locally and provincially.

August 13, 2018: We celebrated the happy arrival of Anatoliy Mykola Gauk! Congratulations to Oksana & Mykola, and to big brother Valentyn!

January 2019: We said goodbye and best wishes to Ms. Lorrie Baryluk, TM Manager, on her retirement. We were pleased to welcome Ms. Gisele Sakowski into the Manager role.

Anatoliy Gauk

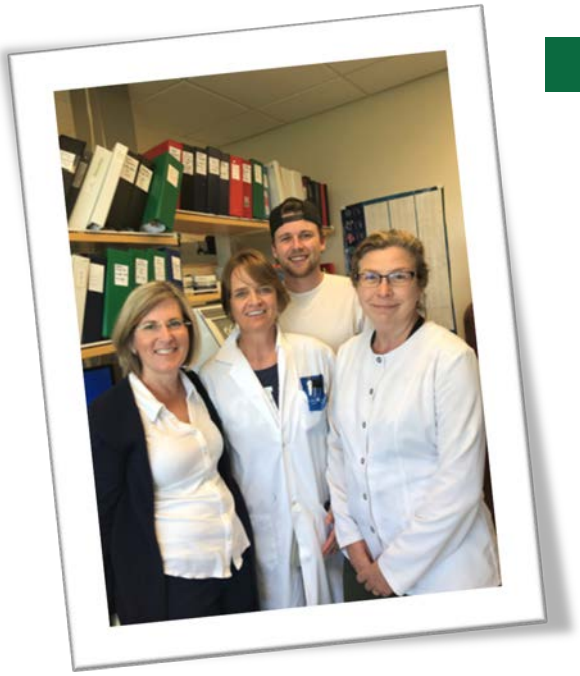
Blood Clot Art1 *by Jordan Miller*

ADVANCED DIAGNOSTICS RESEARCH LABORATORY (ADRL)

Dr. John DeCoteau, Medical Director

Advanced Diagnostics Research Laboratory (ADRL)

The ADRL contributes to excellence in cancer care by providing oncologists with access to a high complexity diagnostics service that is responsive to their clinical needs and capable of rapidly implementing new tests in an evolving practice environment. The ADRL is also a key local resource that supports clinical trial activities; translational and patient oriented research projects; and the training of pathology residents, graduate students, and highly qualified technical personnel.



Some members of the ADRL Clinical Division

Some of the key accomplishments of the ADRL over the past year include:

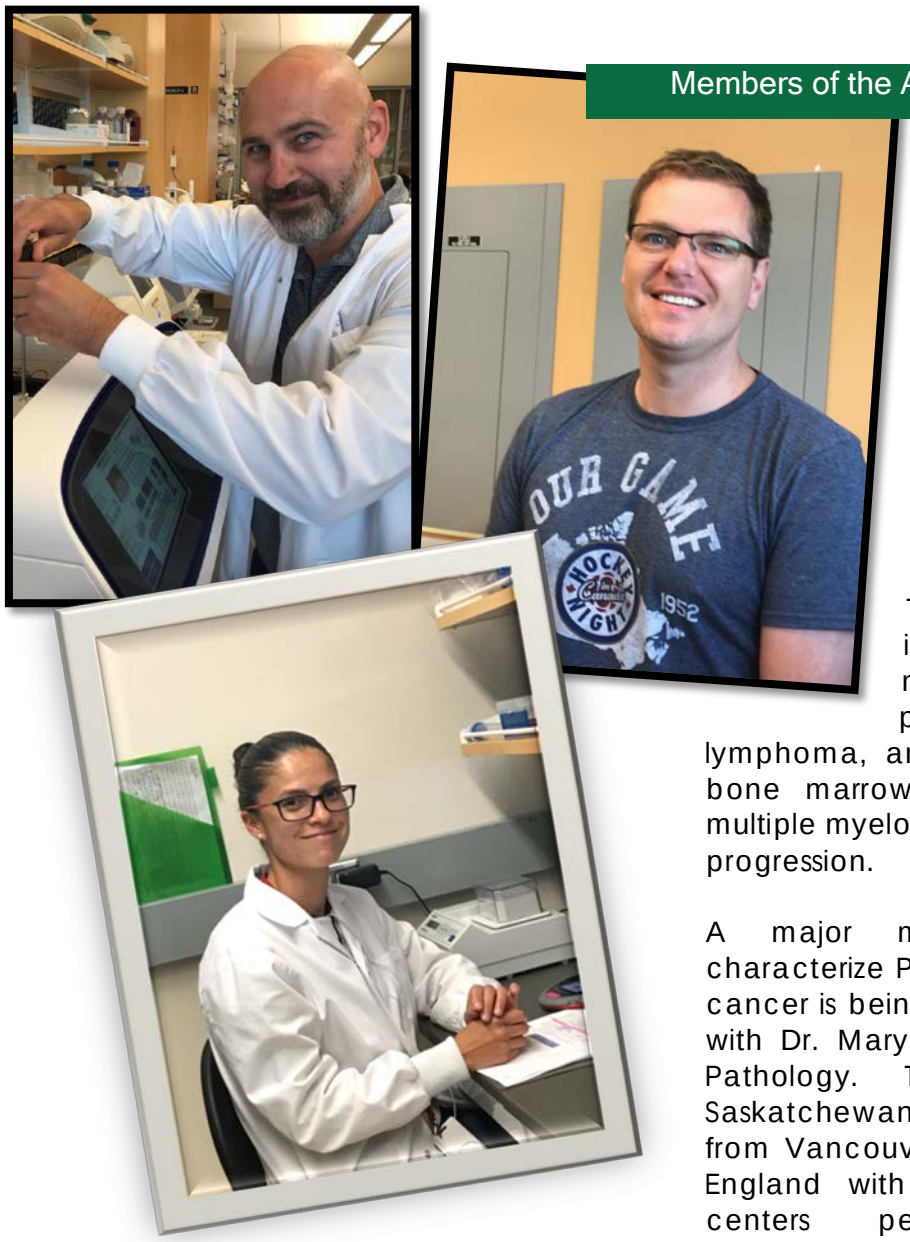
Improved Cancer Diagnostics with Reduced Reliance on Referral Testing

The ADRL successfully underwent its first accreditation visit by the Western Canadian Diagnostic Accreditation Alliance (WCDAA) in October 2018. The test menu offered by the ADRL is now comparable to those at all major oncology centers in Canada. Maintaining an updated cancer test menu, that is aligned with the needs of modern oncology practices, will continue to reduce Saskatchewan's reliance on outside institutions to provide cancer diagnostic and monitoring tests.

Increased Test Volumes to Meet Provincial Demands

The ADRL has been very successful in establishing new standard of care cancer diagnostics and repatriating a large number of cancer tests previously referred out of the Province. This reflects the lab's robust R&D capacity that allows it to keep pace with cancer discovery, and to rapidly respond to clinical demands for developing, validating, and implementing new companion diagnostics. Since its inception in 2014, ADRL test volumes have grown each year - the number of tests that will be performed and reported by the ADRL in 2019 is on track to exceed 2,500. Prior to the ADRL becoming operational, all of these tests were either referred outside of the Province - or not performed at all - to the detriment of optimal cancer care.

Support for High Quality Local Research Endeavors



Members of the ADRL Research Division

The ADRL supports a number of local clinical trial activities and translational research investigations, including ongoing projects in collaboration with Dr. Mark Bosch and Dr. Julie Stakiw, funded by the Saskatchewan Cancer Agency and the Saskatchewan Center for Patient Oriented Research. These projects include improving methods to detect minimal residual disease in patients with diffuse large B-cell lymphoma, and investigating the role the bone marrow microenvironment plays in multiple myeloma development and disease progression.

A major multi-institution initiative to characterize POLE mutations in endometrial cancer is being conducted in collaboration with Dr. Mary Kinloch, Head of Anatomic Pathology. This project is led by Saskatchewan and involves investigators from Vancouver, Calgary, San Diego, and England with mutational analysis for all centers performed at the ADRL. The endometrial cancer project has resulted in several presentations at international meetings; publications in high impact medical journals; and an opportunity for pathology resident Dr. Nick Baniak to obtain advanced subspecialty pathology training at Harvard.

Reference Laboratory to Support Multi-Institution Clinical Trials

Growing recognition of ADRL infrastructure and expertise has positioned the lab to participate in national multi-centered clinical trials as a reference testing center. In 2018, the ADRL was designated a genomic profiling lab for the Canadian Cancer Trials Group 'Canadian Profiling and Targeted Agent Utilization Trial' alongside high profile labs such as the Michael Smith Genome Science Center in Vancouver; the Advanced Molecular Diagnostic Laboratory at Princess Margaret Cancer Center in Toronto; and Foundation Medicine Inc. in Cambridge, MA.

Training Center for Pathology Residents and Other Highly Qualified Personnel

The availability of the ADRL within the University of Saskatchewan College of Medicine provides excellent training opportunities for pathology residents and highly qualified medical laboratory personnel to gain expertise in modern molecular pathology diagnostic procedures. By offering structured rotations through the ADRL, the University of Saskatchewan is now one of only two pathology training programs in Canada that provides residents with hands on training experiences in high complexity diagnostics. Training opportunities offered at the ADRL will also help to fulfill Saskatchewan's future needs for highly qualified personnel, such as medical laboratory technologists with training in molecular pathology, molecular pathology scientists, and bioinformatics specialists.

Center for Biologic Imaging Research and Development (C-BIRD)

The ADRL works closely with the Center for Biologic Imaging Research and Development (C-BIRD) directed by Dr. Ron Geyer. C-BIRD aims to develop the next generation of molecular imaging agents for three main purposes: early and definitive diagnosis; improved disease characterization; and guiding therapeutic interventions. The center focuses on biologic imaging research and development, and collaborates with industry, government, and academic researchers to advance molecular imaging agents and therapeutics from basic research to translation in patients.

The ADRL prides itself on using the right tools for the job!

CLINICAL MICROBIOLOGY

Dr. Joseph Blondeau, Division Head

The past year has been very interesting for the Clinical Microbiology Division. With the formation of the Saskatchewan Health Authority and Pathology and Laboratory Medicine becoming a provincial program, each of the subspecialties were asked to organize themselves provincially. The provincial microbiology group had been working together for a number of years and have now formalized that relationship. Our group has been very active and have already made a number of coordinated changes impacting appropriate utilization, ensuring specimens are going to the correct laboratory for testing and some harmonization of testing protocols. All such changes are to improve patient care and to provide the same standard of care for patients across the province. As part of our provincial microbiology group, Saskatoon and Regina have become the referral centers of excellence for microbiology and have assumed responsibility for support of laboratories in rural centers throughout Saskatchewan still performing microbiology testing. Site visits have been completed for some rural labs and are continuing in order to understand our "current state" and to gather critical information to determine the direction for "future state" as well as the clinical and technical support necessary for rural centers.

As part of the organization of the provincial microbiology group, Dr. J. Blondeau was appointed Clinical Lead for Clinical Microbiology and Dr. J. Minion was appointed Clinical Lead for Public Health. Brandi Keller was appointed the as the provincial director for Microbiology. We are currently working on an organizational chart for the provincial microbiology program and the assignment of key responsibilities to each of our clinical, technical and administrative staff members.

Modernization in our diagnostic laboratories continue with new products and technologies being investigated, evaluated and implemented. A major focus has been on technology that allows for accurate and faster detection of pathogens, including their identification. Multiplex Polymerase chain reaction assays have replaced some traditional technologies and we see this trend continuing. Some exciting developments with real time susceptibility testing is a key focus going forward.

Recruitment continues both in Saskatoon and Regina for Medical Microbiologists and filling these vacant positions is essential for supporting rural sites and of course the opening of the Jim Pattison Children's Hospital.

EVENTS

Dr. Anjelica Hodgson, U of T, Grand Rounds "Diagnostic Updates in Endocervical Adenocarcinoma" and Dr. Kinloch MAY 2019

Dr. Nickolas Myles, UBC, guest lecturer "Evidence-Based Results" FEB 2018

UGME Yr. 1 Recruitment Career Fair FEB 2019 with Drs. Nick Baniak, Marilyn Kinloch and Allison Osmond

Canadian Academy of Pathology
Recruitment Dinner in Quebec City JUN 2018

Dr. Kinloch presenting on "Glandular Lesions of the Gyne Tract" at the Canadian Academy of Pathology in Quebec City JUN 2018

Rachel Meilke, honourary chair & Dr. Kinloch, volunteer chair – giving away their first $100,000 grant

Rachel Meilke, CEO of Hillberg & Berk, visiting the Pathology Department

Retirement Tea for Dr. A. Mabood Qureshi DEC 2018

AWARDS

Dr. Ronald N. Auer, MD PhD FRCPC

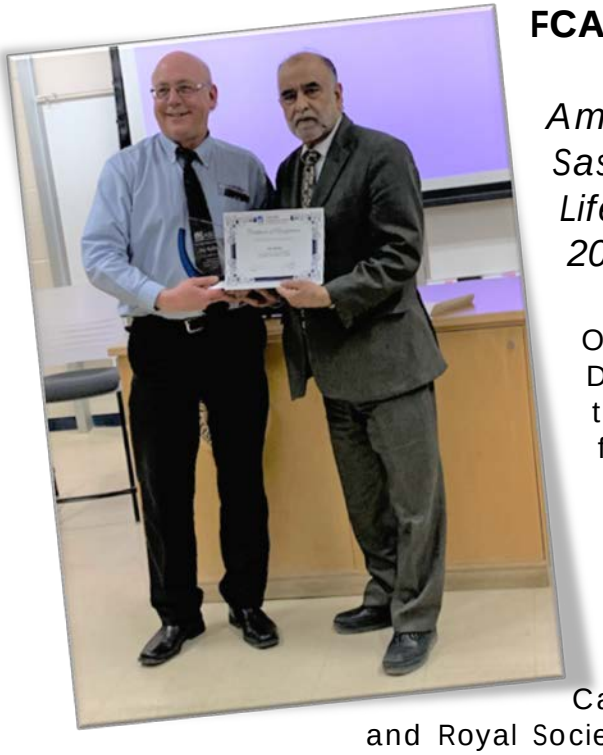
Resident Doctors of Saskatchewan
Excellence in Teaching Award 2019

Since he runs no formal courses, Dr. Auer was somewhat surprised to receive this award, and his mouth is agape in the photo receiving the award from Pathology chief resident, Dr. Hui Wang. Most of his teaching is to residents in Neurosurgery, Neurology and Pathology. On inquiring of the residents why they thought him worthy of the award, the residents informed Dr. Auer that he taught them something essential that they will not forget: firstly, "to know and recognize what they do not know" and, secondly, "to know and convey to other doctors and patients their level of certainty in knowing". While in Quebec, Dr. Auer made up a French word that captures a doctor's level of certainty in knowing, a "mal à l'aise-o-meter", which translates awkwardly into the English "ill-at-ease-o-meter", better into his native German as "Unbequem-o-meter". Dr. Auer believes all doctors should carry in their head as an internal honesty meter about how sure they are of what they are knowing or doing. Some residents also found that learning the word "Epistemology", the science of knowing, will stick with them. Dr. Auer has a humorous side, and asked the residents if they remembered anything he actually taught them. Or did they just remember to "know what they do not know". The response from the residents generally was that they remember "If you don't know, don't go" and that this basic principle of living, and of medical practice, eclipsed any teaching of details, and of details about those details. Dr. Auer frequently recites the part of the medical oath "*primum non nocere*" (at first, do no harm), and this seems to be the main message behind this award. Dr. Auer also wishes to point out the green color to the glass, that he has learned since arriving from Quebec in Sept 2015, is the color of Saskatchewan sports teams and of Saskatchewan memorabilia.

Dr. Rochelle Jalbert (Internal Medicine PGY3 Resident Supervised by Dr. Oksana Prokopchuk-Gauk)

2nd Place in the PGY 3 Oral Research Presentation category at the 2017-18 Department of Medicine Resident Research Day. "Incidence of transfusion associated circulatory overload after red cell transfusion and use of furosemide in a tertiary care center"

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



American Society for Quality (ASQ) Saskatchewan Section Leadership & Lifetime Contribution to Quality Award 2019

On 08 MAY 2019, Gary Gehring, former Regional Director of ASQ Canada, presented Dr. Jay Kalra with the ASQ Lifetime Contribution Award in recognition for his leadership and lifetime contribution to quality.

Dr. Kalra is a Professor of Pathology & Laboratory Medicine at the U of S, formerly serving as Department Head and currently sits on the University Board of Governors. He is a Fellow of the Royal College of Physicians and Surgeons of Canada, Canadian Academy of Health Sciences, and Royal Society of Medicine UK. His research focuses on best practices and guidelines for quality care and patient safety, disclosure policy, total quality management programs, and laboratory utilization in health care. Dr. Kalra is an author of a book entitled "Medical Errors and Patient Safety – Strategies to Reduce and Disclose Medical Errors and Improve Patient Safety". He has been a champion in establishing a non-punitive "no-fault model" to address clinical/medical errors, and in developing educational programs and clinical guidelines reflecting evidence-based medicine. Dr. Kalra has served ASQ in many roles including director, vice-chair, chair, and co-chair bringing excellence to all areas in quality.

UGME, 2nd Year – Mr. Daniel Markewich Supervised by Dr. Jay Kalra

1st Place in the Undergraduate category for his poster "An Assessment of Discordance between Autopsy and Clinical Diagnoses" at the CoM Resident Research Day 19 MAR 2019

CQIP Graduation with Dr. Philip Fourie, Deputy Chief Medical Officer SEP 2018

Dr. Marilyn (Mary) Kinloch, MD BSC FRCPC

Clinical Quality Improvement Program SEP 2018

Congratulations to Dr. Kinloch on successfully completing the Clinical Quality Improvement Program (CQIP), a 10-month course designed to build capability in leading improvement work in health care, with a focus on clinical quality improvement. Dr. Kinloch's project was on increasing lung biomarker success in testing through tissue preservation.

Dr. John DeCoteau, MD FRCPC

Saskatoon Regional Medical Association (SRMA) Physician of the Year Award JAN 2018

Congratulations to Dr. DeCoteau. The SRMA provides advocacy on behalf of physicians in its region, offering an additional avenue of input to the Saskatchewan Medical Association Board of Directors.

SASKATCHEWAN ASSOCIATION OF LABORATORY MEDICINE (SALM)

Includes:

All pathologists and laboratory medicine doctors (e.g. microbiologists, biochemists, blood bankers, etc.) practicing in the province (except forensic pathologists that are under umbrella of Ministry of Justice) and general pathology residents. Pathologists are full voting members of organization and residents have a status of non-voting members of SALM. Currently we have 37 members and 12 residents.

Executive Board:

Current: president - Viktor Zherebitskiy (Saskatoon), vice-president – Tamalina Banerjee (Saskatoon), secretary-treasurer – Quentin Nakonechny (Regina), and immediate past president – Jill Woof (Regina) plus Dr. Mary Kinloch (Saskatoon) - SALM representative in SMA .

Past: president – Jill Woof (Regina, 2017-2018), Tamalina Banerjee (Saskatoon, 2017-2018), Viktor Zherebitskiy (Saskatoon, 2017-2018), immediate past president – Dr. Fergal Magee (2017-2018)

History:

Saskatchewan Association of Pathologists (SAP) was created in 1970-th as a section of Saskatchewan Medical Association (SMA) and represented interests of pathologists across the province. Many currently practicing local pathologists including Drs. Henrike Rees, Steven Angel, Jay Kalra, Ed Jones, Edward Alport, etc. and prominent pathologists who moved to neighboring provinces or US including Drs. Robert West (Edmonton, AB), Ranjit Waghray (Calgary), Lin Ezzat (Victoria, BC), Laurette Geldenhuys (Halifax, NS), Robert Macaulay (Tampa, FL), etc. held executive positions and contributed a lot to the development of SAP in 1990-th and early 2000-th. After that, there was a period of dormancy. Dr. Fergall Magee, current Provincial Head of the department, revived the organization and transformed it from SAP to SALM, acknowledging contribution of representative of laboratory medicine other than pathologists. Drs. Mary Kinloch and Jill Woof, current acting provincial clinical leads in anatomical pathology for Northern and Southern Saskatchewan further contributed to the development of SALM.

Activities:

1. SALM held 3 semi-annual meeting using teleconference format – May 3, 2018 (Saskatoon), November 1, 2018 (Regina) and May 2, 2019 (Saskatoon). During these meetings SALM members were able to get updates provincial leadership on transformation of regional health authorities into a single Saskatchewan Health Authority and integration of pathology and laboratory medicine services across the province. Also, recent developments in cancer molecular biomarker testing, biochemistry technology upgrade, extension of molecular microbiology services to rural sites and new initiatives in hematopathology and transfusion medicine were discussed.

2. SALM created Negotiation Committee (SALM-NC) that included initially 5 members representing Saskatoon, Regina and rural sites (Drs. S. Angel, J. Minion, R. Sabaratnam, J. Woof and V. Zherebitskiy). Two other members recently joined the committee to better represent interests of academic and clinical pathology and laboratory medicine (Drs. J. Kalra and Q. Nakonechny). During the above noted meetings and separately, SALM-NC members discussed remuneration issues and indexation of pathologists and laboratory medicine doctors with SMA negotiators (Ed Hobday and Marcel Nobert). Also, during SMA semi-annual meetings Drs. J. Woof, M. Kinloch, D. Ledingham and V. Zherebitskiy raised attention of SMA leadership and representatives of Ministry of Health to pathology and laboratory medicine problems including increasing workload and availability of additional FTEs that is not catching with the speed of ever growing volume and complexity of pathology cases and laboratory tests.

3. SALM continued supporting educational activities in the department including monetary contribution to resident travel allowances that allowed general pathology residents to participate in annual Banff pathology conferences in 2018 – 2019. Also, in 2019 SALM came up with honorarium and appreciation award for invited speakers. Drs. Anjelica Hodson and Carlos Parra-Herran from University of Toronto were first recipients of the honorarium and Dr. Allan Oryschak was a first recipient of the award (see photos below).

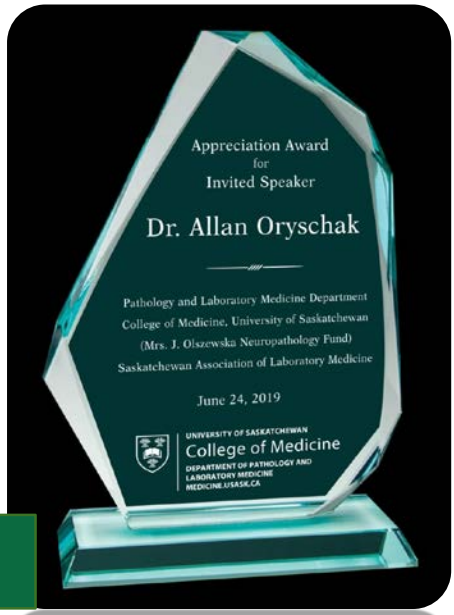
4. SALM continued to be involved in dissemination of pathology and laboratory medicine information in and outside the province. For this purpose, SALM subcontracted Rev Tech Canada to create a comprehensive SALM website that could reflect recent developments, updates and changes in various areas of local, national and international pathology and laboratory medicine.

5. SALM constantly cares about the wellbeing of its members. This extends to situations of their illness and sometimes even death. Dr. Omar Shokeir, pathologist from North Battleford, passed away unexpectedly in 2019. SALM pledged to contribute $30,000.00 to departmental endowment funds during the next 20 years for commemoration of his contribution to provincial pathology and laboratory medicine services. Dr. Valarie Godsalve recently lost her battle to pancreatic cancer and SALM members supported her by visitations, flowers etc. during her last days and organization of funeral service at SCH after her death.

Pathology and Laboratory Medicine
Grand Round with Dr. Allan Oryschak, eye pathologist from the University of Calgary/ Rocky View General Hospital (24 JUN 2019) jointly sponsored by Mrs. J. Olszewska Neuropathology Endowment Fund/Department of Pathology and Laboratory Medicine, and SALM

Grand Round with Dr. Oryschak JUN 2019

Dinner: Drs. Kalra, Auer, Oryschak & Zherebitskiy



In Appreciation: Drs. Oryschak & Zherebitskiy

PUBLICATIONS, FUNDING, PRESENTATIONS

Dr. Alicia Andrews

Research

Assessment of Strip Lot and Meter Variation with the Nova Statstrip® Lactate Point of Care Device. Archan A Kakadekar, **Alicia Andrews**, Lana Smith, Jocelyne Martel, Martha E Lyon. Poster at the 70th Annual AACC/CSCC Conference.

Living in a virtual reality – A crossover study comparing resident examination performance with traditional and virtual microscopy. Alicia R. Andrews, Nick Baniak, Catalin Taraboanta, Amy Bromley, Tyler Hickey, Mary Kinloch. Poster at 2018 CAP-ACP Annual Conference.

Funding

Dr. Thomas A. Cunningham Memorial Fund, University of Saskatchewan Department of Pathology and Laboratory Medicine (recipient of funding for travel to 2019 CAP-ACP Conference)

Dr. Nick Baniak

Papers

2019 Baniak N, Fadare O, Köbel M, DeCoteau J, Parkash V, et al. Targeted Molecular and Immunohistochemical Analyses of Endometrial Clear Cell Carcinoma show that *POLE* mutations and DNA Mismatch Repair Protein Deficiencies are Uncommon. 2019. Am J Surg Pathol. 2019 Apr;43(4):531-537.

2019 Baniak N, Adams S, Lee CH, Chibbar R, Kanthan R. Extra-Pelvic Metastases in Endometrial Stromal Sarcomas – a Clinicopathological Review with Immunohistochemical and Molecular Characterization. Int J Surg Pathol. 2019. Int J Surg Pathol. 2019 Apr;27(2):208-215.

2018 Wood M, Schellenberg A, **Baniak N**, Hayes P. Metastatic ductal carcinoma of the breast to colonic mucosa. BMJ Case Rep 2018. May 26;2018. doi: 10.1136/bcr-2018-224216.

2018 Baniak N, Adams S, Chibbar R, Lee CH, Kanthan R. Hepatic Endometrial Stromal Sarcoma. Pathol Res Pract. 2018. Oct;214(10):1726-1731.

Posters

2018 Andrews A, **Baniak N**, Taraboanta C, Bromley A, Hickey T, Kinloch M. Living in a virtual reality – a cross-over study comparing resident examination performance with traditional and virtual microscopy. Canadian Association of Pathologists 69th Annual Scientific Meeting, Jul 7 – 10, 2018, Quebec City, Quebec

2018 Baniak N, Fadare O, DeCoteau J, Kobel M, Parkash V, Hecht J, Hanley K, Gwin K, Zheng W, Quick C, Jarboe E, Liang S, Kinloch M. *POLE* Mutations in Endometrial Clear Cell Carcinoma. United States & Canadian Academy of Pathology's 107th Annual Meeting, March 17 – 23rd, 2018, Vancouver, BC

2018 Baniak N, Gilks B, DeCoteau J, McAlpine J, Kobel M, Singh N, Casey L, Ganesan R, Kinloch M. Molecular Characterization of Recurrent Low Grade, Low-Stage Endometrioid Endometrial Carcinoma. United States & Canadian Academy of Pathology's 107th Annual Meeting, March 17 – 23rd, 2018, Vancouver, BC

Dr. Joseph Blondeau

Publications

Blondeau JM. Targeted drug delivery and drug resistant pathogens. Expert Review of Respiratory Medicine 2018; 12(3):161-164.

Seifert H, Blondeau JM, Dowzicky MJ. *In vitro* activity of tigecycline and comparators (2014-2016) among key WHO 'priority pathogens' and longitudinal assessment (2004-2016) of antimicrobial resistance: a report from the TEST study. International Journal of Antimicrobial Agents 2018; 52(4):474-484.

Termote K, Joe AW, Butler A, McCarthy M, Blondeau JM, Lovieno A, Holland SP, Yeung SN. Epidemiiology of bacterial corneal ulcers at tertiary centres in Vancouver, BC. Canadian Journal of Ophthalmology 2018; 53(4):330-336

Yen T, Boord MJ, Ghubash R, Blondeau JM. A pilot study investigation the *in vitro* efficacy of sucralfate against common veterinary cutaneous pathogens. Journal of Small Animal Practice 2018: On lline doi:10.1111/jsap.12902.

Blondeau JM, Idelevich EA. The 24-h clinical microbiology service is essential for patient management. Future Microbiology 2018; Epub ahead of print.

Liu F, Hansra S, Crockford G, Köster W, Allan, BJ, Blondeau JM, Lainesse C, White AP. Tetrasodium EDTA is effective at eradicating biofilms formed by clinically relevant microorganisms from patients' central venous catheters. mSphere 2018; 3(6): e00525-18.

Blondeau JM, Fitch SD. Mutant prevention and minimum inhibitory concentration drug values for enrofloxacin, ceftiofur, florfenicol, tilmicosin and tulathromycin dtested against swine pathogens *Actinobacillus pleuropneumoniae, Pasteurella multocida* and *Streptococcus suis.* Plos One 2018;14: e0210154.

Wilcox M, Al-Obeid S, Gales A, Kozlov R, Martinez-Orozco JA, Rossi F, Sidorenko S, Blondeau JM. Reporting elevated vancomycin minimum inhibitory concentration in MRSA I- consensus by an international working group. Future Microbiology 2019; 14(4):345-352.

Weese S, Blondeau JM, Boothe D, Guardabassi L, Gumley N, Papich M, Jessen LR, Lappin M, Rankin S, Westropp J, Sykes J. International Society for Companion Animal Infectious Diseases (ISCAID) guidelines for the diagnosis and management of bacterial urinary tract infections in dogs and cats. The Veterinary Journal 2019; 247: 8-25.

Levinson M, Blondeau JM, Rosenkrantz W, Plowgian C. The *in vitro* antibacterial activity of an anthelmintic drug, oxyclozaninde, against common small animal bacterial pathogens. Veterinary Dermatology 2019: DOI:10.1111/vde.12755.

Curtis Plowgian, Joseph M. Blondeau*†, Matthew Levinson¥, Wayne Rosenkrantz A pilot study on the comparative minimum inhibitory and mutant prevention concentration values for moxifloxacin and pradofloxacin against canine and human isolates of Staphylococcus pseudintermedius and Staphylococcus schleiferi. In Press in Veterinary Dermatology.

Forensic, investigative and diagnostic microbiology: similar technologies but different priorities.Blondeau LD, Rubin JE, Deneer H, Kanthan R, Sanche S, Hamula C, Blondeau JM. Future Microbiol. 2019 May;14:553-558. doi: 10.2217/fmb-2019-0088. Epub 2019 May 31.

Dr. Andrew Freywald

Publications

1. Targeting the CINful genome: Strategies to overcome tumor heterogeneity. Cunningham CE, MacAuley MJ, Yadav G, Vizeacoumar FS, **Freywald A***, Vizeacoumar FJ*. Prog Biophys Mol Biol. (2019). *Corresponding authors.

2. A Road Map to Personalizing Targeted Cancer Therapies Using Synthetic Lethality. Parameswaran S, Kundapur D, Vizeacoumar FS, **Freywald A***, Uppalapati M*, Vizeacoumar FJ*. Trends Cancer. (2019). *Corresponding authors.

3. Molecular characterization of an MLL1 fusion and its role in chromosomal instability. Parameswaran S, Vizeacoumar FS, Kalyanasundaram Bhanumathy K, Qin F, Islam MF, Toosi BM, Cunningham CE, Mousseau DD, Uppalapati MC, Stirling PC, Wu Y, Bonham K, **Freywald A**, Li H, Vizeacoumar FJ. Mol Oncol. (2019).

4. TLR9 agonist enhances radiofrequency ablation-induced CTL responses, leading to the potent inhibition of primary tumor growth and lung metastasis. Xu A, Zhang L, Yuan J, Babikr F, **Freywald A**, Chibbar R, Moser M, Zhang W, Zhang B, Fu Z, Xiang J. Cell Mol Immunol. (2018).

5. Expression-based analyses indicate a central role for hypoxia in driving tumor plasticity through microenvironment remodeling and chromosomal instability. Jing A, Vizeacoumar FS, Parameswaran S, Haave B, Cunningham CE, Wu Y, Arnold R, Bonham K, **Freywald A**, Han J, Vizeacoumar FJ. NPJ Syst Biol Appl. (2018).

6. Glycosylation States of Pre- and Post-synaptic Markers of 5-HT Neurons Differ With Sex and 5-HTTLPR Genotype in Cortical Autopsy Samples. Nyarko JNK, Quartey MO, Heistad RM, Pennington PR, Poon LJ, Knudsen KJ, Allonby O, El Zawily AM, **Freywald A**, Rauw G, Baker GB, Mousseau DD. Front Neurosci. (2018).

7. EPHB6 augments both development and drug sensitivity of triple-negative breast cancer tumours. Toosi BM, El Zawily A, Truitt L, Shannon M, Allonby O, Babu M, DeCoteau J, Mousseau D, Ali M, Freywald T, Gall A, Vizeacoumar FS, Kirzinger MW, Geyer CR, Anderson DH, Kim T, Welm AL, Siegel P, Vizeacoumar FJ, Kusalik A*, **Freywald A*.** Oncogene. (2018). *Corresponding authors.

8. Simulated microgravity inhibits cell focal adhesions leading to reduced melanoma cell proliferation and metastasis via FAK/RhoA-regulated mTORC1 and AMPK pathways. Tan X, Xu A, Zhao T, Zhao Q, Zhang J, Fan C, Deng Y, **Freywald A**, Genth H, Xiang J. Sci Rep. (2018).

9. Heterologous human/rat HER2-specific exosome-targeted T cell vaccine stimulates potent humoral and CTL responses leading to enhanced circumvention of HER2 tolerance in double transgenic HLA-A2/HER2 mice. Xie Y, Wu J, Xu A, Ahmeqd S, Sami A, Chibbar R, **Freywald A**, Zheng C, Xiang J. Vaccine. (2018).

Research Funding

1. 2018/4 - 2023/3
Role: Principle Investigator
"A systematic genome wide effort to identify and validate targetable synthetic dosage lethal interactions of mitotic kinases in colorectal cancer cells."
Funding Source: Canadian Institutes of Health Research (CIHR)
Total Funding - 592,875
Nominated Principal Investigator: Franco Vizeacoumar.

2. 2018/4 - 2022/3
Role: Nominated Principle Investigator
"Targeting the EphA2 receptor in triple-negative breast cancer."
Funding Source: Canadian Institutes of Health Research (CIHR)
Total Funding - 558,452
Principle Investigators: Franco Vizeacoumar, Eric Price.

3. 2018/4 - 2020/3
Role: Co-applicant
"New targets for metastatic breast cancer."
Funding Source: Saskatchewan Cancer Agency (SCA)
Total Funding - 200,000
Principal Applicant : Deborah Anderson

4. 2019/1 – 2020/1
Role: Principle Applicant
"The role of mitochondrial fission in triple-negate breast cancer tumor-initiating cells."
Funding Source: CoMRAD grant, College of Medicine, U of S
Total Funding - $29,522

Dr. Camille Hamula

Publications

Forensic, investigative and diagnostic microbiology: similar technologies but different priorities. Blondeau LD, Rubin JE, Deneer H, Kanthan R, Sanche S, **Hamula C**, Blondeau JM. Future Microbiol. 2019 May;14:553-558. doi: 10.2217/fmb-2019-0088. Epub 2019 May 31. No abstract available.

C Dupper, Amy & J Sullivan, Mitchell & I Chacko, Kieran & Mishkin, Aaron & Ciferri, Brianne & Kumaresh, Ajay & Berbel Caban, Ana & Oussenko, Irina & Beckford, Colleen & Zeitouni, Nathalie & Sebra, Robert & **Hamula, Camille** & Smith, Melissa & Kasarskis, Andrew & Patel, Gopi & McBride, Russell & Bakel, Harm & Altman, Deena. (2019). Blurred molecular epidemiological lines between the two dominant methicillin-resistant Staphylococcus aureus clones. Open Forum Infectious Diseases. 10.1093/ofid/ofz302.

Sullivan, Mitchell & Altman, Deena & I Chacko, Kieran & Ciferri, Brianne & Webster, Elizabeth & Pak, Theodore & Deikus, Gintaras & Lewis-Sandari, Martha & Khan, Zenab & Beckford, Colleen & Rendo, Angela & Samaroo, Flora & Sebra, Robert & Karam-Howlin, Ramona & Dingle, Tanis & **Hamula, Camille** & Bashir, Ali & Schadt, Eric & Patel, Gopi & Bakel, Harm. (2019). Complete genome screening of clinical MRSA isolates identifies lineage diversity and provides full resolution of transmission and outbreak events. Open Forum Infectious Diseases. 10.1101/522078.

Rhabditiform larvae of Strongyloides stercoralis hatching in a bronchoalveolar lavage specimen.Jing J, Edwards J, Harkin T, **Hamula C**, Szporn AH. Diagn Cytopathol. 2019 May;47(5):520-522. doi: 10.1002/dc.24115. Epub 2018 Dec 28. No abstract available.

Capnocytophaga spp. infection causing chorioamnionitis: an unusual suspect. Felix L, Rosenberg A, Caraballo KA, Taborga DP, **Hamula C**. Anaerobe. 2018 Jul 19;59:115-117. doi: 10.1016/j.anaerobe.2018.07.006. [Epub ahead of print]

The impact of blood culture identification by MALDI-TOF MS on the antimicrobial management of pediatric patients. Bhavsar SM, Dingle TC, **Hamula CL.** Diagn Microbiol Infect Dis. 2018 Nov;92(3):220-225. doi: 10.1016/j.diagmicrobio.2018.05.021. Epub 2018 May 5.

Geometric arrangements of Cryptococcus in cytology specimens. Jing J, **Hamula C**, Szporn AH. Diagn Cytopathol. 2018 Jun;46(6):550-552. doi: 10.1002/dc.23943. Epub 2018 Apr 16. No abstract available.

Tuberculosis after liver transplantation in a large center in New York City: QuantiFERON® -TB Gold-based pre-transplant screening performance and active tuberculosis post-transplant. Hand J, Sigel K, Huprikar S, **Hamula C**, Rana M. Transpl Infect Dis. 2018 Apr;20(2):e12845. doi: 10.1111/tid.12845. Epub 2018 Feb 19.

Woods E, Cohen G, Bressman E, Lin D, Zeitouni N, Beckford C, **Hamula C**, van Bakel H, Sullivan M, Altman D, Caplivski D. 2018. Community-acquired Pseudomonas aeruginosa pneumonia associated with the use of a home humidifier. *Case Reports in Infectious Diseases.*

Dr. Sheila Rutledge Harding

Publications

Goligher EC, Cigolini M, Cormier A, Donnelly S, Ferrier C, Gorshkov-Cantacuzène VA, **Harding SR**, et al. Euthanasia and physician-assisted suicide are unethical acts. WMJ (Internet). 2019 May (cited 2019 Jul 15];65(1):34-36. Available from https://www.wma.net/wp-content/uploads/2019/06/wmj_1_2019_WEB.pdf

Harding SR, Lazarus A. *Immune Globulin Products.* In: Clark G, Chargé S, editors. Clinical Guide to Transfusion online edition [Internet]. Ottawa: Canadian Blood Services; 2018 [cited 2019 Jul 15]. Chapter 4. Available from https://professionaleducation.blood.ca/en/transfusion/guide-clinique/immune-globulin-products

Leiva R, Cottle MM, Ferrier C, **Harding SR**, Lau T, McQuiston T, Scott JF. Euthanasia in Canada: a cautionary tale. WMJ [Internet]. 2018 Sep [cited 2019 Jul 15];64(3):17-23. Available from https://www.wma.net/wp-content/uploads/2018/10/WMJ_3_2018-1.pdf

Prairie Collaborative Immune Globulin Utilization Management Framework Project. [**Harding SR**, Chair, Interprovincial Medical Expert Committee.] *Criteria for the clinical use of immune globulin*. Alberta: Alberta Ministry of Health, Shared Health Manitoba, and Saskatchewan Ministry of Health; 2018. [cited 2019 Jul 15]. Available from https://www.ihe.ca/research-programs/hta/aagap/immune-globulin-guideline

Presentation

Prokopchuk-Gauk O, Peters G, Clarke G, **Harding SR**. Recurrent reaction to Rh Immune Globulin administration in a perinatal patient receiving routine anti-D prophylaxis. Poster Presentation – International Society of Blood Transfusion Conference 2018; Toronto, ON. June 5, 2018.

Dr. Chaturika Herath

Publications

Signet ring cell mesothelioma; A diagnostic challenge. Wang, H.; Herath C. Elsevier *Pathology – Research and Practice,* https://doi.org/10.1016/j.prp.2019.152462 (2019).

Dr. Rani Kanthan

Awards

2018 ***Kanthan R* (2018)** Uncommon hepatic metastases. International CME in Pathology, Histopathology and Cytopathology, Goa India 02nd -04th Feb- conference proceedings -**First prize for Oral Presentation. (This was delivered as an oral presentation by me)*

Publications

Book Chapters

2019 **Second Edition** - Handbook of Pathology for Postgraduate Students
Invited Contributor- Chapter 6 Lesions of the Lung pages 67-82
Chapter 20: Endocrine Pathology pages 246-261
CBS Publishers & Distributors ISBN 978-93-88725-70-5

2018 **First Edition** -Handbook of Pathology for Post Graduate Students
Invited Contributor-Lesions of the Lung & Endocrine Pathology

Peer Reviewed Manuscripts

L. Blondeau, H Deneer, ***R Kanthan***, JE Rubin, S. Sanche, C. Hamula, JM Blondeau Forensic, investigative and diagnostic microbiology: Similar technologies but different priorities. In Press March 25th **2019**

Baniak N, Adams S, Lee CH, Chibbar R, ***Kanthan R***. Extrapelvic Metastases in Endometrial Stromal Sarcomas: A Clinicopathological Review with Immunohistochemical and Molecular Characterization. Int J Surg Pathol. 2018 Aug 20:1066896918794278. doi: 10.1177/1066896918794278. [Epub ahead of print]

Coulson-Gilmer C, Humphries MP, Sundara Rajan S, Droop A, Jackson S, Condon A, Cserni G, Jordan LB, Jones JL, ***Kanthan R***, Di Benedetto A, Mottolese M, Provenzano E, Kulka J, Shaaban AM, Hanby AM, Speirs V**.** Stanniocalcin 2 expression is associated with a favourable outcome in male breast cancer. J Pathol Clin Res. 2018 Jun 28. doi: 10.1002/cjp2.106. [Epub ahead of print]

Baniak N, Adams S, Chibbar R, Lee C-H, ***Kanthan R***.Hepatic endometrial stromal sarcoma. Pathology Research and Practice 2018 May 17. pii: S0344-0338(18)30378-9. doi: 10.1016/j.prp.2018.05.008. [Epub ahead of print]

Kanthan, R, Senger, JL, Ahmed, S. and Kanthan, S.C. Pancreatic Neuroendocrine Tumors in the 21st Century—An Update. Journal of Cancer Therapy, 8, 1194-1233. https://doi.org/10.4236/jct.2017.813103

Funding

April 2018- March 2020
Ahmed Shahid, H.Chalchal, L Dwernychuk, **R Kanthan**, J Lim, R Rakheja, F Vizeacoumar, A Zaidi*FOLFIRI Alternate with FOLFOX in Untreated Metastatic Gastric and Esophageal Adenocarcinoma: The LOGIC Study*". **Operating Grant- Saskatchewan Cancer Agency -$100,138.00**

Presentations

January 2018, June 2018 and January 2019 – Seminars, workshops and presentations in India as

- Visiting Professor- MD post Graduate Teaching, Saveetha Medical College, Thandalam, India [*invitation from the Dean and Registrar] January*
- Visiting Professor – Sri Ramachandra Medical College Research Institute, India *[Invitation from the Dean and Registrar]*

- International Conference on Esophagus and Stomach, 15th-17th June, Chennai India
- Medical Education Workshop- Christian Medical College, Vellore, India

Saxena, Premkumar K, ***Kanthan R*** **-**Competency Based Medical Education: Assessment Models. Elements of competency based assessment and best practices for workplace based assessment. 16th Asia Pacific Medical Education Conference **SYMPOSIUM** 12 (1DS1002) 12th **Jan 2019**, Singapore (*This was an oral presentation by me in the designated symposium)*

***Kanthan R*,** Premkumar K **-** W2P3- Constructing Clinical Decision Making Questions - 16th Asia Pacific Medical Education Conference 10th **Jan 2019,** Singapore *(This was an interactive 4 hour teaching workshop for 35-40 registered participants- Workshop feedback strongly positive)*

Kanthan R, Baniak N, Adams, S, Cheng-Han L, Chibbar R. Immunohistochemical and molecular characterization of extrapelvic endometrial stromal sarcomas FOP-13 Abstract No 004 XXXII Congress of the International Academy of Pathology, Amman, JORDAN, **Oct 2018**
(*This was delivered as an oral presentation by myself)*

Kanthan R, Kanthan S. A review of 345 consecutive neoplastic liver biopsies with immune-histochemical diagnostic algorithims. FOP_16, Abstract No 003 XXXII Congress of the International Academy of Pathology, Amman, JORDAN, **Oct 2018** (*This was delivered as an oral presentation by myself)*

Kanthan R, Wright G, Miller, Shaw, J. Pancreatic vascular malformation with diffuse "nesidioblastosis-like ' pancreatic neuroendocrine hyperplasia ,-reactive, dysplastic or neoplastic? P-08 Abstract No 011 Date 15.10.2018 &16.10.2018 XXXII Congress of the International Academy of Pathology, Amman, JORDAN, **Oct 2018** *(Poster presentation)*

Kanthan R Immunohistochemical diagnostic algorithms of neoplastic liver biopsies 14th International Conference on Clinical Gastroenterology and Hepatology - **Aug 29th and 30th-2018** Toronto, Canada *(I was an Invited Speaker -oral presentation)*

Kanthan R, Premkumar K. W2A3: 'The Smorgasbord of Technology-Driven Teaching Strategies to Enhance Learning' at 15th Asia Pacific Medical Education Conference **[APMEC]** 10th -14th **Jan 2018 -** Singapore (*This was an interactive 4 hour teaching workshop for 35-40 registered participants -Workshop feedback strongly positive)*

Mendez I, Premkumar K , ***Kanthan R.*** Innovative E health tools for changing the Culture of Patient Care - Symposium S1002 - 'The utilization and Impact of electronic health Records in Patient care' at 15th Asia Pacific Medical Education Conference **[APMEC]** 10th -14th **Jan 2018,** Singapore, **SYMPOSIUM** (*This was an oral presentation by me in the designated symposium)*

Dr. Marilyn (Mary) Kinloch

Peer Reviewed Journal Articles

Baniak N, Fadare O, Köbel M, DeCoteau J, Parkash V, Hecht JL, Hanley KZ, Gwin K, Zheng W, Quick CM, Jarboe EA, Liang SX, **Kinloch M**. Targeted Molecular and Immunohistochemical Analyses of Endometrial Clear Cell Carcinoma Show that POLE Mutations and DNA Mismatch Repair Protein Deficiencies Are Uncommon. Am J Surg Pathol. 2019 Apr;43(4):531-537.

Parra-Herran C, Cesari M, Djordjevic B, Grondin K, **Kinloch M**, Köbel M, Pirzada A, Plotkin A, Gilks B. Canadian consensus guidelines for benign endometrial pathology reporting in biopsy material. 2019 Mar;38(2):119-127

Pors J, Cheng A, Leo JM, Kinloch MA, Gilks B, Hoang L. A Comparison of GATA3, TTF1, CD10, and Calretinin in Identifying Mesonephric and Mesonephric-like Carcinomas of the Gynecologic Tract. Am J Surg Pathol. 2018 Dec;42(12):1596-1606.

Varughese E, Adams GP, Leonardi CEP, Malhi PS, Babyn P, **Kinloch M**, Singh J. Development of a domestic animal model for endometriosis: Surgical induction in dogs, pigs, and sheep. Journal of Endometriosis and Pelvic Pain Disorders. 2018 May;10(2):95-106.

AlKusayer GM, Pon JR, Peng B, Klausen C, Lisonkova S, **Kinloch M**, Yong P, Muhammad EMS, Leung PCK, Bedaiwy MA. HOXB4 Immunoreactivity in Endometrial Tissues From Women With or WithoutEndometriosis Reprod Sci. 2018 Jun;25(6):950-957

Invited Talks

2018, 2019 Canadian Association of Pathologists, Annual Meeting, Quebec City and Niagara FallsCourse Director; Practical Workshop on Mismatch Repair Testing in Gynecologic and Gastrointestinal Cancers

2018 Canadian Association of Pathologists, Annual Meeting, Quebec City; Session Presenter; Glandular Lesions in the Gynecologic Tract, Update for the Practicing Pathologist

2018 University College Dublin, Grand Rounds; Endometrial Biopsy – Hysterectomy Correlation

2018 Women in Medicine Panel,The Gender Engagement in Medicine, Internal Medicine and Surgery Interest Group March 6, 2019, Saskatoon Health Science

Committees

2017-present Saskatoon Regional Medical Association, Vice President
2018-present Canadian Association of Pathologists Executive, Member-at-Large
2017-present Royal University Hospital Foundation, Women Leading Philanthropy Campaign, Volunteer Chair

Posters

2018 United States and Canadian Association of Pathologists – Poster. Baniak N, Fadare O, DeCoteau J, Kobel M, Parkash V, Hecht J, Hanley K, Gwin K, Zheng W, Quick, CM, Jarboe E, Liang S, **Kinloch M**. *POLE* mutations in Clear Cell Endometrial Carcinoma

2018 United States and Canadian Association of Pathologists – Poster. Baniak N, Gilks CB, DeCoteau J, McAlpine J, Köbel M, Singh N, Casey L, Giede C, Ganesan R, **Kinloch M** Molecular Characterization of Recurrent Low Grade, Low-Stage Endometrioid Endometrial Carcinoma

2018 United States and Canadian Association of Pathologists – Platform Djordjevic, B., Olkhov-Mitsel, E., Amemiya, Y., **Kinloch, M.**, Parra-Herran, C., & Seth, A. Targeted Genomic Profiling of Progestin Treated Low Grade Endometrial Neoplasia Identifies Correlates of Therapy Response

2018 United States and Canadian Association of Pathologists – Poster. E Cai, AS Cheng, AF Lee, CH Lee, **M Kinloch**, CB Gilks, L Hoang. A Comparison of CK19, AFP and Glypican-3 in Distinguishing Yolk Sac Tumors from Other Germ Cell Tumors in the Ovary

Dr. Amanda Lang

Publications

PCR-based discrimination of emerging Streptococcus pneumoniae serotypes 22F and 33F. Gillis HD[1], Demczuk WHB[2], Griffith A[2], Martin I[2], Warhuus M[3], Lang ALS[1], ElSherif M[1], McNeil SA[1], LeBlanc JJ[4]. Gillis HD, et al. J Microbiol Methods. 2018.

Multi-target plasmid controls for conventional and real-time PCR-based serotyping of Streptococcus pneumoniae. Schembri J[1], Gillis HD[1], Lang ALS[1], Warhuus M[1], Martin I[2], Demczuk W[2], ElSherif M[1], McNeil SA[1], LeBlanc JJ. Schembri J, et al. Plasmid. 2018.

Dr. Fergall Magee

Publications

Ma I, Allard M, Barron J, Boag a, Chakrabarti S, Fischer G, Gaboury L, Gao Z, Kandel R, Magee F, Mengel M, Potter M, Tanguay R, Tetu B, Rizcallah E, Sadek I, Veinot J, Vaska M, Naugler C. Subspecialty Sign-Out: A Scoping Review and Survey of Canadian Academic Centres of Pathology. Submitted to Canadian Journal of Pathology 2018 August

Naugler C, Allard M, Barron J, Boag A, Chakrabarti S, Fischer G, Gaboury L, Gao Z, Kandel R, Magee F, Masson J, Mengel M, Potter M, Rizcallah E, Sadek I, Veinot J. Subspecialty Sign-Out in Anatomical Pathology: A Canadian Chairs of Pathology Position Statement. Submitted to Canadian Journal of Pathology 2018 June

Presentations

Magee JF. Genomic diagnostics. College of Pharmacy and Nutrition, University of Saskatchewan, March 19th 2018

Magee JF. Non-tumor genomics. Choosing Wisely Saskatchewan, May 2018

Magee JF. How to Influence Resource Allocation at an Organizational Level. International Conference on Residency Education (ICRE), October 19th, 2018

Magee JF. Review of Current & Future Advances in Genomic Diagnoses. Canadian Centre for Health & Safety in Agriculture (CCHSA), University of Saskatchewan, February 12th 2019

Magee JF. Laboratory Science in Saskatchewan 2018 - Changing Times. Saskatchewan Society of Medical Laboratory Technologists (SSMLT), September 29th, 2019

Dr. Erick McNair

Grants

CoMRAD Grant 2018-19
Royal University Hospital Foundation Grant 2018-19

Presentations

Oral presentation "Blood conservation During Cardiac Surgery" American Society of Extracorporeal Technology, 57th Annual International Conference, Nashville, TN, March 8-10.

Publications

Bezaire J, Thomson D, **McNair E**. Recombinant factor VIII measurement in a Hemophilia A patient undergoing cardiopulmonary-bypass supported cardiac surgery. J Extra Corpor Technol., 2018, Sept;50:170-222

Pearce C, Islam N, Bryce R, **McNair E**, AGE:RAGE Axis in Coronary Stent Restenosis: a Prospective Study, International Journal of Angiology. Dec;27(4):213-222.

Spurr S. Bally J, **McNair E.** An Emerging Public Health Concern in Adolescents. Endocrinology, Diabetes & Metabolism, Accepted January 20, 2019. Prediabetes: An Emerging Public Health Concern in Adolescents. Endocrinol Diabetes Metab. 2019 Mar 1;2(2):e00060. doi: 10.1002/edm2.60. eCollection 2019 Apr. PMID: 31008368

Dr. Oksana Prokopchuk-Gauk

Publications

Bell C, **Prokopchuk-Gauk O**, Cload B, Stirling A, Davis PJ. Optimum accuracy of massive transfusion protocol activation: the clinician's view. *Cureus*. 2018;10(12): e3688. doi:10.7759/cureus.3688

Leung JE, Panchuk H, and **Prokopchuk-Gauk O**. Saskatoon Urban Hospital Frozen Plasma Utilization and Appropriateness Audit. [2018 American Society of Hematology Annual Conference Abstract] *Blood*. 2018:132:5074; DOI: https://doi.org/10.1182/blood-2018-99-114176

Lin Y, Tilokee E, Chargé S, Alam A, Cserti-Gazdewich C, Lau W, Lee C, Lieberman L, Nixon P, Owens W, Pavenski K, Pendergrast J, Saidenberg E, Shehata N, Skeate R, Li Q, Conrad D, Dudebout J, Hsia CC, Murphy M, **Prokopchuk-Gauk O,** Shah A, Solh Z, Trudeau J, Zeller M, Callum J. Transfusion Camp: a prospective evaluation of a transfusion education program for multispecialty postgraduate trainees. *Transfusion.* 2019; 59: 2141-49.

Prokopchuk-Gauk O, Khan AS, Misskey S, Lyon ME, Lyon AW. Transient hepatitis B immunity passively acquired from transfusion of packed red blood cells [Correspondence]. *Transfusion Med.* 2018; 28: 462-464. DOI:10.1111/tme.12560

Prokopchuk-Gauk O and Morrison D (Co-chairs, Irradiation Working Group). Recommendations for the Irradiation of Blood Components: a NAC and CCNMT Collaborative Initiative. October 17, 2017; revised May 14, 2018. Available from https://www.nacblood.ca/resources/guidelines/irradiated.html

Presentations

Prokopchuk-Gauk O. National Advisory Committee on Blood and Blood Products (NAC) Activities and Initiatives Update. Oral Presentation -- Canadian Society of Transfusion Medicine Conference 2019; Calgary, AB. June 1, 2019.

Leung JE, Panchuk H, **Prokopchuk-Gauk O.** An audit of plasma transfusion appropriateness and adverse reaction rates in Saskatoon tertiary care hospitals. Poster Presentation – Canadian Society of Transfusion Medicine Conference 2019; Calgary, AB. May 31, 2019.

Jalbert R, **Prokopchuk-Gauk O.** Incidence of transfusion associated circulatory overload after red cell transfusion and use of furosemide in a tertiary care center. Poster Presentation – Canadian Society of Transfusion Medicine Conference 2019; Calgary, AB. May 31, 2019.

Prokopchuk-Gauk O, Peters G, Clarke G, **Harding SR**. Recurrent reaction to Rh Immune Globulin administration in a perinatal patient receiving routine anti-D prophylaxis. Poster Presentation – International Society of Blood Transfusion Conference 2018; Toronto, ON. June 5, 2018.

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Dr. Steven Sanche

Publications

Forensic, investigative and diagnostic microbiology: similar technologies but different priorities LD Blondeau, JE Rubin, H Deneer, R Kanthan, S Sanche, C Hamula, Future microbiology, 2019

Polymorphisms of the cytidine deaminase APOBEC3F have different HIV-1 restriction efficiencies N Mohammadzadeh, TB Follack, RP Love, K Stewart, S Sanche, .Virology 527, 21-31, 2019

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Extensive host immune adaptation in a concentrated North American HIV epidemic ZL Brumme, NN Kinloch, S Sanche, A Wong, E Martin, KD Cobarrubias, AIDS (London, England) 32 (14), 1927-1938, 2018

Emergomyces canadensis, a dimorphic fungus causing fatal systemic human disease in North America IS Schwartz, S Sanche, NP Wiederhold, TF Patterson, L Sigler Emerging infectious diseases 24 (4), 758, 2018

Dr. Anurag Saxena

Peer-reviewed papers

Saxena A, Lawrence K, Desanghere L, Smith-Windsor T, White G, Florizone D, McCartland S, Stobart K. Challenges, success factors and pitfalls: implementation of distributed medical education. Medical Education, 2018; 52: 1167-1177.

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Saxena A, Desanghere L, Suryavanshi P. Developmental readiness and leadership development in medicine. BMJ Leader 2018; 2: 71-75.

Saxena A, Davies M. Philippon D. Structure of healthcare dyad leadership: an organization's experience. Leadership in Health Services. 2018; 31(2): 238-253.

Khan A, Bensaleh A, **Saxena A.** Concomitant megaloblastic anemia and myelodysplastic syndrome, J Case Reports Images Pathol 2018, 4: pp (6)

Saxena A. Transformative Learning: Promise, Premise and Challenges. Medical Education.2019; 53: 534-536.

Conference presentations/Abstracts

Card SE, Saxena A. Competence by Design in University of Saskatchewan (U of S) Royal College of Physicians and Surgeons (RCPSC) Programs – Are We Ready? How Do We Know? Medical Education Research Day. College of Medicine, University of Saskatchewan, June 2019.

Saxena A, Desanghere L, Robertson-Frey T, Lawrence K, Hayes P, Thiel J, Mendez I. (2019). Identifying strengths and challenges within surgical programs: An exploration of learning environment and learning culture. Canadian Conference on Medical Education, April 2019.

Desanghere L, **Saxena A**, Rohr B. (2019). Conflict management: Perspectives from a Chief Resident Workshop. Canadian Conference on Medical Education, April 2019.

Desanghere L, **Saxena A**, Robertson-Frey T. (2018). An exploration of learning environment, culture and associated strengths and challenges across residency training programs. International Conference on Resident Education, October, 2018.
Card SE, Robertson-Frey T, Desanghere, L, Rohr B, Jalbert, R, Elliott M, **Saxena A**. (2018). Competence by design: Determining learner needs. International Conference on Resident Education, October, 2018.

Saxena A, Desanghere L, Robertson-Frey T. (2018). Examining intimidation and harassment in medical education: Impact on learning environment and program culture. International Conference on Resident Education, October, 2018.

Workshops / Symposia presented (as co-facilitator/co-presenter)

Saxena A, Lawrence K. Integrating assessment of non-cognitive attributes /abilities in resident selection processes. (session on Oct 19) International Conference on Residency Education, Oct 16-21 2018, Halifax, NS.

Saxena A, Magee F. How to influence resource allocation work at the organizational level. (session on Oct 19) International Conference on Residency Education, Oct 16-21 2018, Halifax, NS.

Saxena A, Kanthan R, Premkumar K. APMEC 2019 CBD Symposium "Competency-based medical education: Assessment models" (session on Jan 12). Asia Pacific Medical Education Conference Jan 9-13, 2019. Singapore.

Saxena A, Lawrence K, Premkumar K, Reiter H. APMEC 2019 Admissions Symposium "Improving medical admissions for the 21st century" (session on Jan 21) Asia Pacific Medical Education Conference Jan 9-13, 2019. Singapore.

Invited Presentations

Saxena A, Invited panel member on "Future of Admissions" at the Inaugural "Admissions Summit." Organizer: Altus Assessments. June 10-11, Globe and Mail Centre, Toronto, ON.

Saxena A, St. Croix R, Burgetz S. Invited Research Forum on "Leader Developmental Readiness" to the Royal College of Physicians and Surgeons of Canada Administrative and Academic Leadership and workforce. May 27, 2019, RCPSC, Ottawa, ON.

Funding

Saxena A, Thiel J, Mendez I, Lawrence K, Desanghere L, Hayes P. Improving Learning culture in surgical programs in Saskatchewan. COMRAD $ 18638. (second year of funding) College of Medicine, University of Saskatchewan.

Dr. Rajendra Sharma

Publications

Sreejit Parameswaran Nair SP, **Sharma RK** (2019) The relevance of cardiac Ffbroblasts in ischemic heart disease. J Mol Biol Ther **1**, 56-64

Sreejit Parameswaran Nair SP, **Sharma RK** (2019) Effect of ischemia and reperfusion on Ca^{2+} and calmodulin-regulated proteins in primary murine cardiac non-myocytes. J Mol Biol Ther **1**, 72-79
Sharma RK, Das U, Kumar S, Dimmock JR (2018) Protein N-myristoyltransferase: 30 Years Journey. J Drug Discov Dev Res **1,** 7-38

Sharma RK (2019) Ca^{+2}/Calmodulin-dependent Cyclic Nucleotide Phosphodiesterase (PDE1): 40 Years Journey. J Mol Biol Ther **1**, 24-44

Das U, **Sharma RK**, Dimmock JR (2018) Enhanced chemosensitivity of tumours to antineoplastic agents. J Drug Discov Dev Res **1,** 39-50

Sharma RK (2019) Protein N-myristoyltransferase: A potential biomarker for colon cancer J Mol Biol Ther **1,** 4-5
Sharma RK, Parameswaran S (2018) Calmodulin-Binding Proteins: Calmodulin-Binding Proteins: A Journey of 40 Years. Cell Calcium **75**, 89-100

Funding

Title - Droplet PCR analysis of human papilloma virus in head and neck cancers
R Murphy, P Spafford, A Sharma, S Parameswaran, J Loberg, **R K Sharma**, M Kostiuk and V Biron
Funding Agency: Department of Surgery, College of Medicine, University of Saskatchewan
Total Funding - $15,000
Funding Competitive? Yes

Title - Generating head and neck cancer cell lines for studying HPV associated HNSCC
N Moolman, P Spafford, A Sharma, R Murphy, R Jaggi, S Parameswaran, J Loberg and **R K Sharma**
Funding Agency: Department of Surgery, College of Medicine, University of Saskatchewan
Total Funding - $15,000
Funding Competitive? Yes

Graduate Students Supervision

Mr. Praveen Kumar Roayapalley, PhD Student (2014-present)
Supervisor – Dr. J. Dimmock & Dr. R.K. Sharma
College of Pharmacy and Nutrition
Thesis Title: "Syntheses of novel candidate tumor – selective anticancer agents".

Ms. Sukanya Pati, MSc Student (2019-present)
Supervisor – Dr. R.K. Sharma & Dr. J. Dimmock
College of Pharmacy and Nutrition
Thesis Title: "Evaluation of potent cytotoxic curcumin analogs as potent methionine aminopeptidase 2 inhibitors for treating colon cancers".

Graduate Theses Supervised

Ms. Kinjal Lakhani, MSc Student (2014-2018)
Supervisor – Dr. J. Dimmock and Dr. R.K. Sharma
College of Pharmacy and Nutrition.
Thesis Title: "Synthesis and bioactivities of novel N1-acylhydrazides".
Degree Awarded in August, 2018

Supervision of Research Staff

Dr. Swagatika Das, Post-doctoral fellow (2017 – present)
Dr. Sreejit Parameswaran Nair, Research Officer (2018-present)

Editorial Board

Editor-in-Chief: Journal of Molecular Biology and Therapeutics, 2018-present
Visit our website: www.innovapublications.com
Rajendra K. Sharma: Meet Our Editor-In-Chief. J. Mol. Biol. Ther., 2018, **1**, 1-2

Dr. Hui Wang

Publication

Wang H, and Herath C. (2019). Signet Ring Cell Mesothelioma; A Diagnostic Challenge. *Pathology - Research and Practice*. 215(7). https://doi.org/10.1016/j.prp.2019.152462

Abstracts and Posters

Wang H, Meiers P, Quenneville L, Wang C. Mullerian Glandular Inclusions in Axillary Lymph Node of Patients with Invasive Breast Carcinoma, a Rare Case Report. *College of American Pathologists Annual Meeting 2018*. October 20-24. Chicago, Illinois, USA (Poster Session 100; Poster Number 147). Available at: *http://www.archivesofpathology.org/doi/full/10.5858/arpa.2018-0293-AB*

Wang H, Benoit J, Al-Nourhji O. Retrospective study of diagnostic concordance of bile duct brushing cytology with histological follow-up. *Canadian Association of Pathologists - Association canadienne des pathologists 2018 Annual Meeting*. July 7-10, Quebec City, Canada

Wang H, Meiers P, Quenneville L, Wang C. Mullerian Glandular Inclusions in Axillary Lymph Node of Patients with Invasive Breast Carcinoma, a Rare Case Report. *Resident research day*, College of Medicine, University of Saskatchewan. June 18, 2018. Saskatoon, Saskatchewan

Markland A, **Wang H**. Podoberezin M, et al. A Curious Case of Respiratory infection. *Canadian Pediatric Society 95th Annual Conference.* May 30-June 2, 2018, Quebec City, Canada

Wang H, Benoit J, Al-Nourhji O. Retrospective Study of Diagnostic Concordance of Bile Duct Brushing Cytology with Histological Follow-up. *Surgery/Pathology/Ophthalmology resident research day*, University of Saskatchewan. May 10, 2018. Saskatoon, Saskatchewan

Dr. Yanwei Xi

Presentations

Xi, Y. Molecular genetic testing in prenatal care. Maternal Fetal Medicine Rounds, Royal University Hospital (Feb 13th, 2019; Saskatoon)

Xi, Y. Bridging research and diagnostics: translating next-generation sequencing for clinical genetic testing. Pathology & Lab Medicine Grand Rounds, Royal University Hospital (Jan 28th, 2019; Saskatoon)

Publication

Lamont, R.E., Xi, Y., Popko, C., Lazier, J., Bernier, F.P., Lauzon, J.L., Innes, A.M., Parboosingh, J.S., Thomas, M.A. Next-generation sequencing using a cardiac gene panel in prenatally diagnosed cardiac anomalies. J Obstet Gynaecol Can. 2018;40(11):1417–1423.

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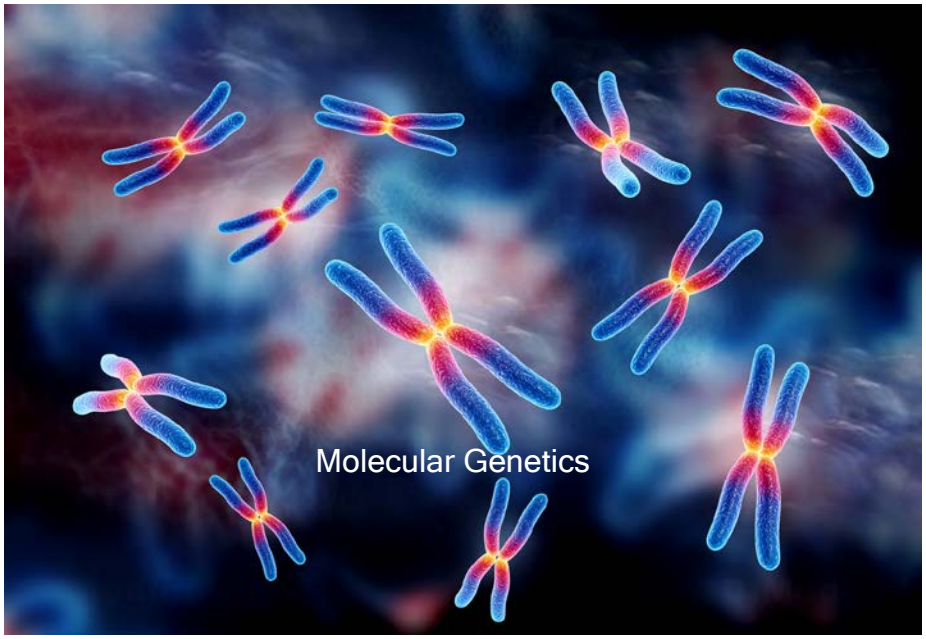
Dr. Viktor Zherebitskiy

Publication

Berlow NE, Svalina MN, Quist MJ, Settelmeyer TP, Zherebitskiy V, Kogiso M, Qi L, Du Y, Hawkins CE, Hulleman E, Li XN, Gultekin SH, Keller C. (2018) "IL-13 receptors as possible therapeutic targets in diffuse intrinsic pontine glioma.", PLoS One, 5,13(4):1-15. [PMID: 29621254]



Provincial Service

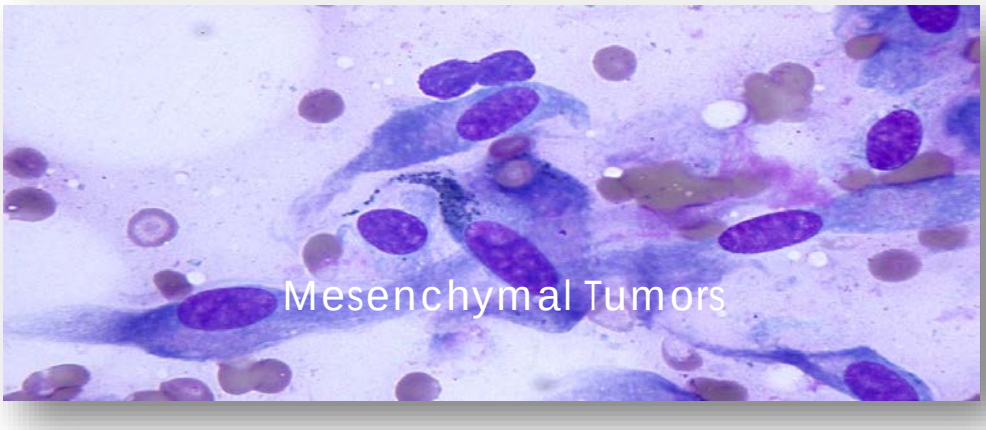
>200 laboratories
25 million tests per year
1400 employees

- MLT
- CXLT
- MLA
- Phlebotomists,
- LIS support staff
- Regulatory affairs
- 60+ Clinicians (MD's and PhD's)

Service

- Multiple geographies
- Many specialties
- Mandate
  - Acute care
  - Public health
  - Academics

Saskatchewan Health Authority



A DAY IN THE LIFE OF A CLXT…

The Rural Combined Lab and X-ray Technologist

We have all had them, as every profession does, encounters that have taught us, scared us, inspired us and shaped us into the team members that we are. In one breath, rural healthcare is limited, by both resources and cases. In the next breath, it is far reaching and encompassing - every department is intertwined - Emergency, the clinic and the wards. It's 'all hands on deck' when the chips are down. We are the third set of hands for the middle of the night code, the recorder in a trauma, and a patient's advocate when they feel they are slipping through the cracks. We work very closely with the physicians and the nurses; learning and taking part in things that an urban tech might never see.

Our patients aren't just an accession number; they are an aunt, a neighbor or a co-worker's grandma and we see them at every stage. Before they become 'just a tube of blood' on the chemistry bench- we were their MOA, their phlebotomist, their ECG tech and we performed their x-ray. On occasion, we are made to feel sub-par; our training consists of the basics of three disciplines- we are experts in none of them but combining knowledge and skills from all three sets us apart from the others, perfectly suited for rural healthcare.

Turtleford Lab and X-ray is the center of a 'hub and spoke' model. St. Walburg, Paradise Hill and Edam labs are all staffed out of Turtleford. The majority of our techs are 'multisite', working three of the four sites, and participating in a 1:6 24/7 call rotation in Turtleford. We are a department of 'full scope' CLXT's. We provide general radiography, ECG and Holter Monitors. Our in-house lab testing consists of chemistry, coagulation, hematology, urinalysis and blood gases. We hold two units of O negative blood that the patient will receive 'unmatched', if warranted.

Cheyanne Conacher, Danielle Fey, Sharon MacNab, Ashley Conacher, Alyssa Roach, Kristi Koop
(Based out of Turtleford but also cover Edam, St. Walburg and Paradise Hill)

Our facility is busy - we serve multiple towns, Thunderchild First Nation and the resort communities surrounding Brightsand and Turtle Lake. Our physician complement consists of four doctors and two Nurse Practitioners. The work/home life balance of a CLXT can be tricky - we take up to five days in a row of call and everyone works the day shift, regardless of how many times we get called in the night. We are proud of the role a CLXT plays in rural healthcare, we are a part of a great team, all working to help our patients navigate the healthcare system.

"…we are proud of the role a CLXT plays in rural healthcare"

SPREAD THE NEWS

A provincial look at improvements underway or completed within the 2018/19 fiscal year. Three questions were asked for each Improvement Initiative to share across our Provincial Program.

Saskatoon Biochemistry Team – In Progress

What are we trying to Accomplish?

- Replacement of SPH, SCH & RUH general Chemistry analyzers
- Replacement of SPH & RUH frontend automation
- Validation of over 110 tests on multiple cells at three sites
- Addition of refrigerated storage unit at SPH

How did you know the change was an Improvement?

APR 2018-SEP 2018: BEFORE

# of days TAT is met 90 % of the expected goal / total # of days		
	Troponin (60 min)	Creatinine (60 min)
RUH	162/183	163/183
SPH	117/183	99/183
SCH	149/183	182/183

We are still working to gather the 'after change data'

What have your Learned?

- Dedicated, committed staff that worked as a team regardless of where the work was required—the multi-site focus has made us a stronger team
- Strive for more communication and flexibility in the process whenever possible
- *"Transitions are stressful but necessary to renew equipment and reduce stress for staff and patients and to improve services in the future."*

- *"In this large project I'm often reminded of words in that children's book about the little steam engine facing a huge mountain: "I think I can, I think I can, I think I can…. I know I can, I know I can, I know I can……."*

Saskatoon LIS Team

What are we trying to Accomplish?

- Specific: Audit 759 Configured Fax Recipients in LIS
- Measurable: Responses to LISFaxAudit@saskhealthauthority.ca, results in DB
- Attainable: Achieved by Linux Scripts
- Relevant: Required by Accreditation and Regulations
- Timely: Within a year

How did you know the change was an Improvement?

- Fax auditing was not done on a regular basis before. (Only done on setup and on change request) This was a **manual** effort.
- Between November 1 and April 3 the **automated** system has sent out ~350 audit requests and received ~270 responses

What have your Learned?

- Not everyone follow directions
- Received "codes" back with notes saying "doctor no longer active", so periodic manual reading of emails still required.
- Not everyone is willing to use email
- Sending out a Memo in prep helped alleviate concerns of "phishing"
- Sending faxes in stages helped us iron out kinks in our process
- We would build the database data structure a little different to help facilitate non-responses.
- Potentially consider using a Website interface rather than email response.

Saskatoon Microbiology – Pre-Analytical Workflow

What are we trying to Accomplish?

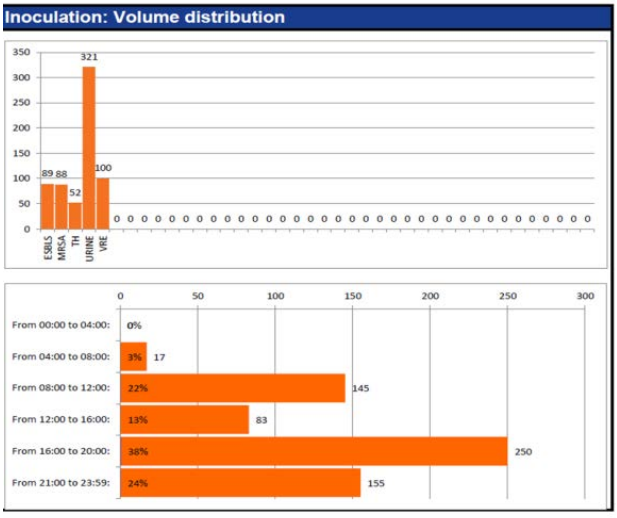
- 5S – Clean up and Organize
- Flow review for understanding and measurement
- Establish efficiencies of automation with Kiestra

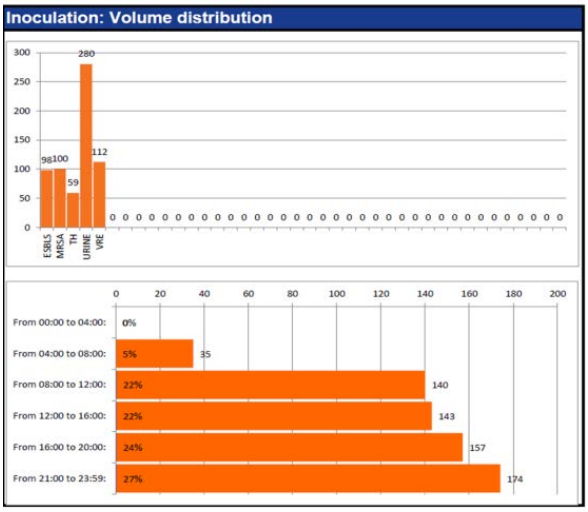
How did you know the change was an Improvement?

- Reduce unnecessary analytical staff within the Front End area which causes interruptions to the Front End staff
- Kiestra running time is levelled out
- Formal roll of Tech support was informally in place
- Future development of SOPs' as workflow improvement put in place.
- Pictures tell a thousand words, if appropriate – new receiving window outside lab containment zone

BEFORE

AFTER





What have your Learned?

- Initiate the changes, then built better improvements from staff as feedback was received
- Keep coming back "Why are we doing this?"
- All staff have a better understanding of workflow so all staff will be able to help out when increasing workload increases.
- Try to understand the resistance from staff when it comes up & work with it.
- Even though the initial changes were made to a Front End area, communication needs to be communicated to all staff.

Transfusion Medicine – Former Sunrise

What are we trying to Accomplish?

- Goal – Decrease RBC transfusions infused greater than four hours from the time of issue from laboratory.

How did you know the change was an Improvement?

BEFORE:

- Tracking system identified **8 transfusions over 4 hours**.
- Audit of transfusion time identified **additional 8 transfusions over the 4 hours**.

AFTER:

- At the March 2019 TM Committee meeting only **1 transfusion over 4 hours** since Oct 2018.

What have your Learned?

- Improvement work:
  - can identify underlying issues
  - takes the whole team
  - is never complete
- We found the improvement to be seamless. Our teams were open to the changes we made and we found working with our multidisciplinary team to be beneficial.

Accreditation – Former Sunrise

What are we trying to Accomplish?

10 on-site assessment: Yorkton, Melville, Canora, Kamsack, Esterhazy, Preeceville, Foam Lake, Ituna, Langenburg and Norquay Laboratories.

Goal – To receive laboratory accreditation through the Laboratory Quality Assurance Program by improving processes identified as non-conformance

- 10 labs: 80 standards non-conformance
  - 20 – no evidence required
  - 24 – 30 day evidence required
  - 36 – 60 day evidence required

How did you know the change was an Improvement?

Progress Indicator Report

FORMER SUNRISE HEALTH REGION LABORATORY ACCREDITATION STANDARDS PROGRESS INDICATOR REPORT

Standard	Canora	Esterhazy	Foam Lake	Ituna	Kamsack	Norquay	Langenburg	Melville	Preeceville	Yorkton
POINT OF CARE										
5.11.8.5								●		●
5.11.8.8	●		●							
5.11.11.1			●							
5.11.11.2	●									
5.11.12.1	●	●						●	●	

All labs received accreditation by Feb 2019 – Yah!

What have your Learned?

- Ongoing communication keeps the team informed and on track.
- Review evidence for compliance acceptability prior to submission.
- Challenges with non-compliance affecting programs outside of laboratory services.
- Celebrate incremental successes (30, 60 day completions)

Meadow Lake Team – Former Prairie North

What are we trying to Accomplish?

- Vitros 350 and Alere PIMA Installation and Validation
- Creation of Hub and Spoke model with Meadow Lake and Goodsoil
- Thermometer Calibration Verification

How did you know the change was an Improvement?

- Our Roche Integra was replaced with a Vitros 350 due to multiple breakdowns and heavy reliance on Roche service – there were some growing pains with the new instrument but less down time is being seen long term
- Alere PIMA POCT CD4 instrument was implemented in Meadow Lake to improve access to testing.
- Goodsoil Hub is not totally functional yet! Current staff shortages limit having this service totally implemented
- We have verified the accuracy of thermometers in 3 labs to date – all labs in the former PNRHA will be complete by the end of 2019

What have your Learned?

- Dry chemistry is NOT equal to wet chemistry!
- Calibration is never step 1 and always buy the bigger freezer
- POCT CD4 testing is improving access for our clients

Competency Program – Former Prairie North

What are we trying to Accomplish?

Our Goal was to implement a Competency Assessment Program that:

- Complied with Accreditation Standards
- Was relevant to the work being done in our lab's
- Documentation of participation could be tracked manually
- Program could be developed and implemented quickly
- Tools were available for the employee to do the majority of completion of their own
- Review and education could be worked into the program - especially for low volume tests

How did you know the change was an Improvement?
Our first opportunity for measurement of our success will be the end of 2019. We know we will not have full participation or completion but it is a place for us to start from and work toward improvement and full participation.

What have your Learned?

- The Competency Assessment Program was not welcomed with open arms - groans and eye rolling seemed to be the most common response in addition to feelings of insult regarding direct observations of their work.
- One of the biggest hurdles at this point is trying to help employees see this as a learning and improvement tool! We can always improve!!!
- If you are developing a program like this – use your LEAN tools and steal shamelessly! Saskatoon was a great resource for us! There is a lot of great information out there when you start looking.

Regina – multiple improvements – Great summaries

Show me the money! - RRPL's in-scope employees switched to the 3SHealth payroll system. This transition went very smoothly thanks to 3SHealth and SHA Regina's Payroll and Benefits group.

Hey, whose genes are these? - RRPL created a Genetic Resource Centre that allows non-genetics physicians to access more genetic testing through a referral process. Some of the testing is also offered in-house.

Bug swap! - Routine Bacteriology testing was moved from RRPL to RGH at the same time parasitology, dermatophyte cultures and H. pylori stool antigen testing was moved from RGH to RRPL.

Why are inflammation sites always so red? You'd blush too if you were constantly surrounded by Complements! - RRPL's Toxicology section began testing for Infliximab (a drug currently approved for several inflammatory conditions) and Infliximab antibodies. This has greatly improved the turn-around time and is a significant cost savings.

All those in favor of safety glasses say "EYE"! - Quality and Safety at RRPL is making continuous improvements to the safety program as it aligns the safety culture.

We made a splash! - Water testing by RRPL set new annual record highs for both total samples analyzed and revenue generated. Water analysis has also been consolidated through the transfer of hemodialysis water testing in the south of the province.

Done in a flash! - Coagulation upgraded Anticardiolipin antibody testing from the manual ELISA methodology to the automated Bioflash methodology. This helps improve turnaround times.

You don't always need two to tango! - Transfusion started validating antibody panels on their Tango analyzers which upgrades from the manual tilt tube method to an automated method. This improves turnaround times and standardizes results.

It's all in the delivery, badum ching! - A Saturday courier service was added to our rural area allowing for testing to be delivered from five acute locations.

Oh, positive!- All required CLXT's have either completed or are registered for the blood management course.

Work/Life Balance – When I asked **Dr. Mali** what improvements were made in Chemistry in the last year, her response was Josh. The addition of **Dr. Buse** has made a big impact on her work/life balance. We all need a little of that!

My Lab Story - A story book was created to help children with Autism Spectrum Disorder prepare to come to the hospital for a blood draw.

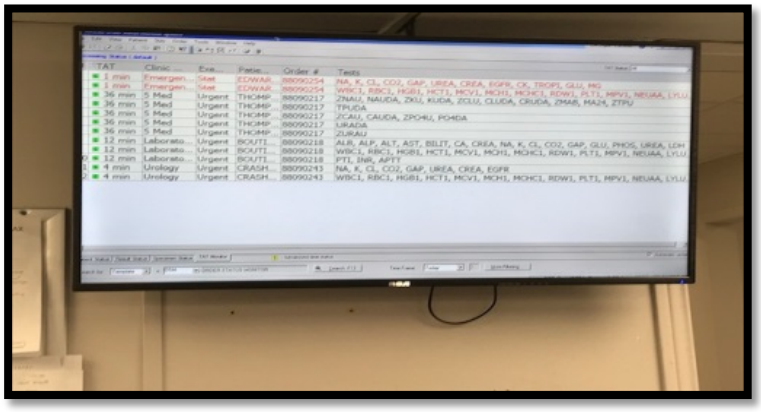
Prince Albert

What are we trying to Accomplish?

- Improved Turnaround Times
- 5S – Clean up and Organize the workplace
- Improved Phlebotomy workflow – AM collection process
-

How did you know the change was an Improvement?

Visualized workflow on TV monitor for pending logs by priority



BEFORE AFTER


BEFORE AFTER





5 Areas Organized and Cleaned up = 5S

Phlebotomy workflow – AM collections

Pre Swarm - *1hour 21 minutes* for MLA to collect all blood draws on level 4
Post Swarm - 1 hour 32 minutes for MLA to collect all blood draws on all listed work (not just Level 4, inclusive of Level, 5,6,Peds/Obs)

What have your Learned?

- Putting our minds together and working as a team we can accomplish great things without having to spend any money. If we keep procrastinating it will never get done let's just get up and do it.
- We realized the importance in having the LILT training and due to this our Tech II's and LIS are currently in LILT training and we are looking at incorporating some of our front line staff for training.
- Engagement in the Lean philosophies is greatly increased when getting staff feedback.
- Do not take for granted that all departments know what is happening within the other departments, there is a lot going on in each department

Ile a la Crosse

The physicians in Ile a la Crosse were unhappy with the TAT for quantitative HCG's.
BEFORE: Quantitative HCG's sent to Regina General Hospital (RGH) with a TAT of 4 - 6 days
AFTER: Changed referral to Saskatoon destination. Improved TAT by 49% = Average of 49hrs

La Loche

Improve access to CD4 results – remote rural location

BEFORE: Unable to collect and ship CD4 counts due to time constraints on the sample and our mode of transportation. Our Infectious disease specialist was pushing for the CD4 counts to be done on-site as the counts are used in monitoring his patients' treatment.

Patients had to be transported to the collection center in Meadow Lake. Getting a group scheduled to go for testing was expensive and inconvenient as Meadow Lake is 4 hours away by taxi service.

AFTER: With the arrival of CD4 counts in La Loche, the specialist can provide better care for his clients. On April 17th, MLT Supervisor and 2 Nurse Practitioners trained and implemented PIMA Point of Care CD4 counts at La Loche Health Centre.

North Battleford Hospital – Main Lab Improvements

What are we trying to Accomplish?

- New Master Rotation implementing May 2019
- New Automated Urine microscopic using Roche u701: Go Live November 2018
- New automated Transfusion Medicine testing using Ortho Vision; Project start December 2018 – Target end date June 1, 2019
- Accreditation 2018; to complete a few tasks to obtain license.
- BioRad QC Program- Chemistry done at BUH Lab, Lloydminster, Meadow Lake, Turtleford, Maidstone to be completed by May 31, 2019. Project will continue with the addition of BioRad Program for Urinalysis, Hematology
- 5S initiatives to clean up and organize the workplace x 2 (Chemistry, Micobiology, AP)
- Pathology = GOAL: Provide a safe workplace for staff – address OH&S contravention

How did you know the change was an Improvement?

- Before the consolidation one MLT or CLXT was dedicated to testing urines and performing manual microscopic testing.
- Added TAT due to manual process in urines but now that we are automated there a fewer manual microscopic urines therefore reduced times, costs, and walk away functionality.
- Microbiology staff are more engaged, less stressed to get all the samples processed at the end of the day.
- Validation of the u6500 wasn't as quick as we anticipated; validation took longer than expected (>1 year) due to LIS interfacing issues and resources for the validation.
- PDSA of workflow; staff engaged by providing ideas/concerns for the new workflow.
- Not having the night shift in place before consolidating the two departments has caused problems as day staff having to do maintenance, calibrations and QC for both Chemistry analyzers, Blood Gas analyzers and u6500. Future state these duties will be performed by night staff to offset workload in the day.

- Current space constraints means the staff have to take more steps between the two departments. Plans for a minor lab renovations to move the u6500 next to Chemistry.
- Overall most staff are glad the night shift will be a reality on May 5.

Contravention Regulation: 312 & 313			
Plan: Eye Flushing Equipment & Emergency Showers	**Responsible Area(s)**	**Target Date**	**Completed**
Contact Saskatoon, Regina, Prince Albert and Five Hills for emergency shower requirements including drain requirements	Lab Manager	Oct 4 2018	October 4 2018
Contact City of North Battleford, Environmental Manager regarding municipal bylaws for drainage requirements into the sewage system	Trades	Oct 10 2018	October 11 2018
Request quotes for safety shower/eyewash combo units	Lab Manager	Oct 4 2018	October 11 2018
Contact Jody Hettinger(trades) for renovation cost	Lab Manager	Oct 11, 2018	October 11 2018
Discuss specs and renovation plans with trades and Infection Control	Lab Manager	Oct 16 2018	October 22, 2018
Submit budget proposal to Executive Directors of Laboratory and Facilities/Infrastructure	Lab Manager	Oct 18 2018	November 5, 2018
Order safety shower/eyewash combination	Lab Manager	Oct 24 2018	Dec 11, 2018
Installation, plumbing and renovations to begin	Trades, Infection control	Dec 1 2018	February 2019

What have your Learned?

- Validation of the u6500 wasn't as quick as we anticipated; validation took longer than expected (>1 year) due to LIS interfacing issues and resources for the validation.
- PDSA of workflow; staff engaged by providing ideas/concerns for the new workflow.
- Not having the night shift in place before consolidating the two departments has caused problems as day staff having to do maintenance, calibrations and QC for both Chemistry analyzers, Blood Gas analyzers and u6500. Future state these duties will be performed by night staff to offset workload in the day.
- Current space constraints mean the staff have to take more steps between the two departments. Plans for a minor lab renovation to move the u6500 next to Chemistry.
- Overall most staff are glad the night shift will be a reality on May 5.
- To ensure a job is done right you need to ensure content experts, resources, assessments and planning with the team are communicated so everyone involved know where we are at and where we are going.
- Establish a project plan but expect some bumps in the road.

North Battleford Phlebotomy (Lab Service Center and New Battleford Hospital)

What are we trying to Accomplish?

We wanted to provide better patient care:

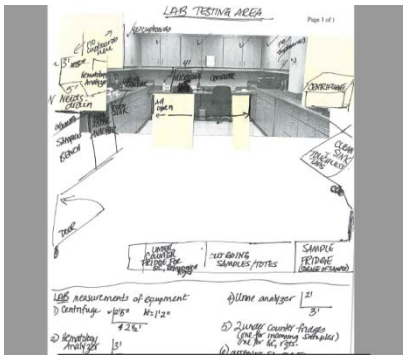
- Provide on-site collection of IGRA samples to prevent patient travel to Saskatoon.
- Work with BTCHIS #6 to provide better prenatal patient care.
- New work area design for New Battleford Hospital.

How did you know the change was an Improvement?

- Patient no longer has to go to Saskatoon for IGRA collections which has saved time for our patients and their families.
- Weekly scheduled IGRA collections provides a standard of care that physicians, staff and referral centers can expect service.
- Working with BTR6HC nurses allows for the nurses to provide care to the clients at their site, no travel required to North Battleford.

What have your Learned?

- Making small changes to delivery of services provides better patient care which is why we are all here.
- Always measure twice and then check that those doing the work measure twice; some re-work because of this.
- Rewarding to have been part of this project for our province.



Moose Jaw

What are we trying to Accomplish?

Our team's most recent improvement work was to improve the ergonomics of the workplace due to safety concerns:

- Weight and frequency of lifting cubes of diluent in hematology
- Workstations – phlebotomy, histology, accessioning, prolonged standing

Moose Jaw Staff

Gravelbourg Staff

LABORATORY & PATHOLOGY SERVICES – NORTH

Saskatchewan's North covers a large geographical area with many unique challenges and diverse communities. Northern Laboratory and Pathology Services has changed drastically over the last year, with the amalgamation of 5 former health regions into 2 Integrated Service areas – the North-East (Kelsey Trail, PA Parkland, Mamaweetan Churchill River) and the North-West (Prairie North, Keewatin Yatthe and some of Heartland).

Laboratory Services are provided at 3 regional hospitals - Prince Albert, North Battleford and Lloydminster, 4 district Hospitals, 10 community hospitals, 21 health centers and numerous collection centers, generating 4.9 million tests results annually.

The laboratories offer Biochemistry, Hematology, Point of Care and Transfusion Medicine testing; Microbiology in North Battleford, Tisdale and Prince Albert and Pathology services provided in North Battleford and Prince Albert.

Dr. Bruce Murray is located in North Battleford and provides services to the Battleford's and surrounding areas. Dr. Murray is also the Area Lead for Pathology Services in the North East and North West. Dr. Rathi Sabaratnam, Pathologist and Area Lead for Pathology services, provides services to Prince Albert and area.

There are currently 5 Laboratory Managers and 1 Regulatory Affairs Manager who oversee 199 FTEs including MLTs, Laboratory Information System staff, CLXTs, MLAs, phlebotomists and clerical staff in numerous facilities.

The laboratories in the North have seen many improvements since the transition to a single health authority. The collaboration and communication within the provincial program across the province has improved the services remarkably! Attached are just a few of the improvements the North has seen over the last year…..many more projects and improvements are planned to improve patient care to our Northern communities in the upcoming year!

3 Regional Hospitals:

Prince Albert Victoria, Battlefords Union & Lloydminster

LABORATORY INFORMATION SYSTEM (LIS)

The implementation of the LIS in Ile-a-la-Crosse and La Loche will provide staff, clinicians and patients with improved care and allow electronic access to laboratory results. Implementation is set for AUG 2019.

(Back Row) LIS Techs: Karen Elliot-Rumpf, Jansia Cooling
(Front Row) Ile-a-la-Crosse Staff: Betsy Ballantyne (Centre)
Cindy Riegert (Left), Erica Desjarlais (Right)

5-PART DIFFERENTIAL INTRODUCED INTO RURAL LABS

Transitioned from a 3-part differential to a 5-part differential in rural laboratories to improve patient care.

Implemented JUL 2019 in Maidstone and Turtleford.

Big River, Stony Rapids and Shellbrook implementation planned for Fall 2019.

Courtney Dejong, CLXT Maidstone Lab with new analyzer

TRANSFUSION AUTOMATION: VICTORIA HOSPITAL AND BATTLEFORDS UNION HOSPITAL

Edith Hein at CSTM presenting on Ortho Vision Analyzer automation for Prince Albert

Prince Albert Laboratory has fully implemented automated Transfusion Medicine. North Battleford implementation is planned for Fall 2019.

Advantages of Automation:

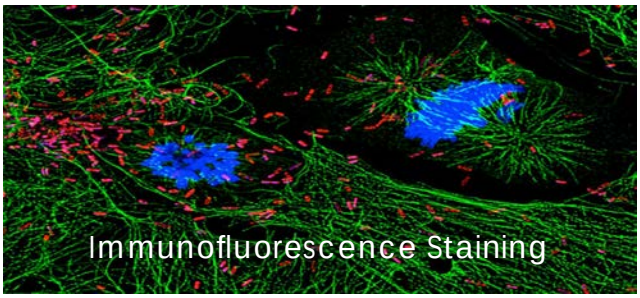
- Continuous flow
- Reduced chance of error due to interruptions
- Average hands-on time of T & S has been reduced by 15 minutes; turnaround time is now 30-35 minutes
- Identical instruments used by reference laboratory and, with network capability to be established, further improvements to transfusion safety in our smaller hospitals

La RONGE

Repatriation of Testing to Prince Albert Laboratory resulting in improved turnaround times for their local patients and families.

Including:

- Routine Microbiology testing
- Beta HCG's
- Redistribution of RBC's



Immunofluorescence Staining

MELFORT & AREA

Tisdale Lab Staff L to R

Marlys Mooney, RaeAnn Erst, Matthew Osterud, MaryAnne Foster, Ashley Jackson

Successful Accreditation Spring 2019

10 laboratories in the area received accreditation certificates.

SASKATCHEWAN HOSPITAL LABORATORY

This new, state of the art, hospital in North Battleford opened its doors in NOV 2018. It includes a Medical Clinic with Laboratory and Diagnostic Imaging Services to provide services closer to the patient and reduce the need to transport patients to another facility.

Dr. Omar Shokeir, Janisa Cooling, Brandi Keller, Pamela Nyholt

REGINA GENERAL & PASQUA HOSPITALS – HIGHLIGHTS

Improvements to Laboratory Testing Turn-Around Times

- The coagulation department has upgraded Anticardiolipin antibody testing from the manual ELISA methodology to the automated Bioflash methodology.
- Transfusion Medicine has started validating antibody panels on their Tango analyzers, which upgrades their current manual tilt tube method to a faster automated method.
- A Saturday courier service was added to include surrounding rural areas that allows for testing to be delivered from five acute locations: Indian Head, Moosomin, Broadview, Wolseley, and All Nations.

What's New at RGH and Pasqua Labs

- All required CLXT's have either completed or are registered for the blood management course
- A story book, "My Lab Story", was created to help children with Autism Spectrum Disorder prepare to come to the hospital for a blood draw.

Allison Ekdahl-Johnston, Angela McTaggart & Brandi Kohl with their book "My Lab Story".

- RGH and Pasqua Hospital received CAP accreditation renewal in December 2018.

The Outpatient Collection Centre received a much needed facelift to give the phlebotomy staff and patients a little more space to work in and to also ensure patient information is kept private.

- Due to increased student enrollment of SaskPolyTech MLT program, an alternate training space at Pasqua Hospital was created.

MLT Training Room at Pasqua Hospital

- Thanks to our SoftTech Quality Management System RGH and Pasqua labs are approximately 80% paperless.
- New deionized and reverse osmosis (DI/RO) water treatment system was installed at both the Pasqua and Regina General laboratories by Canadian Water Technologies Ltd.
- Milan system in Cytology was built into the SoftPath LIS. This uniform reporting system for salivary gland cytopathology improves correlation between cytologic interpretation and surgical outcomes impacting patient care.
- ePath reporter has been implemented by eHealth to direct patient reports with a Cancer diagnosis to the Cancer Agency, ensuring patients referred to the Cancer Agency have all their pathology reports available to help in assessing care. This improvement assists pathologists provide the appropriate patient reports to the CA.
- Coming up: RRPL reference lab interface is scheduled to go live September 2019. This improvement will decrease duplication of accessioning workload between the RRPL and RGH/ Pasqua Accessioning areas.

Staffing Changes

- The Saskatchewan Health Authority was excited to welcome Dr. Estee Benade to the Department of Laboratory Medicine as a Hematopathologist in the Regina Area. Dr. Benade obtained FC Path (Haem) from the College of Medicine South Africa October 2015 and graduated with MMed (Haematology) from the University of Witwatersrand in July 2016. Prior to joining the SHA, Dr. Benade had been working as a hematology consultant in the Department of Molecular Medicine and Haematology and National Health Laboratory Service in South Africa.

- Regina Biochemistry division welcomed Clinical Biochemist Dr. Josh Buse in August 2018. Josh joins us from the Calgary Laboratory Services after completing his Fellowship Program at the University of Calgary.

- As the Saskatchewan Health Authority (SHA) continues to advance their organizational design and recruitment several administration changes have occurred.
  - Keri Crawford has taken over for the now retired Laurie Beitel as Director of Pathology and Lab Services for Regina.
  - Alexis Hicock has replaced the retired Lorna Dawson as Manager of Microbiology for Regina.
  - Manager of Chemistry Chelsea Wilker has left to explore other opportunities and Michele Etter has replaced her.
  - Sheri McCorriston joins the management team as the Manager of Hematology & Transfusions.

ROY ROMANOW PROVINCIAL LABORATORY

Provincial Public Health Laboratory Network (PPHLN)

Microbiologist technologist Tracy Bjorgan working in the Containment Level 3

Public Health Function

In January 2017, the Saskatchewan Advisory Panel on Health System Structure Report recommended that the Saskatchewan Disease Control Laboratory be transferred from the Ministry of Health to the Saskatchewan Health Authority (SHA). After a year of planning and hard work on the part of the RRPL and SHA management, this transfer was completed effective April 1, 2018.
This transition will allow for an integrated provincial laboratory system in the province designed to improve patient care. The Saskatchewan Health Authority is now responsible for the delivery of public health laboratory services within the province. RRPL, under the dyad leadership of Clinical Lead of Public Health, Dr. Jessica Minion, and Director of Pathology and Lab – Regina, Keri Crawford, has been mandated to continue to deliver the services currently provided to government, municipalities and other stakeholders while strengthening and enhancing services to patients and the public.

Provincial Public Health Laboratory Network

We are proud to announce the formation of the Provincial Public Health Laboratory Network (PPHLN) of Saskatchewan. This network aims to bring together experts in laboratory medicine with stakeholders in public health, clinical medicine, the Ministries of Health, Agriculture, and the Environment to ensure the delivery of high quality, standardized, provincial public health laboratory services and surveillance for the population of Saskatchewan.

This PPHLN will be proudly based at the Roy Romanow Provincial Laboratory however public health testing occurs throughout the province and is delivered in an integrated manner by staff of the SHA. Specialists in all areas of laboratory medicine from across the province will be invited to join forces to build collaborations, engage with our partners in public health, and strengthen the coordination and delivery of public health laboratory activities.

Additionally, we hope that this network will help researchers in Saskatchewan identify and connect with laboratory medicine specialists who share their interests and passions for public health-related issues. Research is an important function of public health laboratory medicine, and as we build this network we will be reaching out to our academic colleagues to explore opportunities to work together and foster strong collaborations.

Plaque Unveiling

In November 2017, the Saskatchewan Disease Control Laboratory was renamed the Roy Romanow Provincial Laboratory. On 06 MAY 2019, the lab was honored to have Chancellor Roy Romanow visit the building that bears his name to unveil a plaque and new signage. Chancellor Romanow's impact on healthcare was significant as he played a key role in the federal-provincial negotiations that resulted in the Constitution Act 1982. He also led the reorganization of Saskatchewan's court system, the creation of the Saskatchewan Human Rights Commission, and the introduction of a modern Legal Aid system.

Chancellor Roy Romanow with RRPL Clinical Scientists:
L to R Dr. Amanda Lang, Dr. Jeff Eichhorst, Roy Romanow, Dr. Nick Antonishyn, Dr. Mohey Alawa, Dr. Phil Bailey

CORE FUNCTIONS OF RRPL

Disease Prevention, Control & Public Health Surveillance

- Provide accurate analytical results in a timely manner for the assessment and surveillance of infectious, communicable, genetic and chronic diseases
- Serve as a centre of expertise for the detection and identification of biologic agents of importance in human disease
- Provide specialized tests for low-incidence, high risk diseases such as tuberculosis, anthrax, tularemia, rabies, botulism and plague

Reference & Specialized Testing

Environmental Health & Protection

Integrated Data Management

Food Safety

Laboratory Improvement & Regulation

- Provide analytical support of federal, provincial and local regulations, standards and guidelines
- Lead role in coordination of environmental laboratory testing in province

Public Health Related Research

Partnerships & Communication

- Participate in provincial strategic policy planning and development meetings
- Maintain strong communications with provincial, health district and city health officials, epidemiologists, STD and TB clinics, environmental programs
- Support regional laboratories in resolving microbiology issues

Emergency Preparedness

- Provide lab support as part of provincial and national disaster preparedness plans

Training & Education

- Provide support to regional laboratory technologists in rural Saskatchewan
- Participate in training of laboratory scientists at U of R
- Improve scientific and technical skills of provincial laboratory employees

Policy Development

- Participate in development of standards for all health-related laboratories

What's New at RRPL

RRPL, led by Dr. Nick Antonishyn, created a Genetic Resource Centre (GRC) that allows non-genetics physicians to access more genetic testing through a referral process.

> The Saskatchewan Genetic Resource Centre (GRC) has been created to manage genetic test orders for labs outside of Saskatchewan and provide support and education to health care providers who are ordering these tests to care for their patients. One of the main goals of the GRC is to improve patient outcomes by ensuring that the most appropriate genetic test is ordered for each patient's unique situation. Genetic technology is fast-changing and new and improved tests are always becoming available. The GRC will be able to provide access to new tests that may offer higher value and/or improved clinical sensitivity, which will improve the likelihood of finding a molecular diagnosis in your patient. By centralizing the genetic testing send-out process, the GRC will improve the stewardship of healthcare dollars used for send-out genetic tests. The GRC will also provide equitable access of genetic testing to all patients in Saskatchewan, regardless of their location or provider.

RRPL and Regina General Hospital (RGH) Microbiology Service have collectively worked to minimize the duplication of testing performed at the two microbiology laboratories within the City of Regina.

> On November 5, 2018, routine microbiology culture and sensitivity testing on diagnostic clinical specimens were consolidated at RGH. This includes urine, throat/wound swabs, biopsies, sterile fluids, genital, respiratory and stool cultures. Dermatophyte microscopy and culture was consolidated at RRPL. Parasitology testing and H. pylori Stool Antigen testing is also being completed at RRPL.

RRPL's Toxicology Division began testing for infliximab and infliximab antibodies. This has greatly improved laboratory turnaround time and is a significant cost savings.

> Water quality testing at RRPL set new annual record high for both total samples analyzed (53,649) and revenue generated ($1.4M) for the sixth consecutive year. Water analysis has also been consolidated through the transfer of hemodialysis water testing in the south of the province.

Provincial Strategic Planning Session – 28 NOV 2019, Regina SK