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Message from THE CHAIR/CHIEF

We are proud of our achievements this past year and enter the new year with a high degree of enthusiasm for continued excellence. Our achievements were only possible through the exemplary engagement of all departmental members: faculty, staff and trainees.

2018 was a year of firsts for our Department:
• We completed an integrated strategic planning process that aligns our priorities across hospital and university operations. This would not have been possible without your unprecedented engagement.
• We completed the Laboratory Medicine Transformation Project. Our acquisition and implementation of state-of-the-art instrumentation will allow us to provide improved diagnostic testing to internal and external community partners.
• We made significant progress regional with initiatives.
• We launched a new program in One Health and welcomed Dr. Francisco Olea-Papelka as the Beryl Ivey Chair of One Health.

Beyond our many significant firsts, we continued to demonstrate excellence in teaching, research funding and publications.

In 2019, we will begin the implementation of our strategic priorities and actively live our plan. We will also complete the Pathology Transformation and Microbiology Transformation projects, which are currently well underway.

Our collective achievements are only possible because of your participation. I feel honored to be a member of Pathology and Laboratory Medicine and thankful to everybody for their contributions and commitment. I am sure we will continue improving patient care, along with strong contributions to knowledge creation, education and dissemination.

Best wishes,

Dr. Subrata Chakrabarti
Chair/Chief
MBBS, PhD, FRCP(c)

Departmental MISSION, VISION, VALUES

We are an integrated and collaborative team of faculty, staff and learners achieving excellence in knowledge sharing, knowledge creation and patient care.

MISSION
We are committed to serve our:
PATIENTS, by providing efficient, comprehensive and high quality diagnostic services for optimal patient outcome and health.

STUDENTS, by providing the best student experience through outstanding educational programs for undergraduate, graduate and postgraduate students, and other health care professionals within a clinical and research intensive environment. We integrate continuing medical education programs into the departmental activities.

SCIENTIFIC RESEARCH COMMUNITY AND HEALTH CARE PARTNERS, by sharing expertise, fostering interdisciplinary collaboration, and providing exemplary educational and scientific resources. We are a strong clinical and basic science department and our research endeavors include basic science, clinical and translational research.

We provide research leadership by identifying our strong research strengths and enhancing research productivity with selective allocation of resources. We guide and collaborate with our regional partners to improve the diagnostic pathology and laboratory medicine services throughout Southwestern Ontario.

SOCIETY, by actively applying the art and science of pathology and laboratory medicine in educating the community in matters of health and disease.

VISION
To be the cornerstone of the patient journey, uniting our teams in the pursuit of transformational knowledge, quality improvement and healthcare excellence.

VALUES
TEAM WORK
We believe in a team-based problem identification and problem solving methodology. We believe in interdisciplinary networking.

INNOVATION
We are flexible and adaptable in order to meet the changing needs of society. We strongly believe in continuous quality improvement to enhance clinical performance outcomes.

LEADERSHIP
We strongly encourage members to take leadership roles in education, research and management. We support the leaders who guide our mission.
About

PATHOLOGY AND LABORATORY MEDICINE

Pathology and Laboratory Medicine is uniquely placed as a bridge between the basic science and clinical medicine disciplines.

Translational Department

The Department is unique and complex, comprised of a basic science research department located at the Schulich School of Medicine & Dentistry, Western University and a large clinical department located city-wide within the London hospitals. This structure allows us to be an effective conduit and facilitator of multidisciplinary and translational research, and cross-disciplinary teaching initiatives.

A snapshot of our department, at January 2019

Founded: 1945
Chair/Chief: Dr. Subrata Chakrabarti
2018-19 Total Grant Funding: $7,143,854
Publications: 119

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The Department at a Glance at January 2019
Departmental HIGHLIGHTS

WELCOME NEW FACULTY

December 2017 – Michael Knauer, PhD, FCACB, Clinical Biochemist, Assistant Professor
June 2018 – Michael Payne, PhD, Medical Microbiologist, Assistant Professor
August 2018 – Ana Cabrera, PhD, FCCM, Clinical Microbiologist, Assistant Professor

September 2018 – Dr. Lienna Zhao, MD, PhD, FRCP(C), Pathologist, Assistant Professor
January 2019 – Dr. Francisco Olea-Papelka, DVM, PhD, Associate Professor, Beryl Ivey Chair in One Health

January 2019 – Dr. Rebekah Jacques, MD, FRCP(C) (AP & FP), Assistant Professor

CONGRATULATIONS TO OUR LONG SERVICE AWARD RECIPIENTS

10 Years
Dr. Nancy Chan - Pathology Program
Dr. Manil Gabriel - Pathology Program
Dr. Jose Gomez - Pathology Program

20 Years
Dr. Edward Tweedie - Pathology Program

30 Years
Dr. Carolyn McLean - Pathology Program

35 Years
Dr. Tony Rupar - Pathology Program


DECEMBER 2017
Dr. Jose Gomez-Lemus, Dr. M.E. Kirk Teaching Award recipient

MAY 2018
Dr. Bret Wehrli, Schulich Excellence in Education Award for Postgraduate Education recipient

JUNE 2018
Dr. Subrata Chakrabarti is renewed as Chair/Chief of Pathology and Laboratory Medicine

SEPTEMBER 2018
The Duennwald lab participated in the Walk for ALS in Springbank Garden Park on September 22nd

DECEMBER 2018
Dr. Nikhil Sangle, Dr. M.E. Kirk Teaching Award recipient

JANUARY 2019
Dr. Francisco Olea-Papelka, DVM, PhD, Associate Professor, Beryl Ivey Chair in One Health
AWARDS AND HONOURS

December 2017 – Dr. Jose Gomez-Lemus, Dr. M.E. Kirk Teaching Award recipient

May 2018 – Dr. Bret Wehrli, Schulich Excellence in Education Award for Postgraduate Education recipient

May and June 2018 – Dr. Bertha Garcia, Dean’s Award of Excellence (Lifetime Achievement) recipient

June 2018 – Dr. Bertha Garcia, Leadership in Education Award recipient from the Canadian Association of Pathologists

November 2018 – Dr. Vipin Bhayana, 2018 Lifetime Achievement Award recipient from the Ontario Society of Clinical Chemists

December 2018 – Dr. Nikhil Sangle, Dr. M.E. Kirk Teaching Award recipient

May 2018 – Dr. Bret Wehrli, Schulich Excellence in Education Award for Postgraduate Education recipient

June 2018 – Dr. Bertha Garcia, Leadership in Education Award recipient from the Canadian Association of Pathologists

November 2018 – Dr. Vipin Bhayana, 2018 Lifetime Achievement Award recipient from the Ontario Society of Clinical Chemists

December 2018 – Dr. Nikhil Sangle, Dr. M.E. Kirk Teaching Award recipient

RETIREMENTS

May 2018 – Dr. Michael John, after 23 years of service

June 2018 – Ms. Mair Hughes, after 20 years of service

August 2018 – Ms. Laurie Floyd retires after 40 years of service.

September 2018 – Dr. Carolyn McLean retires after 31 years of service.

December 2018 – Dr. Alan Tuck, after 22 years of service

COMMITMENT TO THE COMMUNITY

September 2018 – The Duennwald and Shaw labs joined forces to support WALK-IT for Parkinson’s at Springbank Garden Park.

September 2018 – In addition to helping organize the event, the Duennwald lab participated in the Walk for ALS in Springbank Garden Park.

December 2018 – Food Drive Challenge – Another year of success! Our department was once again the winner of the Food Drive Challenge. This year we were able to donate more than 3,000 pounds of food to support the London Food Bank. Our Department accounted for more than 75 percent of the total donation made by LHSC this year.

December 2018 – This was the sixth year that our Department has volunteered to prepare, cook and serve meals for families staying at the Ronald McDonald House. Our annual Toy Drive provided more than 100 gifts to the Christmas Room for children staying at the Ronald McDonald House.
Departmental LEADERSHIP

Dr. Subrata Chakrabarti
Chair/Chief

Appointed Chair/Chief in 2011, he is respectively accountable to Western University and the London Health Sciences Centre and St. Joseph’s Health Care London.

Dr. David Driman
Director of Education

Appointed Director of Education since 2011 and oversees the educational activities in undergraduate, graduate and postgraduate education.

Dr. Zia Khan, PhD
Director of Research

Appointed Director of Research in 2011 and develops research programs and facilities, and supports the recruitment and selection of new researchers.

Dr. Ian Chin-Yee
Program Head Laboratory Medicine

Appointed Program Head, Laboratory Medicine in 2016 and oversees activities of Immunology & Biochemistry, Transplant Immunology, London Health Sciences Centre Pulmonary Function and Hematology.

Dr. Meg McLachlin
Program Head Pathology

Appointed Program Head of Pathology in 2011. Dr. McLachlin oversees activities on Surgical Pathology, Cytology, Autopsy Services and Molecular Pathology.

Academic ORGANIZATION

UNDERGRADUATE EDUCATION

Undergraduate Bachelor of Medical Sciences
Lisa Cameron
Undergraduate Chair

Undergraduate Medicine
Ted Tweedie
Medicine 1 & 2 (Interest Group)
Mariamma Joseph
Medicine 3 (Pathology Case Conference)

UNDERGRADUATE DENTISTRY

Mark Darling
Coordinator

GRADUATE EDUCATION

Research Based Graduate Programs
Zia Khan
Graduate Chair

Masters of Clinical Sciences PA Program
Nancy Chan
Program Director
Elena Tugaleva
Medical Director

POSTGRADUATE EDUCATION

Anatomical Pathology Residency Program
Aaron Haig
Program Director

Neuropathology Residency Program
Rob Hammond
Program Director

ADVANCED TRAINING

Surgical Pathology Fellowship Program
David Driman
Program Director

Area of Focused Competence Diploma Program in Cytopathology
Michele Weir
Program Director

CONTINUING PROFESSIONAL DEVELOPMENT

Continuing Professional Development
Cady Zeman-Pocrnich
Program Director

Novel Education Resource Development
Michele Weir
Coordinator

ADMINISTRATIVE SUPPORT

Rachel Halaney
Manager, Administration & Finance

Kayla Anderson
Finance Assistant

Cheryl Campbell
Education Coordinator, Undergraduate & Postgraduate

Tracey Koning
Education Coordinator, Graduate Programs

Linda Jackson
Departmental Technician

Kathilyn Allewell
Media Specialist

Susan Underhill
Administrative Assistant
Education

OVERVIEW

Message from the Director of Education
Dr. David Driman

Education remains a top priority and focus of the Department. By many measures, this is reflected in how attractive the courses and programs are to potential students, and by outcomes within courses and programs. Many of the Department’s educational offerings are greatly over-subscribed with regard to applications and we continue to produce highly successful students and trainees who go on to further training or clinical practice. These successes are a testament to the dedication of all our faculty members who teach at many different levels in the Faculty, and to our many diligent students.

Undergraduate Bachelor of Medical Sciences

The undergraduate Bachelor of Medical Science (BMSc) modules experienced excellent growth in 2018. This past year, we welcomed and graduated 16 Pathology honors specialization students, two honors students each from our combined modules with Microbiology and Immunology and Computer Science, and 12 students in the Major module. The number of students in our programs has steadily increased from five honors students in 2009 to 20 in 2017. We also welcomed 20 honors students for the 2018-2019 academic year. Although our enrollment numbers are saturated for Honors Specialization in Pathology, we are anticipating further growth in the new interdisciplinary program in One Health.

Our BMSc program in Pathology held its cyclical program review on March 9, 2018. Drs. Doug Templeton (University of Toronto), Christopher Nicol (Queen’s University), and Margaret McNay (Western University; internal) met with a number of our department members and submitted their report to the Subcommittee on Program Review – Undergraduate (SUPR-U). Among various other positive aspects, the reviewers noted our program-level outcomes and their alignment with both Western and BMSc Degree Outcomes. Reviewers also commented on students reaching Mastery level in most of the program-level outcomes, with the remainder reaching, at least, the Reinforcement level. Most importantly, the reviewers were impressed with the “overwhelming appreciation by our students for the effectiveness and quality of program content to help hone their skills for their future careers”. SUPR-U recommended our program in GOOD STANDING to the Senate Committee on Academic Policy and Awards (SCAPA). We are delighted that this recommendation was approved by SCAPA.

As we look to the future, we have excellent opportunities to enhance our undergraduate training program. We have been successful in recruiting a new Beryl Ivey Chair in One Health, Dr. Francisco Olea-Popelka; he is an internationally known One Health researcher and will oversee the One Health Honors Specialization Program. Dr. Patti Kiser, and Stephanie Frisbee are also developing two new courses for our One Health Honors Specialization Module. Our Honors Specialization program in Pathology is also enhanced by the participation of faculty from the clinical arm of Pathology and Laboratory Medicine. Feedback from students involved in clinical research projects has been excellent. Overall, our undergraduate BMSc training programs show an excellent trajectory for the foreseeable future.
Undergraduate Dentistry

In the Schulich Dentistry curriculum, instruction in general and systemic pathology are introduced in the first year. Five full courses in pathology and oral pathology were offered to undergraduate and postgraduate dental students in 2017-18. Oral Pathology was instructed in the first, second and third dental years in the form of Oral Diseases 5170, 5235 and 5335; and as Oral Pathology 5304 for Internationally Trained Dentists. Successes include a 100 percent pass rate for all courses, generally with average grades in the mid-70s to low 80s. Interest in Oral Pathology appears to peak in the third dental year, perhaps due to methods of delivery and the emphasis on content such as common conditions, outside of tooth related pathology. Courses are delivered both online through Sakai OWL, and as hands-on laboratory instruction using a problem-based approach, encouraging student participation in discussion. The use of virtual microscopy (introduced and developed by Dr. Christina McCord) in the Oral Diseases laboratory courses will be expanded.

Schulich Dentistry underwent accreditation in 2017. There have been subsequent minor changes/improvements to the Oral Diseases curriculum, particularly with respect to Oral Diseases 1. Dr. Darling serves on the Curriculum Committee for Undergraduate Dentistry and will participate in curriculum development initiatives. Looking ahead, some issues with the current Oral Pathology curriculum may need to be addressed in anticipation of curriculum modernization. The fragmented delivery of topics curriculum may need to be addressed in anticipation of development initiatives.

Undergraduate Medicine Education (UME) in Pathology

We want to elevate the visibility of Pathology and Laboratory Medicine to medical students and enhance student consideration of Pathology and Laboratory Medicine as a career choice. We also want to train our students to achieve certain pathology exit competencies we believe a graduating medical student should learn and demonstrate by the end of fourth year in preparation for the transition to residency. We will participate in the renewed UME curriculum transformation and Competency-based Medical Education (CBME) activities guided by Dr. Gary Tithecott and his team.

Present UME Education Activities (Medicine 1 - Medicine 4):

All activities related to UME in Pathology (Medicine 1-4) are progressing well. We have completed two “Pathology Interest Group” sessions for Medicine 1 and 2, which were organized by student interest group coordinators.

Our faculty provided four Medicine 3 pathology case conference seminars during the past year. Our pathology residents, under the leadership of Dr. Matt Cecchini, actively participated as organizers and teachers. The hands on cytology division workshop on “Fine Needle Aspiration Cytology” procedure and smear preparation was well received by students.

We offered Pathology Electives to a number of medical students from Western and external universities as part of Meds III and IV Clinical Clerkship. We included many junior faculty members as supervisors and revised the booklet/guide to be used by supervisors and students. The “Resident Buddy System” for Med 3 & 4 selective/elective students is working very well in our department; the teaching and mentoring initiatives from our residents were highly complemented by the students.

Dr. Joseph participates in the UME Clerkship Review Committee chaired by Dr. Kent Stobart, Vice Dean of Education at the University of Saskatchewan and Dr. Kevin Fung Chair/Chief, Department of Otolaryngology - Head and Neck Surgery, Schulich School of Medicine & Dentistry, Western University.

Future UME Activities:

The Schulich School of Medicine & Dentistry is actively engaged in UME curriculum renewal efforts. The goal is to develop a more fully coherent, coordinated and integrated curriculum to foster lifelong learning. CBME is built into this new curriculum. Reports on UME CBME updates are available to faculty through periodic bulletins from Dr. Gary Tithecott. Schulich UME will be using the recent 12 AFMC approved EPAs as the foundations of assessment of competency across all four years of the curriculum. Dr. Michele Weir represents our Department at the UME level and she has organized multiple CPO sessions for our faculty and students on CBME principles.

Development of the Foundations course has recently started and will include integrated foundational material for basic and clinical sciences. For Principles 1 and Principles 2, preliminary development work has started; consultations are underway for the “Foundations of Medical Care” block.

In order to encompass the exciting and challenging needs of this new curriculum, we expanded and restructured the existing departmental Undergraduate Medicine Education Committee as follows: Dr. Mariamma Joseph, Chair; Dr. Michele Weir and Dr. Joanna Walsh (representing Medicine 1 & 2 curriculum), Dr. Edward Tweedie (representing Medicine 1 & 2 interest group), Dr. Mariamma Joseph and Dr. Matt Cecchini (Medicine 3 pathology case conference), and Dr. Helen Etter (Medicine 3 & 4 electives/selectives). In addition, a small subcommittee encompassing select faculty members and residents was formed in order to plan and oversee the upcoming curriculum related activities.

Looking Ahead:

We have a group of dedicated teachers and education leaders in our department. CBME implementation needs commitment, planning and action. Although challenging, we are committed to introducing novel ideas and approaches to Pathology and Laboratory Medicine teaching. As we move forward, we will continue to implement CBME as part of curriculum realignment at the UME level.
Graduate EDUCATION

Research Based Graduate Program
The Graduate Program in Pathology and Laboratory Medicine continues to maintain a strong commitment to graduate education. MSc and PhD degrees are offered to students who are interested in acquiring more extensive knowledge of the mechanisms and drivers of disease progression and patterns of disease emergence. Our Program has grown and evolved throughout its long and rich history, from a handful of graduate students in the early years to a robust program today which boasts a stable enrollment and excellent opportunities for further growth.

We have at present, a total of 14 PhD students and 21 MSc students in our research-based program.

Masters of Clinical Science (MCIsC) Pathologists’ Assistant Graduate Program
The MCIsC Pathologists’ Assistant program had six students graduate in 2018. All six students began working full time as pathologists’ assistants in Ontario before convocation, with two joining our team at London Health Sciences Centre.

The PA program underwent the Institutional Quality Assurance Process review, with external reviewers visiting our department in November 2017. Final documentation was submitted and approved by the School of Graduate and Postdoctoral Studies at Western University in early 2018.

There were many achievements this year. Six second year students presented nine posters at the department’s annual research day. Prizes for outstanding research were awarded to Alyshia Philips and Erika Chadwick. Students also presented their posters at the Canadian Association of Pathologists meeting in Quebec City in July 2018. Nicole Smith and Alyshia Philips represented Western as student delegates and showed their case reports at the American Association of Pathologists Assistants Association meeting in New Orleans in September 2018. Phillips and Smith were also awarded the Dr. Subrata Chakrabarti Pathologists’ Assistant Graduate Award as top graduating students.

Two of our alumni have become new PA preceptors in our program this year. Stephanie Sharpley has joined Andrew Zhang as a teacher, preceptor and role model for students at London Health Sciences Centre, while Steffi Stephenson has taken on the same role at the Hospital for Sick Children in Toronto. Steffi also returned to Western to present a seminar “Preparing for the ASCP Pathologists’ Assistant Board Examination” in June.

We continue to be a competitive and sought after program. More than 140 applications were received for only six seats for the new September class. The top six ranked qualified applicants receiving offers of admission all accepted, and have joined the program.
Anatomical Pathology Resident Training Program

The Anatomical Pathology Residency Program has had many accomplishments in 2017-18, and continues to produce well trained residents who go on to have productive careers.

We have a full cohort of residents (11 total in Postgraduate Year (PGY) 1 - Postgraduate Year (PGY) 5). The residents continue to be heavily involved in the department. Aside from the clinical component, residents have taken on active roles in medical education, research and the molecular pathology service. Several residents have been particularly innovative, incorporating pathology into various social media platforms.

Successes over the past year have included:

- Successful completion of the Royal College examination by the PGY5 residents (continuing a 28-year perfect pass rate).
- Implementation of an Introduction to Pathology rotation for PGY1.
- Successful, well attended Resident Research Day.

Looking ahead we are preparing to transition to Competency-based Medical Education in collaboration with the Royal College, scheduled for July 2019. As well, the Anatomical Residency Program will undergo an internal review in November 2019.

Internationally-sponsored residents are self-funded and come with the understanding that they will return to their sponsoring institutions at the completion of training. We provide elective periods for Residents from other Training Programs (Neurosurgery, Neurology and Anatomical Pathology) and we offer post-residency Fellowship training for Canadian and International fellows on a case-by-case basis, based partly on the availability of funding.

Current trainees include one Canadian medical graduate (Dr. Kris Langdon, PGY5) and one internationally sponsored resident (Dr. Basma Alyamany). We were offering a position through the CaRMS match in the 2018/19 match.

Two full-time faculty Neuropathologists (Dr. Lee Cyn Ang and Dr. Rob Hammond) are involved in the program. Two colleagues, Dr. David Ramsay and Dr. Qi Zhang are in part-time roles. The day-to-day training and education of Neuropathology residents and off-service trainees is greatly enhanced by the efforts of the senior Neuropathology residents and the clinical fellows.

The training of the career Neuropathology residents is also supplemented by a mandatory one- to three-month-long Paediatric Neuropathology posting to either the Vancouver Children’s Hospital or the Toronto Hospital for Sick Children.

Neuropathology Resident Training Program

As the Neuropathology Residency Training Program approaches its fiftieth year, it continues to accept both Canadian and foreign medical graduates, including international sponsored residents. This policy partly reflects the shortage of Neuropathology posts in Canada for qualified Canadian neuropathologists and concurs with internationalization initiatives of Western University and the Schulich School of Medicine and Dentistry.

Internationally-sponsored residents are self-funded and come with the understanding that they will return to their sponsoring institutions at the completion of training. We provide elective periods for Residents from other Training Programs (Neurosurgery, Neurology and Anatomical Pathology) and we offer post-residency Fellowship training for Canadian and International fellows on a case-by-case basis, based partly on the availability of funding.

Current trainees include one Canadian medical graduate (Dr. Kris Langdon, PGY5) and one internationally sponsored resident (Dr. Basma Alyamany). We were offering a position through the CaRMS match in the 2018/19 match.

This core complement of trainees was supplemented in 2017/18 by 13 elective blocks, primarily from other Western Residency Training Programs (six from Neurology, four from Neurosurgery and three from Anatomical Pathology), as well as five medical student observerships and 4th year electives.

The program was most recently accredited by the Royal College of Physicians and Surgeons of Canada in 2012 with its next scheduled accreditation in late 2019. The training is also accepted by the European Confederation of Neuropathological Societies for the qualification examination of the European Fellowship in Neuropathology.

An important plan for the future is to implement the directive of the Royal College of Physicians and Surgeons of Canada for competency-based resident education. This will entail substantial changes to the training objectives, teaching curriculum and methods of evaluation.
Advanced TRAINING

ADVANCED TRAINING

Surgical Pathology Fellowship Program

The Surgical Pathology Fellowship program remains a sought-after program for residents who are coming out of training in Canada. On average, there have been approximately three times the number of applicants as there are available positions. Typically, there are one or two positions per year; one position if there is a concurrent cytopathology fellow. Strengths of the program include the exceptional quality of teaching staff in the department, the volume of material available for learning, a pleasant and agreeable learning environment and the external recognition received as a result of the Schulich School of Medicine & Dentistry being known as a desirable location for fellowship training in Pathology. Current challenges with the program lie in the on-going threat of a reduction in funding sources.

There was one fellow in the Department in 2017-2018, but they were unable to complete their training due to the acceptance of a full-time staff pathologist position.

Area of Focused Competence (Diploma) in Cytopathology

The Area of Focused Competence (AFC) team has had a busy year training our third candidate. We will be welcoming a new candidate, Dr. Qi Yang from the University of Manitoba, in July 2019. We expanded our team and welcomed Dr. C. Zeman-Pocrich, our prior AFC trainee to our cytopathology faculty supervisor team, as well as a Stratford clinician to our fine needle aspiration biopsy clinical supervisor team. The team is taking a much-needed break from training for 2018-19, so we will not have a candidate for the academic year.

The team trained our third candidate, Dr. Nicole Delaney from the University of Calgary, who finished the program in June 2018, and we await the Royal College of Physicians and Surgeons of Canada’s decision of her e-Portfolio submission. This was our first trainee from outside of our program, and we will update the program to include some orientation features to support our future external trainees. As with any new curriculum, there have been minor changes to the training documents from the Royal College of Physicians and Surgeons of Canada and we have updated our program accordingly. We successfully migrated to on-line electronic tools on One4G to minimize paperwork, and used an electronic logbook summation through our Cerner system to reduce trainee and program director time.

We participated in a visit from an external departmental head and his team this year who were interested in implementing an AFC in Cytopathology in their pathology department. Our AFC team showcased our model, documents and tools and received positive feedback on our accomplishments. In addition we have provided support to a new AFC program at Schulich School of Medicine & Dentistry, Western University by sharing our documents, tools and lessons learned from our build and implementation. We anticipate ongoing work through the upcoming year as we prepare for our first Royal College external review in November 2019.

Continuing PROFESSIONAL DEVELOPMENT

Continuing Medical Education Events

Advances in the Practice of Cytopathology

Advances in the Practice of Cytopathology with Bedard Lectureship in collaboration with Mt. Sinai Hospital took place on October 21, 2017 at University Hospital, London Health Sciences Centre, with many speakers from Western included in the lineup.

Cancer Care Ontario Educational Event

American Joint Committee on Cancer 8th Edition: What’s new in cancer reporting? A Schulich School of Medicine & Dentistry, Western University and Cancer Care Ontario Program took place in March 2018. This collaborative half-day event took place at Spencer Hall and was designed to meet the learning needs of community pathologists. Six local faculty presented, and were given excellent feedback from attendees.

Multi-header Microscope Workshops

The Department of Pathology and Laboratory Medicine continued the series of multi-header microscope workshops for community pathologists. Successful workshops were held in the fall of 2017 and 2018. Feedback from attendees continues to be excellent. The last workshop was a full day event with optional morning attendance and was our best attended workshop to date.

2018 Workshop Participants
Grand Rounds

Pathology and Laboratory Medicine Grand Rounds were held quarterly, hosting a variety of interesting local and international speakers. Previous problems with broadcasting via OTN have been resolved and attendees at distributed sites were able to listen in and view the presentations. Going forward, the Novel Educational Resource Development working group is going to continue to provide a speaker for one grand rounds spot per year in order to reach a larger audience with our departmental educational plan. Three speakers have been confirmed for the 2018/2019 dates.

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<td>Amanda Moehring, Associate Professor, Department of Biology, Western University</td>
<td>Imposter Syndrome: How to Keep Self-Doubt from Sabotaging Your Success</td>
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<td>November 9, 2017</td>
<td>Dr. Kathryn Roth, Assistant Professor, Department of Otolaryngology, Schulich School of Medicine &amp; Dentistry</td>
<td>The Road to CBME: Lessons from Otolaryngology</td>
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<td>April 19, 2018</td>
<td>Dr. David Viswanatha, Associate Professor of Laboratory Medicine and Pathology, Mayo Clinic, Rochester, MN</td>
<td>Molecular Diagnostics of Hematologic Neoplasms: Next Generation Sequencing and Next Generation Challenges</td>
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Novel Educational Resource Development (NERDs)

The NERDs group is an educational interest group which was created from our Strategic Direction Retreat in 2014, and provides resources, a community of practice for teaching, and education scholarship and leadership for our department. The group builds resources for novel learning techniques as well as scholarships in education for faculty and learners.

During the past four years we have created resources for enhancing faculty and learner development of educational skills; and building a community of practice for sharing successes, experiences and challenges. We have built on-line resources on our OWL website with links to Western University Teaching Support Centre, Schulich CPD and the Royal College of Physicians and Surgeons. Website activity includes more than 400 visits and 40 users, with the resources section being the most active tool accessed.

Our open forums have continued over the academic year and topics included coaching and feedback, Competency-based Medical Education (CBME), UME Curricular renewal update, Flipped Classroom, and Technology & Techniques for Pathology and Laboratory Medicine teaching. NERDs sponsored a Grand Rounds session on lessons learned from CBME Implementation. New this year, our open forum audience includes our technologists and administrative leads.

Our impact has included a growth of scholarship in education, with posters, presentations and workshops at departmental and national research forums and conferences. There has been increased use of new techniques and technologies in our teaching activities. Additionally, there have been education related publications, learner interest in educational scholarship, and our technologists’ seminars have had some educational topics. Future direction for the upcoming year includes another Grand Rounds session sponsored by the NERDs on an educational topic, continued open forums with topics on CBME, UME curricular renewal and learning techniques.

Clinical SERVICE

The Department of Pathology and Laboratory Medicine is a joint venture of London Health Sciences Centre and St. Joseph’s Health Care London, created in September 2000. The Programs of Pathology and Laboratory Medicine provide a comprehensive range of routine and specialized laboratory testing and clinical consultation to support diagnosis and monitor treatment of patients within London, Southwestern Ontario, nationally and internationally.

Grossing, Tissue Trimming, Casseting and Sectioning
In recent years, the reporting of pathology specimens has extended to molecular/predictive markers for many cancer types. The department has implemented integrated testing for many of these markers. This has required the development of detailed work flow to ensure that the appropriate tissues and reports are created in partnership with the molecular diagnostics division. Undoubtedly the divisions of surgical pathology and molecular diagnostics will continue to work closely in future to align diagnostic processes to support personalized medicine.

Autopsy

The autopsy service, based at University Hospital, is a monitor of quality assurance for the London Health Sciences Centre clinical services and an essential component, as a regional forensic pathology unit, of coroners’ death investigations in Southwestern Ontario.

In 2016, the total number of autopsies (hospital authorized and coroner’s warrant) decreased 5 percent (from 637 to 605) compared to the previous year; however, there was there was a 6.6 percent increase in coroners’ cases (470 to 501). A 38 percent decrease in hospital authorized autopsies (167 to 104) reflects worldwide trends; however, the complexity of the cases has increased. The proportion of coroners’ cases originating outside of London done in the London Health Sciences Centre facility was 46 percent compared to 42 percent the previous year. In 2017, an increased coroners’ autopsy caseload is anticipated which will continue to challenge human resources in our Department.

Drs. Elena Tugaleva and Michael Shkrum supervised Audrey Evetts who successfully defended her MSc thesis on “Organ weights and measures in infants aged one month to one year investigated by the Office of the Chief Coroner”. The data from this research is being prepared for publication and will be an invaluable reference for pathologists who do medicolegal pediatric autopsies. Dr. Michael Shkrum continued in his role as the Director and Principal Investigator of the Motor Vehicle Safety (MOVES) Research Team. His MSc student – James Roos – successfully defended his MSc thesis entitled “Etiology of Motor Vehicle Collisions Fatalities in Urban and Rural Canada.” Dr. Shkrum is currently supervising – Peyton Schroder, MSc Candidate – who is studying factors contributing to trauma in pediatric rear occupants injured in motor vehicle collisions.
Cytopathology

The Cytopathology Laboratory provides a wide range of diagnostic services to physicians in London and many regional hospitals. We deliver expert cytopathology consultation service to regional pathologists. The strength of our lab lies in its continued efficiency in providing test results with TAT in lab target. We have a robust ongoing technical and professional quality management program in place. We are pleased to introduce Mr. Gavin Giles, who recently joined as the new coordinator for cytopathology division.

In 2016, we received 20,208 cytology cases (GYN 7,913 and Non GYN 12,295) in our division. Our cytotechnologists continue to provide an efficient and highly valued Rapid Onsite Evaluation (ROSE) FNAB service to clinicians located at all three sites (1,152 cases in 2016). Our regional cytology service partnership with various South Western Ontario hospitals is running quite well. In order to sustain a strong partnership with our clients, our cytology team recently completed a review and discussion Video conference session with our corresponding leaders at Stratford. We are also making plans to reach out to our remaining partners in the region in the near future. In collaboration with molecular pathology lab, we have already introduced a number of molecular tests (ALK, EGFR), related to cancer therapy on small cell lung cancers and postnatal constitutional microarray testing for individuals with autism, developmental delay and multiple congenital anomalies) at the provincial level and performs some testing at the national level.

Molecular Diagnostics

The Molecular Diagnostics Division is comprised of the Sections of Biochemical Genetics, Cytogenetics and Molecular Genetics. The Division provides specialized genetic testing including inherited metabolic disorders, chromosome analyses/FISH, microarray analyses, nucleic acid sequencing, and a wide variety of gene tests for inherited disorders, predictive cancer testing and therapeutic monitoring. The Division also serves as a reference laboratory for multiple tests (such as inherited peripheral neuropathies, mitochondrial disorders, heritable cancers and postnatal constitutional microarray testing for individuals with autism, developmental delay and multiple congenital anomalies) at the provincial level and performs some testing at the national level.

Microbiology

Specimen volumes and complexity of testing continue to increase within microbiology. In molecular microbiology, we have begun to test and report our CMV assay in International Units (IU) based on the World Health Organization International Standard to increase reproducibility and are in the process of moving EBV reporting to IU. A new testing method/algorithms for CSF viral studies is being evaluated and will improve the time to result.

Testing for many inherited diseases, inherited and acquired cancers has now advanced to using technologies that interrogate panels of genes simultaneously and/or entire genomes. The numbers of specimens tested in the Divisions continue to increase each year; and more importantly the complexity of testing and interpretation has significantly increased workload per case. The Division works closely with other divisions in our department and in other hospital departments, as well as with clinicians in the community to support personalized medicine. Over the past year, we have increased technical coverage and acquired new technology (increased automation and next generation sequencing [NGS] capability) to meet our growth, expand our test menu and participate in other provincial opportunities. A major goal for the division in the future is to improve our depth of professional coverage. Our efforts are being supported by Hospital Leadership, MOHLTC and CCO.

Several utilization and quality improvement initiatives have been undertaken. A new algorithm for urine testing has decreased unnecessary urine cultures by 25 percent. The laboratory is working with IS to standardize the way in which microbiology results are displayed in PowerChart. These changes will improve the client user experience by making the reports easier to read and decrease interpretation errors. Improvements aimed at detecting more bloodstream infections are underway through collaborations with the Vascular Assess Support Team (VAST). Blood culture collection procedures are being updated to standardize collection and ensure that adequate volumes are being collected to maximize sensitivity.

Looking ahead, we continue to partner with regional hospital associations, including Middlesex Health Alliance and Huron Perth Healthcare Alliance to ensure their access to quality lab services and to develop shared practice standards. Test cost analysis has been completed with a view to offering advanced molecular testing to regional hospitals. Further initiatives of the Choosing Wisely Campaign will be implemented to improve test utilization and lessons learned offered to regional partners. Antimicrobial stewardship has been supported by creation of a website on the intranet and provision of treatment algorithms for common infections. Expertise on antimicrobial stewardship will be provided to regional hospitals as part of a LIHN initiative.
Laboratory MEDICINE

It has been an exciting and transformative year in Laboratory Medicine. With the award of over more than $7 million in capital support we take our first steps in the process of transforming our Core Laboratory, Biochemistry, Hematology and Immunology facilities into state-of-the-art high-efficiency, cost-effective, modern laboratories. Multiple teams and countless hours were devoted by laboratory staff in the bidding and renovation process to insure that both instruments and workflow would be optimized. We brought together frontline technologist and medical leaders from all areas. The goal was not just replacing aging equipment but to reexamine all of our processes to ensure we have the latest assays, improve turnaround time (TAT), reduce costs and improve utilization.

Many of the tests previously performed in specialty areas will be moved to the automated core laboratory which will improve TAT and reduce cost with the added bonus of allowing specialty laboratories to devote more time to develop new assays.

Pharmacy Department continues in their quest to meet their own regulatory requirements, and testing in this laboratory has demonstrated that numerous Pharmacy-prepared custom drug mixtures are stable for the time period of intended clinical use. More custom drug mixtures will be tested in the immediate future. Poster presentations and a publication manuscript in preparation have resulted from these projects.

Clinical Immunology

The Immunology laboratory offers highly specialized autoimmune disease testing for autoimmune diseases. We have recently implemented the state-of-the-art automated instruments for IFA and Immunofluorescence. This new investment in technology has allowed us to increase our test menu by making it possible to perform in-house new tests. We have repatriated AMA, ASMA and ALK/M testing for autoimmune liver diseases. We have also launched anti-MOG and anti-AQP4 antibody testing for Neuroimmunologic Optic Spectrum Diseases. Moreover, we have expanded testing of positive ANA IFA for individual specific antinuclear antibodies by immunoblot. We are planning to perform comprehensive Autoimmune Encephalitis antibody testing for NMDA receptor, LGI1, CASPR2, AMPA1/2, GABA(B), DPX. Currently we are in the process of method validation; this work will serve our highly sub-specialized neurology service as well as serve as a resource for regional partners in Southwestern Ontario.

We also perform protein electrophoresis for monoclonal gammopathy, cryoglobulinemia, oligoclonal banding, and beta-2 transferrin. The Immunology laboratory has also acquired an automated capillary system for serum protein electrophoresis to improve diagnostic efficiencies. We have validated and changed to the high resolution gel for urine protein electrophoresis which has increases the sensitivity for monoclonal protein bands and reduced time for concentrating urine samples and associated cost.

We stopped performing Cholinesterase phenotyping testing in-house due to very small volume of testing. The test is now sent out to a reference laboratory.

The limited utilization of STAT services for ANCA testing, STAT ANCA tests are no longer being processed on Saturdays and holidays.

Endocrinology and Maternal Serum Screening

After extensive consultation with clinical services, maternal serum screening has been discontinued at London Health Sciences Centre and is now being referred out to North York General Hospital.

Twenty-six automated immunoassays have been relocated from the Endocrinology Laboratory to the Core Laboratories to make better use of the analyzers in the Core Labs, to reduce the need for aliquotting of samples, and to enable the technicians from the Endocrinology Lab to perform more specialized testing. A number of low volume tests and highly manual radioimmunoassays were discontinued and those tests are now being referred out.

Assays for anti-TSH receptor antibodies and calcitonin were being referred out.

Pharmacy services

Pharmacy services for regional partners in Southwestern Ontario.

Clathrin-mediated endocytosis

The transformation process has also refocused our clinical laboratories’ future in research on test utilization, technology evaluation and knowledge transfer. We join national initiatives such as Choosing Wisely Canada to educate and improve laboratory practice and test utilization. All new electronic orders (powerplans) are now reviewed and for the first time in decades the volume of laboratory tests has actually decreased. A committee to evaluate new tests has been established with the goal of developing a robust process for new technology and testing. Future quality improvement initiatives will target inappropriate testing or frequent repeat testing with the goal of improving practice.

Laboratory transformation is an ongoing process aimed at updating instruments and improving processes with an overall goal of greater involvement of clinical laboratories in leading laboratory and clinical practice innovation.

Specialty Biochemistry

**Toxicology, Therapeutic Drug Monitoring & Special Chemistry Laboratory**

This Laboratory performs toxicology, therapeutic drug monitoring, vitamin testing, and various special chemistry tests for London Health Sciences Centre, St. Joseph’s Health Care London and other hospitals across the province and nationally. In addition, as part of the Zone B 10th floor specialty biochemistry laboratory transformation, the endocrinology tests, vanillylmandelic acid, homovanillic acid and 5-hydroxyindoleacetic acid have been developed and are now in routine use. Metanephrines methoxytyramine, serotonin and catecholamines are under development on the same instrument, allowing the replication of these referred out tests. Urine organic acids tested are being done in the laboratory, and the acquisition of this test represents one of the first steps in the integration of this laboratory with the Biochemical Genetic Laboratory also as part of the Zone B 10th floor specialty biochemistry laboratory transformation Collaboration with the

**Trace Elements**

The Trace Element Laboratory offers a wide range of trace elements analysis for nutritional and toxic elements of clinical interest in Canada. Testing is used to assess deficiencies, measure nutrient intake, monitor toxic exposure through environmental or occupational exposure and provide trace metal analysis for patients with joint replacements. In addition to routine clinical service, we also offer testing for research projects and analyze trace elements in various tissue samples.

This laboratory uses one of the most advanced and highly sensitive technologies - High Resolution Sector Field Inductively Coupled Plasma Mass Spectrometry (HR-SF-ICP-MS). This makes our laboratory competitive in the marketplace. Our laboratory meets the stringent FDA requirements for orthopedic implant performance and has been selected by another major North American orthopedic implant manufacturer as the testing site for trace metal analysis for patients with hip implants. We have successfully passed a quality audit by this manufacturer in 2017. Hair iodine testing has been discontinued because of a very small volume of testing. Plasma and urine iodine tests are now sent out to a reference laboratory.

**Specialty Biochemistry**

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Core Laboratories and POINT OF CARE TESTING

Transformation and Process Improvement
The strategic vision for laboratory medicine is to be the cornerstone of the patient journey, providing timely, quality, state-of-the-art results to guide patient-centered care. This year marked a significant leap along this path, a transformative year for laboratory medicine. With over $7 million in capital support, we sought not just to replace machinery but to re-engineer our laboratory processes in the Core, Specialty Biochemistry, and Hematology Laboratories into state-of-the-art, high-efficiency, cost-effective, modern laboratories. With replacement of our Core Laboratory instruments, transition to digital microscopy, and a move towards total laboratory automation (TLA) we have taken significant steps towards our goals to improve turnaround time (TAT), reduce costs, and improve utilization. Thirty-eight tests previously performed in the Special Biochemistry Laboratories moved to the Core Laboratory, which will improve TAT and reduce cost. With this change, we have also initiated a total rethinking of our Specialty Biochemistry Laboratories, with a focus on highly complex testing and new assay development.

Transplant Immunology transformed its processes with the adoption of real-time to provide faster and more accurate HLA typing for deceased donors. During laboratory transformation, we have validated the Roche Cobas 8000 methods for high volume immunology tests (IGAM, C3, C4, B2M, ceruloplasmin, haptoglobin, prealbumin, RF, transferrin, and CSF albumin) and moved them to the Core laboratory and implemented automation rules to increase work efficiency. In addition to routine clinical services, our Immunology laboratory has offered three-week lab rotation for Clinical Immunology and Allergy residents.

Quality Improvement

Quality improvement initiatives have aimed to reduce our TAT, reduce inappropriate testing, and reduce overall costs. Small changes in the process of sample handling have resulted in significant improvement in TAT and cost savings. Some selected examples of our success include:

- Moving reticulocyte count from St. Joseph’s Hospital to University Hospital, reducing the cost per test from $15 to only $3.
- Moving Cystatin C and Citrate testing from the Specialty Labs (10th Floor Victoria Hospital) to the Core Laboratory improving TAT.
- Shifting workload for sample loading on analyzers to specimen receiving area. Medical Laboratory Assistants have reduced the number of contact steps, resulting in an improved CBC TAT.
- Introduction of combined Chemistry and Hematology Divisional Meetings on a monthly basis, bringing stakeholders together to discuss, resolve and improve shared Core Laboratory processes. Many of the simple changes in process are the result of these discussions, driven by frontline technologists and are part of the overall goal to shift the culture improvement to involve all laboratory staff.

Utilization – Choosing Wisely
A pillar of our transformational impact is to engage with clinical services to optimize test utilization, technology evaluation, and knowledge transfer. We undertook a number of quality improvement projects aimed at improving laboratory utilization. We expect to build our partnership with stakeholders to look for ways to improve current utilization and add to our test menu.

- One major ongoing initiative was the Choosing Wisely Canada goal to reduce daily bloodwork on stable patients in hospital. We have successfully reduced daily bloodwork after day three by approximately 40 percent from baseline on general medicine wards.
- RBC folate testing has been discontinued by the laboratory and utilization measures are in place to limit the number of samples sent to another facility for RBC folate testing to appropriate orders. We have witnessed a greater than 98 percent reduction in testing and hope to publish a manuscript on our initiative in the near future.
- Menus of appropriate indications for vitamin D testing (both 25-OH and 1,25 di-OH) were developed with stakeholders including pediatrics, endocrinology, and nephrology to limit testing to specific indications. This utilization project has led a 25 percent reduction in 25-OH vitamin D testing and a 68 percent decrease in 1,25 di-OH vitamin D testing.
- Measures to ensure appropriate D Dimer testing are being instituted in the Emergency department with the use of a computer decision support tool to calculate risk scores for patients with suspected deep vein thrombosis or pulmonary embolus. The goal is to ensure the right patient gets the right test.

New Assay Development
Core Laboratories provide initial, rapid, high volume testing and screening for all the hospital service areas (including Parkwood and Regional Mental Health) and work in partnership with the other laboratories to provide complete investigational results. Each year approximately 6.9 million chemistry tests, 490,000 CBCs, and 210,000 coagulation tests are done in the Core Laboratories.

During the past year the Core Laboratories have been undergoing an extensive laboratory transformation project. As a part of this transformation project, the Core Laboratories have upgraded the analytical instrumentation for biochemistry, coagulation, and hematology testing at London Health Sciences Centre and St. Joseph’s Healthcare. New laboratory automation systems have also been implemented at VH and UH to handle pre-analytical sample handling, centrifugation, aliquoting, and sample storage. This new technology has allowed the Core Laboratories to increase the number tests offered 24/7, with capacity for growth in providing new tests, built in capacity for future workload increases, and reduced time to perform add-on tests.

Digital microscopy has allowed remote viewing of blood films and enhanced educational opportunities for resident trainees and technical staff. It also provides future opportunities for the region for consultation and rapid access to expert review for critically ill patients.

As we move forward, the Hematology and Chemistry teams will play a key role in the implementation, documentation and validation, and safety and quality initiatives surrounding the implementation of the new laboratory equipment.
**Point-of-Care-Testing (POCT)**

Point-of-Care testing is laboratory testing performed close to the bedside typically by certified clinical care staff. Various devices allow for Glucose, Blood gas, Urine, Occult Blood, Hemoglobin, A1c and Activated Clotting Time testing across sites of LHSC/SJHC.

One of the POC Strategies has been to help improve POCT for the users. Several initiatives have helped enabled this:

- Support by a new refreshed Corporate POCT Policy to improve compliance for Accreditation
- Improved electronic registration and reporting by interfacing with the latest implementation of 22 new Clinitek urinalysis instruments
- Improved training access and certification management with the POC website for competency requirements, as well as troubleshooting tools, located in one spot for users to access. POCT has also been on the “move” with our POC mobile cart, providing an increased presence on the wards for troubleshooting, certification assistance and the provision for distributing barcodes to the users.

There have been challenges with moving POCT forward in certain areas. In clinics with no armbands for scanning purposes, a barred labeled specimen is required to be able to provide POCT testing. Also, some areas lack a medical directive in order to delegate POCT when necessary. Looking ahead, tools to achieve 100% patient scanning rates will allow the completion of the implementation of interfacing devices. This, combined with the continued improvement of certification processes, will help advance the POCT program.

**Investigational Hematology**

Investigational hematology has several specialty areas including hemoglobinopathy screening, hemostasis and thrombosis and flow cytometry. This year saw a reorganization of the specialty areas with merging of hemostasis and thrombosis and hemoglobinopathy benches with the immunology laboratory. This change provides a larger pool of highly trained technologists working on similar platforms to work together to improve efficiency of the service. It required many hours of retraining and all of the technologists rose to the challenge.

Over the past year, POC has seen improvements with positive patient identification. Labeled specimens are being analyzed at POC devices with the implementation of the POC Specimen Label. These changes have resulted postdated electronically and directly to the patient’s chart complete with traceability to the person doing the test. These electronic tools have also provided an improvement to the auditing processes for POCT including scanning, quality control reviews, and certifications.

As part of the Pathology and Laboratory Medicine website, POC now has its own section which provides links to the Standard Operating Procedures (SOPs), refreshed and updated quizzes laboratories are supported by the clinical hematologists Dr. Phua (hemostasis), Drs. Lazo-Langner and Kovacs (Thrombosis) and Drs. Hsa and Soh (hemoglobinopathy). Both Drs. Soh and Phua are newly appointed clinical hematologists with specialty clinics in hemoglobinopathy and bleeding disorders and will work to ensure that the laboratories remain responsive to changing clinical needs.

Flow Cytometry continues its long-standing success in innovation, both nationally and internationally. We are one of two centers in Canada approved to do minimal residual disease (MRD) testing for childhood leukemia. We provide consultative services and process MRD from Vancouver to the Maritime Provinces.

Technologists from flow cytometry continue to lead, present and publish at international conferences.

**Transfusion Medicine**

The Blood Transfusion Laboratory provides an essential 24/7 service for Transfusion Medicine, Stem Cell Transplantation, and Tissue Banking for London Health Sciences Centre (LHSC) and St. Joseph’s Health Care (SJHC). Supporting emergency services, trauma, surgical services, oncology, multi organ transplant and bone marrow transplant, the Transfusion Laboratories are the third largest Blood Bank in Ontario. This year saw the hiring of our first transfusion medicine specialist, Dr. Ziad Soh, a pediatric hematologist, who recently completed his transfusion medicine fellowship. Dr. Soh has major research interest in Knowledge Transfer, which he intends to use to improve transfusion practice and support laboratory initiatives in utilization improvement in general.

Our main focus is on appropriate utilizations where several key quality improvement initiatives have taken place including:

- Local transfusion guidelines for both pediatrics and adults approved by City Wide Blood transfusion Committee. We identified this as the first step to in anchoring our evidence based utilization of blood products.
Transplant Immunology

The Transplant Immunology Laboratory continues to provide 24/7 services to The Multi-Organ Transplant Program (MOTP) at London Health Sciences Centre (LHSC). In 2017, surgeons at LHSC performed a record number of kidney transplants (122) and heart transplants (19). HLA services for organ transplant are expanding not only in numbers but also in context:

• More post-transplant work such as monitoring of donor-specific antibodies (DSA), which are important to prognosis/diagnosis of rejection and guide rejection treatment and immunosuppression management.

• More work for liver transplant where HLA is considered as more important than ever before.

• Emerging roles of antibodies to non-HLA, such as anti-angiotensin II receptor 1 (AT1R) in organ transplantation. We are the 1st Canadian lab to provide such test.

In response to increasing demand for services while remaining fiscally responsible, we have made many changes to improve efficiency and quality. With the support of MOTP co-director Dr. Tony Jevnikar and Dr. Patrick Luke, we acquired $45,000 from the London Health Sciences Foundation to purchase real time PCR instrument. This will help us provide faster and more accurate HLA typing for deceased donors. We are replacing regular SSO typing kits with CWD kits, which have a similar cost, but provide better typing. We also cut 25% SSO reagent per test to accommodate increased volume. We have completed automatic workload measurement, pricing and billing in our Lab Information System.

We are currently working on automated turnaround times. This will enable us to more accurately monitor our quality improvement initiatives.

The Lab actively participates in many research projects, some of which have been presented by the Section Head in ASHI Annual Meeting and American Transplant Congress. Both the Senior Technologist and Section Head were invited to attend Canadian HLA working group meeting.

Since the recruitment of a new transplant hematologist, our services to hematopoietic stem cell transplant (HSCT) program are growing. The planned expansion to unrelated and one haploid-matched HSCT will dramatically increase test volume for high resolution typing. Personalized medicine in organ transplantation also demands HLA typing with higher resolution to better assess immunological risk. These increased demands will require our current method for high resolution typing (SSP) to be replaced with more cost-effective methods such as Next Generation Sequencing. This change will be necessary to keep us competitive and also to provide excellent health care to our patients.

The Department of Pathology and Laboratory Medicine has maintained its excellence in both foundational and translational research at Western. Our researchers were once again successful at obtaining highly competitive peer-reviewed grants, and publishing high impact journal articles. Just over the last year, our members have received funding from the Canadian Institutes of Health Research (Art Poon, Mark Darling, and Martin Duerenrod), NSERC Discovery grants (Art Poon), AstraZeneca and Pfizer (Bekim Sadikovic), the Brain Tumour Foundation of Canada Research Grant (Qi Zhang), Canadian Allergy Asthma Immunology Foundation (Lisa Cameron). In addition, our researchers received numerous other operating and fellowship grants. Our research productivity has also been excellent, as exemplified by 200 peer-reviewed publications.

Research OVERVIEW

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One of our major initiatives the past few years has been to enhance inter- and intra-departmental research collaborations. We hope that we can enhance collaboration by providing opportunities for interaction through Dr. Robert Zhong Research Seminars, our Annual Pathology and Laboratory Medicine Research Day, and a revamped Paterson Lecture.

Over the past year, we held four Dr. Robert Zhong Research Seminars, which were delivered by excellent researchers at Western. At the 2018 Research Day, we set yet another record with 84 research presentations. In addition to celebrating our research accomplishments, we were treated with a fantastic keynote address by Dr. Harold Atkins, Dr. Atkins is a physician of the Ottawa Hospital Blood and Marrow Transplant Program, an Associate Professor of Medicine at the University of Ottawa, a scientist in the Center for Innovative Cancer Research and the Medical Director of the Regenerative Medicine Program at the Ottawa Hospital Research Institute. Dr. Atkins shared his amazing work with hematopoietic stem cell transplantation to ‘reprogram’ the immune system of patients suffering from autoimmune diseases. The address was both inspiring and thought provoking.

Following the amazing success and high attendance of the Paterson Lecture at our 2016 Pathology and Laboratory Medicine Research Day (delivered by 2006 Nobel Laureate, Dr. Andrew Fire), the Research Committee decided to separate the research day from the Paterson Lecture to create two marquee events. We have continued to invite inspiring, high-profile researchers to deliver the Paterson Lecture. Some of these have included the 2017 Paterson Lecture, delivered by Dr. Martin Chalfie, who won the 2008 Nobel Prize in Chemistry with Roger Tsien and Osamu Shimomura “for the discovery and development of the green fluorescent protein, GFP”, as well as the 2018 Paterson Lecture, delivered by Dr. Randy Schekman, who, together with Thomas Südhof and James Rothman, received the 2013 Nobel Prize “for their discoveries of machinery regulating vesicle traffic, a major transport system in our cells”.

As we look ahead, our challenges essentially remain the same. Although these challenges are due to external pressures posed by diminishing research funding, the department is preparing to implement a new strategic plan of identifying research areas where we, as a department, can excel, build our capacity in the areas of priority, and capitalize on emerging opportunities.
Dr. Bekim Sadikovic, PhD, DABMG, FACMG, is an Associate Professor of Pathology and Laboratory Medicine at Schulich Medicine & Dentistry, Western University and Head of Molecular Genetics at the London Health Sciences Centre and St. Joseph’s Health Care in London, Ontario Canada. Dr. Sadikovic is a diplomat of the American Board of Medical Genetics from Baylor College of Medicine and holds American Board of Medical Genetics certifications in Clinical Molecular Genetics and Clinical Cytogenetics. Prior to his appointment at Western, Dr. Sadikovic served as the Head of Advanced Molecular Diagnostics at McMaster University. He completed his PhD in the Department of Biochemistry at Schulich Medicine & Dentistry, Western University, followed by the Canadian Cancer Society Fellowship in integrative genomics and epigenomics at Princess Margaret Hospital, SickKids Hospital, and the University of Toronto.

Dr. Sadikovic’s research interests revolve around application of genomics technologies to clinical diagnostics with particular focus on development of genomic and epigenomic technologies for diagnosis of both germ-line and somatic genetic and epigenetic conditions.

His current research specifically focuses on identification of epi/genetic signatures of constitutional genetic and epigenetic syndromes, and development of analytical and bioinformatic approaches and genomic databases for clinical diagnostic applications.

Dr. Sadikovic has authored more than 60 manuscripts in peer reviewed journals, and as the Head of the PaLM translational genomic research laboratory, he has overseen translation of this research to a number of clinical applications including novel diagnostic technologies, resulting in a number of exclusive government laboratory testing licenses and contracts as well as public-private partnerships. Notably, under his oversight, Pathology and Laboratory Medicine Molecular Genetics Laboratory has become the provincial reference laboratory and a national center of excellence for a broad range of hereditary genetic conditions including hereditary cancers, mitochondrial and metabolic disorders and epilepsy to name a few.

More recently, it has become the first Canadian laboratory to, through licensing agreement with the global life sciences company LabCorps® and its Canadian partner Dynacare, provide genetic testing for Charcot–Marie–Tooth disease, epilepsy and mitochondrial disorders for patients world-wide.

In his clinical role, Dr. Sadikovic oversees the Pathology and Laboratory Medicine Molecular Genetics Laboratory performing constitutional, prenatal, and somatic genomic testing across a wide range of genomic disorders for patients across Canada and internationally. He is an active member on a number of National and International committees, advisory and working groups including Ministry of Health, Cancer Care Ontario, American and Canadian College of Medical Genetics related to development, regulation and implementation of clinical genetic testing and services.


