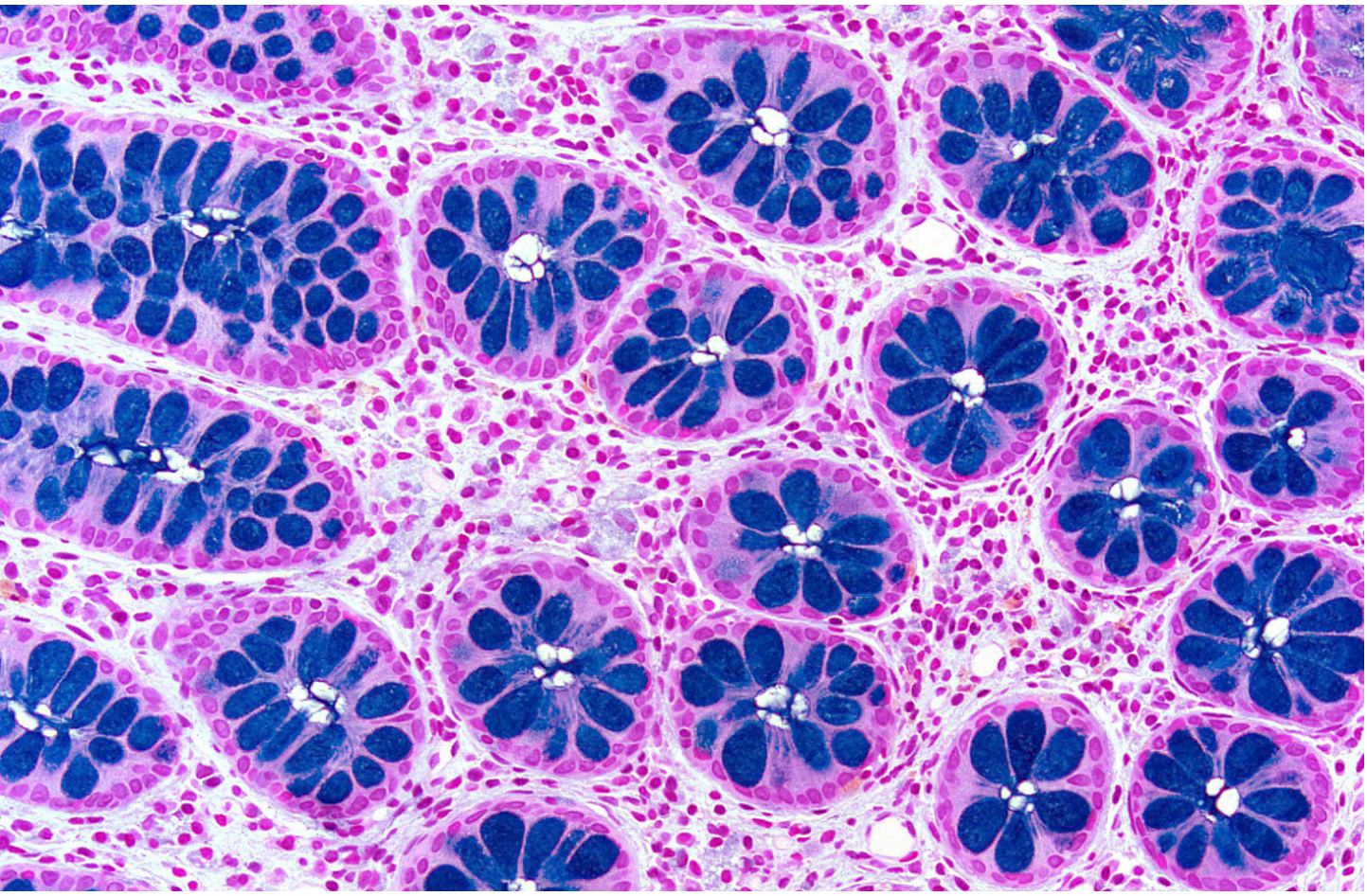
Schulich MEDICINE & DENTISTRY Western

# THE DEPARTMENT OF PATHOLOGY AND LABORATORY MEDICINE

**ANNUAL REPORT 2014**



The Department of Pathology and Laboratory Medicine provides state-of-the-art diagnostic pathology and laboratory services while achieving excellence in research and education. Members of the Department of Pathology and Laboratory Medicine strive to provide a quality work environment that fosters unity, respect for diversity, teamwork and professional growth. We are committed to serve our: Patients, Students, Society, Scientific Research Community and Health Care Partners.

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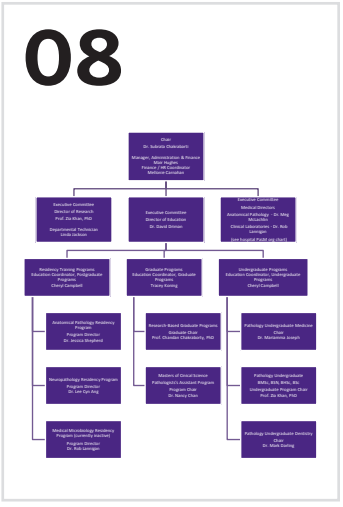
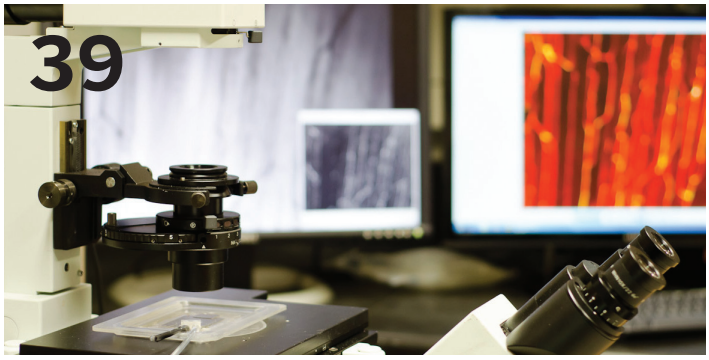








# Vision, Strategic Directions, Goals & Objectives

The Department of Pathology and Laboratory Medicine fully supports the mission and values of the Schulich School of Medicine & Dentistry of The University of Western Ontario, the London Health Sciences Centre and St. Joseph's Health Care London.

## EXCELLENCE IN **OUR STAFF & FACULTY**

**Nourish and develop staff and faculty to make our department the best place to work.**

- Increase staff and faculty engagement
- Promote mentorship, coaching and peer dialogue
- Facilitate provision of academic time
- Maintain Research Day, Grand Rounds and Zhong Seminar series

## EXCELLENCE IN **EDUCATION**

**Educate the next generation by providing an exceptional learning experience.**

- Strengthen the UME-BMSc-Grad-PGE Interconnection
- Develop competency-based education
- Encourage leadership in education
- Enhance scholarship in education

**Attract top candidates to the best place to train.**

- Improve marketing via web presence
- Enhance recruitment process
- Introduce novel interdisciplinary education

## EXCELLENCE IN **RESEARCH**

**Foster independent and collaborative research (inter- and intra-departmental and cross-specialty).**

- Increase the department's research profile
- Increase opportunities for independent and collaborative interaction
- Communicate department's research strengths and define areas of strength
- Enhance scholarship in education

**Support innovation in translational research and knowledge translation.**

- Establish a process for review of metrics and implementation regarding translational research dissemination
- Facilitate Faculty, Resident & Graduate student research and research training

# Message from the Dean

The Department of Pathology and Laboratory Medicine began the 2014-15 fiscal year with the launch of a new strategic plan.

With goals focused on enhancing cross-specialty research collaboration, supporting and developing researchers, and enhancing focus on knowledge creation and translation, the Department continues to fully support the Schulich School of Medicine & Dentistry's long-term vision to become a global leader in optimizing life-long health.

The Department is unique at the School, in that it is a clinical and basic science department all in one. This past year, a name change for the Department was completed that more accurately reflects its role as a clinical and basic science department, the scope of its academic programs, the commitments of the Chair, and its alignment with the teaching hospitals in London.

On the research front, the Department has continued to excel in a variety of programs including cancer biology, cardiovascular science and metabolic diseases, infection and immunity, and neuropathology. They also continue to play a lead role in areas such as environmental pathology and global health.

The Department's education programs are focused in the School's undergraduate Bachelor of Medical Sciences (BMSc), graduate and postdoctoral studies, and undergraduate and postgraduate medical education programs. This past year, there were achievements in each of the programs.

With new curriculum development, the Pathology module continued to be one of the most sought after modules for the BMSc program. Meanwhile the Department's involvement in the Undergraduate Medical Education program was strengthened as three faculty members took on roles as course chairs.

The Department is home to Canada's first Area of Focused Competence Diploma in Cytopathology. This past June, their first trainee completed the program and has submitted a portfolio to the Royal College of Physicians and Surgeons of Canada for assessment.

In the area of graduate studies, the popular Pathologists' Assistant program continues to grow and underwent an accreditation. We are looking forward to learning the results in the coming months.

As one of the School's 21 departments, Pathology and Laboratory Medicine, continues to advance its work in education and research, while supporting the overall goals and mission of Schulich Medicine & Dentistry. The faculty, staff and students have embraced the values of the School through their dedication and achievements on an annual basis. With a new strategic plan in hand, their education and research programs will continue to have an impact across the country and around the world.

**Dr. Michael J. Strong**
Dean, Schulich School of Medicine & Dentistry
Interim Scientific Director, Robarts Research Institute

# Message from the Department Chair/Chief

Dr. Subrata Chakrabarti

Dr. Subrata Chakrabarti

Our new name better reflects the diverse scope of our constituents and academic programs. The change also aligns the department's name with our clinical department at our London Hospitals.

2014 has been a landmark year for our department. In July of this year the University Senate approved the change of the name of our department to the Department of Pathology and Laboratory Medicine. Our new name better reflects the diverse scope of our constituents and academic programs. The change also aligns the department's name with our clinical department at our London Hospitals, which encompasses both the Program of Pathology (Surgical Pathology, Cytopathology, Molecular and Autopsy Pathology) and the Program of Laboratory Medicine (HLA Laboratory, Microbiology, Biochemistry, and Molecular Diagnostics). The name change will improve public understanding and will be consistent with other Canadian university departments.

The Department of Pathology and Laboratory Medicine (PaLM) held a strategic planning retreat in April, 2014, facilitated by Jane Parkinson, of Western's Office of Learning and Development. Forty-eight attendees included pathologists, medical microbiologists,

clinical chemists, basic and institute scientists, clinical fellows, residents, graduate students and staff. The retreat agenda was designed by first identifying linkages among the strategic plans of all our affiliated institutions, including those of the University and the Schulich School of Medicine & Dentistry.

Many opportunities were identified related to our department's academic vision of excellence in research, excellence in education and excellence in faculty and staff. Building on the information and recommendations gathered at this retreat we developed a strategic plan for the next five years. This plan was unanimously approved at the September 2014 meeting of the Department of Pathology and Laboratory Medicine.

In line with this strategic plan and our name change, in 2014 the academic appointments of our hospital Clinical Chemists were moved to our department from the University's Department of Biochemistry. We also welcomed two new scientists to our department. Dr. Lisa Cameron, Associate Professor, arrived in April and her research is focused on understanding how naturally occurring genetic variation influences development and trajectory of inflammatory disease. In September, Dr. Bekim Sadikovic joined the department as an Associate Professor. Dr. Sadikovic is a clinical molecular geneticist and brings a wealth of experience and energy to our Molecular group.

In clinical services, we have made significant progress with respect to turnaround time in surgical pathology and other areas of health care delivery. We continue to face resource-related challenges. Implementation of HUGO in the London Hospital created some significant issues in our clinical laboratories but we continue to thrive and take these challenges head on. Over the next year we will continue to grow our clinical services. Molecular Diagnostics will become a focus on the clinical side. We plan to grow in this area and provide necessary support for "Personalized Medicine" – one of the areas identified in LHSC, Clinical Renewal Strategy.

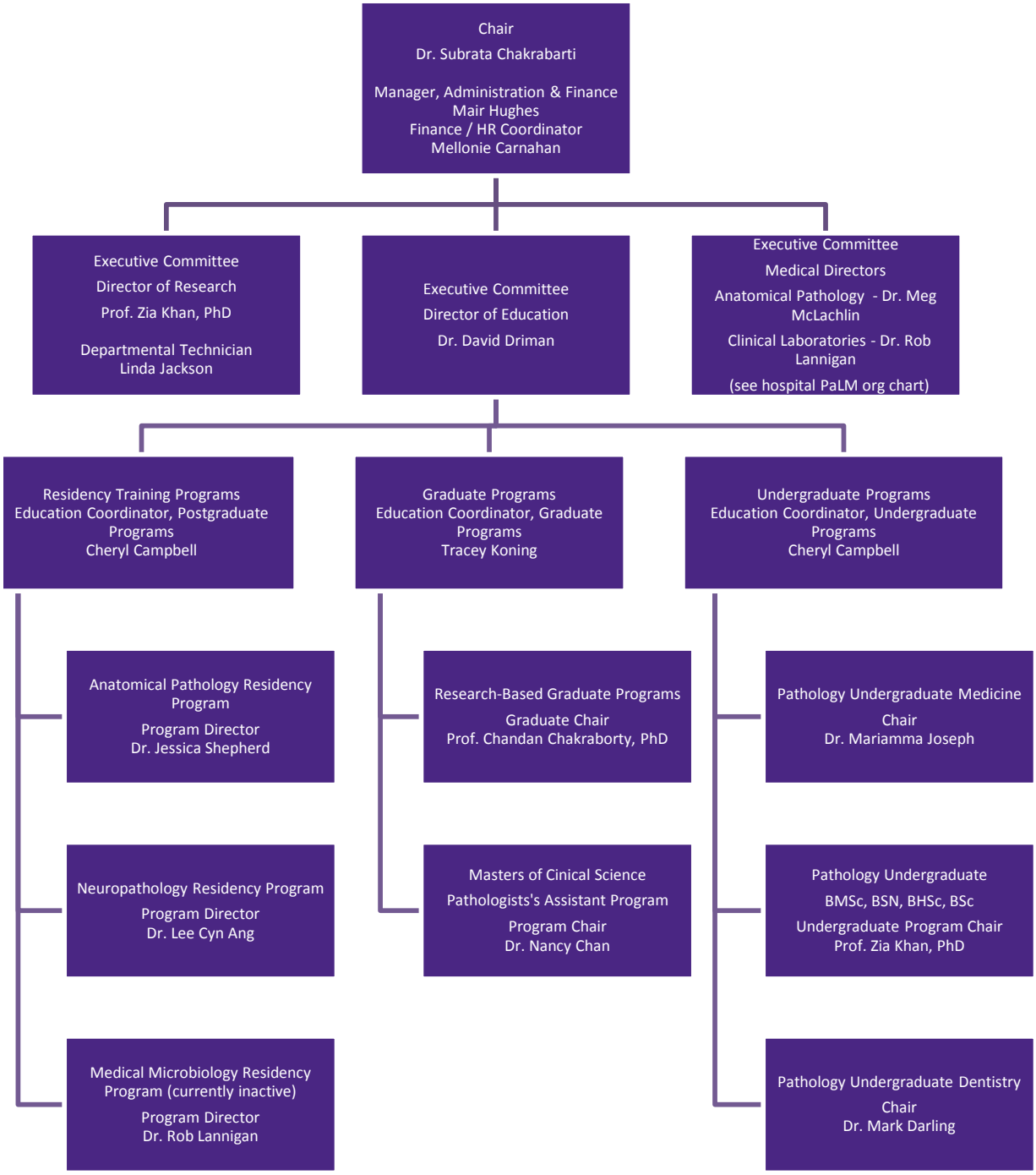
Dwindling research resources remain a major challenge as this limits our capacity to accommodate research training for our students in all programs. It is important to fully appreciate this enrolment challenge considering the plans of Western and Schulich Medicine & Dentistry to increase enrolment over the next few years. Additional resources (faculty and space) are needed to increase intake in Pathology beyond this number. Our hope is that with planned new recruitments and innovative approaches we will be able to overcome these hurdles.

Our education programs continue to be a source of great pride in all areas and special mention must go to the following. Again, for the 24th year in a row, all our Anatomic Pathology residents were successful in their Royal College examination, giving us a 100% success rate. Also of note, our Masters of Clinical Science Pathologists' Assistant program expanded this year as our students now benefit from clinical rotations with the Ontario Centre of Forensic Sciences, The Hospital for Sick Children and Mount Sinai Hospital. This year, too, we have our first report from our newly accredited Area of Focused Competence (Diploma) in Cytopathology program. Looking ahead in our education programming in both postgraduate and undergraduate medicine we will be learning more about competency based medical education and begin to implement changes in line with the Schulich Medical education guidelines. We are considering ways in which to increase enrolment in Honours Pathology modules by using collaborative and team approaches to research.

Dr. Subrata Chakrabarti

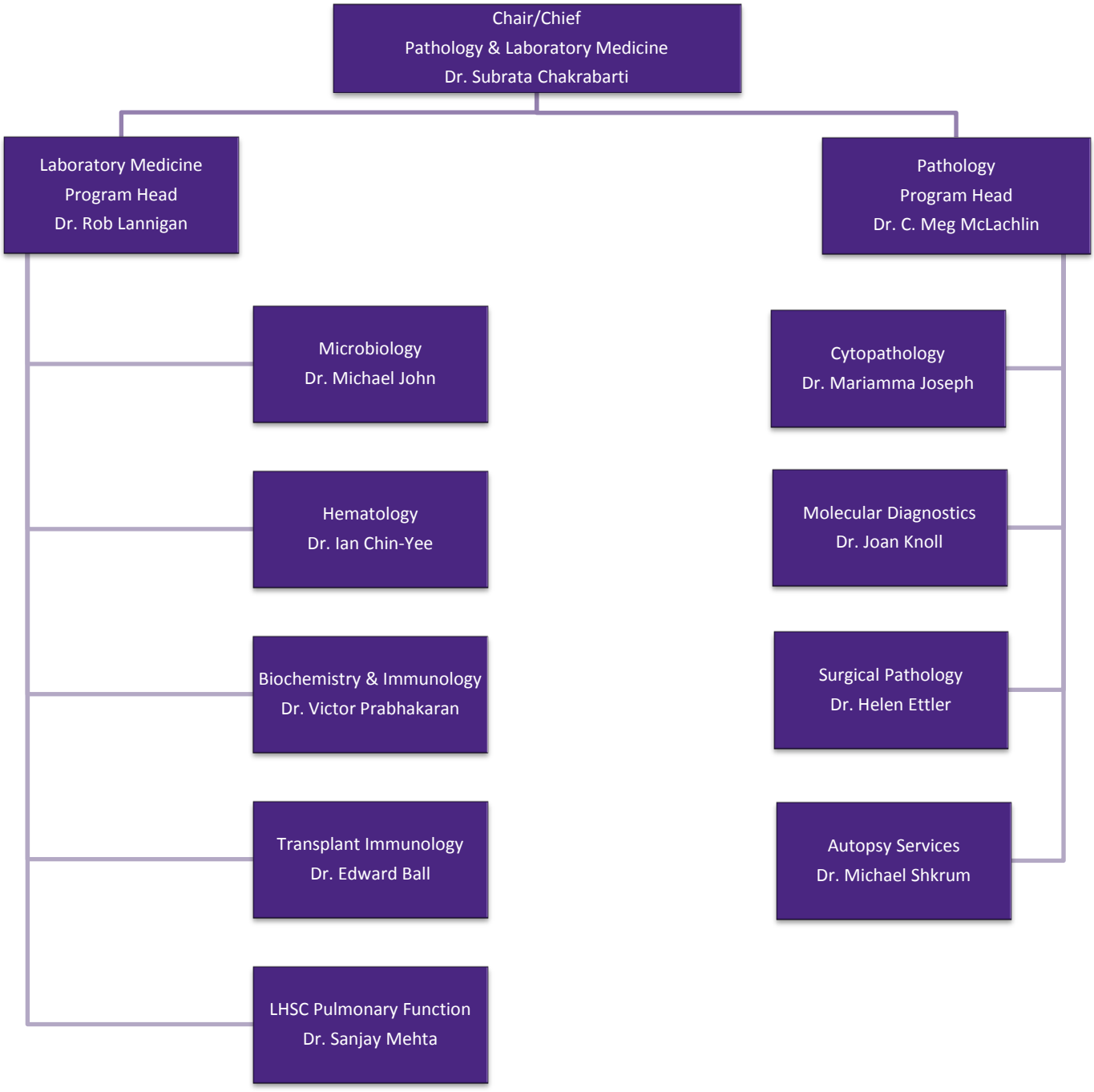
# Organizational Charts

Department of Pathology and Laboratory Medicine, Western University



# Department of Pathology & Laboratory Medicine, LHSC and SJHC

Please see http://www.lhsc.on.ca/lab/org_chart.htm for the full organization charts for Pathology & Laboratory Medicine



# Staff & Faculty

## Department of Pathology and Laboratory Medicine at September 1, 2014

**Full-Time Faculty**

Dr. Peter Ainsworth,
Adjunct Research Professor,
MBChB, PhD

Dr. Lee Cyn Ang,
Professor, MBBS

Dr. Christopher Armstrong,
Associate Professor, MD

Dr. Edward Ball,
Associate Professor, PhD

Dr. Vipin Bhayana,
Associate Professor, PhD

Dr. Lisa Cameron,
Associate Professor, PhD

Dr. Subrata Chakrabarti,
Professor, MBBS, PhD

Dr. Chandan Chakraborty,
Associate Professor, PhD

Dr. Nancy Chan,
Associate Professor, MD

Dr. Thomas Daley,
Professor, DDS, PhD

Dr. Mark Darling,
Associate Professor, MChD

Dr. Johan Delport,
Assistant Professor, MBChB

Dr. David Driman,
Professor, MBChB

Dr. Martin Duennwald,
Assistant Professor, PhD

Dr. Sameer Elsayed,
Associate Professor, MD

Dr. Helen Ettler,
Associate Professor, MBChB

Dr. Manal Gabril,
Associate Professor, MD

Dr. Bertha Garcia,
Professor, MD, MEd

Dr. Candace Gibson,
Associate Professor, PhD

Dr. Jose Gomez Lemus,
Associate Professor, MD

Dr. Aaron Haig,
Assistant Professor, MD

Dr. Rob Hammond,
Professor, MD

Dr. Chris Howlett,
Assistant Professor, MD

Dr. Michael John,
Professor, MBChB

Dr. Mariamma Joseph,
Professor, MBBS

Dr. Zia Khan,
Associate Professor, PhD

Dr. Joan Knoll,
Professor, PhD

Dr. Keith Kwan,
Associate Professor, MD

Dr. Rob Lannigan,
Professor, MDCM

Dr. C. Meg McLachlin,
Professor, MD

Dr. Carolyn McLean,
Associate Professor, MD

Dr. Madeleine Moussa,
Professor, MBBCh

Dr. Jeremy Parfitt,
Assistant Professor, MD

Dr. Victor Prabhakaran,
Adjunct Professor, MD

Dr. David Ramsay,
Professor, MBChB, PhD

Dr. Jack Rip,
Assistant Professor, PhD

Dr. Kamilia Rizkalla,
Professor, MD

Dr. Anthony Rupar,
Associate Professor, PhD

Dr. Angela Rutledge,
Assistant Professor, PhD

Dr. Bekim Sadikovic
Associate Professor, PhD

Dr. Nikhil Sangle,
Assistant Professor, MD

Dr. Jessica Shepherd,
Associate Professor, MBBS

Dr. Mike Shkrum,
Professor, MD

Dr. Norm Smith
Associ ate Professor, PhD

Dr. Alan Tuck,
Professor, MD, PhD

Dr. Elena Tugaleva,
Assistant Professor, MD

Dr. Ted Tweedie,
Associate Professor, MD

Dr. Joanna Walsh,
Assistant Professor, MBBCh

Dr. Bret Wehrli,
Associate Professor, MD

Dr. Michele Weir,
Professor, MD

Dr. Liju Yang,
Assistant Professor, MD, PhD

Dr. Ping Yang,
Assistant Professor, PhD

Dr. George Zahariadis
Associate Professor, MD

**Professors Emeriti**

Dr. Jack Bend

Dr. George Cherian

Dr. John. V. Frei

Dr. Joe Gilbert

Dr. Robert A. Goyer

Dr. Collette M. Guiraudon

Dr. M. Daria Haust

Dr. Zafar Hussain

Dr. Mary Ellen Kirk

Dr. D. Ian Turnbull

Dr. George Wysocki

**Cross Appointees**

* Basic Scientists with Basic Science home in Pathology
** Institute Scientists with Basic Science home in Pathology

Dr. Paul Adams
Professor, Department of Medicine

Dr. Ann Chambers
Professor, Department of Oncology

Dr. Regna Darnell
Professor, Department of Anthropology

Dr. Guido Filler
Professor, Department of Paediatrics

Dr. Cindy Hutnick
Associate Professor, Department of Ophthalmology

Dr. Jonathan Izawa
Associate Professor, Department of Surgery

Dr. Tisha Joy
Assistant Professor, Department of Medicine

Dr. Jim Koropatnick
Professor, Department of Oncology

Dr. Weiping Min **
Professor, Department of Surgery, Lawson Health Research Institute

Dr. Sunil Parapuram**
Assistant Professor, Department of Ophthalmology, Lawson Research Institute

Dr. Tianqing Peng**
Associate Professor, Department of Medicine, Lawson Health Research Institute

Dr. Tau Rui
Assistant Professor, Department of Medicine

Dr. Michael Strong
Professor, Department of Clinical Neurological Sciences

Dr. Lloy Wylie*
Assistant Professor, Department of Psychiatry, Masters of Public Health Program

Dr. Zhu-Xu Zhang**
Associate Professor, Department of Medicine, Lawson Health Research Institute

**Clinical Adjunct Professors/MD**

Dr. Pat Allevato
(Windsor Regional Hospital)

Dr. Mohammad Alomari
(Windsor Regional Hospital)

Dr. Saad Awad
(Chatham Kent Hospital, Chatham)

Dr. Ardit Deliallisi
(Grey Bruce Health Services, Owen Sound)

Dr. Mohamed El-Fakharany
(Windsor Regional Hospital)

Dr. Akram Elkeilani
(Windsor Regional Hospital)

Dr. Emily Filter,
Adjunct Professor/MD

Dr. Ram Gidwani
(Bluewater Health)

Dr. Muhammad Hakim
(Windsor Regional Hospital)

Dr. Rosemary Lubynski
(Bluewater Health)

Dr. Michael Pickup,
Adjunct Professor/MD

Dr. Reda Saad
(Chatham Kent Hospital, Chatham)

Dr. Sajid Shukoor
(Hotel Dieu Grace, Windsor)

Dr. David Shum
(Windsor Regional Hospital)

Dr. Pamela Smith
(Windsor Regional Hospital)

**Adjunct Research Professors**

Dr. Edith Arany,
Adjunct Assistant Professor

Dr. Jack Bend,
Adjunct Research Professor

Dr. Tyrrel de Langley,
Adjunct Assistant Professor

Dr. Carol Herbert,
Adjunct Research Professor

Dr. Melanie Katsivo,
Adjunct Research Professor

Dr. Teresa Van Deven,
Adjunct Research Professor

Dr. Xiufen Zheng,
Adjunct Research Professor

**Western University – Department of Pathology and Laboratory Medicine Staff**

Mair Hughes,
Manager, Administration and Finance

Kathilyn Allewell,
Media Specialist (on leave)

Cheryl Campbell,
Education Coordinator, Undergraduate & Postgraduate Education Programs

Mellonie Carnahan,
Finance/HR Coordinator

Rodney Hagle,
Acting Media Specialist

Linda Jackson-Boeters,
Departmental Technician

Tracey Koning,
Education Coordinator, Graduate Education Programs

Susan Underhill,
Part-time Administrative Assistant

## AWARDS & DISTINCTIONS

*(July 1, 2013 - June 30, 2014)*

**Dr. Lee Cyn Ang** was the recipient of the 2013 Dr. M. E. Kirk Annual Teaching Award for Excellence in Resident Teaching.

Distinguished University Professor Emeritus, **Jack Bend, PhD,** was recognized with the University of Manitoba Distinguished Alumni award, Faculty of Pharmacy, 2014.

**Dr. Mark Darling** received the 2013 Elsevier Oral Surgery Oral Medicine Oral Pathology Oral Radiology Top Reviewer award.

**Dr. Sameer Elsayed** received the distinction of FACP (Fellow of the American College of Physicians) effective July 1, 2013.

Professor **Candace Gibson, PhD**, was appointed Assistant Dean, Basic Medical Science Undergraduate Education, Schulich School of Medicine & Dentistry.

In March 2014, **Dr. Zia Khan** received the University Students' Council (USC) Teaching Honour Roll, 2012-2013, Western University.

**Dr. Mariamma Joseph** received the 2014 Canadian Association for Medical Education (CAME) Certificate of Merit Award at the Canadian Conference on Medical Education (CCME) 2014 in Ottawa in April 2014. The award recognizes faculty committed to medical education in Canadian medical schools, taking into account their contributions made toward teaching, evaluation, educational leadership and course coordination.

**Dr. Kamilia Rizkalla** was the 2014 recipient of the Douglas Bocking Award. This award, created in honour of the former Dean of Medicine and Vice-Provost, is given annually to a faculty member at the Schulich School of Medicine & Dentistry who has made an outstanding contribution to the development of medical education over the last four years.

**Dr. Michael Shkrum** was the recipient of an award from the Royal College of Physicians and Surgeons of Canada Specialty Chairs Committee. He received the Lean-on-me Award for Forensic Pathology.

**Dr. Michele Weir** received the 2013 Exceptional Service Award (Leader-of-the-Pack) for leadership in the Area of Focused Competence Program Committee in Cytopathology, Royal College of Physicians & Surgeons of Canada.

2014 Certificate of Merit was awarded to **Dr. Michele Weir** for outstanding contributions to medical education from the Canadian Association for Medical Education.

**Dr. Michele Weir** and co-chairs (Drs. J. Schmidt & J. Rawlins) received the 2014 HUMEC award for Year 2 Reproduction course (for course & co-chairs).

## SOCIAL RESPONSIBILITY

The staff and faculty of the Department of Pathology and Laboratory Medicine continue to devote their valuable time both at the workplace and in the community to lead various initiatives over the past year. Some examples include:

Every night a group of volunteers prepare dinner at the Ronald McDonald House (RMH) for the families of children who are hospitalized. Eleven members of Pathology had this opportunity in December, 2013 and together, they prepared dinner for 60 people. Everyone worked side by side making chicken chili with rolls, salads, vegies and dip, lemon meringue pies, chocolate pies and squares. It was a lot of fun and a wonderful experience.

Each year Drs. Mike Shkrum and Ted Tweedie teach topics in Forensic Pathology to experienced police officers at the Ontario Police College in Aylmer.

Drs. Chambers and Tuck, along with other faculty, research associates, graduate students, and technicians from the Translational Breast Cancer Research Unit at the London Regional Cancer Program, participated in the Breast Cancer Society of Canada's Mother's Day 5K walk/run, raising over $7,600 for breast cancer research.

2013 Food Drive Challenge – What a great way to start 2014! This season during the Holiday Food Drive Challenge, the two groups of our competitors collected a combined 3,800 pounds of food for the London Food Bank. And Pathology and Laboratory Medicine as a group collected 6,717 pounds ourselves! Congratulations everyone! Once again, Pathology and Laboratory Medicine were the winners of the Food Drive Challenge! In the end, the real winners are our community's families who truly needed the assistance at this time of year.

## INTERNATIONAL EFFORTS

Faculty members in the Department of Pathology and Laboratory Medicine share their knowledge, skills and experience globally. Over the past year these are some of the international efforts in which our faculty have been involved.

Dr. Rob Lannigan continues his work as a co-investigator with The Coastal Cities at Risk (CCaR) project, a $2.5 M project spanning Canada (the city in Canada is Vancouver), Manila, Bangkok and Lagos. The project is multi-year, and the trans-disciplinary team is committed to developing an approach to model city resilience in the face of sea level rise, storm surges and extreme precipitation events. The team consists of scientists from a number of disciplines: engineering, geography, climatology, economics, political science, health and social vulnerability. Dr. Lannigan is the health representative and has attended regular meetings of all the international participants. Research findings are published regularly and there have already been a number of Masters and PhD's conferred.

Dr. David Ramsay was on the faculty of a course on the Histology of Forensic Pathology in Salamanca, Spain. "Traumatismos craneoencefálicos. Caracteristicas microscópicas de las lesions recientes y evolución temporal de las mismas. Curso Histopatología Forense, Facultad de Medicina de Salamanca, Spain. June 2014.

Dr. Jose Gomez spends a week per semester (pro bono) at the Javeriana University Medical School in Bogotá, Colombia. His teaching there includes: Pathology of the Genitourinary Tract for medical students, a one-week lecture series including a genitourinary gross pathology lab session; a slide seminar for pathology residents on challenging cases in genitourinary pathology; and, daily consultations in genitourinary pathology for pathologists in general practice.

As a member of the Royal College of Physicians and Surgeons of Canada, Dr. Bertha Garcia participated in and helped organize the first Latin American Conference in Residency Education in October 2014. This conference took place in Santiago, Chile and was co-sponsored by Pontificia Universidad Catolica de Chile. Dr. Garcia delivered 5 workshops (3 hours each).

Dr. Jack Bend has published a study from the work done in Kenya with a grant from the IDRC. Dr. Bend was a key member of this research project concerning the sustainability and public health of Lake Naivasha in Kenya. The project was driven by an interdisciplinary team of researchers led by Professor Charles Trick, the Ivey Chair in Ecosystem Health at Schulich Medicine & Dentistry and the Faculty of Science at Western and Professor William Shivoga of the Faculty of Environmental Sciences, Egerton University, Kenya. The interdisciplinary team at Western included members of the Faculties of Science and Social Science, as well as basic and clinical researchers from Schulich. In addition, graduate students from the Anthropology, Environmental Pathology-Ecosystem Health, and Evolution and Ecology graduate streams at Western and from the Faculties of Environmental Sciences and Health from Egerton University were involved in this research project, as are interns from both campuses.

Drs. Joan Knoll and Peter Rogan (Biochemistry) are collaborating on a breast cancer project with Dr. M. L. Carcangiu and Dr. A. Moliterni at the National Cancer Institute in Milan, Italy. The project is 'Relevance of Genomic Stability in Breast Cancer Chemotherapeutic Response: Collaborative Study.

Dr. Johan Delport is the faculty representative and medical lead for MedOutreach, a student-led initiative at The University of Western Ontario to help promote and improve access to care for the people of Tanzania. Dr. Delport also supports our international efforts as a member of Schulich's Global Health Elective Funding Committee and is an adjudicator for Global Health funding applications.

Dr. Lee Cyn Ang travelled in September 2013 to the Prince of Wales Hospital Postgraduate Education Centre in Hong Kong to give diagnostic slide seminars as part of the Neuropathology Course, International Academy of Pathology and Association of Directors of Pathology of China,

In April 2014 Dr. Ang presented a neurodegenerative diseases slide seminar at the Department of Pathology, Singapore General Hospital.

Dr. Edith Arany established collaborations in 2013-2014 with the University of Buenos Aires, Argentina. Her collaboration with Dr. Alicia Jawerbaum was very productive and they were able to publish a paper in the Journal of Molecular Endocrinology. As part of this ongoing collaboration, Dr. Arany was selected to give an oral presentation at the 46th Annual Meeting of the Diabetic and Pregnancy study group held in October in Budapest, Hungary. Dr. Arany also initiated and established a scientific partnership with the Pontificia Universidad de Chile through the Lawson Research Institute.

# Promoting Excellence in Education

## Report of the Director of Education

**Introduction by Dr. David Driman, Director of Education**

From an educational perspective, the department continues to grow and perform at a high level; particularly pleasing is to see this happening across all aspects of education. At the undergraduate level, there is ever-increasing interest in the BMSc program by academically high-level students and both a new course and a new combined Honors Specialization module have been introduced. Dentistry student training continues to provide essential teaching in oral pathology as well as systemic pathology, and for medical students, new programs to engage students in the clinical years have been developed and have proven successful. In graduate education, enrolment continues to climb and students are engaged in research across a broad front of scientific experience ranging from stem cell biology to diabetes. A new part-time research based graduate program has proven to be a popular pathway for potential clinician-scientists. The Pathologists' Assistant program has expanded and is increasingly popular, allowing students to train in an area of increasing demand in the Canadian healthcare system. Postgraduate medical education remains a major strength of the department, building on a long history of educational excellence. Fortunately, the department is able to continue to offer fellowship training in surgical pathology, and the new competency based training in cytopathology is a welcome development. The department continues to mount a regular series of continuing educational experiences including Grand Rounds and a successful full-day program in CME for trainees and community pathologists. All in all, education continues to be a great strength of our department, and all members of the department, teachers and students alike, deserve credit for this.

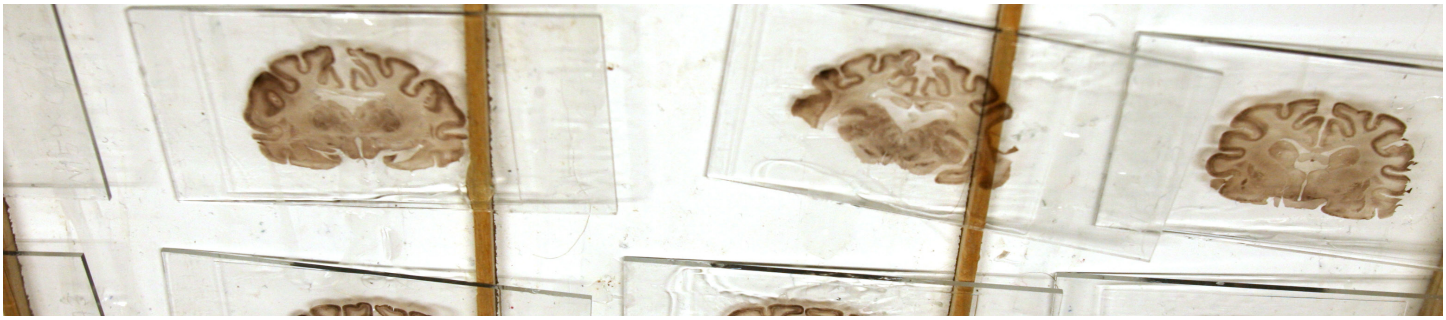
| 14 | 33 | 12 |
|---|---|---|
| RESIDENTS 2013-2014 | GRADUATE STUDENTS 2013-2014 | PATHOLOGISTS' ASSISTANTS 2013-2014 |

## Postgraduate Education Programs

The Department of Pathology and Laboratory Medicine offers intensive, integrated training programs in Anatomical Pathology and Neuropathology. The Medical Microbiology program is currently inactive. These programs fulfill the requirements of the Royal College and are fully accredited. The training programs may be used to embark on a career in either an academic or community hospital setting.

Our department is a combined clinical and basic science department. As such, our training programs offer a range of clinical experiences and opportunities for research. Programs approved by the Royal College of Physicians and Surgeons are currently offered in Anatomical Pathology and Neuropathology.

Pathology and Laboratory Medicine also offers advanced training with our Clinical Fellowship in Surgical Pathology and our newly accredited Area of Focused Competence (AFC) Diploma Program in Cytopathology.



## 1) ANATOMICAL PATHOLOGY RESIDENT TRAINING PROGRAM

***Report of the Program Director, Dr. Jessica Shepherd***

There were 11 residents in Anatomical Pathology in 2013-14. The PGY2-5 residents are primarily located at the University Hospital, and only go off site for frozen section coverage at other hospitals or to attend some academic events or rounds. They have the benefit of the Regional Forensic Unit also being on site, as well as a parallel Neuropathology Program, and adjacent Schulich medical/dental school, so there is beneficial sharing of facilities.

All the full-time anatomical pathologists participated in teaching and mentoring residents, covering one or more subspecialty areas, as members of subspecialty teams. On any given day, most pathologists are on site and interact in the handling of service and consult work, resulting in a comprehensive and cohesive learning experience for the residents, with broad practical exposure and opportunity for role-modeling. In addition to pathology residents, there were two fellows who contributed to resident education, and there was a steady stream of elective off-service residents, medical students and observers, such that the working space in the residents' rooms was almost always filled to the seams.

There were many educational rounds throughout the academic year. Residents participated in teaching medical student small group sessions, and taught each other through oral presentations in rounds and as components of their weekly Academic Half Days. Residents (except PGY5s) presented their research, alongside graduate students, at the Annual Department Research Day in March.

***SWOT analysis***

Strengths

- Exposure to wide variety of cases due to physical location of teaching program, including the regional forensics unit, at one consolidated site, presence of large regional cancer care centre and wide referral base
- High faculty-to-resident ratio, strong faculty commitment to resident education, and faculty mentoring of junior residents
- Quarterly internal examinations and biannual practice oral examination
- Residents' continued success at the Royal College examinations (unbroken 24-year pass record) and in developing sound practice competence
- Many opportunities for residents to teach and present

Weaknesses

- Tightness of working space for residents and other students, requiring constant monitoring
- Necessity for an internal program review in December 2014, mandated by the Royal College; however, the identification and correction of weaknesses has, with the hard work of the training committee and faculty, made the program better than it already was
- Exposure to and attraction of medical students to pathology as a desirable specialty

Opportunities

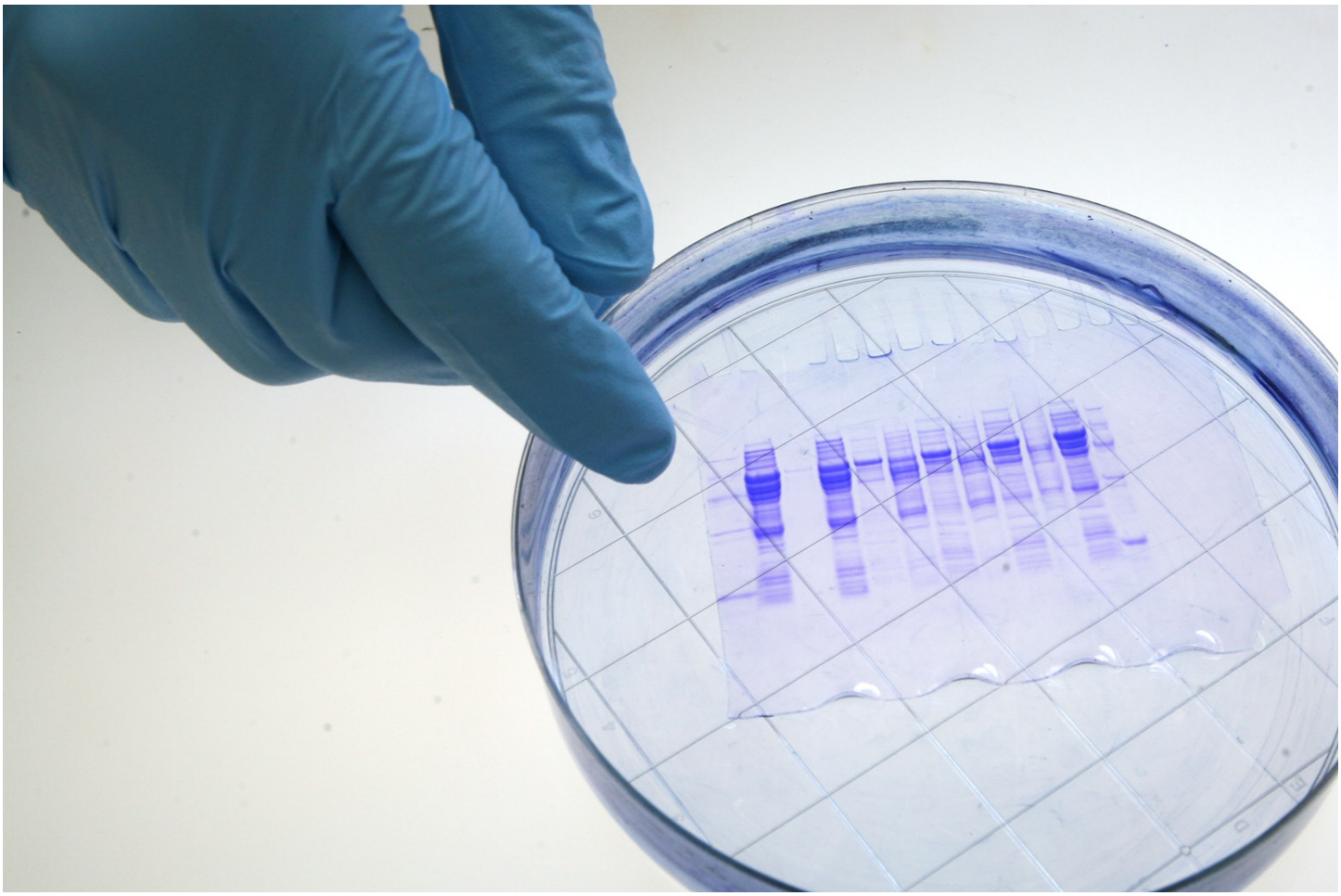
- Implementation of a pilot project for competency-based medical education in Autopsy pathology, ahead of this future direction of the Royal College

Threats

- Inability to train more residents due to space constraints
- Restructuring and cost-cutting on the University side may affect support for the program
- Ongoing unpredictability of the job market for new pathologists, since most positions are tied to hospitals whose budgets continue to be cut, despite the increasing workload and case complexity that pathologists are facing

***Looking ahead***

Learning more about competency-based medical education and beginning to implement program changes in that direction.



## 2) NEUROPATHOLOGY RESIDENT TRAINING PROGRAM

***Report of the Program Director, Dr. L.C. Ang***

The residents not only actively participate in service but are excellent teachers to other residents rotating through the program. The small number of teachers has also made organization of formal teaching difficult and time consuming, but this has been overcome by organizing our journal club, teaching sessions and self-assessment assignments along the format of a curriculum so that all the relevant topics can be covered. As there are very few positions available for neuropathologists in Canada, career planning for current residents can be difficult and recruitment of future residents quite challenging. This program has three residents, one in PGY5, one PGY3, and one in PGY2. Throughout the year, a number of AP residents, Neurology residents and Neurosurgery residents completed their electives in our program.

The three full-time faculty members in Neuropathology (Drs. David Ramsay, Robert Hammond and Lee-Cyn Ang) are involved in the training of the residents in Neuropathology as a specialty (approximately three years), and more than 26 anatomical pathologists are involved in the training of these residents in their one-year compulsory rotation in the specialty of Anatomical Pathology. The program administration has been provided by Ms. Susan Stewart at Western University.

Almost all clinical teaching is concentrated at University Hospital. In addition to teaching during brain cutting and microscopic sign-out sessions, there is a weekly unknown slide session, as well as a Teaching Seminar for NP residents. For Anatomical Pathology teaching, residents are required to attend the Wednesday noon rounds with the Anatomical Pathology residents where surgical biopsies are presented and the Forensic Pathology Rounds teaching where general forensic pathology is being taught. Pathology Grand Rounds and the Robert Zhong Research Seminars are held every month. For teaching in Clinical Neurosciences, there are the Grand Neuroscience Rounds every Tuesday morning for neurosurgery and neurology cases, the epilepsy rounds and neuroradiology rounds weekly, and neuromuscular rounds monthly, all of which residents are to attend. A monthly Neuropathology Slide Teaching Session on the CNS Academic Half-day is being held for all Neuropathology, Neurology and Neurosurgery residents.

## 3) SURGICAL PATHOLOGY FELLOWSHIP PROGRAM

***Report of the Program Chair, Dr. David Driman***
There was one surgical pathology fellow in the department in 2013-2014. Dr. Derek Kohler rotated through three subspecialty areas: genitourinary, breast and hematological pathology.

***SWOT analysis***

Strengths

- Quality of teaching staff in department
- Volume of material available for learning
- Pleasant and agreeable learning environment

Weaknesses

- Physical location of fellows' office
- Timing of application process

Opportunities

- Possibility of innovative funding sources and mechanisms
- Greater participation of fellows in resident teaching

Threats

- Withering sources of funding

***Looking ahead***

The need for continued stable funding for the surgical pathology fellowship program is important, ideally for two positions. This would be appropriate given the strengths of the department in surgical pathology education and the large volume of material available. Ongoing stable funding would allow the application process to be moved forward and permit the program to be more competitive with programs in the US, which typically have an earlier application deadline. It would also have a secondary benefit in that Western would become known across Canada (where the number of fellowship positions available elsewhere is low) as a centre where residents can undertake fellowship training.

## 4) AREA OF FOCUSED COMPETENCE (DIPLOMA) IN CYTOPATHOLGY

***Report of the Program Chair, Dr. Michele Weir***
This is the first report for the Area of Focused Competence (Diploma) program in Cytopathology at Western University. This is a new program which is entirely different from a subspecialty or specialty program at the Royal College of Physicians and Surgeons of Canada for the following reasons: 1) it is competency based without a final examination; 2) assessment is based on a summative portfolio; 3) funding for the program and candidate is not supported by the Royal College; and, 4) training is not entirely time dependent.

We have a collaborative training team including a cytotechnologist, four cytopathologists, one endocrinologist, one radiologist and three head and neck surgeons. We are supported by an administrative assistant as well as the Post Graduate Education Office. This program would not have been possible without the outstanding contributions from the team: a profound thank you to all of the team!

Our program provides advanced training in Cytopathology to Royal College certified or eligible candidates in six areas: 1) interpretation of Cytopathology specimens; 2) laboratory management; 3) performance of fine needle aspiration biopsies; 4) selection and interpretation of ancillary studies; 5) advancement of Cytopathology through scholarship; and ,6) engagement of health care professionals in the importance of Cytopathology in patient wellness and care. Our training guides include a Portfolio with key and enabling competencies and assessment tools, as well as a Competency Training Requirement document, all set by the Royal College.

It has been a busy but exciting year for the team preparing our accreditation application, building our program and participating in trainee supervision and assessment. Two notable events occurred which we are celebrating: 1) our program was accredited by the Royal College in March 2014 (the first program in Canada); and, 2) our first trainee, Dr. Emily Filter, completed the program in June 2014 and has submitted her portfolio to the Royal College for assessment. We now await the Royal College's decision of her submitted materials.

As a new program, there will be a mandatory internal review in two years. We have already begun changes to our program and evaluation of areas requiring improvement with particular attention to trainee and supervisor workloads, as well as competition of our trainee with residents and medical students on the fine needle aspiration services. As with any new curriculum, there will likely be changes to the training requirements from the Royal College and we will need to update our program. We recognize that funding is dependent on limited departmental sources.

For now, the team is taking a well-deserved break for 2014-5, but we are reviewing applications for 2015-16. We are especially looking forward to the on-line submission of the e-portfolio and e-logbook in the near future, since it will streamline assessment material submission.

Reflecting back on the year, our experience has been rewarding, educational and a once-in-a-lifetime opportunity now that the Royal College has finally recognized advanced training in Cytopathology in Canada.

## FACILITIES

Residents and Fellows are primarily located at one site, the Department of Pathology and Laboratory Medicine at University Hospital at the London Health Sciences Centre, and only go off site for frozen section coverage or to attend academic events or rounds. Our trainees also benefit from having the Regional Forensic Unit on site and by being within walking distance of Western University. There is much beneficial sharing of facilities and educational interaction, as well as the formal rotations offered in these areas.

## POSTGRADUATE MEDICINE TRAINEES AT JULY 1, 2014

***Anatomical Pathology Residency Program***
Dr. Saeed Alsiry, PGY2
Dr. Fahd Al-Sufiani, PGY5
Dr. Murad Alturkustani PGY5
Dr. Matthew Cecchini, PGY1
Dr. David Garcia Marquez, PGY3
Dr. Emily Goebel, PGY2
Dr. Matthew Kubica, PGY2
Dr. Allison Osmond, PGY5
Dr. Brian Schick, PGY4
Dr. Sundip Shah, PGY1
Dr. William Stecho, PGY3
Dr. Qi Zhang, PGY4

***Neuropathology Residency Program***
Dr. Huda Alghefari, PGY1
Dr. Maher Kurdi, PGY3

***Fellowship Program***
Dr. Chaturika Herath, Anatomical Pathology
Dr. Amir Salehi, Anatomical Pathology
Dr. Arunee Sighanaeh, Neuropathology

***Postgraduate Medicine Graduating Class 2014***
Dr. Emily Filter – Area of Focused Competence (AFC) Diploma Program in Cytopathology
Dr. Rebekah Jacques, Anatomical Pathology
Dr. Derek Kohler, Surgical Pathology Fellowship
Dr. Cady Pocrnich, Anatomical Pathology

***Postgraduate Program Teaching Staff***
***Anatomical Pathology***
29 full-time faculty anatomical pathologists, including
Dr. Jessica Shepherd, Program Director

***Neuropathology***
Three full-time faculty neuropathologists, including
Dr. Lee, Cyn Ang, Program Director

***Fellowship Program***
Dr. David K. Driman, Director

***Cytopathology Diploma Program***
Dr. Michele Weir, Director,

## RESIDENT AWARDS

June 2013: PGY4 resident Dr. Cady Pocrnich was the winner of the Hugh Curry Award at the annual CAP-ACP Meeting in Quebec City. This award recognizes the best poster related to the field of cytopathology presented by a resident.

2014 APRD Chair's Award for the Best Clinical Science Presentation: Will Stecho. Title of presentation: Assessment of Resident Grossing Skills in the Digital Age: Evaluation and Implementation of a Mobile Digital Assessment Tool

2014 APRD Best Clinical Science Poster Presentation Award: Brian A. Schick. Title of presentation: Negative Colorectal Polyp Biopsies: The Utility of Cutting Deeper Levels

2014 Robert Smout Resident Research Award: Allison Osmond

**Resident Publications**

***Caragea M**, Smith P, Howlett C, Parfitt J, Chakrabarti S. "Progressing" Multicystic Mesothelioma of the Liver. Can J Path. 2013:5(2) Summer:60-4.*

***Cecchini MJ**, Thwaites MJ, Talluri S, MacDonald JI, Passos DT, Chong JL, Cantalupo P, Stafford PM, Sáenz-Robles MT, Francis SM, Pipas JM, Leone G, Welch I, Dick FA. A retinoblastoma allele that is mutated at its common E2F interaction site inhibits cell proliferation in gene-targeted mice. Mol Cell Biol. 2014 Jun;34(11):2029-45.*

*Thwaites MJ, **Cecchini MJ**, Dick FA. Analyzing RB and E2F during the G1-S transition. Methods Mol Biol. 2014;1170:449-61.*

*Coschi CH, Ishak CA, Gallo D, Marshall A, Talluri S, Wang J, **Cecchini MJ**, Martens AL, Percy V, Welch I, Boutros PC, Brown GW, Dick FA. Haploinsufficiency of an RB-E2F1-Condensin II Complex Leads to Aberrant Replication and Aneuploidy. Cancer Discov. 2014 Jul;4(7):840-53.*

*Yoon JY, Appleton T, **Cecchini MJ**, Correa RJ, Ram VD, Wang X, Ng E, Speechley M, Wilcox JT. It begins with the right supervisor: importance of mentorship and clinician-investigator trainee satisfaction levels in Canada. Clin Invest Med. 2013 Dec 1;36(6):E269-76.*

***Li-Chang HH**, Driman DK, Levin H, Siu VM, Scanlan NL, Buckley K, Cairney AE, Ainsworth PJ. Colorectal cancer in a 9-year-old due to combined EPCAM and MSH2 germline mutations: case report of a unique genotype and immunophenotype. J Clin Pathol. 2013 Jul;66(7):631-3.*

*Wong D, **Irimies A**, Shkrum J, Joseph MG. Malignant combined squamomelanocytic tumor: a clinical case. Dermatol Online J. 2013 Sep 14;19(9):19610.*

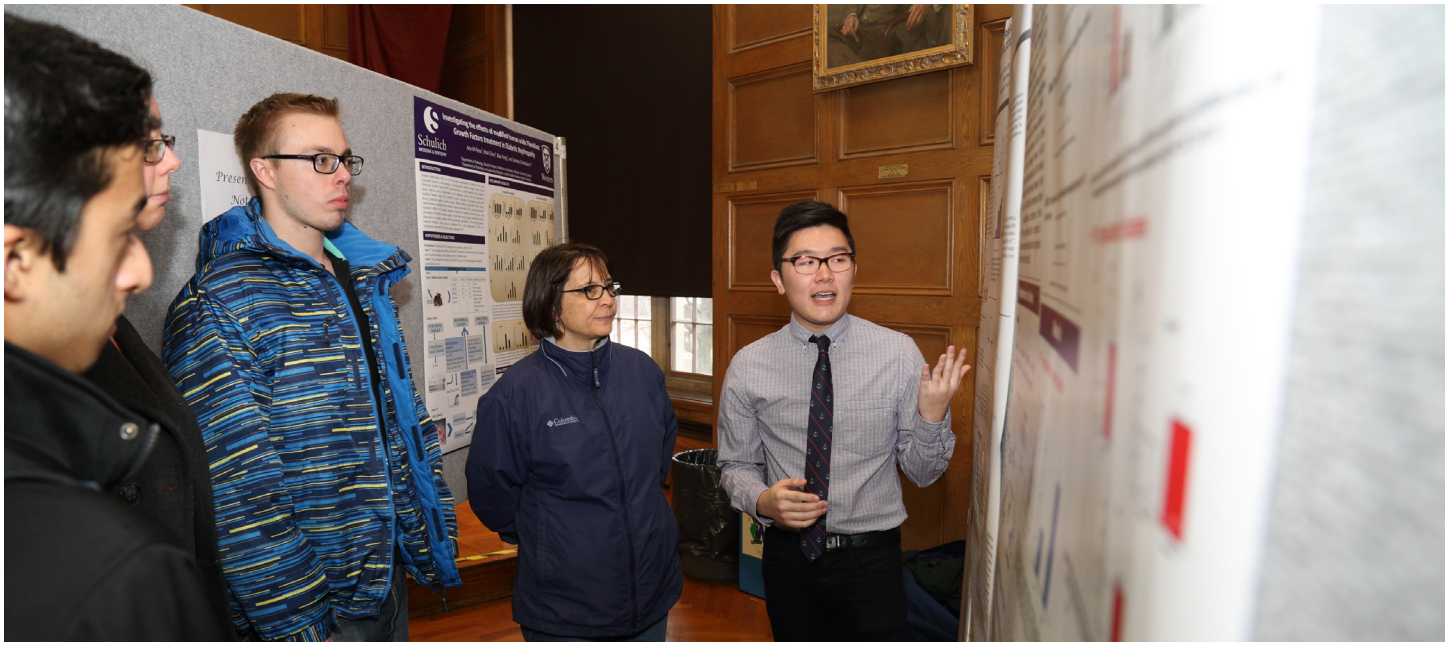
***Castonguay MC, Li-Chang HH**, Driman DK. Venous Invasion in Oesophageal Adenocarcinoma: Enhanced Detection with Elastic Stain and Association with Adverse Histologic Features and Clinical Outcomes. Histopathol 2014;64:693-700.*

*Karamchandani JR, White NMA, Scorilas A, Gabril MY, **Filter E**, M Yousef GM. Profilin-1 Expression Is Associated With High Grade and Stage and Decreased Progression-Free Survival in Renal Cell Carcinoma Mod Pathol. March 2014.*

***Osmond A, Li-Chang H**, Kirsch R, Divaris D, Falck V, Feng Liu D, Marginean C, Newell K, Parfitt J, Rudrick B, Sapp H, Smith S, Walsh J, Wasty F, Driman DK. Interobserver variability in assessing dysplasia and architecture in colorectal adenomas: a multicentre Canadian study. J Clin Pathol doi:10.1136/jclinpath-2014-202177.*

***Schick BA**, McLean CA, Dri man DK. Negative colorectal polyp biopsies: The utility of cutting deeper levels. Mod Pathol 2014;27:202A, #823.*

# Graduate Programs



Challenges remain from two perspectives: marketing and resource-related issues. Further growth will depend on continued faculty recruitment and the availability of research funding. We believe that with the recruitment of the past years and future strategic new recruitments, we will be able to sustain this growth.

## 1) RESEARCH BASED GRADUATE PROGRAM

***Report of the Graduate Chair, Dr. Chandan Chakraborty***

### Program Overview

Research training is provided both at the MSc and at the PhD levels. This is an integrated research program and investigation occurs at the molecular, cellular, tissue, whole organism, and clinical levels. Students carry out supervised research in various thematic areas, including cancer, diabetes, transplantation, stem cell biology, neurodegenerative diseases, cardiovascular diseases, developmental defects, molecular genetics and toxicology. The goal of our graduate program is to create tomorrow's researchers, scientists who will make significant original contributions to the global understanding of disease diagnosis and mechanisms. Graduates from our program are qualified for a diverse set of careers including academia, government, and the pharmaceutical industry and have been successful in each of these sectors. To further address the specific need for tomorrow's scientists and to train clinician-researchers, an under-resourced profession in Canada, we have initiated a successful part-time research based graduate program.

### Graduate Student Enrolment

In the past several years we have experienced an unparalleled growth in our pathology graduate education program. For example, from a total of 14 MSc and 6 PhD students in September of 2005, enrolment increased to 36 MSc and 11 PhD students in September of 2010 (see Table 1). The apparent reduction in the number of full-time MSc students after 2010 is due to the separation of the graduate programs into two streams: research-based and course-based PA programs. Our achievements fulfill the mandate of our University to increase graduate student enrolment. Our faculty members are very successful in recruiting high-quality research students into their research laboratories.

### Faculty supervisors and research areas

The department currently has 46 Pathology faculty members approved for graduate student supervision, some of whom are heavily involved in the PA training program. Several of these individuals are also members of interdisciplinary graduate programs. Table 2 lists our graduate faculty members.

### Department of Pathology and Laboratory Medicine Research Graduate Education Committee *(at September 1, 2014)*

Dr. Chandan Chakraborty, Graduate Chair
Dr. Nancy Chan (Program Director – MCISc PA Program)

Dr. Mark Darling (Graduate Faculty Member)

Dr. David Driman (Director of Education)

Dr. Martin Duennwald (Graduate Faculty Member)

Dr. Chris Howlett (Graduate Faculty Member)

Dr. Zia Khan (Director of Research)

Mr. Richard Filek (Student Representative)

Dr. Subrata Chakrabarti (Chair/Chief, Department of Pathology and Laboratory Medicine)

Ms. Tracey Koning (Ex-Officio Graduate Program Administrator)

Ms. Mair Hughes (Ex-Officio Manager of Administration & Finance)

**Table 1: Enrolment in the Pathology Graduate Program**

| Academic Year | MSc FT | MSc PA FT | MSc PT ** | MSc Total | PhD FT | PhD PT | PhD Total | Total FT | Total PT | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| 2005-2006 | 11 | 0 | 3 | 14 | 5 | 1 | 6 | 16 | 4 | 20 |
| 2006-2007 | 9 | 0 | 4 | 13 | 3 | 2 | 5 | 12 | 6 | 18 |
| 2007-2008 | 10 | 4 | 4 | 18 | 5 | 1 | 6 | 19 | 5 | 24 |
| 2008-2009 | 9 | 8 | 3 | 20 | 4 | 2 | 6 | 21 | 5 | 26 |
| 2009-2010 | 15 | 8 | 6 | 29 | 5 | 2 | 7 | 28 | 8 | 36 |
| 2010-2011 | 18 | 8 | 10 | 36 | 9 | 2 | 11 | 35 | 12 | 47 |
| 2011-2012 | 13 | 8 | 7 | 28 | 12 | 2 | 14 | 28 | 14 | 42 |
| 2012-2013 | 7 | 8 | 6 | 21 | 12 | 2 | 14 | 35 | 8 | 43 |
| 2013-2014 | 14 | 12 | 9 | 35 | 8 | 2 | 10 | 34 | 11 | 45 |

**** MSc PT - Oral Maxillofacial students have been counted even though they are not counted until the 4th year of their degree.**

**Table 2: Members of Research Graduate Program Faculty (at September 1, 2014)**

| Name | Rank | Home Department |
|---|---|---|
| Adams, Paul C | Professor | Medicine |
| Ang, Lee-Cyn | Professor | Pathology |
| Arany, Edith | Adjunct Research Professor | Medicine |
| Bend, John R | Professor | Pathology |
| Burneo, Jorge G | Associate Professor | Clinical Neurological Science |
| Cameron, Lisa | Associate Professor | Pathology |
| Chakrabarti, Subrata | Professor | Pathology |
| Chakraborty, Chandan | Associate Professor | Pathology |
| Chambers, Ann F | Professor | Oncology |
| Chan, Nancy | Associate Professor | Pathology |
| Daley, Thomas D | Professor | Pathology |
| Darling, Mark R | Associate Professor | Pathology |
| Delport, Johannes A | Assistant Professor | Pathology |
| Dhanvantari, Savita | Assistant Professor | Medical Biophysics |
| Duennwald, Martin | Assistant Professor | Pathology |
| Garcia, Bertha | Professor | Pathology |
| Gibson, Candace Joyce | Associate Professor | Pathology |
| Hammond, Robert Ralph | Professor | Pathology |
| Herbert, Carol P | Professor | Family Medicine |
| Howlett, Christopher Jon | Assistant Professor | Pathology |
| Hutnik, Cindy Mary-Lynn | Associate Professor | Ophthalmology |
| Jevnikar, Anthony M | Professor | Medicine |
| Joy, Tisha Rosalin | Assistant Professor | Medicine |
| Karlik, Stephen | Professor | Pathology |
| Khan, Zia Ali | Associate Professor | Pathology |
| Knoll, Joan Helen Mary | Professor | Pathology |
| Koren, Gideon | Professor | Pediatrics |
| Koropatnick, D James | Professor | Oncology |
| Lannigan, Robert | Professor | Pathology |
| Luke, Patrick P W | Professor | Surgery |
| McCormick, John | Associate Professor | Microbiology & Immunology |
| Megyesi, Joseph Frank | Associate Professor | Clinical Neurological Sciences |
| Min, Wei-Ping | Professor | Surgery |
| Moussa, Madeleine | Professor | Pathology |
| Nichols, Anthony C | Assistant Professor | Otolaryngology |
| Parapuram, Sunil K | Assistant Professor | Ophthalmology |
| Peng, Tianqing | Associate Professor | Medicine |
| Rieder, Michael J | Professor | Pediatrics |
| Shkrum, Michael J | Professor | Pathology |
| Strong, Michael Joseph | Professor | Clinical Neurological Science |
| Thind, Amardeep | Professor | Epidemiology & Biostatistics |
| Trick, Charles G | Professor | Biology |
| Tuck, Alan Bradley | Professor | Pathology |
| Tugaleva, Elena | Assistant Professor | Pathology |
| Wang, Rennian | Associate Professor | Physiology & Pharmacology |
| White, David J. | Professor | Surgery |
| Wylie, Lloy | Assistant Professor | Psychiatry |
| Zhang, Zhu-Xu | Associate Professor | Medicine |
| Zheng, Xiu Fen | Adjunct Research Professor | Medicine |

## 2) MASTER OF CLINICAL SCIENCE, PATHOLOGISTS' ASSISTANT PROGRAM

***Report of the Program Director, Dr. Nancy Chan***

### Program Overview

Our Master of Clinical Science, Pathologists' Assistant, program is the largest such program in Canada and the only one accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS). In their first year, students complete courses in general and systemic pathology, anatomy and embryology, histology, infectious diseases and pathology, forensic pathology, and environmental pathology. In their second year, students complete rotations in autopsy and surgical pathology, a research project, and two months of a community hospital rotation. Upon graduation, the students are highly skilled professionals in hospital pathology laboratories, assuming significant responsibility for the initial examination and dissection of all surgically removed tissues and to a variable extent, for the dissection during postmortem examinations. In September 2012, our program became a stand-alone professional program, whereby students graduate with a Master of Clinical Sciences (MCISc) – Pathologists' Assistant program degree.

### PA Program Enrolment

This is a highly competitive program in which we have received up to 84 applications this year, of which only six are usually accepted. The reputation of the program as Canada's only program accredited by NAACLS is increasing, as we are seeing more applicants from American students, as well as job postings forwarded to our office from the USA.

### PA Program Graduate Research Projects

| Name | Supervisor(s) | Project Title |
|---|---|---|
| Julie Montgomery | Drs. Nancy Chan and Aaron Haig | Pediatric Pathology Cases: Retrospective Review at London Health Sciences Centre for Training Purposes |
| Rebecca Mantha | Dr. Bret Wehrli | The Application of a Multi-Tissue Spring Roll Control Block in Immunohistochemistry |
| Satwinder Multani | Dr. Joanna Walsh | Lymph Node Dissection in Total Gastroectomy Specimens: A Restrospective and Prospective |
| Jenna Strong | Dr. Nancy Chan | Canada's First NAACLS Accredited Pathologists' Assistant Program: A Self-Study and Review |

### PA Program Graduates – Career Opportunities

There is a well-documented need for well-trained PAs in Canada. There are approximately 225 community laboratories in Ontario and the vast majority of them do not have a PA, largely due to the demand exceeding the supply of trained professionals. We expect that if well trained PAs are available each of these labs will hire at least one.

Additional career possibilities are available in other provinces as well as in forensic centres. It is also expected that, over the next several years, this need will continue to increase because of the severe shortage of practicing pathologists and pathologists-in-training required to meet escalating clinical demands.

In June 2014, our program had graduated 23 students. Four graduates went on to medical school after graduation. All of the remaining students found jobs working as pathologists' assistants in Canada and the USA.

### MCISc PA Program Graduate Education Committee *(at September 1, 2014)*

Ms. Rebekah Carter (Clinical Preceptor)

Dr. Subrata Chakrabarti (Chair/Chief, Department of Pathology and Laboratory Medicine)

Dr. Chandan Chakraborty (Chair-Research Based Graduate Program)

Dr. Nancy Chan (Program Director)

Dr. David Driman (Director of Education)

Dr. Rick Mann, Regional Supervising Coroner (Community Member)

Dr. Madeleine Moussa (Graduate Faculty Member)

Vacant (Clinical Coordinator)

Ms. Melissa Stegmaier(Graduate Student Representative)

Ms. Tracey Koning (Ex-Officio Graduate Program Administrator)

Ms. Mair Hughes (Ex-Officio Manager, Administration & Finance)

### Future Directions

This is an innovative program with room to grow. Until last year we were limited to accepting only four students per year, based on the capacity of our facility for training students during their practicum year, and to ensure quality, hands-on experiences. In 2012/2013 talks between our department and pathologists in Toronto were successful in establishing a partnership and a pilot project was initiated. In September 2013, we accepted six students in a new expanded class. The students' second-year practicum rotation will take place in London and in Toronto; students will graduate with a Western University degree. We are excited about the growth of our program and its leadership role in this emerging profession in Canada.

### Graduate Student Awards

2013-2014 Ontario Graduate Scholarships (OGS): Samantha Crombie (MCISc-PA), Jina Kum (MSc Candidate), Cecilia Kwok (MSc Candidate), Meghan Piccinin (MSc Candidate), Liangyi "Larry" Zhou (MSc Candidate- Declined)

2013 Till & McCulloch Meeting: Emily Keats (PhD Candidate) abstract selected as one of the top entries in this year's Trainee Abstract Competition

2013-2014 CIHR-Master's CGSM: Liangyi "Larry" Zhou (MSc Candidate)

2013 Canada Society of Transplantation Annual Meeting: Arthur Lau (PhD Candidate) Basic Science Trainee Award

2014 Dutkevich Travel Award: Wahab Khan (PhD Candidate), Jina Kum (MSc Candidate), Yadira Tejeda Saldana (PhD Candidate), Ana Pena Diaz (MSc Candidate)

2014 Annual Pathology Research Day: Wahab Khan, PhD Candidate, received the Dr. M. Daria Haust Award for the Best Basic Science Presentation; Milica Krstic, MSc Candidate, received the Best Basic Science Poster Presentation Award; Jacquleine Cox , MSc Candidate, received the Best Basic/Clinical Science Collaborative Poster Presentation Award, Jenna Strong and Rebecca Mantha, MCISc-PA Candidates, received the MCISc Graduate Research Award

2014 Cameron Wallace Graduate Student Award: was awarded to Phaedra Henley, PhD Candidate

2014 London Laboratory Service Group – Professional Development Awards: Audrey Blanchard, MSc Candidate

2013-2014 Translational Breast Cancer Studentship from the London Regional Cancer Program MSc award winner Milica Krstic

2014 Nellie L. Farthing Memorial Fellowship in the Medical Science Award: Wahab Khan, PhD Candidate

### Pathology Graduate Student Publications

July 1, 2013 to June 30, 2014

**Journal Articles:**

*Chau E, Daley T, Darling MR, Hamilton D. The expression and immunohistochemical localization of periostin in odontogenic tumours of mixed epithelial/mesenchymal origin. Oral Surg Oral Med Oral Pathol Oral Radiol. 2013 Aug;116(2):212-20.*

*Gibson E, Gaed M, Gomez JA, Moussa M, Romagnoli C, Paulter S, Chin JL, Crukley C, Bauman GS, Fenster A, Ward AD. 3D prostate histology Reconstruction: an evaluation of image-based and fiducial-based algorithms. Med Phys. 2013 Sep;40(9):0093501. doi: 10.1118/1.4816946.*

*Riopel M, Stuart W, Wang R. Fibrin improves beta (INS-1) cell function, proliferation and survival through integrin αvβ3. Acta Biomater. 2013 Sep;9;(9):8140-8.*

*Gibson E, Gaed M, Gomez JA, Moussa M, Paulter S, Chin JL, Crukley C, Bauman GS, Fenster A, Ward AD. 3D prostate histology image reconstruction: Quantifying the impact of tissue deformation and histology section location. J Pathol Inform. 2013 Oct;4:31.*

*Ruiz MA, Chakrabarti S. MicroRNAs: the underlying mediators of pathogenetic processes in vascular complication of diabetes. Can J Diabetes. 2013 Oct;37(55):339-344.*

*Henley P, Jahedmotlagh Z, Thomson S, Hill, J, Darnell R, Jacobs D, Johnson J, Williams NC, Williams RM, Van Uum S, Bend JR, and Koren G. Hair Cortisol as a Biomarker of Stress in a First Nation in Canada. Ther Drug Monit. 2013 Oct;(35(5):595-9.*

*Gorelick L, Veksler O, Gaed M, Gomez JA, Moussa M, Bauman G, Fenster A, Ward AD. Prostate histopathology: learning tissue component histograms for cancer detection and classification. IEEE Trans Med Imaging. 2013 Oct;32(10):1804-18. doi: 10.1109/TMI.2013.2265334. Epub 2013 May 31.*

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*Lau A, Wang S, Jiang J, Haig A, Pavlosky A, Linkermann A, Zhang ZX, Jevnikar AM. RIPK3 mediated necroptosis promotes donor kidney inflammatory injury and reduces allograft survival. Am J Transplant. 2013 Nov;13(11):2805-18.*

*Malvankar-Mehta MS, Filek R, Iqbal M, Shakir A, Mao A, Si F, Malvankar MG, Mehta SS, Hodge WG. Immediately sequential bilateral cataract surgery: a cost-effective procedure. Can J Ophthalmol 2013 Dec;48(6):482-8.*

*Imani F, Abolmaesumi P, Gibson E, Galesh-khale AK, Gaed M, Moussa M, Gomez JA, Romagnoli C, Siemens DR, Leviridge M, Chang S, Fenster A, Ward AD, Mousavi P. Ultrasound-based characterization of prostate: an in vivo clinical feasibility study. Med Image Comput Comput Assist Interv. 2013;16(pt2):279-86*

*Mortuza R, Chakrabarti S. Glucose-induced cell signaling in the pathogenesis of diabetic cardiomyopathy. Heart Fail Rev. 2014 Jan; 19(1):75-86.*

*Riopel M, Wang R. Collagen matrix support of pancreatic islet survival and function. Front Biosci (Landmark Ed). 2014 Jan. 1;19:77-90.*

*Kum JJ, Khan ZA. Propranolol Inhibits growth of hemangioma-initiating cells but does not include apoptosis.Pediatr Res. 2014 Mar, 75(3):381-8.*

*Henley, P and Koren, G. Preschoolers' Hair Cortisol Levels are Linked to Parental Income. Ther Drug Monit. 2014. Apr;36(2):133-5.*

*Zhang X, Liu Y, Zhang G, Shi J, Zhang X, Zheng X, Jiang AT, Zhang ZX, Johnston N, Siu KS, Chen R, Lian D, Koos D, Quan D, Min WP. J Transl Med. 2014 May 22;12:142.*

*Mortuza R, Feng B, Chakrabarti S. miR-195 regulates SIRT1-mediated changes in diabetic retinopathy. Diabetologia. 2014 May; 57(5):1037-46.*

*Keats EC, Dominguez JM, Grant MB, Khan ZA. Switch from canonical to noncanonical Wnt signaling mediate high glucose-induced adipogenesis. Stem Cells. 2014 Jun; 32(6):1649-60.*

*Lau A, Khan K, Pavlosky A, Yin Z, Huang X, Haig A, Liu W, Singh B, Zhang ZX, Jevnikar AM. Serine Protease Inhibitor-6 inhibits Granzyme B-mediated injury of Renal Tubular Cells and Promotes Renal Allograft Survival. Transplantation. 2014 June 10. In press*

*Lau A, Wang S, Liu W, Haig A, Zhang ZX, Jevnikar AM. Glycyrrhizic Acid Ameliorates HMGB1-Mediated Cell Death and Inflammation after Renal Ischemia Reperfusion Injury. Am J Nephrol. 2014; 40(1):84-95.*

*Feng B, Cao Y, Chen S, Ruiz M, Chakrabarti S. miRNA-1 regulates endothelin-1 in diabetes. Life Sci. 2014 Mar7;98(1):18-23.*

*Rogan Pk, Li Y, Wickramasinghe A, Subasinghe A, Caminsky N, Khan W, Samarabandu J, Wilkins R, Flegal F, Knoll JH. Automating dicentric chromosome detection from cytogenetic biodosimetry data. Radiation Protection Dosimetry 2014: 159:95-104.*

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**Published Abstracts:**

*Piccinin MA, Khan ZA. Differential contribution of niche proteins by osteoblasts and adipocytes: potential mechanism of stem cell depletion in diabetes. Diabetes. Vol 63 Supplement 1, A2633. Jun 2014.*

*Piccinin MA, Khan ZA. Adipogenesis of bone marrow mesenchymal progenitor cells is associated with selective modulation of extracellular matrix. Diabetes. Vol 63 Supplement 1, A2643. Jun 2014.*

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**Presentations:**

*Kum J, Khan ZA. Explicating the mechanism of propranolol on infantile hemangiomaand its recurrence. Presented at the 2013 Till & McCulloch Meetings, Banff AB, October 2013.*

*Khan WA, Rogan PK, Knoll JHM. Non-random, locus-specific differences in DNA accessibility are present in homologous metaphase chromosomes. Paper presented at 63rd Annual Meeting of The American Society of Human Genetics, October 2013, Boston, MA USA*

*Piccinin MA, Khan ZA. Potential role of diabetes-induced angiopoietin-2 in altering stem cell niche proteins. Poster Presentation - 2013 Diabetes Research Day, London, Ontario. 12 Nov 2013.*

*Piccinin MA, Khan ZA. Differential contribution of niche proteins by osteoblasts and adipocytes: potential mechanism of stem cell depletion in diabetes. Poster Presentation - 2013 Diabetes Research Day, London, Ontario. 12 Nov 2013.*

*Ruiz M, Feng B, Mortuza R, Chakrabarti S. SUZ12 regulates glucose induced VEGF production through miR-200b regulation in retinal endothelial cells. Oral Presentation – Annual Pathology Research Day, London, ON March 28, 2014.*

*Ruiz M, Feng B, Mortuza R, Chakrabarti S. Polycomb Repressive Complex 2 Regulates Glucose Induced VEGF Production Through miR-200b Regulation in Retinal Endothelial Cells. Platform Presentation at the 2014 London Health Research Day, London, ON March 18, 2014*

*Henley P, Trick, C, Bend, JR. Real vs. Perceived Risk of pesticide exposure in Naivasha, Kenya. Platform Presentation at the 2014 London Health Research Day, London, ON March 18, 2014*

*Ansari R, Zelcer SM, Gibson P, Ang LC, Chakraborty C. ERK5 expression in Brain Tumors. Annual Pathology Research Day, London, ON March 28, 2014.*

*Blanchard A, Shkrum M, Tugaleva E. Ontario Growth Standards for Infants: A Retrospective Autopsy Study. Annual Pathology Research Day, London, ON March 28, 2014.*

*Brackstone M, Tuck AB, Palma DA, Chambers AF. Concurrent Neoadjuvant chemoRadiotherapy Improves Pathological Complete Response but Not Survival in Locally Advance Breast Cancer. Annual Pathology Research Day, London, ON March 28, 2014.*

*Cheung K, Droppelmann C, Volkening K, Strong M. The role of Rho Guanine Nucleotide Exchange Factor, an RNA-binding protein discovered in amyotrophic lateral sclerosis, in stress response. Annual Pathology Research Day, London, ON March 28, 2014.*

*Cox J, Khan ZA, Darling M. Expression of human tissue kallikriens (KLKs) in Polymorphous Low Grade adenocarcinoma (PLGA). Annual Pathology Research Day, London, ON March 28, 2014.*

*DiGregorio SE, Duennwald ML. Deciphering the role of RGNEF in ALS using a novel yeast model. Annual Pathology Research Day, London, ON March 28, 2014.*

*Filek R, Hooper P, Sheidow T, Hodge W, Gonder J, Siebert L, Ladak H, Hutnik, CML. Investigating the Structural and Functional Changes to the Retina Following PRP in Diabetic Retinopathy Patients. Annual Pathology Research Day, London, ON March 28, 2014.*

*Henley P, Lowthers M, Koren G, Fedha PT, Russell E, VanUum S, Arya S, Darnell R, Creed IF, Trick CG, Bend JR. Hair Cortisol as a Biomarker of Stress in Sub-Saharan African Communities. Annual Pathology Research Day, London, ON March 28, 2014.*

*Johnston N, Zhang X, Koropatnick J, Zheng X, Min WP. miRNA Regulation of PD1, TIM3 and BTLA: Reverting T-cell Exhaustion in Melanoma. Annual Pathology Research Day, London, ON March 28, 2014.*

*Kerr Z, Darling M, Khan ZA. Expression of kallikrein-related peptidases (KLKs) in Adenoid Cystic Carcinomas. Annual Pathology Research Day, London, ON March 28, 2014.*

*Khan WA, Rogan PK, Knoll JHM. Differences in Chromatin Accessibility are present between Homologous Metaphase Chromosomes. Oral Presentation – Annual Pathology Research Day, London, ON March 28, 2014.*

*Krstic M, Leong HS, Andrews J, Chambers AF, Tuck AB. The roles of transcriptional regulator TBX3 in early breast cancer progression. Annual Pathology Research Day, London, ON March 28, 2014.*

*Kum J, Khan ZA. αadrenergic receptor-independent action of propranolol in infantile hemagioma. Annual Pathology Research Day, London, ON March 28, 2014.*

*Kwok C, Lau A, Pavlosky A, Jevnikar AM, Zhang Z. Characterizing the impact of membrane vesicles produced by apoptotic and necrotic tubular epithelial cells on renal transplant rejection and graft-versus-host disease. Annual Pathology Research Day, London, ON March 28, 2014.*

*Lau A, Khan K, Shek K, Yin Z, Huang X, Haig A, Liu W, Singh B, Zhang, ZX, Jevnikar AM. SPI-6 (Serpin Protease Inhibitor-6) inhibits granzyme B mediated injury of renal tubular cells and promotes renal allograft survival. Annual Pathology Research Day, London, ON March 28, 2014.*

*Mantha R, Wehrli B. The Application of a Multitissue Spring-roll Control Block in Immunohistochemistry. Annual Pathology Research Day, London, ON March 28, 2014.*

*Mok S, Shabbeer I, Khan ZA, Quan D, Howlett CJ. Epithelial to mesenchymal transition in the pathogenic progression of small intestinal neuroendocrine tumours.*

*Annual Pathology Research Day, London, ON March 28, 2014.*

*Brennan L, Mok S, Knoll J, Howlett, CJ. Determining Global Cytogenomic changes in Classical Hodgkin Lymphoma. Annual Pathology Research Day, London, ON March 28, 2014.*

*Montgomery J, Chan NG, Haig AR. Pediatric Pathology Cases: Retrospective Review at London Health Sciences Centre for Training Purposes. Annual Pathology Research Day, London, ON March 28, 2014.*

*Multani S, Walsh JC. Lymp Node Dissection in Total Gastrectomy Specimens. A Retrospective and Prospective Institutional Review. Annual Pathology Research Day, London, ON March 28, 2014.*

*Pavlosky A, Huang X, Lau A, Yin Z, Haig A, Lian D, Jevnikar AM, Zhang ZX. RIP3 regulates microvascular endothelial cell death and cardiac allograft rejection. Annual Pathology Research Day, London, ON March 28, 2014.*

*Peart J, Li J, Wang R. The Effect of a Conditional αcell Specific 1-Integrin Knockout on αcell Survival, Proliferation and Function. Annual Pathology Research Day, London, ON March 28, 2014.*

*Pena AM, Chen S, Feng B, Chakrabarti S. Investigating the effects of modified human acidic Fibroblast Growth Factors treatment in Diabetic Nephropathy. Annual Pathology Research Day, London, ON March 28, 2014.*

*Piccinin MA, Khan ZA. Extracellular Matrix is Selectively Regulated Following Diabetes-induced Adipogenesis of Bone Marrow Mesenchymal Progenitor cells. Annual Pathology Research Day, London, ON March 28, 2014.*

*Piccinin MA, Khan Z. Distinctive Expression of Niche Factors by Adipocytes and Osteoblasts May Mediate Diabetic Stem Cell Depletion. Annual Pathology Research Day, London, ON March 28, 2014.*

*Riopel M, Li J, Trinder M, Wang R. Fibrin mediated Human Islet Cell Differentiation via p70s6k, promotes Integrin Expression while enhancing Vasculature during Transplantation. Annual Pathology Research Day, London, ON March 28, 2014.*

*Shekari S, Shkrum M, Howard A. Understanding Head and Cervical Spine Injuries in Pediatric Occupants Involved in Motor Vehicle Collisions. Annual Pathology Research Day, London, ON March 28, 2014.*

*Siu KS, Chen Di, Zheng X, Zhang X, Gillies E, Koropatnick J, Min WP. Folate receptor targeted siRNA delivery with a novel non-covalent functionalization of single-walled carbon nanotubes for cancer therapy. Annual Pathology Research Day, London, ON March 28, 2014.*

*Strong J, Tugaleva E, Chakrabarti S, Chan NG. Canada's First Accredited Pathologists' Assistant Graduate Program: A Self Study Review. Annual Pathology Research Day, London, ON March 28, 2014.*

*Tejeda Saldana Y, Reider MJ. Validating Inclusivity/Exclusivity of an Alternative Method for Detecting E. coli 0157 According to AOAC Guidelines. Annual Pathology Research Day, London, ON March 28, 2014.*

*Tikhomirov I, Jaramillo ML, Sulea T, Banville M, Figueredo R, Baardsnes J, Grothe S, Adams GP, Blattler w, O'Connor-McCort MD, Koropatnick J. Development of a Novel EGFR-Targeting Therapeutic Antibody-Drug Conjugate for the treatment of EGFR-Expressing Malignancies. Oral Presentation – Annual Pathology Research Day, London, ON March 28, 2014.*

*Thomas AA, Puthanveetil PP, Chen S, Feng B, Chakrabarti S. Role of H19 in diabetic complications. Annual Pathology Research Day, London, ON March 28, 2014.*

*Woodford R, Jackson-Boeters L, Darling M, Shimizu M, Daley T. Selected Human Kallikrein Expression in Odontogenic Cysts and Tumors. Annual Pathology Research Day, London, ON March 28, 2014.*

*Zhou L, Trinder M, Li J, Wang R. Investigation of –cell insulin receptor regulation of –cell growth, function and survival. Annual Pathology Research Day, London, ON March 28, 2014.*

*Piccinin MA, Khan ZA. Adipogenesis of bone marrow mesenchymal progenitor cells is associated with selective modulation of extracellular matrix. Poster Presentation - London Health Research Day, London, Ontario. 18 Mar 2014.*

*Piccinin MA, Khan ZA. Selective modulation of extracellular matrix proteins following adipogenesis of marrow mesenchymal progenitor cells. Poster Presentation - Developmental Biology Annual Research Day, London, Ontario. 30 May 2014.*

*Kum J, Khan ZA. -adrenergic receptor-independent mechanism of propranolol in hemangioma-initiating cells. Presented at 2014 Developmental Biology Research Day,London ON, May 2014.*

*Kum JJY, Khan ZA.-adrenergic receptor-independent action of propranolol in infantile hemangioma. Presented at the 20thInternational Society for the Study of Vascular Anomalies, Melbourne, Australia, April 2014.*

*Kum Jand Khan ZA. Propranolol, the first-line therapy for infantile hemangioma, may act through a-adrenergic receptor-independent mechanism. Presented at the London Health Research Day 2014, London ON, March 2014.*

# Undergraduate Programs

The Department of Pathology and Laboratory Medicine has had a long standing commitment to teaching students at the undergraduate level within the faculties of Medicine and Dentistry, Science, and Health Sciences, and at Fanshawe College.

The Department of Pathology and Laboratory Medicine offers undergraduate pathology courses and training to medical students, dental students, nursing students, and several undergraduate pathology courses in the joint specialization in Pathology and Toxicology open to students in the BMSc/BSc programs.

## 1) UNDERGRADUATE MEDICINE EDUCATION

***Report of the Chair, Dr. Mariamma Joseph***

We desire to elevate the visibility of Pathology and Laboratory Medicine to medical students early on and enhance student consideration of Pathology and Laboratory Medicine as a career choice. We also desire 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 and transition to residency. Given below are some of the major departmental activities, including successes and achievements, related to undergraduate medicine (Meds 1-4) from last year.

**Meds I and Meds II:** During the past year, our faculty actively participated in various Meds I and Meds II curriculum courses, which included pathology lectures, PCCIA, CPC and small group discussions. Three pathologists served as course chairs in these courses. In addition we offered individual one-on-one observership program opportunities to Meds I and Meds II medical students and delivered a large group Pathology Interest Group session on "Introduction to the Multifaceted Field of Pathology", which were very well received by students. Our residents and staff also offered an interactive small group observership session, "Multi-head Microscope Teaching: An Undergraduate Pathology Observership," in which students in small groups learned basic skills in the work-up of real case scenarios and observed and experienced the life of a pathologist in an academic hospital.

**Meds III and Meds IV**: Last year, we (Drs.Joseph/Driman) further refined the existing "Pathology Exit Competency" document customized for our Meds III & IV students. We developed 10 learning modules on a variety of clinically relevant pathology practice topics and successfully implemented these mandatory pathology seminars for Meds III students called "Pathology Case Conferences". We are quite pleased with this collaborative initiative with the Department of Surgery. We also redesigned and implemented the "Meds III - Clinical Clerkship Pathology Selective" in collaboration with the Department of Surgery. Last year we offered to a number of students the Meds III & IV – Clinical Clerkship Pathology Electives. We also participated in the Meds IV Integration, Consolidation & Enrichment (ICE) course "Primary Care Pathology" and "Forensic Medicine" courses.

This year, we (Drs. Weir/Joseph/Driman) are introducing a new selective for Meds IV Integration and Transition Course, "Tips & Tools for Pathology and Laboratory Medicine: A Guide for New Doctors". We are excited about this course and it is scheduled to start in 2015.

**Administrative Role:** One faculty member (Dr. Garcia) serves as the Vice Dean of Education. In addition our faculty participates in many Undergraduate Medicine Committees at Schulich.

**Challenges:** There is increasing demand on our department to provide observerships and selectives for medical students from Western and other Canadian/international universities. A major challenge is lack of dedicated space for students to sit in the current residents' room. This needs to be looked into as a priority. Similarly, adding a camera to the current multi-head microscope would enhance large group teaching opportunities for med students.

**Looking Ahead:** Our department is fortunate to have a group of passionate teachers and an atmosphere of innovation and continuous quality improvement. We will continue the current and future educational activities as outlined above and would like to encourage more active participation of our pathology residents in med student teaching in the future.

## 2) UNDERGRADUATE DENTISTRY

***Report of the Chair, Dr. Mark Darling***

In the Schulich Dentistry curriculum, instruction in general and systemic pathology is introduced in the first year. Five full courses in pathology and oral pathology were offered to undergraduate and postgraduate dental students in the academic year 2013-14.

**Dentistry – Year 1:**

Two pathology courses were taught to Dents 1: Dentistry 5162 - Systemic Pathology, directed by Dr. Jose Gomez and Dentistry 5170 - Oral Diseases 1, directed by Dr. Tom Daley.

**Dentistry 5162** - Systemic Pathology is a component of the General Medicine Unit and is a systems-based course which runs sequentially with Human Physiology, Pharmacology, Systemic Anatomy and Medicine. It examines specific aspects (etiology, clinical presentation, macroscopic and microscopic features, and pathogenesis) of common human diseases relevant to the practice of dentistry.

**Dentistry 5170** - Oral Diseases I is an integrated course covering common diseases of the teeth, periodontal and periapical tissues; specifically caries, gingivitis, periodontitis, pulp disease, periapical inflammation, regressive dental conditions and dental anomalies. It is designed to introduce the student to common maxillofacial and dental pathologies early in their dental school careers. Faculty engage the students in one small group discussion introducing them to the concepts of histopathology of common oral diseases.

**Dentistry – Year 2:**

In year 2, the theme of introducing students early to common oral diseases is continued in Dentistry 5235 (Oral Diseases II) directed by Dr. M. Darling. This is a continuation of Oral Diseases I and is an integrated course combining oral medicine, oral pathology and oral radiology to cover a variety of diseases that affect the hard and soft tissues of the mouth, head and neck. Several faculty members engage the students in six small group sessions, encouraging discussion in the clinical and histopathological aspects of oral conditions.

**Dentistry – Year 3:**

In year 3, Dentistry 5335 (Oral Diseases III) was also directed by Dr. M. Darling. This course is a continuation of Oral Diseases II, but focuses now on the less common oral diseases that might be more infrequently seen by dentists. This included broader aspects of odontogenic, salivary, mucocutaneous and connective tissue diseases. Again, several faculty members engage the students in seven small group sessions, encouraging discussion in the clinical and histopathological aspects of oral conditions.

**Internationally-trained Dental Students – Year 1:**

The Dentistry 5304 (Oral Pathology (ITD1 only), is directed by Dr. T. Daley. It is a comprehensive review of the more common diseases affecting the orofacial region and jaws, excluding periodontal diseases, and is intended to be a comprehensive Oral Pathology "refresher" for these students who already have significant experience in treating oral and dental diseases.

**SWOT analysis**

Strengths

- Scope of subject matter
- Depth of subject matter
- Two-person delivery with control over subject matter and excellent cooperation
- General high standard and intellect of students
- Diversity of group, and opportunity to teach internationally trained dentists
- Teaching facilities

Weaknesses

- Fragmentation of topics due to timing of delivery of common and uncommon conditions
- Student perception that some subject matter is superfluous
- Failure to connect with all students in terms of stressing the importance of subject matter

- Develop online learning through OWL
- Try to engage students more fully through the small group learning sessions (labs)
- Possible research into Oral Pathology undergraduate education; how to increase impact on students: and to secure funding for research

Threats

- Control over timing of delivery by the Dental school undergraduate curriculum agenda

**Looking ahead**

In the forthcoming year, we will build on some of the issues which were raised and addressed in the "Weakness" section of the SWOT analysis completed a year ago:

1. The fragmentation of subject matter has been addressed to a large extent by teaching of sections or modules, grouping common pathologies with related less common ones, and this will be carried forward into the next few years.
2. Subjectively, student opinion towards oral pathology appears to be shifting to a favourable view, as a lot of positive feedback has been obtained from both current and past students. Objectively, teaching evaluation and ratings have also increased. We hope to build on this change of perspective, to increase student motivation using the principle of knowledge acquisition to embed the practical importance of having a broad range of diagnostic skills.
3. We continue to use OWL as a teaching and communications tool.

## 3) UNDERGRADUATE BACHELOR OF MEDICAL SCIENCES PROGRAM

***Report of the Undergraduate Chair, Dr. Zia A. Khan***

Pathology modules in the Bachelor of Medical Sciences (BMSc) program at Western are one of the most sought after modules. Interest in our courses and programs, particularly the Honors Specialization in Pathology and Toxicology, remains high and we still have the distinction of having the highest entrance average among the BMSc modules.

During the last year, we have taken a number of initiatives to increase enrolment in Pathology modules. First, we introduced a new course, Pathology 4200A (Current Concepts in the Pathogenesis of Human Diseases; coordinated by Dr. Chandan Chakraborty). Increasing our course offerings was essential to allow for the creation/introduction of a Major in Pathology. This major can only be taken in conjunction with another Major in the BMSc degree program to obtain an honors undergraduate degree. Second, the Departments of Pathology and Laboratory Medicine and Biochemistry introduced a new combined Honors Specialization module in the BMSc program, "Biochemistry and Pathology of Human Disease". The module is approved and fully active for the 2014/15 academic year. We have welcomed nine third year students in the new module. Students will take courses offered by the Department of Pathology and Laboratory Medicine and Biochemistry and will be able to choose to do the honors research project in Biochemistry (4483E) or Pathology (4980E) in their fourth year. Lastly, to enrich the options available to BMSc students at Schulich Medicine & Dentistry, we are devising another new combined Honors Specialization module with Microbiology and Immunology. The module will undergo approval to appear in the 2015/16 year. Approximately 6-8 students will be admitted to the program and will carry out their undergraduate thesis in Microbiology and Immunology or Pathology.

### Challenges

Our challenge remains the number of research projects we can offer in any given year to fourth year Honors students for their undergraduate thesis. We have been able to accommodate 14-15 students over the past two to three years but we are at our maximum capacity. It is important to fully appreciate this enrolment challenge considering the plans of Western and Schulich Medicine & Dentistry to increase enrolment over the next few years. Additional resources (faculty and space) are needed to increase intake in Pathology beyond this number.

### Looking ahead

In the immediate 1-2 years, we will consider innovative ways to increase enrolment in Honors Pathology modules. These measures may involve a collaborative approach to honors thesis research (inter-departmental approach, i.e. students being co-supervised by faculty from Pathology and Laboratory Medicine and another department in the BMSc program) as well as a "team approach" to research where 1-2 honors students work together on a particular research project. In addition, we will continue our efforts to enhance Pathology faculty engagement in the Pathology BMSc programs.

### BMSc Student Publications

*Arifin AJ, Hannauer M, Welch I, Heinrichs DE. Deferoxamine mesylate enhances virulence of community-associated methicillin resistant Staphylococcus aureus. Microbes Infect. 2014. doi: 10.1016/j.micinf.2014.09.003.*

*Douglas GA, McGirr R, Charlton CL, Kagan DB, Hoffman LM, Luyt LG, Dhanvantari S. Characterization of a far-red analog of ghrelin for imaging GHS-R in P19-derived cardiomyocytes. Peptides. 2014, 54:81-8. doi: 10.1016/j.peptides.2014.01.011.*

### Undergraduate Student Awards

2013-14 Western Gold Medal for Honors Specialization in Pathology and Toxicology (for the BMSc. Pathology/Toxicology student with the highest grade) – Kelsey Watson (BMSc)

2013-14 Western Gold Medal for BMSc Pathology Major – Swati Chavda (BMSc)

The 2013-2014 Professor Colin Anderson Award was awarded to Dominic Leblanc on May 15, 2014. This award is given to the undergraduate student who achieves the highest mark in the course Pathology 3245B, "Diseases of Organ Systems". The Anderson Award is given in memory of Dr. Colin Anderson, who was a member of our Pathology faculty from 1973 to 1996, during which time he organized and coordinated this course.

The 2013-2014 Frederick N. Lewis Memorial Prize was awarded to Qi Yao on February 4, 2014. This award is given to the undergraduate student who achieves the highest mark in the course Pathology 3240A, "Understanding Disease". The prize is given in memory of Dr. Fred Lewis, a member of Pathology staff who for quite a while organized and coordinated this course.

## CURRENT UNDERGRADUATE BMSC STUDENTS
*at September 1, 2014*

| Name | Supervisor |
|---|---|
| Anderson, Michelle Lynn | Dr. Tom Drysdale (Physiology) and Dr. Zia A. Khan |
| Baker, Shannon Danielle | Drs. Martin Duennwald and Chris Howlett |
| Grewal, Gurinder | Dr. Rennian Wang |
| Grin, Peter | Dr. Subrata Chakrabarti |
| Kanagalingam, Tharsan | Dr. Lisa Cameron |
| Kuk, Mariya | Dr. Michael Shkrum |
| Liu, Sophia Yijia | Dr. Savita Dhanvantari |
| Loganathan, Neruja | Dr. Weiping Min |
| Milman, Tal | Dr. Cindy Hutnik |
| Seo, Injun | Dr. Norman Smith |
| Seok, David Je-Bin | Dr. Zhuxu Zhang |
| Shin, Eun Jung | Dr. Sunil Parapuram |
| Yao, Qi | Dr. Tianqing Peng |
| Yim, Edmund Kar-Kee | Dr. Edith Arany |

## BMSC GRADUATING CLASS 2013-2014

| Name | Future Plans |
|---|---|
| Andrew Arifin | MD program at Western University |
| Lacey Brennan | MD program at University of Calgary |
| Matthew Chan | MD program at University of Ottawa |
| Yuxin (Kelly) Chang | MD program at McGill University |
| Samik Doshi | MD program at University of Toronto |
| Anzel Hennop | MD program at University of Ottawa |
| Dov Kagan | Unknown |
| Aaron Leung | MD program at Western University |
| Sandra Mekhaiel | MD program at Western University |
| James Roos | MSc program in Pathology and Laboratory Medicine at Western University |
| Kelsey Watson[1,2] | MD program at University of Toronto |
| Mei Wen | Master of Public Health program at Western University |
| Mark Woo | MD program at McGill University |
| Jin (Bill) Yan | Unknown |

## BMSC STUDENT RESEARCH PROJECT, TITLES, SUPERVISORS *(2013-2014)*

| Name | Supervisor(s) | Project Title |
|---|---|---|
| Andrew Arifin | Drs. David E. Heinrichs and Robert Lannigan | Influence of desferrioxamine and gallium conjugates on Staphylococcus aureus infection |
| Lacey Brennan | Drs. Christopher Howlett and Joan Knoll | Determining global cytogenomic changes in hodgkin lymphoma |
| Matthew Chan | Drs. Sunil Parapuram and William Hodge | Tissue engineering a corneal stroma for transplantation through keratocyte-mediated mechanotransduction |
| Yuxin (Kelly) Chang | Dr. Edith Arany | Effect of dietary modifications during pregnancy with and without diabetes on offspring pancreas development |
| Samik Doshi | Drs. Xiufeng Zheng and Weiping Min | The role of microRNA-346 in breast cancer |
| Anzel Hennop | Dr. Zhuxu Zhang | The potential role of RIPK3 in PARP 1-mediated memory T cell death |
| Dov Kagan | Drs. Savita Dhanvantari and Gerald Wisenberg | Levels of the growth hormone secretagogue receptor in human cardiomyopathies |
| Aaron Leung | Dr. Martin Duennwald | The effects of human DnaJ proteins (DnaJA1 and DnaJB1) on Huntington aggregation and toxicity |
| Sandra Mekhaiel | Drs. Zia A. Khan, Michelle Weir, and Iram Siddiqui | Understanding the mechanism of carboplatin-induced vascular dysregulation in ovarian serous adenocarcinoma |
| James Roos | Dr. Michael Shkrum | Trauma in adult pedestrians due to frontal motor vehicle collisions |
| Kelsey Watson | Dr. Cindy ML Hutnik | Interaction of primary human trabecular meshwork cells with metal alloy candidates for microinvasive glaucoma surgery |
| Mei Wen | Dr. Cindy ML Hutnik | The effects of mechanical stress on human trabecular meshwork cells |
| Mark Woo | Drs. Christopher Howlett and Douglas Quan | Immunohistochemical characterization of mTOR pathway activation in gastroenteropancreatic neuroendocrine tumours |
| Jin (Bill) Yan | Drs. Weiping Min and Xiufeng Zheng | Impact of different indoleamine-2,3-dioxygenase (IDO) isoforms in melanoma cells |

# Continuing Professional Development

***Report of the Director, Dr. Aaron Haig***

The Department of Pathology and Laboratory Medicine held well-received "Update in Pathology" CME days in both October and May. The events consisted of various speakers from LHSC Pathology Department speaking on select topics in Surgical Pathology. The October event was targeted for, and attended primarily by, community pathologists and residents. At the spring event, we were fortunate to host Dr. Jason Hornick, from Harvard Medical School, as our guest speaker.

Pathology and Laboratory Medicine Grand Rounds were held every other month. We had a variety of interesting speakers. There was excellent attendance from Pathology and Laboratory Medicine staff and faculty from both the hospital and university.

**SWOT analysis**

Strengths

- Strong attendance, wide range of topics, support to bring in speakers

Weaknesses

- Difficulty with infrastructure, specifically for Grand Rounds, including appropriate room; change in administrative staff

Opportunities

- Web casting/reaching wider audience, ability and interest in bringing in prominent and relevant guest speakers

Threats

- Difficulty finding topics of global interest; have had numerous technical difficulties with web casting.

**Looking ahead**

Following the success of our previous "Update in Pathology" CME days, we are planning another event in the spring of 2015. The day will follow the same format, with a focus on topics of interest to community pathologists. We are again planning on inviting a keynote speaker from another institution.

For the upcoming 2014-2015 academic year we are continuing with Pathology Grand Rounds every other month (alternating with the Dr. R. Zhong lecture series). We have a variety of speakers scheduled, both internal and external. We are moving the Rounds to the UH lecture halls to better accommodate the size of the audience and hopefully improve AV issues.

**CME EVENTS**

***Report of Directors Drs. David Driman and Aaron Haig***

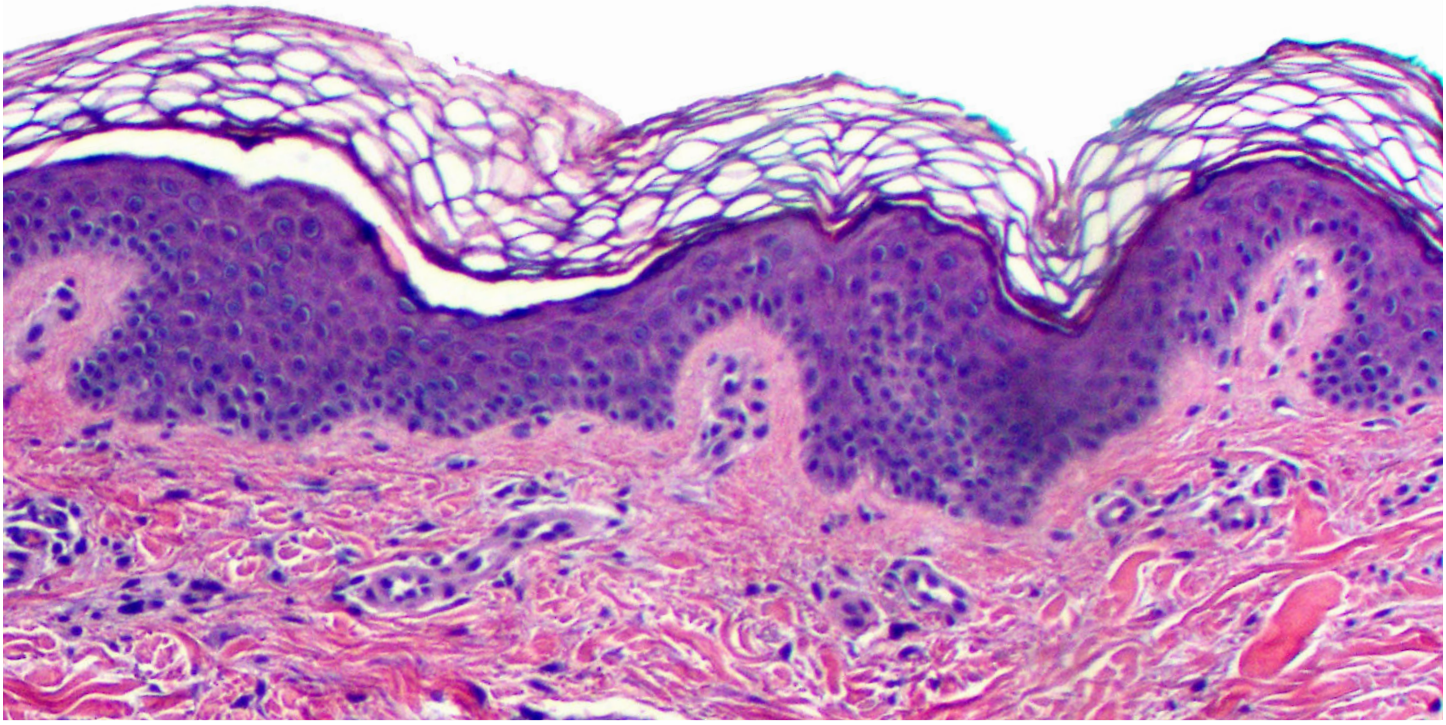
These meetings, in an interactive educational format, provided the audience with an excellent opportunity to learn and share ideas with expert pathologists in a relaxed setting. Challenging diagnostic issues, new developments in diagnosis and advances in treatment were discussed. An audience-response system was used to enhance interaction.

**Target Audience:** Pathologists, Pathology residents, Pathologists' assistants, Pathologists' assistant students

**Learning Objectives**

These educational sessions allow participants to:

1. Increase knowledge of selected challenging topics in pathology.
2. Expand knowledge and skills.
3. Gain understanding of new requirements in cancer pathology reporting.
4. Participate in a large group session through use of an audience-response system.



**October 26, 2013**

- Update in Selected Topics in Pathology
- Ivey Spencer Leadership Centre
- 31 Attendees

**May 16, 2014**

- Pathology Update: Difficult Differentials and Diagnostic Challenges
- Ivey Spencer Leadership Centre
- Guest Speaker: Dr. Jason Hornick, Brigham and Womens' Hospital, Harvard University, Boston MA
- 49 Attendees

## 2013-14 GRAND ROUNDS

| DATE | PRESENTERS | TITLE |
|---|---|---|
| September 12, 2013 | Dr. Anthony Nichols Head & Neck Oncologist, Microvascular Reconstructive Surgeon, Department of Otolaryngology | Personalizing Care in Head and Neck Cancer. |
| November 14, 2013 | Dr. Teresa Van Deven Adjunct Research Professor, Department of Pathology and Laboratory Medicine, Undergraduate Medical Education Curriculum Specialist, Schulich School of Medicine & Dentistry | Scholarship of Teaching in Medical Education: Challenges and Possibilities. |
| February 13, 2014 | Dr. Johan Delport Medical Microbiologist Department of Pathology and Laboratory Medicine | Microbiology: What is new? |
| April 10, 2014 | Dr. Nikhil Sangle Anatomical Pathologist Department of Pathology and Laboratory Medicine | Lymphoproliferative Disorders in this Era of Transplant and Immunomodulatory Therapies. |

# Financial Accessibility

## Department of Pathology and Laboratory Medicine Scholarships, Awards and Bursaries

### 1) PATHOLOGY AND LABORATORY MEDICINE RESEARCH DAY

Each year the Department of Pathology and Laboratory Medicine funds the following awards at the annual departmental research day:

| | |
|---|---|
| Chair's Award for the Best Clinical Science Presentation | $250 |
| Dr. M. Daria Haust Award for the Best Basic Science Presentation | $250 |
| Best Clinical Science Poster Presentation Award | $100 |
| Best Basic Science Poster Presentation Award | $100 |
| Best Basic/Clinical Science Collaborative Poster Presentation Award | $100 |
| Best Undergraduate Basic Science Poster Presentation Award | $100 |
| MCISc Graduate Research Award | $100 |

### 2) POSTGRADUATE TRAINEE AWARDS and BURSARIES

**Marvin S. Smout Resident Travel Award**

Description: The Marvin S. Smout Resident Travel Award was developed to honour Dr. Marvin S. Smout, Chief of Pathology at the former Victoria Hospital from 1965 to 1990. During his term as Chief of Pathology, Dr. Smout was always interested in the education and development of young pathologists. This fund was established to support residents to attend national and international meetings to present research carried out during rotations at the London Health Sciences Centre.

Eligibility: All Anatomical Pathology, General Pathology, and Neuropathology residents currently in the respective training programs at Western University are eligible to apply for this award. Research must have been performed primarily within the Department of Pathology and Laboratory Medicine at London Health Sciences Centre and the results of the research have been accepted (presentation/poster) at an international/national meeting.

Deadline: March 31st

Award: $2,000 maximum per year

**Department of Pathology and Laboratory Medicine Resident/ Fellow Travel Reimbursement Fund**

Description: Residents and fellows in the Department of Pathology and Laboratory Medicine are encouraged to present their research at scientific meetings, and to attend educational courses. Funded by the Department of Pathology and Laboratory Medicine and the London Pathology Associates.

Eligibility: All residents and clinical fellows registered in the Department of Pathology and Laboratory Medicine.

Deadline: Claims must be submitted by June 30th each year, with the exception of CAP meeting expenses.

Award: Maximum $3,000 annually.

**Pathology Internal Funds for Academic Development (PIFAD)**

The London Pathology Associates fund an internal competition twice a year (deadlines March 15 and September 15) to support research and educational development projects (up to $5,000). The primary applicant must be a faculty member and must hold a primary clinical appointment in Anatomical Pathology or Neuropathology. Residents are encouraged to discuss this opportunity with a pathologist, and to apply as co-investigators.

### 3) GRADUATE STUDENT AWARDS and BURSARIES

**Dutkevich Memorial Foundation Pathology Graduate Student Travel Award**

Description: Travel award for graduate students to attend and present papers at scientific meetings.

Eligibility: All graduate students registered in a Pathology program (full-time and part-time students). Students must submit a copy of the abstract, proof of registration at the meeting, and a supporting letter from their supervisor.

Deadline: Twice per year, June 1st and December 1st

Award: $500 per student, maximum of 4 awards per year

**Dr. Frederick Winnett Luney Graduate Scholarship (NEW in 2014)**

Description: Awarded annually to a graduate student in a research-based MSc or PhD Pathology program to encourage and promote excellence in graduate studies. Selection of the awardee will be based on academic achievement and research aptitude/contributions.

Eligibility: All graduate students registered in a Pathology program (full-time and part-time students). Eligible students must complete an application with details of their marks in courses, publications and presentations at scientific meetings, and a detailed research plan. Preference will be given to applicants that pursue a collaborative research approach between basic science and clinical science. A student can receive this award only once during their graduate program training in the Department of Pathology Laboratory Medicine.

Award: $10,000, awarded annually

**Dr. Frederick Winnett Luney Graduate Research Fund (NEW in 2014)**

Description: Funding is aimed at enhancing graduate training and to promote students to present their graduate research work at scientific meetings and to pursue research-related activities. Students must complete an application accompanied by a detailed description of the research-related activity, and an explanation of the benefit of such activity to graduate training. For conference travel, the application must include original receipts, a copy of the abstract as/will be submitted, an explanation of the meeting (association, place, date etc.) and a letter from their supervisor (sent directly to Graduate Education Committee) indicating the importance and benefit for the student to be able to attend the meeting. The letter of support from the supervisor should indicate the need for travel support. A student can receive this award only once during their graduate training in Pathology.

Eligibility: All graduate students registered in a Pathology Graduate program (full-time and part-time students).

Award: $2,000 per student, maximum 3 awards per year

**Cameron A. Wallace Award in Pathology**

Description: This award was established in memory of Dr. Cameron Wallace by generous gifts from alumni, faculty, staff and friends of the Department of Pathology and Laboratory Medicine at Western University.

Eligibility: Awarded annually to a graduate student who is in second year or beyond of an MSc or PhD Graduate Pathology program based on academic achievement (minimum 78% average) and research work. Eligible students must complete an application with details of their marks in graduate courses, publications and presentations at scientific meetings.

Deadline: October 15th

Award: $1,500, awarded annually

**MCISc-Pathologists' Assistant Program Bursary**

Description: Awarded annually to two first-year PA students.

Eligibility: first-year PA students only. A student can only receive this award once.

Deadline: April 1st

Award: $5000, per student, maximum 2 awards per year

**MCISc-Pathologists' Assistant Travel Award**

Description: Travel award for PA graduate students to attend and present papers at scientific meetings.

Eligibility: All PA graduate students registered in the MCISc- PA program (full-time students). Students must submit a copy of the abstract, proof of registration at the meeting, and a supporting letter from their supervisor.

Deadline: April 15th

Award: The maximum award will be up to $500 per year. The number of awards given out per year is at the discretion of the PA-Graduate Education Committee.

**4) UNDERGRADUATE STUDENT AWARDS and BURSARIES**

**Dr. P.C. Shah Summer Clinical Training Experience in Pathology and Laboratory Medicine**

Description: The P.C. Shah summer studentship was established to encourage undergraduate medical students to pursue a career in clinical pathology involving community health services by enabling first-and-second year medical students in the Schulich School of Medicine & Dentistry to work under the supervision of a Pathology and Laboratory Medicine faculty member.

Eligibility: Awarded to a first-or second-year medical student who applies for a summer training opportunity in the Department of Pathology and Laboratory Medicine. The successful student and faculty supervisor will commit to a training experience allowing the student to gain exposure to pathology and laboratory medicine by participating in departmental activities (such as gross pathology, microscopy, and autopsy pathology) and attending rounds. The student will also be given an opportunity to participate in an interesting clinical project.

Deadline: April 1st

Award: $4,048 per year, funding from the Dr. Pravin C. Shah Fund, with matching funds from the Department of Pathology and Laboratory Medicine.

**Professor Colin Anderson Award**

Description: This prize is given in memory of Professor Colin Anderson, who was a member of the Pathology staff for a good number of years, and for quite a while organized and coordinated the course. The Prof. Colin Anderson Award is given to the undergraduate student who obtains the highest grade in the Path 3245b 'Diseases of Organ Systems' course.

Eligibility: Undergraduate students, registered in Path 3245b. Students who write a deferred exam are not eligible for this prize.

Award: $150, awarded annually

**The Frederick N. Lewis Prize**

Description: The Frederick N. Lewis Prize is given in memory of Dr. Fred Lewis who was a member the department. This prize is given to the undergraduate student who obtains the highest grade in the Path 3240a 'Understanding Diseases' course.

Eligibility: Undergraduate students, registered in Path 3240a. Students who write a deferred exam are not eligible for this prize.

Award: $150, awarded annually


Schulich
MEDICINE & DENTISTRY

# Promoting Excellence in Research

Report of the Director, Dr. Zia A. Khan

## RESEARCH HIGHLIGHTS

We have continued to enhance our research capacity over the past year. The Department of Pathology and Laboratory Medicine occupies a unique position among the departments in the Schulich School of Medicine & Dentistry by spanning both clinical and basic research interests of its department members. The majority of our department members have clinical responsibilities at London Health Sciences Centre (LHSC; University Hospital or Victoria Hospital), and teaching duties in the undergraduate and postgraduate (residency) medical programs. The structure of the department is such that some faculty members concentrate on clinical work and residency training; some on basic science research; and a few who do both. We have been able to recruit two scientists to strengthen our research efforts (Drs. Martin Duennwald and Lisa Cameron). To further build numbers, we have continued to explore cross-appointments of strong researchers in our department and to build a multidisciplinary approach to research.

### Scope of our research

Our researchers have continued to excel in their respective research programs, which are in perfect alignment with Schulich Medicine & Dentistry key areas of research strengths. These areas of research include cancer biology, cardiovascular science and metabolic diseases, infection and immunity, and neuropathology. We also play a lead role in areas such as environmental pathology and global health. Highlighted below are a few specific research programs in which the Department of Pathology and Laboratory Medicine plays a major role.

***Cancer biology:*** Cancer research is one of the strengths of the Department of Pathology and Laboratory Medicine and identified an area of research excellence at Schulich Medicine & Dentistry. Key researchers in cancer biology research are Drs. Joan Knoll, Chandan Chakraborty, Alan Tuck and Ann Chambers (cross-appointee from Oncology) (breast cancer); Madeleine Moussa and Jose Gomez (prostate cancer); Christopher Howlett and Kamilia Rizkalla (hematologic malignancies); David Driman and Jeremy Parfitt (gastrointestinal and hepatobiliary cancer); Mariamma Joseph (skin and pulmonary cancers); Meg McLachlan and Michele Weir (gynecological cancers); Bret Wehrli (soft tissue tumors); Lee-Cyn Ang and Robert Hammond (neurological cancer); and Thomas Daley and Mark Darling (oral cancers).

***Cardiovascular, Respiratory Health, and Metabolic Diseases:*** Cardiovascular biology and metabolic disease researchers have focused their attention on: a) chronic complications of diabetes (Drs. Subrata Chakrabarti, Zia A. Khan), b) cardiovascular disease (Dr. Tianqing Peng, Lawson Scientist/cross-appointee), c) vascular stem cell research (Dr. Zia A. Khan), d) mechanisms of islet development in the pancreas (Dr. Edith Arany, Lawson Scientist/cross-appointee), and e) imaging modalities for pancreatic islets and cardiomyopathy (Dr. Savita Dhanvantari, Lawson Scientist/cross-appointee). We have also been fortunate to recruit Dr Lisa Cameron to lead a research program in asthma research.

***Transplant pathology and immunopathology research:*** Research in transplantation (clinical and experimental) is one of our department's focus areas, and has demonstrated strong growth during the last year. The backbone of the xenotransplant program is the expertise of people such as Drs. Bertha Garcia, Aaron Haig, and Weiping Min (cross-appointees from Surgery), and Zhu-Xu Zhang (cross appointee from Medicine). Research in this field has been very productive with a large number of publications in high impact journals.

***Neuropathology:*** Key researchers in the neuropathology research group include Drs. Lee-Cyn Ang and Robert Hammond (neurological cancer), and Michael Strong and Martin Duennwald (amyotrophic lateral sclerosis). A new collaborative research program was recently established with Drs. Martin Duennwald (recruited 2012) and Dr. Michael Strong, who are investigating RNA metabolism as a major contributor to both familial and spontaneous amyotrophic lateral sclerosis (ALS).

***Environmental pathology research:*** Another area of our research focus which is aligned with Schulich Medicine & Dentistry's long-term focus and where we lead is environmental pathology and global health. We have a large number of researchers who focus their efforts in this area and have established a graduate program in ecosystem health. This group utilizes a multidisciplinary approach to research with active participation from communities. Key players in this research area include Drs. Jack Bend, Jorge Burneo (Clinical Neurological Sciences), Carol Herbert, Amardeep Thind (Family Medicine), Michael Rieder (Pediatrics), Gideon Koren (Molecular Toxicology), and members from the Faculties of Science (Irena Creed, Biology; Charlie Trick, Biology [Ivey Chair in Ecosystem Health]) and Social Science (Bradley Corbett, Sociology [Statistics Canada]; Regna Darnell, Anthropology).

## SUMMARY OF GRANT FUNDING DATA *(July 1, 2013 to June 30, 2014)*

| | Total Awards | Award Value | 2013-14 Funding |
|---|---|---|---|
| Externally Funded (PI) | 17 | $ 3,839,974 | $ 1,055,724 |
| Externally Funded (co-PI/co-investigator) | 10 | $ 4,059,849 | $ 962,350 |
| Internally Funded (PI) | 12 | $ 386,767 | $ 144,967 |
| Internally Funded (co-PI/co-investigator) | 5 | $ 311,297 | $ 311,297 |
| Total Grant Funding: | 44 | $ 8,597,887 | $ 2,474,338 |

## SUMMARY OF RESEARCH PUBLICATIONS *(July 1, 2013 to June 30, 2014)*

| | Journal articles | Books & Book Chapters | Published Abstracts | Totals |
|---|---|---|---|---|
| MD/CTA | 71 | 6 | 16 | 93 |
| PhD/Scientists | 21 | 0 | 8 | 29 |
| Cross Appointees | 1 | 0 | 0 | 0 |
| Totals: | 93 | 6 | 24 | 123 |

## SUMMARY OF INVITED SCIENTIFIC LECTURES AND PRESENTATIONS *(July 1, 2013 to June 30, 2014)*

| | International | National | Provincial | Totals |
|---|---|---|---|---|
| MD/CTA | 20 | 1 | 17 | 38 |
| PhD/Scientists | 1 | 4 | 1 | 6 |
| Totals: | 21 | 5 | 18 | 44 |

## BUILDING OF RESEARCH INFRASTRUCTURE

The Pathology Department and Laboratory Medicine continues to provide a significant amount of research infrastructure, which is organized as core facilities at London Health Sciences Centre (LHSC) or Western to facilitate research of investigators in London. It is our goal to support as many researchers as possible with this infrastructure.

- Tissue preparation facility
- Transplant histology laboratory services
- Archival tissues
- Ontario Institute for Cancer Research (OICR) tissue collection
- Morphometry core
- Real-time PCR core
- Palm Laser Dissection
- Shared Multimedia Resource and Teaching Centre (SMART) Centre

## POSTDOCTORAL FELLOWS, POSTDOCTORAL ASSOCIATES, VISITING SCIENTISTS

Dr. Yanan Cao, Mujanjiang Medical University, China (Chakrabarti Lab), Visiting Research Scientist

Dr. Pinyin Abulizi, Xinjiang Medical University, China (Zheng Lab), Postdoctoral Fellow

## DR. ROBERT ZHONG SEMINAR SERIES

The Department of Pathology and Laboratory Medicine Research Committee initiated a research seminar, named after Dr. Robert (Zheng) Zhong, with the purpose of capturing the research interests of our department and the wider university and hospital community. The objectives are to enhance our departmental basic and clinical science research, and to improve communication within the department and between departmental members and other researchers in the city. The Research Committee invites high profile speakers from Western to enhance our research profile and to help establish collaborations. The seminars are accredited by the Royal College Maintenance of Certification program.

**2013-2014 Dr. Robert Zhong Research Seminars - Speakers**

| Date | Speaker | Topic |
|---|---|---|
| 2014-06-12 | Professor Shiva Singh, PhD<br>Professor, Department of Biology, Western University | "Genetic and Epigenetic Insights in Neurodevelopmental Disorders" |
| 2014-03-13 | Professor Robert Cumming, PhD<br>Associate Professor, Department of Biology, Western University | "Exploring the relationship between cancer-like metabolism and brain function in Alzheimer's disease" |
| 2013-12-12 | Professor S.M. Mansour Haeryfar, PhD<br>CRC Viral Immunity & Pathogenesis. Associate Professor, Department of Microbiology & Immunology, Western University | "Manipulation of Conventional and Glycolipid-reactive T Cells in Allotransplantation" |
| 2013-10-10 | Professor John Di Guglielmo, PhD<br>Associate Professor, Department of Physiology and Pharmacology, Western University | "aPKC: a nexus for TGFbeta-dependent EMT in lung tumor cells" |

## 2014 PATHOLOGY AND LABORATORY MEDICINE RESEARCH DAY

***Report of Dr. Zia A. Khan, Chair Annual Pathology Research Day Committee***

Pathology and Laboratory Medicine Research Day is an event organized to recognize research excellence and promote inter- and intra-departmental collaboration. This full day event allows our trainees to present their research in oral presentations and poster sessions. The Pathology and Laboratory Medicine Research Day Committee established in November 2012 continuously reviews the format and makes changes to make this important day as effective and enjoyable as possible.

The 2014 Pathology and Laboratory Medicine Research Day was held on March 28th, 2014. The event was attended by over 100 faculty, residents, students, and staff. The day started off with an outstanding keynote address delivered by internationally renowned cancer biologist, Dr. Thomas Hudson, President and Scientific Director of the Ontario Institute for Cancer Research. His engaging talk was followed by Pathology trainee platform and poster presentations on a wide range of topics underscoring the multidisciplinary research being carried out in the Department of Pathology and Laboratory Medicine.

# 2014 Annual Pathology Research Day

**Research Day Awards Winners:**

Chairs' Award for the Best Clinical Science Presentation: Will Stecho

Title of presentation:
Assessment of Resident Grossing Skills in the Digital Age: Evaluation and Implementation of a Mobile Digital Assessment Tool

Dr. M. Daria Haust Award for the Best Basic Science Presentation:
Wahab A. Khan

Title of presentation:
Differences in Chromatin Accessibility are present between Homologous Metaphase Chromosomes

Best Clinical Science Poster Presentation Award: Brian A. Schick

Title of presentation:
Negative Colorectal Polyp Biopsies: The Utility of Cutting Deeper Levels

Best Basic Science Poster Presentation Award: Milica Krstic

Title of presentation:
The role of transcriptional regulator TBX3 in early breast cancer progression

Best Basic/Clinical Science Collaborative Poster Presentation:
Jacqueline Cox

Title of presentation: Expression of Human tissue Kallikriens (KLKs) in Polymorphous Low Grade Adenocarcinoma (PLGA)

MCISc Graduate Research Award:
Jenna Strong

Title of presentation:
Canada's First Accredited Pathologists' Assistant Graduate Program: A Self Study and Review

MCISc Graduate Research Award:
Rebecca Mantha

Title of presentation:
The Application of a Multitissue Spring-roll Control Block in Immunohistochemistry.

The Cameron Wallace Graduate Student Award in Pathology:
Phaedra Henley

Best Undergraduate Basic Science Poster Presentation:
Kelsey Watson

Title of presentation:
Interaction of Primary Human Trabecular Meshwork Cells with Metal Alloy Candidates for Microinvasive Glaucoma Surgery

## CHALLENGES AHEAD AND OPPORTUNITIES

Pathology and Laboratory Medicine has made a significant research impact over the years. We have continued to grow and enjoy the highest number of research trainees. Although we have a relatively small core of faculty, we are collectively very productive. Obstacles that we need to overcome for further growth include securing and renovating space for laboratory work, replace outdated infrastructure and equipment, and make the best of limited research funding. However, these challenges also present unique opportunities to strengthen collaborative work within and outside of the department. The department recently held a strategic planning meeting to create a blueprint for continued research growth over the long term. The initiatives identified include enhancing our research profile, which will likely benefit all of our research efforts, through more effective communication of our research successes and by increased exposure. We also see opportunities to make a mark with cutting edge translational research. Because of our clinical/basic science structure and multidisciplinary approach to research, we are uniquely positioned to take the lead.

# Promoting Excellence in Diagnostic Service

## Report of the Director, Dr. Mike Kadour


With most of our labs making big changes and improvements, it's easy to forget that 2014 was the year of monumental change for London and regional hospitals with HUGO. The milestone of implementing HUGO - which at it's essence is Care Provider Order Entry and ePrescribing - is a new beginning for our hospitals in addressing standardization and appropriateness. Unsurprisingly given the scale of the change, we are still grappling with the basics of what we now call "ePractice". The bigger agenda of using it to guide practice (and patients, lest we forget) down evidence-based care pathways is waiting for us next year. It is in this context that we have used 2014 to materially increase the recognition of our department as a critical enabler to achieving best-practice care. Strengthening diagnostics now features as one of the top strategic priorities within the hospitals. This is a tremendous achievement for us and our community strategically, and a call to action for us to lead our hospitals in defining what great diagnostics look like and delivering it every day.

You will see from our Program-level reports that our people have achieved great things this year. The breadth of accomplishments this year is quite impressive and a testament to the passion and energy our teams have for quality. Some certainly stand out: we built a brand new Transplant lab and ramped-up more stringent testing for transplant patients; won a large international contract serving all corners of the globe with exacting FDA regulatory requirements; developed novel methodologies in Microbiology getting patients home significantly earlier and safer; broke through Cancer Care Ontario Pathology turn-around-time targets and now lead the province; and are transforming Molecular Diagnostics with Next Generation Sequencing.

2014 was a flurry of activity within our laboratories. Our plans for 2015 are even more ambitious as we look outside our laboratories at driving even better patient care for our hospitals and region.

# Anatomical Pathology

***Report of the Program Head, Dr. C. Meg McLachlin***

Anatomical Pathology includes the Divisions of Surgical Pathology, Cytopathology, Autopsy Services and Molecular Diagnostics and provides a wide range of tissue diagnostic services to the London Hospitals as well as consultation services and tertiary diagnostics to the region. The program supports the clinical programs, education mandate and research endeavors of the department and maintains standards for Cancer Care Ontario, QMPLS and other health care agencies. Services are provided largely in a subspecialty model with recognized experts across the disease spectrum. The following includes highlights of successes and challenges from the past year.

## 1) SURGICAL PATHOLOGY

***Report of the Division Head, Dr. Helen C. Ettler***

The Division of Surgical Pathology provides tissue diagnostic services to the London Hospitals. Specialized testing including immunopathology, and electron microscopy is provided within the division and further ancillary testing is provided in conjunction with the division of Molecular Diagnostics.

### Turnaround time (TAT)

There has been a 63% reduction in TAT from a high of 16.7 days (Aug 2013) to a low of 6.2 days (June 2014). This was largely due to workflow improvements that were designed by the staff in specimen receiving, gross room and histology. Regular monitoring shows a reduction in TAT in all areas of the laboratory (transportation, specimen receiving, gross room and histology). Individual pathologists are informed of their TAT a on quarterly basis. Overall Pathologist TAT has remained stable over the past year.

### Workload

There was a 4% increase in specimens received from 83,208 (2012) to 86,531 (2013). Consults referred in from other centres increased 8% to 2,448 in the same time period. This is likely to increase further with requests for molecular testing.

### Cancer Care Ontario Mandates

Synoptic report completeness for cancer cases increased from 65% (Mar 2013) to 85% (Mar 2014). This improvement resulted from a Cerner upgrade and continuing feedback to the pathologists. TAT for breast and colorectal specimens were better than the CCO expectation of 90% within 14 days in quarter 4 of 2013/14.

### QMPLS

All surveys were passed with good scores.

### Teaching

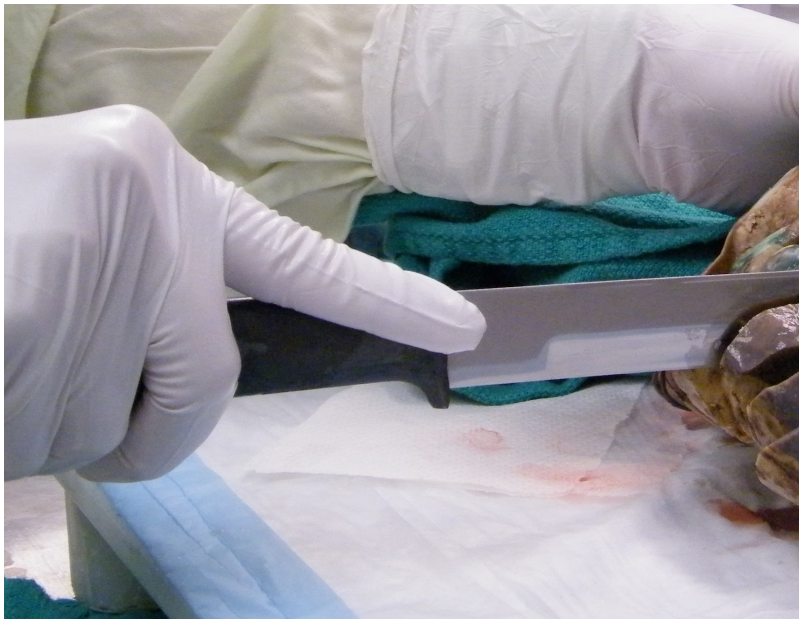
There are a wide range of students in our department including pathology fellows, pathology and off-service residents, Western and outside medical students, Pathologists' Assistant (PA) students, MLA students (Westervelt) and MLT students (St. Clair College). This involves extensive teaching by pathologists, PAs, medical technologists and MLAs. Continuing education sessions are provided to PAs and MLTs by pathologists. There was a highly successful Western Pathology Update CME event held on May 16, 2014 at Spencer Hall (50 attendees).

### Research

The Division actively supports collaborative research through clinical partnerships. The Tissue and Archives committee assessed over 75 applications for the use of tissue in research last year. The Division is acting as a Dako Omnis test site for immunopathology test development.

### Challenges

- Maintenance of TAT in face of increasing volumes
- Increasing complexity of cases with challenging synoptic reporting and increasing requirements for molecular testing
- Budgetary pressures particularly with respect to special stains and IHC



## 2) AUTOPSY SERVICE

***Report of the Division Head, Dr. Michael J. Shkrum***

The autopsy service based at University Hospital performs a dual role. By doing autopsies authorized by families of individuals dying in hospital, it monitors quality assurance of the LHSC clinical services. As a regional forensic pathology unit, the service assists coroners conducting death investigations in southwestern Ontario.

In 2013, the total number of autopsies (hospital consent and coroner's warrant) increased 1.6% (from 556 to 565). There was a 3.2% decrease in coroners' cases (439 to 425) but a 20% increase in hospital consent autopsies (117 to 140). The proportion of coroners' cases originating outside of London done in the LHSC facility was 43%. In 2012, 41% of cases originated outside London. Although current staffing by pathologists and support staff is sufficient to meet this regional need, this will be a concern if community hospitals in the region continue to close their autopsy services.

The forensic pathologists on the autopsy team – Drs. E. Tugaleva, E. Tweedie and M. Shkrum – continue to lecture on various forensic topics at the undergraduate, graduate and professional levels.

Research initiatives are ongoing focusing on motor vehicle-related trauma and pediatric pathology.

## 3) CYTOPATHOLOGY

***Report of Division Head, Dr. Mariamma Joseph***

The Cytology laboratory provides a wide range of diagnostic services to physicians in London and many regional hospitals. We deliver expert cytology 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.

The cytotechnologists continue to provide an efficient and highly valued Rapid Onsite Evaluation (ROSE) FNA service to clinicians (1,159 cases in 2013) and this volume is steadily increasing with increases in numbers of EUS and EBUS procedures.

The laboratory expanded our cytology service to Stratford this year including processing, screening and reporting as part of the regional expansion of cytology practice.

There are plans to introduce a number of molecular tests related to cancer therapy on small cytology samples and currently there are two validation projects (P16, EGFR) in progress.

Education is a major thrust of our team. A major contribution of our department this year, at the national level, is the establishment of a Royal College accredited Competency Based Cytopathology Diploma Program, the first in Canada (Dr. Weir Program Director, AFC Diploma). Dr. Emily Filter, our cytology fellow, successfully completed this diploma program this year.

Rounds, including Medical Leader's Multihead Microscope Rounds, Monthly Cytology Rounds which includes current topics, cytology E conferences and journal clubs, and Endoscopic Ultrasound Guided FNAB Rounds, are held to create a stimulating educational environment to enhance team relationships.

Our cytology team completed two clinical research projects this year: 1) Pancreas EUS FNAB – An Analysis of Equivocal Results, The London Experience; and 2) Random Weekly Retrospective Review of Non-Gyn Cytology. These were presented as posters at the July 2014 Canadian Association of Pathologists' meeting in Toronto. In addition, our team members published a number of peer reviewed papers and guidelines related to cytology and gave invited lectures at local and regional meetings.

## 4) MOLECULAR DIAGNOSTICS

***Report of the Division Head, Dr. Joan Knoll***

Molecular Diagnostics Division is comprised of Biochemical Genetics, Cytogenetics and Molecular Genetic Sections (which includes Molecular Pathology) and provides specialized genetic testing including inherited metabolic disorders, chromosome analysis/karyotyping, FISH, microarray analysis and a wide variety of gene tests for inherited disorders, predictive cancer testing and therapeutic monitoring. It also serves as a reference laboratory for multiple tests at the provincial level and performs some testing at the national level.

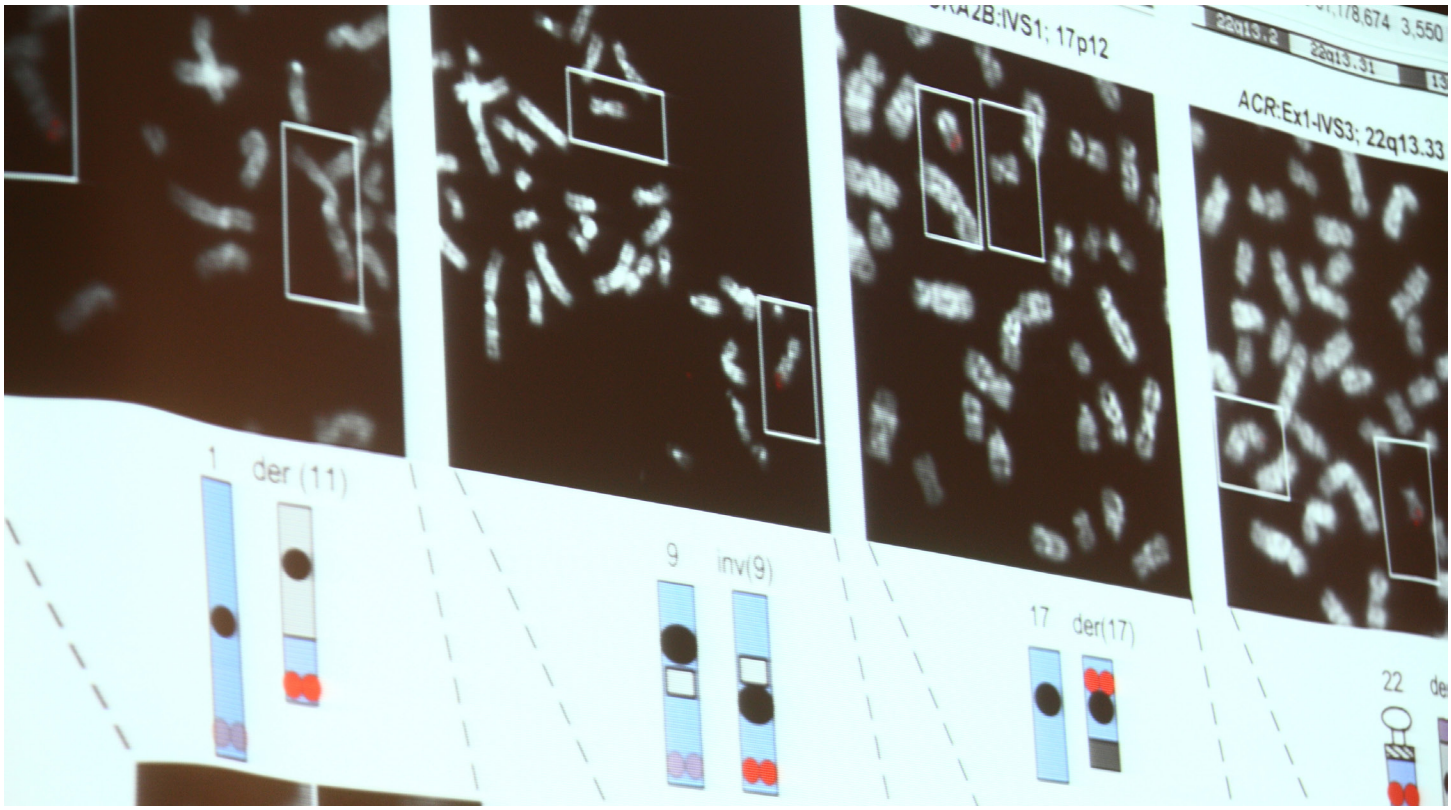
Test volumes and complexity are increasing significantly with the largest increases occurring in cancer testing and provincial newborn screening. A comparison of our division laboratories relative to our provincial and national peers, with respect to staffing, complexity of testing and advanced technology, demonstrated that we are understaffed and slow to acquire new genomic technologies. There has been a coordinated and successful effort to attract both professional and technical staff in order to support plans for expansion of services.

Molecular testing for most inherited diseases and many cancers is advancing to use technologies that interrogate many genes simultaneously. A major goal for the division is to improve our depth of professional and technical coverage and acquire new technology (automation and next generation sequencing technology [NGS]) to meet current demands and participate in future opportunities. This effort is being supported by hospital leadership and the London Health Sciences Foundation.

The Cerner Helix Millenium module was developed for tracking and reporting samples and tests in the Molecular Genetics Section. The working build was introduced to the staff in spring 2014 and is currently being revised and further modified to meet the reporting needs of the specific tests that are performed. The build for the Biochemical Genetics Laboratory is slated to begin in autumn 2014.

Molecular Diagnostics Division was very successful in its multiple application submissions to MOHLTC and CCO. This includes repatriation of genetic testing for constitutional microarray testing and peripheral neuropathy testing as well as ALK, BRAF, KRAS gene mutation.

The division plays an active role in teaching of undergraduate students, graduate students, medical technology students in molecular genetics and cytogenetics, and residents and fellows, and contributes to clinical scientific knowledge and advancement through peer review publications, conference presentations and committee memberships.



# Laboratory Medicine

***Report of the Program Head, Dr. Rob Lannigan***

"What's in a name?" In many instances it is fair to say that the answer to the question is "Nothing much" as name changes are often no more than cosmetic. Sometimes however a name change signals a substantial shift in direction and the recent Senate approval to change the name of the Department of Pathology to the Department of Pathology and Laboratory Medicine is just such an event. Much of the day-to-day work of people in the department is supporting the clinical services in the diagnosis, monitoring and management of disease. The hospitals in London recognized that creating the London Laboratory Services Group (LLSG) was a start. Recently the hospital moved to change the name of the LLSG to Pathology and Laboratory Medicine and, now, creating the Department of Pathology and Laboratory Medicine at the Schulich School of Medicine & Dentistry provides the appropriate alignment to allow for the merging of clinical service, research and teaching for its members.

**London Laboratory Service Group (LLSG)
has been renamed to
Pathology and Laboratory Medicine (PaLM)**

Laboratory Medicine includes: Clinical Biochemistry with its divisions of Core Laboratories and Point of Care testing, Endocrinology, Immunology, Maternal/fetal screening, Toxicology and Trace Metals analysis along with Clinical Microbiology and its divisions of Bacteriology, Virology and Infection Control, Transplant Immunology and Pulmonary Function. When added to the divisions housed within Pathology, Surgical Pathology, Neuropathology, Autopsy Service, Cytopathology and Molecular Diagnostics, including Molecular Genetics, Cytogenetics and Biochemical genetics-the combination provides an infrastructure that supports a depth and breadth of clinical service, teaching, research and collaboration that has not been achieved before. This means that newer thrusts towards translational research and personalized medicine can be nourished and supported in ways not previously possible while the traditional basic science research and teaching activities are strengthened. It is an exciting and intellectually stimulating time with no end of possibilities to improve the understanding of disease in all its aspects and to improve outcomes of those afflicted. So "What's in a name?" in this case, a great deal.

## 1) MICROBIOLOGY

***Report of the Division Head, Dr. Michael John***

### Service

The laboratory has been fortunate to have had the opportunity to acquire much needed capital equipment along with middleware software that has allowed us to change workflow and provide more timely results for patient management. The MALDI-TOFF equipment, which provides rapid identification of bacteria, has resulted in us being able to identify the bacteria present in blood cultures rapidly and this has resulted in more appropriate and targeted antibiotic use in patients with sepsis. We continue to strive to improve and have incorporated physician feedback in laboratory service changes, resulting in significant savings and service improvements. Examples include an ova and parasite screen and protocol allowing for a more focused use of time consuming and costly methods for diagnosis of parasitic disease. A change in Clostridium difficile testing frequencies and algorithms has been implemented so that we can now offer the service 7 days a week. The introduction of a protocol for monitoring patients at risk of developing invasive fungal infections using a galactomannan assay has led to significant savings in the use of high cost anti-fungal agents along with better utilization of other laboratory resources.

### Teaching

As a division we participate in teaching undergraduate and graduate students, medical students, Clinical Clerks and residents. A highlight this past year involved an innovative teaching technique in the Pathology 9562 course where a Blackboard assignment was included in the course. This requires students to research specific questions and then submit a paper to the "blackboard" which is critiqued by a fellow student. This has resulted in interesting and informative material as well as increased student engagement in learning.

### Research

We are currently involved in collaborative research projects with several other departments; grant applications have been submitted. In-house projects over the summer included the development of a molecular detection method for carbapenemase producing organisms from stool, which will be of value in screening patients who may be harboring multi-drug resistant Gram-negative organisms containing this resistance factor. Our project has just been completed and exceeds the current industry methods in both quality and cost. This will be a major advantage in helping with controlling the spread of NDM and KPC carbapenemase producing organisms.

**Challenge**

While additional capital equipment will be forthcoming in the next year that will help further streamline workflows and improve efficiencies, cost containment and ongoing quality improvement will remain a major focus. Our hope is to be able to use the hospital's CPOE initiative along with the laboratory capital equipment and software improvements to influence our utilization patterns allowing full advantage to be taken of our laboratory resources.

## 2) HEMATOLOGY

***Report of the Division Head, Dr. Ian Chin-Yee***

The hematology laboratories support the large volume core laboratories for all hospital sites as well as the specialty areas of Blood Transfusion Laboratory and Investigational hematology (comprised of coagulation, hemoglobinopathy, flow cytometry and morphology).

Being one the 3 largest blood banks in Ontario, our focus is to ensure the proper and safe use of blood products at LHSC and our regional hospitals. Over the past years successful initiatives have been introduced to reduce major transfusion reaction due to ABO errors from mislabeled samples, to tracking transfusion reactions and monitoring blood product utilization. The blood transfusion laboratory is actively involved in educating physicians (postgraduate trainees) and technologists and has consistently presented and published at both national and international conferences.

The coagulation laboratory supports one of the largest regional bleeding disorders programs in Ontario providing specialty testing for patients with hemophilia and other bleeding disorders. This year the coagulation laboratory introduced ADAM-TS13 testing for renal patients with suspected TTP or aHUS. A national quality assurance program has been implemented by LHSC to ensure this test is available to all patients in Canada.

Flow cytometry provides regional testing for patients with hematologic malignancies and continues to be an innovator both nationally and internationally. Flow cytometry at LHSC has developed and implemented some lead technologies in rare event detection including circulating tumor cells in patients with breast and prostate cancer, minimal residual disease testing in childhood leukemia and hematopoetic stem cell enumeration. Many of these projects started as independent research projects which have been translated into clinical tests which now guide patient care. For example, CellSearch system for detection of circulating tumor cells in solid cancers developed in collaboration with the Oncology breast research group at LRCP headed by Dr. Alison Allan. We are one of only two centres in Canada offering this as a clinical test. Flow cytometry was also part of a $5M grant from the FNIH/NCI to implement residual disease testing in childhood acute lymphoblastic leukemia. This 3-year project is in collaboration with key Cooperative Oncology Groups from the University of Washington in Seattle and Johns Hopkins in Baltimore.

This year we hope to implement a new technology in automated morphology analysis, Cellavision, which will allow remote scanning of microscope slides for expert review and education. Teaching remains a core activity at the MD, PhD and technologist level locally as well as national and international meetings and workshops in 2014.

The strength and success of the Hematology and Blood Transfusion laboratories has always rested on a culture of innovation, education and collaboration among technologists, trainees, scientists and medical staff. We look forward to another fruitful year in 2015.

## 3) BIOCHEMISTRY AND IMMUNOLOGY

***Report of the Division Head, Dr. Victor Prabhakaran***

The Discipline of Biochemistry and Immunology has the following sections (Section Heads in parenthesis):

- Core Laboratories (Dr. Vipin Bhayana),
- Toxicology, Therapeutic Drug Monitoring and Special Chemistry (Dr. Norman Smith),
- Maternal Serum Screening and Endocrinology (Dr. Angela Rutledge), and
- Trace Elements and Immunology (Dr. Liju Yang).

These laboratories have the largest revenue streams in the city. While primarily serving the in-patients and out-patients at the London city hospitals, the Biochemistry and Immunology labs act as referral labs for esoteric tests from other regions of Canada and the U.S.A.

The variety and volumes of testing at these laboratories are huge. There are continued efforts to upgrade instrumentation and modify/modernize test methodology; however, in some sections the need for change of hardware (analyzers) is due/overdue e.g., the Core Labs main line analyzers.

**Teaching:** All Biochemists (Sections Heads and Division Head) taught Biochem 3386b and 3387g. Dr. Norm Smith taught Pathology 4500b. The Division Head has 2 summer students working on different projects.

**Research:** Several poster presentations, round-table, and a couple of publications have been made at national and international meetings by the Section Heads. This is remarkable considering the heavy service load these professionals carry.

### 4) LHSC PULMONARY FUNCTION

***Report of the Division Head, Dr. Sanjay Mehta***

The Pulmonary function labs are streamlining their service due to the implementation of HUGO, and hope to go paperless soon and have all orders online. They are also now doing reminder calls to decrease the no-show rate, and this looks like it is working because people are calling to rebook if they can't make it.

#### Teaching

All our Respirology fellows and residents are PF tested, which helps them relate better to the patients; medical staff now supervise all our exercise tests.

#### Research

We have always participated in a lot of clinical research studies with cardiology, respirology and recently are doing more studies with children. This is bringing in revenue and expanding the techs' expertise!

#### Challenges

We will have to try to accommodate new Respirology doctors' clinics with the limited space and equipment at VH. Because of the ever changing clinic schedules of the doctors with call and vacation, and all the vacation time of our many senior techs, this will be very hard without the addition of part-time staff, especially as we're losing a senior FT PF tech in December.

# Pathology and Laboratory Medicine

## Seeing Small, Thinking Big!

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