



IN THIS ISSUE

Farewell from the Editor

Matchmaking the Gift of Life

Advancing the Care of Sickle Cell Disease Patients in Hamilton: Blood Group Genotyping

News from the HRLMP

News from LRC Education News

News from Hematology

News from Microbiology

Editorial Board:

Chemistry: Dr C Balion
Microbiology: Dr C Main
Pathology: Dr C. Ross
Genetics: Dr E. McCready
Hematology: K Moffat

Editorial Office:

Editor: Dr Cheryl Main
mainc@hhsc.ca
Editorial Assistant:
Michelina Bozzo
Bozzom@hhsc.ca

Snapshot of this edition:

- Discover the HRLMP Histocompatibility Lab
- Learn all about Blood Group Genotyping
- Welcoming the new Director of the HRLMP – Dr. John Fernandes
- Thank you to Dr. Vina Alexopoulou for her leadership
- Big changes in LRC!
- Introducing Dr. Marek Smieja as the new Discipline Director for Microbiology

Farewell from the Editor

It is with mixed feelings that I share this, my last edition of Connections, with you. I took over the role of editor when Dr. Vijay Grey retired in 2011 and it has been a very rewarding experience for me. Over the past four years, the newsletter has undergone a couple of facelifts and a major change in format. I have been proud to be its editor.

I would like to thank all of the members of the editorial board for their help, hard work and creativity. I would also like to thank Michelina Bozzo for keeping me on track with the last 23 editions, and Grace Kiers for her careful eye and skill in editing. I have been fortunate to work with such an excellent team!

– Cheryl Main

Matchmaking the Gift of Life

The Histocompatibility Laboratory (HLA Lab) is an integral component of Hamilton's two transplantation programs – the Renal Transplant Program at St Joseph's Healthcare Hamilton and the Bone Marrow Transplant Program at the Juravinski Hospital and Cancer Centre. When patients require a transplant, an appropriate donor must be found. The HLA lab provides tissue typing, antibody testing and crossmatch testing to help find a compatible donor for patients awaiting a transplant.

The human leukocyte antigen system is defined by the genes of the major histocompatibility complex that function in antigen processing and presentation and have implications for transplant tolerability. It is the most polymorphic set of loci in the human genome. The HLA system includes Class I alleles (HLA-A, B and C) and Class II alleles (HLA-DR, DP, DQ). A transplant recipient and potential donors are typed at these loci to determine if they are an acceptable HLA match. Typing is completed in our lab by reverse sequence oligonucleotide probe typing (RSSO) and sequence specific primer typing (SSP). Additionally, in

assessing suitability of the match, our lab performs testing to identify pre-formed antibodies that may lead to increased risk of rejection. This is performed using Luminex antibody identification. Lastly, we also perform flow cytometry crossmatch testing to ensure we find the best possible donor and improve the chance of successful transplant.

“The HLA lab collaborates closely with our local clinical programs as well as our national colleagues. We are dedicated to ensuring quality and are invested in finding the best match for our patients. Each donor recipient case is unique and HLA testing is key to ensuring a successful transplant outcome” (Dr. Ribic and Dr. Lopic).

“This is a challenging and stimulating field where we always know that we are making a difference in patients’ lives. Our testing and interpretation is constantly evolving and consistently meets local, provincial, national and international quality assurance standards” said Teri- Lynn Steeves, Senior Lab Technician.

The HLA lab currently completes testing on over 3000 donor and recipient samples per year. It also provides disease association testing for Behcet’s uveitis, birdshot uveitis, celiac disease, abacavir sensitivity, carbamazepine sensitivity, narcolepsy, and spondyloarthropathies.

“We provide donor and recipient testing 24 hours a day with our staff being on-call if an organ becomes available. HLA testing is specialized and must be done in a timely manner. This requires a unique and specialised skill set in our lab staff” said Sandra Fazari, HLA Lab Manager.

“Matchmaking” a donor and recipient requires a large amount of testing, interpretation and collaboration but together we are able to provide the gift of life.



HLA technologists and Co-Heads of Service that are Matchmakers in the Gift of Life. (Photo: HLA Lab)

Dr. Christine Ribic and Dr. Kylie Lopic
Heads of Service, Histocompatibility Laboratory

Advancing The Care of Sickle Cell Disease Patients in Hamilton: Blood Group Genotyping

Background

Sickle Cell Disease (SCD) is one of the most common inherited red blood cell (RBC) disorders worldwide. In SCD, the protein in RBCs that carries oxygen to vital organs – haemoglobin - is abnormal which causes RBCs to take on a sickled shape. Sickled RBCs hemolyze, resulting in chronic haemolytic anemia, and occlude blood vessels, leading to tissue damage. Advances in evidence-based SCD care have led to ongoing improvements in patient outcomes.

HRLMP continues to be home to world-class diagnostics with the Molecular Hematology and Red Cell Disorders laboratories. At HHS and SJHH, recent initiatives for improving SCD care have included: Consolidation of the pediatric and adult hemoglobinopathy clinics, educational initiatives for hospital staff, improved access to imaging modalities for iron overload, development of a patient support and advocacy group, and implementation of best practices in RBC transfusion.

Transfusion in SCD

In patients with SCD, transfusing normal RBCs decreases the percentage of sickle cells, and is the cornerstone of preventing strokes in high-risk SCD patients, and of treating some acute complications of SCD (e.g. stroke, acute chest syndrome, multiorgan failure).¹ However, transfusion can be challenging as the SCD patient populations have high rates of genetic mismatches with the blood donor pool in North America, have high rates of variant RBC antigens, and are often multiply transfused. Transfusion of non-antigen matched blood can produce an immune antibody response in the recipient, called alloimmunization, which may lead to hemolytic transfusion reactions including hyperhemolysis, which can be fatal. Furthermore, the presence of alloantibodies increases the difficulty of finding compatible blood and may lead

to a delay in the transfusion care of these patients. At least 30% of adult homozygous SS patients have ≥1 RBC antibody and 17% of patients have ≥4 antibodies.²

To date, provision of "phenotype-matched" blood has aimed to reduce immune complications of transfusion in SCD patients – on the basis of serological testing, patients receive donor RBCs that are matched for additional RBC antigens (e.g. RhCE and Kell, in addition to the usual matching for ABO and RhD). However, literature demonstrates that serological phenotyping is not accurate for a subset of patients in this population, when compared with results of RBC antigen genotyping, which is the gold standard method of testing, traditional serological phenotyping shows discrepant results in 1/3 to 1/2 of SCD patients.³ Discrepancies are typically due to variant RBC antigens that yield a misleading phenotype result. As highlighted in the case below, transfusion of phenotype-matched blood may be ineffective at preventing alloimmunization in patients with variant RBC antigens^{4,5}

CASE: A 26 year old woman with HbSS in her first pregnancy required transfusion for symptomatic anemia, with a haemoglobin of 62 g/L. Testing in the Transfusion Medicine Laboratory found her to be blood group O+ and to have an anti-E alloantibody on her antibody panel. Serological phenotyping showed the following RBC antigen profile: Positive for C, c, e, Jk(a) and Jk(b); negative for E, Fy(a), Fy(b), and K. Based on phenotyping results and the presence of an alloantibody, the patient received RBC transfusion with extended antigen matching. Ten days later, the patient presented to hospital with worsened anemia (Hb 50 g/L) and signs of brisk hemolysis. Antibody panel revealed a new anti-C RBC antibody. She was admitted with a diagnosis of delayed hemolytic transfusion reaction (DHTR) with hyperhemolysis and was monitored closely by the Maternal Fetal Medicine Service and the McMaster Hemoglobinopathy Clinic through the remainder of her pregnancy, including avoidance of any further RBC transfusions.

On follow-up RBC antigen genotyping, she was found to have a C variant with a partial expression of C. Therefore, when she had been transfused with blood positive for "normal" C, an immune

response occurred against the portion of the C antigen that was unrecognized by her immune system. Had RBC antigen matching been done on the basis of genotyping results as opposed to serological phenotyping, the DHTR and new alloantibody formation would have been avoided.

RBC Antigen Genotyping at HHS/SJHH

RBC antigen genotyping for SCD patients is emerging as a new standard of care. Canadian Blood Services (CBS) and HRLMP are collaborating to provide genotyping for all local SCD patients to accurately identify matched RBC units for transfusion. We aim to genotype all SCD patients served by Hamilton Health Sciences (HHS) and St. Joseph's Healthcare Hamilton (SJHH).

To request blood group genotyping, a completed genotyping requisition and blood sample must be sent to the Transfusion Medicine Laboratory. A flow diagram illustrating this process is in Figure 1.

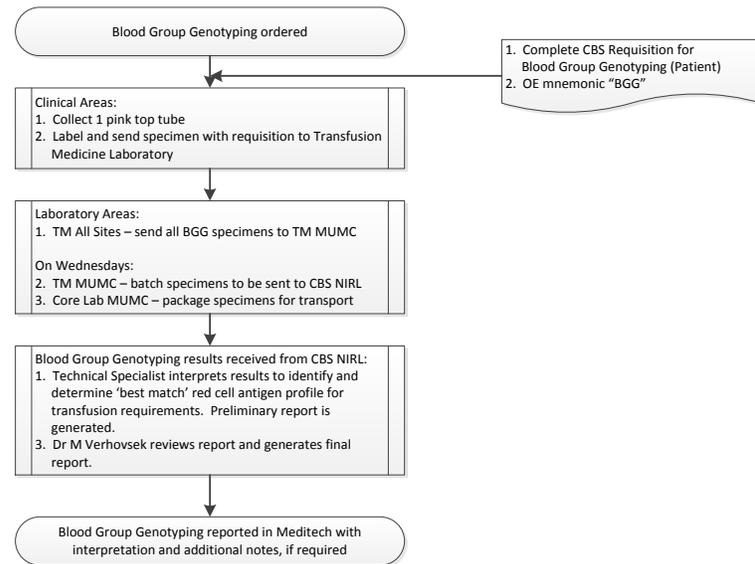


Figure 1. Flow Diagram Illustrating Blood Group Genotyping

Transfusion Medicine may be contacted for the blood group genotyping requisition. Section C must be completed by a physician and the Meditech mnemonic to order the genotyping is "BGG". Specimens are sent to the CBS National Immunohematology Reference Lab in Ottawa.

Accessing Results of RBC Antigen Genotyping

The results of RBC antigen genotyping will be reported in Meditech under Blood Bank Testing.

We have condensed the report to display that blood transfused to the patient should be negative for certain antigens. An example is displayed in Figure 2. Patients’ full reports will be archived in Sovera.

BLOOD GROUP GENOTYPING	Specimen referred to CBS National Immunohematology Reference Laboratory, Ottawa Ontario.	CMH
INTERPRETATION	Based on genotype, recommended selection of red cell concentrates: No history of alloantibodies: C E K Negative If history or presence of alloantibodies: C E K Fya Jkb Negative, and antigen negative for offending alloantibody(ies).	CMH
NOTES	Genotyping determined that the patient has a GATA box mutation. Individuals who have Fy(c-a-b-) red cells invariably possess an allele that encodes Fyb on cells other than red cells. When the allele encoding red cell Fyb antigen is silenced by a GATA box mutation, patients do not make anti-Fyb. Genotyping determined that the patient's red cell genotype is RHCE*ce[7336]. This variant is associated with hrB-, and weakened or partial expression of c and e. These patients may produce alloanti-c, alloanti-e and / or alloanti-hrB.	CMH
METHOD	Genotyping performed for the following blood group systems: Rh, Kell, Kidd, Duffy, MNS, Diego, Donbrock, Colton, Cartwright, Lutheran. Blood group genotyping was performed using Progenika iDCoreXT assay. Genotyping is not a licensed test. Results should be interpreted within the clinical context of the patient as well as serologic data. Full report available in Sovera under Blood Bank Tests.	CMH
REVIEWED BY	Dr. Madeleine Verhovek, M.D. Hamilton Regional Laboratory Medicine Program	CMH

Figure 2. An Example Report of Blood Group Genotyping

RBC Antigen Genotyping in Practice

When a patient with SCD presents at HHS/SJHH, check if RBC antigen genotyping has been performed on a blood sample. It is imperative to determine the SCD patient's RBC antigens to find the best matched RBC units for them. Transfusion Medicine should be notified early to allow sufficient time to find antigen-matched units. Due to the complex care these patients require, physicians and laboratory staff requiring guidance on transfusion or other management issues should reach out to Drs. Uma Athale (Director – Pediatric Hemoglobinopathy) or Madeleine Verhovek (Director – Adult Hemoglobinopathy).

The genotyping results of these SCD patients will be compared to their traditional serological phenotyping in a quality assurance study to determine the rates of discrepancy between methods for patients in our centre. A future goal may be to incorporate this information into an Ontario-wide SCD registry so any Ontario hospital

may access this information to provide the right blood product to the right patient at the right time.

- 1.Yawn et al. Management of sickle cell disease: summary of the 2014 evidence-based report by expert panel members. *Jama* 2014;312:1033-48.
- 2.Mijovic A et al. Red blood cell alloimmunization in sickle cell disease-prevalence and trends: a single-center cross-sectional study from United Kingdom. *Transfusion* 2013;53:3279-80.
- 3.Ribeiro et al. DNA array analysis for red blood cell antigens facilitates the transfusion support with antigen-matched blood in patients with sickle cell disease. *Vox sanguinis* 2009;97:147-52.
- 4.Chou et al. High prevalence of red blood cell alloimmunization in sickle cell disease despite transfusion from Rh-matched minority donors. *Blood* 2013;122:1062-71.
- 5.Sippert et al. Variant RH alleles and Rh immunisation in patients with sickle cell disease. *Blood transfusion = Trasfusione del sangue* 2015;13:72-7.

Dr. Andrew Shih, Transfusion Medicine fellow, **Dr. Khalid Al-Habsi**, Transfusion Medicine Fellow, **Allahna Elahie**, Technical Specialist, Transfusion Medicine and **Dr. Madeleine Verhovek**, Laboratory Hematologist

News from HRLMP

Welcome to Dr. John Fernandes!

All Staff with the Hamilton Regional Laboratory Medicine Program (HRLMP) warmly welcome **Dr. John Fernandes** to the role of Chief of Laboratory Medicine for St. Joseph’s Healthcare and Hamilton Health Sciences and Director of the HRLMP, effective **August 1, 2015**.

John has been practicing Forensic Pathology with the HRLMP for the past 13 years and holds the appointment of Associate Professor within the Department of Pathology and Molecular Medicine, McMaster University. He has held the position of Medical Director for the Hamilton Regional Forensic Pathology Unit since 2010. Through his leadership of the Unit, a safe and tolerant work environment has been established where staff



members are empowered to perform at their best even when under pressure from police, families,

and medical staff.

As a well-known expert pathologist to the courts and media, Dr. Fernandes has provided testimony and consultations for many legal cases and has earned the respect of medical and legal communities, as well as of the public at large.

Dr. Fernandes completed his medical training at McGill University and went on to complete fellowships in Obstetrics and Gynecology and General Pathology through McGill University and the University of Toronto respectively. He went on to complete the Forensic Pathology and Legal Medicine fellowship through the Office of the Chief Medical Examiner at Commonwealth University, Virginia.

As an educator, he was instrumental in developing the Royal College Accredited Fellowship Program in Forensic Pathology at McMaster University in 2011 – the second such Program in Canada. He is currently the Program Director of the Forensic Pathology Fellowship Program and a regular speaker at the Forensic Science Program in Toronto.

As the HRLMP undergoes unprecedented expansion within both Hamilton and the greater community, Dr. Fernandes' leadership abilities will steer us towards excellence in the implementation and delivery of high-quality laboratory services, while maintaining both a positive work environment and the long held tradition of a close association with the Department of Pathology and Molecular Medicine, McMaster University.

We wish Dr. Fernandes the very best in this new and exciting role!

Thank you to our Acting Chief!



Dr. Vina Alexopoulou graciously assumed the role of acting Chief of Laboratory Medicine and Director of HRLMP role on October 1, 2014. Since then Vina has provided respectful and caring leadership to our laboratory professionals, technologists,

technicians, and support staff. She has capably managed clinical laboratory services across all five sites and ensured the continued high quality patient care and continuity of all HRLMP services during this transition process. While Vina has ably withstood many meetings and deflected crisis situations with professionalism and composure, I am sure she is now more than happy to hand the reigns to Dr. John Fernandes who will take over the role of Chief of Laboratory Medicine and Director of HRLMP August 1, 2015.

No stranger to administrative responsibilities, Vina honed her management skills through her many years of service as Discipline Director of Anatomic Pathology, as Deputy Chief of Laboratory Medicine and (twice) as acting/interim Director of Laboratories within the HRLMP. During her six year sojourn at St Joseph's Health Centre in Toronto, Vina held the positions of Chief of the Department of Laboratory Medicine, Director of Laboratories, Pathologist in Chief, and Acting Chief of Staff.

On behalf the Department I would like to thank Vina for her contributions to the success of the department of Pathology and Molecular Medicine, and I look forward to working with her into the future.

Dr. Mark Crowther, Chair, Pathology and Molecular Medicine

News from LRC

After 40 years of dedicated service to the HRLMP, **Barb Baltzer** is retiring. She has spent her entire career associated with the Laboratory Reference Centre (LRC) and for many years has been the cornerstone of this operation. During this time, Barb has witnessed many changes to LRC and has helped develop it into a very successful business entity.



Almost immediately after graduating from Sheridan College in the spring of 1975, Barb was hired as an administrative clerk for the LRC. In these early days, LRC was a very manual operation and Barb was directly involved with sorting specimen samples as well as sending out reports. In 1985, Barb was promoted to become the Supervisor of LRC. In the early 90's, this position was reclassified as LRC coordinator, a title Barb maintained throughout her career.

LRC coordinator is an extremely demanding position requiring Barb to wear many "hats". This included being responsible for billing, directing laboratory and clerical staff as well as interacting with professional staff on all aspects of diagnostic testing. A crucial component of the LRC coordinator is customer service. Barb was nothing less than stellar as the "face" of LRC. Her pleasant and engaging personality coupled with her superb organizational skills ensured excellent support for our clients.

So after a career that spanned the tenure of three Laboratory Directors and multiple changes in site location, Barb has decided to start a new chapter in her life. Her retirement will be an active one. In addition to driving around in her mini-cooper, she plans on spending more time with her hobbies which include gardening, power-walking and shopping. Finally, as is often the case, retirement will give Barb the opportunity to reconnect with old friends and spend more time with her husband of 35 years, Rick, and her children, Adam and Shannon.

We would like to thank Barb for all her years of service and support of the LRC program. Although she will be moving on to many new and exciting activities, she will always be a part of the HRLMP family.

Dr. Joe Macri, Professional Consultant - LRC

New LRC Business Coordinator

Effective **July 6, 2015**, **Jeff Cuneo** began his position as LRC Business Coordinator. Jeff has valuable experience with customer relationship building, management, and teaching. He also has a background in creative marketing. His skills, background, experience, and positive enthusiastic personality will be a valuable addition to the LRC and HRLMP teams.

Jeff will be spending his first month shadowing Barb Baltzer prior to her retirement. Please join us in welcoming Jeff to his new role within the HRLMP!

Dan Brooks, Manager Laboratory Reference Centre

Education News

The Medical and Clinical Biochemistry programs wish to welcome **Terence Agbor**, who will be starting Clinical Chemistry training at the Juravinski Hospital site. **Janet Simons** will be joining the laboratory component of the training program and was recently married. **Omair Sarfaraz** and **Lori Beach** both had posters selected for oral presentation at the Canadian Laboratory Medicine Congress. **Lori Beach** also received a travel award from the CSCC for the recent Canadian Laboratory Medicine Congress. Two former Clinical Chemistry fellows, **Angela Rutledge** and **Saranya Kittanakom**, are also to be congratulated on completing their certification examinations from the CACB.

The Anatomical Pathology programs are proud to announce that **Jeremy Daniels** (PGY4 Anatomical Pathology resident) received the *Dr. Donald Rix Travel Award*.

General Pathology resident **Ipshita Kak** (PGY3) received the *Hugh Curry award for best cytopathology presentation* at the June annual meeting of the Canadian Association of Pathologists

News From Hematology

As of **July 15, 2015**, spinal fluid morphology and cell count differentials will be conducted on the Cellavision platform. As a result, differentials will be reported as a percentage, rather than as an absolute number. The number of cells counted, however, will still be reported as there are often fewer than 100 cells in the differential.

Teresa DiFrancesco, Manager Malignant Hematology

News from Microbiology

It is with great pleasure to announce the new Discipline Director for Microbiology, **Dr. Marek Smieja**.

Dr. Smieja joined the HRLMP in 1998 as a clinical scholar and the Department of Pathology and Molecular Medicine in 2001 and rose to the rank of full professor in 2013. He was the previous Head of Parasitology and became the Head of Virology in 2013. He was instrumental in optimizing the diagnosis of respiratory viruses and under his leadership the HRLMP is at the forefront in this field.



Dr. Smieja trained at the University of Western Ontario (MD-1987), Dalhousie University (internship), University of London (Tropical Medicine), and McMaster (Internal Medicine, Infectious Diseases, Medical Microbiology, and PhD in Health Research Methodology). As a General Practitioner, he worked in Labrador, Northern Ontario, and in Malawi, Africa. He is an Infectious Diseases consultant at St. Joseph's Healthcare Hamilton and at the Special Immunology Services Clinic at McMaster/Hamilton Health Sciences.

Dr. Smieja is very active in undergraduate, graduate, and post graduate teaching, and is a clinician scientist with over 100 published articles and 200 presented abstracts. His research interests

include respiratory and gastrointestinal diagnostics, and the role of chronic infections in respiratory and cardiac disease.

Our congratulations and full support goes to Dr. Smieja.

Dr. Christine Lee, outgoing Discipline Director of Microbiology

News from Pathology

Recognizing Dr. Chitra Rao

Awarded the Medical Staff President's Award for Distinguished Service, from the President of the Medical Staff Association for Hamilton Health Sciences and St Joseph's Healthcare in Hamilton, Ontario in 2013, **Dr. Chitra Rao** will be transitioning from active practice to pursue other personal and professional interests in July 2015 after more than 30 years of service to the citizens of Ontario. Dr. Rao's career includes public service to the residents of Southwestern Ontario, other jurisdictions across Canada including the provincial and superior criminal courts of Nova Scotia and New Brunswick, and more recently to Bermuda. She completed her medical degree in 1966 from the University of Bihar in India and immigrated to Canada where she completed her post-graduate training in 1978 with the support of her husband and mother while raising her two sons.

Dr. Rao was the first female forensic pathologist in Canada. She has accomplished many achievements in her role as a full time forensic and general pathologist including appointments as Residency Programme Director for General Pathology at McMaster University, Medical Director of the Forensic Pathology Unit in Hamilton (1988-2009), contract forensic pathologist (2009-2015), and forensic pathology consultant to the Bermuda Police Service. She continues to be an ally and mentor to innumerable young and old physicians and other

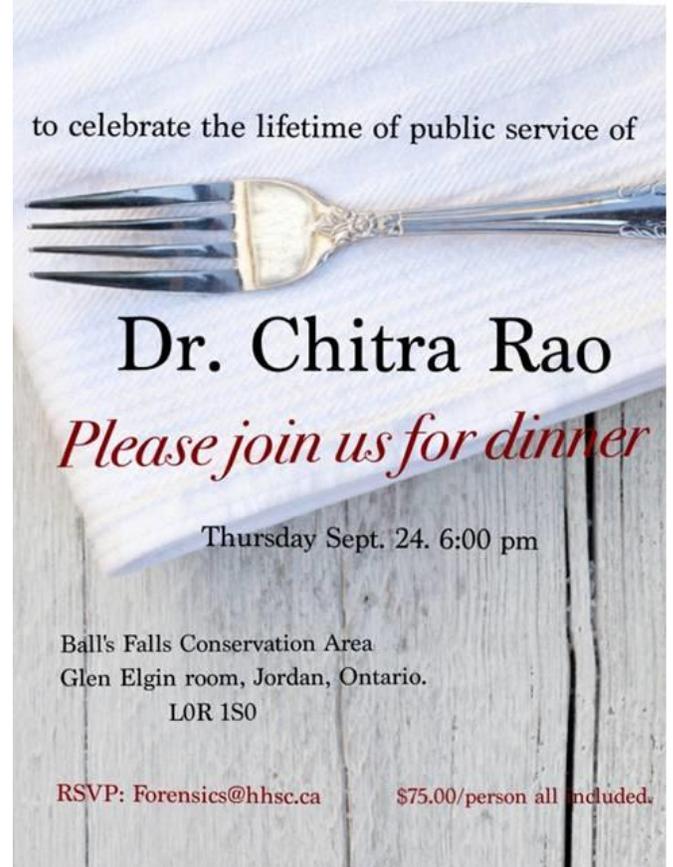


professionals. Dr. Rao has provided expert testimony and consultation on many issues, including non-accidental injury and child abuse. She peer reviewed numerous cases as part of the Goudge Inquiry that aimed to improve medico-legal pediatric practices in the province of Ontario.

Through all of her contributions she has earned the respect and appreciation of the medical community, the legal community, the judiciary, and the general public at large. Over her years of practice she has demonstrated a professional and fervent commitment to the public good and has consistently provided thorough comprehensive, scientifically based reports which have been invaluable to the criminal justice system. Always passionate about her work, Dr. Rao has remained an unsung hero for the advocacy of women especially in medicine, and has forged strong professional and personal bonds with many and varied professionals including physicians, nurses, lawyers and judges. Coroners have frequently cited her for mentorship and invaluable insights into investigation of deaths from the obscure to the obvious, through hard work, dedication, and continuously high personal and professional standards.

As she embarks on the next of her adventures, we wish her good health, great happiness, a well deserved and earned rest, and continued successes.

Dr. John Fernandes, Chief of Laboratory Medicine for St. Joseph's Healthcare and Hamilton Health Sciences and Director of the HRLMP



Recognizing the Role of Pathologists

The role of the pathologist (and other lab physicians and scientists) is often a behind the scenes role and although we are fundamentally important to patient care, we are sometimes a bit of an unknown entity.

The Canadian Association of Pathologists (CAP-ACP) has created a website entitled [my pathologist.ca](https://mypathologist.ca/) which endeavors to show the public who we are and what we do as physician specialists.

<https://mypathologist.ca/>

In addition, the outgoing President of the CAP-ACP has written an inspiring letter that more than anything explains who we are and provides some sage advice for young trainees to be the voice of our future.

<http://cap-acp.org/pathology-news.php?ID=646>

Dr. Catherine Ross, Editorial Board representative for Pathology

Congratulations to Rose Macaluso who was recently granted a Masters of Education, specializing in Leadership and Administration, from Brock University.

Rose has been a Senior Technologist in the Histotechnology Laboratory at MUMC since 2002. She is also the Clinical Coordinator for the MLT students in Pathology.

Rose has always had a keen interest in education and learning, as evidenced in the role she plays within the laboratory. Her pursuit of a Bachelor of Education degree and then a Masters degree in Education exhibit her dedication to continuous learning.

Congratulations, Rose, on this great achievement!

Duane Boychuk – Director of Operations, HRLMP
Dr. Vina Alexopoulou – Former Chief (interim)
 Laboratory Medicine HHS and SJH

Welcome to new members of the Department of Pathology

Rebekah Jacques is joining the Forensic Pathology unit effective August 10, 2015 replacing the retiring Dr. C. Rao who has been with HHS for more than 30 years. Dr. Jacques trained in Anatomic Pathology at University of Western Ontario, after completing medical school at Queen's University. She has just completed her subspecialty training in Forensic Pathology at University of Toronto. Please join us in welcoming her to our team. Her office will be located in the Forensic Pathology unit at Hamilton General Hospital.

Houman Nafisi joined the pathology group at St. Joseph's Healthcare on July 2, 2015. Dr. Nafisi completed medical school through the University of Tehran and obtained a Master's Degree in molecular medicine through the University of Ottawa. He was then trained in Anatomic Pathology and subsequently completed a fellowship in breast pathology through the University of Toronto.

Amir Salehi joined the pathology group at the Juravinski Hospital on July 2, 2015. Dr. Salehi completed medical school and trained in Anatomical Pathology through McGill University. He has just completed a fellowship in breast and gynecological surgical pathology through the University of Western Ontario.

Michael Bonert joined the pathology group at St. Joseph's Healthcare on August 4, 2015. After obtaining a Master's Degree in Biomedical Engineering, Dr. Bonert completed medical school and trained in Anatomical Pathology through the University of Toronto. Dr. Bonert has just completed a fellowship in genitourinary pathology through the University of Calgary.

Please warmly welcome these new additions to the HRLMP professional staff!

Many thanks to **Mr. Gino Celebre**, our Pathologists Assistant in charge of the Tumour Bank at St. Joseph's site of the HRLMP and who was responsible for the information on tumour banking provided in the last newsletter. Thanks Gino!

Dr. Catherine Ross, Editorial Board representative for Pathology

