May 2018, the Microenvironment NEWSLETTER

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MESSAGE FROM THE PRESIDENT

Dear Colleagues,

It is an honour to become the president of the Canadian Hematology Society. Your new CHS executive is featured in this issue of The Microenvironment. Thank you to the executive members who are departing for their valuable contributions and welcome to our new executive members.

As your national professional organization, The CHS continues to promote excellence in Hematology. The CHS meeting at ASH 2017 in Atlanta was well attended and several annual awards were presented. The Research Abstract Awards including the John H. Crookston Award for the best paper by a resident, acknowledge excellence and encourage the academic activities of Hematology trainees and Clinical Scientists.

This year, we presented the first Lifetime Achievement Award to celebrate the accomplished career and professional contribution of Dr. Armand Keating. Start planning now to submit your nomination for this new annual award.

The CHS is pleased to co-sponsor the International Society of Hematology (ISH)
Chers collègues

C’est un honneur pour moi de devenir la présidente de la Société canadienne d’hématologie (SCH). Votre nouveau Comité exécutif de la SCH est présenté dans cette édition de The Microenvironnement. Merci aux membres du Comité sortants pour leurs précieuses contributions et bienvenue à nos nouveaux membres.

Comme votre organisation professionnelle nationale, la SCH continue à promouvoir l’excellence en hématologie. La réunion de la SCH à ASH 2017 à Atlanta a rassemblé de nombreux participants et plusieurs prix annuels ont été présentés. Le prix Research Abstracts et le prix John H. Crookson pour le document de l’année reconnaissent l’excellence et encouragent les activités universitaires des stagiaires en hématologie et des scientifiques cliniques.

Cette année, nous avons présenté le premier prix Lifetime Achievement (œuvre de toute une vie) pour célébrer la carrière accomplie et la contribution professionnelle du Dr Armand Keating. Commencez à projeter dès maintenant de soumettre votre nomination sur ce nouveau prix annuel.

La SCH a le plaisir de coparrainer la réunion de la Société internationale d’hématologie qui aura lieu du 13 au 16 septembre 2018 à Vancouver. La Dre Gail Rock et le Dr Tom Neville ont fait preuve de beaucoup de compétence organisationnelle et fourni beaucoup d’effort pour la planification de cet événement international. Veuillez envisager de vous joindre à nous. Il est possible de trouver les renseignements pour cette réunion sur le site Web de la SCH à www.canadianhematologysociety.org.

A CHS executive retreat is planned for Ottawa in June 2018. There are many ways you can contribute to the CHS. Please continue your annual membership and promote CHS membership to trainees. Log in to the Portal for an Image Challenge or explore Continuing Medical Education modules. Think about ways in which we can further the original goals of the CHS founded in 1971 to ‘maintain the integrity and vitality of the specialty of Hematology, encouraging and rewarding scholarly research and providing a forum for communication and mutual support for all of our colleagues in both community and academic settings’.

Dr. Nicole Laferriere, Présidente, CHS


Dr. Nicole Laferriere, Présidente, CHS

Don’t miss out!

To register: http://www.ish2018.com

Dr. Ciara Freeman, Lymphoma Fellow BC Cancer Agency, Vancouver, BC (Supervisor: Dr. Laurie Sehn)

Patients with DLBCL that have bulky disease at diagnosis or have less than a complete remission with initial chemotherapy are often treated with locoregional radiotherapy (RT) in an attempt to effect long-term disease control. The use of end-of-treatment (EOT) PET imaging to help decide the role of RT was evaluated in this retrospective review of 702 newly diagnosed de novo DLBCL patients treated in BC from 2005-2016. All patients were treated with ≥ 6 cycles of R-CHOP without clear evidence of progressive disease and then underwent EOT PET imaging.

In this study, PET-positive patients were offered RT (if the disease was deemed to be radioencompassable) while PET negative patients, regardless of original disease bulk, were observed. 71% of patients in the cohort were PET-negative at EOT and 29% were PET-positive. Of the latter group, 53% were treated with RT (typically 3500 cGy in 20 fractions) and 47% were not – most frequently because RT was not feasible due to the location and extent of disease. 5-year time-to-progression (TTP) and overall survival (OAS) were similar for PET-negative (79% and 82%) and PET-positive patients treated with RT (77% and 73%).

However, TTP and OAS were inferior in PET-positive patients not receiving RT (29% and 43%) although 29 patients (27%) in this group have not had documented progression to date. Of interest, 272 patients had bulky disease (≥ 10 cm at one site) at diagnosis and 59% were PET-negative at EOT. However, TTP and OAS were not significantly different for PET-negative patients with and without bulky disease.

This population-based study provides a number of answers for a common clinical dilemma in the treatment of advanced-stage DLBCL. EOT RT does seem to improve outcome in PET-positive patients. More importantly, patients with EOT PET-negativity – even those with bulky disease at diagnosis - can reasonably be spared the potential side effects of RT.

Do you know the diagnosis?

A 44-year-old man was referred with a pancytopenia that had been discovered on a routine health evaluation. He was feeling entirely well and his only recent health issue occurred four months previously when he suffered an abrasion on his arm that developed into a cellulitis requiring a 10-day course of oral antibiotics. He otherwise had a completely negative past medical history with no hospitalizations, no chronic medical conditions and was on no medications. He did admit to consuming 3 alcoholic drinks per day. Family history included an aunt who had multiple myeloma. Aside from mild conjunctival pallor, his physical examination was normal.

Blood work revealed hemoglobin 109 g/L (MCV 103), WBC 1.3 x 10^9/L and Platelets 54 x 10^9/L. Differential showed neutrophils 0.2, lymphocytes 0.9 and monocytes 0.1 with no morphologic abnormalities in any cell line. Reticulocytes were 41 x 10^9/L. Renal, hepatic and thyroid function tests were normal. Serum immunoglobulins and protein electrophoresis were also normal. A bone marrow aspirate and biopsy was performed with the latter shown in Figure 1. Do you know the diagnosis?  

Answer: Page 20
Two cycles of consolidation chemotherapy are associated with similar clinical outcomes to three cycles in AML patients with favorable risk cytogenetics. 

Dr. Daniel Sawler, Hematology Fellow University of Alberta, Edmonton, Alberta (Supervisor: Dr. Lalit Saini)

Core-binding factor acute myelogenous leukemia (CBF AML) is associated with a high complete remission (CR) rate and a favorable overall survival (OAS) with consolidation chemotherapy (CC) alone although the number of CC cycles required is uncertain. The investigators used pooled outcome data for 108 CBF AML patients treated in Edmonton and Vancouver from 2003-2017 and performed an analysis according to number of high-dose Cytosine arabinoside (HIDAC) CC cycles intended. 74 patients (68.5%) were intended for 3 CC cycles and 34 patients (31.5%) for 2 CC cycles. Five patients in the former group and 6 patients in the latter group underwent stem cell transplantation in CR1 (p=0.09). Hospitalization rates, median length of hospital stay, episodes of bacteremia and deaths during consolidation did not differ between the two groups.

Median follow-up time from CR1 was longer for the 2 CC cycles group (85 months) versus the 3 CC cycles group (30 months; p <0.0001). 38.2% of patients in the 2 cycle cohort relapsed or died versus 41.9% in the 3 cycle group with corresponding 5-year OAS rates of 73% and 71%, respectively. In multivariate analysis, patient age, cytogenetics (t(8;21) versus inv(16)) or transplantation in CR1 did not influence OAS in the two cohorts.

This comparison, limited by its retrospective nature, suggests that CBF AML patients may be adequately treated with two cycles of HIDAC CC. This conclusion could have significant economic benefits as well as improve quality of life for patients.
Feeding the fire: The comorbid and inflammatory backdrop of clonal hematopoiesis of indeterminate potential (CHIP) by mutation subtype

Elina K Cook, MSc
Department of Pathology and Molecular Medicine,
Queen’s University, Kingston, Ontario
(Supervisor: Dr. Michael Rauh)

Clonal hematopoiesis of indeterminate potential (CHIP) is an increasingly frequent finding with aging and is associated with a higher risk of hematologic malignancy and cardiometabolic diseases. The two most common CHIP mutations seen with aging involve the TET2 and DNMT3A genes. TET2-mutated cells contribute to and thrive in inflammatory environments that may be associated with inflammatory diseases of aging; less is known about the role of DNMT3A in inflammation.

The investigators analyzed leukocyte DNA for 48 myeloid gene mutations in 348 hematologically normal adults >65 years of age, measured serum cytokine levels and correlated findings with 32 comorbidities. CHIP was detected in 28% of participants with TET2 and DNMT3A being the most common.

CHIP was associated with higher monocyte counts and, in those with VAF >0.1, elevation in TNFα levels (p=0.01). Valvular heart disease [Hazard ratio (HR) 2.9; p=0.007] and chronic pulmonary disease (HR 2.8; p=0.003) were both more frequent in CHIP patients.

Patients with DNMT3A mutations were found to have significantly elevated levels of Eotxin-1 (p=0.03), an eosinophil chemo-attractor, and had increased risk of chronic pulmonary disease (HR 4.2; p=0.001), valvular heart disease (HR 3.6; p=0.015) and gastroesophageal reflux disease (HR Continued)

TAK-243 is a selective UBA1 inhibitor that displays preclinical activity in acute myeloid leukemia

Samir Barghout, MSc, BPharm
Princess Margaret Cancer Centre, Toronto, Ontario
(Supervisor: Dr. Aaron Schimmer)

Ubiquitin-like Modifier Activating Enzyme 1 (UBA1) is the initiating enzyme in the ubiquitylation cascade. While AML cells and normal hematopoietic cells have equal levels of UBA1, AML cells have an increased requirement for this enzyme. TAK-243 is a potent and selective inhibitor of UBA1 and the investigators sought to determine the preclinical activity, biological effects and mechanisms of resistance to the drug in AML.

TAK-243 reduced growth and viability of human AML cell lines in a concentration- and time-dependent manner. 18/21 primary AML samples were sensitive to TAK-243, including patients with high-risk molecular and cytogenetic profiles and patients refractory to induction chemotherapy. TAK-243 preferentially inhibited the clonogenic growth of AML cells over normal hematopoietic cells by a factor of 19-fold (p<0.01).

UBA1 inhibition by TAK-243 decreased the abundance of poly- and mono-ubiquitylated proteins in AML samples and increased PERK phosphorylation, CHOP, XBP1s and ATF4 - all markers of proteotoxic stress.

The investigators then evaluated the biological effects of UBA1 inhibition by TAK-243. At concentrations associated with cell death, TAK-243 decreased the abundance of poly- and mono-ubiquitylated proteins in AML samples and increased PERK phosphorylation, CHOP, XBP1s and ATF4 - - all markers of proteotoxic stress.

To determine the preclinical efficacy and toxicity of TAK-243, OCI-AML2 cells were injected into SCID mice and, when tumors were palpable, the mice were treated with TAK-243. TAK-243 significantly delayed tumor growth in mice and no toxicity was observed. In an additional model, primary AML
The current prognostic stratification of acute myelogenous leukemia (AML) patients is largely based upon cytogenetic and molecular profile in addition to initial response to induction chemotherapy. Post-remission therapy is usually decided by these prognostic factors but even those patients with favourable-risk AML not infrequently fail to enter complete remission (CR) or relapse despite consolidation chemotherapy. Refractoriness to induction and relapse following initial therapy has been attributed to persistence of leukemia stem cells (LSC) which possess properties that are linked to therapy resistance.

Ng and colleagues decided to generate a list of genes differentially expressed between LSC+ and LSC- cell fractions -- primarily identified by CD34 expression but confirmed by xenotransplantation -- in 78 AML patients. Using a sparse regression analysis, a 17-gene LSC score (LSC17) was developed that was highly prognostic for therapy resistance – even with stem cell transplantation – in five independent AML patient cohorts comprising over 900 patients.

The investigators began by analyzing gene expression profiles by microarray in 138 LSC+ fractions and 89 LSC- fractions. An LSC+ gene expression reference profile was developed, involving 104 differentially expressed genes (≥ 2 fold of the expression in LSC- cells). This profile was strongly associated — See: Stanley W.K. Ng Continued, next page

Continued, Elina K Cook
3.1; p=0.005). Patients with TET2 mutations had significant elevations in serum IL-6 levels (p=0.01) and increased risk of chronic pulmonary disease (HR 3.2; p=0.02).

There is increasing evidence that CHIP is a natural aging phenomenon. This study provides a better understanding of its link to the inflammatory milieu associated with a number of chronic medical conditions.

Continued, Samir Barghout

cells from 2 patients were injected into the femurs of NOD-SCID mice after which they were treated with TAK-243. TAK-243 reduced primary AML tumor burden in both tested samples, again, without toxicity.

To understand mechanisms of resistance to TAK-243, the research team selected a population of TAK-243-resistant OCI-AML2 cells and, by sequencing studies, were able to show reduced binding of TAK-243 to UBA1 in the resistant cells due to the acquisition of a missense mutation. This mutation occurred in exon 16 and invovled substitution of tyrosine with cysteine at codon 583 (Y583C).

The investigators have shown that TAK-243 is a potent and selective UBA1 inhibitor that displays preferential activity towards AML cells over normal hematopoietic cells without obvious toxicity in preclinical testing. These data support conducting a clinical trial of TAK-243 in patients with AML. However, it does appear that AML cells develop resistance to this novel agent by acquiring mutations that affect the drug’s ability to bind to the UBA1 enzyme.

Dr. Stanley W.K. Ng, LEFT, and his colleague, Dr. Jean Wang, receive the CHS Paper of the Year Award, presented by Dr. Vikas Gupta, CHS Executive Secretary at the CHS Annual Gala and Awards evening at ASH in Atlanta, Ga., in December, 2017.

Dr. Ng’s award-winning paper, A 17-gene stemness score for rapid determination of risk in acute leukaemia, was published in the renowned journal, Nature 540:433-437, 2016.

Continued, next page — See: Stanley W.K. Ng

Dr. Stanley W.K. Ng, LEFT, and his colleague, Dr. Jean Wang, receive the CHS Paper of the Year Award, presented by Dr. Vikas Gupta, CHS Executive Secretary at the CHS Annual Gala and Awards evening at ASH in Atlanta, Ga., in December, 2017.
with the expression profile seen in normal hematopoietic stem cells and umbilical cord blood cells and anti-correlated with expression profiles in mature myeloid cells. Ng and colleagues then interrogated a set of 495 patients for these differentially expressed genes, narrowed the number of genes to 43 and finally decided upon an optimal 17-gene signature. This allowed for the calculation of a weighted sum termed the “LSC17 score”. In this patient cohort, a high LSC score (defined as > median) was significantly associated with a (1) higher marrow blast percentage, (2) higher incidence of adverse cytogenetic/molecular profile, (3) higher rate of induction failure and (4) higher rate of relapse. In multivariate analysis, the LSC17 score added prognostic significance to all known outcome predictors including cytogenetic risk group and molecular mutation profile. In fact, a high LSC17 score was also found to be predictive of survival in three separate normal karyotype AML cohorts.

The performance of the LSC17 score was further compared with a recently described genomic classification in AML (Papaemmanuil et al, N Engl J Med, 2016) and with previously published LSC gene expression signatures in populations defined by phenotype, mass cytometry and epigenetic profiles. In these comparisons, the LSC17 score remained the best predictor of overall survival (OAS).

Next, the investigators sought to develop a clinically applicable gene expression-based diagnostic test and decided upon the NanoString platform. This test is cost-effective with a 24-48 hour turnaround time and was used to generate gene expression data on 307 AML patients treated at Princess Margaret Cancer Centre (PMCC). This analysis essentially mirrored the findings of the microarray technique – the LSC17 score retained prognostic significance in OAS in multivariate analysis in the entire cohort and in the normal karyotype (NK) subgroup. Further analysis of this group regarding the value of allogeneic stem cell transplantation (SCT) showed that SCT had no effect on OAS regardless of LSC17 score. In fact, despite a clear reduction in relapse risk in SCT patients, OAS showed a trend toward inferiority compared to consolidation chemotherapy (p=0.06) in patients with low LSC17 scores.

The authors specifically analyzed the NK AML patient subgroup with a favourable molecular profile (NPM1+, FLT3-). In this cohort (n=44), a modified 3-gene signature (“LSC3”) was employed using the microarray platform. In this group of patients, a low LSC3 score was found to have an outstanding OAS (>90%) while those with a low LSC3 score had an abysmal outcome (~10%). The analysis was repeated with the NanoString platform with similar, although less striking, survival differences.

In analyzing the entire 307 PMCC AML cohort, LSC17 was shown to be independently predictive of refractoriness to initial chemotherapy. In fact, using the Wald chi-square statistic, LSC17 outperformed age, presenting white count, cytogenetic risk group and de novo versus secondary AML in predicting refractory disease. Finally, the investigators evaluated the LSC17 score in participants of the ALFA-0701 study that involved randomization of patients to standard therapy with or without Gemtuzumab ozogamicin (GO). This showed that patients with high LSC17 score did not benefit from the addition of GO but that those with a low LSC17 score had a superior OAS when receiving GO.

The LSC17 score has strong prognostic value in AML with respect to primary chemotherapy refractoriness and OAS across a wide variety of AML cohorts. This testing may be done with rapid, cost-effective NanoString technology and may help to refine the future management of AML patients.
Dr. Sheldon Naiman (1937-2016)
Dr. Linda Vickars (1951-2014)

By Dr Tom Nevill
Editor
The Microenvironment

Sheldon Naiman was born in Toronto on October 2, 1937 to Jewish immigrants from Poland.

An avid baseball player and fan as a youth, he nevertheless spent enough time with his studies to gain acceptance into medical school at the University of Toronto in 1958. After his graduation in 1962, he did an internship in Los Angeles, California where he became interested in hematology through his experience caring for women with disseminated intravascular coagulation on the obstetrics ward. Upon returning to Toronto for further hematology training, Shelly – as he was known to many – was encouraged by Dr. Mac Whitelaw from the Ontario Cancer Agency (who was taking a position at Shaughnessy Hospital in Vancouver) to pursue a hematology practice in British Columbia.

Dr. Wally Thomas

However, it was Dr. Wally Thomas, the Head of the Hematology Laboratory at Vancouver General Hospital – who had trained under the legendary Dr. John Dacie in the UK – who ultimately recruited Shelly Naiman to Vancouver. As there was no full-time position available in the Department of Medicine – and no Division of Hematology – he was hired to work in the Department of Pathology by another eminent BC pathologist, Dr. Herbert Fidler. Shelly’s position allowed for him to do clinical medicine and hematology and he eventually became the first Clinical Hematologist in the province of British Columbia. He was named the first UBC Head of Clinical Hematology in 1976 and his expertise was nationally recognized by his inclusion on the first Royal College examining board for Clinical Hematology in Canada.

Dr. Sheldon Naiman

Wally Thomas was a close friend of E. Donnall Thomas, who developed the bone marrow transplantation program in Seattle in the late 1960s and Shelly Naiman became increasingly disappointed with outcomes in adults with acute leukemia. This led him to develop a proposal for a bone marrow transplantation program in BC and his efforts led to the first adult bone marrow transplant at VGH in August 1981.

Dr. Naiman was one of the last remaining examples of a hybrid clinical and laboratory hematologist but eventually settled into the laboratory in 1983 where he modernized the coagulation section at the same time as he became the “go to” person for difficult blood films. He was regarded by trainees and physicians around the province as a master teacher and won numerous medical student and resident teaching awards. For this he was recognized by the Dr. Cam Coady Foundation – Dr. Coady was the first pathologist in BC to receive Royal College certification – and the Doctors of BC with the Medal of Excellence in 2009 for his distinguished work in the field of medicine.

Dr. Linda Vickars

Dr. Linda Vickars was born in Vancouver on August 25, 1951 and initially studied physiology at UBC before completing her MD in 1976. She pursued post-graduate studies in critical care in New Zealand but took time off to travel in Southeast Asia before returning to Vancouver to train in Internal Medicine and Hematology. She completed her hematology fellowship in 1984 and took a staff position at Vancouver General Hospital where her professional interactions and personal relationship with Shelly Naiman – who she married in 1997 – grew.

In 1987, Linda moved to St. Paul’s Hospital where she spent 25 years, including 12 years as the Hematology Division Head. In 2004, Dr. Vickars assumed the role of Medical Director of the Provincial Hemophilia and Inherited Bleeding Disorders Program following the retirement of Dr. Gerry Growe. She helped establish provincial programs for hemoglobinopathies and iron chelation therapy that was often required in this patient population.

Dr. Vickars was also recognized as an excellent morphologist and was an avid and highly respected teacher, for which she received the UBC Clinical Faculty Award for Career Excellence in Clinical Teaching in 2008, ultimately being given the title of Clinical Professor Emeritus.

Shelly Naiman had five children – including a set of triplets in...
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**CHS LIFETIME ACHIEVEMENT AWARD: Dr. Armand Keating**

The Canadian Hematology Society introduced this new award to recognize individuals who have made outstanding contributions to the national and international hematology community over an extended period of time. The inaugural winner of the CHS Lifetime Achievement Award is Dr. Armand Keating from the Princess Margaret Cancer Centre and University Health Network in Toronto, Ontario.

**Dr. Armand Keating** is a professor in the Department of Medicine and Senior Scientist at the Institute of Biomaterials and Biomedical Engineering at the University of Toronto. He acted as the Director, Division of Hematology and the Epstein Chair in Cell Therapy and Transplantation at UHN for over two decades and is a Past Director of the Cell Therapy Program and the Orsino Cell Therapy Translational Research Laboratory at the Princess Margaret Cancer Centre. He was the Chief of Medical Services and the Head of the Department of Medical Oncology and Hematology at Princess Margaret Hospital/Ontario Cancer Institute for 10 years. Dr. Keating was appointed the first Chief of Medical Services at the Princess Margaret Hospital and was instrumental in organizing the merger of cancer programs at PMH and the Toronto General Hospital in an effort to improve the care of patients with cancer in Ontario.

Dr. Keating transformed the care of patients with blood cancers in Canada by establishing the largest autologous stem cell transplantation program in Toronto. This program has shown national and international leadership in the field through the performance of over 4000 autologous procedures. He has been a valuable mentor for numerous graduate students and clinical trainees who have become prominent members of the national and international hematology community in their own right.

Dr. Keating has published almost 400 peer-reviewed papers and is a past president of both the Canadian Hematology Society and the American Society of Hematology. He is a co-editor of *Bone Marrow Transplantation* and an associate editor of the *Biology of Blood and Marrow Transplantation*.

The Canadian Hematology Society is extremely proud to recognize Dr. Armand Keating for his career contributions in the field of Hematology with the 2017 CHS Lifetime Achievement Award.

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**History Corner... continued from previous page**

1973 -- with his first wife Marcia and worked with his second wife Linda at St. Paul’s Hospital for over 20 years before retiring in 2007. His vision had begun to fail in 2002 when he had a retinal vein thrombosis and he ultimately was blinded by macular degeneration – sadly ironic for one of British Columbia’s best hematopathologists.

Together, Shelly and Linda created an endowment at the Centre for Blood Research at UBC; the multipurpose laboratory in the Life Sciences Centre has been named after them. In their time together, they visited all seven continents and, during these travels, spent time teaching physicians in China and India.

In July 2011, Linda Vickars experienced a generalized seizure and was found to have an inoperable malignant brain tumour. She had to withdraw from clinical practice but she noted that she gained some solace in being able to spend more time at home caring for her visually-impaired husband. Linda Vickars died on April 18, 2014 at the age of 62; Shelly Naiman died on July 24, 2016 at the age of 78. In March 2018, Sheldon Naiman was one of five physicians honoured as inaugural inductees in the Vancouver General Hospital Medical Staff Hall of Honour recognizing exceptional leadership, clinical and academic service benefitting the residents of British Columbia.
35th International Congress of the International Society of Blood Transfusion (ISBT)  
...in conjunction with the Annual Conference of the Canadian Society for Transfusion Medicine (CSTM)  
June 2 – 7, 2018  
Toronto, Ontario  
Contact: http://www.transfusion.ca/Events/  

Canadian Blood & Marrow Transplant Grp (CBMTG)  
2018 Annual Meeting & Conference  
June 7—9, 2018  
Ottawa, Ontario  
Contact: http://www.cbmtg.org/  

European Hematology Association (EHA)  
23rd Congress  
June 14—17, 2018  
Stockholm, Sweden  
Contact: www.ehaweb.org/ or eha@mci-group.com  

37th World Congress of the International Society of Hematology (ISH) ...hosted by the Canadian Hematology Society (CHS)  
Sept 13-16, 2018  
Vancouver Convention Centre  
Contact: http://www.ish2018.com/  

Canadian Apheresis Group (CAG), with Canadian Association of Apheresis Nurses (CAAN)  
Annual Meeting & Scientific Sessions  
November 2—4, 2018  
Montreal, Quebec  
Contact: cag@cagcanada.ca  

Canadian Hematology Society (CHS)  
Annual Reception, Dinner & Awards Evening  
December 2, 2018  
San Diego, California, USA  
Contact: chs@uniserve.com  

International Society of Laboratory Hematology (ISLH)  
International Congress  
May 9—11, 2019  
Vancouver, BC  
Contact: www.islh.org  

American Society for Apheresis (ASFA)  
2019 Annual Meeting  
May 15—18, 2019  
Portland, OR, USA  
Contact: http://www.apheresis.org/page/ASFA2018  

Pictured at the CHS Annual Awards Gala at ASH in Atlanta, Ga., December 2017, are: FROM LEFT, Dr. Ciara Freeman, winner of the Crookston Award for the best paper by a resident, Samir Barghout, CHS Abstract Award winner in the PhD & Post Doctoral category, Lynn Savoie, CHS President, Dr. Jean Wong, representing Dr. Stanley Ng’s winning CHS Paper of the Year, published in the renowned journal, Nature in 2016, Dr. Daniel Sawler, CHS Abstract Award winner in the Residents and Fellows category, and Elina K Cook, CHS Abstract Award winner in the PhD & Post Doctoral category.
MEDICAL ONCOLOGY, APP – BELLEVILLE, ONTARIO

The Dr Douglas A MacIntosh Cancer Clinic in partnership with The Cancer Centre of South-eastern Ontario (CCSEO) are searching for a Medical Oncologist. This 1.0 FTE position is fully funded by MOH as a ONT MOA APP position with competitive salary. The successful applicant will possess Royal College Certification in Internal Medicine, or equivalent and will have completed sub-speciality training in Medical Oncology with eligibility for APP under the ONT MOA agreement.

To apply, please send a letter of intent and a CV to: Dr Roger Lévesque, Head Medial Oncology, Quinte Health Care, 265 Dundas Street East, Belleville, Ontario, K8N 5A9.; Tel: 613-969-7400 ext. 2371; Fax 613-969-0486; email: rlevesque@qhc.on.ca

BENIGN HEMATOLOGIST—RICHMOND HILL, ONTARIO

Mackenzie Health is a major regional healthcare organization that is rapidly expanding to meet the needs of the growing community of Southwest York region. The current Mackenzie Richmond Hill Hospital is a 515 bed community hospital in Richmond Hill. Training and interest in thromboembolic disease and management would be an asset.

Interested applicants should send a CV and letter of intent to:
Dr. Matilda Ng MD, RCPC, Head, Division of Medical Oncology/ Hematology, Mackenzie Richmond Hill Hospital
10 Trench Street, Richmond Hill, ON L4C 4Z3
Phone: (905)883-2153
Email: matilda.ng@mackenziehealth.ca

MULTIPLE POSITIONS / NIAGRA HEALTH & WALKER FAMILY CANCER CENTRE

Niagara Health is seeking a physician to join the Department of Oncology, Service of Hematology and Thrombosis. The successful applicant would practice malignant hematology at the Walker Family Cancer Centre. Click here for full details.

Niagara Health is also seeking a benign hematologist to join the Department of Oncology, Service of Hematology and Thrombosis. This includes both In-Patients consultations and Ambulatory clinics with appropriate nursing support in Niagara Health. Click here for full details.

Contact: MedicalAffairs@niagarahospital.on.ca
Phone: 905-378-4647 ext. 44224

HEMATOLOGIST - MARKHAM STOUFFVILLE HOSPITAL

The Department of Medicine is seeking a Hematologist to help support the existing general benign and malignant hematology service. The current requirement is for a part time Hematologist to support our benign hematology service with the intent to expand with APP funding to a full time complement. The successful candidate will join a service that provides high-quality, patient-centered cardiac care within the Markham Stouffville community and MSH catchment area. The successful candidate will also be collegial and committed to providing an exceptional caliber of patient care at MSH. Contact: Jaclyn Bell, Director, Medical Administration: jbell@msh.on.ca Tel: 905-472-7619

Fellowships

McGill University Thrombosis Fellowship 2018-19

McGill University Thrombosis Fellowship 2018-19 at Jewish General Hospital in Montreal, Quebec.

The JGH Thrombosis Program is currently accepting applications for a one year fellowship (July 1, 2019 - June 30, 2020) to acquire and consolidate expertise in Thrombosis. Specific areas of clinical activity include the Thrombosis Clinic, Anticoagulation Clinic and In-patient Thrombosis Consultation Service.

Our Thrombosis Program also encompasses a broad range of research activities that relate to diagnosis, risk factors and treatment of venous and arterial thromboembolic disease.

For more information and complete details, please contact:

Dr. Susan Kahn
Director, Thrombosis Fellowship
Jewish General Hospital
3755 Cote St Catherine Rm B.304.24
Montreal, Quebec CANADA H3T 1E2
c/o Maureen Morganstein 514-340-7587.
FELLOWSHIPS

Multiple Myeloma & Malignant Hematology Fellowship - Toronto, Ontario

**St. Michael’s JAMES DREWRY STEWART FELLOWSHIP**

**Inspired Care.** The James Drewry Stewart Fellowship in Multiple Myeloma and Malignant Hematology will provide financial assistance in the form of fellowship grants to oncology trainees at St. Michael’s Hospital who have completed their core training in oncology and are seeking additional clinical training in myeloma and other blood cancers.

**Application Procedure**
Applicant must submit the following:

1. Completed James Drewry Stewart Fellowship in Multiple Myeloma and Malignant Hematology form
2. CV
3. Statement of intent
4. Applications will be reviewed by the Stewart Fellowship Committee

**CONTACT:**
Maryana Ghazula
ROLE: Administrator
TELEPHONE: 416-864-5632
EMAIL: gazhulam@smh.ca
MAILING ADDRESS: St. Michael’s Hospital, 30 Bond Street, Room 2–084, Toronto ON M5B 1W8

Leukemia/Bone Marrow Transplantation Fellowship, Vancouver, BC

The Leukemia/Bone Marrow Transplantation Program of British Columbia offers 1 or 2 Year fellowships to provide advanced training in the management of adults with hematological malignancies including all aspects of allogeneic and autologous hematopoietic stem cell transplantation (HSCT).

Candidates should be registered in, or completed a recognized hematology or oncology training program.

**For more information:** leukemiabmtprogram.org

Interested candidates should submit a CV and names of three references to:

Dr. Sujaath Narayanan, Fellowship Director Leukemia/BMT Program, BC Cancer Agency & Vancouver General Hospital
Phone: (604) 875-4089
FAX: (604) 875-4763
Email: SNarayanan@bccancer.bc.ca

Two-year Fellowship Program, Princess Margaret Cancer Centre, Toronto

**Allogeneic Blood and Marrow Transplantation – Clinical Research Fellowship**

The 2-year Fellowship Program at Princess Margaret Cancer Centre/University of Toronto is designed to provide the opportunity for trainees in hematology and medical oncology to define and refine career goals, enhance their ability to pursue a successful career as consultants, clinical researchers and clinician scientists.

Both funded and unfunded opportunities are available.

For further information, please contact:

Auro Viswabandya
Fellowship Director, Allotransplant
Telephone: +1-416-946-4501 x 3256
E-mail: Auro.Viswabandya@uhn.ca

Mailing Address:
Princess Margaret Cancer Center
Division of Medical Oncology and Hematology
610 University Avenue, Rm 5-110
Toronto, ON, Canada M5G 2M9
Membership Matters

The Canadian Hematology Society has represented all physicians and scientists with an interest in the discipline in Canada since it was founded in 1971, and currently has over 500 members.

Active Membership
• Physicians in the practice of clinical or laboratory hematology in Canada
• Scientists with PhD degrees making continuing contributions to research related to hematology in Canada
• Allied Health Professionals making sustained contributions to clinical or laboratory hematology practice or hematology research in Canada.

Only active members shall:
• vote
• hold office
• receive CHS grants, and
• pay dues.

Associate Members
• Residents and fellows engaged in hematology training
• Masters and PhD graduate students
• Post-doctoral fellows engaged in hematology research
• Associate members will not be required to pay dues until completion of their training.

Emeritus Members
• All individuals who have retired from full time hematology practice or research, or those who were active members and request a transfer of status with adequate reason.

Honorary Membership
• Non-members may be invited to become Honorary Members of the corporation by virtue of their outstanding contributions to any discipline which is of importance to hematology.

CHS members are reminded ... that dues for the year 2018 are now past due.

Your $75.00 annual dues payment may be made online at the CHS website: www.canadianhematologysociety.org

Or by mail to: Canadian Hematology Society, 199-435 St. Laurent Blvd., Ottawa, Ontario K1K 2Z8

Please provide the following information with your payment:

2018 Membership Renewal / Address Change: Canadian Hematology Society

Membership Status
Active ☐
Associate ☐
Emeritus ☐

Has your status changed?
Yes ☐
No ☐

Name: ________________________________
Title: ________________________________
Email: _______________________________
Work Address: _________________________

Work Phone: _________________________
Work Fax: ___________________________