



Annual Report
Division of Hematology
Department of Medicine - Jewish General Hospital
January 1 - December 31, 2018

SUMMARY

General Considerations

Our objectives for 2018 didn't change at all and will not change for 2019. First class patient care, excellence in teaching and clinical/translational, as well as basic research, remain the vocation of our Hematology Division within the Department of Medicine at the Jewish General Hospital. This spirit of unconditional commitment who animates the entire Department of Medicine, headed by Dr. Ernesto Schiffrin, fuels our nurses, laboratory technicians, administrative agents and staff physicians with energy and determination. This is the only way to withstand a permanently increasing workload due to manpower restrictions (without any new staff physician position since 2002) and financial pressure. Hopefully the recent personal changes in the MSSS will open the way to a more equitable attribution of needed manpower. A heartfelt *thank you* to our volunteers and donors whose contributions are essential in running a Division whose patients are amongst the most vulnerable Medicine knows.

In July the Division of Hematology was obliged by the Royal College to open a Hematology Ward without residents in order to decompress the Internal Medicine CTU Ward on K7, constantly over-occupied due to a high accrual of Hematology patients. Remarkable solidarity within the Department of Medicine allowed us to start this ward successfully despite alarming understaffing with Hematologists. After the arrival of two Nurse Practitioners in Adult Care end of October, so-called "*Super Nurses*", Ms. Shoshanna Breiner and Ms. Sheena Heslip, the workload of the ward attending substantially decreased. Both specialized nurse practitioners (SPN) represent pioneers in this emerging specialty in Québec. The now 9 Clinical Programs (Stem Cell Transplant Program, Hematology Ward, Hematology-Oncology Clinic/Segal Cancer Center, CML Clinic, MPN Clinic, MDS Clinic, Gaucher Clinic, Anti-Coagulant/DOAC Clinic, and Benign Outpatient Clinic), backed-up by up to date clinical and molecular hematopathology, flow-cytometry and hemostasis laboratories, guarantee timely optimal patient care.

Hopefully the Division of Hematology will get a PEM to replace Dr. Martin Gyger in order to guarantee the continuation of the autologous Stem Cell Transplant Program and the up-to-date treatment of myeloma patients not eligible for auto-SCT, a MUST for every Hematology Division at University level.

1. Clinical programs

Autologous Stem Cell Transplant Program

The Jewish General Hospital's Hematology Autologous Stem Cell Transplant (ASCT) Program, is an essential component of the McGill Bone Marrow Transplant Program. The JGH is an approved center for the performance of ASCT by an official letter from the Ministry of Health (March 23, 2007). Under the expert lead of Dr. Gyger, who built and successfully expanded our ASCT Program, a total of > 400 auto-SCTs (mean of 35/year) were successfully performed. The majority of transplants (61.6% occurred for multiple myeloma (MM), followed by diffuse large B- cell lymphoma (DLBCL) and Hodgkin's lymphoma (HL)). Unfortunately, May 25, 2018, Dr. Gyger retired from his Attending position forced by serious health issues. We are grateful to Dr. Martin Gyger for his outstanding performance and accomplishments. The Lion's part of all transplants performed since 2007 belongs with 43% to Martin. The recruitment of a dynamic and capable young specialist for MM and auto-SCT, whom we want to join our Division, is currently evaluated by the MSSS.

Hematology Ward K7

In July we were obliged, -though short of Hematology staff physicians-, to open our own 6-8 bed Hematology ward since the Royal College limited the number of patients at the Internal Medicine CTU on K7 at 28 beds, a number constantly overpassed, essentially due to a high number of Hematology patients. Dr. April Shamy acts as director of this ward. To cope with this new demanding task several colleagues from Internal Medicine generously accepted to participate in the ward attending rotation. From October 22nd onwards, a substantial release of the work overload occurred with the arrival of our two “*Super Nurses*”, Ms. Shoshanna Breiner and Ms. Sheena Heslip. Both Nurse Practitioners in Adult Care earned their post Master’s degree from the University of Toronto and are pioneers in this emerging specialty in Québec. The Division of Hematology at the JGH is proud to host both personalities and to integrate them in our care team.

Hematology-Oncology Clinic/Segal Cancer Center

The number of patient visits at the Hematology-Oncology division of the Segal Cancer Center has been stable over the past four years. In 2018 we totalized 9558 patient visits (2017: 9490 patient visits, i.e. a difference of 0.7%). Currently there are 13 Clinical Hematology Research Trials (four phase 1, six phase I/II) offering patients with relapsing/refractory or primarily aggressive hematologic diseases new hope. In 2018 a total of 48 patients have been included. As usual, the number of patients having been evaluated was much higher since the inclusion criteria are very rigorous. Updated detailed information concerning the trials is available at the Rossy Cancer Network website under <https://www.mcgill.ca/rcr-rcn/clinical-trials>. These patients are treated and followed in the Clinical Research Unit (CRU) by a team of specialized study coordinators/managers and nurses. The CRU, successfully directed by Dr. Sarit Assouline, offers young Hematologists and fellows optimal conditions to get personal experience in Clinical Research and translational studies. The scientific activity of our CRU is well documented through presentations at international Hematology meetings and numerous publications in renowned journals.

CML Clinic

The CML Clinic at the JGH is in its 14th year and integrated in the Groupe Québécois sur la recherche en leucémie myéloïde chronique (GQR-LMC) and strictly adheres to the guidelines based on the European Leukemia Net (ELN) guidelines. The patients are seen either by Dr. Sarit Assouline, head of the Clinic, or Dr. Jaroslav Prchal. Currently the Clinic offers a phase 3, multi- center, open-label, randomized study of oral ABL001 versus bosutinib in patients with chronic phase CML, previously treated with two or more tyrosine kinase inhibitors. ABL001 (Asciminib) acts as an allosteric bcr-abl kinase inhibitor, blocking the tyrosine kinase at a site generally non mutated, whereas bosutinib is a double bcr-abl kinase and src family kinases (src, lyn, hck) inhibitor.

Myeloproliferative Neoplasia (MPN) Clinic

As per November 2018, the first dedicated MPN clinic in Canada, set up in 2010 thanks to a generous donation from Mr. Edward Pascal, actively follows 150 Patients (51 with Essential Thrombocythemia, 57 with Polycythemia Vera and 42 with Myelofibrosis). The clinic is co-directed by Drs. Jaroslav Prchal and Shireen Sirhan and organized by Sabrina Fowlkes, a dedicated, specialized nurse. The clinic is an active part of the Provincial MPN Registry and offers the patients early access to new treatments. There is an increasing collaboration with Obstetrics to further develop expertise in the management of MPNs in pregnancy.

Myelodysplastic Syndrome Clinic (MDS) Clinic

This nationally recognized teaching program, headed by Dr. April Shamy, is very popular amongst

medical students, medicine residents and hematology-oncology fellows. However, there is a continuously increasing patient accrual and, in order to guarantee optimal patient management in the future, additional nursing support is needed. With increasing life expectancy, MDS is now considered as a frequent malignant hematologic condition, and new treatment modalities are warranted. Currently the Clinic offers a randomized, controlled study of Rigosertib (a microtubule-destabilizing agent) versus physician's choice of treatment in patients with MDS after failure of a hypomethylating agent.

Gaucher Clinic

Since spring 2018 Dr. François Mercier leads the Gaucher clinic with the same energy and empathy as Dr. Assouline did for 10 years. This specialized program, which has been mandated more than 20 years by the government of Québec, includes all patients transferred from the pediatric Hôpital Sainte-Justine when they reach adulthood. This highly specialized treatment program for patients with Gaucher's disease includes established relationships with designated specialists, a research nurse, and a pharmacist for assistance with the dispensation of medication with its side effects, as well as a Gaucher's disease website in order to ensure optimal patient care.

Anticoagulation Clinic

The anticoagulation clinic, integrating the classical AC Clinic (Warfarin patients) and the ever expanding New Oral Anticoagulants Clinic (also called DOACs for Direct Oral Anticoagulants), both directed by Dr. Mark Blstein, represent a key element in the optimal functioning of many surgical and medical services of the JGH. These targeted services are much appreciated by the frequently elderly patients and offer an excellent platform for teaching and research. In 2018 again the Clinic hosted medicine fellows and young Hematology staff physicians from other Canadian universities and overseas for completing their specialization in managing complex interdisciplinary hemostasis and thrombosis issues. The AC Clinic, the DOAC Clinic and the Thrombosis Clinic moved early in 2018 from the E-1 level into a completely new, spacious state-of-the-art facility in the B-3 level of the same building. They represent an integral part of the nationally and internationally recognized Centre for Thrombosis and Anticoagulation Care (CETAC), headed by Dr. Susan Kahn.

Benign Outpatient Clinic

Most hematologists and all hematology fellows participate in the Benign Hematology clinic with over 100 weekly visits/consultations. Consultations are mainly requested for severe iron deficiency anemia, followed by leukopenia/leukocytosis, thrombocytopenia/thrombocytosis as well as by monoclonal gammopathy of unknown significance (MGUS). Most importantly, this clinic functions as a screen for more serious conditions. Malignant hematologic diseases are picked up at an early stage when patients present for low blood counts or localized lymphadenopathies. This clinic is very interactive with Family Physicians, the GI Division at the JGH and the specialized thalassemia/sickle cell Clinic at RVH, respectively.

Molecular Diagnostics Laboratory

Again, despite significant budgetary restrictions and organizational (decisional) problems related to *optilab*, the Molecular Diagnostics Laboratory, an integrative part of our Hematology CRU, had a successful year. Yuri Monczak, Ph.D., and Tina Haliotis, MD, Ph.D., both associate members of the Division of Hematology, organize and lead this laboratory in difficult times with remarkable competence. Major achievements in this year include: i) AML gene mutation testing transferred to the Next-Generation-Sequencing (NGS) platform, ii) B-cell clonality immunoglobulin heavy chain variable (IGHV) region sequencing to detect somatic hyper mutation (SMH) within this gene region was transferred to the NGS platform, iii) Training of three Canadian laboratories (Toronto, Vancouver and Halifax) for IGVH SMH analysis, iv) Introduction of TP53 testing in CLL by NGS

for all MUHC cases; the designation of INESSS for this assay is awaited. Cutting-edge NGS is primordial for a dynamic CRU in order to offer best treatment options to our patients.

2. Research and publications

Dr. Sarit Assouline, director of Clinical Research in Hematology-Oncology and associate director of the LDI Clinical Research Unit was awarded July 1st a 4 years' FRSQ Senior Research Scholarship. She heads a successful Clinical Research Program in leukemia and lymphoma and acts as a Principal Investigator in 8 Hematology trials (mainly phase I/II) publicly available on the net under <https://www.mcgill.ca/rcr-rcn/clinical-trials>, integrated in the McGill Rossy Cancer Network. Dr. Assouline was involved in 11 peer reviewed publications including one NEJM manuscript. She signed as senior author of a publication dealing with the molecular monitoring of CML (Cancer).

Dr. Mark Blostein, after having built and lead the Clinical Investigator Program at McGill University to RCPC accreditation in 2015, has passed the Program directorship after a 10 years' innovative leadership to Dr. Nathalie Johnson (July 2018) but remains a member of the Program Committee. Thanks to Dr. Blostein for his outstanding performance at the base of many clinical research careers. He is still very active as a site-investigator in 4 clinical Hemostasis research trials and was involved in 4 peer reviewed published manuscripts, in one of them as senior author.

Dr. Stephen Caplan is the director of the Health Canada accredited Blood Bank. Again, he was very active in recruiting patients to the CRU Clinical Trials and in academic carrier planning of our Hematology fellows. Dr. Caplan is a major contributor to the Canadian Paroxysmal Nocturnal Hemoglobinuria (PNH) Network and co-authored recently in this rapidly progressing therapeutic field an up-to-date review (*Eur J Haematol*) entitled « *How we treat paroxysmal nocturnal hemoglobinuria: A consensus statement of the Canadian PNH Network and review of the national registry* ».

Dr. Chantal Cassis' Master thesis entitled "*Identifying the supports and barriers to the implementation of an educational intervention to promote hematology and oncology residents' use of Evidence-Based Medicine: a knowledge translation study*" was accepted as a presentation at the 2019 CCME (Canadian Conference for Medical Education). Under her supervision two Hematology Fellows (VK and SL) presented this year quality improvement projects (one oral, one poster presentation) at the Rossy Cancer Network retreat.

Dr. Nathalie Johnson has been appointed July 1st as Director of the Clinical Investigator Program at McGill University. She also directs the Hematology Flow-Cytometry Laboratory at the JGH. The rapid diagnostic services delivered by this facility are essential for the JGH Hematology and outbound hospitals in situations, where timely reports are crucial and life-saving. In 2018 a total of 3527 blood, bone marrow, lymph node and body fluid samples has been analyzed. This corresponds to a tremendous increase of >40% of workload over the past two years (without additional manpower), mainly related to the accrual of samples from outbound hospitals (Gatineau, Hull and Lakeshore). With money donated from the JGH Foundation Dr. Johnson developed and validated a new panel that will improve the diagnosis and detection of T cell leukemias and lymphomas. Moreover, in the setting of an innovative fellow teaching approach (AB) she developed a new panel to diagnose residual leukemia in patients with chronic lymphocytic leukemia. In 2018 Dr. Johnson was awarded as a PI a 5 years' CHIR grant entitled "*Optimizing immunotherapy for high-risk lymphoma*" (\$1,200,000) and a 3 years' CCSRI grant entitled "*Optimizing immunotherapy for high-risk adolescent and young adult lymphomas*"

(\$25K). On both grants H  l  ne Decaluwe (LDI) acts as Co-PI. Dr. Johnson is also Primary Site Investigator in 10 ongoing Clinical Trials. Her basic science laboratory with a research program focused on the molecular pathogenesis of aggressive lymphomas and relapsing/refractory cHL, published this year two manuscripts where she signed as senior author.

Dr. Hans Knecht continued his basic and translational research in the 3D molecular pathogenesis of cHL in collaboration Professor Sabine Mai, PhD, Director of the Genomic Center for Cancer Research and Detection (GCCRD) at the University of Manitoba, and with Drs. Johnson and Haliotis at the JGH. This year he co-authored one basic research manuscript and one review dealing with a new imaging technique to analyze the chromatin nanostructure.

Dr. Fran  ois Mercier, after 18 months as a staff physician in the Hematology Division, has fully attained his first goals. Three major grant awards from the Canadian Leukemia & Lymphoma Society, the Cole Foundation, and the Cancer Research Society allowed him to start successfully his basic leukemia research laboratory at the LDI. His main area of research is focused on AML, the most devastating disease in Hematology. He developed novel experimental tools for the study of AML that combine *in vivo* tracking of leukemic clonal evolution with genome-scale CRISPR perturbation screens. Using these models, his laboratory identified novel candidates regulating leukemic cell engraftment. The changes in gene expression identified in human samples during treatment are currently characterized as potential therapeutic targets. This year Dr. Mercier was co-author of a paper in Oncoimmunology and finished a major translational research project whose scientific conclusions will be submitted as manuscript early in 2019.

Dr. Yury Monczak was successful in NGS B-cell clonality testing at large scale. The NGS assays are currently expanded to acute myeloid leukemia (AML) and lymphoma subtypes.

Dr. Fran  ois Patenaude, as a leading Canadian expert in the management of advanced kidney cancer, was a co-author of a Canadian Kidney Cancer Network publication (*Can Urol Assoc J*).

Dr. April Shamy co-authored guidelines of the Canadian MDS study group dealing with iron overload, published in *Leuk Res*.

3. Teaching and learning:

All doctors in the Division of Hematology participate in teaching activities, whether through the consultation service (Hematology and Thrombosis), Clinics, Introduction to Internal Medicine, Senior Physician Rounds or Clinical Teaching Unit on K7, E-7, Academic half-day lectures, McGill Department of Medicine Research Day, Hematology Laboratory, or CTU and CRU. Particularities in teaching are listed as follows:

Dr. Sarit Assouline, Osler Fellow in Hematology in her third year, has taught in this function a total of 10 hours. She again introduced two first year medical students in research fundamentals and acted as a CRU supervisor of a postdoctoral fellow (Dr. Raoul Santiago), a Hematology Fellow (Shen Li), and a R3. She also did Classroom teaching (3 hours) and Fellow and Resident teaching regularly in the setting of the Hematology Consultation Service (5 weeks).

Dr. Mark Blostein taught Coagulation and Hemoglobin electrophoresis (80 and 16 hours/year, respectively) to Hematology fellows, as well as management of Coumadin/DOACs to residents rotating through the Anticoagulation clinic (4 hours/week, i.e. 160 hours/year). He held

Hemostasis classroom teaching to Medical Students (3 hours), as well as to Hematology and ICU Fellows (4 hours). Dr. Blostein did Fellow and Resident teaching regularly in the setting of the Hematology and the Thrombosis Consultation Service (6 and 10 weeks, respectively). His research trainee supervision included 2 graduate students in Physiology (PhD and Masters, respectively) and a graduate student in Experimental Medicine (Masters).

Dr. Stephen Caplan coached a team composed of 2 senior and 3 junior residents as ward attending on K7 for two weeks (140) and was Hematology ward attending for 2 weeks. His teaching activities include the outpatient clinics for Hematology-, Radiation /Oncology-, and Medical Oncology fellows with 150 hours per year. He did Fellow and Resident teaching regularly in the setting of the Hematology Consultation Service (6 weeks). His tremendous knowledge and experience in both, benign and malignant hematology, is most appreciated by our trainees.

Dr. Chantal Cassis has created over the past 5 years a competitive, highly valued Hematology Residency Program. She accomplished her MEd at the University of Cincinnati in 7/2017. Every staff Hematologist is actively involved in teaching. This program was accredited by the RCPC February 04, 2015, definitely confirmed after internal review 4/2017, and is constantly ameliorating. A Residents' room is now arranged at the JGH and will be equipped with large high resolution screens to teach blood morphology. Dr. Cassis' teaching activities include service as ward attending on K7 for two weeks (140 hours), two formal lectures per year during the Hematology academic half-day, expert physician rounds, laboratory teaching to Hematology Fellows, bed-side teaching during the Consultation weeks (6 weeks), preparation and organization of the annual McGill Hematology in-training exam which is composed of 3 parts (written, oral scenario and morphology), as well as teaching the TCP class "An approach to anemia" since 2015 at all 3 sites (JGH, MGH and Glen) for medical students.!

Dr. Nathalie Johnson has been involved in teaching students at the undergraduate and post-graduate levels at McGill (EXMD607B, 614, 635, and PHGY516 total of 9 hours), as well as in teaching of Hematology fellows during her 5 weeks of Consultation service. She held a 2 hours' lecture to Hematology/Oncology fellows featuring the biology of DLBCL, taught 4 hours of flow-cytometry and 2 hours of Hodgkin lymphoma to our Hematology fellows. Four PhD candidates of the McGill Experimental Medicine Program perform in her laboratory a thesis and are in the first, second, and fourth year (two candidates), respectively. The theses are entitled "*The role of FAS in lymphoma*", "*Effect of loss of CD20 on B cell receptor targeted therapy in lymphoma*", "*The role of STAT6 in DLBCL*", and "*Overcoming treatment resistance in DLBCL*". Claudia Weaver, a post-doctoral fellow in her laboratory continued to study "*Relapsed and refractory Burkitt's lymphoma*" awarded by a transition grant from the Cole Foundation. As Director for the Clinical Investigator Program at McGill Dr. Johnson organizes the curriculum for 13 Residents and prepares the 2019 re-accreditation of the Program for the Royal College (70 hours).

Dr. Hans Knecht was involved in teaching McGill Medical students (Expert Physician Rounds, 4 hours) and Hematology fellows on the microscope (12 hours), flow-cytometry and hemoglobin electrophoresis. He did Fellow and Resident teaching regularly in the setting of the Hematology and the Thrombosis Consultation Service (6 and 3 weeks respectively). His research trainee co-supervision included two graduate students; one Master's student at UoS who got her degree in Microbiology/Infectiology and one PhD student in molecular biology at UoM, Winnipeg. His habilitation at UoS to co-direct Master's and PhD students was renewed until December 2021.

Dr. François Mercier in his first year as a Hematology staff physician at the JGH was very active

in the teaching and learning process at McGill. He was teaching students at the undergraduate (PHGY 313, 516, and 2nd year Medical School, total of 8 hours) and post-graduate levels (Simulation center OSCE – ethics and communication, 3 hours). He did Fellow and Resident teaching regularly in the setting of the Hematology Consultation Service (4 weeks). In his leukemia research laboratory Dr. Mercier supervised 3 undergraduate students (one of them, Sami Chergui, was awarded the 1st prize for the best summer research bursary report, McGill Faculty of Medicine, for his work entitled “*Identification of regulators of leukemic growth in vitro using CRISPR*”). At the graduate level a PhD candidate and MSc candidate each will start in his laboratory January 1st 2019 and a further MSc candidate will start in July. Dr. Mercier participates also in 2 PhD thesis committees and was reviewer of a Master thesis.

Dr. Yury Monczak acted as a lecturer at the McGill Academic half-day teaching for Hematology (3 hours) and Pathology Residents (3 hours). He was again very active in Hematology and Pathology residents’ rotation teaching (6 hours teaching and 1 week of practical activities for the former, 12 hours teaching and 4 weeks of practical activities in the lab for the latter). He participated in the University of Montreal Medicine course MMD 1229 (Pathology and Immunology), for 1st year medicine students (18 hours) and the Medicine course MMD1231 (Hematology), for 1st year medicine students (18 hours), as well as in the University of Montreal Molecular Biology course PBC6042 graduate course (6 hours). Dr. Monczak participated in the Dawson College Medical Technology program with lectures (4 hours) a one-week of practical rotation in the laboratory including 3 hours of lectures.

Dr. François Patenaude shows impressive teaching activity in Hematology and Oncology at the JGH, the RVH and the CHUM. Many fourth year medical students spending 4-week rotations in the outpatient clinics with case discussions and review-manuscript discussion of oncology topics spend at least 1 to 2 days per week with Dr. Patenaude. Over 40 2nd and 3rd year medical students spend up to 2 days with him and are exposed to all stages of breast-, colorectal-, renal cell cancer and melanoma, as well as to management of chemotherapy side effects. Again five 6th year students from Germany spent 8 to 12 weeks (1 day/week with Dr. Patenaude) in an elective clinical rotation supervision, introduction to clinical trials and formal teaching sessions. He also did 4 weeks of regular Hematology fellow teaching in the setting of our Hematology Consultation Service.

Dr. April Shamy is director of the Clinical Teaching Unit (CTU) at K7 and organizer/developer of the new Hematology unit at K7. Her role in selecting, training, and initiation of our two specialized nurse practitioners was, is essential. Dr. Shamy’s teaching activities include four weeks of K-7 as ward attending, weekly interactions with the K-7 ward team, teaching in outpatient clinics for Hematology-, Radiation/Oncology-, and Medical Oncology fellows during the entire year, as well as five weeks of house staff teaching when responsible for the Consultation service. In her 10th year as Osler Fellow she acted as teacher of the core curriculum for first year medical students at the McIntyre building.

4. Involvement in the community:

Dr. Assouline held presentations in several Québec hospitals (Université de Sherbrooke, Hôpital Charles-Lemoyne, St.Mary’s Hospital, Hôpital Verdun) dealing with cutting-edge treatments of CML and CLL. She acted as co-chair of the Hematology Disease Site group at the Canadian Cancer Trial Group (CCTG) and as session moderator at the annual meeting of the *Groupe québécois de recherché en LMC*, as expert reviewer for INESSS, and as reviewer for *Blood*,

Blood Journal and Lancet Hematology.

Dr. Mark Blostein established the AC Clinic as a major teaching site of the McGill Hematology Division, attracting national and international Fellows. He also acts as a member of the Surgeon Scientist Committee, McGill University. He reviewed articles for *Blood, Thrombosis & Hemostasis, Thrombosis Research, and Clinical and Applied Thrombosis and Hemostasis.*

Dr. Chantal Cassis acted as Examiner, Royal College of Physicians and Surgeons of Canada, for the Internal Medicine Examination (3 days). She invests weekly about 9 hours as program director for the Hematology Fellow Program and two hours in the Resident training committee meetings (every 3 months). She is Member of the Rossy Cancer Network Cancer Quality Council where she leads the Hematology Disease Site. She also organizes the M & M rounds at our Division.

Dr. Nathalie Johnson held presentations dealing with PD-1 inhibitors in Hodgkin's lymphoma (University of Ottawa, Hôpital St. Jérôme and Cité de la Santé, Laval) and challenges in the treatment of follicular lymphomas (Hôpital St. Jérôme). She was a busy grant-reviewer for LLSC, CRS, and CIHR (total of 7 days). In her second year as a Director for board of Lymphoma Canada her goals are to improve patient education, advocacy for patients and to promote lymphoma research (eight meetings per year). Her review activity included manuscripts for *Blood, Brit J Haematol, Exp Hematol and Leukemia.*

Dr. Knecht was nominated member of the Editorial Board of IJMS (*International Journal of Molecular Sciences*; IF 3.7) June 11, 2018. He signs as Academic Editor (co-Editor Dr. Camille Laurence, Toulouse) of a special issue of the journal *Cancers* (IF 5.3) focusing on insights into the molecular pathogenesis and cutting-edge treatments of relapsing-refractory Hodgkin's lymphoma. The special issue's release occurred in July 2018 and includes five research and four review articles. Dr. Knecht reviewed manuscripts for *Brit J Haematol, CMAJ, Cancers, Genes Chromosomes and Cancer, IJMS, JAMA Dermatology, Lab Invest, Plos One, Tissue and Cell, and Viruses.*

Dr. François Mercier acted as Examiner, Royal College of Physicians and Surgeons of Canada, for the Internal Medicine Examination (3 days). He was an invited speaker at the Molecular Genetics Departmental Seminar, McGill University Genome Center (January 26th), at Hôpital Maisonneuve-Rosemont Research Center (March 2nd), and at Medical Grand Rounds, Jewish General Hospital (June 4th). All three lectures dealt with *in vivo* tracking of leukemic clonal evolution in AML, changes in gene expression during treatment, and identification of potential therapeutic targets. Dr. Mercier further participated with presentations at the Annual Retreat of the LDI, at the Meetings Immunology Montreal, and at a Webinar of the LLSC.

Dr. Yury Monczak is a Member of *Comité Consultatif de Diagnostic Moléculaire* of the MSSS (Quebec Health Ministry), and a permanent (volunteer activity) visiting professor, Ukrainian Catholic University in Lviv, Ukraine, School of Bioethics; this year he held 22 hours of lectures on molecular biology and diagnostics from March 10-17, 2018. He is a Board Member of the Shevchenko Scientific Organization, Montreal Chapter and an Advisory Board Member of the Dawson College Biomedical Technology Program. Dr. Monczak held four presentations concerning NGS and diagnostic precision in CLL diagnosis (Lake Louise, Toronto, Winnipeg, Halifax and Vancouver.) He reviewed a manuscript for *Genet Test Mol Biomarkers.*

Dr. François Patenaude was the invited Guest Speaker for the Conference Joseph Ayoub, entitled

“*L’immunothérapie du cancer renal métastatique: une histoire sur 3 décennies*”, at the annual AMHOQ meeting in Québec City, and invited speaker at 7 further occasions in 2018. Four presentations dealt with the immunotherapy of malignant melanoma, two with renal cancer and one with “*New Targeted Therapies in First and Second-line Metastatic Hormone-Dependent Breast Cancer*”. Dr. Patenaude is a longstanding committee member of the CKCF for establishing Canadian guidelines for the management of renal cell cancer. He acts also as a Consultant for CEPO for renal cell cancer, melanoma, and breast cancer, and he is a member of the steering committees of GEOQ for these three entities.

Dr. April Shamy organizes regularly national and international speakers for our Hematology Rounds and offers by that cutting edge presentations in the rapidly changing optimal therapeutic choice in several malignant hematological diseases, in particular multiple myeloma. She plays an active role in CCMDS management and is a planning committee member of the 2019 CCMDS Vancouver Meeting. Dr. Shamy orchestrated the traditional Christmas party (14th of December) as “usual”, i.e. as the annual social highlight of our Division. The death of Dr. Arthur Rosenberg was honored by a moment of silence and Hematology Division was delighted to welcome Dr. Martin Gyger in recovered health. This traditional evening transforms volunteers, administrative agents, K-7 ward personal, nurses, laboratory technicians, pharmacists, affiliated and staff physicians in a dancing cohort.

Dr. Shireen Sirhan was an invited speaker at the JGH Department of Medicine Grand Rounds November 12, 2018, where she held a lecture entitled “*Myeloproliferative Neoplasms: 2018 update on Diagnosis and Management*”. She also held presentations dealing with the same topic at three further Québec hospitals (RVH, St. Mary’s, Lakeshore), the “groupe québécois de recherches en LMC et NMP”, the regional MPN Patient support group and the Texas club of Internists.

5. Partnerships:

In the context of the CIUSSS organization the Division of Hematology provided the bone marrow (55 patients) and peripheral smear (91 patients) reading for Rouyn-Noranda (Dr. Knecht) and flow cytometry reports for Hull and Gatineau (Drs. Johnson and Knecht). Dr. Patenaude remains a frequently called oncology consultant for Rouyn-Noranda.

6. Milestones: new hires, highlights, promotions, and retirements:

Dr. Arthur Rosenberg, former Chief of the Division and founder of the Palliative Care unit at the JGH, has passed away September 3rd, shortly prior to his 83rd anniversary. As a passionate Hematologist, Arthur was still a fascinated reader of *Blood* and *Science*. His smile and enthusiasm are sadly missed by all of us.

May 25, Dr. Martin Gyger, pioneer of allogeneic and autologous bone marrow transplantation in Québec, retired after 16 years of devoted service to the JGH Hematology Division. Dr. Gyger, who built and successfully expanded our ASCT Program was forced to this major step by health issues. To honor his outstanding accomplishments in bone marrow transplantation and Hematology fellow training, the JGH Hematology created an annual *Martin Gyger Bone Marrow Transplant* prize, awarded at the AMHOQ Meeting for an excellent fellow presentation in the field.

April 1st, Dr. Nathalie Johnson was awarded a 5 years CIHR Project grant (Co-PI Dr. Hélène Decaluwe) entitled “*Optimizing immunotherapy in high-risk lymphoma*” for \$1,208,700.

July 1st, Dr. Sarit Assouline was awarded a 4 years' FRSQ Senior Research Scholarship.

July 1st, Dr. Mark Blostein passed the “flambeau” to Dr. Nathalie Johnson, who succeeds him as Director of the Clinical Investigator Program at McGill University (RCPC accredited in 2015).

July 7-8 “*IMMUNE FORCE ONE*” with Dr. Nathalie Johnson and IPO Line Bourgeois as team-captains was the Top-Team (1st place) in the 10th anniversary Enbridge® Ride to Conquer Cancer® with a fundraising of \$206,186 for cancer immunotherapy.

October 22, Ms. Shoshanna Breiner and Ms. Sheena Heslip joined our Division as Nurse Practitioners in Adult Care. Both “*Super Nurses*” got their post Master’s degree from the University of Toronto and are pioneers in this emerging specialty in Québec. They work mainly on the new Hematology ward on K7.

Drs. Lissa Ajjamada and Tanya Skamene, two of our former Hematology residents, joined our Division as Associate members in October this year. Dr. Ajjamada is involved in malignant Hematology whereas Dr. Skamene is involved in Clinical Trials and benign Hematology.

November 12, Dr. Shireen Sirhan held an excellent presentation entitled “*Myeloproliferative Neoplasms: 2018 update on Diagnosis and Management*” in the setting of the JGH Medical Grand Rounds.

In 2018 Dr. Hans Knecht signed as Academic Guest Editor a *Cancers* issue on cutting edge treatments and molecular pathology of Hodgkin’s lymphoma.

7. Honours, awards, and prizes: Reported above under 6.

SECTION I - DIVISION STATUS UPDATE

1. Mission and objectives of the Division:

The principle goals for the next years will be (unchanged):

- to offer cutting-edge treatment to the very sick hematology patients,
- to increase patient recruitment for phase I and II trials, to progress in our Hematology Fellowship program,
- to strengthen and expand laboratory hematology,
- to increase the collaboration with the other Hematology McGill sites,
- to increase top-level research production in basic, translational and clinical research, to solidify the administrative (secretarial) domain of the Division and
- to improve our Clinical Programs despite forthcoming financial restrictions and reorganization of the current healthcare system.

Concerning the recruitment of new young staff Hematologists the vision remains exactly the same as that formulated by Dr. Stephen Caplan in the 2013 Annual Report, as follows (verbatim):

“The principle goals for the future will be to recruit young physicians with academic ambition and appropriate training to accomplish their goals. This requires identification early on of residents during their training, assisting them in finding the best academic programs to further their goals, and providing an attractive environment to which they could be recruited and flourish as clinical or laboratory researchers. The success of clinician-scientists hinges on planning to ensure mentoring by senior physicians or scientists, protected time for research and a strong financial base to support their research activities.”

2. A nominative list of academic staff, their academic rank

Dr. Sarit Assouline	Associate Professor	Active
Dr. Mark Blostein	Associate Professor	Active
Dr. Stephen Caplan	Associate Professor	Active
Dr. Chantal Cassis	Assistant Professor	Active
Dr. Martin Gyger	Full Professor	Active (retired May 25, 2018)
Dr. Nathalie Johnson	Associate Professor, tenured	Active
Dr. Hans Knecht	Full Professor	Active
Dr. François Mercier	Assistant Professor	Active
Dr. François Patenaude	Assistant Professor	Active
Dr. April Shamy	Associate Professor	Active
Associate Members		
Dr. Lissa Ajjamada	Faculty Lecturer	Active (Start Oct 1 st , 2018)
Dr. Jaroslav Prchal	Associate Professor	Active
Dr. Shireen Sirhan	Assistant Professor	Active
Dr. Tanya Skamene	Faculty Lecturer	Active (Start Oct 29, 2018)

SECTION II - GRANTS, PUBLICATIONS, AND SERVICE OUTSIDE OF MCGILL

1. Grants and awards received

Dr. Sarit Assouline

2018-2022	Fonds de Recherche en Santé du Québec, 4-year Senior Research Scholarship
2017-2018	AbbVie Grant: phase I study of R-GDP and Venetoclax – to be conducted by the CCTG (Canadian Cancer Trials Group) \$300,000.
2017-2018	The Leukemia & Lymphoma Society of Canada New Idea Award. Co-Investigator. (PI Dr. F. Mercier). Tracking of clonal evolution in acute myeloid leukemia using single-cell RNA sequencing. \$75,000.

Dr. Mark Blostein

2017-2018	Site Investigator: Clinical Trial for Perioperative management of Warfarin. Funded by CIHR.
2016-2018	Site Investigator: Annexa-4. Clinical Trial examining the use of a Reversal agent for the New Oral Anticoagulant Factor Xa inhibitors (only site in Quebec and one of two in Canada).

Dr. Yury Monczak

2017-2018 PI of an educational grant from Janssen Pharmaceuticals. \$206,000.

Dr. April Shamy

2015-2018 CIHR Transitional Operating Grant. Co-Investigator. \$1,600,000. !

2. Scholarly works published in the 2018 calendar year (*in press* not included):

Assouline, Sarit

Owen C, Gerrie AS, Banerji V, **Assouline S**, Chen C, Robinson KS, Lye E, Fraser G. Canadian evidence-based guideline for the first-line treatment of chronic lymphocytic leukemia. *Curr Oncol*. 2018, 25:e461-e474.

Klil-Drori AJ, Yin H, Azoulay L, Del Corpo A, Harnois M, Gratton MO, Olney HJ, Delage R, Laneuville P, Mollica L, Busque L, **Assouline SE**; Groupe Québécois de Recherche en Leucémie Myéloïde Chronique et Néoplasies Myéloprolifératives (GQR LMC-NMP). Molecular monitoring of therapeutic milestones and clinical outcomes in patients with chronic myeloid leukemia. *Cancer*. 2018, Nov 13. doi: 10.1002/cncr.31835. [Epub ahead of print]

Bixby D, Noppeney R, Lin TL, Cortes J, Krauter J, Yee K, Medeiros BC, Krämer A, **Assouline S**, Fiedler W, Dimier N, Simmons BP, Riehl T, Colburn D. Safety and efficacy of vismodegib in relapsed/refractory acute myeloid leukaemia: results of a phase Ib trial. *Br J Haematol*. 2018, Sep 11. doi: 10.1111/bjh.15571. [Epub ahead of print]

Andorsky DJ, Kolibaba KS, **Assouline S**, Forero-Torres A, Jones V, Klein LM, Patel-Donnelly D, Smith M, Ye W, Shi W, Yasenchak CA, Sharman JP. An open-label phase 2 trial of entospletinib in indolent non-Hodgkin lymphoma and mantle cell lymphoma. *Br J Haematol*. 2018, Sep 5. doi: 10.1111/bjh.15552. [Epub ahead of print]

Burke JM, Shustov A, Essell J, Patel-Donnelly D, Yang J, Chen R, Ye W, Shi W, **Assouline S**, Sharman J. An Open-label, Phase II Trial of Entospletinib (GS-9973), a Selective Spleen Tyrosine Kinase Inhibitor, in Diffuse Large B-cell Lymphoma. *Clin Lymphoma Myeloma Leuk*. 2018, 18:e327-e331.

Ruskey JA, Zhou S, Santiago R, Franche LA, Alam A, Roncière L, Spiegelman D, Fon EA, Trempe JF, Kalia LV, Postuma RB, Dupre N, Rivard GE, **Assouline S**, Amato D, Gan-Or Z. The GBA p.Trp378Gly mutation is a probable French-Canadian founder mutation causing Gaucher disease and synucleinopathies. *Clin Genet*. 2018, 94:339-345.

Stilgenbauer S, Eichhorst B, Schetelig J, Hillmen P, Seymour JF, Coutre S, Jurczak W, Mulligan SP, Schuh A, **Assouline S**, Wendtner CM, Roberts AW, Davids MS, Bloehdorn J, Munir T, Böttcher S, Zhou L, Salem AH, Desai M, Chyla B, Arzt J, Kim SY, Verdugo M, Gordon G,

Hallek M, Wierda WG. Venetoclax for Patients with Chronic Lymphocytic Leukemia With 17p Deletion: Results from the Full Population of a Phase II Pivotal Trial. *J Clin Oncol*. 2018; 36:1973-1980.

Assouline S. Improving on R-ICE in relapsed DLBCL. *Blood*. 2018, 131:1767-1768.

Zaja F, Salvi F, Rossi M, Sabattini E, Evangelista A, Ciccone G, Angelucci E, Gaidano G, Zanni M, Ladetto M, Chiappella A, Vitolo U, Zinzani PL, Califano C, Tucci A, Patti C, Pileri SA, Lenti V, Piccaluga PP, Cavallo F, Volpetti S, Perali G, **Assouline S**, Mann KK, Morin R, Alcaide M, Bushell K, Fanin R, Levis A. Single-agent panobinostat for relapsed/refractory diffuse large B-cell lymphoma: clinical outcome and correlation with genomic data. A phase 2 study of the Fondazione Italiana Linfomi. *Leuk Lymphoma*. 2018, 59:2904-2910.

Seymour JF, Kipps TJ, Eichhorst B, Hillmen P, D'Rozario J, **Assouline S**, Owen C, Gerecitano J, Robak T, De la Serna J, Jaeger U, Cartron G, Montillo M, Humerickhouse R, Punnoose EA, Li Y, Boyer M, Humphrey K, Mobasher M, Kater AP. Venetoclax-Rituximab in Relapsed or Refractory Chronic Lymphocytic Leukemia. *N Engl J Med*. 2018, 378:1107-1120.

Pera B, Krumsiek J, **Assouline SE**, Marullo R, Patel J, Phillip JM, Román L, Mann KK, Cerchietti L. Metabolomic Profiling Reveals Cellular Reprogramming of B-Cell Lymphoma by a Lysine Deacetylase Inhibitor through the Choline Pathway. *EBioMedicine*. 2018, 28:80-89.

Blostein, Mark

Bertin FR, Rys RN, Mathieu C, Laurance S, Lemarié CA, **Blostein MD**. Natural killer cells induce neutrophil extracellular trap formation in venous thrombosis. *J Thromb Haemost*. 2018 Nov 20. doi: 10.1111/jth.14339. [Epub ahead of print]

Douketis JD, Spyropoulos AC, Anderson JM, Arnold DM, Bates SM, **Blostein M**, Carrier M, Caprini JA, Clark NP, Coppens M, Dentali F, Duncan J, Gross PL, Kassis J, Kowalski S, Lee AY, Gal GL, Templier GL, Li N, MacKay E, Shah V, Shivakumar S, Solymoss S, Spencer FA, Syed S, Tafur AJ, Vanassche T, Thiele T, Wu C, Yeo E, Schulman S. Erratum to: The Perioperative Anticoagulant Use for Surgery Evaluation (PAUSE) Study for Patients on a Direct Oral Anticoagulant who Need an Elective Surgery or Procedure: Design and Rationale. *Thromb Haemost*. 2018, 118:1679-1680.

Rys RN, **Blostein MD**, Lemarié CA. Deep Vein Thrombosis Induced by Stasis in Mice Monitored by High Frequency Ultrasonography. *J Vis Exp*. 2018, Apr 13;(134).

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Caplan, Stephen

How we treat paroxysmal nocturnal hemoglobinuria: A consensus statement of the Canadian PNH Network and review of the national registry. Patriquin CJ, Kiss T, **Caplan S**, Chin-Yee I, Grewal K, Grossman J, Larratt L, Marceau D, Nevill T, Sutherland DR, Wells RA, Leber B. *Eur J Haematol*. Epub 2018 Oct 25. Review.

Johnson, Nathalie

Wever CM, Geoffrion D, Grande BM, Yu S, Alcaide M, Lemaire M, Riazalhosseini Y, Hébert J, Gavino C, Vinh DC, Petrogiannis-Haliotis T, Dmitrienko S, Mann KK, Morin RD, **Johnson NA**. The genomic landscape of two Burkitt lymphoma cases and derived cell lines: comparison between primary and relapse samples. *Leuk Lymphoma* 2018, 59:2159-2174.

Contu F, Rangel-Pozzo A, Trokajlo P, Wark L, Klewes L, **Johnson NA**, Petrogiannis-Haliotis T, Gartner JG, Garini Y, Vanni R, Knecht H, Mai S. Distinct 3D Structural Patterns of Lamin A/C Expression in Hodgkin and Reed-Sternberg Cells. *Cancers* 2018, 10:286-304.

Meti N, Esfahani K, **Johnson NA**. The Role of Immune Checkpoint Inhibitors in Classical Hodgkin Lymphoma. *Cancers* 2018, 10:204-219.

Knecht, Hans

Contu F, Rangel-Pozzo A, Trokajlo P, Wark L, Klewes L, Johnson NA, Petrogiannis-Haliotis T, Gartner JG, Garini Y, Vanni R, **Knecht H**, Mai S. Distinct 3D Structural Patterns of Lamin A/C Expression in Hodgkin and Reed-Sternberg Cells. *Cancers* 2018, 10:286-304.

Szczurek A, Birk U, **Knecht H**, Dobrucki J, Mai S, Cremer C. Super-Resolution Binding Activated Localization Microscopy through reversible change of DNA conformation. *Nucleus* 2018, 9:182-189.

Mercier, François

Almeida FF, Tognarelli S, Marçais A, Kueh AJ, Friede ME, Liao Y, Willis SN, Luong K, Faure F, **Mercier FE**, Galluso J, Firth M, Narni-Mancinelli E, Rais B, Scadden DT, Spallotta F, Weil S, Giannattasio A, Kalensee F, Zöller T, Huntington ND, Schleicher U, Chiocchetti AG, Ugolini S, Herold MJ, Shi W, Koch J, Steinle A, Vivier E, Walzer T, Belz GT, Ullrich E. A point mutation in the Ncr1 signal peptide impairs the development of innate lymphoid cell subsets. *Oncoimmunology*. 2018 Aug 15;7:e1475875)

Patenaude, François

Karakiewicz PI, Zaffuto E, Kapoor A, Basappa NS, Bjarnason GA, Blais N, Breau RH, Canil C, Drachenberg D, Hotte SJ, Jeldres C, Jewett MAS, Kassouf W, Kollmannsberger C, Lavallée LT, Maloni R, **Patenaude F**, Pouliot F, Reaume MN, Sabbagh R, Shayegan B, So A, Soulières D, Tanguay S, Wood L, Bandini M. Kidney Cancer Research Network of Canada consensus statement on the role of adjuvant therapy after nephrectomy for high-risk, non-metastatic renal cell carcinoma: A comprehensive analysis of the literature and meta-analysis of randomized controlled trials. *Can Urol Assoc J*. 2018, 12:173-180.

Shamy, April

Leitch HA, Buckstein R, Zhu N, Nevill TJ, Yee KWL, Leber B, Keating MM, St Hilaire E, Kumar R, Delage R, Geddes M, Storrington JM, **Shamy A**, Elemery M, Wells RA. Iron overload in myelodysplastic syndromes: Evidence based guidelines from the Canadian consortium on MDS. *Leuk Res*. 2018, 74:21-41.

Skamene, Tanya

Reiman T, Savage KJ, Crump M, Cheung MC, MacDonald D, Buckstein R, Couban S, Pilotis E, Imrie K, Spaner D, Shivakumar S, Kuruvilla J, Villa D, Shepherd LE, **Skamene T**, Winch C, Chen BE, Hay AE. A phase I study of romidepsin, gemcitabine, dexamethasone and cisplatin combination therapy in the treatment of peripheral T-cell and diffuse large B-cell lymphoma; the Canadian cancer trials group. Leuk Lymphoma. 2018, Oct 10:1-8. doi: 10.1080/10428194.2018.1515937. [Epub ahead of print]

3. Academic and community engagement service outside of McGill by individual members of the unit:

This issue has already been dealt with under: 4. Involvement in the Community.

Respectfully submitted,



Hans Knecht, MD, FRCPC, FMH, FMAH
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