SUMMARY

(1) Continuing the implementation of the digitalized Patient Order Sets throughout the Jewish General Hospital and continue to expand this throughout the CIUSSS including LTC and eReferrals.

(2) To expand Special Chemistry testing by incorporating Mass Spectrometry in separation techniques, to further reduce costs and developing mass spectrometry assays.

(3) Upgrade out-of-date, overtaxed and sluggish instrumentation particularly in the Corelab and Special Hematology sections.

(4) To work on a Mobile app development for critical values alert service with Concordia. The purpose of the App is to allow instantaneous transfer of the critical patient result to the physician’s phone.

(5) Try to get funds and continue the upgrading of the Proteomics Laboratory at the Jewish General Hospital.

(6) Digital Health and IT upgrade implementation

1. Research and publications:
   Research
   • The Proteomics Department at the Jewish General Hospital has had 14 projects that were either completed or ongoing this past year, including 7 collaborations with different researchers within the Lady Davis Institute/Jewish General Hospital.

2. Teaching and learning (undergraduate and graduate):

2.1 MacNamara, Elizabeth, M.D., FRCPS(C)

   Undergraduate, McGill University
   Medical Student Elective (4 week period)
   Medical Biochemistry Resident (12 month/year)
   Medical Student elective (4 week period)
   Attendance at Medical Grand Rounds (4/month)
   Internal Medicine Rounds
   Palliative Care Attending on 4M, (26weeks/year)
   Palliative Care (6 weekends/year)
   Palliative Care on call (1 in 6weeks/year)
Palliative Care Residents’ Teaching on wards
LDI Cancer Seminars
Attendance at the Association des Médecins Biochimistes du Québec/Canadian Association of Clinical Biochemists Annual Congress
Comité de suivi des examens(FMSQ)
Mass Spectrometry: Applications to the Clinical Lab (MSACL)
Canadian Society of Palliative Care Physicians Conference, Alberta
Palliative Care Continuing Professional Education Day, McGill
Abstract Reviewer for the 22nd International Palliative Care Congress of Canada

**Lectures given:**

CIUSSS West-Central Montreal, Frontline Services Medical Forum.
-How family medicine physicians from the community and the CIUSSS specialists can work together to improve the patient experience.

AMBQ- Journée de Développement professionnel continu
-Pertinence des analyses de biochimie médicale : expérience du JGH

Medical Grand Rounds, Palliative Care-JGH
-Becoming A Resident In Your 60s: Learning The Obvious In Palliative Care With Presentations Of Three Clinical Scenarios

Biochemistry and Metabolic Medicine Program
Kuwait Institute for Medical Specializations (KIMS)
-Clinical Audits- Theory And What Makes A Good And Bad Audit
-Examples in the Laboratory
-Laboratory Errors- Do They Matter
-Bariatric Surgery- Pre and Post Op Complications

Medical Biochemistry- Jewish General Hospital
-Gastric Bypass Metabolic problems

**2.2 Eintracht, Shaun, M.D., FRCPS(C)**

Undergraduate, McGill University
Postgraduate, McGill University
Resident Supervision/One-on-One Teaching
McGill Medical Biochemistry Residents teaching (12 month period)
Teaching of Hematology and Rheumatology Resident
Attendance at Medical Grand Rounds (4/month)
Attendance at the Association des Médecins Biochimistes du Québec/Canadian Association of Clinical Biochemists Annual Congress
Internal Medicine Rounds
Journal Club (Ad hoc basis)

**Lectures given:**

Jewish General Hospital, Montreal, Québec
-Benefits of Ketogenic Diet
-Pseudo Hyperkalemia
3. **Involvement in the community:**

4. **Partnerships:**
   
   - Dr. MacNamara has been appointed as the Chair and External Examiner for the Medical Biochemistry and Metabolic Medicine Program, Kuwait Institute for Medical Specialization (KIMS). Duties include reviewing the exam questions, participating in the oral module of the final exam, and marking the exam with the members of the exam committee.
   
   - Abstract Reviewer for the 22nd International Palliative Care Congress of Canada
   
   - Vice President of Canadian Association of Medical Biochemist: 2016-present
   
   - Dawson College

5. **Milestones:**

   Dr. Christoph Borchers has been appointed Head of the Division of Clinical and Research Proteomics at the Jewish General Hospital.

   Dr. René Zahedi has been appointed the facility manager of the Proteomics Laboratory, Jewish General Hospital.

**SECTION I – DIVISION STATUS UPDATE**

1. **Mission and Objectives of the Division**

   **Mission Statement**

   To provide laboratory and clinical services consistent with the needs of the health care team and their patients in a professional and caring manner.

   To initiate and collaborate in research activities directed towards the improved understanding of disease, its diagnosis and monitoring.

   To ensure the optimal use of the laboratory service.

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

   Dr. Elizabeth MacNamara, Medical Biochemist, Chief, Division of Medical Biochemistry, Jewish General Hospital
   Associate Professor of Medicine, McGill University (active)

   Dr. Shaun Eintracht, Medical Biochemist, Division of Medical Biochemistry, Jewish General Hospital
   Assistant Professor of Medicine, McGill University (active)
   JGH Medical Biochemistry Site Director Optilab
### SECTION II – GRANTS, PUBLICATIONS AND SERVICE OUTSIDE OF McGill

#### 1. Grants and Awards received: currently active

<table>
<thead>
<tr>
<th>Agency</th>
<th>Title</th>
<th>PI</th>
<th>Time Period</th>
<th>Total amount awarded to Dr. Borchers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ministry of Economy and Innovation - Quebec</td>
<td>Curbing Atherosclerosis Through Precision Medicine</td>
<td>C. Borchers T. Alquier JC. Tardiff</td>
<td>2018-22</td>
<td>$237,500</td>
</tr>
<tr>
<td>Genome Canada / Genome BC</td>
<td>Proteogenomic Improved Guided Quantification Pipeline (PIGQpipe): Toward Personalized Targeted Proteomics</td>
<td>C. Borchers</td>
<td>2018-21</td>
<td>$556,472</td>
</tr>
<tr>
<td>NSERC - EGP</td>
<td>Molecular characterization of SSI products from Qu biologics</td>
<td>C. Borchers</td>
<td>2018-19</td>
<td>$25,000</td>
</tr>
<tr>
<td>The Fonds de recherche du Québec and the Flemish Research Foundation</td>
<td>Innovative cleavable link strategy based on mass spectrometry for the elucidation of drug binding sites</td>
<td>C. Borchers</td>
<td>2017-20</td>
<td>$298,450</td>
</tr>
<tr>
<td>Genome Canada / Genome BC</td>
<td>The Pan-Canadian Proteomics Centre: An Integrated Platform for Comprehensive, Innovative, Translational Proteomics Research in Canada</td>
<td>C. Borchers L. Foster</td>
<td>2017-22</td>
<td>$7,467,485</td>
</tr>
<tr>
<td>Genome Canada / Genome BC</td>
<td>The Metabolomics Innovation Centre</td>
<td>C. Borchers D. Wishart</td>
<td>2017-22</td>
<td>$1,782,990</td>
</tr>
<tr>
<td>CFI-MSI</td>
<td>The Metabolomics Innovation Centre</td>
<td>C. Borchers D. Wishart</td>
<td>2017-22</td>
<td>$899,215</td>
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</table>

#### Personal Support Awards (Indicate type of award, agency, term)

<table>
<thead>
<tr>
<th>Agency</th>
<th>Subject</th>
<th>$ /Year</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Warren Y. Soper Charitable Trust</td>
<td>The Innovative Translational Proteomics Program</td>
<td>100,000</td>
<td>2015-24</td>
</tr>
<tr>
<td>Segal McGill Chair</td>
<td>Molecular Oncology</td>
<td>40,000</td>
<td>2014-19</td>
</tr>
<tr>
<td>BC Leading Edge Endowment</td>
<td>LEEF Chair</td>
<td>200,000</td>
<td>2011-28</td>
</tr>
</tbody>
</table>
2. Scholarly works published in the 2018 calendar year:

Publications

Chen M., Gerson H., Eintracht S, Nessim SJ, MacNamara E.  

Glisovic S, Eintracht S, Longtin Y, Oughton M, Brukner I.  

*Multiplexed LC/ESI-MRM-MS-based Assay for Identification of Coronary Artery Disease Biomarkers in Human Plasma.*  

*Changing the Apoptosis Pathway through Evolutionary Protein Design.*  

*Hydrophilic bile acids prevent liver damage caused by lack of biliary phospholipid in Mdr2/- mice.*  

Popp R, Li H, Borchers CH.  
*Immuno-MALDI (iMALDI) mass spectrometry for the analysis of proteins in signaling pathways.*  

Han J, Higgins R, Lim MD, Atkinson K, Yang J, Lin K, Borchers CH.  
*Isotope-labeling derivatization with 3-nitrophenylhydrazine for LC/multiple-reaction monitoring-mass-spectrometry-based quantitation of carnitines in dried blood spots.*  

*Molecular phenotyping of laboratory mouse strains using 500 multiple reaction monitoring mass spectrometry plasma assays.*  
Common Biol, 1:78 (2018)

Zahedi RP, Parker CE, Borchers CH.  
*Immuno-MALDI-TOF-MS in the Clinic.*  


Wölter M, Okai CA, Smith D, Ruß M, Rath W, Pecks U, Borchers CH, Glocke MO.

Maternal Apolipoprotein B100 Serum Levels are Diminished in Pregnancies with Intrauterine Growth Restriction and Differentiate from Controls.


Mahdavi S, Jenkins DJA, Borchers CH, El-Sohemy A.

Genetic Variation in 9p21 and the Plasma Proteome.


Detecting post-translational modification signatures as potential biomarkers in clinical mass spectrometry.


Bhowmick P, Mohammed Y, Borchers CH.


Popp R, Basik M, Spatz A, Batist G, Zahedi RP, Borchers CH.

How iMALDI can improve clinical diagnostics.


Parker CE, Borchers CH.

The Special Issue: Clinical Proteomics for Precision Medicine.


Mitochondrial oxodicarboxylate carrier deficiency is associated with mitochondrial DNA depletion and spinal muscular atrophy-like disease.


Luehr TC, Koide EM, Wang X, Han J, Borchers CH, Helbing CC.

Metabolomic insights into the effects of thyroid hormone on Rana [Lithobates] catesbeiana metamorphosis using whole-body Matrix Assisted Laser Desorption/Ionization-Mass Spectrometry Imaging (MALDI-MSI).


b. Other publications

**CH Borchers**, “Newly Funded Genome Canada Projects Focus on Proteomics, Rare Disease, Crop Genomics". Interview for Genomeweb, (01/02/2018)

CH Borchers, “New funding strengthens UVic’s national leadership in protein research". Interview for UVic Communications and Media Relations. (23/01/2018)

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

**Conference organizational committees**

MRM & PRM Proteomics Workshop, Workshop Organizer, Montreal, 16/10 – 19/10/18
8th Symposium of Structural Proteomics, Symposium Organizer, Berlin, Germany, 10/10 - 12/10/18
2nd Int. Workshop of PROTEOMICS – from Introduction to Clinical Applications, Workshop Organizer, Iasi, Romania, 07/09-07/13/18
MRM & PRM Proteomics Workshop, Workshop Organizer, Montreal, 06/26 – 06/29 2018
Membership and service on international, national and provincial professional bodies and societies

<table>
<thead>
<tr>
<th>Organization</th>
<th>Position and Timeframe</th>
<th>Hours per Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>HUPO Council</td>
<td>Committee member, 2009-present, once per year, 4 hrs per year</td>
<td></td>
</tr>
<tr>
<td>HUPO Marketing Committee</td>
<td>Member &amp; chair, 2015-2018, 24 hours/year</td>
<td></td>
</tr>
<tr>
<td>Structural Proteomics Society</td>
<td>Founding member, 2018, 24 hours/year</td>
<td></td>
</tr>
</tbody>
</table>

Grant committees

Grant proposals reviewed


Thesis review

2018: Popp – University of Victoria (Ph.D.)

Visiting scientists hosted in 2018 (include lab visitors who have spent more than two weeks in your group)

Mengxuan Wang, Fudan University, China (UVic-GBC Proteomics Centre)
Lucia Gonzalez, CHUAC a Coruña, Spain (UVic-GBC Proteomics Centre)
Margherita Dell’Aica, ISAS Institute, Germany (JGH-Pr)
Sheila Garcia, University of Campinas, Brazil (UVic-GBC Proteomics Centre)
Georgia Mitsa, Fresenius Institute, Germany (McGill University)
Izzah Shahid, Forman Christian College, Pakistan (UVic-GBC Proteomics Centre)
Evgeniy Petrotchenko (McGill University)

Editorships

Editorial Boards (Journal name, years)

<table>
<thead>
<tr>
<th>Board Name</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executive Advisory Board for “Proteomics”</td>
<td>2015-present</td>
</tr>
<tr>
<td>Executive Editor for “Journal of Proteomics”</td>
<td>2013-present</td>
</tr>
<tr>
<td>Member, Editorial Board of “Journal of Metabolomics and Systems Biology”</td>
<td>2013-present</td>
</tr>
<tr>
<td>Member, Editorial Board of “Journal of Mass Spectrometry”</td>
<td>2012-present</td>
</tr>
<tr>
<td>Member, Editorial Board of “BBA Proteins and Proteomics”</td>
<td>2012-present</td>
</tr>
<tr>
<td>Member, Editorial Board of “Proteomics Clinical Application”</td>
<td>2011-present</td>
</tr>
<tr>
<td>Member, Editorial Advisory Board of “Journal of Proteome Research”</td>
<td>2008-present</td>
</tr>
<tr>
<td>Member, Editorial Board of “Current Molecular Pharmacology”</td>
<td>2006-present</td>
</tr>
<tr>
<td>Member, Editorial Board of “Expert Review of Proteomics”</td>
<td>2003-present</td>
</tr>
</tbody>
</table>

Ad hoc reviews (List journals for last three years)

American Journal of Tropical Medicine & Hygiene
Analytical and Bioanalytical Chemistry
Analytical Chemistry
BBA GEN
<table>
<thead>
<tr>
<th>Reviews for journals, book reviews, published commentaries (19 papers reviewed in 2018)</th>
</tr>
</thead>
</table>

Respectfully submitted,

Elizabeth MacNamara, MD
Chief, Division of Medical Biochemistry
Department of Medicine-JGH