

Annual Reporting for Faculty Supported Research Centres and Networks

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Annual Report of Activities and Outcomes

In line with our missions, the Centre outlined the following objectives in 2018:

- Revise the advisory board
This is still in progress, as efforts are underway to develop an AB aligned with others already in existence in the environment, so as to create synergies rather than redundancies
- Restructure the Centre's website
-

Diagnostics was added to the list. The descriptions of research themes, core facilities and members were updated to recruit talented trainees and to attract potential collaborators

- Throughout bridge fund for innovative projects, the Centre provided financial support to Dr. Mark Trifiro's research project investigating the use of nanoparticles to ablate the tumors. The project focuses initially on prostate cancer, but the resulting knowledge will eventually be applied to other types of cancer. The Centre also supported Vincent Turgeon, a resident in Medical Physics Unit at McGill University. His research focuses on decreasing patient discomfort and minimizing adverse events during a PET scan by developing a non-invasive but effective way to measure radioactive tracer concentration in the blood.
- The Centre established a tumor bank management committee at the Jewish General Hospital (JGH). With the financial support from the Réseau de Recherche sur le Cancer (RRCancer), all JGH biobanks are currently undergoing a certification process offered by the Canadian Tissue Repository Network (CTRNet).
- The Centre helped develop the Molecular Tumor Board to support the CAPTURE (CCTG) molecular based cancer therapy, with the aim to expand this with increased profiling of patients, and linking with other institutions across McGill and Quebec.
- The Centre established a core genomic profiling unit, in Molecular Pathology with the addition of the Thermo Fisher Gene Studio S5 system. This grants access to the OncoPrint genomic/RNAomic panels, enables a comprehensive sequencing capacity and fuels advancements in molecular diagnostics and innovation in biomarkers translational research. The Centre facilitated acquisition of the technology, even though the funds do not pass through the Centre. The profiling unit has set the foundation for:
 1. Translational NGS research aimed at Urachal Cancer Research (funded by the Ride to Conquer Cancer)
 2. Innovative multi-Centre liquid biopsy NGS testing in pulmonary oncology (Funded by the Rossy Cancer Network).
 3. Comprehensive Genomic profiling Research and Development initiatives for the JGH molecular diagnostics laboratories
 4. Representing the Quebec Profiling Lab Platform for the Canadian Personalize my Treatment (PMT) Initiative driven by Exactis Innovation.
- The Centre also facilitated the acquisition of a NanoLC system (1260 Infinity) and Agilent Fraction Collector (1260 Infinity II) in the Proteomics Centre

9. New Members who joined the Unit in the past year and their institutional affiliation(s).

Name Last, First	Title PI, Staff or Trainee [Graduate student (GS) or post- doctoral fellow (PDF)]	Type of Membership Full, Associate	Affiliation(s)
Rivera, Barbara	Assistant Professor	Full	Gerald Bronfman Department of Oncology

Dr. Rivera, previously a trainee at the MCTRC in Dr. Foulkes laboratory, is now Assistant Professor at the Gerald Bronfman Department of Oncology, McGill University. Since then, she has joined the Centre as full member and has established new collaboration with Dr. Orthwein.

10. Members who have left the Unit over the reported year.

N/A

We are in the process of creating a website to increase the awareness and participation of patients and to increase the accessibility of resources ~~to~~ ~~searchers~~.

- Support and expand and integrate Molecular Tumor Boards across the network of hospitals
- Support the development and expansion of the McGill Proteomics Program (C Borchers)
- Develop financial support for graduate students in Translational Medicine
- Organize an annual scientific symposium

14. Provide suggestions about how the Faculty could do better to support the Unit and research efforts in general (e.g., centralized data repositories, institutional data management plans, support for software developments, guidance for adopting open science practices, simplification of administrative procedures, etc) (no page limit but please be specific and unleash your creativity!)

- Central leadership with addressing Quebec's legal impediments to bio banking (towards an 'opt out' system)
- Support for patient data integration within and among the hospitals
- Free access to publications for trainees other than graduate students (e.g. postdoc fellows)
- Higher profile for the Centre in McGill's environment

In the attached (Excel) Year End Financial Report please detail

1. Expenditures of funding provided by the Faculty of Medicine and the Department of Medicine (Mer85d bep and other) (see also aiheea-1(s)-4(

Appendix List

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26. Chaddad A, Sabir S, Niaz T, Abdulkarim B. Prediction of survival with multiscale radiomic analysis in glioblastoma patients. *Med Biol Eng Comput*. 2018; 56(12):2287-90.
27. Xue Y, Meehan B, Macdonald E, Venneti S, Wang Y, Skowronski L, Jelinic P, Kong T, Martinez D, Morin G, Firlit M, Abedini A, Johnson R, Cencic R, Patibandla J, Chen H, Papadakis A, Auguste A, de Rink I, Kerkhoven R, Bertos N, Gotlieb M, Clarke B, Leary A, Witcher M, Guiot M, Pelletier J, Dostie J, Park M,

machine learning in a multicentric context with independent testing: identical data, similar algorithms, different methodologies *IEEE Transactions on Radiation and Plasma Medical Sciences*. 2019;3(2):192-200.

40. Song JS, Dmytriw AA, YF, Erghani R, Rotstein LE, Goldstein DP, Poon C. Investigation of Thyroid Nodules: A Practical Algorithm and Review of Guidelines *Head Neck*. 2018;40(8):1861-1873.
41. Chatterjee A, Vallières M, Dohan A, Levesque IR, Ueno Y, Saito S, and Seuntjens J. Creating robust predictive radiomic models for data from independent institutions using normalization. *Transactions on Radiation and Plasma Medical Sciences*. 2019;3(2):201-215.
42. Almarzouki H, Niazi T, Hier M, Mlynarek A, Lavoie I, Sultanem K. Local Failure Rate in Oropharyngeal Carcinoma Patients Treated with Intensity Modulated Radiotherapy Without High dose Clinical Target Volume. *Cureus*. 2018;10(7):e2958.
43. Rodriguez AM, Frenkiel S, Desroches J, DeSimone A, Chiocchio F, MacDonald C, Black M, Zeitouni A, Hier M, Kost K, Mlynarek A, Bolster-Foucault C, Rosberger Z, Henry M. Development and validation of the McGill body image concerns scale and use in head and neck oncology (HNCBS) a mixed method approach. *Psychooncology*. 2019;28(1):116-21.
44. Henry M, Alia A, Frenkiel S, Richardson K, Hijazi M, Zeitouni A, Kost K, Mlynarek A, Black M, MacDonald C, Chartier B, Rosberger Z. Contribution of psychiatric diagnoses to extent of opioid d.

AppendixII: Grants

Only the grants that involve multiple PI members of the Centre are listed.

Years	Project title	MCTRC members	Funding Agency	Amount
2018- 2020	Montreal Cancer Consortium: Pilot Project	Wilson Miller,Gerald Batist, Mark Basik,Alan Spatz,Sarit Assouline, Cristiano Ferrario, Sonia del Rincon	Terry Fox Research Institute	\$ 2,000,000

Appendix III: Conferences

Only the conferences that involve participation of more than one member of the Centre are listed.

1. Translating Proteomics into the Clinic Symposium, Jewish General Hospital, Montreal. January 14, 2019.
Christoph Borchers hosted the symposium and delivered the lecture “Introduction to the Pan Canadian Proteomics Centre.”
Alan Spatz delivered the lecture “PD1: How proteomics can help to meet unmet needs in pathology.”
2. 9th Annual Lady Davis Institute Scientific Retreat Montreal. May 4, 2018.
Alexandre Orthwein co-organized the event along with Colin Crist and Dr. Marc Fabian
Session 1 chair: Gerald Batist Session 4 chair: Koren Mann
3. 10th Worldwide Innovative Network (WIN) Symposium: “Global Implementation of Precision Oncology: Winning the War against Cancer” Paris, France. June-26, 2018.
Alan Spatz chaired the session 4 “New Concepts and Therapeutics Avenues in Precision Oncology” and moderated “The future of drug development for Precision Oncology,” an open forum and debate with the audience on June 26.
Gerald Batist participated in this event as well as the Annual General Assembly.
- 4.

Appendix IV: Clinical Trials

The MCTRC investigators take part in designing and conducting clinical studies to evaluate the safety and efficacy of new drugs or more effective ways to use existing drugs. Closely tied to MCTRC, the Clinical Research Unit (CRU) of the Jewish General Hospital (JGH) is a research unit that is part of the JGH's research program. The CRU is a research unit that is part of the JGH's research program. The CRU is a research unit that is part of the JGH's research program.

Appendix V: New graduate students and trainees

The researcher members of the MCTR continue to dedicate their time to mentor and train graduate students, postdocs and fellows. Below is the list of trainees who started their degree during the current reporting period.

The members also put efforts into educating younger aspiring scientists in their undergraduate program. This year, we would like to highlight the contribution of Dr. Josie Usajel's laboratory in supervising 7 undergraduate students from different programs in Sciences and Engineering as a postdoc project from a student-led initiative called iGEM McGill (international genetically engineered machine competition – McGill team).

Christoph Borchers

Student: Makepeace, Karl

3rd cycle

Student: Fröhlich, Björn

3rd cycle

Student: Vincent Lacasse

3rd cycle

Claudia Kleinman

Student: Hu, Yixing

Project title : Computational methods for single cell sequencing transcriptomics

2nd cycle

Student : Worme, Samantha

Project title: Single cell analysis of leukaemia tumors

2nd cycle

Student : Coutelier, Marie

Post doctoral fellow

Gerald Batist

Appendix VI: Lectures and Seminar Series

Our trainees have access to various seminars, lectures and workshops offered by the Segal Cancer Centre (SCC) and the Lady Davis Institute (LDI). Among these programs are the LDI Cancer Seminar Series that are composed of talks from invited speakers from all around the world and presentations of trainees in the LDI Cancer Axis. Both published and unpublished data are presented, and preliminary data or outlines of new research proposals can be discussed as well. All trainees are encouraged to practice their communication skills in a formal setting and to obtain constructive feedback on their projects. To further encourage our trainees, a prize for best talk in the M.Sc., Ph.D. and Postdoc categories are awarded starting from this year. Additionally, the investigators of the institute also started to present their research, thereby serving as exemplary models for effective communications as well as fostering collaborations among the laboratories within the institution. Furthermore, LDI Cancer Axis partners with other axes of the institute to bring multidisciplinary perspectives on cancer research. One example of this is when the Cancer Axis, in collaboration with Biomedical Ethics Unit, hosted Mark. J. Rataj to give lectures titled *Interventional Pharmacoeconomics: A Strategy to Reduce Prescribing Costs of Modern Cancer Therapeutics* over two days.

Additionally, LDI Trainee Committee, formed by graduate students and postdoctoral fellows at the LDI, offers a monthly journal club and various workshops covering a wide range of topics, from research techniques to activities that shape trainees for their future careers in the field of biomedical research. The committee also holds monthly seminar series where the postdoctoral fellows present their research. The active student representation and involvement is crucial in creating rich learning environment for trainees.

LDI Cancer Seminars

Tuesday, May 1, 2018

The mechanism and relevance of translational control of metabolism in cancer cells

Stefano Biffo, Ph.D.

Professor of Cell Biology and Comparative Anatomy, University of Milano & Program Leader INGM "Romeo ed Enrica Invernizzi"

Hosted by: Dr. Ivan Topisirovic

& Characterization of a dual kinase inhibitor

Thursday, May 3, 2018

In vivo screen identifies receptor for organ selective neutrophil and cancer cell recruitment to the lungs and liver

Donna L. Senger Ph.D.

Associate Professor, Arnie Charbonneau Cancer Institute Department of Oncology, Cumming School of Medicine, University of Calgary

Hosted by: Dr. Josie Ursic Siegel

Friday, May 11, 2018

Epigenetic characterization and therapeutic targeting of cancers harboring dysfunctional CTCF

Maika Jangal, Postdoc Fellow

Dr. Michael Witcher's Lab

Friday, May 25, 2018

Peroxisome metabolism in health and disease
Dr. Nancy Braverman
Associate Professor, Department of Pediatrics,
Faculty of Medicine McGill University & Scientist,
RIMUHC Child Health and Human Development
Program
Hosted by: Dr. Sonia del Rincon

Friday, June 15, 2018

PRMT5/PDGFR axis implications for cancer
Sara Calabretta
Stephane Richard's Lab

& Interferon-driven STAT1 activation sensitizes
breast cancers to biguanides as anti-cancer
agents
Stephanie Totten
Josie Ursin Siegel's Lab

Friday, September 21, 2018

Elimination of signaling receptors in cancers
Serge Y. Fuchs, PhD, MD
Professor of Cell Biology, Department of
Biomedical Sciences, University of Pennsylvania,
School of Veterinary Medicine
Hosted by: Dr. Ivan Topisirovic

Friday, September 28, 2018

(In collaboration w/ Biomedical Ethics Unit)
Interventional Pharmacoeconomics: A Strategy
to Reduce Prescribing Costs of Modern Cancer
Therapeutics
Mark. J. Ratain, MD
Leon O. Jacobson Professor of Medicine Director,
Center for Personalized Therapeutics Associate
Director for Clinical Sciences Comprehensive
Cancer Center, University of Chicago
Hosted by: Dr. Gerald Batist

Friday, September 28, 2018

(In collaboration w/ Biomedical Ethics Unit)
Interventional Pharmacoeconomics: A Strategy
to Reduce Prescribing Costs of Modern Cancer
Therapeutics
Mark. J. Ratain, MD
Leon O. Jacobson Professor of Medicine Director,
Center for Personalized Therapeutics Associate
Director for Clinical Sciences Comprehensive
Cancer Center, The University of Chicago
Hosted by: Dr. Gerald Batist

Friday, October 5, 2018

A mouse model of metabolic syndrome what it
means to oncology?
Dr. Mark Trifiro
Senior Investigator & Professor, Department of
Medicine, McGill University
Hosted by: Dr. Josie Ursin Siegel

Friday, October 12, 2018

Potential Mechanisms of Action of Metformin in
Early Breast Cancer
Ryan Dowling, Ph.D.
Affiliate Scientist Princess Margaret Cancer Centre
University Health Network, Toronto
Hosted by: Dr. Josie Ursin Siegel

Friday, October 19, 2018

The adaptive trait of the integrated stress
response promotes KRAS lung tumorigenesis
Nour Ghaddar, MSc Student
Dr. Antonis Koromilas' Lab

& Promoting pexophagy to overcome therapy
reistance
Michael Dahabieh, PhD Student
Dr. Wilson Miller's Lab
Hosted by: Dr. Josie Ursin Siegel

Friday, October 26, 2018

Functional proteomics as a pathway to precision
medicine
Shawn S. Li, PhD
Canada Research Chair in Molecular and
Epigenetic Basis of Cancer & Professor of
Biochemistry, Oncology and Chemistry
Scientist, Child Health Research Institute, Lawson
Research Institute, University of Western Ontario
Hosted by: Dr. Stephane Richard

Friday, November 2, 2018

State of the Arg!
Dr. Stephane Richard
Senior Investigator, Lady Davis Institute &
Professor, Departments of Medicine and
Oncology, McGill University
Hosted by: Dr. Josie Ursin Siegel

Friday, November 9, 2018

(In collaboration w/ Molecular & Regenerative
Medicine Seminar)
Seeing and modeling tumours: The role of
advanced materials in oncology
Matt J. Kinsella, Ph.D.
Associate Professor, Department of
Bioengineering, McGill University

Hosted by: Dr. Josie Ursini Siegel

Friday, November 23, 2018

Negative growth control and survival
mechanisms in ovarian cancer cell dormancy

Fred Dick, Ph.D.

Professor of Biochemistry and Oncology

Distinguished Scientist, London Health Sciences

Centre University of Western Ontario

Hosted by: Dr. Ivan Topisirovic

Friday, November 30, 2018

A distinct adaptive response can support breast
tumor growth in the presence of oxidative stress

Rachel La Selva, Ph.D. Student

Dr. Ursini Siegel's Lab

Distinguished Lecture Series

Trainees also benefit from the Distinguished Lecture Series, which has attracted world renowned scientists like James D. Watson (lecture on October 12, 2011). The lectures shown here are only those relative to the context of oncology

Tuesday, May 15, 2018

Intracellular and extracellular nitric oxide transport and its role in M1 and M2 macrophages as a novel mechanism involved in tumor cell killing or promotion

Des R. Richardson, Ph.D.

Professor of Cancer Cell Biology National Health & Medical Research Council of Australia Senior Principal Research Fellow Director, Molecular Pharmacology & Pathology Program, University of Sydney

Hosted by: Dr. Prem Ponka

Tuesday, June 5, 2018

Metabolic dysregulation in cancer and other diseases

Ralph DeBerardinis, MD, Ph.D.

Professor, Children's Research Institute, UT Southwestern Medical Center

Tuesday, October 2, 2018

The multifaceted DNA damage response

Roger A. Greenberg, M.D., Ph.D.

Professor of Cancer Biology Director of Basic Science Basser Center for BRCA Perelman School of Medicine University of Pennsylvania

Hosted by: Dr. Alexandre Orthwein

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Tuesday, October 16, 2018

Mapping Genetic Networks in Yeast 6(i)-8(4 54 325.68 Tm [325.e-7(i)-8(n Y)-6(e)r,.e-7(1f)11(e)-8(ng)-83e)-8

Hosted by: Dr. Alexandre Ole Badre18