Joint Retreat
McGill Department of Pathology and
OPTILAB-MUHC Division of Pathology
January 20, 2018
INTERCONTINENTAL MONTREAL


Where we are now: Weakness
• Fund raising to meet our future needs: Rossy, MGH foundation, Roche, EPU needs
• Transform increased research support and research capacity into research productivity
• Enhance our national leadership in postgraduate pathology education
• Sustain the still fragile graduate program

Renew Refocus and Rebuild through innovation

2018 department retreat

You cast a brick to attract jade


Where we want to be
SUCCESS
What we will do to get there
Where we are now

Where are we now?

Where we are now: strength

- **Undergraduate education:** Path 300 39 lecture hrs, FMD 45 lecture hrs, 800 SG hrs. PIAT 27 lecture hrs. Excellent student evaluation. 120K support
- **Graduate education:** 25 students, graduate courses PATH 600, 613, 614, 620, 622 (80 lecture hrs), 100K support (60+20+20), many studentships and awards
- **Resident education:** 20 residents, Regular black box teaching, passed accreditation x2, CaRMS and Royal college exam successful. New resident room, Lots of innovation. Funding from faculty and practice plan. CPD model promoted nationally.
- **Fellowship:** Graduated 4 fellows and will have 1 in 2018. Area of Focused Competence of Cytology fellowship—Full Royal College accreditation.
- **Continuing Medical Education:** Cytopathology review course, published the <<Pathology Review and Practice Guide>> and <<Transplant Pathology>> book
- **Research:** Experimental pathology unit with 9 research programs, histopathology research platform at the MUHCRI, 3 new research scientists, annual departmental research competition, annual research day, monthly scientific lectures.
- **Administration:** Fully staffed with excellent recruitment, fund raising sufficient to support the academic mission, collegial culture and attractive working environment, improved departmental visibility, reputation and external relationship.
- And….. Thanks to all of you!

Where we are now: Weakness

- Fund raising to meet our future needs: Rossy, MGH foundation, Roche, EPU needs
- Transform increased research support and research capacity into research productivity
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Table 6. Publications by pathologists

	Total No. of publications	No. of staff who published	Publications per person	Mean impact factor	Total No. of citations
2012	90	19	4.7	8.17	138
2013	142	27	5.25	3.66	447
2014	117	32	3.65	4.97	302
2015	91	31	2.94	4.76	221
2016	92	28	3.29	4.55	427

Where we are now: Opportunities

- The Optilab
- New advancements in our field: liquid biopsy, molecular testing, omics, digitization
- The New CPD resident training model
- The RI tumor banking initiatives
- Expand pathology department to include laboratory medicine initiative
- License to recruit adjunct professors

Where we are now: Threats

- More clinically focused regulations such as Bill 130
- Fee for service structure
- Local (such as the new graduate programs), national, and international competition
- The Optilab, the department expansion, if not handled well, could pose threat to the academic mission

Where we want to be?

Where we want to be?

- National leader in pathology education
- International leader in high fatality disease research

What we will do to get there?

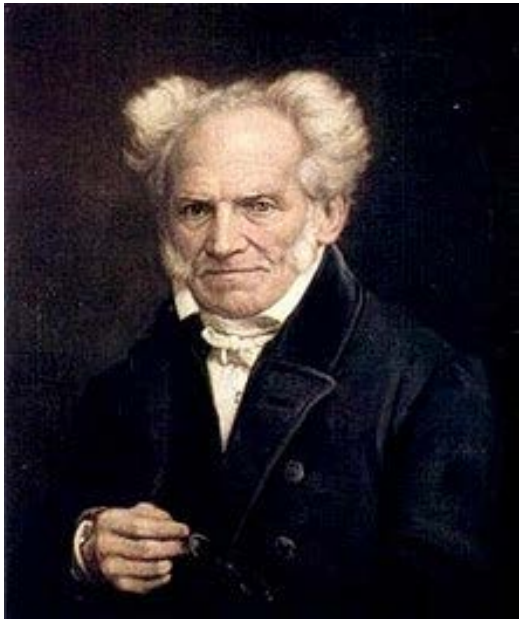
What we will do to get there: Innovation

- **New people**: Alex Griegorieff, Julia Burnier, Siham Sabri, 1 tenure track professor to be recruited
- **New structure**: Clinical research director Dr. Brimo, EPU Drs Telleria and Baglole
- **New ways of doing things:** real research day, real teaching day, leadership retreat for setting strategic directions
- **New supports**: project supports in addition to research competition, travel supports for presenters at international meetings for trainees and staff, protected time mechanism (to be discussed)
- **New initiatives:** China long distance education project, McGill Annual slide seminar, McGill pathology webinar of selected blackbox lectures, or other format
- **New accountability:** More objective evaluation, new awards, physician profiling: physician-scientist, physician-educator, physician-diagnostician, physician-administrator

Insanity: *Keep doing the same thing over and over again and expecting different results*.

The Process of Innovation

Every truth passes through three stages. First, it is ridiculed. Second, it is violently opposed. Third, it is accepted as being self evident.



Arthur Schopenhauer,

German philosopher

1788-1860

What are the top 3 NEW things we should do that can take the department to a NEW level of achievement?


Retreat 2018: teaching
Undergraduate education: challenges and innovative ideas
R.P. Michel, Dept. Pathology, McGi
University
January, 2018

Retreat 2018: teaching

Undergraduate education: challenges and innovative ideas

R.P. Michel, Dept. Pathology, McGill University

January, 2018

- Academic staff
- Residents
- Eileen Grenier
- Support staff at the faculty

Introduction

- Accreditation issue less of an issue!
  - Details at https://www.mcgill.ca/medicine/about/our-vision-mission-values/update-ugme-accreditation
- Faculty administration (https://www.mcgill.ca/ugme/contact-us)
  - Dr. Beth Cummings Associate Dean, UGME
  - Dr. Namta Gupta namta.gupta@mcgill.ca (Assistant Dean Office of Student Affairs; wellness office)
  - Dr. Gilles Brousseau, gilles.brousseau@mcgill.ca (Assistant Dean, Satellite Program Site, Outaouais
  - Dr. Colin Chalk, chair FMD steering committee (mandate coming to an end, up for renewal)
- Administrative staff *Eileen Grenier (Dept. Pathology)*
  - Kate Allan nciadmin.med@mcgill.ca (Administrator of assessments-exams)
  - Anna Lee fmd.med@mcgill.ca (FMD 1st year students)
  - Devon Malcolm, fmd2.med@mcgill.ca , tcp.med@mcgill.ca (FMD 2nd year students)

Introduction II

- Administrative staff II
  - Safiya Simon longitudinalmdcm.med@mcgill.ca) (administrator of R&E weeks, research fundamentals…)
  - Timothy Johns (e-curriculum.med@mcgill.ca) (Curriculum Editor – myCourses)
  - John-Charles Wilson, clerkcourses.med@mcgill.ca (administrator for PIAT)
  - Mona Sabouri, curriculummgmt.med@mcgill.ca (administrator for PIAT)
  - Alexandra Karabatsos, T: 514-398-5602, curriculumadmin.med@mcgill.ca (shares with Anna Lee FMD 1)

Block (A to J) leaders

- Fall year 1
  - A. Molecules to Global Health: Anne Andermann anne.andermann@gmail.com
  - B. Breathing: Sal Qureshi salman.qureshi@mcgill.ca
  - C. Circulation: Matt Walker mathieu.walker@gmail.com
- Winter/spring year 1
  - D. Renal, GU: Tiina Podymow tiina.podymow@muhc.mcgill.ca
  - E. Digestion & Metabolism: Chris Zalai christian.zalai@mcgill.ca
  - F. Defense: Christine McCusker christine.mccusker@mcgill.ca
  - [G. Infection: Chris Karatzios] chris.karatzios@muhc.mcgill.ca
  - H. Movement: Claire Leblanc claire.leblanc@mcgill.ca
- Fall year 2
  - I. Reproduction & Sexuality: Helene Weibel helene.weibel@muhc.mcgill.ca
  - J. Human Behaviour: Fraser Moore fraser.moore@mcgill.ca

What have we been/are doing?

- Attending FMD meetings to monitor progress
- Member of the Critical Thinking and Knowledge Translation (SCTKT), UGME Subcommittee
- Communicating with block leaders re: lectures + small groups
- Ensuring lectures and small groups conform to teaching/learning standards (more below…)
- Ensuring communication between (lecturers, small group leaders) and (faculty of medicine staff, students)
  - Scheduling, timetable changes
  - Small group and lecture rooms
  - Getting evaluation of students in on time!!
  - Ensuring payment of teaching staff (after student evaluations…)
- And much more…

The good

- The Pathology component overall is well received and rated
- Small group leaders in general, Residents in particular do very well
- Despite “new curriculum”, we have managed to keep an important input into the medical/dental FMD component of the new curriculum, and basic science in general
- Sessions integrated with treating clinicians working well (cardiovascular x 2, diabetes)

FMD student curriculum review: feedback, suggestions (Medical student’s society, McGill)

- Version of a final document but not yet digested by faculty and of somewhat strong language!
- Administration by Faculty
  - Quintile equity: seems in FMD, students in quintile A, B consistently get best tutors and rooms; issue of sharing big rooms (e.g. 210). To be solved by Faculty!
- Lectures
  - Clinical disease and pathology lectures could be delivered as a cohesive whole (applicable to blocks B, C, D, E, ? H, I, J)

FMD student curriculum review: Pathology

- Students need to be grasping fundamental pathophysiological processes as the basis of the clinical phenomenon they observe and this is not being achieved
  - *Lecture approach: Block A lectures + neoplasia series are well organized and delivered to lay foundation for pathology in FMD*
  - *In rest FMD, lectures in most blocks not well received by students, too much content, focus not clear*
    Content fails to complement the clinical lectures to increase relevance
  - Suggestion A: Density must be cut down; consider approach of must know, should know and nice to know.
  - Suggestion B: It is important to teach pathology to first-year medical students. Currently, most pathologists teach as to pathologists. Certain lecturers and SG leaders emerge as excellent; they should be identified and perhaps lead faculty development for the department

FMD student curriculum review: Pathology II

- Pathology should be taught with clinical disease lectures
  - Suggestion A: have clinician and pathologist teach back to back effective
  - Suggestion B: have co-teaching where instructors meaningfully integrate content
- Pathology slides: unclear indication of findings on images, without pointing or too fast
  - Suggestion A*: add arrows, labels to slides; focus on key findings
  - Suggestion B*: assist students in giving basic understanding of histology slide interpretation to build visual representation of disease mechanisms
  - Suggestion C*: integrate pathology image questions in block exams
- Small groups: too many questions; need to emphasize pathophysiological processes
  - More integration of Pathology into clinical small groups (i.e., superintegrated as block C)
  - Reduce complexity of small groups in block A, esp. the first one on cell injury

FMD student curriculum review: Pathology III

- Case presentations very good but suggestions for improvements
  - *Suggestion A: Introduce the case presentation in Block F near midterm break so students can begin earlier and work during the summer if needed

    Announce with UGME eDigest with guidelines posted to MyCourses (cf. faculty administration)

    Drop-in question period during lunch (can easily be done)
  - Suggestion B: The current time of the presentation on Wed after the Block J (Mon) and anatomy exams (Tues) is not bad as it gives students one free day to study for the R&E exam (Fri)

    Quality of presentations improved by moving the presentation date to during the RAC week or week 6 of Block J (will organize)

Lingering issues

- Little feedback on student ratings of teaching by lecturers and small group leaders: only to individuals
- Sometimes intradepartmental communication difficult between Eileen/myself and the academic staff
  - Filling of evaluation forms
  - Getting material in on time for posting
  - Getting exam questions formatted according to standards
- Some improvements still needed for lectures and small groups
  - Ensuring esp. lectures updated on a regular basis
  - Variability of small group leaders
  - Sometimes students feel “picked on”
  - Assumptions made of what students should know
  - Students told “this is not my area of expertise…”
  - Some leaders dismissive of student questions

Solutions: lectures I

- Lectures should include
  - Title page with your name, date, then clear objectives
  - Maximum 50-55 slides; avoid too much detail)
  - Ensure enough text so understood without lecturer
  - Pathology images: arrows for specific points
  - Include a SUMMARY SLIDE at end
- Up-to-date lecture, no contradictions textbook, etc
- Prepare one month before date lecture
  - Lecturer → Eileen/RPM → Eileen/faculty/block leader → posting by Tim at E-curriculum
- Do not change your lecture after posting so students can follow the lecture
  - If you need to make changes, must re-post after the lecture and tell students what changing during the lecture-suggest avoid this altogether

Solutions: small groups

- Be positive, encourage students to prepare, participate, ask question, look up
- If you do not know answer to question, say it and
  - Ask students to look up at the time, or
  - Come back with the answer next time, or
  - Check it out and feedback to students
- Emphasize observation and description (e.g., of pathology images), differential diagnosis, importance of history, physical exam before CT scans and imaging
- Be original, ask related questions not specifically part of the small group, add your own experience!
- Case presentations: please get together at first small group of 2nd year in September (or even at end of 1st year) and assign groups of students and leaders so lots of time to prepare

Suggestion for approach to small groups

- For at least some of the entities we cover, I apply the features of the clinical case to the general approach to a disease, e.g. for Coronary Artery Disease

Etiology →	Pathogenesis →	Pathology →	Pathophysiology
Genetics, Smoking, HTN…	Inflammation, EC injury	Atherosclerotic plaque…	Stenosis of artery, Reduced flow, infarct…

Clinical → labs, image	Diagnosis → DDx	Therapy →	Prognosis →	Complications
Chest pain, ↑ troponins	CAD, MI…	Drugs, PTCA, CABG	Age, extent of MI…	CHF, pulm. edema, rupture…

What is New?

- PIAT ("Putting It All Together") selective: "Pathology for medical, radiation and surgical oncologists", version 2.0
  - For 4th year students
  - Feb 9-Mar 5, 2018, 7 sessions of 2.5 h + Intro and Wrap-up, Pathologist ± treating clinician
  - 20 students total (max)
- Lung, Dr. Camilleri-Broet
- Breast, Dr. Florea
- Urological malignancy, Drs. Brimo + Kassouf
- CNS, Drs. Karamchandani, Owen
- Hematological, Drs. Michel, Davison
- Pediatric, Drs. Bernard, Blumenkrantz, Sabapathy
- Gynecologic malignancies, Drs. Fu, Ton-Nu

Format: student-led with case provided on PowerPoint, key articles and discussion with other students; wrap-up will also be a student-led summary of the selective

What is New II?

- Pathology consultations with Dept. Anatomy & Cell Biology
  - 2016, Drs. M. Redpath, R.P. Michel went x 2 to Gross Anatomy lab. to consult on potential pathological findings in the abdomen (block E)
  - 2017, Drs. D. Thai, P. Zolotarov, R.P. Michel went x 2 in Block E, with 2 presentations in block F on findings in abdomen
  - 2017, Drs. S.J. Pilon, L. Richer, B. Case, R.P. Michel went to Block C anatomy lab. x 2, and took sections from lung CAs and other, presented in Block D of 2018
  - 2018, going to go during block D anatomy lab. x 2 again with Drs. S.J. Pilon, L. Richer, and present probably in Block F
  - 2018, during PIAT, "Anatomy for Surgeons" will again go anatomy lab. and will be a formal presentation at the end of that selective with clinicians, radiologists, etc.

What is New III?

- New lecture (RPM), in block A, just before the Neoplasia lectures: Pathology: from Cells and Tissues to Patient Dx and Rx
  - Explain how "(Anatomic) Pathology" fits into "Laboratory Medicine" and differences
  - Components of Anatomic Pathology and how they contribute to patient diagnosis and treatment
  - Surgical procedures used to make a "tissue diagnosis"
  - Technical steps from removal of patient's tissue to slide examined by pathologist, including time for the process
  - Description of general chemical reactions and specificities of histological/histochemical stains (HE, PAS, MT, Prussian blue) and how assist in diagnosis
  - Principles of IHC, IF, EM
  - Data on Autopsy vs. Surgical vs. Cytopathology
- Replace 2 lectures + CNS SGS in Block J by
  - Lecture Dr. J Karamchandani: increased ICP, hydrocephalus, herniation
  - Lecture Dr. M-C. Guiot: CNS tumors
  - Lecture Dr. M-C. Guiot: dementia

What is New IV?

- Revival of a "Pathology Undergraduate teaching committee"
  - Members: RP Michel (chair), RS Fraser (MUHC), P-O Fiset (MUHC), M Chergui (MUHC), M Redpath (JGH), J Chepovetsky (SMH)
  - Terms of reference (to be re-written, to be reviewed, approved…)
    - Review the entire FMD curriculum with a view to continuing improvement
    - Oversee lectures and small groups for latest updates, quality, etc
    - Collaborate with other components of FMD and interact with block leaders
    - Review carefully exam questions and participate in "tagging" of questions (i.e., aligning them with curricular objectives)

Questions and topics for discussion

- How do we address some of the challenges posed by the student feedback review?
- How do we find more time for research and quality teaching in the current vy busy diagnostic-driven climate?

- Questions
- Discussion


PATHOLOGY
GRADUATE
STUDIES
2018

GRADUATE PROGRAM

DESIGN

Each student has a personalized advisory committee:

Research director, and often a co-director

Two research advisors, one of whom is usually from another biomedical science department.

They meet with the student individually throughout the year, and jointly attend a mandatory research proposal and seminar the student must give each year.

UNDERGRADUATE PROGRAM

FACULTY OF SCIENCE

PATH 300: HUMAN DISEASE

PATH 504: DISEASE IN DEPTH

GRADUATE COURSES IN PATHOLOGY

PATH 504 DISEASE IN DEPTH (3) Mechanisms controlling the cellular life cycle in normal versus disease states such as cancer, infectious disease, cardiovascular, neurodegenerative and immune disorders. Dr. Telleria

PATH 607 Biochemical Pathology (3) Immunopathogenesis of Human Disease: The critical role of immune-regulatory mechanisms (cellular/molecular) in maintaining a balance between protection and pathology; pathogenesis of major infectious diseases caused by bacteria (e.g. Tuberculosis), viruses (e.g. AIDS), parasites (e.g. Malaria), as well as non-infectious diseases involving immunopathogenesis (e.g. Asthma).Dr. Divangahi

PATH 613 Research Topics in Pathology. (3) Analysis of current research within a chosen theme that varies each year. Dr. Zorychta

PATH 614 Research Topics in Pathology. (3) Dr. Zorychta

PATH 620 Research Seminar 1. (3) Evaluation of research literature in relation to a proposed thesis project, development of hypotheses to be tested and the rationale for intended methodology. Dr. Zorychta

PATH 622 Research Seminar 2. (3) Presentation of thesis research to departmental graduate students and faculty.

PATH 652 Molecular Biology of Disease (3) Environmental Toxicants: The role of various environmental toxicants in causing human diseases, approached from different scientific viewpoints, with an emphasis on cellular / molecular mechanisms. Dr. Baglole

PATH 653 Reading and Conference: (3) Cytogenetics. (Offered in conjunction with the Department of Human Genetics.) Analysis of human chromosomes, and the genetic alterations involved in human diseases. Basic facts and mysteries about chromosomes will be explained and discussed in the light of clinical examples. Dr. Lavoie

PATH 701 Comprehensive Exam for PhD Candidates

MAIN STRENGTHS :

balanced curriculum, well designed graduate courses provide essential breadth

excellent research supervisors* ** provide exceptional facilities and training in experimental research on disease

interdisciplinary collaboration with research advisors from other departments

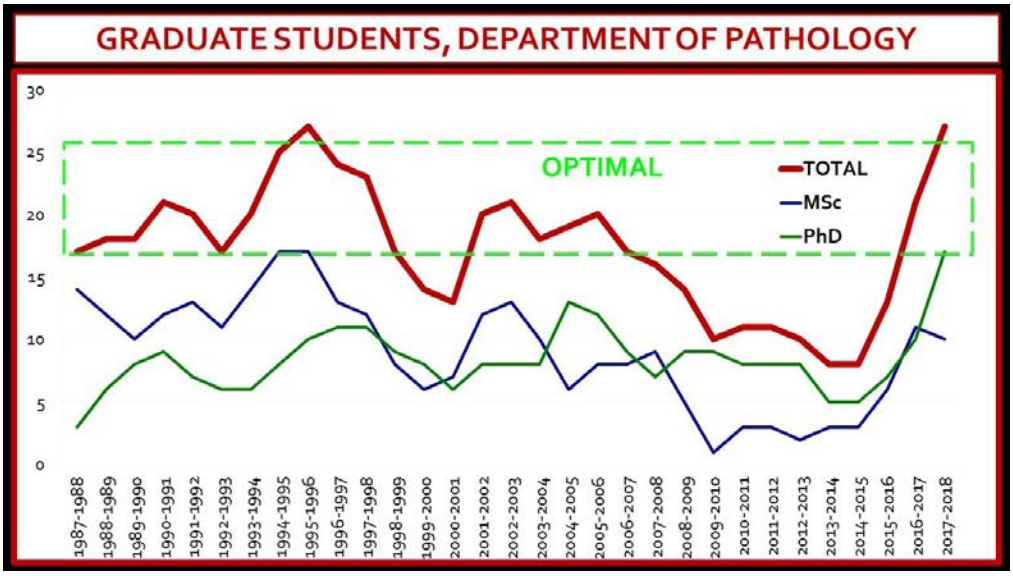
follow the 12 guiding principles of the Association of Graduate Studies

specialized resources made available through other units at McGill

Career Planning Service: advice and training for future careers
Teaching and Learning Services: professional workshops
McGill Writing Center: special courses for graduate students

students consistently successful – no dropouts or failures; good outcomes after

excellent administration – Graduate Program Coordinator



MAIN CHALLENGE, 2017, 2018:

FUNDING

STRATEGY:

ATTRACT OUTSTANDING CANDIDATES
BE HIGHLY SELECTIVE IN ADMISSIONS
INCREASE INTERNATIONAL MEMBERS
FOCUS ON OBTAINING SCHOLARSHIPS

McGill UNIVERSITY

OFFICE OF INTERNATIONAL STUDENT SERVICES

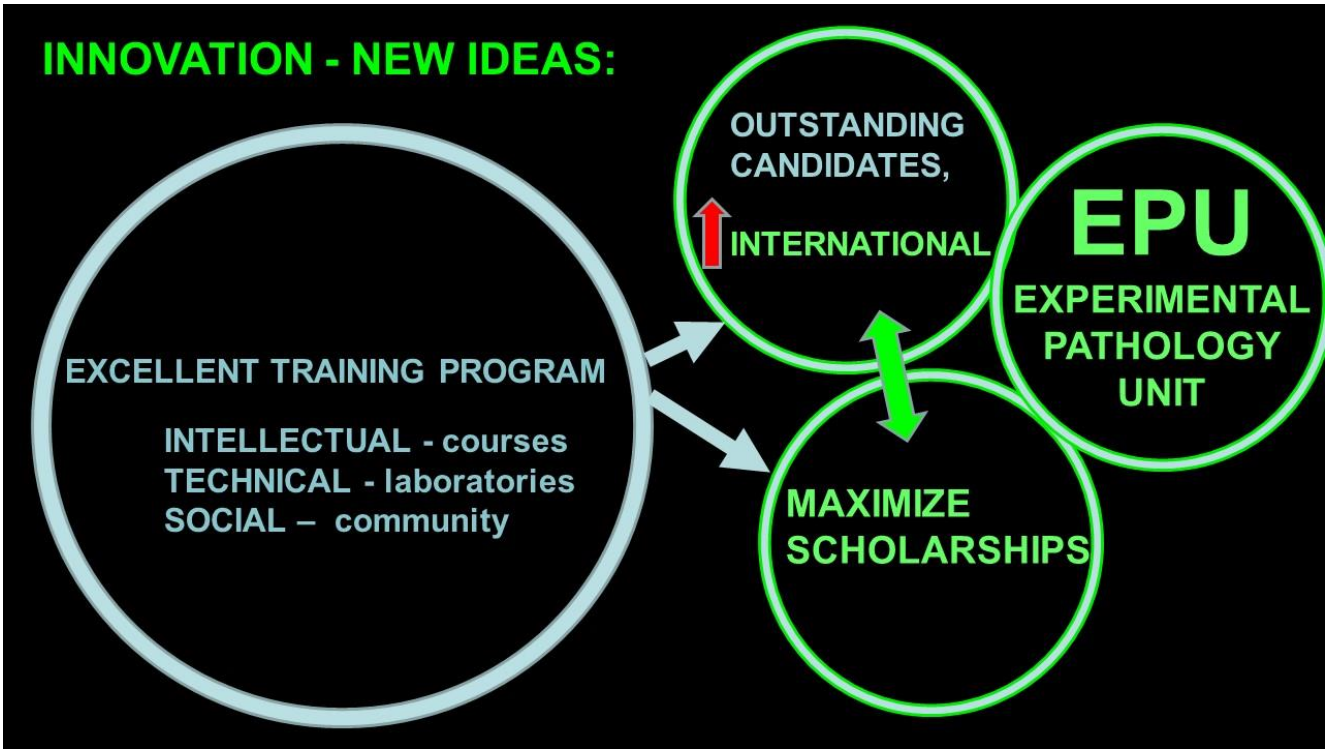
INTERNATIONAL STUDENTS

McGill is Canada's most international university, and also one of North America's

McGill's connections span the globe,
with graduate students from 150+ countries

38% of all graduate students are non-Canadian citizens
49% of doctoral students are non-Canadian citizens

ISS
INTERNATIONAL STUDENT SERVICES




McGill
Report from Anatomic Pathology
Residency Training Program
Jason Karamchandani, MD
January 20th, 2018

Report from Residency Training Program

Jason Karamchandani, MD

January 14th, 2017

https://pollev.com/jasonkaramch640

Attempt Polling Site Log-In

- Please direct your phone and / or laptop / tablet, web-enabled doohickey to

https://pollev.com/jasonkaramch640

Today's Goals

1. Briefly review accomplishments, changes, and improvements of the last year (7 mins)
2. Discuss upcoming changes at the national level of how pathology residents are trained (3 mins)
3. Resident presentation (10 mins)
4. Open discussion based on real-time interactive polling

Accreditation - Congratulations!

- We await final report from PGME but we were advised at the end of our site visit that they would recommend full accreditation
- Fewer than half of the programs reviewed in December received this designation.
- This positive results reflects engagement of the entire faculty and the residents
- Next accreditation is in 2019
  - External, will be assessed directly by the Royal College
- Special thanks to Eileen for dozens of hours of work
  - “This was one of most organized PSQ submissions we have seen…”

Teaching Scores

- Congratulations!
- All the feedback was positive
- Everyone scored higher than 4
- Rare suggestions were worded in constructive way!
- We are probably one of the highest ranked teaching faculty at McGill

New Resident Rooms at MUHC Glen Site

- Residents have separated desks - more suited to handling cases and studying
- Sincere thanks to many people who worked extremely hard to make this happen:
  - Marie Vachon & Laurie Ball
  - Kevin Watters and & Van-Hung Nguyen
  - Amal Al-Odaini & Duc-Vinh Thai
  - MUHC personnel

- These improvements will help us continue to recruit excellent residents (applicants will be here on Monday and next Friday)

Request for Funding

- MUHC received medical equipment teaching funding from the 2016 competition:

Dual Observation Unit	$4,732.00 (tax incl.)
5 x teaching microscopes	$43,216.00 (tax incl.)
2 x high infinity HD cameras	$5,824.00 (tax incl.)
1 x high definition monitor	$6,588 (tax incl.)
Total funding amount:	$60,360 (tax included)

- Start thinking about next year's requests now!

Recent Changes to the Program

- Introduced annual resident retreat
- Autopsy coverage
- Frozen section coverage (call, JFS, longitudinal exposure)
- Mandatory QA/QC projects
  - Notable resident successes:
    - Decal project
    - MOC-31 validated for alcohol-fixed tissues
    - p16 for use in FNA tissues
  - Many more ongoing!
- Pilot project: Autopsy – Transition to Practice

Resident Report 2015-2016: Summary of Projects and Issues

1. Table of Contents

Challenges

- As workload goes up and the number staff stays constant we have less time to devote to teaching
- Sub-specialty practice is the reality of academic pathology in almost all medium-large centers
- Capacity issues (difficulty accommodating observers, etc.)
- Evaluations are demanding
  - In 1st half of 2017 we will be changing our evaluations (shorter!)
  - Evaluation is going to be a bigger part of PGME in coming years

I feel a change comin’ on

- The way residents are trained across Canada is changing
- Expected start for pathology and Competency By Design is 2018
- Next specialty committee meeting is Feb
- Last meeting is in June
- One year to plan local implementation
- The details are still currently unknown

Cohort 3

Neurosurgery, Cardiac Surgery, Pediatrics, Anatomical Pathology, General Pathology, Radiation Oncology, Emergency Medicine, Critical Care Medicine, General Internal Medicine and Nephrology.

2016

Specialty Committee begins working with Royal College to prepare discipline for CBD

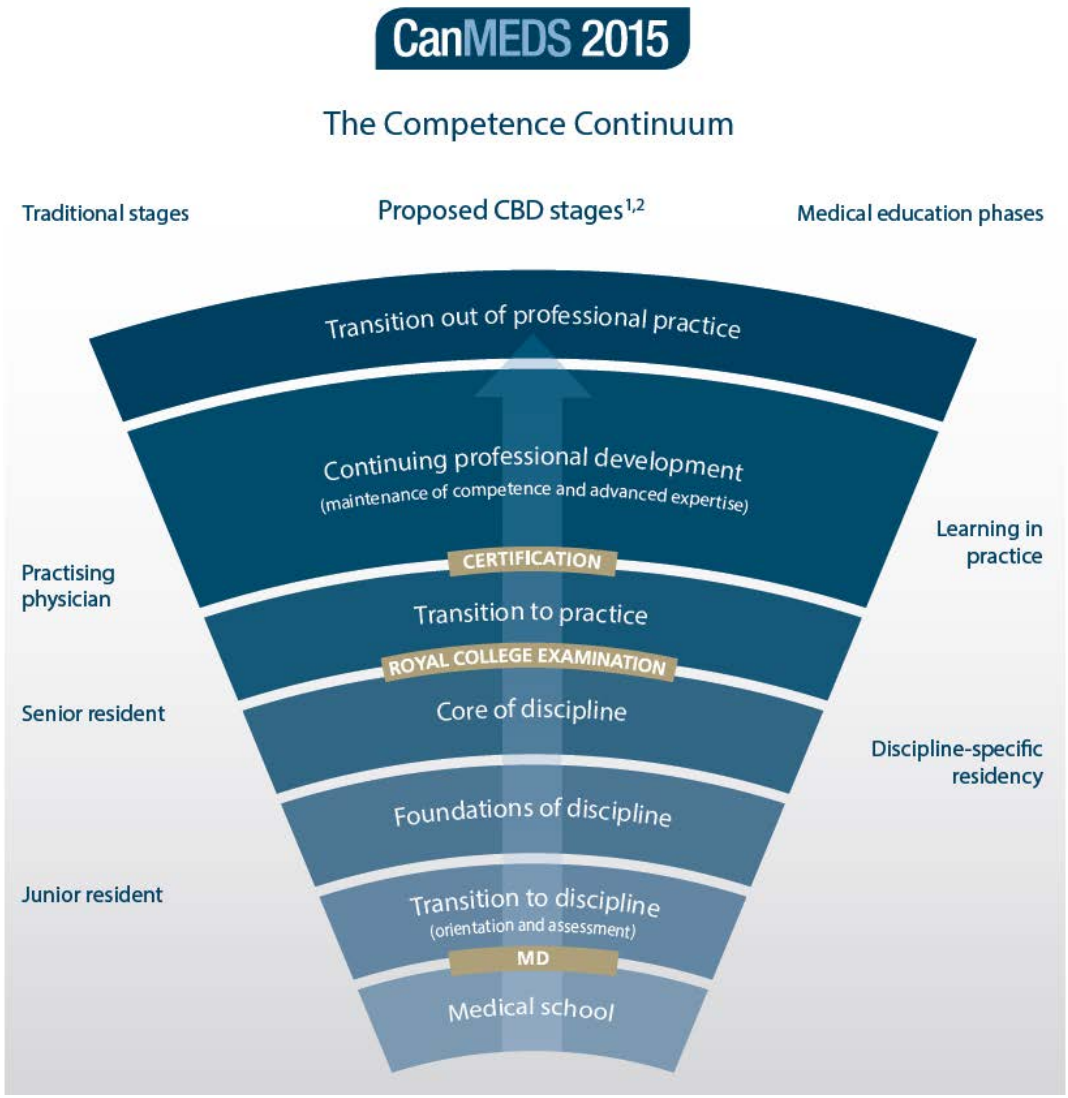
2018* and on

Residents will likely enter into a CBD-based program

*Residents entering a Cohort 3 discipline from this year forward will likely experience CBD-based learning and assessment. As each discipline adopts CBD, the overall model for implementation will be refined and enhanced to better reflect stakeholder needs.

CBD

- LMCC part 2 likely to be phased out
- Not clear how current ‘intern’ year fits
- We are in best position in the country for the ‘Transition to Discipline’
- We have been trying to prospectively anticipate these changes when building new academic content



Resident Retreat 2016


McGill Pathology
Resident Retreat
2017-2018
Outcomes
Drs Lara Richer and Sarah-Jeanne Pilon,
PGY-3. Co-chief residents 2017-2018

Discussion #1

Innovative ideas to enhance our national leadership in Pathology education

- We have a subspecialized practice at McGill. Our resident should be trained for general pathology practice as well.
- We should teach the teachers to improve their teaching skills.
- We need to organize joint social gatherings between graduate students and residents. This can promote collaboration and career development
- Increase national presence e.g. CAP-ACP
- Make a database of frozen section artifacts to teach residents.
- Learn, identify and deal with sub-optimal setting.
- Improve telepathology setting for inter-operative consults between MGH and the Glen as well as remote sites.
- Make department aware of personal initiation and innovation on the part of the staff.
- Build a database of "must know, must see and must do". This could transform to a book project or a national slide review sessions like interactive microscopy
- Update slide collection.
- Should rotations be longer than one month, perhaps two months long.
- In general, there should be more hands on approach within the residency program.
- Digital slide server at the Neuro will be live in one month.
- More responsibility should be given to the senior resident such as being in charge of a case and presenting the case to the tumor board.
- There should be an exchange between ophthalmology and McGill RTC group- session of rapid ophthalmology slides and macroscopic opthalmopathology demonstration.
- Consider having a departmental education day

Identified priorities

1. Joint social events between residents and graduate students
2. The "must know, must see and must do" project with intention of producing a book
3. National slide review session or other format of surgpath conference


McGill
EXPERIMENTAL PATHOLOGY UNIT
Faculty of Medicine
Department of Pathology
UNITÉ DE PATHOLOGIE EXPÉRIMENTALE
Faculté de médecine
Département de pathologie

EXPERIMENTAL PATHOLOGY UNIT
Faculty of Medicine
Department of Pathology

UNITÉ DE PATHOLOGIE EXPÉRIMENTALE
Faculté de médecine
Département de pathologie

Steering Committee

- Dr. Carlos Telleria; *Director*
- Dr. Carolyn Baglole; *Associate Director*
- Dr. Miguel Burnier; *Member*
- Dr. Edith Zorychta; *Member*
- Dr. Leon Van Kempen; *Member*

Mission Statement

- Establish a bidirectional approach to biomedical discovery:
  - translate basic sciences into clinical practice
  - utilize clinical observations to develop novel hypotheses to be tested in the research laboratory

- The aim is to better understand the fundamentals of disease for improving human health.

- The EPU will build bridges between the Faculty of Medicine and health care services.

Vision

- The Unit will:
  - Be tissue-driven
  - Have a strong technology component
  - Train the next generation research scientists
  - Develop a state-of-the-art biobanking facility
  - Support the research community at McGill and beyond
  - Conduct <u>translational research</u> to understand the molecular mechanisms of the disease to:
    - Find new diagnostic biomarkers,
    - Find new therapeutic targets
    - Find new preventive measures

To achieve our vision, we aim to:

- Strengthen collaborations between faculty members and associate members

- Catalyze the formation of multidisciplinary working groups from academic/basic and clinical units.

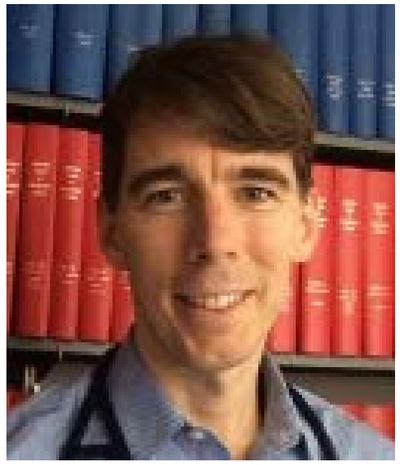
- Promote the integration of people, research themes, technology and facilities

- Bridge basic and clinical experimental pathology
  - Interconnect basic science research and clinical practice

Translational Research in Action

Translational Research in COPD: Airway Branch Patterns and COPD Susceptibility

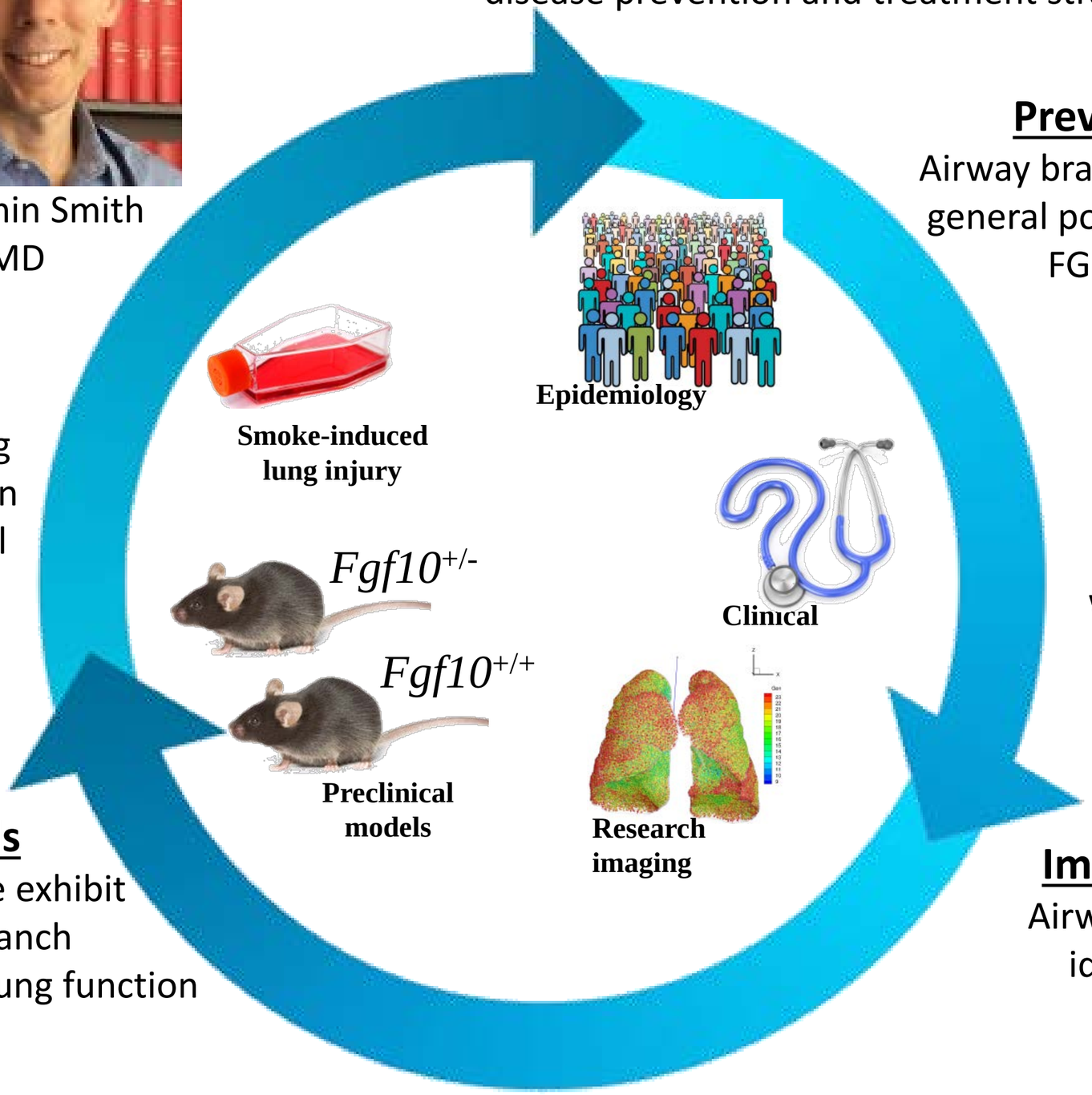
Carolyn J. Baglole
PhD



Benjamin Smith
MD

Applying Translational Methods to Understand and Target Novel Mechanisms of Respiratory Diseases

♦ A clinically relevant gene-structure-environment interaction leading to novel disease prevention and treatment strategies



Disease Susceptibility

Testing of FGF10 gene - lung structure - smoke interaction with smoking mouse model

Animal Models

FGF10-insufficient mice exhibit abnormal airway branch morphology and impaired lung function

Prevalence & Genetics

Airway branch pattern variation in the general population is associated with FGF10 polymorphisms

Clinical Significance

Airway branch pattern differences are associated with COPD and respiratory symptoms

Image-based Biomarker

Airway branch variants can be identified by CT scanning

Leading by example: The EPU mission of translational research

Available online January 16th, 2018

PNAS PLUS

Human airway branch variation and chronic obstructive pulmonary disease

Benjamin M. Smith[a,b,1], Hussein Traboulsi[b], John H. M. Austin[c], Ani Manichaikul[d], Eric A. Hoffman[e,f,g], Eugene R. Bleecker[h], Wellington V. Cardoso[a], Christopher Cooper[i], David J. Couper[j], Stephen M. Dashnaw[c], Jia Guo[k], MeiLan K. Han[l], Nadia N. Hansel[m], Emlyn W. Hughes[n], David R. Jacobs Jr.[o], Richard E. Kanner[p], Joel D. Kaufman[q], Eric Kleerup[i], Ching-Long Lin[r], Kiang Liu[s], Christian M. Lo Cascio[a], Fernando J. Martinez[t], Jennifer N. Nguyen[d], Martin R. Prince[c], Stephen Rennard[u], Stephen S. Rich[d], Leora Simon[b], Yanping Sun[a], Karol E. Watson[i], Prescott G. Woodruff[v], Carolyn J. Baglole[b], and R. Graham Barr[a,w], for the MESA Lung and SPIROMICS investigators

[a]Department of Medicine, College of Physicians and Surgeons, Columbia University, New York, NY 10032; [b]Translational Research in Respiratory Diseases Program, Department of Medicine, McGill University Health Centre Research Institute, Montreal, QC H4A 3J1, Canada; [c]Department of Radiology, College of Physicians and Surgeons, Columbia University, New York, NY 10032; [d]Center for Public Health Genomics, University of Virginia, Charlottesville, VA 22903; [e]Department of Radiology, University of Iowa, Iowa City, IA 52242; [f]Department of Medicine, University of Iowa, Iowa City, IA 52242; [g]Department of Biomedical Engineering, University of Iowa, Iowa City, IA 52242; [h]Department of Medicine, Wake Forest University, Winston-Salem, NC 27101; [i]Department of Medicine, University of California, Los Angeles, CA 90095; [j]Department of Biostatistics, University of North Carolina at Chapel HIll, Chapel Hill, NC 27599; [k]Department of Biomedical Engineering, Columbia University, New York, NY 10027; [l]Department of Medicine, University of Michigan, Ann Arbor, MI 48109; [m]Department of Medicine, Johns Hopkins University, Baltimore, MD 21205; [n]Department of Physics, Columbia University, New York, NY 10027; [o]Division of Epidemiology and Community Public Health, School of Public Health, University of Minnesota, Minneapolis, MN 55454; [p]Department of Medicine, University of Utah, Salt Lake City, UT 84132; [q]Department of Environmental and Occupational Health Sciences, University of Washington, Seattle, WA 98195; [r]Department of Mechanical and Industrial Engineering, College of Engineering, University of Iowa, Iowa City, IA 52242; [s]Department of Medicine, Northwestern University, Chicago, IL 60611; [t]Department of Medicine, Weill Cornell Medical College, New York, NY 10065; [u]Department of Medicine, University of Nebraska Medical Center, Omaha, NE 68198; [v]Department of Medicine, University of California, San Francisco, CA 94110; and [w]Department of Epidemiology, Mailman School of Public Health, Columbia University, New York, NY 10032

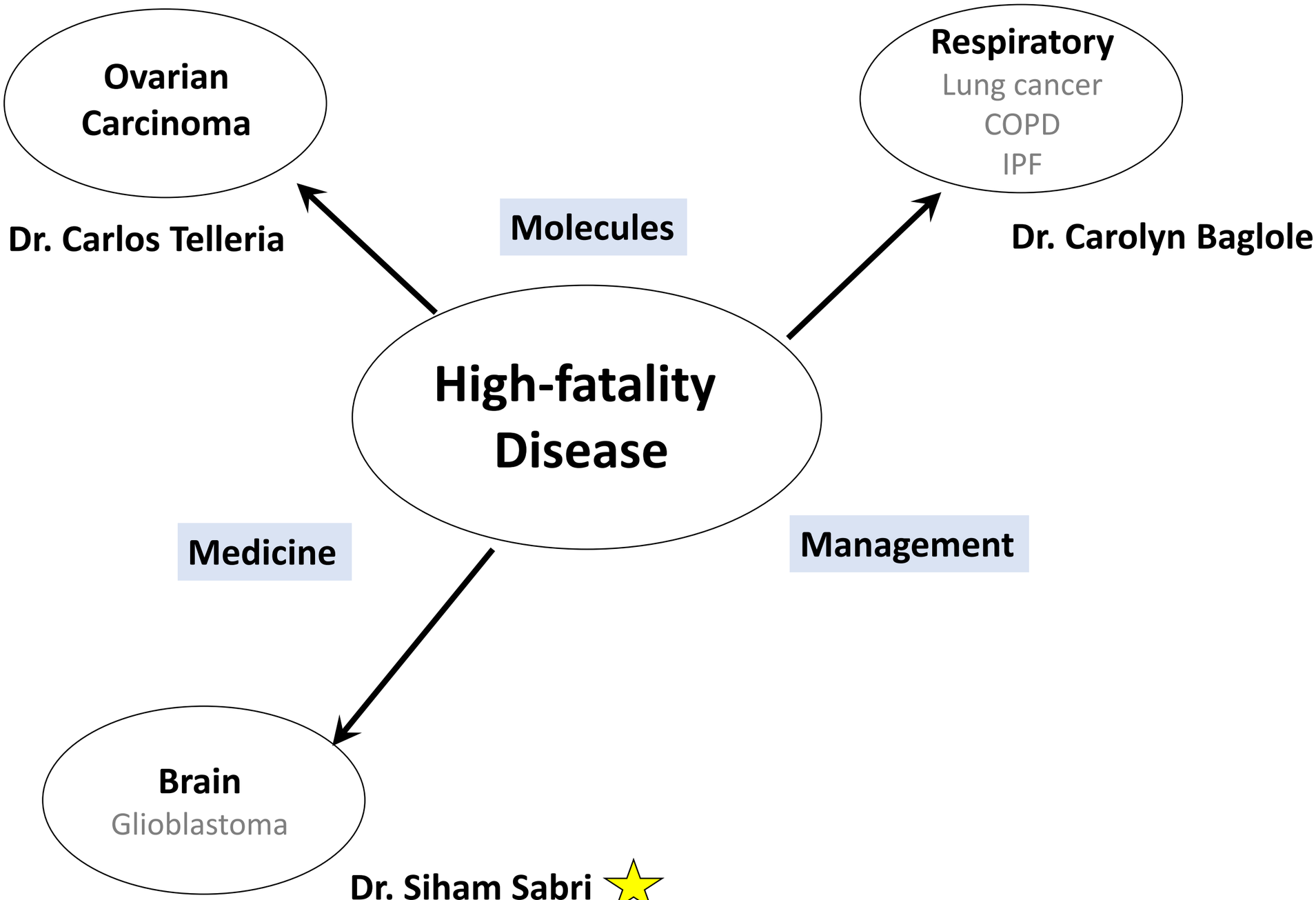
Edited by Brigid L. M. Hogan, Duke University Medical Center, Durham, NC, and approved December 15, 2017 (received for review September 3, 2017)

Vision

- The Unit will:
  - Be tissue driven
  - Have a strong technology component
  - Train the next generation research scientists
  - Develop a state-of-the-art biobanking facility
  - Support the research community at McGill and beyond
  - Conduct translational research to understand the molecular mechanisms of the disease to:
    - Find new diagnostic biomarkers,
    - Find new therapeutic targets
    - Find new preventive measures
  - **Center on high fatality diseases**

Vision of the Unit- and update

- Tissue-centric, Technology-driven Translational Research in the Department of Pathology



Therefore, our Research Niches are:

- **Neuropathology**
- **Pulmonary pathology**
- **Gynecologic pathology**
- Molecular pathology
- Genitourinary pathology
- Gastrointestinal pathology
- Ocular pathology
- Dermatological pathology

- <u>New niches of research to be identified or developed</u>

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Technology

- Research technologies identified:
  - Histopathology platform at the MUHC
  - Molecular pathology platform at the JGH
  - Imaging platform at the Duff Medical Sciences Building- McGill
  - Neuropathology platform at the MNI
  - Others (to be surveyed)

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Short-term objectives- update

- Promote collaboration across the sites
- Work closely with the graduate and residency programs to promote the integration and propel biomedical research forward
- Promote experimental research including graduate students and residents, basic scientists and clinician scientists
  - Formation of scientific working group to identify research directions/questions for joint grant applications ★

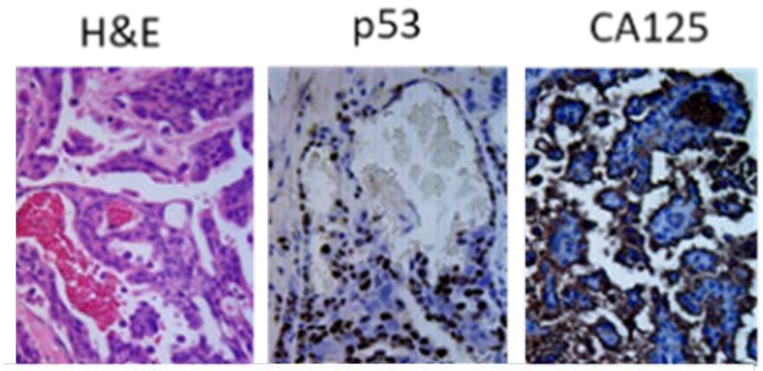
- Develop a web site linked to the Department of Pathology ★

Web site is up… and under revision

McGill

EXPERIMENTAL PATHOLOGY UNIT
Faculty of Medicine
Department of Pathology

UNITÉ DE PATHOLOGIE EXPÉRIMENTALE
Faculté de médecine
Département de pathologie



Peritoneal Ovarian Cancer Recreated in a Mouse Model of Disease

Mission Statement

Advisory Committe

Ongoing Research Projects

Resources

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Fundraising

- Fundraising for the translational research enterprise:
  - Promote formation of human resources
  - Graduate Students and Residents
  - Undergraduate research program
  - Faculty recruitment aimed at bridging the basic/clinical research.

Teamwork

Coming together is a beginning.

Keeping together is progress.

Working together is success.

- Henry Ford

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Clinical Research
Current Challenges and Future Strategy
2018 McGill Annual Pathology Retreat
Fadi Brimo, MD, FRCP (C)

Clinical Research
Current Challenges and Future Strategy

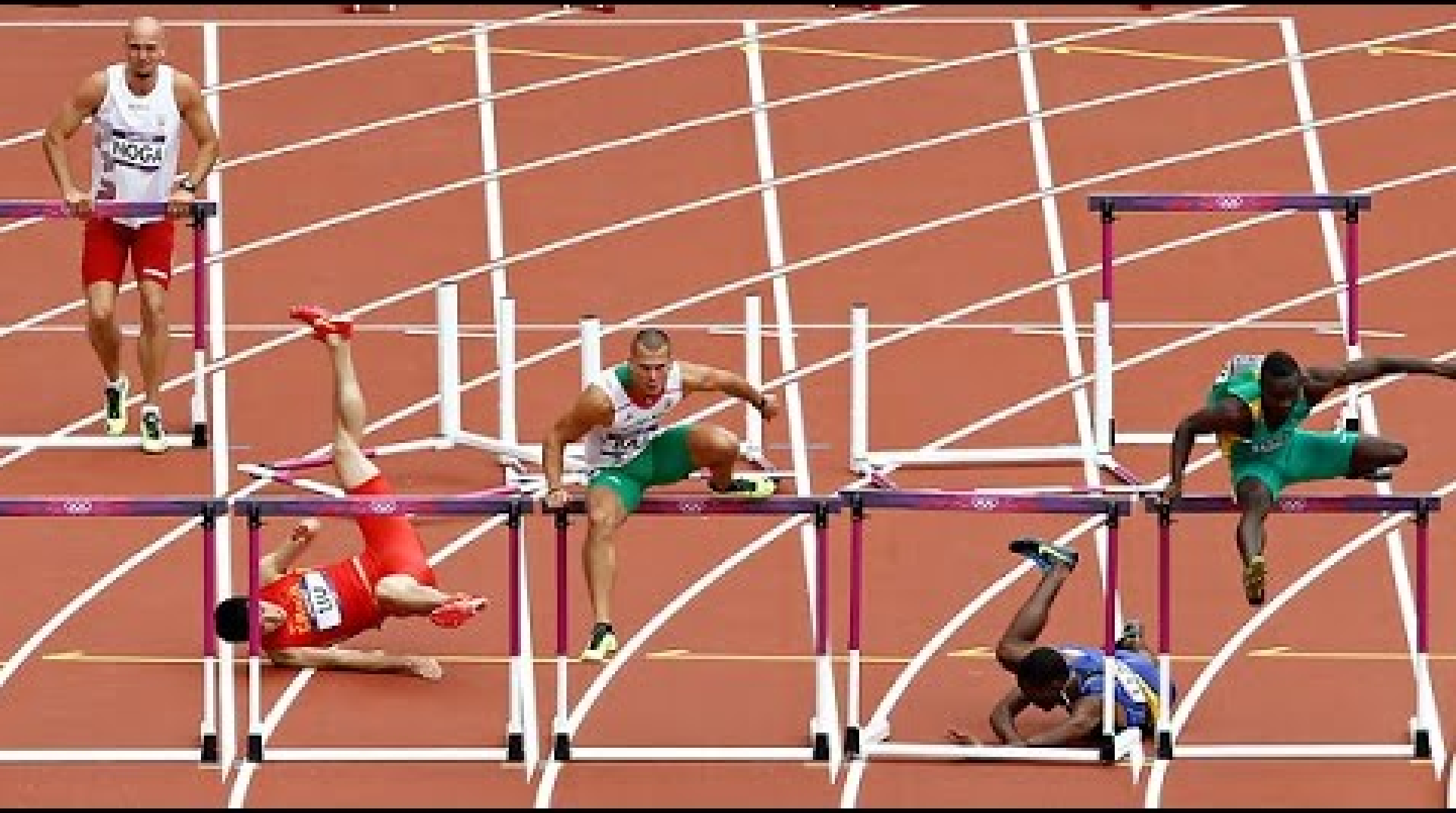
2018 McGill Annual Pathology Retreat

Fadi Brimo, MD, FRCP (C)

Research laboratories are located in the Duff Medical Building, the RI-MUHC and McGill affiliated hospitals. The University is situated in downtown Montreal, one of the most cosmopolitan cities in North America, and the large campus is located at the edge of splendid Mount Royal, an extensive park containing nature trails and scenic lookouts.

General observations

- Significant improvement in the situation of basic research in the last few years, BUT
  - Disconnect between basic and clinical research
  - Suboptimal communication/collaboration
- Some initiatives to improve clinical research
  - Departmental research competition
    - Only rare projects finalized after two years
    - Reflects the challenges pathologists face when conducting research projects




HENRI EISENBERG
2010

What to streamline and how

- Pathologist's interest (idea for a project)
- Resident
- Collaborator
- Access to various tests/technologies
- Technical
- IRB submission
- Statistician
- Funds
- Time

Residents

- Residents research coordinator
  - Helps coordinate research activities
  - Monitor residents' participation in research
  - List and summary of available projects updated regularly (clinical and experimental)
    - Resident/investigator matched according to interest and expertise
    - Helps creating collaborations between pathologists and basic researchers
- Attending and presenting in National/International meetings
  - Funding changed to maximize residents participation in International meetings
    - Attending: 1000$, Presenting in Provincial/National meeting: 1500$, Poster in USCAP: additional 500$ (chair award), Platform in USCAP: additional 1000$ (chair award)
- Recruiting residents with academic interest
- Increasing the number of departmental fellowships

Collaborators

- Active collaboration with clinical departments
- Collaboration between basic scientists and pathologists within the department
  - Central role of residents
- Intradepartmental collaborations (Glen, JGH, SMH, LGH)

Access to various tests/technologies

- List of available tests and go-to persons compiled and made available as electronic document (following this presentation)
  - Finalized in the next month
  - Updated regularly

Ethics Approval

- All sites centralized at Glen
- Two sessions with ethics committee teams scheduled (to be recorded)
  - General session on January 10th
  - Session discussing the online-submission 'Nagano' website on January 25th
- IRB coordinator: Hua Ling (gradstudies.pathology@mcgill.ca)
  - Submitting pathologists'/resident's proposals online
  - Follow-up of submitted proposals

Statistics

- Three statisticians
  - Jose Mansour (jjmansure@gmail.com)
  - Hassan Behlouli (hassanbehlouli@hotmail.com)
  - Alice Dragomir (alice.dragomir@mcgill.ca)
    - Best to communicate in early phases of project

- Biostatistics and Epidemiology residents curriculum
  - To replace the current one month course (R1)
  - Longitudinal exposure over 5 years
  - 3 sessions X 2 h per year (total 15 sessions)

Biostatistics and Epidemiology residents' curriculum

Presenters

- Dr. Eduardo Franco (Departments of Oncology and Epidemiology, Biostatistics and Occupational Health)
- Dr. Gilles Paradis (Department of Epidemiology, Biostatistics and Occupational Health)
- Dr. Alice Dragomir (Department of Experimental Surgery and Urology)
- Dr. Bruce Case (Departments of Pathology and Epidemiology, Biostatistics and Occupational Health)
- Dr. Elham Rahme (Department of Medicine, Division of Clinical Epidemiology)
- Dr. Jose Mansour (Department of Surgery, Division of Urology)
- Dr. Logan Walsh (Department of Human Genetics)

Topics

- General principles: mean, median, sensitivity, specificity, PPV, NPV, discrete versus continuous distribution with AUC (*July 2018, Gilles Paradis*)
- Study design: cross sectional, cohort, case control, RCT (*November 2018, Gilles Paradis*)
- Inference for single mean or two means: p value, confidence interval, sample size calculation (*April 2019, Elham Rahme*)
- T-tests for 2 paired/independent samples and ANOVA: p-value and confidence interval (*July 2019, Jose Mansour*)
- Contingency table correlation: Fisher, Kappa, Chi-Square, Pearson (*November 2019, Elham Rahme*)
- Regression models I: simple and multiple linear regression (*April 2020, Alice Dragomir*)
- Regression models II: univariate and multivariate logistic regression (*July 2020, Alice Dragomir*)
- Regression models III: survival analysis (Kaplan-Meier curve, Cox proportional hazard model) (*November 2020, Alice Dragomir*)
- Statistical bias (*April 2021, Jose Mansour*)
- Practical application and statistics for next generations sequencing data (*July 2021, Logan Walsh*)
- Epidemiology: General principles with a focus on cancer epidemiology (*November 2021, Eduardo Franco*)
- Carcinogenesis (*April 2022, Bruce Case*)
- Screening: principles, biases, examples of large studies impacting screening in breast, cervix and prostate cancer (*July 2022, Jose Mansour*)
- Census, vital statistics and registries (*November 2022, Bruce Case*)
- Best practices in publishing biomedical and clinical research papers (*April 2023, Eduardo Franco*)

Funds

New supporting mechanisms for pathologists

- Pulling blocks and slides
- Building TMA
- IHC
- Publication fee if pathologist is the corresponding author (reputable journals only)
- Cost of producing posters
- Cost of statistical analysis
- Other

Funds

New supporting mechanisms for pathologists

- Departmental research competition (all sites)
  - 50K yearly to fund five projects

- MUHC Foundation research funds (for MUHC pathologists)
- Departmental Research funds (for non-MUHC pathologists)
  - Maximum 5 K per request
    - Send ‘title, brief description, Purpose of funding, end-point’ to Drs. Gao and Brimo

- Pathologists who have their own RI accounts or other sources of funding cannot have access to other departmental sources before exhausting their funds

Funds

New supporting mechanisms for MUHC pathologists to encourage presentation in conferences

- Currently pathologists have 2000$ per year to attend conferences
  - If presenting in conference and no other sources of funding MUHC research funds pays full cost minus 2000$

Time

- Protected time
  - Feasible?
  - How?
  - How to link it to academic productivity?
  - How to link it to clinical productivity (L4E)?

Survey (Respondents=16)

- All would like to have less clinical (10%-30% less) and more research activities (10%-30% more)
- Is research an integral part of the missions of the department: yes=15, no=1
- Do you like to get involved in research: yes=16
- Which research role do you prefer:
  - Primary investigator: 11
  - Co-investigator with clinical departments: 9
  - Co-investigator in pathology-based projects: 9

Survey (Respondents=16)

- Major constraints
  - Lack of time: 15
  - IRB: 7
  - Lack of structure for clinical research: 7
  - Statistical analysis: 5
  - Lack of financial support: 5
  - Difficulty in finding collaborators: 4
  - Lack of technical support: 3
  - Lack of information about how to conduct research: 3
  - Lack of residents involvement: 3
  - Lack of gratification: 1

Survey (Respondents=16)

- Do you think protected time should be given for
  - Research: yes = 16
  - Administration: yes = 16
- Minimum FTE for pathologist involved in research/administration
  - 0.5 (n=3), 0.8 (n=3), 0.85 (n=1), 0.9 (n=3), 1 (n=2)
- Mechanisms of support: IRB, departmental funds, time, technical support
  - Administrative support for those doing research and administration
  - Research assistant
  - Organization in departmental groups
  - Rotatory coverage of clinical work
  - Liaison (go-to person)
- How to link support with productivity
  - Number of yearly papers as first or senior author: n=9
  - Number of abstracts: n=6
  - Number of grants: n=4
  - Reduce clinical work and monitor productivity and rebalance depending on performance: n=1

Conclusions

- First steps toward facilitating clinical research undertaken in 2018
- Monitor performance in 2018-2019 and adjust if necessary
- Feedback about the new strategy and logistical difficulties to Drs. Gao and Brimo
- Protected time is a major constraint that needs to be addressed
  - Open discussion that should take into account workload, administrative tasks, teaching, departmental missions and future strategy


Where we are now: Weakness
• Fund raising to meet our future needs: Rossy, MGH foundation, Roche, EPU needs
• Transform increased research support and research capacity into research productivity
• Enhance our national leadership in postgraduate pathology education
• Sustain the still fragile graduate program

Thank you

Available tests, technologies and equipment

Glen Technology platforms

Centre universitaire de santé McGill
Institut de recherche

McGill University Health Centre
Research Institute

Technology Platforms
of the Research Institute of the MUHC

Glen, West tower, Level E1

This presentation is courtesy of

Patrice Vaillancourt M.Sc.
Manager, Operations and Platforms

Patrice.vaillancourt@muhc.mcgill.ca

Research Institute of the MUHC

Environment:

- Healthcare delivery
- Leading research University - McGill
  and
  Outstanding academic healthcare system

Vision

- bridge the gap between **biomedical research and clinical medicine**
- **speed up innovation** and **accelerate the translation of basic discoveries** to public uses
- bring together **pediatric and adult research programs**
- focus on **improving the health of individual patients** throughout their life cycle
- set the stage for the **transition to patient-centered medicine**

Research Institute of the MUHC

Research Institute:

- Centre for Translational Biology (CTB)
- Centre for Innovative Medicine (CIM)
- Centre for Outcomes Research and Evaluation (CORE)

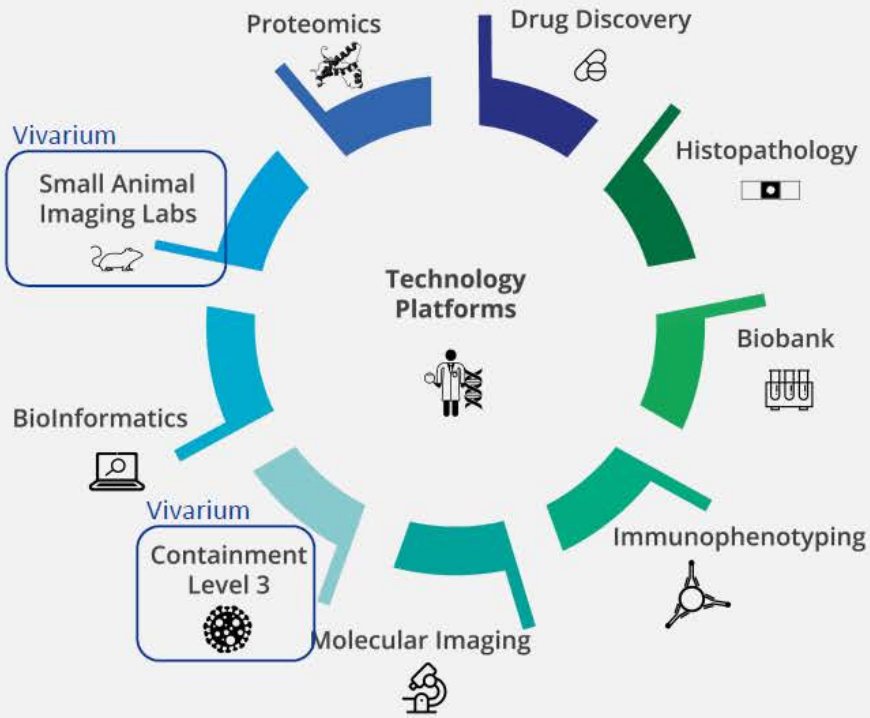
Technology Platforms:

Accelerate research by providing:

- Access to state-of-the art technologies and instrumentation
- Top-level scientific expertise and the training necessary to promote cutting-edge research

Technology Platforms

One Location:



Helping researchers understand, treat and cure diseases

- 139 Laboratories
- 326 Users

Nicholas.bertos@mail.mcgill.ca

RI-MUHC Technology Platforms

Drug Discovery

Advancing new medications with nuclear magnetic resonance **(NMR)** spectroscopy for both liquid and solid samples, **MALDI mass imaging**, and **mass spectroscopy.**

Biobank

Fostering ethical studies of human tissues with expert **regulatory support, sample collection** and **secure storage**, featuring a robotic freezer system capable of handling 500,000 samples for diverse pathologies.

Proteomics

Finding new protein interactions and measuring peptides, lipids and metabolities within tissues, using **mass spectroscopy and related analytical approaches** in biochemistry.

Immunophenotyping

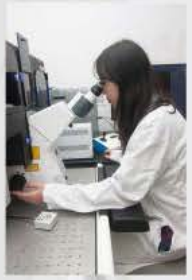
Accurate and swift purification of specific cell types, with added fluorescence **imaging of individual sorted cells**, and **isolation of micro-particles** from within cells.

Bioinformatics

Expert services and consultation in **genomics** using next-gen DNA sequencing, with added support for **molecular diagnosis, functional genomics,** and **high-performance computing.**

Molecular Imaging

Superb technologies for microscopy that provide **enhanced resolution** of cellular sub-structures and biomolecules, and **real-time movies** of events as they occur within living tissues and organisms.



Small Animal Imaging Labs

Non-invasive imaging of animal models to create holistic pictures of diseases, using magnetic resonance **(MRI), computed tomography (CT)** and other modalities **(PET, SPECT, optical).**

Containment Level 3

Highly-controlled biosafety laboratories where live pathogenic bacteria and viruses are studied in **three independent research pods** for research on tuberculosis, influenza and acquired immune deficiency syndrome (AIDS).

Histopathology

Processing soft and hard tissues to visualize and measure biological structures and molecular components, with automated **protocol optimization, laser microdissection,** and custom stains.

Proteomics

Finding new protein interactions and measuring peptides, lipids and metabolities within tissues, using **mass spectroscopy and related analytical approaches** in biochemistry.

high and low resolution LCMS assays for proteins, lipids and targeted small molecules
complete service: sample preparation to data visualization and statistics
extensive experience in **quantitative biology**

Containment Level 3

Highly-controlled biosafety laboratories where live pathogenic bacteria and viruses are studied in **three independent research pods** for research on tuberculosis, influenza and acquired immune deficiency syndrome (AIDS).

- state-of-the-art **TB** level 3 facility combines the expertise of 5 TB scientists with complementary research (**pathogen, host genetics and immunology**)
- aerosol infections, **cell sorting** and an anaerobic chamber to **induce persistent forms of the bacteria**.
- certification process for **influenza**

Molecular Imaging

Superb technologies for microscopy that provide **enhanced resolution** of cellular sub-structures and biomolecules, and **real-time movies** of events as they occur within living tissues and organisms.

- Confocal and multiphoton, **live organ imaging** (intravital and perfused)
- understanding of **microcirculation** in organs
- **mechanisms of signal transduction** in cells
- immune **cell migration** (neutrophil and platelet trafficking)
- role of **mitochondria** in immunity under normal and inflammatory conditions

- comprehensive suite of **in vivo imaging** modalities from fluorescence to **MRI**.
- **SPECT/CT** for assessing drug biodistribution and **cell tracking**
- **CT** component of scanner enables high-resolution anatomy of organs

- conventional histology and special stains
- Automated immunohisto-chemistry (**double and triple IHC**), single or **double IF**
- **laser capture microdissection** of tissues

- on-site **central** biobank
- **collection and processing** of patient biospecimens
- sample **storage** and database capabilities

Immunophenotyping

Accurate and swift purification of specific cell types, with added fluorescence **imaging of individual sorted cells**, and **isolation of micro-particles** from within cells.

- **multi-parametric** flow cytometry and high-speed **cell sorting**
- offers services **CL3** environment for studies on infectious diseases (TB and HIV)
- **imaging flow cytometry** combining cytometry with spatial resolution and morphology of microscopy. In-depth **characterization** of cellular composition and of **cell-cell interactions, internalization and co-localization events, cellular** phagocytosis, etc.
- developed and **validated** multi-parametric approaches to analyze immune cells (B and T cell subsets, ILCs, innate cell types) involved **in inflammatory events**

Bioinformatics

Expert services and consultation in **genomics** using next-gen DNA sequencing, with added support for **molecular diagnosis, functional genomics,** and **high-performance computing.**

- analytic tools for analysis, annotation and clinical interpretation of **next-generation sequencing data**
- visualization, management and integration of genomic data
- Development and implementation of **custom analytic pipelines** for analysis of targeted next-generation sequencing

Drug Discovery

- **LC-NMR-MS** system expands the limits of metabolite separation, elucidation and profiling
- **HR-MAS** on tissues can uncover disease-specific metabolic data for prognostic and therapeutic approaches.
- **MALDI-IMS**: rapidly analyze thin tissue sections and to analyze and visualize large amount of analytes simultaneously

Platform	Equipment type
Containment Level 3	Rolling Incubators
Containment Level 3	Flow Cytometer - BD AccuriC6 (x2)
Containment Level 3	Cell Sorter - BD FACSAria Fusion (3 lasers)
Containment Level 3	Hypoxia Chamber - Plas Labs
Containment Level 3	Aerosolizer / Inhalator - CH Technologies
Containment Level 3	BSC Types A2 and B2 cabinets
Drug Discovery	Bruker Hyphenated LC-NMR-MS Instrument (LC Agilent – MS Impact HD, Gilson):LC-MS, LC-MS/MS, LC- NMR-MS /NMR Spectrometry 600 MHz: liquid NMR, HR-MAS NMR
Drug Discovery	NMR Spectrometry Bruker 400 MHz: liquid NMR
Drug Discovery	MALDI-Mass Spectrometry - Bruker: MS, MS/MS, Imaging, Biotyper
Drug Discovery	Mass Spectrometry EVOQ - Bruker: quantification by LC-MS
Drug Discovery	UV-Vis-UR Spectrometry
Drug Discovery	Circular Dichroism Spectrometry
Drug Discovery	X-ray Crystallography - Bruker
Histopathology	Laser Capture Microdissection - Arcturus Xt
Histopathology	Ventana Discovery Ultra - Automated ICC and ISH
Histopathology	Leica Aperio AT Slide Scanner
Histopathology	Leica Automated multistainer and coverslipper
Histopathology	Leica Tissue processor
Histopathology	Nikon Eclipse Multihead microscope
Histopathology	Cryostats
Histopathology	Microtomes
Histopathology	Experion automated electrophoresis system, BioRad
Immunophenotyping	BD FACSAria Fusion (5 lasers) (x2)
Immunophenotyping	BD FACSAria Fusion (3 lasers)
Immunophenotyping	BD LSR Fortessa
Immunophenotyping	BD LSR Fortessa X-20
Immunophenotyping	BD FACSCanto II
Immunophenotyping	Amnis ImageStream Mark II
Immunophenotyping	CytoFLEX - Beckman Coulter: microparticles analysis
Immunophenotyping	autoMACS Pro Separator
Immunophenotyping	BD AccuriC6 (x2)

Platform	Equipment type
Molecular Imaging Platform	Zeiss LSM780
Molecular Imaging Platform	Zeiss LSM880 Elyra PS1Zeiss SM780-NLO
Molecular Imaging Platform	Zeiss spinning disk Axio Observer Z1
Molecular Imaging Platform	Nikon Epi-Fluorescence for fixed cells and tissues
Molecular Imaging Platform	Nikon Epi-Fluorescence for live cell imaging
Molecular Imaging Platform	Zeiss MP7
Molecular Imaging Platform	Molecular Devices ImageXpress Micro XLS Widefield high-content analysis system
Molecular Imaging Platform	Molecular Device ImageXpress Ultra confocal high-content analysis system
Molecular Imaging Platform	PerkinElmer EnSpire Multimode Plate Reader
Molecular Imaging Platform	PerkinElmer Victor X Light Multilabel Plate Reader
Proteomics	Thermo Scientific Orbitrap Fusion Tribrid mass spectrometer with Dionex UltiMate 3000 RSLCnano system
Proteomics	Thermo Scientific TSQ Quantiva Triple Quadrupole mass spectrometer with Dionex UltiMate 3000 RSLCnano system
Proteomics	Sciex TripleTOF 5600 and Shimadzu LC
Proteomics	Agilent 6650 Q-TOF mass spectrometer equipped with nano-UHPLC
Small Animal Imaging Labs	Mediso nanoScan SPECT/CT
Small Animal Imaging Labs	Mediso nanoScan PET/CT
Small Animal Imaging Labs	Bruker 7T MRI BioSpec 70/30 USR
Small Animal Imaging Labs	GE Typhoon FLA 9500
Small Animal Imaging Labs	Biospace Labs BetaIMAGER dFINE
Small Animal Imaging Labs	Bruker In-Vivo Xtreme
Small Animal Imaging Labs	Leica Cryostat CM1950
Small Animal Imaging Labs	Agilent technologies HPLC
Small Animal Imaging Labs	Buchi Rotavapor R-300
Small Animal Imaging Labs	Laser Capture Microdissection - Zeiss PALM MicroBeam

Glen Histopathology Platform

E01-3082
histopathology.rimuhc@mcgill.ca
514-934-1934#76221

This presentation is courtesy of

Carolyn J. Baglole
(carolyn.baglole@mcgill.ca)
Director

Fazila Chouiali
(fazila.chouiali@mail.mcgill.ca)
Manager

The Histopathology platform offers:

- Full-service processing of tissue samples. Services include decalcification, paraffin embedding, wax sectioning, cryosectioning, and routine staining.
- Training on histological equipment.
- Independent use of histological equipment available.

ASP300S Tissue processor

Paraffin Embedding Station

Microtome

Cryostat

Routine H&E and Special Staining

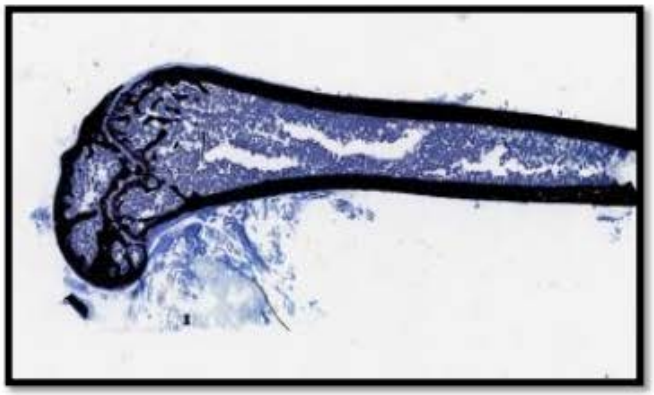
Available Special Stain list

1	ACID FAST BACTERIA(ZEEIL NEELSEN)
2	ALCIAN BLUE
3	ALKALINE PHOSPHATASE
4	CRESYL VIOLET-NISSL
5	GRAM
6	GROCOTT'S METHENAMINE SILVER (GMS)
7	JONE'S METHENAMINE SILVER (BASAL MEMBRANE)
8	MASSON TRICHROME
9	OIL RED O
10	PERIODIC ACID-SCHIFF (PAS)
11	PICRO-SIRIUS RED
12	RETICULUM
13	TARTRATE-RESISTANT ACID PHOSPHATASE (TRAP)
14	TOLUIDINE BLUE
15	VAN GIESON
16	VERHOEFF ELASTIC VAN GIENSON
17	VON KOSSA
18	GOLDNER TRICHROME
19	H&E
20	IRON
***	*Other stains available upon request*

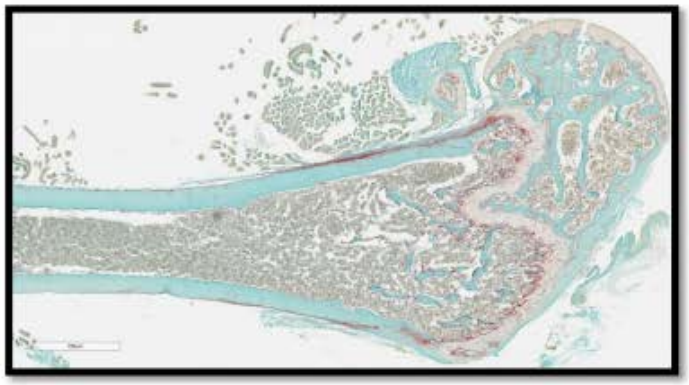
Automated Multistainer and Coverslipper
Leica CV5030 ST5020

New

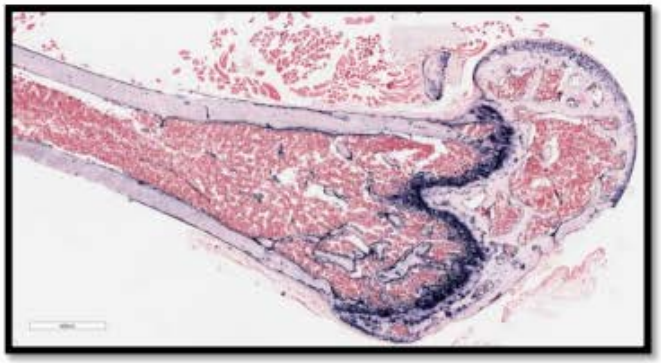
Bone Tissue Plastic&Paraffin Embedding, Sectioning and Staining



Von Kossa, Mouse Tibia.



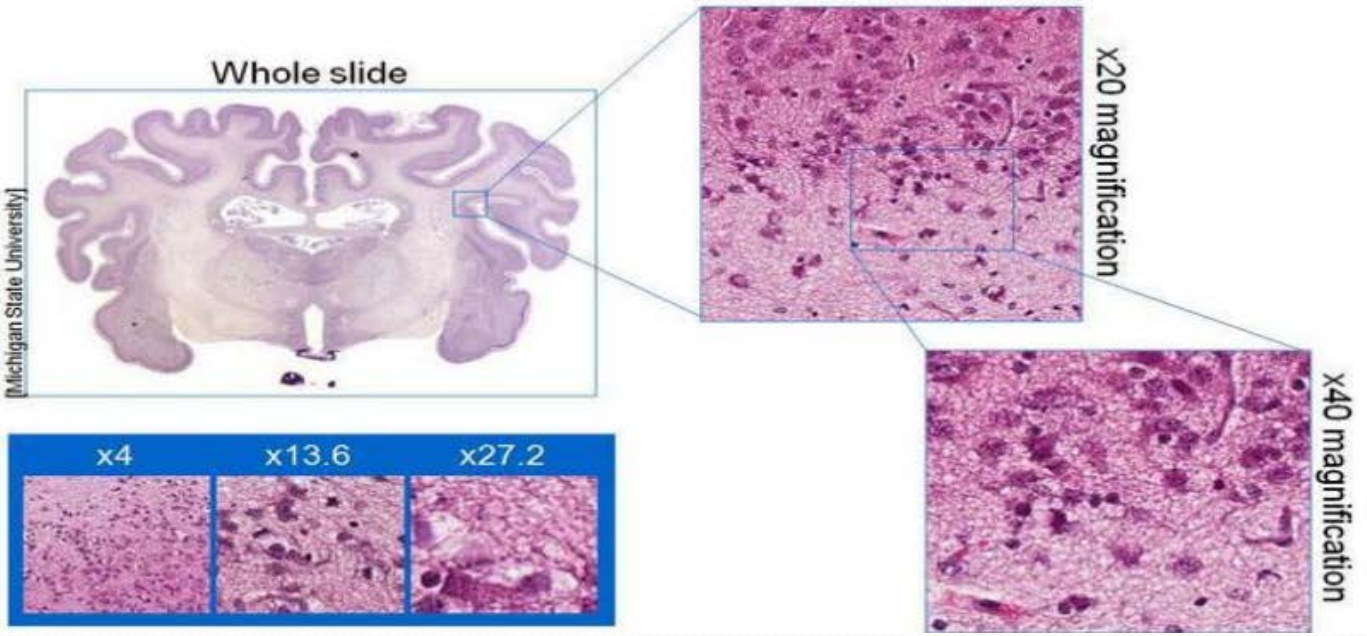
Tartrate-resistant acid phosphatase (TRAP), Mouse Tibia



Alkalin Phosphatase, Mouse Tibia.

Goldner Trichrom, Rat Tibia.

Aperio-Turbo Slide Scanner



Laser capture Microdissection, ArcturusXT

Laser capture microdissection LCM, Arcturus XT :

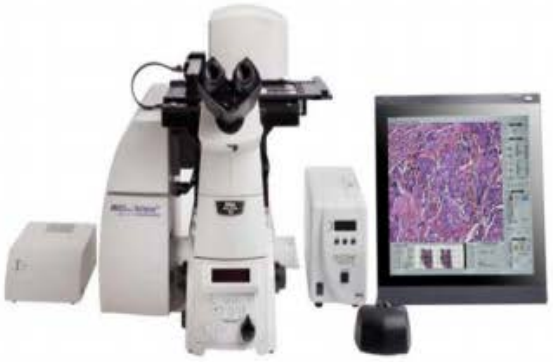
Enables isolation of pure cells from a mixed for downstream RNA, DNA, and protein experiments.

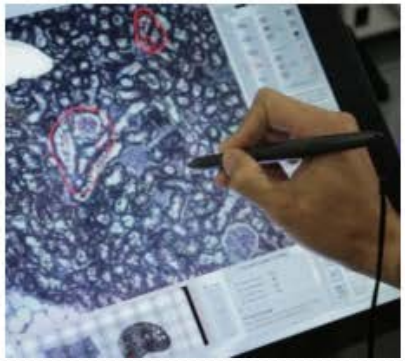
Cells can be isolated from

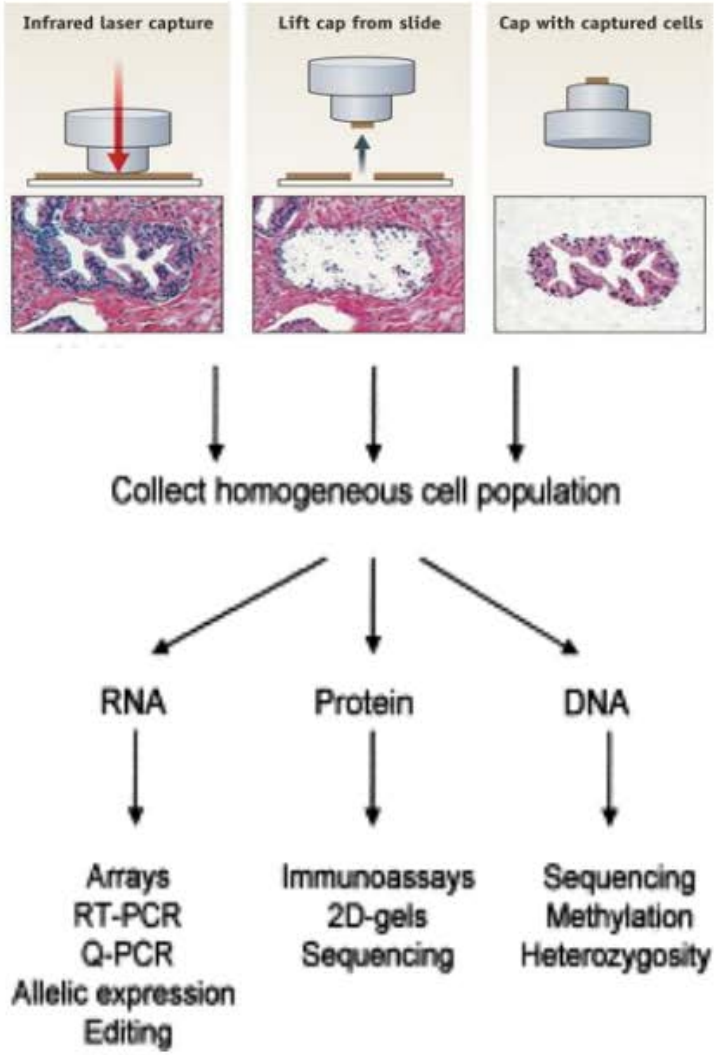
- Heterogeneous tissue section (FFPE or Frozen sections/ Unstained, IHC or IF)
- Cytological preparation
- Live cell culture

Arcturus XT Instrument:

- Combines two lasers IR (small number of cells) and UV laser (dense tissue structures and large numbers of cells)
- Easy workflow to simplify microdissection







Automated Immunohistochemistry

The BenchMark ULTRA platform is for Researchers who values improved productivity.

The BenchMark ULTRA fully integrated staining solution delivers superior workflow efficiency and medical value through continuous and random processing of samples

•30 slide positions and 35 reagent

•Individual slide drawers with continuous access to slides improves throughput

•Simultaneous IHC, ISH, Dual Stain, and FITC slide processing and titration

Automated Immunohistochemistry

Offered services:

- **BrightField: Single IHC**
  Double IHC
  Triple IHC

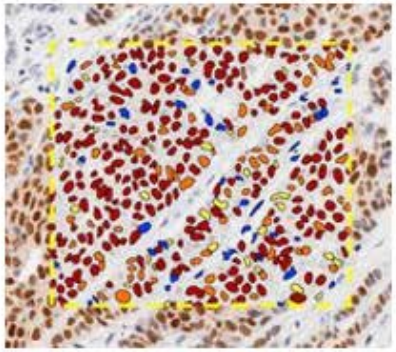
- **Immunofluorescence: Single & Dual IF**

Primary Antibody List------RI-MUHC Histopathology Platform

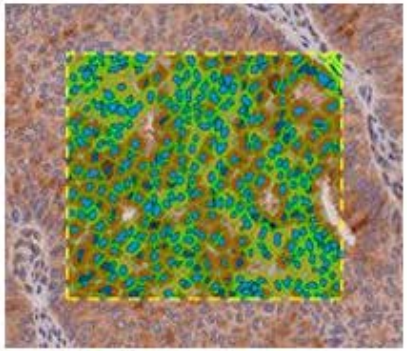
Alpha Actin Smooth Muscle
Cytokeratin Antipan (C11)
CD 68
CD19
CD3
CD31
IL-22
CD8
Cleaved Caspase-3 (ASP175)
Collagen Type IV(CIV22)
Cytokeratin 5
Cytokeratin 19
Cytokeratin 20
E-Cadherin (24E10)
EGFR(EP384)
EG2 (Eosinophils)
P53
Ki67
Melanoma (HMB45)
N-Cadherin (Antihuman)
Neutrophil Elastase
P40
P57
PCNA(d3h8P)xp
S-100
Vimentin(D21H3)xp
Vimentin(V9)

Coming soon to the Histopathology Platform....

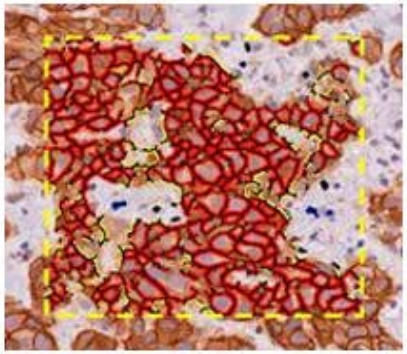
Aperio Image Analysis IHC:
For quantification of multiplex staining



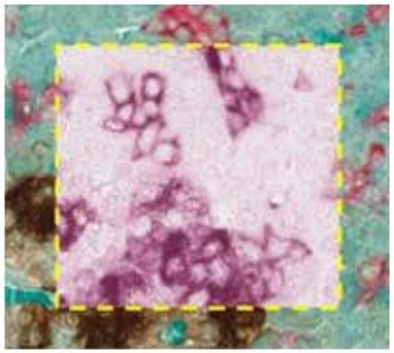
1. Aperio Nuclear Algorithm
Count and Quantify Stained Nuclei



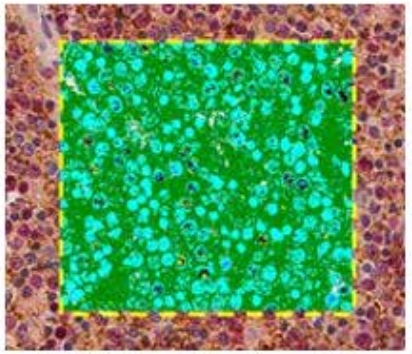
2. Aperio Cytoplasm Algorithm
Accurate Subcellular IHC Analysis



3. Aperio Membrane Algorithm
Rapid Cell Membrane Analysis



4. Aperio Color Deconvolution Algorithm
Separate & Quantify IHC Stains



5. Aperio Colocalization Algorithm
Identify Multiple Biomarker Interactions

Glen
Molecular Diagnostic/Pathology Laboratory
(West Tower, E5)

Andrea Gomez (andrea.gomez@muhc.mcgill.ca)

Director

514-934-1934# 38776

Available equipment

- QIA Symphony-DNA extractor
- QIACube-DNA extractor
- Thermocycleurs
- Realtime PCR Viia7 96 wells
- Luminex
- QIA-Agility automated Pippettor
- ABI 3130 Sequencing platform
- MiSeq
- QIA-Excel Capillary electrophoresis

Techniques	Methodologies validated
Acid nucleic extractions DNA/RNA	Blood
	Frozen Fresh tissue
	FFPE, blocks and slides
	Anmiotic Fluid
	Bone Marrow
	Buccal swabs
Mutation detection	Taqman
	Sanger Sequencing
	Luminex based genotyping
	Restriction fragment length polymorphims (RFLP's)
	Indels by Fragment analysis
	Multiple Ligation Probe Amplifictaion (MLPA)
	Single base extension (SnapShot)
	Next generation Sequencing (NGS)

Pricing
Glen Technology Platforms

Technology Platforms

4-Tier Costing Schedule ***July 2017 / Rates are subject to change without notice***

**** Industry rates: Please contact Platform for pricing***

Platform	Services/Instruments	RI-MUHC Members	McGill	Academia	Industry *
Containment Level 3 (CL3)	Biological Safety Cabinet - Entry Fee	**30.00**	45.00	60.00	Contact Platform
	Training (per session)	**60.00**	75.00	90.00	
Small animal imaging labs (SAIL)	MRI (hourly)	**150.00**	190.00	200.00	Contact Platform
	SPECT/CT/PET (hourly) *excluding radiotracer fees*	**150.00**	190.00	200.00	
	CT Only (hourly)	**125.00**	160.00	170.00	
	In-Vivo Xtreme (hourly)	**50.00**	60.00	70.00	
	TYPHOON FLA 9500 (per scan)	**40.00**	45.00	50.00	
	BetaIMAGER (per scan)	**40.00**	45.00	50.00	
	Cryostat (hourly)	**15.00**	19.00	20.00	
	CatWalk	**25.00**	32.00	33.00	
	PALM Laser-capture microdissection (LCM)	**63.00**	80.00	84.00	
	Additional technical assistance (hourly)	**50.00**	50.00	50.00	
	Radiotracer F18-FDG (20 mCi)	**250.00**	250.00	250.00	
	Radiotracer Tc99m-HMPAO (80 mCi)	**385.00**	385.00	385.00	
	Scintillating paper for BetaIMAGER (per slide)	**60.00**	60.00	60.00	
	Image processing/analysis	**22.00**	40.00	44.00	
	Zeiss AxioScan (fluorescence only)	**15.00**	19.00	20.00	
	PiezoSleep System (daily rate)	**25.00**	32.00	33.00	
Immunophenotyping	Flow Cytometry Cell Analysis - Unassisted (hourly)	**40.00**	50.00	60.00	Contact Platform
	Flow Cytometry Cell Analysis - Assisted (hourly)	**70.00**	80.00	90.00	
	BD Accuri C6	**TBD**			
	BD LSRFortessa - Unassisted (hourly) BD LSRFortessa X-20 - Unassisted (hourly) BD FACSCanto II - Unassisted (hourly)	**40.00**	50.00	60.00	
	BD LSRFortessa - Assisted (hourly) BD LSRFortessa X-20 - Assisted (hourly) BD FACSCanto II - Assisted (hourly)	**70.00**	80.00	90.00	
	Flow Cytometry Cell Sorting - Assisted (hourly)	**80.00**	120.00	140.00	
	BD FACSAria Fusion (hourly)	**80.00**	120.00	130.00	

Technology Platforms

4-Tier Costing Schedule ***July 2017 / Rates are subject to change without notice***

**** Industry rates: Please contact Platform for pricing***

Platform	Services/Instruments	RI-MUHC Members	McGill	Academia	Industry *
	BD FACSAria Fusion - CL3 Facility (hourly)				
	ImageStream Mark II - Imaging Flow Cytometer - Unassisted (hourly)	**40.00**	50.00	60.00	
	ImageStream Mark II - Imaging Flow Cytometer - Assisted (hourly)	**70.00**	80.00	90.00	
	autoMACS - Seperation (qty) 1 - 5	**13.00**	15.00	20.00	
	autoMACS - Seperation (qty) 6 - 10	**10.00**	12.00		
	autoMACS - Seperation (qty) 10+	**6.00**	8.00		
Molecular Imaging	**Training**				
	Zeiss LSM780 (3 hour session)	**150.00**	170.00	200.00	Contact Platform
	Zeiss LSM880 (3 hour session)	**150.00**	170.00	200.00	
	Zeiss SIM/PALM (3 hour session)	**200.00**	220.00	250.00	
	Zeiss LSM780-IR Confocal (3 hour session)	**150.00**	170.00	200.00	
	Zeiss LSM780-IR Multiphoton (3 hour session)	**200.00**	220.00	250.00	
	Zeiss MP7 (3 hour session)	**200.00**	220.00	250.00	
	Olympus FV1000MPE multiphoton (3 hour session)	**200.00**	220.00	250.00	
	Zeiss SD-TIRF (3 hour session)	**150.00**	170.00	200.00	
	Nikon Epi-Fluo / Fixed sample (2 hour session)	**100.00**	120.00	150.00	
	Nikon Epi-Fluo / Live sample (2 hour session)	**150.00**	180.00	200.00	
	Molecular Device Image Ultra HCS analysis (4 hour session)	**200.00**	220.00	250.00	
	Molecular Device Image XLS HCS analysis (4 hour session)	**200.00**	220.00	250.00	
	PerkinElmer Enspire Plate reader (2 hour session)	**50.00**	70.00	100.00	
	PerkinElmer Victor Plate reader (2 hour session)	**50.00**	70.00	100.00	
	Zeiss offline workstation (2 hour session)	**50.00**	70.00	100.00	
	Usage				
	Zeiss LSM780 (hourly)	**30.00**	40.00	50.00	Contact Platform
	Zeiss LSM880 (hourly)	**30.00**	40.00	50.00	
	Zeiss SIM/PALM (hourly)	**35.00**	45.00	60.00	
	Zeiss LSM780-IR Confocal (hourly)	**30.00**	45.00	60.00	
	Zeiss LSM780-IR Multiphoton (hourly)	**40.00**	60.00	80.00	
	Zeiss MP7 (hourly)	**40.00**	45.00	60.00	

Technology Platforms

4-Tier Costing Schedule ***July 2017 / Rates are subject to change without notice***

**** Industry rates: Please contact Platform for pricing***

Platform	Services/Instruments	RI-MUHC Members	McGill	Academia	Industry *
	Olympus FV1000MPE Multiphoton (hourly)	**40.00**	45.00	60.00	
	Olympus FV1000MPE Confocal (hourly)	**30.00**	45.00	60.00	
	Zeiss SD-TIRF (hourly)	**30.00**	40.00	50.00	
	Nikon Epi-Fluo / Fixed sample (hourly)	**15.00**	20.00	25.00	
	Nikon Epi-Fluo / Live sample (hourly)	**20.00**	30.00	40.00	
	Molecular Device Image Ultra (hourly)	**40.00**	50.00	70.00	
	Molecular Device Image XLS (hourly)	**40.00**	50.00	70.00	
	Molecular Device Image HCS analysis (hourly)	**10.00**	15.00	30.00	
	Molecular Device Image XLS HCS analysis - License (per year)	**500.00**	700.00	1,000.00	
	PerkinElmer Enspire Plate reader (per plate)	**5.00**	10.00	20.00	
	PerkinElmer Victor Plate reader (per plate)	**5.00**	10.00	20.00	
	Zeiss offline workstation (hourly)	**5.00**	10.00	20.00	
	Extended Assistance				
	Zeiss LSM780 (hourly)	**50.00**	60.00	80.00	Contact Platform
	Zeiss LSM880 (hourly)	**50.00**	60.00	80.00	
	Zeiss SIM/PALM (hourly)	**50.00**	60.00	80.00	
	Zeiss LSM780-IR (hourly)	**50.00**	60.00	80.00	
	Zeiss MP7 (hourly)	**50.00**	60.00	80.00	
	Olympus FV1000MPE Multiphoton (hourly)	**50.00**	60.00	80.00	
	Zeiss SD-TIRF (hourly)	**50.00**	60.00	80.00	
	Nikon Epi-Fluo / Fixed sample (hourly)	**50.00**	60.00	80.00	
	Nikon Epi-Fluo / Live sample (hourly)	**50.00**	60.00	80.00	
	Molecular Device Image Ultra (hourly)	**50.00**	60.00	80.00	
	Molecular Device Image XLS (hourly)	**50.00**	60.00	80.00	
	Molecular Device Image HCS analysis (hourly)	**50.00**	60.00	80.00	
	PerkinElmer Enspire Plate reader (per 30 mins)	**25.00**	30.00	40.00	
	PerkinElmer Victor Plate reader (per 30 mins)	**25.00**	30.00	40.00	
	Zeiss offline workstation (hourly)	**50.00**	60.00	80.00	

Proteomics | **Cost/sample based on 10 samples**

Technology Platforms

4-Tier Costing Schedule *July 2017 / Rates are subject to change without notice*

** Industry rates: Please contact Platform for pricing*

Platform	Services/Instruments	RI-MUHC Members	McGill	Academia	Industry *
	10% Precast SDS-PAGE (per gel)	**20.00**	25.00	30.00	Contact Platform
	2D Gel-Digestion (per spot)	**10.00**	15.00	20.00	
	In-Gel Tryptic Digestion (per sample) includes staining/destaining	**50.00**	55.00	60.00	
	In Solution Digestion (per sample)	**15.00**	20.00	25.00	
	LC-MS/MS 1 hr gradient (per sample)	**50.00**	55.00	60.00	
	LC-MS/MS 2 hr gradient (per sample)	**100.00**	110.00	120.00	
	LC-MS/MS 3 hr gradient (per sample)	**150.00**	160.00	170.00	
	Analysis (Mascot) (per sample)	**50.00**	55.00	60.00	
	Quantitation (Spectral Counting)	**free**	free	free	
	Quantitation (MS1 High resolution)	**50.00**	50.00	50.00	
	Quantitation (DIA, MS2 high resolution)	**120.00-240.00**	120.00-240.00	120.00-240.00	
	Analysis (Scaffold) (per sample)	**25.00**	30.00	35.00	
	Phosphopeptide Enrichment (per sample)	**50.00**	55.00	60.00	
	Special Requests	**TBD**	TBD	TBD	
	*** Rebate for more than 10 samples (per sample)**	**10.00**	15.00	20.00	

Technology Platforms

4-Tier Costing Schedule ***July 2017 / Rates are subject to change without notice***

**** Industry rates: Please contact Platform for pricing***

Platform	Services/Instruments	RI-MUHC Members	McGill	Academia	Industry *
Drug Discovery	Bruker NMR 400 MHz - Assisted (hourly)	**9.00**	18.00	24.00	Contact Platform
	Bruker NMR 400 MHz - Unassisted (hourly)	**9.00**	11.00	14.00	
	Bruker NMR 400 MHz - 5pm to 7am (hourly)	**6.00**	12.00	15.00	
	Bruker NMR 600 MHz - Assisted (hourly)	**9.00**	18.00	24.00	
	Bruker NMR 600 MHz - Unassisted (hourly)	**14.00**	18.00	20.00	
	Bruker NMR 600 MHz - 5pm to 7am (hourly)	**6.00**	12.00	15.00	
	Bruker UltraFlextreme MALDI-TOF/TOF sample analysis (per sample)	**20.00**	25.00	30.00	
	Bruker UltraFlextreme MALDI-TOF/TOF tissue imaging (hourly) (< 3 hours)	**40.00**	45.00	50.00	
	Bruker UltraFlextreme MALDI-TOF/TOF tissue imaging (hourly) (> 3h and overnight)	**20.00**	25.00	30.00	
	Bruker Hyphenated LC-NMR (MHz)MS Instrument - Unassisted	**15.00**	20.00	25.00	
	Bruker Mass Spectrometer EVOQ - Unassisted	**25.00**	28.00	30.00	
	Bruker Mass Spectromer AmaZon SL - Unassisted	**25.00**	28.00	30.00	
	Spectrometer UV-Vis-UR Agilent Cary - Unassisted	**25.00**	28.00	30.00	
	Spectrometer Circular Dichroism Jasco - Unassisted	**25.00**	28.00	30.00	
	Bruker X-ray Crystallographic instrument - Unassisted	**TBD**	**TBD**	**TBD**	
	Training Program	**20.00**	25.00	30.00	
Biobank	Coming Soon				
Histopathology	**Paraffin Tissues**				
	Standard trimming (per sample)	**1.75**	3.00	4.00	Contact Platform
	Casseting (per cassette)	**1.25**	2.15	2.51	
	Processing (per sample)	**1.99**	2.00	2.95	

Technology Platforms

4-Tier Costing Schedule ***July 2017 / Rates are subject to change without notice***

**** Industry rates: Please contact Platform for pricing***

Platform	Services/Instruments	RI-MUHC Members	McGill	Academia	Industry *
	Embedding (per sample)	**1.70**	2.20	3.10	
	Serial sections (2 sec per slide)	**2.40**	2.45	3.20	
	Step sections (per section)	**2.40**	2.45	3.20	
	Routine H&E (per slide)	**2.40**	2.45	2.70	
	Complete service(Process, Embed,section(1 slide), 1 H&E) (per sample)	**8.50**	9.00	9.00	
	Rush service (per request)	**35.00**	40.00	45.00	
	Special handling/Tech time (per hour)	**30.00**	39.00	48.00	
	Frozen Tissues				
	OCT embedding (per sample)	**2.40**	3.18	3.90	Contact Platform
	Cryostat sections (2 sect/slide)	**2.99**	3.05	3.50	
	Frozen routine H&E (per slide)	**1.99**	2.20	2.70	
	Cryostat sections: different tissue on same slide (per section)	**2.30**			
	Immunohistochemistry staining				
	Ab optimization (3 trials/3 slides, Ab provided by the PI) - marker	**120.00**	135.00	140.00	Contact Platform
	IHC Automated, AB provided by the PI (per slide)/ IF	**29.50**	32.90	35.69	
	Double IHC (per slide)	**30.00**			
	Special histochemical stains				
	Acid Fast Red (ZN) (per slide)	**8.00**	9.08	11.18	Contact Platform
	Elastin (per slide)	**5.85**	6.80	8.45	
	Giemsa (per slide)	**5.90**	6.10	7.30	
	Gram (per slide)	**7.50**	9.05	11.15	
	Silver (Jone's) (per slide)	**7.99**	8.99	11.00	
	Masson Trichrom (per slide)	**7.50**	8.00	9.95	
	Nuclear Fast Red (per slide)	**2.99**	3.20	3.50	
	PAS (per slide)	**5.99**	6.50	7.99	
	Sirus Red (per slide)	**6.40**	6.40	7.55	
	Toluidine Blue (per slide)	**3.80**	4.50	5.20	

Technology Platforms

4-Tier Costing Schedule *July 2017 / Rates are subject to change without notice*

** Industry rates: Please contact Platform for pricing*

Platform	Services/Instruments	RI-MUHC Members	McGill	Academia	Industry *
	Wright (per slide)	**5.99**	6.10	7.20	
	Other stains available upon request (per slide)	**9.00**	11.71	14.20	
	Equipment Hourly Rates				
	Technical Assistance	**40.00**	50.00	60.00	Contact Platform
	Cryostat/No Assistance	**25.00**	30.00	39.00	
	Laser Capture Microdissection	**63.00**	70.00	75.00	
	Microtome/No Assistance	**25.00**	30.00	39.00	
	Multihead Microscope	**20.00**	35.00	40.00	
	Training Hourly Rates				
	Cryostat training	**40.00**	50.00	60.00	Contact Platform
	Special stain training/ consultation	**40.00**	50.00	60.00	
	IHC Traning/ Consultation	**40.00**	50.00	60.00	
	Laser capture Microdissection training	**60.00**	60.00	80.00	
	Microtome training	**40.00**	50.00	60.00	
	Other	**40.00**	50.00	60.00	
	Scan				
	Scan 20X (per slide)	**6.99**	7.95	8.50	Contact Platform
	Scan 40X (per slide)	**9.71**	12.90	15.50	

JGH
Molecular Pathology Center

Leon Van Kempen
(leon.vankempen@mcgill.ca)
Current Director

Andreas Papadakis
(andreas.papadakis@mail.mcgill.ca)
Upcoming Director

- Clinical tests (MSI, BRCA, EGFR)
- Targeted mutation profiling in plasma (qPCR, ddPCR, and NGS of a 15-gene panel is under validation)
- Targeted DNA mutation profiling using custom panels (MiSeq).
- Targeted mRNA, miRNA and combined RNA/protein profiling using nanoString in FFPE and frozen tissue.
- Proteomics (via dr. Christoph Borchers): MRM, lc-ms/ms, iMaldi.
- In Q1/2 2018 after the installation of the IonTorrent S5-XL: tumor mutation burden, RNAseq, WES, large panels (>600 genes), as well as NGS on plasma ctDNA (170 -340 genes).

JGH
Pathology Core Facility

Alan Spatz
(alan.spatz@mcgill.ca)
Director

Naciba Benlimame
(nbenlimame@jgh.mcgill.ca)
Manager
Office E-613 # 4538

Lilian Canetti
Technologist
E-619 #3698

No.	Routine Histology	Description	Unit	Price		
				Internal	Acad	Industry
1	Paraffin Embedding (RPF)		sample	$4.00	$8.00	$12.00
2	Paraffin section (unstained)	4-8 μm	First slide/tissue	$3.00	$5.00	$8.00
3		Additional slide from same block above	Add. Slide/tissue	$1.75	$2.50	$4.00
4	Frozen section (unstained)	6-20 μm	First slide/tissue	$4.00	$7.50	$10.00
5		Additional slide from same block above	Add. Slide/tissue	$2.00	$3.75	$5.00
6	H&E staining	From pre-existing slide	slide	$4.00	$6.00	$12.00
7	IHC/DAB staining (Using th	Paraffin section(not including cost of primary antibody)	slide	$32.00	$40.00	$60.00
8		Frozen section (not including cost of primary antibody)	slide	$28.00	$36.00	$50.00
9	IHC/RED staining (Using th	Paraffin section(not including cost of primary antibody)	slide	$45.00	$57.00	$77.00
		Frozen section (not including cost of primary antibody)	slide	$38.00	$48.00	$65.00
	IF/FITC/TR	Paraffin section(not including cost of primary antibody)	slide	$36.00	$45.00	$80.00
10		Frozen section (not including cost of primary antibody)	slide	$32.00	$40.00	$60.00
11	Technical assist/h	manual IHC & IF, pictures, sample handling, etc..	hour	$50.00	$60.00	$90.00

No.	TMA work	Description	Unit	Price		
12	TMA design	mapping, and linking of clinical data	hour	$50.00	$60.00	$90.00
13	TMA construction	Core harvested and transfer into recipient block	core	$6.00	$9.00	$12.00
14	Sectioning TMA	Paraffin section from TMA block	slide	$10.00	$15.00	$20.00
15	H&E for TMA	from pre-existing slide	slide	$5.00	$7.50	$10.00
16	IHC for TMA	IHC staining (not including cost of primary antibody)	slide	$32.00	$40.00	$60.00
17	**Analysis by a pathologist**		hour	$120.00	$180.00	$250.00
No.	**Digital Scan**	**Description**	**Unit**	**Price**		
18	High resolution	Whole microscope slide-20X	slide	$5.00	$7.00	$11.00
19	High resolution	Whole microscope slide-40X	slide	$5.00	$7.00	$11.00
20	Technical assist/h	Digital scan analysis and training	hour	$40.00	$60.00	$90.00
21	Time logged	Loggin to spectrum	hour	$10.00	NA	NA

No.	Special stain	Description	Unit	Price		
22	PAS	From pre-existing slide	slide	$5.50	$7.50	$11.00
23	Lendrum MSB	From pre-existing slide	slide	$7.50	$10.50	$15.00
24	Trichrom	From pre-existing slide	slide	$7.50	$10.50	$15.00
25	Perl's Iron	From pre-existing slide	slide	$5.00	$7.00	$10.00
26	Sirius Red	From pre-existing slide	slide	$5.00	$7.00	$10.00
27	Von Kossa	From pre-existing slide	slide	$7.00	$9.75	$14.00
28	Oil-O-Red	From pre-existing slide	slide	$5.50	$7.50	$11.00
29	Orceine	From pre-existing slide	slide	$5.00	$7.00	$10.00
30	Luxol F Blue	From pre-existing slide	slide	$5.00	$7.00	$10.00
31	Movatt's	From pre-existing slide	slide	$11.00	$15.00	$22.00
32	Giemsa	From pre-existing slide	slide	$7.00	$9.75	$14.00
33	Toluidine Blue	From pre-existing slide	slide	$3.00	$4.00	$6.00
34	Verhoeff	From pre-existing slide	slide	$5.50	$7.50	$11.00
35	Alizarin	From pre-existing slide	slide	$5.50	$7.50	$11.00
36	Congo Red	From pre-existing slide	slide	$6.00	$8.00	$12.00
37	Sefranine O	From pre-existing slide	slide	$5.00	$7.00	$10.00

Goodman Center Histology platform

Marie-Christine Guiot
(marie.christine.guiot@mcgill.ca)
Director

Jo-An Bader
(jo-ann.bader@mcgill.ca)
Coordinator
#(514) 3985647

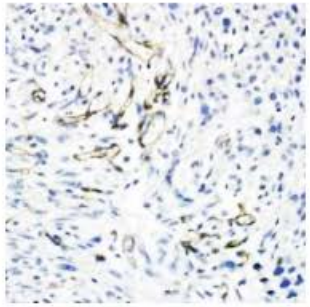
https://mcgillgcrc.com/research/facilities/histology

We offer a wide range of histology services:

Grossing Tissue Trimming & Cassetting

Processing & Ebedding

Cutting & Staining Routine & Special Stains



Immunohistochemistry Optimization & Staining

Training

Tissue Microarrays

- Pathology Services
- Histology Price List
- List of Validated Antibodies
- Service Request Form - GCRC
- Service Request Form - McGill
- Service Request Form - Academic
- Service Request Form - Industry
- Sample Submission Form
- Histology Instrumentation

Tissue Microarray

- At JGH: contact Naciba Benlimame (nbenlimame@jgh.mcgill.ca)

- At Goodman center: contact Jo-An Bader (jo-ann.bader@mcgill.ca) or Cleber Moraes (cleber.moraes@mcgill.ca)

- At CHUM: contact Liliane Meunier (liliane.meunier@gmail.com) or Veronique Barres (veronique.barres@gmail.com)

- Will be available soon at Glen Biobank platform

Plateforme Pathologie moléculaire

Soumission # **FB2017-xx**

DÉTAIL

Description	Quantité	Unité	Prix unitaire	Montant
TMA de 500 patients (2 punchs de tissus tumeurs)= 1000 punchs sur 4 blocs, 250 cores par blocs. 1 seul réplicat				
Observation des lames au microscope et marquage des endroits à puncher sur le bloc	42 heures (5 minutes par patient)	heure	40$/heure	1 680,00 $
Design des maps TMA de 250 cores par map (4 maps différentes)	8 heures (2 heures par map)	heure	40$/heure	320,00 $
Prix pour la fabrication de 4 blocs TMA (250 cores de 0.6mm/blocs)	20 heures (50 punchs/heure)	heure	80$/heure	1 600,00 $
TOTAL				**3 600,00 $**

Prix en dollars canadiens (CAD).

Les prix n'incluent pas de taxes car non facturées par le CRCHUM.

Next Generation Sequencing

- At Glen: contact Andrea Gomez (andrea.gomez@muhc.mcgill.ca)
- At JGH: contact Leon VanKembpen (leon.vankempen@mcgill.ca)
- At McGill University and Genome Quebec Innovation Center: contact Yasser Riazalhosseini (yasser.riazalhosseini@mcgill.ca)

How to search the Pathology database

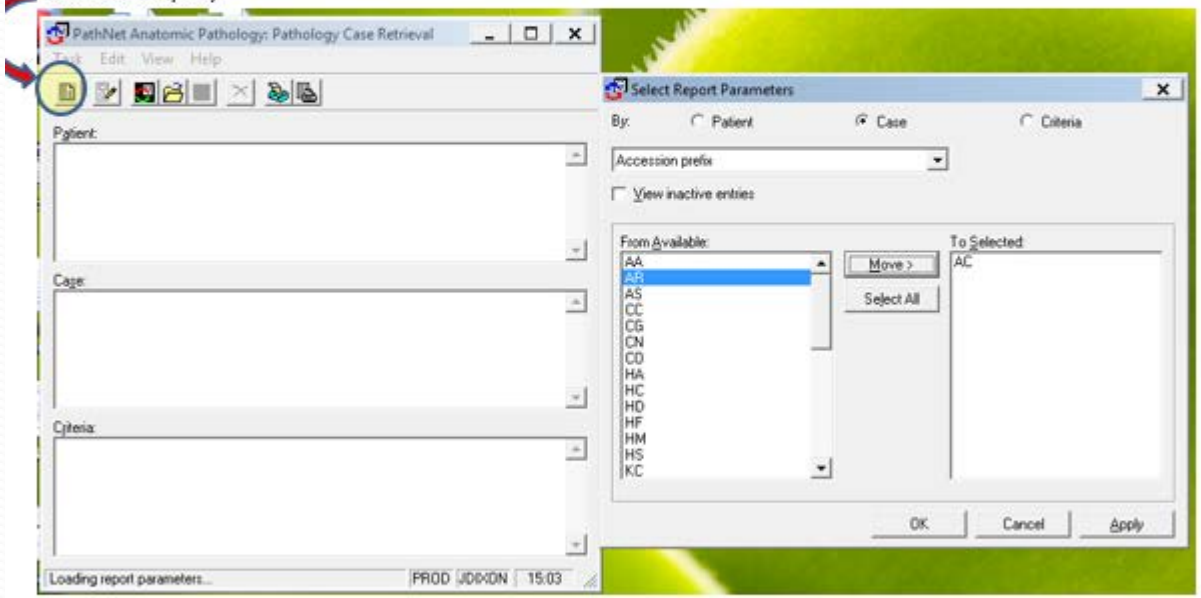
Cerner

Path Case Retrieval – Cerner

(jim.dixon@muhc.mcgill.ca)

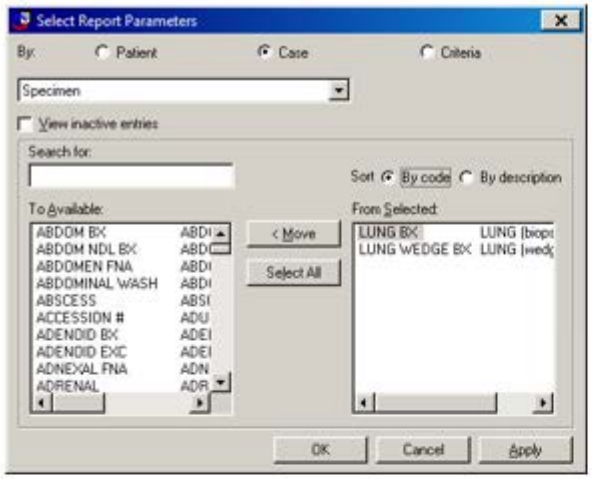
1) Open up "Pathology Case Retrieval" in Cerner –

Build a new query

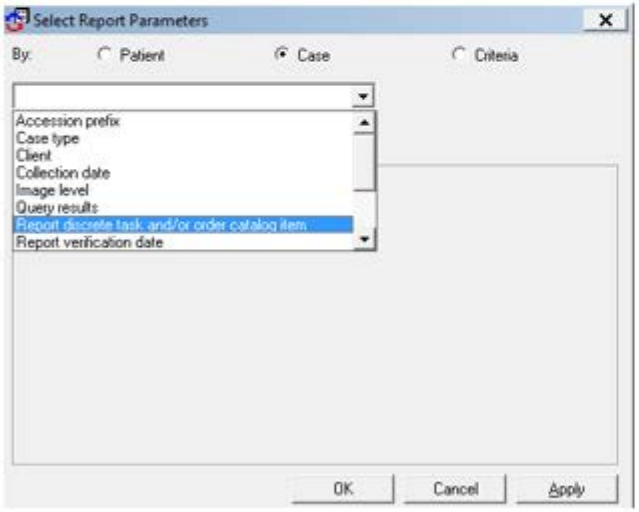


2) "Select Report Parameters" box pops up – move it over so it doesn't block the Pathology Case retrieval box (As shown above).

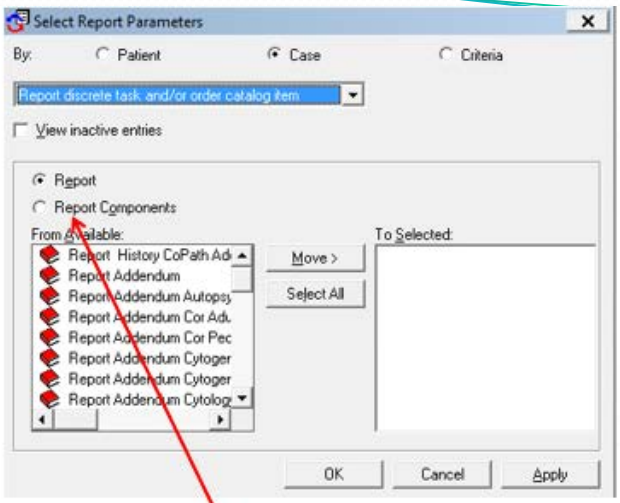
Here you will select various parameters to narrow your searches down. Ignore the "Patient" selection. Start with "Case" and go through the menu, selecting parameters that will be suitable for your query.



One important parameter is "report discrete task and/or order catalog item"



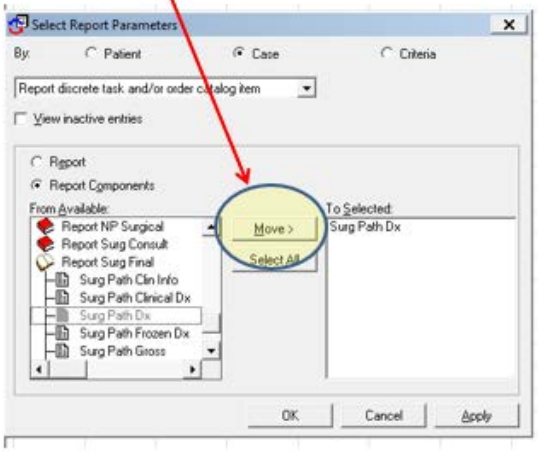
You can scroll down to choose Pathology and/or Cytology reports – and choose the "**Move >**" to add it to the query



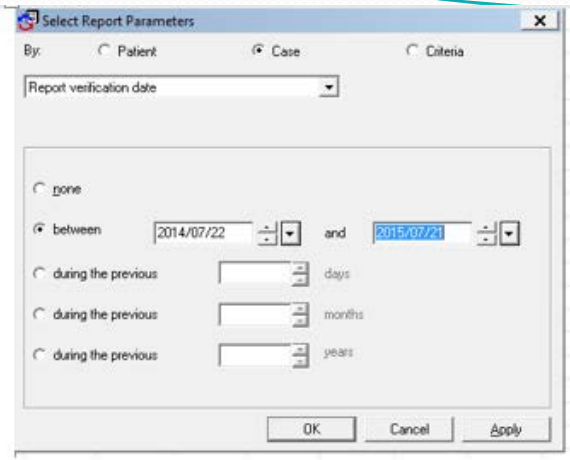
If you select "**Report Components**" you can further break down the searching to more specific details

Such as clinical, information, final diagnosis, etc etc.

Again, use the "**Move >**" icon to select what you need.

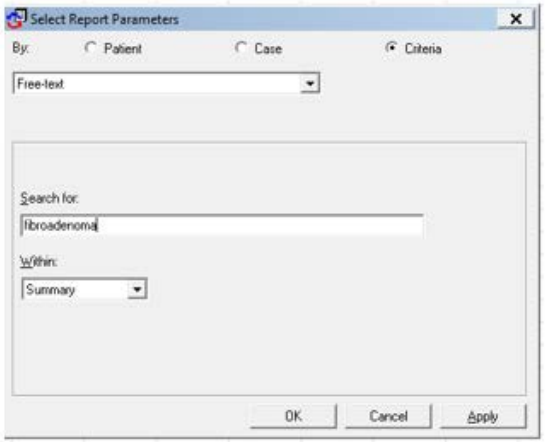


"**Report verification date**" is used to select a specific range to search on.

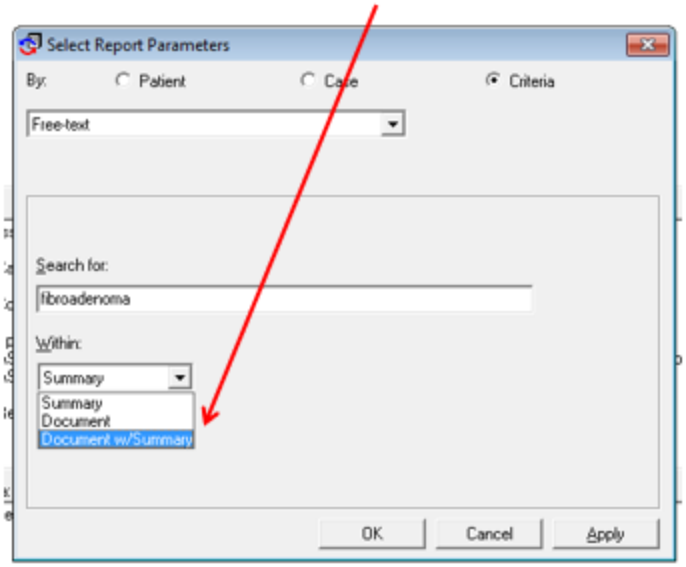


Please note – this query will crash if the date range is more than 6 months. Other users in the MUHC may be running queries at the same time. **Refrain from running date ranges longer than 6 months**.

3) Moving onto the "Criteria" menu – choose "free-text". This will greatly help you find results.



Make sure you always choose "**Document w/Summary**". This will give you best results.

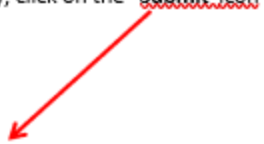


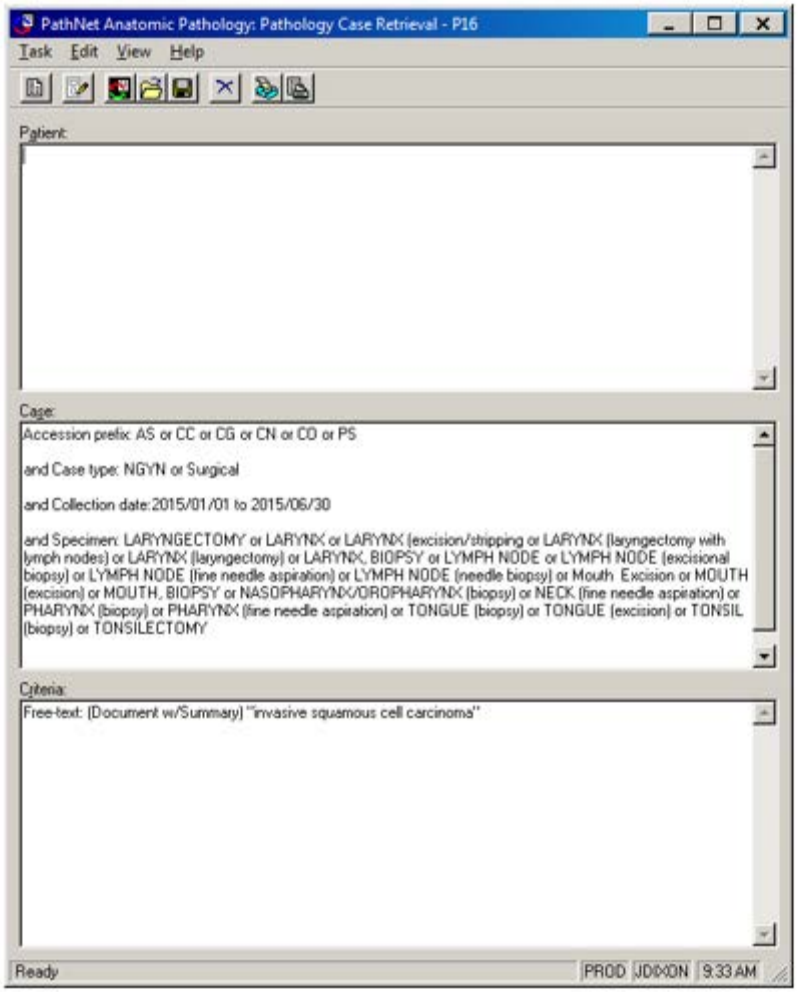
If you want to find something with more than one word, use parenthesis to make sure the words are found in sequence.

Example – "necrotizing fasciitis" – if you omit the parenthesis, you will get all results from both words individually.

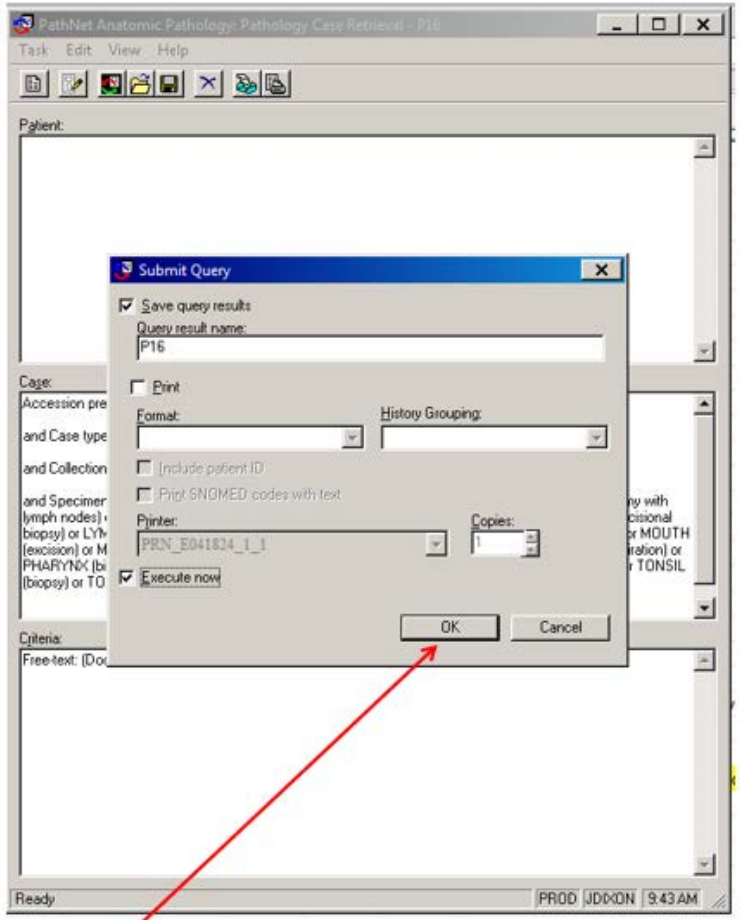
When all parameters are selected, choose "Apply" then "OK"

4) The main box should populate all your search parameters.
When you are ready to do your query, click on the "**Submit**"icon



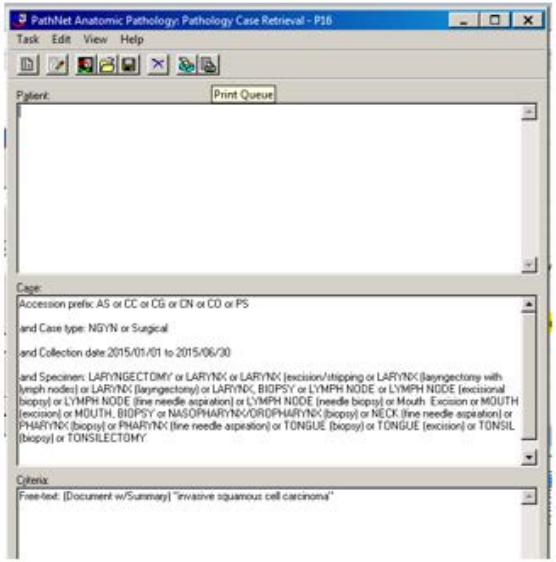

PathNet Anatomic Pathology: Pathology Case Retrieval - P16
Task Edit View Help
Patient:
Case:
Accession prefix: AS or CC or CG or CN or CO or PS
and Case type: NGYN or Surgical
and Collection date: 2015/01/01 to 2015/06/30
and Specimen: LARYNGECTOMY or LARYNX or LARYNX (excision/stripping or LARYNX (laryngectomy with lymph nodes) or LARYNX (laryngectomy) or LARYNX, BIOPSY or LYMPH NODE or LYMPH NODE (excisional biopsy) or LYMPH NODE (fine needle aspiration) or LYMPH NODE (needle biopsy) or Mouth Excision or MOUTH (excision) or MOUTH, BIOPSY or NASOPHARYNX/OROPHARYNX (biopsy) or NECK (fine needle aspiration) or PHARYNX (biopsy) or PHARYNX (fine needle aspiration) or TONGUE (biopsy) or TONGUE (excision) or TONSIL (biopsy) or TONSILECTOMY
Criteria:
Free-text: (Document w/Summary) "invasive squamous cell carcinoma"
Ready
PROD
9:33 AM

5) You will then be prompted to name/save your query. Checkmark boxes on the "**Save query results**" field and on the "**Execute now**".
6) Be sure to **name your query before you click on "OK".** (Take note of the name, as you will need it later)

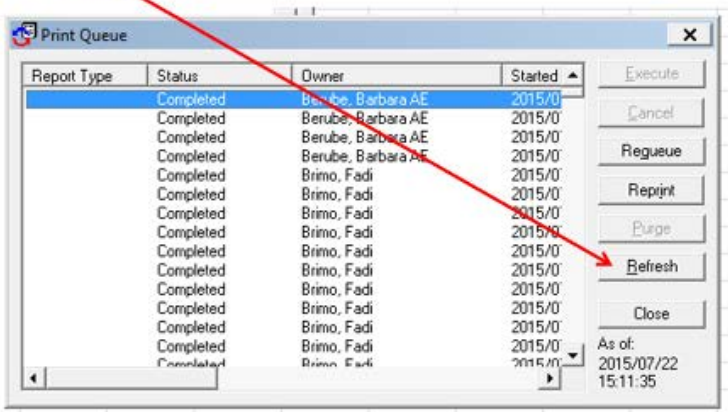


Choose "OK"

7) Now your query is running in the background. You can check the status every 5-10 minutes by choosing the "**Print Queue**" icon

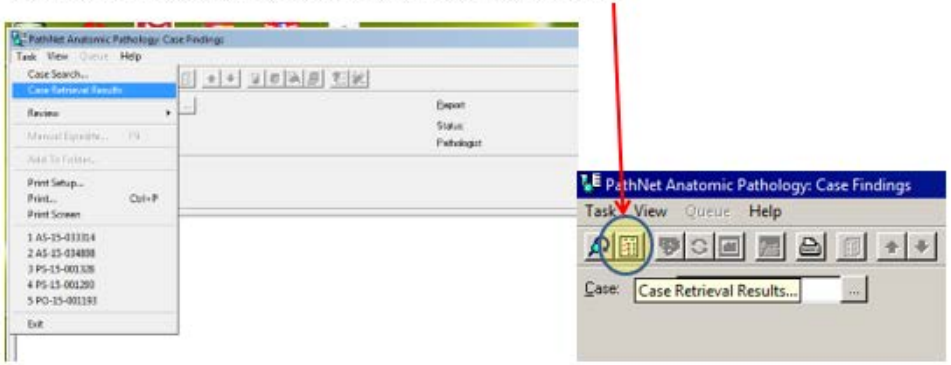


The Print Queue status will say "In Process" or "Completed" – If it is still "In process", wait another 10 minutes and choose "Refresh" again.

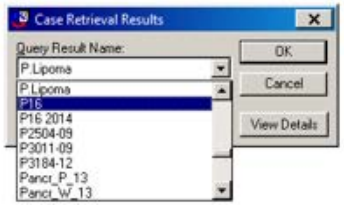


8) When your query is completed, go to "**Case Findings**" to view your query results.

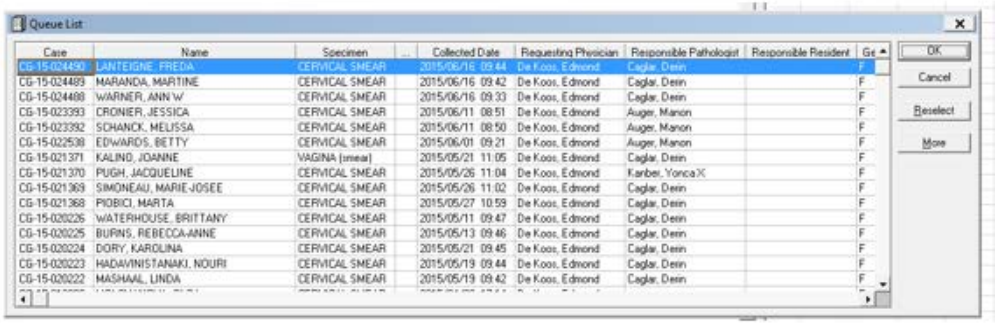
In Case Findings you can access your results by looking up the name you gave your query. Simply select "**Case Retrieval Results**" from the menu or from the icon as shown below.



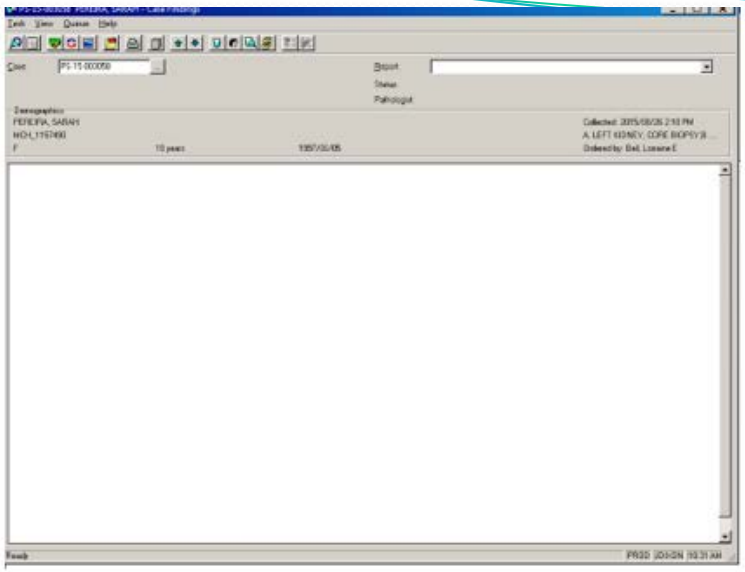
Find your query name in the list. Choose "OK"

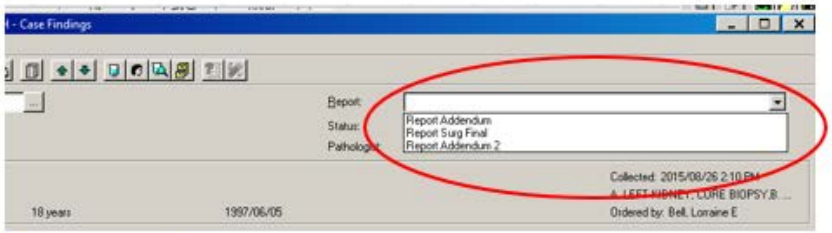


The cases will populate in the Queue List. Double-click on the first case to start reviewing case by case...one at a time.



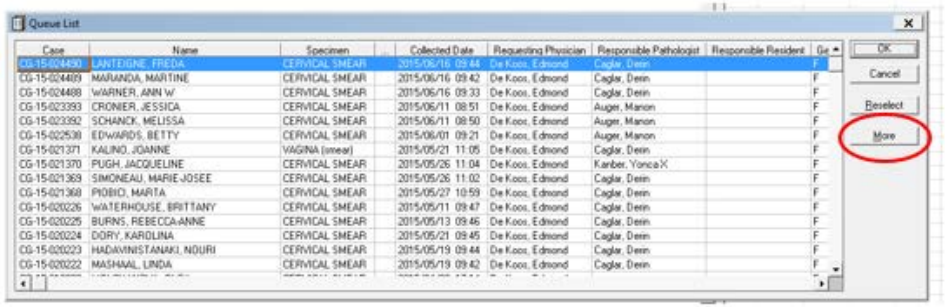
If the "Report" field is blank, you need to click on the arrow (pull down menu) to select the final report or addendum(s)



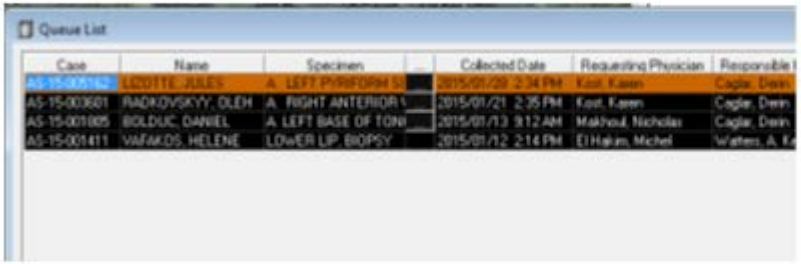


Copy results to Excel

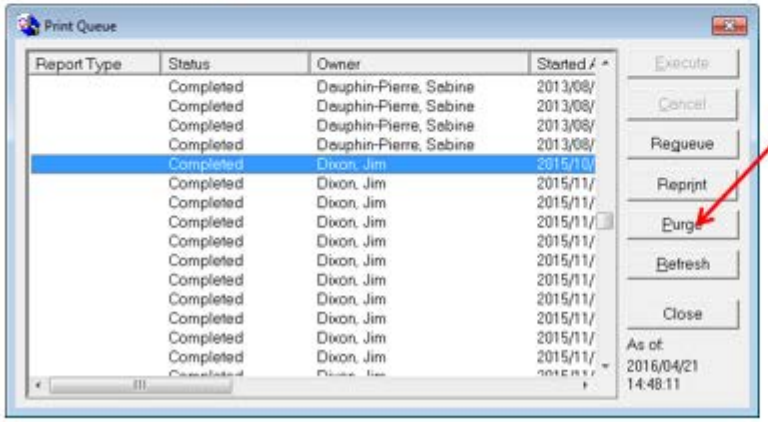
1) If there are more than 500 results, you need to click on "More". Each time the page will load up an additional 500 results. Keep doing this until all cases are loaded. (the "More" icon will grey out) .



2) Highlight all cases – keyboard commands "CTL-C" (Copy) and "CTL-V" (Paste) onto an Excel sheet.



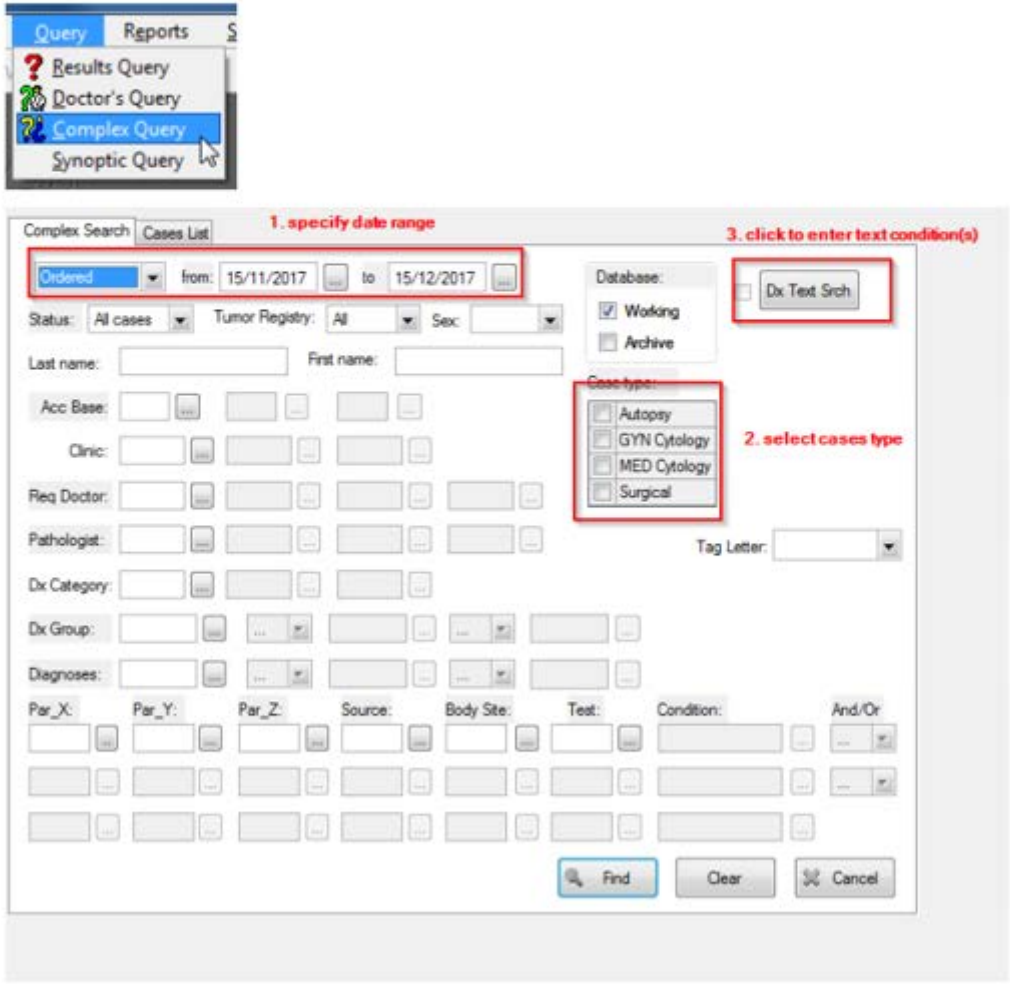
* PURGE your searches after they are done. Select your query when finished and choose the "Purge" icon.



SoftPath

Path Case Retrieval – SoftPath

(mmunazzit@jgh.mcgill.ca)




Text Searched:
And/Or/Not
And
And/Or/Not
And
Final diagnosis
Words/Phrases
And/Or/Not
enter diagnosis here
W
P
And
Final diagnosis
Words/Phrases
And/Or/Not
And
Final diagnosis
Words/Phrases
And/Or/Not
And
Clear
OK

Discussion #2

Innovative ideas to enhance both clinical and basic science research in the department

- Challenges for community hospital pathologists doing research: resources, time and remuneration impact.
- Resident involved in research should be given half day a week for doing research projects
- Better organization and create ties with basic scientists
- There should be a research agenda for each subspecialty team.
- Graduate style supervision of residents.
- There should a mentorship between staff, residents and post-graduate students. Mentor proposed Drs. Burnier, Brimo, Telleria and Baglole.
- Motivation to do research by the possibility of publishing articles and presenting at conferences.
- Learn, identify and deal with sub-optimal setting.
- Involve PGY1 in research projects starting with smaller projects then larger projects later in residency.
- Time management-possible protected time mechanisms.
- A list of topics/research projects by staff should be made available so that the residents can approach earlier.
- Residents to be part of inter-departmental clinicians' connections/projects. Generate a list of possible inter-disciplinary projects.
- Alumni connections, what research projects and increase collaborations.
- Flexible level of research projects for residents based on their level of expertise, time availability and future goals.
- Protected time for research by having more clinical staff.
- Cases should be accessioned by service and not to the person.
- We should draw a list of current graduate students programs and the programs at the Research Institute & JGH along with the different tests available on the different sites.
- The ongoing projects could be included in the self-evaluation.
- Leon vanKempen 's research activities in molecular pathology will be replaced by Andreas Papadakis.

Priorities identified

1. Make a list of research opportunities by staff and associate members to the trainees
2. Have a research agenda in each subspecialty team
3. Re-format the annual research day with staff presenting their projects in the morning