Department of Surgery Research Strategic Plan 2023-2026

VISION

To provide highest-quality patient-centered surgical care, perform innovative research, and train the next generation of surgeons and scientists.

MISSION

To be Canada's leading academic surgical department, improving outcomes and quality of care through impactful research, innovation and training.

VALUES

The Department of Surgery is committed to the following Values:

- **Creativity** – to drive meaningful innovation and discovery

- **Excellence** – to produce world-class results

- **Collaboration** – to yield interdisciplinary breakthroughs

- **Empathy** – for patients, learners, faculty and staff

- **Inclusivity** – for a supportive, welcoming and productive environment

GOALS:

- **SURGICAL OUTCOMES AND QUALITY**: Department of Surgery will lead the development and adoption of impactful programs in surgical outcomes and quality improvement research.

- **REGENERATIVE MEDICINE**: Department of Surgery will drive, sustainably fund and translate advances in regenerative medicine.

- **SURGICAL EDUCATION AND SIMULATION**: Department of Surgery will lead in the field of surgical education by improving training content, levering existing resources and developing enabling structures.

- **SURGICAL ONCOLOGY**: Department of Surgery will define the future of surgical oncology by growing academically, leading clinical trials and attracting leading trainee talent.

MULTI THEMATIC CAPABILITIES WILL SUPPORT THESE KEY AREAS OF COMPETENCE BY ACHIEVING THE FOLLOWING AIMS:

- **TRANSLATION/INNOVATION**: Department of Surgery will appropriately balance protection of ideas with open innovation

- **DATA SCIENCE**: Department of Surgery will develop a universal data consent strategy and build a streamlined access structure.

- **MEDICAL TECHNOLOGY**: Department of Surgery will build collaborative networks around core strengths to realise the formation of a leading medical technology centre.

- **PRECISION HEALTH**: Department of Surgery will link clinical and research data to grow precision health across the department.

FOUNDATIONS AND ENABLERS WILL SUPPORT THE DEPARTMENT OF SURGERY'S RESEARCH MISSION:

- **GRADUATE TRAINING PROGRAM**: Department of Surgery's graduate program will attract and train outstanding students in priority areas

- **TALENT**: Department of Surgery will establish transparent processes for hiring and access to tenure track positions

- **INTERDISCIPLINARITY**: Department of Surgery will create interdisciplinary centres and networks

1. **Priority 1: 6 months**
2. **Priority 2: 12 months**
3. **Priority 3: 12-18 months**

Progress Tracking

GRADUATE TRAINING PROGRAM GOAL: Our graduate program will attract and train outstanding students in priority are

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Objective 1: Increase number of high-quality applicants and PhD students
Strategic initiatives:

1. Review and update the website

2. Rebrand "Experimental Surgery" to "Surgical Sciences"

3. Explore introduction of new programs aligned with strategic plan

4. Increase the ratio of PhD-to-MSc students and number of postdocs

Objective 2: Expand and ensure transparent access to student funding
Strategic initiatives:

1. Catalogue all internal funding opportunities

2. Establish policies to increase merit-based funding

3. Expand access to the Surgeon Scientist Program for priority areas

TALENT: We will establish transparent, performance-based processes for hiring and long-term funding

Objective 1: Promote sustainable funding for research scientists
Strategic initiatives:

1. Lobby faculty/university to increase tenure track positions

2. Establish transparent process and metrics for decisions regarding ongoing support for CAS research scientists

3. Establish process for access to tenure track positions including metrics

Objective 2: Promote strategic recruitment
Strategic initiatives:

1. Establish uniform and transparent hiring processes for all faculty members

2. Consider new policies regarding use of Department-based start-up funding

TALENT: We will establish transparent, performance-based processes for hiring and long-term funding

3. Recruit and/or cross-appoint research faculty with expertise in areas aligned with strategic plan

INTERDISCIPLINARITY: We will create interdisciplinary centres and networks

Objective : Create interdisciplinary centres and networks aligned w/strategic plan
Strategic initiatives:

1. Establish a medtech/innovation centre	⬤
2. Establish a Surgical Outcomes Research Centre or network	⬤
3. Establish a Precision health network	⬤
4. Establish a surgical education Research Centre or network	⬤

SURGICAL OUTCOMES: We will lead the development and adoption of impactful programs in surgical outcomes and qua improvement research.

Objective 1: Establish a strong graduate program that gives access to the best and brightest
Strategic initiatives:

1. Create a world-class website to advertise the Surgical Outcomes MSc program

2. Expand opportunities and mentorship to increase student funding success.

3. Hire academic staff to expand research in key areas of surgical outcomes (AI, big data, and mobile health)

Objective 2: Create a Surgical Outcomes Research Center
Strategic initiatives:

1. Build the initiative and launch a website

2. Identify potential sponsors and acquire funding for center-specific resources/positions (research coordinator, statistician, data scientist/manager, epidemiologist)

3. Create a functional and productive research community

Objective 3: Establish a Surgical Outcomes Database Across McGill-Affiliated Hospitals
Strategic initiatives:

1. Give every surgical patient the opportunity to provide consent to use of their data for research purposes.

2. Hire a data scientist/manager

3. Create the surgical outcomes database for each speciality, with core outcome sets including patient reported outcome measures

SURGICAL ONCOLOGY: We will define the future of surgical oncology by growing academically, leading clinical trials and attracting leading trainee talent.

Objective 1: Build Strong Integration Between Basic/Translational Researchers And Clinicians Within and Outside the Depart Surgery
Strategic Initiatives:

1. Dept. of Surgery will undertake prospective data capture with synoptic reporting of OR oncology cases. Priority 1. Oncology group

2. Dept. of Surgery will collect standardized patient outcomes. Priority 2. Points of accountability: Outcomes and oncology group

3. Dept. of Surgery will build standardized and dynamic data storage. Priority 2. Points of accountability: Oncology with Data Science group

Objective 2: Lead Clinical Trials In Oncology by Leveraging Longitudinal Access To Tissues
Strategic Initiatives:

1. Streamline the process for clinical trials in oncology. Priority 1. Points of accountability: Oncology group

2. Define the needs in order to enhance support for the establishment of clinical trials in oncology (eg support for IRB, biobanking, data management, statistical support). Priority 2. Points of accountability: Oncology with Data Science group

PRECISION HEALTH: We will link clinical and research data to grow precision health across the department.

Objective 1: To double precision health research (PHR) studies in Surgery in the next 5 years.
Strategic initiatives:

1. Identify 3 priority areas for PHR in Surgery based on clinical priority areas and academic interests/strengths. Priority 1. Points of accountability: Precision health

2. Make recruitment recommendations to fill gaps in these 3 PHR priority areas. Priority 2. Points of accountability: Precision health

3. Develop PHR clinical research units. Priority 3. Points of accountability: Precision health

4. Establish a dedicated and funded PHR training program to support. Priority 3. Points of accountability: Precision health

Objective 2: Link clinical and research data in the next 5 years.
Strategic Initiatives:

1. Identify the core clinical variables needed to support PHR. Priority 1. Points of accountability: task force including outcomes, data science, precision health and oncology

2. Develop sharing platforms for imaging and omic data to support PHR. Priority 2. Points of accountability: imaging and omics working groups from the task force

3. Embed research (data/biospecimen) consent in the MUHC treatment consent form. Priority 2. Universal consent task force

4. Develop synthetic datasets- needs assessment and action plan. Priority 2. Points of accountability: Precision health

5. Integrate research and clinical data in a platform accessible by researchers, clinicians and patients. Priority 3. Points of accountability: task force including outcomes, data science, precision health and oncology

🟠 In progress

🟠 Done

FOUNDATIONS AND ENABLERS WILL SUPPORT THE DEPARTMENT OF SURGERY'S RESEARCH MISSION:
GRADUATE TRAINING PROGRAM: Department of Surgery's graduate program will attract and train outstanding students in priority areas

Objective 1: Increase the number of high-quality applicants and the number of PhD students

Strategic Initiatives:

1. Review and update the website. Priority 1. Points of accountability: Graduate Program with each group

2. Rename/rebrand "Experimental Surgery" to "Surgical Sciences". Priority 2. Points of accountability: Department of Surgery Executive

3. Explore introduction of new programs aligned with strategic plan including Medicine and AI and Precision health. Priority 3. Points of accountability: Graduate Program

4. Increase the ratio of PhD-to-MSc students and number of postdocs. Priority 2. Points of accountability: Graduate Program with each group

Objective 2: Expand and ensure transparent access to student funding

Strategic Initiatives:

1. Catalogue all internal funding opportunities. Priority 1. Points of accountability: Graduate Program Exec

2. Establish policies to increase merit-based funding. Priority 1. Points of accountability: Graduate Program Exec

3. Expand access to the Surgeon Scientist Program for priority areas. Priority 2. Points of accountability: Surgeon Scientist Program

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TALENT: Department of Surgery will establish transparent, performance-based processes for hiring and long-term funding

Objective 1: Promote sustainable funding for research scientists

Strategic Initiatives:

1. Lobby faculty/university to increase tenure track positions. Priority 1. Points of accountability: Chair and Vice-chair research

2. Establish transparent process and metrics for decisions regarding ongoing support for CAS research scientists: Priority 2. Points of accountability: new task force reporting to Chair

3. Establish process for access to tenure track positions including metrics. Priority 2. Points of accountability: new task force reporting to Chair

Objective 2: Promote strategic recruitment

Strategic Initiatives:

1. Establish uniform and transparent hiring processes for all faculty members. Priority 1. Points of accountability: Surgical Executive committee

2. Consider new policies regarding use of Department-based start-up funding. Priority 3. Points of accountability: Tomlinson committee

3. Recruit and/or cross-appoint research faculty (scientists, engineers, clinicians) with expertise in AI, data science, robotics, mobile health, health sciences education or other areas aligned with strategic plan. Priority 2. Points of accountability: Surgical Executive

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INTERDISCIPLINARITY: Department of Surgery will create interdisciplinary centres and networks

Objective : Create interdisciplinary centres and networks aligned with strategic plan

Strategic Initiatives:

1. Establish a medtech/innovation centre. Priority 2. Points of accountability: MedTech group

2. Establish a Surgical Outcomes Research Centre or network. Priority 2. Points of accountability: Outcomes and data science groups

3. Establish a Precision health network. Priority 1. Points of accountability: Precision health group

4. Establish a surgical education Research Centre or network. Priority 1. Points of accountability: Education group

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Surgical Outcomes And Quality Goals

Dept. of Surgery will lead the development and adoption of impactful programs in surgical outcomes and quality improvement research.

Objective 1: Establish a strong graduate program that gives access to the best and brightest

Strategic Initiatives:

1. Create a world-class website to advertise the Surgical Outcomes MSc program. Priority 1. Points of accountability: Outcomes group with Graduate program

2. Expand opportunities and mentorship to increase student funding success. Priority 2. Outcomes group

3. Hire academic staff to expand research in key areas of surgical outcomes (AI, big data, and mobile health). Priority 3. Outcomes group

Objective 2: Create a Surgical Outcomes Research Center

Strategic Initiatives:

1. Build the initiative and launch a website. Priority 1. Points of accountability: Outcomes group

2. Identify potential sponsors and acquire funding for center-specific resources/positions (research coordinator, statistician, data scientist/manager, epidemiologist). Priority 2. Points of accountability: Outcomes and data science groups

3. Create a functional and productive research community. Priority 3. Points of accountability: Outcomes group

Objective 3: Establish a Surgical Outcomes Database Across McGill-Affiliated Hospitals

1. Give every surgical patient the opportunity to provide consent to use of their data for research purposes. Priority 1. Points of accountability: Universal patient consent working group

2. Hire a data scientist/manager. Priority 2. Points of accountability: Outcomes group

3. Create the surgical outcomes database for each speciality with core outcome sets including patient reported outcome measures. Priority 3. Points of accountability: task force including Outcomes, data science, precision health and oncology

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Regenerative Medicine Goal

Department of Surgery will drive, sustainably fund and translate advances in regenerative medicine.

Objective 1: Double research funding over the next 5 years

Strategic Initiatives:

1. Create a team dedicated to identifying and obtaining funding for special projects and merit based funding for trainees. Priority 1. Points of accountability: Regenerative medicine group

2. Design and deliver a mandatory grant writing mentorship course to develop our infrastructure. Priority 2. Points of accountability: Regenerative medicine group

3. Develop a strategy to prepare for future advances in regenerative medicine. Priority 3. Points of accountability: Regenerative medicine group

Objective 2: Establish a hiring plan for future areas of strategic focus

Strategic Initiatives:

1. Fund and recruit a leader in regenerative medicine having defined clear criteria. Priority 3. Points of accountability: Regenerative medicine group

Objective 3: Increase collaboration between clinicians and scientists

1. Define a clear strategy for better knowledge exchange and solidify interdisciplinary collaborations among members and with those outside to identify and utilize the opportunities in the field. Priority 2. Points of accountability: Regenerative medicine group

2. Identify practical approaches for the development of the next generation of regenerative medicine scientists in the field. Priority 2. Points of accountability: Regenerative medicine group

3. Implement liaison and support mechanisms that increase grants and publications Priority 3. Points of accountability: Regenerative medicine group

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Surgical Education And Simulation Goal

Department of Surgery will lead in the field of surgical education by improving training content, levering existing resources and developing enabling structures.

Objective 1: Update and expand surgical education graduate training

Strategic Initiatives:

1. Update the Surgical Education Concentration MSc Website. Priority 1. Points of accountability: Education group/ Harley

2. Update MSc thesis Curriculum. Priority 2. Points of accountability: Education group/ Harley

3. Develop Surgical Education PhD Concentration. Priority 3. Points of accountability: Education group/ Harley

Objective 2: Enhance the surgical education research community

1. Create "nexus" surgical education website for faculty, students, & other stakeholders, including a surgical education resource directory. Priority 1. Points of accountability: Graduate program with Education group / Harley-Vassiliou

2. Explore better mechanisms for sharing data. Priority 3. Points of accountability: Education group

3. Explore development of "division of Surgical Education". Priority 3. Points of accountability: Education group / Vassiliou-Harley

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Surgical Oncology Goal

Department of Surgery will define the future of surgical oncology by growing academically, leading clinical trials and attracting leading trainee talent.

Objective 1: Dept. of Surgery will Build Strong Integration Between Basic/Translational Researchers And Clinicians Within and Outside the Department of Surgery

Strategic Initiatives

1. Dept. of Surgery will undertake prospective data capture with synoptic reporting of OR oncology cases. Priority 1. Oncology group

2. Dept. of Surgery will collect standardized patient outcomes. Priority 2. Points of accountability: Outcomes and oncology group

3. Dept. of Surgery will build standardized and dynamic data storage. Priority 2. Points of accountability: Oncology with Data Science group

Objective 2: Dept. of Surgery will Lead Clinical Trials In Oncology by Leveraging Longitudinal Access To Tissues

Strategic Initiatives

1. Streamline the process for clinical trials in oncology. Priority 1. Points of accountability: Oncology group

2. Define the needs in order to enhance support for the establishment of clinical trials in oncology (eg support for IRB, biobanking, data management, statistical support). Priority 2. Points of accountability: Oncology with Data Science group

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MULTI-THEMATIC CAPABILITIES
Translation/Innovation
Department of Surgery will appropriately balance protection of ideas with open innovation

Objective 1: Bring in external ideas and technologies to the department's own innovation process.

Objective 2: Externalise un- and under-utilized ideas and technologies from our research and clinical experience to be incorporated into others' innovation processes.

Objective 3: Partner with companies who look to identify priority projects and build solutions to ours

Strategic initiatives:

- Generate health care economics data

- Accumulate surgical video library that can be used for computer vision/AI research and can potentially be sold

- Develop expertise within Department using data warehouse in RI

- Identify industry partners

- Clearly define IP sharing and incentivize entrepreneurs

- Bring technology into everyday use in clinical care, research and teaching

- Define value proposition

- Attractive for philanthropic engagement

- Recruit clinicians into established teams

- Recruit CAS scientists/engineers to support multiple projects

- **Key Result 1**: Quarterly innovation rounds and annual Visiting Professorship
- **Key Result 2**: Departmental newsletter
- **Key Result 3**: Case studies

Data Science
Department of Surgery will develop a universal data consent strategy and build a streamlined access structure.

Objective 1: Encourage patients to provide signed consent to use their data.

- Establish an integrated consent model (ICM) consistent with Quebec and institutional privacy laws. Priority 1. Points of accountability: Universal patient consent working groups

- Create patient education material in surgical clinics re: data collection. Priority 2. Points of accountability: Universal patient consent working groups

Objective 2: Create a cross-institutional database for rectal, breast, and prostate cancers

- Develop database with data sharing agreements already baked into the consent process. Priority 2. Points of accountability: Task force including Outcomes, data science and oncology

- Expand to other cancers at other university networks. Priority 3. Points of accountability: task force including Outcomes, data science and oncology

Objective 3: Collaborate with researchers outside of medicine in AI

- Identify potential collaborators in AI at McGill University and other universities. Priority 1. Points of accountability: Data science and innovation groups

- Create a "Medicine and AI" degree/track through Experimental Surgery. Priority 2. Points of accountability: Data science group and graduate program

- Obtain funding to hire data scientist and for database management. Priority 3. Points of accountability: Data science and outcomes group

Objective 4: Expand access to biostatistical resources

- Perform a needs assessment for biostatistical resources. Priority 1. Points of accountability: Data science and outcomes group

- Create dedicated and sustained funding for these resources. Priority 2. Points of accountability: Data science and outcomes groups

- Establish a "Surgical Outcomes and Statistics" Centre where data can be stored and required expertise is available onsite or there are funds to support temp contracts PRN. Priority 3. Points of accountability: Data science and outcomes groups

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Medical Technology
Department of Surgery will build collaborative networks around core strengths to realise the formation of a leading medical technology centre.

Objective 1: Increase the impact of McGill's research where we have strengths or momentum

- Rebrand The Division and Degree of Experimental Surgery. Priority 1. Points of accountability: Graduate Program

- Increasing the quality and number of our publications. Priority 2. Points of accountability: Med Tech

- Peer-assist Publication and Outreach Support. Priority 3. Points of accountability: Med Tech

- McGill's Surgical Innovation Journal. Priority 3. Points of accountability: Med Tech

Objective 2: Build A Designated Med Tech Lab

- Establish space, identifying funding, and build infrastructure. Priority 2. Points of accountability: Med Tech

- Establishing the organization. Priority 2. Points of accountability: Med Tech

- Expanding the network of collaborators and PIs. Priority 3. Points of accountability: Med Tech

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Precision Health
Department of Surgery will link clinical and research data to grow precision health across the department.

Objective 1: To double precision health research (PHR) studies in Surgery in the next 5 years.

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Objective 2: Link clinical and research data in the next 5 years.

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