A Year of Progress at the
Osler Research Institute for Health Innovation

Transforming Ideas into Impact

ORIHI Annual Report 24/25

Osler Research Institute
FOR HEALTH INNOVATION

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Welcome Message

We are pleased to present the Osler Research Institute for Health Innovation (ORIHI) 2024/2025 Annual Report, marking a year of remarkable growth, collaboration, and innovation. This report captures our progress from April 1, 2024, to March 31, 2025, highlighting key milestones and the impactful work driving ORIHI forward.

A defining moment was the official launch of ORIHI during *Celebrate Research Week* in November 2024—a milestone that showed our commitment to working alongside our partners and community to advance health innovation. Our achievements this year span promising clinical trials, such as the next-generation therapy tackling resistance in non-small-cell lung cancer, and bedside studies on evidence-informed assessment tools used in pediatric emergency departments.

The report also highlights our growing research impact, including community collaborations, our Community-Based Advisory Committee, as well as profiles of studies, publications, and key partnerships. We report on community initiatives such as the ORIHI Virtual Speaker Series and the 2024 Summer Student Research Program, which supports and inspires the next generation of health innovators.

We thank our staff, partners, researchers, clinicians, students, and community members whose dedication continues to build a strong foundation for transformative change. Together, we are shaping the future of healthcare locally, nationally, and beyond.

As we look ahead, we remain inspired and committed to our purpose: transforming discoveries into practice for better health. We invite you to explore these highlights and join us on our journey of innovation and impact.

ORIHI Leadership

Tiziana Rivera
Executive Vice President, Research, Quality and Chief Nursing Executive, William Osler Health System

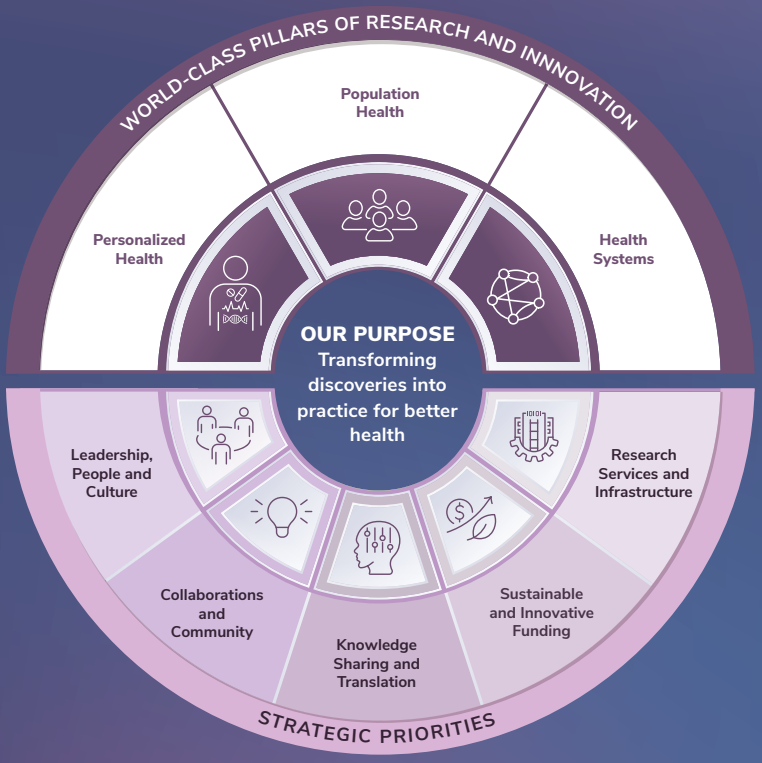
Dr. Veronique Boscart
Chief Scientific Officer

Patti Rempel
Director Clinical Research

ORIHI at a Glance

The Osler Research Institute for Health Innovation (ORIHI) brings together Osler's research and innovation efforts into a collaborative ecosystem where researchers, innovators, and scholars work in partnership to develop real-world solutions that enhance patient care and improve health outcomes. Established to support research that directly informs clinical practice and addresses pressing health system challenges, ORIHI places a strong emphasis on community engagement and health equity. We are dedicated to advancing interdisciplinary research that drives meaningful, practical change at the forefront of care.

Strategy-At-A-Glance



Personalized Health
Tailoring health care interventions to individual characteristics, such as genetics, lifestyle, preferences, and environmental factors, to improve health.

Population Health
Understanding, researching, and innovating to address the health needs of our diverse population.

Health Systems
Studying and optimizing the structures and processes of our health care systems to ensure they are efficient, equitable, and people centered.

ORIHI Funding

April 1, 2024 – March 31, 2025

- 3% Government
- 91% Industry
- 1% Osler Foundation
- 5% Other Not-for-Profit
- 1% Post-Secondary

$3,365,322.13

The Year in Numbers

67 Active clinical trials	**99** Peer-reviewed Publications	**6** Knowledge translation events	**46** New studies with REB approval	**173** Active studies
28 Departments leading studies	**59** External research partners	**65** Active researchers	**25** Community partners	**46** Studies completed this past fiscal year

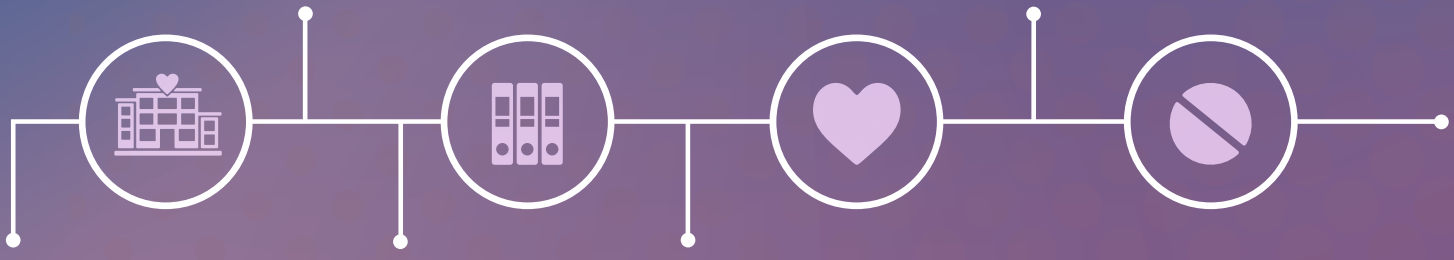
2024-25 Milestones

ROADMAP

Release of ORIHI Strategic Plan 2025-2030

ENGAGEMENT

Community-Based Research Advisory Committee certified with Community-Based Research Canada



LAUNCH

Official launch of ORIHI during *Celebrate Research Week* 2024

NEXT GEN

Advancing the Summer Student Research Program (SSRP)

COMMUNITY ENGAGEMENT

Offering a series of community engagement initiatives:

- Celebrate Research Week
- Virtual Speaker's Series
- Researcher Breakfast Networking
- Nursing Research Poster Session
- SSRP Research Poster Session

From Clinical Trials to Real-World Impact

Pioneering Liquid Biopsy

A Canadian First at Osler

In a major advancement for cancer diagnostics, William Osler Health System (Osler) became the first hospital in Canada to offer in-house, point-of-care liquid biopsy testing as part of a ground-breaking research study. This achievement by the Advanced Diagnostics team, led by Molecular Pathologist, Dr. Brandon Sheffield, marks a milestone in community-based cancer care and demonstrates Osler's leadership in precision oncology.

Liquid biopsy, a minimally invasive blood test to detect cancer, is quickly becoming an essential tool in oncology. Despite its potential, access to this technology has been limited. To generate real-world evidence for its broader implementation, Osler launched Canada's first in-house liquid biopsy program at a community hospital in 2022.

The results published in July 2024 demonstrated an average turnaround time of three business days, for the blood test which supports timely, actionable insights without the need for invasive procedures. This opens up the possibility of personalized treatment strategies for patients.

This pioneering effort reflects Osler's commitment to innovation and equity in cancer care. By proving the feasibility and impact of rapid, in-house liquid biopsy testing, Osler is not only transforming care within its own network but also creating a scalable model for other hospitals across Canada to adopt.

Real-World Study

Outcomes of a Multidisciplinary Lung Cancer Screening Program at Osler

In 2012, Osler launched the country's longest-running lung cancer screening program in a real-world setting, using a Low-Dose CT (LDCT) scan, an effective tool for detecting lung cancer early, particularly for people at high risk due to a history of heavy smoking.

The program offers annual LDCT scans to individuals aged 55 to 77 who had smoked heavily, had no history of lung cancer, and had not received a chest CT scan within the past year. Between 2012 and 2019, more than 5,400 people took part in the program, with over 14,000 scans completed. On average, 683 new patients enrolled each year, with the program growing by nearly 28% annually.

The scans helped identify lung nodules that required further investigation. About 5% of participants underwent a biopsy, and more than half were diagnosed with lung cancer—many at an early and more treatable stage.

This study was led by an interdisciplinary team of Osler clinician/researchers:

Dr. Marc Ossip, Chief of Diagnostic Imaging
Garima Sharma, Research Student
Daniel Levay, Manager Business Operations DI and Lab
Dr. Anna Bendzsak, Department of Surgery
Dr. Kashif Irshad, Division Head, Thoracic Surgery
Dr. Ching Yeung, Thoracic Surgeon
Kassandra Bisson, Genomic Data Analyst
Lynn Vicente, Manager of Clinical Research Oncology
Dr. Kirsten Perdrizet, Oncology Physician
Dr. Brandon Sheffield, Molecular Pathologist
Dr. Parneet Cheema, Head of Cancer Research

The findings, published this year, highlight the feasibility and effectiveness of lung cancer screening in a community hospital setting. The program's success shows the critical role of early detection in lung cancer treatment.

Promising Clinical Trials

A Next-Generation Therapy to Overcome Resistance in Non-Small Lung Cancer

Findings from a study on a new cancer drug, Repotrectinib, published in the *New England Journal of Medicine* in January 2024, offered renewed hope for patients with ROS1 fusion-positive non-small-cell lung cancer (NSCLC). This form of lung cancer is challenging to treat, as many patients eventually develop resistance to existing therapies, especially when the cancer spreads to the brain. This is where older drugs often fail.

Repotrectinib is a next-generation therapy specifically designed to overcome treatment resistance. In a large phase 1–2 clinical trial, an international team of researchers from 19 countries, including Dr. Parneet Cheema, Head of Cancer Research at ORIHI, evaluated the drug's safety and effectiveness in patients with advanced lung cancer.

Findings showed that nearly 80% of patients (who had never received a ROS1-targeted therapy previously) responded positively to Repotrectinib. Among patients who had previously received ROS1 inhibitors, Repotrectinib still demonstrated a benefit, with about 38% experiencing a meaningful response and extended disease control.

Since its publication, the study has been cited multiple times, already showing its impact in the field of oncology. Repotrectinib represents an important advancement in targeted cancer therapy, and the international collaboration reflects a global commitment to improving the outcomes for these patients.

Research in Progress

Daryn Cushnie-Sparrow
Speech Therapy
Dysphagia Prevalence Study

Speech-language pathologist Daryn Cushnie-Sparrow is leading a study on the prevalence of dysphagia among patients receiving care at Osler. This research is expected to play a critical role in shaping the model of care for Speech-Language Pathology services by providing data that aim to guide resourcing, inform clinical protocols, and help prioritize early identification and intervention strategies. The findings will have implications both within Osler and across broader health care settings.

Dr. Rahim Valani
Emergency Medicine
Validity of Broselow Tape in the Emergency Department

Dr. Rahim Valani's research evaluates the accuracy and clinical relevance of the Broselow Tape, which is a widely used tool in pediatric emergency settings for estimating weight and guiding medication dosing. Originally developed over 30 years ago using data from a limited ethnic population, this study aims to validate its effectiveness within the diverse population in the Peel region. The findings will have immediate implications for clinical practice, highlighting the need to update tools and resources to support care for diverse populations.

Dr. Marco Iafolla
Oncology
Use of BRAF-Mutant ctDNA for Prediction and Prognosis

Dr. Marco Iafolla's is investigating circulating tumor DNA (ctDNA) as a predictive and prognostic biomarker in cancers with BRAF mutations, including thyroid cancer, colorectal cancer, melanoma, and non-small cell lung cancer (NSCLC). This personalized medicine approach aims to enhance treatment decision-making, disease monitoring, and ultimately, patient outcomes. When validated, the use of ctDNA will represent a major advancement in non-invasive cancer diagnostics and precision oncology.

Dr. Paula Chidwick and
Dr. Jill Oliver
Ethics Quality Improvement Lab
PoET

Dr. Paula Chidwick and Dr. Jill Oliver continue to lead work on the PoET project, an innovative approach to reduce avoidable and ethically complex transfers from long-term care homes to hospitals. Through a series of publications and ongoing stakeholder engagement, this nationally recognized project is influencing health policy and fostering system-wide improvements in end-of-life care, communication practices, and decision-making frameworks for vulnerable populations.

Dr. Herbert Brill
Pediatrics
Bilirubin Assessments in Pediatric Diagnostics

Dr. Herbert Brill is examining the diagnostic value of direct bilirubin as a potential early indicator of conjugated bilirubin levels in pediatric patients. This study aims to improve diagnostic clarity for neonates with liver and gastrointestinal disorders. By identifying simpler and more reliable markers, the project supports more timely diagnosis and treatment in pediatric care and may influence diagnostic guidelines nationally.

Researcher to Watch:
Dr. Charissa Cordon
Associate Vice President, Practice and Academics

Dr. Charissa Cordon is a nursing leader blending academic scholarship with practical innovation in health care.

Her current research includes a study evaluating the impact of the Clinical Scholar Program to support the transition to practice of novice nurses. She also has received funding to explore an early warning system to facilitate timely response to patient deterioration. Dr. Cordon's scholarship spans educational theory, clinical practice optimization, workforce integration, and nursing education evaluation.

Community Engagement

Celebrate Research Week 2024 Recap

Last year's *Celebrate Research Week* (CRW) marked a milestone for William Osler Health System (Osler) with the official launch of ORIHI. The week-long event underscored the importance of research that addresses community needs, celebrating our innovators and highlighted the power of collaboration in advancing health innovation. The event received a City of Brampton proclamation and was celebrated for fostering deeper connections among researchers, clinicians, patients, and the broader public.

CRW 2024 featured over **20 sessions**, attracting more than **1,100** participants to keynotes, panels, a research fair, open houses, and the "Why Science Needs Art?" exhibition. A standout component of the week, the Science-Art Exhibition explored the intersection of research and creativity. The exhibition featured international and local artists, including Daniela Brill-Estrada (supported by the Embassy of Austria's Cultural Forum), OCAD University's Health Design Studio, and local artists—all presenting works that illuminated complex issues such as end-of-life care, loneliness, and imposter syndrome among health workers.

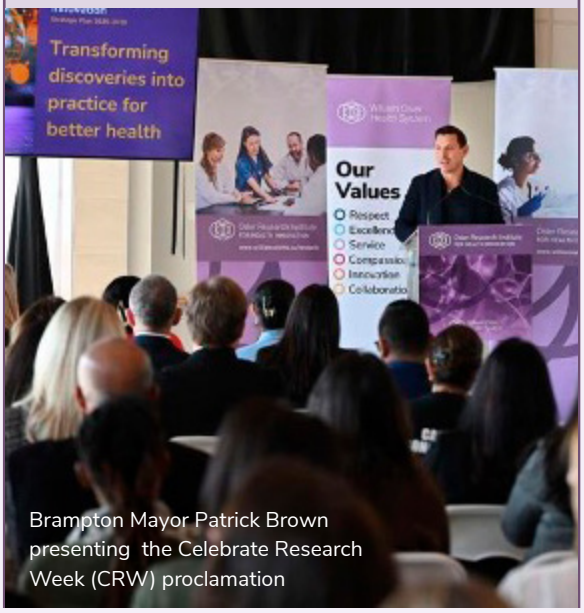
CRW was created to engage communities and mobilizing knowledge that drives health system transformation, demonstrating how research can inform, inspire, and improve lives.

Celebrate Research Week by the Numbers

1,000+
participants

20
knowledge sharing sessions

25
community partners



Brampton Mayor Patrick Brown presenting the Celebrate Research Week (CRW) proclamation

ORIHI Virtual Speaker Series

Last year's ORIHI Virtual Speaker Series engaged diverse communities around issues and opportunities in health care research and innovation. Designed as a platform for open dialogue and learning, the series brought together leading experts, community partners, and Osler researchers to explore emerging topics, highlight ORIHI's strategic goals, and foster meaningful connections across the health system.

This past year's sessions covered a wide range of themes—from Indigenous data sovereignty to innovations in cancer care—and featured dynamic speakers who shared insights, challenged assumptions, and helped shape a collective vision for equitable, ethical, and impactful research.

Topics and Highlights

Shaping Ethics in Health Care

- *Host: Patchen Barss (Science Journalist)*
- *ORIHI Ethics QI Lab Panel: Dr. Paula Chidwick, Dr. Jill Oliver, Dr. Angel Petropanagos, Theresa Nitti*

Indigenous Data Sovereignty

- *ORIHI Hosts: Angel Petropanagos (Osler Ethics), Augustina Ampofo (Research Ethics Manager)*
- *Presenter: Dakota Recollet, Indigenous Primary Health Care Council*

New outreach channels this year

- *ORIHI Spotify Podcast*
- *Youtube Playlist*
- *Research Newsletter*

Advancing Personalized Cancer Treatments Through Molecular Genetic Pathology

- *Host: Patchen Barss (Science Journalist)*
- *Researcher: Dr. Brandon Sheffield (Molecular Pathologist)*

Black Health Equity in Research

- *ORIHI Host: Augustina Ampofo (Research Ethics Manager)*
- *Panelists: Angela J. Carter (Roots Community Services), Neil Price (LogicalOutcomes), Hathor-Ra Adwoa (Sacred Health and Wellness Network)*

Engaging Community Hospitals in Research

- *Host: Patchen Barss (Science Journalist)*
- *Researcher: Dr. Alexandra Binnie (ICU Research Lead)*

The Next Generation of Health Innovators

Summer Student Research Program (SSRP) 2024

In the summer of 2024, 15 post-secondary students gained hands-on experience by working alongside Osler researchers on a range of clinical and health research projects across Brampton Civic Hospital, Peel Memorial Centre, and Etobicoke General Hospital.

Supported by funding from Employment and Social Development Canada's Summer Jobs program and Toronto Metropolitan University, the 2024 research projects spanned important topics such as stroke care, emergency medicine, newborn and seniors' health, stem cell transplantation, and oncology. The program culminates each year with a research poster competition attended by staff and local dignitaries.

Awards were given to the top three presentations

First place: Tanya Puri, McMaster University, for her poster on improving newborn hearing screening follow-up post-discharge.

Second place: Tazeen Hemraj, McMaster University, for her summary of identifying predictive risk factors for hospital-acquired pressure injuries.

Third place: Jazlyn Garcha, University of Western Ontario, and Gianmarco Ferrari, University of Toronto, for their research on Osler's development of a specialized stroke unit and its impact on patient outcomes.

This SSRP program continues to foster emerging researchers under the strategic aim of cultivating future leaders, advancing Osler's commitment to innovative, people-centred research. In future years we will continue to expand this important program.

ORIHI SSRP Publications

Jammu, A., Chasen, M., van Heest, R., Hollingshead, S., Kaushik, D., Gill, H., & Bhargava, R. (2020). Effects of a cancer survivorship clinic: Preliminary results. *Supportive Care in Cancer, 28* (5), 2381–2388.

Nithianandan, H., Sharma, S., Tam, E. S., Chiu, H., Maini, R., & Somani, S. (2021). Evaluating newer generation intraocular lens calculation formulas in manual versus femtosecond laser-assisted cataract surgery. *International Journal of Ophthalmology, 14*(8), 1174–1178.

Maida, V., Shi, R. B., Fazzari, F. G. T., & Zomparelli, L. (2021). Topical cannabis-based medicines: A novel adjuvant treatment for venous leg ulcers—An open-label trial. *Experimental Dermatology, 30* (9), 1258–1267.

Maida, V., Shi, R. B., Fazzari, F. G. T., & Zomparelli, L. M. (2021). A new treatment paradigm for sickle cell disease leg ulcers: Topical cannabis-based medicines. *Experimental Dermatology, 30* (2), 291–293.

Arya, A., Davey, R., Sharma, A., Dosani, N., Grewal, D., Afzal, A., Bhargava, R., & Chasen, M. (2022). Utilization of point-of-care ultrasound in a specialist palliative care team across multiple care settings: A retrospective chart review. *Palliative Medicine Reports, 3* (1), 229–234.

Chandok, N., Provost, E., & Siddiqui, I. (2022). The great imitator: A case of mistaken cirrhosis. *Canadian Liver Journal, 5* (3), 435–436.

Barakati, S. S., & Furqan, M. A. (2023). Point-of-care ultrasonography use in the emergency department for adult patients with acute dyspnea. *Academic Emergency Medicine, 30* (Suppl 1), 87.

Ogunrinde, O., Gatmaitan, J. A., Chouhan, S., Mehta, H., & Marticorena, R. M. (2023). Hyperphosphatemia and vascular calcification in chronic kidney disease. *CANNT Journal, 33* (2), 18–23.

Kuruvilla, P., Husain, J., Conter, H. J., To-Dang, W., Balcewicz, M., & Reingold, S. (2023). Real world experience of ibrutinib in an ethnically diverse Canadian community hospital. *Blood, 142* (Suppl 1), 6549.

Badwal, G. K., Saha, S., Dattani, N., Panchadcharadevan, S., & Nadkarni, S. (2024). Evaluating the effectiveness of the Butterfly Model of Care for elderly patients with dementia. *Canadian Geriatrics Journal, 27* (2), 183–266.

Saldutto, M., Nadkarni, S., Brar, J., Panchadcharadevan, S., Duah, F., & Saha, S. (2024). Cognitive impairment in older adults: Clinical characteristics of Osler's memory clinic. *URNCST Journal, 8*(12).

Samaraweera, P., & Brill, H. (2025). Elevated direct bilirubin does not predict elevated conjugated bilirubin in neonates. Journal of the *Canadian Association of Gastroenterology, 8* (Suppl 1), i97.

SSRP Snapshot

2015	150	147	12
Launch of program	projects	students	SSRP publications

What's Ahead

As ORIHI builds on a year of growth and innovation, we are looking ahead to 2025–2026 to focus on advancing our vision to be a leading force in pragmatic, person-centred research to transform care under these key areas.

Leadership, People, Culture

Advance ORIHI's vision through a culture of curiosity, compassion, and impact.

Develop future research leaders and clinician-investigators through training, mentorship, and student programs.

Collaborations and Community

Engage patient and community in co-design of integrated research.

Strengthen partnerships with TMU, academic, clinical, and community partners.

Knowledge Sharing and Translation

Embed implementation science to close the gap between evidence and practice.

Expand knowledge mobilization to reach new audiences and collaborators.

Sustainable and Innovative Funding

Attract and retain talent through diverse, sustainable funding strategies.

Engage philanthropic and industry partners to co-fund research innovation.

Glossary

Advanced Diagnostics
Specialized testing and technologies used to detect, diagnose, and monitor disease with a high level of precision, often involving molecular or genomic tools.

BRAF-Mutant ctDNA
Circulating tumor DNA (ctDNA) that carries mutations in the BRAF gene. Used as a biomarker to help predict disease progression and treatment response in cancers such as melanoma, thyroid, and colorectal cancer.

Celebrate Research Week (CRW)
An annual event hosted by ORIHI that showcases research achievements, fosters collaboration, and engages the public through panels, exhibits, and keynote sessions.

Circulating Tumor DNA (ctDNA)
Small fragments of DNA released into the blood by cancer cells, used as a non-invasive biomarker for detecting cancer and monitoring its progression or treatment response.

Clinical Trials
Research studies involving human participants that test the safety and effectiveness of new medical treatments, devices, or approaches. These trials help determine whether new therapies should become standard care.

Community Partners
Local organizations, advocacy groups, or service providers that collaborate with researchers or in knowledge sharing events to ensure that research supports equitable access to health innovations.

Dysphagia
A medical condition characterized by difficulty in swallowing, which can affect nutrition, hydration, and quality of life.

Ethics QI Lab (Ethics Quality Improvement Lab)
A team within ORIHI that explores how ethical principles can be integrated into care practices and end-of-life decision-making to improve quality of life and equity in health systems.

Indigenous Data Sovereignty
The right of Indigenous Peoples to govern the collection, ownership, and use of their own data, reflecting their distinct cultures, laws, and governance systems.

Knowledge Mobilization
The process of sharing research findings in accessible, actionable ways to inform policy, practice, and public understanding.

Liquid Biopsy
A minimally invasive blood test used to detect cancer-related biomarkers, such as ctDNA, offering real-time insights into cancer diagnosis and treatment without the need for tissue biopsy.

Low-Dose CT (LDCT)
A medical imaging technique that uses lower amounts of radiation to produce detailed images of the lungs, commonly used for lung cancer screening.

Molecular Genetic Pathology
A field of pathology that uses molecular and genetic techniques to diagnose and understand diseases, often informing personalized treatment plans, especially in cancer care.

Multidisciplinary Team
A collaborative group of healthcare professionals from different specialties who work together to provide comprehensive patient care or conduct research.

Oncology
The field of medicine that deals with the prevention, diagnosis, and treatment of cancer.

ORIHI Virtual Speaker Series
A public lecture series hosted by ORIHI, designed to connect researchers, community members, and experts through discussions on emerging topics in health research and innovation.

PoET (Prevention of Error-Based Transfers)
A nationally recognized initiative focused on reducing avoidable and ethically complex hospital transfers from long-term care homes, promoting improved communication and end-of-life care planning.

Precision Oncology
A personalized approach to cancer treatment that uses genetic, biomarker, and molecular data to tailor therapies to an individual's specific cancer profile.

Project Partnerships
Collaborative efforts between researchers, institutions, industry, and communities to advance specific research goals. Partnerships are formalized and may involve sharing resources, expertise, and data.

Publications
Scientific papers or articles written by researchers that are published in academic journals. Publications share research findings with the global scientific and medical community.

Repotrectinib
A next-generation targeted therapy for ROS1 fusion-positive non-small-cell lung cancer (NSCLC), designed to overcome resistance to earlier treatments and show intracranial activity.

Research Partners
External organizations (e.g., universities, hospitals, government agencies, industry) that collaborate with ORIHI researchers on studies, trials, or innovation initiatives.

ROS1 Fusion-Positive NSCLC
A subtype of non-small-cell lung cancer characterized by a specific gene fusion involving ROS1, which can be targeted with specific therapies like Repotrectinib.

SSRP (Summer Student Research Program)
A hands-on summer research opportunity for post-secondary students to work with ORIHI researchers on real-world health studies, promoting early-career learning and innovation

ORIHI welcomes innovative ideas and collaborations with our academic community, donors, researchers, students, partners and community.

Support Now

To support ORIHI , please visit the William Osler Foundation and direct your gift to support research activities at ORIHI.

For more information

williamoslerhs.ca/research

Email: research@williamoslerhs.ca

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Watch on Youtube

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