

2015 Annual Report

St. Joseph's
Healthcare  Hamilton

The Research Institute
of St. Joe's Hamilton



The Research Institute of St. Joe's Hamilton was launched in 2014 in order to foster investment in research at St. Joseph's Healthcare Hamilton and to better serve the needs of our growing research enterprise.

Through sharing stories about the research undertaken within our hospital, this inaugural annual report will outline the vision of our Research Institute – an academic and scientific community focused on improving quality of life for patients within our hospital and around the world.

By combining fundamental science with clinical and evaluative disciplines, our researchers reinvent exploration in order to improve diagnostics, treatments and practices. Through collaboration with other health professionals as well as front-line staff, world-class research conducted at St. Joe's renews our promise of delivering compassionate care of the highest quality to the patients that we serve.

In building upon our roots, the Research Institute of St. Joe's Hamilton will continue to make local, national and international impacts in improving patients' quality of life.

Publication Credits

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MENTAL HEALTH & ADDICTION



LUNGS & CHEST



FATHER SEAN O'SULLIVAN CENTRE



KIDNEY & URINARY



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A WORD FROM
JACK GAULDIE

SCIENTIFIC DIRECTOR, THE RESEARCH INSTITUTE OF ST. JOE'S HAMILTON

The mission of St. Joseph's Healthcare Hamilton is to provide dynamic research, revolutionary methods in health sciences education, and the highest standard of clinical care in a spirit of compassion, innovation and commitment. By producing world-class research that focuses on improving quality of life, the Research Institute of St. Joe's Hamilton directly impacts the care that patients receive. Working collaboratively with our local community allows our researchers to answer pressing questions affecting our local community and impacting patient care around the world. Whether the studies that our researchers conduct are peer-reviewed, corporate-sponsored initiatives, care practices tested by allied health professionals or innovations developed through individual efforts – they are united in our common goal of improving patients' quality of life.



A WORD FROM
PETER TICE

CHAIR, BOARD OF DIRECTORS, THE RESEARCH INSTITUTE OF ST. JOE'S HAMILTON

The Research Institute of St. Joe's Hamilton represents the cutting-edge of health research that is taking place within our city. Driven by a passion to improve the patient's quality of care, our researchers commit themselves to studying the human body and mind in order to help overcome some of today's most prevalent medical conditions. Engaging in partnership with McMaster University and the Michael G. DeGroote School of Medicine allows the Institute to be the nexus of this work. Representing a wide range of academic disciplines, our researchers represent some of Canada's best scientific and clinical minds. The stories featured in this annual report will bring light to the life-changing research carried out at St. Joseph's Healthcare Hamilton. We welcome you to join us in learning more about our research and innovations.

Raising the Bar in Addictions Research

By testing new medications for addictions in a bar laboratory setting, Dr. James MacKillop blends laboratory and clinical research in a unique way.



While basic science and clinical research often differs in practice, research at St. Joe's often blends the two types of research in order to translate research outcomes from the cellular level into practice. Dr. James MacKillop, Peter Boris Chair in Addictions Research and Director of the Peter Boris Centre for Addictions Research at St.

Joseph's Healthcare Hamilton, has discovered that a learning-enhancing medication has the potential to reduce cravings among patients with alcohol-use disorders.

This medication – also used to treat fears, phobias and anxiety disorders – changes the way in which the brain creates associations to stimulus.

“Cravings for alcohol are often produced by environmental triggers – such as people, places and the sight of alcohol itself,” explains Dr. MacKillop. “Our attempts to reduce these cravings in treatment haven't been very successful. In this study, however, patients receiving the medication exhibited a steeper reduction of cravings in the presence of alcohol triggers.”

Not only did all patients receive evidence-based treatment, plus the active medication or placebo, but part of the treatment took place in an experimental bar laboratory at the University of Georgia where they were exposed to alcohol and alcohol-related environmental triggers.



Cravings for alcohol are often produced by environmental triggers – such as people, places and the sight of alcohol itself.”

- Dr. James MacKillop



Dr. MacKillop is currently recreating the bar laboratory at the Peter Boris Centre for Addictions Research at St. Joseph’s Healthcare Hamilton, a Centre created through a donation made by the Boris family. By continuing to work with a translational approach to addiction research, Dr. MacKillop hopes to bridge the gap between the research world and the real-world – with the goal of substantially improving quality of life for patients with alcohol-use disorders.



Rethinking Children's Mental Health

In analyzing the responses of patients, families and care providers, Dr. Juliana Tobon identifies optimum care practices in children's mental health.

Continuity of care is recognized as an integral component of delivering quality care to patients in the field of family medicine. By facilitating a long-term patient-physician relationship, continuity of care allows for safer and more consistent care. Dr. Juliana Tobon, psychologist and researcher at St. Joseph's Healthcare Hamilton, has completed a study analyzing the importance of continuity of care for children's mental health. The study identified continuous care as a need outlined by parents, youth and care providers – suggesting that emphasizing this process can improve youth and family involvement in treatment as well as better coordination and information sharing among children's healthcare professionals.

“Children's mental health care is unique in terms of all of the additional sectors involved: education, medical, child welfare and juvenile justice,” states Dr. Tobon. “One parent described what happens when these services are well-coordinated: ‘all of the services work together like a zipper. [If] the bottom part doesn't come together; you can't pick up that coat and keep warm.’”


Inviting patients, families and care providers to participate in research allows our researchers to identify their needs and advocate on their behalf. Studies such as Dr. Tobon's can not only improve the care provided within St. Joseph's Healthcare Hamilton, but they can also serve to advance care practices in other institutions across Canada.



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Children’s mental health care is unique in terms of all of the additional sectors involved: education, medical, child welfare and juvenile justice.”

- Dr. Juliana Tobon



“What is unique about what we are doing at St. Joe’s is that the research doesn’t just stay in ivory towers - it immediately benefits patients.”

- Dr. Parameswaran Nair



Changing the Asthma Landscape

Dr. Paul O’Byrne and Dr. Parameswaran Nair pave the way for a new way to fight asthma by testing novel antibody treatments for the disease.

By leading multicentre studies that offer the potential for new asthma treatments, St. Joseph’s Healthcare Hamilton researchers have once again contributed to improving patient care by providing hope for those diagnosed with respiratory illnesses. Dr. Paul O’Byrne’s research has found an antibody treatment that both alleviates baseline inflammation and provides resistance to allergens for those with mild allergic asthma. This study can lead to quality of life improvements for those with allergic asthma that have issues with inhalers or steroid-based medications.

His colleague Dr. Parameswaran Nair has successfully evaluated a new, antibody-based drug for certain patients with severe asthma. The drug can replace traditional, steroid-based treatments for a specific subset of patients, resulting in improved outcomes and reduced side effects.

“What is unique about what we are doing at St. Joe’s is that the research doesn’t just stay in ivory towers - it immediately benefits patients,” states Dr. Nair.

By testing for cells in a patient’s blood or sputum, respirologists can now identify which patients will benefit from this new treatment – leading to more personalized and effective care for those diagnosed with asthma.



Making Lung Surgery Safer

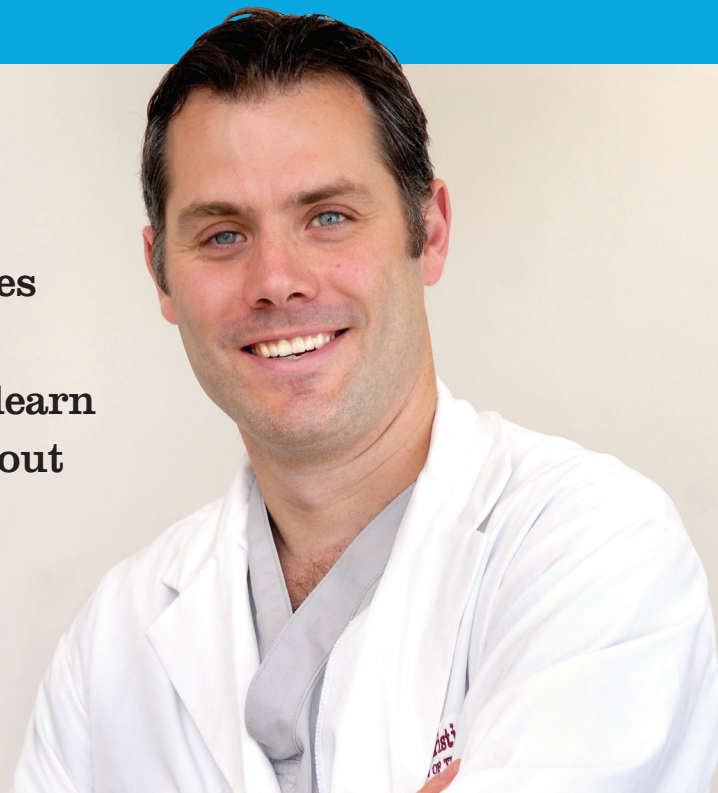
Studying post-discharge mortality after lung removal allows Dr. Christian Finley and his team to ensure safer lung surgeries.



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By conducting research that identifies the risk of injury or mortality after surgery, our thoracic surgeons can learn to circumvent these risks and carry out safer operations.”

- Dr. Christian Finley



Lung cancer is the leading cause of cancer-related death for both genders. For early stage non-small cell lung cancer, surgical intervention provides patients with the best chance of long-term survival, although these surgeries are not without risk. Surgeons should be aware of the risks associated with the selection of patients for lung resection to minimize the risk of death after surgery.

Dr. Christian Finley and his research team have studied Ontario-based data of all lung removal procedures between 2005 and 2011 to assess the risk of mortality associated with a lobectomy (removal of one lobe of the lung) or pneumonectomy (removal of a whole lung).

While the risk of death in hospital is well documented, this study noted that there is significant but often overlooked risk of death after the patient is discharged following lung removal procedures. The research also investigated key patient risk factors that are thought to be major predictors of mortality in patients undergoing major lung resections.

“By conducting research that identifies risks of injury or mortality after surgery, our thoracic surgeons can learn to circumvent these risks and carry out safer operations,” states Dr. Finley. “Combining cutting-edge surgical practices with an understanding of patient risk factors allows our surgeons to effectively treat disease while maintaining patient safety.”

Saving Lives through Evidence-Based Practices

Dr. James Douketis has discovered that the popular process of switching blood thinning medications for patients undergoing surgery can be risky.

Traditionally, patients regularly taking blood thinners stop taking blood thinning medication a few days before and after surgery. They would then receive short-acting heparin injections as a “bridging therapy” – with the belief that switching to heparin would prevent potential blood clots, strokes and other complications around the time of surgery. In North America, about 250,000 to 400,000 patients who are receiving a blood thinner need a surgical intervention or procedure every year.

New research led by St. Joseph's Healthcare Hamilton researchers proves that this common practice of “bridging” – or temporarily switching their blood thinner to heparin – is ineffective, and actually subjects patients to a higher risk of major bleeding. This finding will not only affect how surgeons, anaesthesiologists and nurses look after these patients, but it will help improve care for the thousands of patients that receive bridging therapy every year.

“This study provides evidence that will help to simplify how patients who are taking blood thinners and need surgery are managed, and change the paradigm that more treatment, in this case ‘bridging’, is better,” explains Dr. James Douketis. “Changing practice through evidence-based research helps our physicians, surgeons, and nurses to provide better care for patients and helps minimize bad outcomes during and after surgery.”



Leading National Initiatives to Improve the Quality of Care

Through the Canadian Choosing Wisely campaign, Dr. Christopher Hillis and Dr. Mark Crowther help to improve the care that patients receive.

Unnecessary treatments, procedures and tests reduce the value of care –potentially exposing patients to harm. Choosing Wisely Canada is a national campaign that aims to reduce unnecessary health care practices, helping physicians and patients to make informed decisions to ensure quality care.

Dr. Christopher Hillis and Dr. Mark Crowther have published recommendations as part of this campaign on behalf of the Canadian Hematology Society. They concluded that five specific treatments, transfusion practices and procedures should not be administered for certain patient groups due to their associated risks and ineffectiveness.

“Our recommendations encourage a dialogue between physicians and patients to reduce unnecessary tests, treatments and procedures,” states Dr. Hillis. “The Canadian Hematology Society’s list supports safer transfusion practice, suggests limiting exposure to blood thinners at the time of surgery, identifies situations where certain genetic tests are inappropriate and suggests means to improve timely cancer diagnosis for patients with suspected lymphoma.”

By drawing from the suggestions of other hematologists’ and prior research in the field, Dr. Hillis and



These recommendations have the potential to increase the quality of our care while reducing costs.”

- Dr. Mark Crowther

Dr. Crowther were able to offer five specific recommendations that will work to improve the quality of care for patients with hematologic diseases.

Collaborating with their colleagues on national initiatives allows our researchers to advance care practices across Canada.

“These recommendations have the potential to increase the quality of our care while reducing costs,” says Dr. Crowther. “Using evidence to guide practice will prevent exposure of patients to unneeded products while ensuring that product is available for patients who truly need it.”



Investigating Proteins for Better Diagnostics

Dr. Ali Al-Hashimi and Dr. Rick Austin have discovered how auto-antibodies can be used as a prostate cancer diagnosis that is more effective than the currently-used diagnostic procedures.

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edical diagnosis allows physicians to determine which treatment options are best for patients. By painting an accurate picture of illness or disease, correct diagnosis leads to correct treatment practices, which quickly improves patients' quality of life.

Drs. Ali Al-Hashimi and Richard Austin's research on proteins found in prostate cancer patients' blood, named anti-GRP78 autoantibodies, have unveiled new possibilities for the diagnosis of prostate cancer. Their preliminary research shows that anti-GRP78 autoantibodies increase tumor growth and thus targeting these autoantibodies can improve patients' health outcomes.

More importantly, a drop in anti-GRP78 autoantibody levels after removal of the prostate tumour was observed – meaning that the expression of these autoantibodies coincides with presence of cancer.

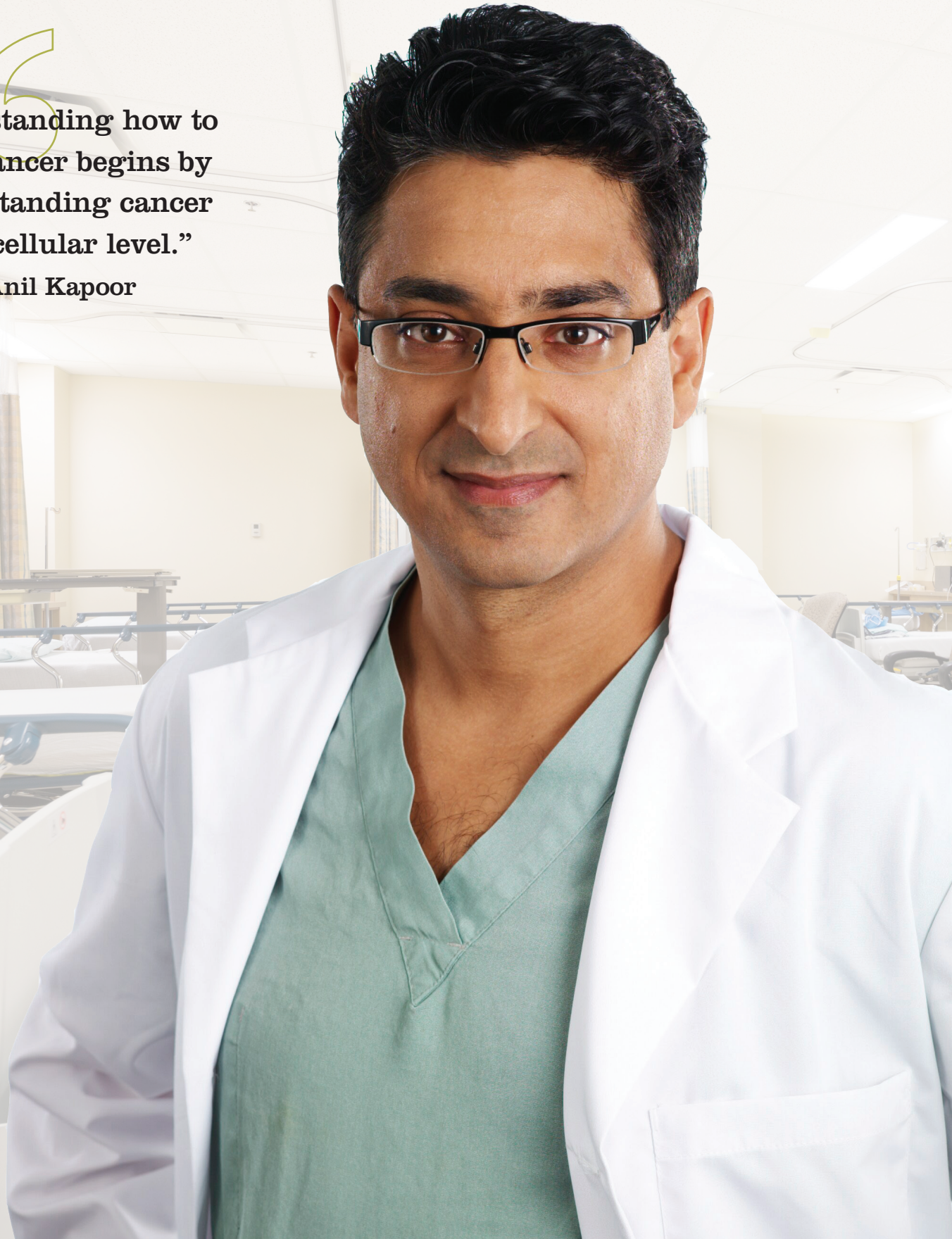
Their study has found that these autoantibodies can be directed to detect metastatic prostate cancer with high accuracy, proving that this diagnosis is more effective than the standardized prostate cancer diagnostic currently used today.

The next step for Dr. Al-Hashimi is to apply his findings in a clinical setting to ensure that patients can directly benefit from his research. Moving from the laboratory bench to the patients' bedside allows our researchers to take their developed diagnostics from testing into practice.



“Understanding how to
treat cancer begins by
understanding cancer
at the cellular level.”

- Dr. Anil Kapoor





Targeting Cell Pathways to Fight Cancer

Dr. Anil Kapoor's research has uncovered functions of cell signaling pathways in prostate cancer cells, paving the way for a new treatment approach for men with prostate cancer.

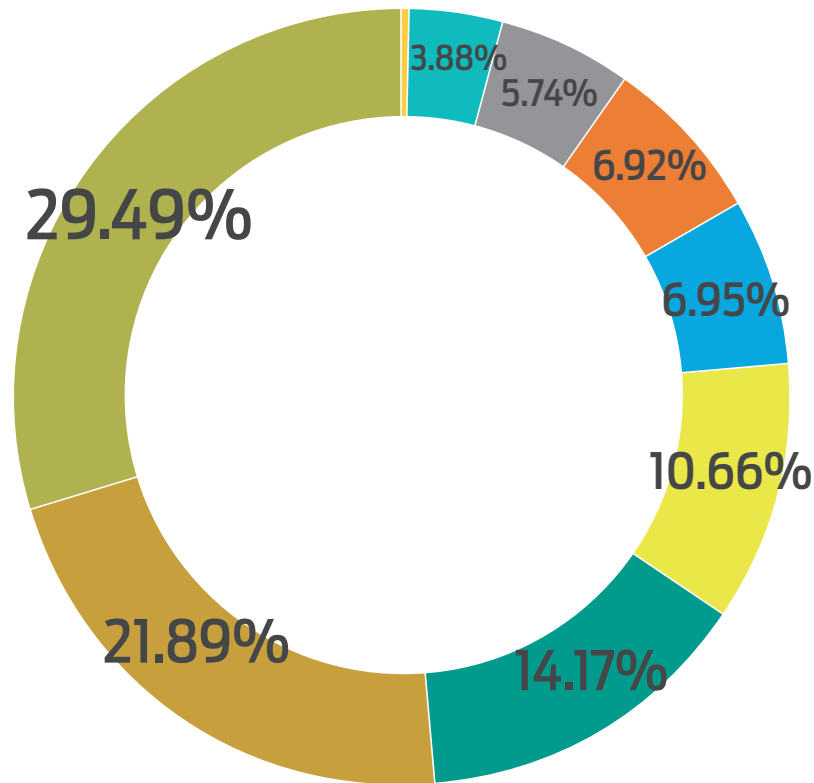
Prostate cancer is one of the most common forms of cancer among men in Canada, with 24,000 new cases being reported every year. With 11 men dying from prostate cancer every day, the need to find new treatments and an eventual cure looms large for urology and oncology researchers. Uncovering the processes involved in tumour growth allows our researchers to work towards an eventual treatment for cancer.

Dr. Anil Kapoor's work has found that the inhibition of cell signaling pathways can target prostate cancer cells in cases where other treatments fall short – such as in the treatment of castration-resistant prostate cancer.

The study suggests that monitoring these pathways in patients' tumours may allow urologists to tailor their treatments to respond to the needs of each individual patient.

“Understanding how to treat cancer begins by understanding cancer at the cellular level,” states Dr. Kapoor. By beginning to unveil the origin and processes of cell signaling pathways, Dr. Kapoor's work can lead to more effective and personalized treatments for prostate cancer in the future.

2014-2015 Funding: \$28.7 Million



RESEARCH INSTITUTE 2014-2015 FUNDING SOURCES			
29.49%	Federal	6.92%	International
21.89%	Corporate	5.74%	Regional
14.17%	Facilities/Admin	3.88%	Internal
10.66%	Provincial	0.30%	Hospital/University
6.95%	Not For Profit		

**MENTAL HEALTH & ADDICTION
2014-2015 FUNDING SOURCES**

65.28%	Federal
16.94%	Not For Profit
5.61%	Internal
5.03%	Corporate
3.94%	Provincial
1.61%	International
1.60%	Regional

**FATHER SEAN O'SULLIVAN CENTRE
2014-2015 FUNDING SOURCES**

33.86%	Corporate
29.92%	Federal
19.64%	Provincial
4.26%	Not For Profit
4.05%	International
3.73%	Regional
2.88%	Facilities/Admin
1.33%	Internal
0.32%	Hospital/University

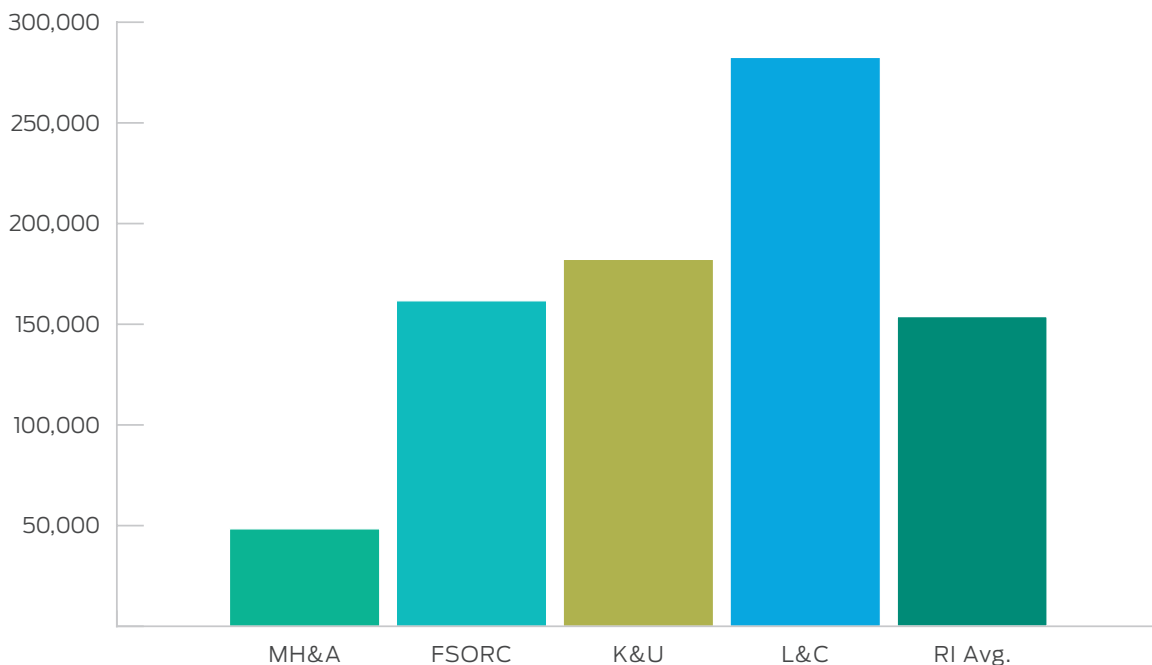
**LUNGS & CHEST
2014-2015 FUNDING SOURCES**

28.78%	Federal
20.35%	International
17.59%	Corporate
11.78%	Internal
8.29%	Regional
7.05%	Provincial
6.16%	Not For Profit

**KIDNEY & URINARY
2014-2015 FUNDING SOURCES**

40.91%	Federal
20.82%	Not For Profit
20.02%	Corporate
16.89%	Regional
1.35%	Hospital/University

Research Funding Per PI



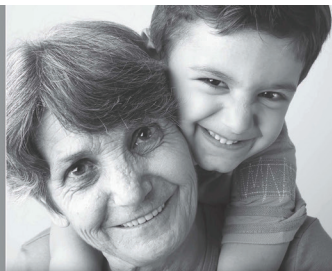
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