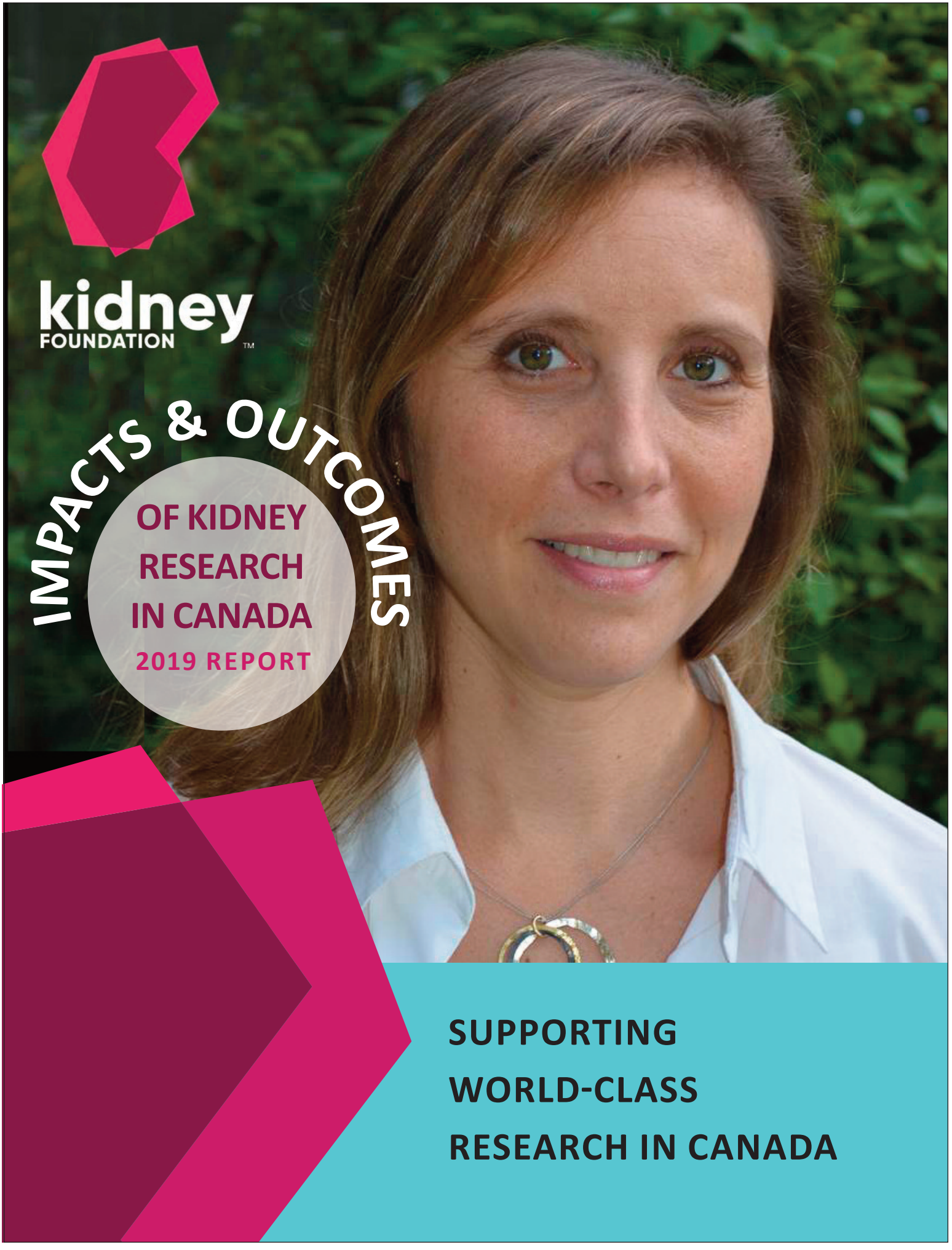

kidney
FOUNDATION
IMPACTS & OUTCOMES
OF KIDNEY
RESEARCH
IN CANADA
2019 REPORT
SUPPORTING
WORLD-CLASS
RESEARCH IN CANADA

Creating a Canadian Platform to Accelerate Research for Glomerulonephritis Treatment

DR. HEATHER REICH is a clinician-scientist at Toronto's University Health Network, and an Associate Professor at the University of Toronto where she holds the Gabor Zellerman Chair in Nephrology Research. The Toronto-based nephrologist is working to find new ways to detect and treat glomerulonephritis (GN), one of the leading causes of kidney failure in Canada. Glomerulonephritis means inflammation and scarring of the filters of the kidney, and it is caused by several conditions including Focal Segmental Glomerulosclerosis (FSGS), IgA Nephropathy (IgAN), Membranous Nephropathy (MGN), and others.

> **"THE GOAL IS TO DEVELOP MEDICATIONS WITH FEWER SIDE EFFECTS THAT ARE MORE EFFECTIVE FOR THAT INDIVIDUAL PATIENT'S DISEASE."**

"When I was a trainee earlier in my career, I became focused on GN because it was an opportunity to actually prevent kidney failure," she recalls. "It is catching patients before they have end-stage disease and their only option is dialysis or a transplant. I am very passionate about preventing kidney failure."

While GN diseases are relatively rare in Canada, they can have a devastating impact on patients and their families. If the conditions are caught early, there is a better chance of limiting kidney damage, though the side effects of treatment can be as bad as the disease itself. Because there is no specific treatment approved for GN, patients often receive high doses of immune lowering medications called corticosteroids (prednisone). This does not cure GN, and produces very difficult side effects that may be more difficult on the body than the disease itself.

Dr. Reich, in cooperation with other nephrologists across the country, has launched a national program to look for new solutions for GN patients to help understand the individual patient experience with GN. The Canadian Glomerulonephritis Registry (CGNR) is a web-based network operating across the country from British Columbia to the Atlantic provinces. It was set up to support innovative discoveries and generate better treatments for GN diseases.

"We have created a platform for scientists to participate in translational research," Dr. Reich says, noting the registry is collecting bio-samples of DNA, urine and blood to better understand how GN diseases develop. Researchers plan to recruit GN patients across the country to be part of a new medical cohort. Individuals enrolled in the study will be seen every six months for blood tests and health updates.

With a larger database of patients, scientists will have a deeper pool of information to work with. They can look for specific genes and proteins that provide important clues to help predict how a disease will progress. "Our goal is to make GN research more accessible to patients and to doctors and scientists in centres across Canada," says Dr. Reich. "As we grow, my goal for the future is for this resource to also be a hub for patients to access information about their condition and be able to learn about clinical trials of new treatments."

In recent years, Dr. Reich has seen an explosion of interest from the pharmaceutical industry in developing targeted treatments for diseases like GN. There are, she observes, an unprecedented number of clinical trials underway testing new medications that are personalized and less toxic. For example, scientists are looking for alternatives to steroids, which are often used to treat the inflammation associated with GN conditions. "The steroids work but they are kind of a sledgehammer used for many diseases, and they don't work in all patients. The goal is to develop medications with fewer side effects that are more effective for that individual patient's disease."

Companies may not always think of Canada for trials because of our smaller population. Having a central resource for GN helps bring patients and their doctors together to bring trials to Canada. Centres relatively new to research can also lean on other members of the GN community for support to begin to offer access to research studies across Canada.

In her more than 15 years as a nephrologist, Dr. Reich has seen first-hand the difficulties that come with a GN diagnosis. She is encouraged by the wave of interest and discoveries, and believes that new treatment options are on the horizon. The key now is recruiting more GN patients to be partners in the research process, and to maintain the support needed to sustain this endeavour.

"It is a very exciting growth period in the GN world. I have been a nephrologist since 2002 and never have I seen so many upcoming clinical trials in GN. There is a tremendous interest in developing new medications. I am deeply grateful to The Kidney Foundation for support throughout my career, and I hope that building this community allows me to 'give back' and help boost GN research capacity in Canada."

- ARTICLE BY HEIDI WESTFIELD

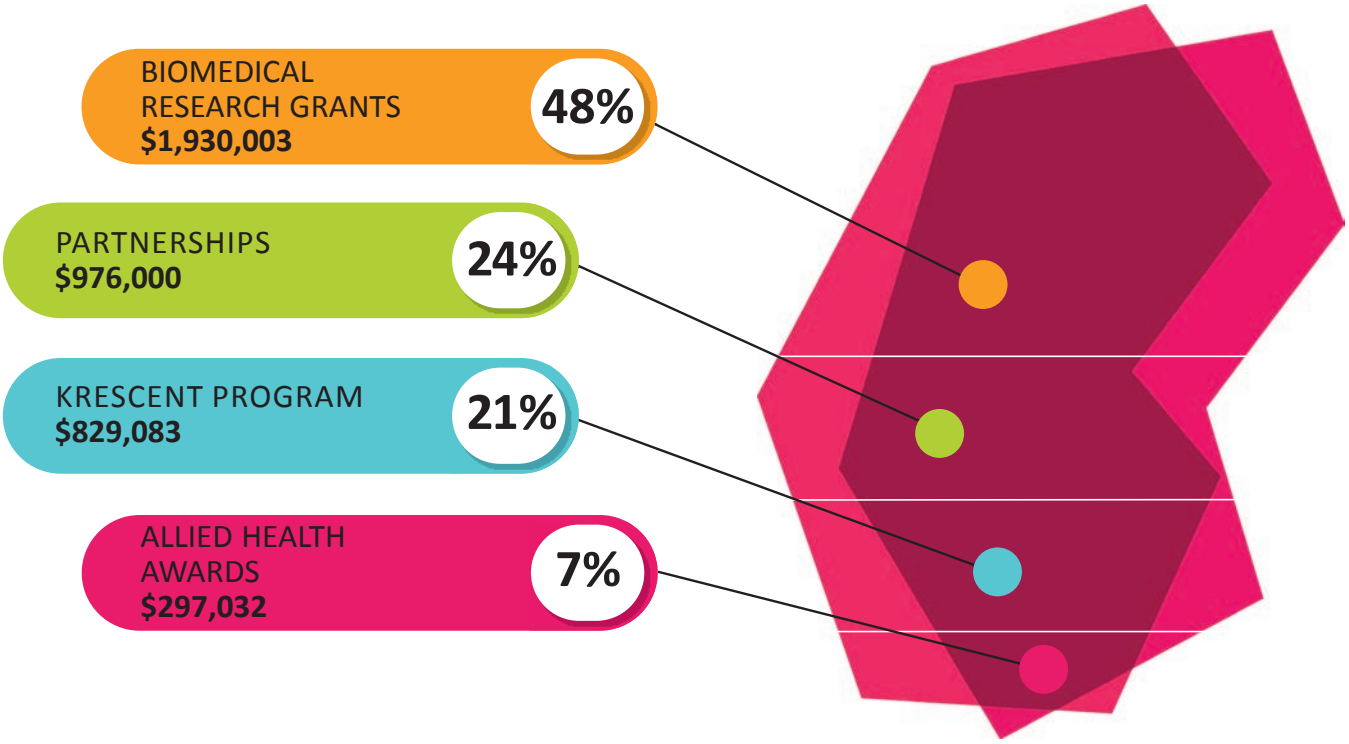
COVER PHOTO: DR. HEATHER REICH

Research by the Numbers

RESEARCH CONTINUES TO BE a central pillar of The Kidney Foundation's mission.In 2019, the Foundation provided over $4 million to support Canadian kidney researchers, which represents 40% of our mission-focused budget. Over the last 55 years, the Foundation invested over $124 million in grants and awards to find better treatments and improve the care and quality of life for patients living with kidney disease. Translating new findings into positive impacts for patients requires significant research effort and sustained funding.

TOTAL INVESTED IN RESEARCH:

$4,027,818



In 2019, The Kidney Foundation provided funding to:

IMPACTS & OUTCOMES OF KIDNEY RESEARCH IN CANADA

37 Biomedical Research Grants

18 KRESCENT Awards

7 Allied Health Awards

1 Alport Syndrome Award

64 Principal Applicants

91 Co-Applicants

80 Collaborators

23 Research Institutes

6 Provinces

2 Partnerships in large networks

TOP 10 RESEARCH THEMES FUNDED IN 2019:

- Kidney Biology
- Dialysis
- Renal Failure
- Hypertension
- Quality of Life
- Cancer
- Diabetes
- Genetics
- Glomerulonephritis
- Kidney Development

NEW RESEARCH FRAMEWORK 2019-2024

As a follow up to the HORIZONS 2022 work-shop, a committee comprising 12 members of the kidney community including patient partners, basic and clinical scientists worked together in 2019 to develop a strategic research framework to best advance The Kidney Foundation's mission to fund and stimulate innovative research for better treatments and a cure for kidney disease.

While the committee recommended that the Foundation continue funding research through the current suite of programs (The Biomedical Research Grant competition, the KRESCENT competition and the Allied Health Competition), the following research priority areas were identified:

- Stakeholder-identified priorities (patient-oriented research) to improve outcomes grouped under five themes: Communication & Connectivity, Health System Approaches, Promoting Health & Quality of Life, Keeping your Kidneys Healthy, and Treatment of Kidney Disease
- Innovative research for transformational change
- Population health research to build the evidence base to demonstrate seriousness of kidney disease and public health impact

The strategic research priorities will be used to inform research funding, and to create "priority announcements" with dedicated funding towards one of these strategic research areas and assess future partnership opportunities.

To read the full report, please consult the website: **kidney.ca/research/the-impact-of-research/reports**

2019 HIGHLIGHTS: RESEARCH COMPETITIONS

Advancing kidney research remains among the Foundation's top priorities. In 2019, the maximum amount for operating grants was increased by 20%, bringing the total to $120,000, for both the Kidney Health Research Grant and the Allied Health Kidney Research Grant competitions, effective in 2020.

The Foundation also changed the name of its largest research competition formerly known as Biomedical Research Grant to Kidney Health Research Grant to emphasize that the research funding supports the four research pillars (biomedical, clinical, health systems, & population health) and to accurately describe the funded research.

All research competitions have now transitioned to a new online grant application and review system in 2019 creating efficiencies and streamlining the process for applicants and reviewers.

2019: **New Funded Researchers by Program**

BIOMEDICAL RESEARCH GRANTS

DR. TODD ALEXANDER
University of Alberta, AB
2019-2021: $100,000
Project Title: Phosphate added to food moves between intestinal cells and is therefore more readily absorbed
Category: Renal Failure

DR. RAHUL CHANCHLANI
Co-applicants: Michael Zappitelli, Ron Wald, Danielle Nash, Eric McArthur, Rulan Parekh, Lehana Thabane
McMaster University, ON
2019-2021: $99,849
Project Title: Long-term outcomes after acute kidney injury among neonates and children in Ontario: A population-based cohort study
Category: Renal Failure

DR. JEFFREY DICKHOUT
McMaster University, ON
2019-2021: $100,000
Project Title: Preventing kidney disease by preventing protein misfolding
Category: Kidney Biology

DR. AMIT GARG
Co-applicants: PJ Devereaux, Maura Marcucci, Pavel Roshanov, Raja Jayaram, Jessica Sontrop, Meaghan Cuerden Knight, Michael McGillion
Lawson Health Research Institute, ON
2019-2021: $100,000
Project Title: Does a strategy to avoid low blood pressure during surgery protects the kidneys?
Category: Renal Failure

DR. RICHARD HÉBERT
University of Ottawa, ON
2019-2021: $100,000
Project Title: The role of prostaglandin E2 and their receptor subtypes in kidney disease
Category: Hypertension

DR. NINA JONES
University of Guelph, ON
2019-2021: $100,000
Project Title: Hold on tight! A molecular approach to understand podocyte adhesion
Category: Kidney Biology

DR. ANDRAS KAPUS
Co-applicant: Casimiro Gerarduzzi
St. Michael's Hospital, ON
2019-2021: $100,000
Project Title: The role of injured kidney tubules in chronic kidney scarring
Category: Kidney Biology

DR. ANDREW KARAPLIS
Co-applicants: Mark Lipman, Dibeyendu Panda
Jewish General Hospital, QC
2019-2021: $100,000
Project Title: Preventing polycystic kidney disease
Category: Renal Failure

DR. ANDREW MAKRIGIANNIS
Dalhousie University, NS
2019-2021: $100,000
Project Title: Regulation of immune function in the kidney
Category: Kidney Biology

DR. ISTVAN MUCSI
Co-applicants: Marta Novak, Geoffrey Liu, Doris Howell, Madeline Li, Gihad Nesrallah, Nicholas Mitsakakis, Tran Truong
University Health Network, ON
2019-2021: $99,670
Project Title: A study of patient-reported distress measures
Category: Quality of Life

DR. DANIEL MURUVE
University of Calgary, AB
2019-2021: $100,000
Project Title: How the immune system of the kidney contributes to disease
Category: Kidney Biology

DR. FRANCES PLANE
Co-applicant: William Cupples
University of Alberta, AB
2019-2021: $100,000
Project Title: How blood flow to different parts of the kidney is coordinated
Category: Kidney Biology

DR. PIETRO RAVANI
Co-applicants: Kathryn King-Shier, Meghan Elliott, Hiremath Swapnil, Braden Manns, Brenda Hemmelgarn, Matthew Oliver, Nairne Scott-Douglas, Robert Quinn, Matthew James, Jennifer MacRae
University of Calgary, AB
2019-2021: $100,000
Project Title: Individualizing the method of connecting people with kidney failure to the hemodialysis machine
Category: Dialysis

DR. DARREN RICHARD
Co-applicant: Richard Larivière
Université Laval, QC
2019-2021: $100,000
Project Title: Roxadustat, a drug to treat anemia in chronic kidney disease, may cause arterial calcification
Category: Renal Failure

DR. KATALIN SZASZI
St. Michael's Hospital, ON
2019-2021: $100,000
Project Title: Claudin-2 in kidney disease
Category: Kidney Biology

DR. TOMOKO TAKANO
Co-applicants: Ciro Piccirillo, Susan Samuel
Research Institute McGill University Health Centre, QC
2019-2021: $100,000
Project Title: How can we treat children with nephrotic syndrome without using steroids?
Category: Glomerulonephritis

DR. BRAD URQUHART
Co-applicants: Andrew House, Matthew Weir, Guido Filler, Michael Knauer
The University of Western Ontario, ON
2019-2021: $100,000
Project Title: Finding better ways to detect and monitor kidney disease
Category: Predictive Biomarkers

DR. MICHELE ZAPPITELLI
Co-applicants: Paul Nathan, Tal Schechter-Finkelstein, Jason Pole, Lillian Sung, Eric McArthur, Danielle Nash, Abhijat Kitchlu, Asaf Lebel, Rahul Chanchlani
The Hospital for Sick Children, ON
2019-2021: $100,000
Project Title: Long-term kidney and blood pressure problems in children treated for cancer
Category: Cancer

DR. SHAO-LING ZHANG
Centre de recherche CHUM, QC
2019-2021: $100,000
Project Title: Hedgehog interacting protein expression in diabetic kidney disease
Category: Diabetes

ALLIED HEALTH DOCTORAL FELLOWSHIPS

MS. ARRTI ANIL BHASIN
Supervisor: Michael Walsh
McMaster University, ON
2019-2021: $50,000
Project Title: The epidemiology of depression and anxiety in patients with chronic kidney disease
Category: Quality of Life

MS. CHI WING (LILY) YEUNG
Supervisor: Martine Puts
University of Toronto, ON
2019-2021: $58,000
Project Title: Predicting patient participation and their outcomes during end-stage kidney disease treatment decisions
Category: Quality of Life

ALLIED HEALTH RESEARCH GRANTS

DR. MARY SMITH
Co-applicants: Vanessa Silva e Silva, Kara Schick-Makaroff
Queen's University, ON
2019-2021: $97,710
Project Title: Circles towards indigenous solutions for kidney health: a strength-based approach
Category: Quality of Life

DR. SHERYL ZELENITSKY
Co-applicant: Ted Lakowski
University of Manitoba, MB
2019-2021: $99,892
Project Title: Optimizing antibiotic dosing for patients on hemodialysis: a high-risk population
Category: Dialysis

ALLIED HEALTH SCHOLARSHIP

MS. RANI FEDORUK
Supervisor: Diana Mager
University of Alberta, AB
2019: $5,000
Project Title: Frailty and the elderly in chronic kidney disease
Category: Quality of Life

SPECIAL RESEARCH PROJECT GRANT - PREDICTIVE BIOMARKERS

DR. ANA KONVALINKA
Co-applicant: Igor Jurisica
University Health Network, ON
2019-2023: $450,000
Project Title: Urine markers of kidney transplant scarring
Category: Predictive Biomarkers

CDTRP PARTNERSHIP INNOVATION GRANTS

DR. MARIE-CHANTAL FORTIN
Co-applicant: Tania Janaudis-Ferreira
Centre de recherche CHUM, QC
2019-2020: $30,000
Project Title: Acceptability and feasibility of the Kidney Transplant Physical Activity and Social Club (KEeP ACTIVe Club)
Category: Transplantation

DR. BETHANY FOSTER
Research Institute McGill University Health Centre, QC
2019-2020: $30,000
Project Title: Associations between Sex Hormone Levels and Immune Profiles among Kidney Transplant Recipients
Category: Transplantation

KRESCENT IS A NATURAL PARTNERSHIP OF THE KIDNEY FOUNDATION, THE CANADIAN SOCIETY OF NEPHROLOGY AND THE CANADIAN INSTITUTES OF HEALTH RESEARCH INSTITUTE OF NUTRITION, METABOLISM AND DIABETES.

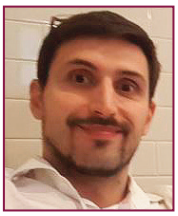
KRESCENT NEW INVESTIGATOR AWARDS

DR. MEGHAN ELLIOTT
University of Calgary, AB
2019-2022: $225,000 + $25,000 infrastructure support
Project Title: Supporting Engagement in Chronic Kidney Disease Care and Research
Category: Chronic Kidney Disease

DR. GREGORY HUNDEMER
Ottawa Hospital Research Institute, ON
2019-2022: $210,000 + $25,000 infrastructure support
Project Title: Characterizing Renal Outcomes in Overt and Subclinical Aldosterone Excess
Category: Hypertension

DR. MATTHEW LANKTREE
McMaster University, ON
2019-2022: $210,000 + $25,000 infrastructure support
Project Title: Assessing the Omnigenic Contribution to Chronic Kidney Disease
Category: Genetics

KRESCENT POST-DOCTORAL FELLOWSHIPS



DR. SERGI CLOTET FREIXAS
Supervisor: Ana Konvalinka
University Health Network, ON
2019-2022: $165,000
Project Title: Sex and Human Kidney Metabolism: New Insights into Diabetic Kidney Disease
Category: Diabetes

DR. JANINE FARRAGHER
Supervisor: Brenda Hemmelgarn
University of Calgary, AB
2019-2021: CIHR Award
Project Title: A Pilot RCT of the PEP Program for Adults on Chronic Dialysis with Fatigue
Category: Quality of Life

DR. TYRONE HARRISON
Supervisor: Brenda Hemmelgarn
University of Calgary, AB
2019-2022: $130,000
Project Title: Improving the perioperative care of patients with end-stage renal disease
Category: Dialysis

DR. CLAIRE MARTIN
Supervisor: Anne-Claude Gingras
Mount Sinai Hospital, ON
2019-2022: $12,000 + CIHR Award
Project Title: Proteomic mapping of the kidney's blood filtration barrier
Category: Kidney Biology

DR. MARKO SKRTIC
Supervisor: Lisa Robinson
University Health Network, ON
2019-2022: $195,000
Project Title: Pro-resolving mediators and Slit2-Robo pathway in acute kidney injury
Category: Acute Kidney Injury

KRESCENT PARTNERSHIP WITH CIHR IHDCYH NEW INVESTIGATOR GRANT

DR. MATHIEU LEMAIRE
The Hospital for Sick Children, ON
2019-2022: $105,000
Project Title: Studying why abnormal fats in blood vessel leads to blood clots in the kidneys of children with a rare genetic disease
Category: Genetics

DR. RICHARD GILBERT

New Treatment for Diabetic Kidney Disease

Despite all our currently available treatments, diabetes remains the most common cause of end-stage kidney failure in Canada, which requires dialysis or transplantation to preserve life. Stem cells offer the exciting potential of not only slowing the progression of diabetic kidney disease but also of reversing the disease once it has occurred. While highly successful in animal studies of heart disease, human stem cell studies have been far less impressive. Among the likely reasons for this is the type of cells that are used in humans, as opposed to those used in animals. Notably, donor stem cells in animal studies are derived from healthy animals with the same genetic makeup. To avoid rejection, human studies have focused on using cells derived from the patient himself. As these stem cells come from an "unhealthy" individual, they do not function as well. Dr. Gilbert's study seeks to find a way around this key obstacle.

His research team has found that many types of stem cells work, not by creating new tissues but by secreting factors that allow organs to repair themselves. After several years of painstaking research, they have identified the factor that they believe is responsible for the kidney-protective properties of certain stem cells. The project objective was to test this factor, called CXCL-10, to see whether its administration can stop the development of diabetic kidney disease in a mouse model. Their findings confirmed this hypothesis and showed that CXCL-10 treatment prevented kidney scarring and the development of diabetic kidney disease in the animals. This work was published in the American Journal of Pathology.

WHAT THIS MEANS FOR PATIENTS:

If CXCL-10 proves to be successful in future human trials, this new treatment alternative could help prevent or stop the development of kidney disease in diabetic patients.

DR. CAROLINE LAMARCHE

Harnessing the Immune System to Decrease Kidney Rejection

Transplantation is the best and sometimes only treatment for end-stage kidney failure. Immuno-suppressive drugs make transplantation possible, but since these drugs do not only suppress the cells reactive to the transplanted organ but also the entire immune system, they come at the price of an increased risk of infection and cancer. The drugs are not perfect; many kidneys are still lost to rejection.

The goal of Dr. Lamarche's research is to improve the success of transplantation, by finding ways to re-educate the recipient's immune system to tolerate the transplanted organ. Her strategy is to harness the natural immunosuppressive properties of a type of white blood cell called T regulatory cells (Tregs). Tregs naturally regulate immune responses by ensuring the immune system attacks infectious or harmful substances without over-reacting to self or to non-harmful foreign proteins. Research has shown that Tregs could be used as a cell-based therapy to induce immune tolerance and prevent organ rejection. The efficacy of Treg cell therapies can be significantly enhanced if the cellular product is enriched for Tregs that recognize a target that is specific to the transplanted organ. Dr. Lamarche's lab developed a method to improve the potency of Tregs by engineering them to express a protein that activates them when they are in the presence of a transplant.

This technology has now been patented and through a collaboration with the industry, a first-in-man clinical trial should start in the following years. Dr. Lamarche's team has demonstrated that this technology might be useful to prevent acute rejection but not so much to treat it if already established.

WHAT THIS MEANS FOR PATIENTS:

Dr. Lamarche is hopeful that this new technology will allow the development of personalized cell therapy treatment to harness the patient immune system and prevent graft rejection.

DR. GEORGE YOUSEF

Predicting the Effectiveness of Kidney Cancer Treatment

Kidney cancer is an aggressive disease and when the tumor spreads outside the kidney (called metastatic disease), the treatment becomes very difficult and patient survival drops significantly. Although the introduction of sunitinib treatment (a drug used to treat kidney cancer) has improved patient outcomes, most patients will eventually develop resistance to the drug. Currently, there is no way for physicians to predict which patients will respond well to sunitinib.

Dr. Yousef has been studying the changes in small molecules (called microRNAs) between kidney cancer patients who benefited from sunitinib treatment and those who did not.

His study has shown that some microRNAs can predict the effectiveness of treatments in kidney cancer. It demonstrated that microRNA levels are altered with sunitinib response and that certain microRNAs are changed after treatment. MicroRNAs were also associated with short term and long-term survival and they played a role in the molecular pathways that contribute to kidney cancer progression.

WHAT THIS MEANS FOR PATIENTS:

This is a very important issue since predicting response to treatment can help physicians to determine which patients will benefit from this treatment and those that should have a different treatment. It will help patients avoid complications and side effects of the drug if clinicians know that they are not going to benefit.

DR. MARISA BATTISTELLA

Deprescribing in Patients on Hemodialysis

Polypharmacy (concurrent use of multiple medications by a patient) has been associated with an increased risk of non-adherence to medication regimens, adverse drug events, falls, hospital admissions and mortality. Patients with end-stage renal disease on hemodialysis (HD) are exposed to polypharmacy by taking on average 12 medications per day. Deprescribing tools have been developed to reduce polypharmacy and have been successful in the elderly population, but these tools have not been applied directly to the chronic kidney disease (CKD) population. Furthermore, many medications currently used in HD patients lack the high-quality evidence for efficacy and safety seen in the general population and the role of these medications in HD patients is often not known. The aim of the project was to develop tools (algorithms) to guide the re-assessment and deprescribing of specific medications that lack evidence for efficacy and safety in HD patients and to determine the effectiveness of these tools in reducing polypharmacy.

Dr. Battistella and her team developed a representative set of medication-specific deprescribing algorithms validated by nephrology experts for nine identified medications that are often inappropriately prescribed. To reach this goal, a total of 45 Canadian nephrology experts were interviewed. These algorithms will feed into a national deprescribing study that aims to tackle the issue of polypharmacy in Canadian patients on HD, ultimately increasing patient safety and well-being by reducing or mitigating the risks of drug side effects and unwanted interactions between drugs.

The algorithms were presented at the American Society of Kidney Disease Annual Meeting in November 2019. The study group involves members within the Can-SOLVE CKD Network / Knowledge Translation Community of Practice and our results will be disseminated to network stakeholders, funding partners, patients, and the general public. Through the validation process, positive feedback has already been garnered from over 70 Canadian clinicians, many of which have requested copies of these completed toolkits for use in practice. Dr. Battistella is currently working on a publication and Canadian clinicians will be able to access these toolkits on an upcoming webpage to encourage dissemination and implementation. Three pharmacy research students also worked on patient information pamphlets and videos.

WHAT THIS MEANS FOR PATIENTS:

This initiative will be the basis for the development of national consensus driven medication deprescribing algorithms that will be implemented in clinical practice for hemodialysis units across Canada.

DR. MOUMITA BARUA

Genetic Research Helps Unlock Mysteries of a Rare Kidney Disease

DR. MOUMITA BARUA is working to improve clinical outcomes, and the quality of life for people diagnosed with genetic kidney diseases. She is a graduate of the KRESCENT Post-Doctoral Fellowship (2010-2013) and New Investigator (2016-2019) programs. Dr. Barua is now a clinician-scientist with Ontario's University Health Network and an Assistant Professor at the University of Toronto's Department of Medicine. In both her research and clinical practice, she is focused on learning more about how these disorders develop, and why certain individuals armore vulnerable to kidney disease.

"I have always been the type of person who wants to know 'why'. Why does someone get a kidney disease and other people don't? When I was going through my training, I sometimes found the answers a bit unsatisfying," Dr. Barua says. "That drew me to research, to find more answers and think about things in a different way."

Her research has centered on a kidney disorder called Focal and Segmental Glomerulosclerosis (FSGS). The disease is characterized by damage to the kidney filters, which leads to protein in the urine, kidney damage and in some cases kidney failure. FSGS has a number of causes – some genetic and others the result of an underlying illness or infection. Dr. Barua is seeking ways to better identify the cause of FSGS in individual patients, so doctors can provide more personalized treatments and care.

"The starting point is to understand what you are dealing with. [You] cannot come up with really effective therapies if you don't understand what is going on," she explains. "I really think that genetics is a huge part of that. We want to use the unique biologic signature of a patient to tailor medication and choose the appropriate therapy for that person."

Finding new treatments is especially beneficial for Canadians diagnosed with FSGS. While doctors can identify the disorder with a biopsy, there is no medical tool to pinpoint its exact cause. Most Canadians diagnosed with FSGS are prescribed steroids, which have a lot of toxicity and unwanted side effects. While steroids often work in cases where scarring is the result of inflammation, they are not usually as effective when the underlying cause is genetic. Steroids, Dr. Barua observes, only work in about half of patients with FSGS.

Recent advances in DNA analysis and genome sequencing are helping researchers better identify the causes of FSGS. Dr. Barua's lab has discovered that about five per cent of adults with FSGS have a genetic mutation in type 4 collagen, also known as Alport Syndrome. Her lab's findings are being replicated in other international studies.

"Collagen is something that provides structure to all of our organs including the kidney," she explains, noting most Canadians are only aware of the collagen used to maintain a youthful appearance. "Type 4 collagen provides important structure to the kidney filters. When there is a mutation, it leads to a weakening of the filters and kidney damage."

With this new discovery, nephrologists can now look for type 4 collagen mutations in patients and, when found, choose to forego steroid treatments in those individuals. Dr. Barua stresses more is being done than simply removing an ineffective therapy. There are also two new medications being tested for people with type 4 collagen disorders (https://alportsyndrome.org/research). These, and other advancements, point to a better treatment landscape for Canadians living with FSGS and other kidney diseases in the years ahead.

"We have come a long way in the past few years because of a lot of advances in science and technology related to genetics, gene editing and stem cell science," she says. As a clinician-scientist, Dr. Barua has an opportunity to drive these new advances and provide better solutions for patients. "Being a researcher is an amazing job path because there is so much reward in it. There is a lot of failure too, and you have to be okay with that. But those successes, even if they are really rare, are rewarding."

– ARTICLE BY HEIDI WESTFIELD

DR. BRENDAN BARRETT

Medal for Research Excellence Recipient 2019

FOR OVER 25 YEARS, Dr. Brendan Barrett has contributed generously to the Canadian kidney research landscape through his work in transformational research. He is currently the Chief Scientific Officer of the Translational and Personalized Medicine Initiative, funded by the Canadian Institute for Health Research (NL SUPPORT, Strategy for Patient-Oriented Research), the province of Newfoundland & Labrador, the Atlantic Canada Opportunities Agency and IBM.

Dr. Barrett was presented the prestigious Medal for Research Excellence at a reception held in his honour on September 17 at The Frank and Eileen Gronich Lecture Theatre, Memorial University in St. John's, Newfoundland.

"Dr. Barrett is a consummate ambas-sador of the best Canadian kidney investigation has to offer on the world stage," says Elizabeth Myles, National Executive Director of The Kidney Foundation of Canada. "He serves as a valuable mentor and role model to his junior colleagues thanks to his leadership, advice and team building prowess."

Described by his colleagues as a "gentle giant" and a "pillar" of Canadian research, Dr. Barrett is also the principal investigator for eastern Canada for the Strategy for Patient-Oriented Research (SPOR) Chronic Kidney Disease network under review by CIHR and co-investigator on the CIHR funded ACCESS trial investigating the role of fistulas versus other access for elderly patients starting dialysis.

Dr. Barrett has been an influential, intelligent and sensible leader in several important Canadian studies, including CanPREVENT: the Canadian Prevention of Renal and Cardiovascular Endpoints Trial which enhanced understanding of how to improve multidisciplinary care for people with chronic kidney disease.

Dr. Barrett's key contributions in the innovative use of non-ionic contrast media to prevent contrast nephropathy have made him recognized worldwide as the foremost expert on the subject. He has advanced understanding on topics in progressive chronic kidney disease and end-stage kidney disease.

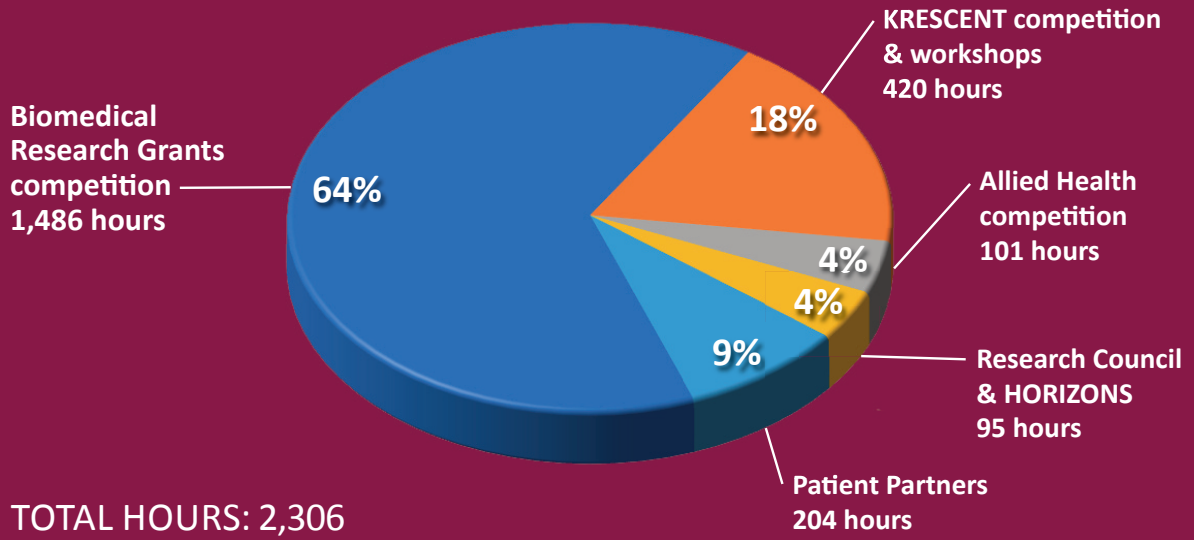
Dr. Barrett has dedicated a substantial amount of his time serving on and elevating the Canadian research community through Kidney Foundation activities. These include serving as a member of the Biomedical Scientific Committee for seven years and acting as a member of the Foundation's Research Council, and of the National Medical Advisory Committee.

Special Thank You to Volunteers from the Kidney Research Community

The Kidney Foundation appreciates the dedication and support of the 72 kidney researchers and 12 kidney patients that collectively volunteered more than 2,300 hours of their time to help the foundation meet its research goals this year. Their work and expertise contributed to the launch of a new Research Framework and to select the best scientific projects for funding in the Foundation three research competitions: the Biomedical Research Grants competition, KRESCENT and the Allied Health competition.

In 2019, our patient partners were involved as reviewers in the KRESCENT competition, acted as advisors to the KRESCENT curriculum, actively participated in workshops and provided strategic input to develop the Research Framework.

Thank you to our scientific and patient experts for all the hard work and help!



TOTAL HOURS: 2,306