

Kidney Research Centre

Annual Report

2016-2017

Inspired by research.
Driven by compassion.

Inspiré par la recherche.
Guidé par la compassion.



About the KRC

The Kidney Research Centre (KRC) was established in 2000 at The Ottawa Hospital Research Institute, University of Ottawa, and is the first centre of its kind in Canada devoted exclusively to the prevention, diagnosis and treatment of kidney disease. The KRC team

consists of laboratory scientists, clinician investigators, students and research trainees, technologists, research coordinators, research managers, and clerical and administrative staff. Since 2000, the KRC has experienced significant growth in the size of its team of researchers, and in the scope of the research being conducted.



Cover Photo: Pictured is Dr. Dylan Burger alongside his Canada Foundation for Innovation-funded nanoparticle tracking analysis system. Dr. Burger's laboratory uses this system to examine tiny pieces of cells (known as microparticles) for the early detection of kidney disease.

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Message from the Director

Academic Year 2016-2017

Once again, on behalf of the Kidney Research Centre, I am pleased to highlight the key developments in research, funding support, recognitions, and information about important community-based initiatives for the academic year 2016-17. Indeed, it has been another very busy and productive year.



*Dr. Kevin Burns, Director of
The Kidney Research Centre*

In 2016-17, researchers at the KRC published more than 70 peer-reviewed manuscripts in scientific/medical journals, and presented their studies at local, national and international venues. Advances have been made in a wide variety of research areas, including the molecular basis of diabetic kidney disease, the development of new urine tests that may detect early kidney disease in people with diabetes, the role of accurate blood pressure recordings in defining treatment targets in people with hypertension and chronic kidney disease, and many other areas. Many of these advances are highlighted in the KRC Newsflash, our monthly newsletter that was launched in April 2017 (www.ohri.ca/centres/krc/newsflash.asp).

KRC Scientist Dr. Dylan Burger was awarded a major 5-year Project Scheme grant (\$685,000) from the Canadian Institutes of Health Research (CIHR) to pursue his studies on the role of tiny cell-derived “microparticles” in causing injury to blood vessels and kidney cells in hypertension and diabetes. This represents particularly good news for Dr. Burger and the KRC, especially considering that the competition was very intense, with only one out of every seven applications being funded. In the past year, in collaboration with colleagues at the University of Toronto, Dr. Burger’s laboratory has discovered that in hu-

mans with uncomplicated diabetes, microparticles shed from cells of the kidney filter (“glomerulus”) appear in the urine and could be markers of early diabetic kidney disease. With this new grant, he and his group will continue this exciting new area of research, with the hope to develop new tests that can detect kidney disease at its earliest stages, as well as new treatments that can prevent kidney damage due to microparticles.

The laboratory of Dr. Kevin Burns was awarded a 2-year grant from the Kidney Foundation of Canada and a 1-year grant from the CIHR to study cell-based treatments for acute kidney failure. Dr. Burns and his group have shown that in animals with sudden kidney failure, intravenous administration of tiny vesicles (“exosomes”) isolated from human cord blood “progenitor” cells significantly protects against kidney injury and allows for more rapid recovery. His lab will now study in more detail the mechanisms involved in the protective response, with a goal to hopefully transfer this technology for use in humans with kidney failure in the near future.

Kidney transplantation remains the best treatment for end-stage kidney failure, in those people who are suitable for a transplant. However, wait times for kidneys from deceased donors remain long (~ 3-4 years on average in Ottawa), and some people unfortunately may never receive a kidney due to shortage of donors. In 2017, Nephrology Division Head and Senior Scientist Dr. Greg Knoll received a CIHR SPOR-iCT Organ donation registration grant. With these funds, Dr. Knoll and his collaborators will con-

duct an innovative trial of an intervention to promote organ donation registration in primary care physicians' offices.

Community fund-raising strongly supports kidney research in Ottawa. The Annual KRC Golf Tournament was re-launched in September 2016 at The Meadows course, and it was a great success. Organization of the event was led by Mr. Sam Karkache, his committee of volunteers, and TOH Foundation. We thank Sam and all committee members, our Honorary Chair - hockey legend Brian Kilrea, Dean Roberts from TSN 1200, and all participants and sponsors.

The 33rd Annual Italian Night gala dinner in March 2017 raised \$40,000 for the KRC, an incredible achievement. We thank Mario Frangione, Anna Monteduro, and all members of the Italian Night organizing committee for hosting this outstanding event, as well as The Ottawa Hospital (TOH) Foundation for their assistance and support. At the dinner, medical student Mr. Rameez Imtiaz (supervised by Dr. Deb Zimmerman) and KRC Honors student Jamie Ghossein (Dr. Richard Hébert's lab) were awarded KRC scholarships, sponsored by the Italian Night and the Kidney Foundation of Canada. Mr. Imtiaz has been investigating the risk factors for developing high levels of serum phosphate in people with chronic kidney disease (which can lead to bone disease, itching and other complications). In Dr. Hébert's laboratory, Mr. Ghossein has been studying the effects of key hormones ("prostaglandins") on the ability of the kidneys to excrete salt and water, a process that is impaired in people with diabetic kidney disease. The KRC scholarships will support the research training of these two excellent students and allow them to present their research findings at national and international meetings.

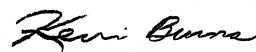
More than \$5,000 was raised to support the KRC at the 7th annual Alive to Strive Kidney Fitness Project event on April 30, 2017. The event

involved more than 600 runners and walkers from all age groups. Many thanks to Ms. Marie-Eve Chainey, Chair of the event, Dr. Zimmerman, and all committee members for their hard work and dedication to this important cause.

On June 27th, the KRC held its 3rd Open House at the laboratory facility located at the University of Ottawa Health Sciences Building. More than 50 people attended the event, which featured presentations on research advances by Drs. Manish Sood and Chris Kennedy, a moving testimonial by kidney donor Rachel de Waard and her husband Darrell (transplant recipient), as well as laboratory and clinical research demonstrations highlighting state-of-the-art technologies at the KRC. Once again TOH Foundation provided superb support for the event, and we received excellent feedback that will guide organization of our next Open House event.

Finally, we are very grateful for our private donors, who have made substantial donations to the KRC in the past year that will go directly to support biomedical and clinical research projects. We also thank the trainees, research staff, our lab manager Ms. Gaby Cherton-Horvat, and administrative staff (Ms. Brittany Hollingsworth and Ms. Jennifer Brownrigg) for their contributions to another successful year of research at the KRC. Now and into the future, we will continue to strive to improve the lives of all people affected by kidney disease.

Sincerely,



Kevin D. Burns, MD CM, FRCPC
Professor of Medicine, Division of Nephrology,
Dept. of Medicine
The Ottawa Hospital
Director, Kidney Research Centre
Ottawa Hospital Research Institute,
University of Ottawa

Message du directeur

Année scolaire 2016-2017

Encore une fois, au nom du Centre de recherche sur les maladies du rein, je suis heureux de souligner les principaux concernant dans la recherche, le financement, les reconnaissances et l'information sur les initiatives communautaires importantes pour l'année universitaire 2016-2017. En effet, cela a été une autre année très occupée et productive.

En 2016-2017, les chercheurs du CRMR ont publié plus de 70 manuscrits évalués par des pairs dans des revues scientifiques et médicales, et présenté leurs études sur les scènes locales, nationales et internationales. Des progrès ont été réalisés dans une grande variété de domaines de recherche, notamment des études des mécanismes moléculaires de la maladie rénale diabétique, le développement de nouveaux tests d'urine pouvant détecter les maladies rénales précoces chez les diabétiques, le rôle des enregistrements précis de la pression artérielle dans la définition des objectifs thérapeutiques. Les personnes souffrant d'hypertension et de maladie rénale chronique, et de nombreux autres domaines. Bon nombre de ces progrès sont soulignés dans le bulletin d'information du CRMR, notre bulletin mensuel qui a été lancé en avril 2017 (www.ohri.ca/centres/CRMR/newsflash.asp).

Le Dr Dylan Burger scientifique du CRMR a reçu une subvention de projet de cinq ans (685 000 \$) des Instituts de recherche en santé du Canada (IRSC) pour poursuivre ses études sur le rôle des minuscules microparticules dérivées des cellules dans la lésion des vaisseaux sanguins et les cellules rénales dans l'hypertension et le diabète. Cela représente une très bonne nouvelle pour le Dr Burger et le CRMR, d'autant plus que la compétition était très relevée, avec seulement une demande sur sept financée. L'an dernier, en collaboration avec des collègues de l'Université de Toronto, le laboratoire du



Dr. Kevin Burns, Directeur du Centre de recherche sur les maladies du rein.

Dr Burger a découvert que chez les humains atteints de diabète non compliqué des microparticules provenant des cellules du filtre rénal « glomérule » apparaissent dans les urines et pourraient être indicatif, de la maladie rénale diabétique précoce. Avec cette nouvelle subvention, lui et son groupe poursuivront ce nouveau domaine de recherche passionnant, avec l'espoir de développer de nouveaux tests capables de détecter les maladies rénales dès leur plus jeune

âge, ainsi que de nouveaux traitements pouvant prévenir les lésions rénales dues aux microparticules.

Le laboratoire du Dr Kevin Burns a reçu une subvention de deux ans de la Fondation canadienne du rein et une subvention d'un an des IRSC pour étudier les traitements cellulaires pour l'insuffisance rénale aiguë. Le Dr Burns et son groupe ont montré que chez les animaux souffrant d'insuffisance rénale aiguë, l'administration intraveineuse de minuscules vésicules « exosomes » isolées à partir de cellules progénitrices provenant du sang ombilical humain protège de façon significative contre les lésions rénales et permet une récupération plus rapide. Son laboratoire va maintenant étudier plus en détail les mécanismes impliqués dans la réponse protectrice, dans le but de transférer, espérons-le, cette technologie aux humains atteints d'insuffisance rénale dans un proche avenir.

La transplantation rénale reste le meilleur traitement pour l'insuffisance rénale terminale, chez les personnes qui se prêtent à une transplantation. Cependant, les temps d'attente pour les reins des donneurs décédés restent longs (~ 3-4 ans en moyenne à Ottawa), et certaines personnes pourraient malheureusement ne jamais recevoir de rein en raison d'une pénurie de donneurs. En 2017, le Dr Greg Knoll, chef de la Division de néphrologie et

scientifique en chef, a reçu une subvention d'inscription au don d'organes ECN de la SRAP des IRSC. Grâce à ces fonds, le Dr Knoll et ses collaborateurs pourront réaliser un essai novateur d'une intervention visant à promouvoir l'enregistrement des dons d'organes dans les cabinets de médecins de soins primaires.

La collecte de fonds communautaires appuie fortement la recherche sur les maladies du rein à Ottawa. Le Tournoi de golf annuel CRMR a été relancé en septembre 2016 au club de golf « The Meadows » et ce fut un grand succès. L'organisation de l'événement était dirigée par M. Sam Karkache, son comité de bénévoles et la Fondation de la Fondation de Hôpital d'Ottawa. Nous remercions Sam et tous les membres du comité, notre président d'honneur, le légendaire Brian Kilrea, Dean Roberts, de TSN 1200, ainsi que tous les participants et commanditaires.

Le 33e dîner de gala annuel de la nuit italienne en mars 2017 a permis d'amasser 40 000 \$ pour le CRMR, une réalisation incroyable. Nous remercions Mario Frangione, Anna Monteduro et tous les membres du comité organisateur de la Nuit d'Italie d'avoir accueilli cet événement exceptionnel, ainsi que la Fondation de l'Hôpital d'Ottawa (FOH) pour leur aide et leur soutien. Lors du dîner, M. Rameez Imtiaz (supervisé par le Dr Deb Zimmerman) et Jamie Ghossein (laboratoire du Dr Richard L. Hébert) ont reçu des bourses de la Serata Italiana commanditées par la Fondation Canadienne des maladies du rein. M. Imtiaz étudie les facteurs de risque de développer des taux élevés de phosphate sérique chez les personnes atteintes d'insuffisance rénale chronique (pouvant entraîner une maladie osseuse, des démangeaisons et d'autres complications). Dans le laboratoire du Dr Hébert, M. Ghossein étudie les effets des autacoides (les « prostaglandines ») sur la capacité des reins à excréter le sel et l'eau, un processus qui est altéré chez les personnes atteintes d'une maladie rénale diabétique. Les bourses provenant de la Serata Italiana appuieront la formation en recherche de ces deux excellents étudiants et leur permettront de présenter leurs résultats de recherche lors de rencontres nationales et internationales.

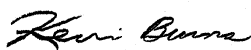
Le 30 avril 2017, plus de 5 000 \$ ont été amassés pour soutenir le CRMR lors de la 7e édition du projet « Alive

to Strive ». L'événement a impliqué plus de 600 coureurs et marcheurs de tous les groupes d'âge. Un grand merci à Mme Marie-Ève Chainey, présidente de l'événement, Dr Zimmerman, et à tous les membres du comité pour leur travail acharné et leur dévouement à cette cause importante.

Le 27 juin, le CRMR a tenu sa troisième journée porte ouverte au CRMR situé dans l'édifice des sciences de la santé de l'Université d'Ottawa. Plus de 50 personnes ont assisté à l'événement, qui comprenait des présentations sur les progrès de la recherche par les Drs. Manish Sood et Chris Kennedy, un témoignage émouvant de Rachel de Waard, qui a donné un rein à son mari Darrell, ainsi que des démonstrations de laboratoire et de recherche clinique mettant en évidence les technologies les plus récentes au CRMR. Une fois de plus, la Fondation de L'Hôpital d'Ottawa a fourni un soutien exceptionnel à l'événement et nous avons reçu d'excellents commentaires qui guideront l'organisation de notre prochain événement portes ouvertes.

Enfin, nous sommes très reconnaissants envers nos donateurs privés, qui ont fait des dons substantiels au CRMR l'année dernière et qui serviront directement à soutenir des projets de recherche biomédicale et clinique. Nous remercions également les stagiaires, le personnel de recherche, notre gestionnaire de laboratoire, Mme Gaby Cherton-Horvat, et le personnel administratif (Mesdames Brittany Hollingsworth et Jennifer Brownrigg) pour leur contribution à une autre année fructueuse de recherche au CRMR. Maintenant et dans le futur, nous continuerons à nous efforcer d'améliorer la vie de toutes les personnes affectées par une maladie rénale.

Cordialement,



Kevin D. Burns, MD CM, FRCPC
Professeur de médecine, Division de néphrologie
Université d'Ottawa et l'Hôpital d'Ottawa
Directeur, Centre de recherche sur les maladies du rein
Institut de recherche de L'Hôpital d'Ottawa, Université
d'Ottawa

Profile—Dr. Chris Kennedy



Dr. Christopher Kennedy is Scientist at The Ottawa Hospital Research Institute and Professor in the Department of Cellular and Molecular Medicine at the University of Ottawa. He is internationally recognized for his expertise in understanding damage to the kidney's filtration barrier. His recent work has defined a critical role for a protein known as NADPH oxidase isoform (Nox5) in kidney damage in diabetes. We recently met with Dr. Kennedy and asked him some questions about his career and his other interests.

What traits do you think make for a good scientist?

A critical yet open mind that is curious about how things work and why they are the way they are.

How did you become interested in research in kidney disease?

During my PhD studies I was working on a project with Dr. Richard Hébert. It was during a conference in Boston (The American Society of Nephrology meeting) that I realized how incredibly complex and interesting the kidney really is. I was fascinated and wanted to learn more.

What's your favourite part of your job?

Seeing students' success and having a hypothesis either supported or in many cases overturned.

You did your postdoctoral training at Vanderbilt University in Nashville. What was that experience like?

Vanderbilt is a major centre for renal research where some of the world's best known scientists do their work. It was amazing to learn by watch-

ing and listening to them. A really competitive environment.

Is there an area of research that you think is understudied at the moment?

The ability to reverse the ageing process in the kidney. Chronic kidney disease (CKD) requires years to progress giving us plenty of time to intervene. I am sure that part of the progression derives from the ageing process. If we could slow down this process perhaps CKD could be reduced.

What does your perfect Sunday look like?

REDBLACKS winning back to back Grey Cups.

Five Faves:

City: Ottawa

Drink: Bitburger beer

Sport: Downhill Skiing

Restaurant: Hunter's Public House

Vegetable: Baby Spinach

KRC Outreach

KRC Golf Tournament

The KRC Golf Tournament returned in 2016 and was a great success raising over \$20,000 for kidney research. The KRC is grateful to the golfers, sponsors, The Ottawa Hospital Foundation, The Kidney Foundation of Canada (Eastern Ontario chapter) and the organizing committee led by Mr. Sam Karkache. Special thanks to our generous main sponsors, the CLV Group and Urbandale Corporation.



(Left to right) Dr. Kevin Burns, Ms. Jennifer van Noort and Mr. Sam Karkache.

Mr. Sam Karkache's long-time support of the Kidney Research Centre and the Ottawa Hospital was recognized at the event. He was presented with an Ottawa Hospital Guardian Angel award from Ms. Jennifer van Noort, Ottawa Hospital Foundation Vice-President, Philanthropy and Leadership Giving and Dr. Kevin Burns, Director of the Kidney Research Centre. *(Photo right)*

Italian Night

La Serata Italiana continued its tradition of fundraising and celebration on Saturday March 4th, 2017. The KRC joined in celebrating the 33rd Italian Night Dinner which raises funds for research and trainee scholarships at the KRC. The dinner was held at the Sala San Marco and featured great food, networking, and entertainment. The theme of the evening was Canada 150, a wonderful evening for everyone that raised \$40,000.



La Serata Italiana organizing committee.

Kidney Research Centre students Rameez Imtiaz and Jamie Ghossein were awarded the 2017 Agostino Monteduro Italian Night Scholarships, on behalf of the Kidney Foundation of Canada. The KRC is thankful for the tireless efforts of the Italian Night organizing committee in support of research aimed at improving the lives of people affected by kidney disease.

Alive to Strive

The 2017 Alive to Strive race was held Sunday, April 13, 2017 and despite the chilly weather more than 600 runners and walkers participated raising more than \$5,000 for the Kidney Research Centre. The event has now raised more than \$145,000 for its active living grant program. Thanks to Marie-Eve Chainey (President of the Board of Directors) and the entire Alive to Strive Organizing Committee!



KRC Open House

The KRC held its 3rd Open House on June 27th, 2017 at our laboratory facility located at the University of Ottawa Health Sciences Building. The event featured presentations on research advances by Drs. Manish Sood and Chris Kennedy, and a moving testimonial by kidney donor Rachel de Waard and her husband Darrell (transplant recipient). Following the presentations over 50 guests toured the laboratory and took part in presentations highlighting state of the art technologies. The presenters included: Dr. Richard Hébert (Water and sodium transport in kidney disease), Dr. Deb Zimmerman (Serum phosphate from mice to iPads), Dr. Kevin Burns (Cell therapy for diabetic kidney disease) and Dr. Dylan Burger (Early detection of kidney disease). The event was a success and we look forward to hosting future KRC Open Houses.



KRC Staff / Trainees

Research Personnel

Members of the Division of Nephrology / Kidney Research Centre

<u>Name</u>	<u>Title</u>	<u>Scientific Rank</u>
Dr. Ayub Akbari	Associate Professor Division of Nephrology	Senior Clinician Investigator, OHRI
Dr. Robert Bell	Associate Professor Division of Nephrology	
Dr. Mohan Biyani	Assistant Professor Division of Nephrology	Clinician Investigator, OHRI
Dr. Pierre Antoine Brown	Assistant Professor Division of Nephrology	Clinician Investigator, OHRI
Dr. Ann Bugeja	Assistant Professor Division of Nephrology	
Dr. Dylan Burger	Assistant Professor Dept of Cellular and Molecular Medicine	Scientist, OHRI, KRC
Dr. Kevin D. Burns	Professor of Medicine Division of Nephrology Director of Kidney Research Centre	Senior Scientist, OHRI
Dr. Edward Clark	Assistant Professor Division of Nephrology	Clinician Investigator, OHRI
Dr. Janet Davis	Assistant Professor Division of Nephrology	
Dr. Cedric Edwards	Assistant Professor Division of Nephrology	
Dr. Todd Fairhead	Assistant Professor Division of Nephrology	Clinician Investigator, OHRI
Dr. Richard L. Hébert	Full Professor Dept of Cellular & Molecular Medicine	
Dr. Swapnil Hiremath	Assistant Professor Division of Nephrology	Senior Clinician Investigator, OHRI
Dr. Stephanie Hoar	Assistant Professor Division of Nephrology	
Dr. Jolanta Karpinski	Associate Professor Division of Nephrology	Clinician Investigator, OHRI
Dr. Chris Kennedy	Full Professor Dept of Cellular & Molecular Medicine	Senior Scientist, OHRI
Dr. Greg Knoll	Professor of Medicine Division of Nephrology	Senior Scientist, OHRI
Dr. Susan Lavoie	Head, Division of Nephrology Associate Professor Division of Nephrology	Clinician Investigator, OHRI

Members of the Division of Nephrology / Kidney Research Centre

Dr. David Z. Levine	Emeritus Professor Division of Nephrology	Affiliate Investigator, OHRI
Dr. Peter Magner	Associate Professor Division of Nephrology	Clinician Investigator, OHRI
Dr. Brendan McCormick	Associate Professor Division of Nephrology	Clinician Investigator, OHRI
Dr. Soraya Moghadam	Clinical Associate Division of Nephrology	
Dr. Steven Nadler	Associate Professor Division of Nephrology	
Dr. Sushil Ratnaparkhe	Clinical Nephrology Associate	
Dr. Marcel Ruzicka	Associate Professor Division of Nephrology	Clinician Investigator, OHRI
Dr. Manish Sood	Jindal Research Chair for Prevention of Kidney Disease Assistant Professor Division of Nephrology	Associate Scientist, OHRI
Dr. Deborah Zimmerman	Associate Professor Division of Nephrology, Director of Clinical Research, KRC	Clinician Investigator, OHRI

Clinical Scholars, Trainees and Fellows

<u>Name</u>	<u>Title</u>
Dr. Rima Abou Arkoub	Clinical Fellow
Dr. Syed Amin	Clinical Fellow (RCPSC)
Dr. Mahesh Bennikal	Clinical Fellow
Dr. Ankur Gupta	Clinical Fellow
Dr. Caitlin Hesketh	Clinical Fellow (RCPSC)
Dr. Januvi Jegatheswaran	Resident Researcher
Dr. Prabhu Kanchi	Clinical Fellow
Dr. Vaibhav Keskar	Clinical Fellow
Dr. Teerath Kumar	Clinical Fellow
Dr. Darius Lazarus	Clinical Fellow
Dr. Trevor Mace-Brickman	Clinical Fellow (RCPSC)
Dr. David Massicotte-Azarniouch	Clinical Fellow (RCPSC)
Dr. Krishnam Penmatsa	Clinical Fellow
Dr. Birinder Singh	Clinical Fellow (RCPSC)

Research Associates

<u>Name</u>	<u>Supervisor</u>
Dr. Alexey Gutsol	Dr. K. Burns
Dr. Chet Holterman	Dr. C. Kennedy
Dr. Mercedes Munkonda	Dr. D. Burger
Dr. Rania Nasrallah	Dr. R. L. Hébert
Dr. Jose Vinas	Dr. K. Burns
Dr. Fengxia Xiao	Dr. D. Burger / Dr. K. Burns

Post-Doctoral Research Fellows (Basic Science)

<u>Name</u>	<u>Project Title</u>	<u>Supervisor</u>
Dr. Jean-François Thibodeau	Investigating the therapeutic benefit and mechanism of action of PBI-4050, novel anti-inflammatory and anti-fibrotic drug, in mouse models of acute and chronic kidney injury.	Dr. C. Kennedy

Medical Students

<u>Name</u>	<u>Supervisor</u>
Mohammed Ali Faraz	Dr. S. Hiremath
Johnny Huang	Dr. S. Hiremath
Rameez Imtiaz	Dr. D. Zimmerman
Simon Parlow	Dr. S. Hiremath
Soroush Rouhani	Dr. S. Hiremath
Tharshka Thangarasa	Dr. D. Zimmerman

Graduate Students (Basic Research)

<u>Name</u>	<u>Project Title</u>	<u>Supervisor</u>
Randa Haneef	ECFC exosomes in acute kidney injury.	Dr. K. Burns
David Eckert	The Prostaglandin E2 EP1 receptor modulates water and sodium transport in the mouse collecting duct.	Dr. R. L. Hébert
Naomi Boisvert	The role of ubiquitin C-terminal hydrolase L1 in ACTN4-associated focal segmental glomerulosclerosis.	Dr. C. Kennedy
Maddison Turner	The effects of high glucose on endothelial micro-particle composition and bioactivity.	Dr. D. Burger

Undergraduate Students (Clinical Research)

<u>Name</u>	<u>Supervisor</u>
Michael Che	Dr. A. Akbari
Sophie Harris	Dr. E. Clark
Rana Hassan	Dr. A. Akbari
Brianna Lahey	Dr. S. Hiremath
Jonathan Lau	Dr. A. Akbari
Olivia McBride	Dr. S. Hiremath

Honours Students (Basic Research)

<u>Name</u>	<u>Supervisor</u>
Kaitlyn Brosseau	Dr. C. Kennedy
Jamie Ghossein	Dr. R. L. Hébert
Eldjonai Kamto	Dr. C. Kennedy
Matthew Spence	Dr. K. Burns
Suzy Sun	Dr. D. Burger

Summer Students (Basic Research)

<u>Name</u>	<u>Supervisor</u>
Jamie Ghossein	Dr. R. L. Hébert
William Knoll	Dr. K. Burns
Yici Liu	Dr. C. Kennedy
Chloé Landry	Dr. D. Burger
Jude Sanon	Dr. D. Burger
Matthew Spence	Dr. K. Burns
Suzy Sun	Dr. D. Burger
Tessa Whiteley	Dr. D. Burger

Volunteers (Clinical Research)

<u>Name</u>	<u>Supervisor</u>
Gabrielle McKay	Dr. D. Zimmerman
Emma Ruzicka	Dr. D. Zimmerman

Volunteers (Basic Research)

<u>Name</u>	<u>Supervisor</u>
Jude Sanon	Dr. D. Burger

Technical Staff

<u>Name</u>	<u>Title</u>	<u>Supervisor</u>
Gabriele Cherton-Horvat	Laboratory Manager	Dr. K. Burns
Ying He	Senior Laboratory Technician	Dr. R. Touyz
Lihua Zhu	Laboratory Technician	Dr. C. Kennedy
Joseph Zimpelmann	Senior Laboratory Technician	Dr. K. Burns / Dr. R. L. Hébert

Clinical Research Staff

<u>Name</u>	<u>Title</u>	<u>Supervisor</u>
Valerie Cronin	Clinical Research Coordinator	Dr. D. Zimmerman
Julie Leidecker	Clinical Research Coordinator	Dr. D. Zimmerman
Jessica Wagner	Clinical Research Coordinator	Dr. D. Zimmerman

Research Administrative Staff

<u>Name</u>	<u>Title</u>	<u>Supervisor</u>
Jennifer Brownrigg	Research Administrative Assistant	Dr. K. Burns
Brittany Hollingsworth	Research Administrative Assistant	Dr. D. Zimmerman

Publications

1. Chruscicki A, Morton AR, **Akbari A**, White CA. Composition of human breast milk in acute kidney injury. *Obstetric Medicine* 10(2):79-82, 2017.
2. Wang MK, White C, **Akbari A**, **Brown P**, Hussain N, **Hiremath S**, **Knoll G**. Utilizing estimated creatinine excretion to improve the performance of spot urine samples for the determination of proteinuria in kidney transplant recipients. *PLoS One* 11(12):e0166547, 2016.
3. **Akbari S**, **Abou-Arkoub R**, **Sun S**, **Hiremath S**, Reunov A, **McCormick BB**, **Ruzicka M**, **Burger D**. Microparticle formation in peritoneal dialysis: A proof of concept study. *Canadian Journal of Kidney Health and Disease* 4:1-8, 2017.
4. White CA, **Akbari A**, Eckfeldt JH, Chakraborty D, McCudden C, Flemming JA, Lowe C, Labrecque P, Parent JL, Fergusson D, Gill JS, **Knoll G**. β -Trace protein assays: A comparison between nephelometric and ELISA methodologies. *American Journal of Kidney Diseases* 69(6):866-868, 2017.
5. **Burger D**, Turner M, Xiao F, Munkonda MN, Akbari S, **Burns K**. High glucose increases the formation and pro-oxidative activity of endothelial microparticles. *Diabetologia* 60(9):1791-1800, 2017.
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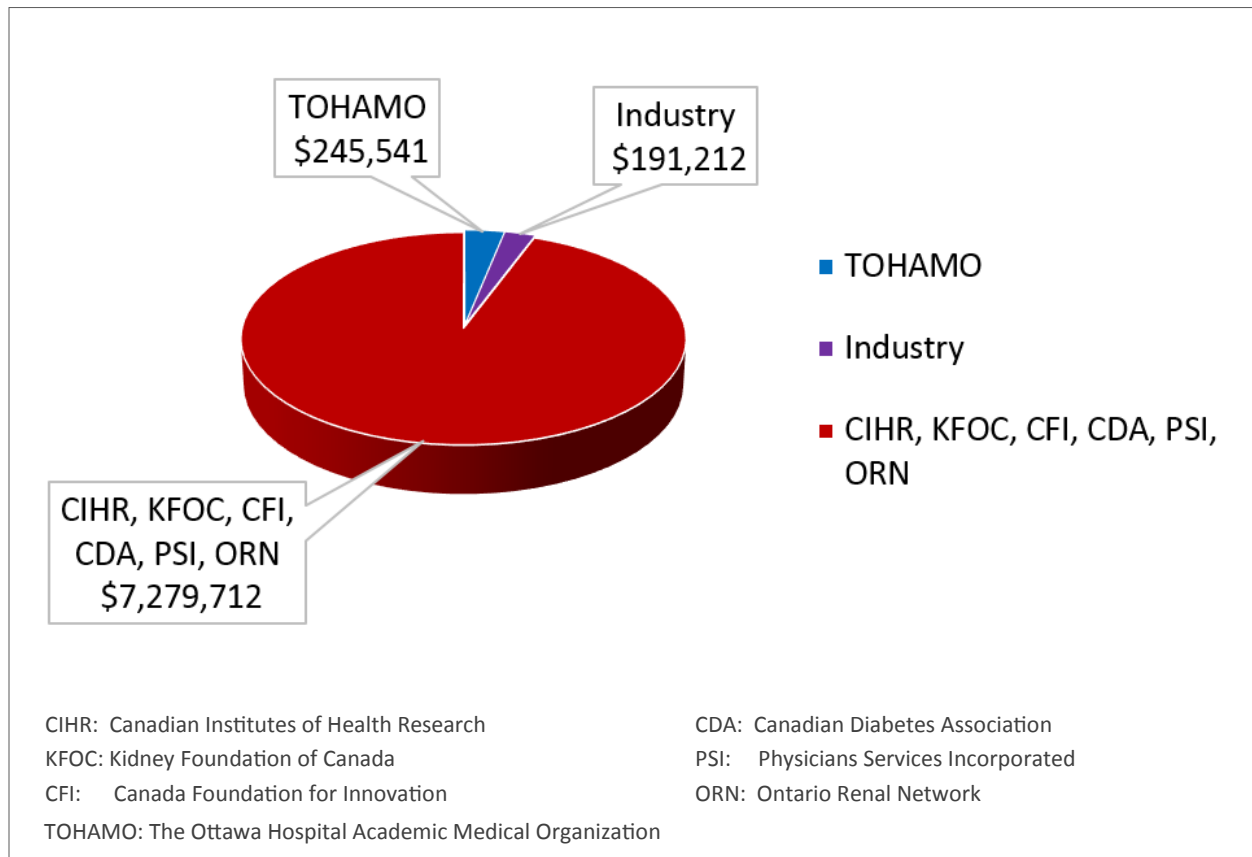
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KRC Grant Funding (2016-2017)

KRC Operating Grant Funding 2016-2017



Kidney Research Centre funding for Research Grants in 2016-2017, where the KRC Scientist/Clinician is the Principal Investigator.

Research Grants

Dr. Dylan Burger

Microparticles in diabetes.

Canadian Institutes of Health Research
 2017-2022
 \$685,000

Mechanisms of endothelial microparticle formation and signaling in diabetes.

Canadian Institutes of Health Research
 2017
 \$100,000

Extracellular vesicles in vascular and renal disease.

Canada Foundation for Innovation
 2015 to 2020
 \$521,859

Podocyte microparticles in diabetic nephropathy.

Canadian Diabetes Association

2014 to 2017

\$279,880

Microparticles in kidney disease.

KRESCENT Infrastructure Award

Kidney Foundation of Canada

2014 to 2017

\$25,000

Dr. Kevin Burns

Endothelial progenitor cell exosomes and microRNA transfer as therapy for acute kidney injury.

Canadian Institutes of Health Research

2017-2018

\$100,000

Exosomal transfer of MicroRNA-486-5p in acute kidney injury repair.

Kidney Foundation of Canada

2017-2019

\$100,000

Listening, Learning, Leading: Canadians seeking solutions and innovations to overcome chronic kidney disease (Can-SOLVE CKD).

Canadian Institutes of Health Research

2016 to 2021

\$12,500,000 (Cell Therapy in Diabetic Nephropathy Trial: \$2,000,000)

Dr. Richard Hébert

The renal PGE2/EP3 system affects kidney concentrating mechanisms and diabetic polyuria.

Kidney Foundation of Canada

2016-2018

\$100,000

Tubular dysfunction in diabetes: Role of PGE2/EP receptors.

Canadian Institutes of Health Research

2012-2017

\$780,000

Insight into mechanisms and receptor(s) involved in PBI-4050's beneficial effect on kidney fibrosis and inflammation.

ProMetic Life Sciences Inc.

2015-2016

\$25,000

Dr. Chris Kennedy

Targeting EP receptors to attenuate the actions of angiotensin II in diabetic nephropathy.

Kidney Foundation of Canada

2015-2017

\$100,000

Validating Nox5 as a target for diabetic renal complications.
Canadian Institutes of Health Research
2012-2017
\$665,550

Clinical Grants

Dr. Ted Clark, Dr. Greg Knoll, Dr. Swapnil Hiremath

Saline versus albumin fluid for extracorporeal removal with slow low efficiency dialysis.
University of Ottawa Department of Medicine, Developmental Research Grant
2017-2019
\$47,988

Dr. Janet Davis

Conservation Kidney Management: Improving patient decision making and clinical care.
The Ottawa Hospital Academic Medical Organization (TOHAMO)
2017
\$18,200

Dr. Swapnil Hiremath

What is the Evidence behind the recommendations of withholding certain medication before contrast procedures? A systematic review of the evidence.
Canadian Institutes of Health Research
2016-2017
\$99,000

Dr. Greg Knoll

A research program to improve patient outcomes in kidney transplantation.
Canadian Institutes of Health Research Foundation Grant
2015 to 2022
\$3,871,802

A randomized trial of screening for coronary artery disease in kidney transplant candidates.
Canadian Institutes of Health Research (CIHR)
2014 to 2017
\$240,252

The Canadian National Transplant Research Program: Increasing donation and improving transplantation outcomes.
Canadian Institutes of Health Research (CIHR)
2013 to 2018
\$13,850,000

ICES kidney dialysis and transplantation program.
Canadian Institutes of Health Research (CIHR)
2013 to 2018
\$802,023

Dr. Marcel Ruzicka

Establishment and critical evaluation of efficacy, mechanisms and safety of renal sympathetic denervation.

Centre for Excellence for Treatment of Resistant Hypertension
The Ottawa Hospital Academic Medical Organization (TOHAMO)

2014-2017

\$99,998

Dr. Marcel Ruzicka, Dr. Swapnil Hiremath

Blood pressure measurement: Should technique define targets?

Physician Services Incorporated

2017-2018

\$45,000

Assessment of effectiveness of counselling by a registered dietician on low salt diet in patients with hypertension: A pragmatic clinical trial.

The Ottawa Hospital Academic Medical Organization (TOHAMO)

2014-2017

\$95,055

Protein supplementation for thiazide diuretic induced hyponatremia: A pilot study.

The Ottawa Hospital Academic Medical Organization (TOHAMO)

2015-2017

\$89,998

Dr. Manish Sood

Understanding advanced care directives and do not resuscitate status in hemodialysis patients in Ontario (The Do No wRong study).

Ontario Renal Network (ORN)

2017-2018

\$120,000

Hyperkalemia in patients with kidney disease (The Stop HiK Study).

AstroZeneca

2017-2018

\$160,000

Characteristics and clinical outcomes of polycystic kidney disease patients with end stage kidney disease in Canada.

Otsuka Pharmaceuticals

2017

\$22,460

Prediction of progression in polycystic kidney disease (PREDICT PKD).

Otsuka Pharmaceuticals

2016-2017

\$76,252

Dr. Deb Zimmerman

iOS APP to assist end stage kidney disease patients with phosphate self-management.

The Ottawa Hospital Academic Medical Organization (TOHAMO)

2017

\$93,330

Investigators—Invited Presentations

Dr. Pierre Brown

CKD for primary care - what's new.

CME Colloque Bal de Neige

February 2017

Gatineau, QC

Dr. Dylan Burger

Microparticles in hypertension and cardiovascular disease: Does what's inside count?

Canadian Hypertension Congress

October 2016

Montreal, QC

Microparticles as biomarkers in vascular and renal disease.

CHUM Research Centre Nephrology Rounds

November 2016

Montreal, QC

Microparticles: biological vectors for intercellular exchange in diabetes and vascular disease.

CHUM Research Centre Seminar Series

November 2016

Montreal, QC

Extracellular vesicle analysis: Sample preparation and supplemental technologies.

University of Ottawa Flow Cytometry Research Day

November 2016

Ottawa, ON

Cellular mechanisms of oxidative stress, inflammation, and endothelial dysfunction in kidney injury and hypertension.

Immunology and Extracellular Vesicle Workshop - Ottawa Hospital Research Institute

January 2017

Ottawa, ON

Dr. Kevin Burns

Acute kidney injury: Exosomes to the rescue.

Ottawa Hospital Research Institute Annual Retreat

April 2017

Ottawa, ON

The KRESCENT Program.

Horizons 2022 Conference.

May 2017

Toronto, ON

Dr. Ted Clark

Infected catheter – how to investigate and manage.

University of Ottawa Continuing Professional Development

February 2017

Ottawa, ON

Dr. Swapnil Hiremath

New approaches in hypertension: New drugs & interventional treatment.

XXVIII Brazilian Congress of Nephrology

September 2016

Maceio, Brazil

Kidney Disease Improving Global Outcomes: Guidelines on management of hypertension in chronic kidney disease.

XXVIII Brazilian Congress of Nephrology

September 2016

Maceio, Brazil

#MedEd in the 21st century: harnessing Twitter and social media for education.

University of Ottawa Continuing Professional Development

January 2017

Ottawa, ON

Dialysis access in chronic kidney disease – when, which and why.

University of Ottawa Continuing Professional Development

February 2017

Ottawa, ON

Contrast induced acute kidney injury.

University of Ottawa Continuing Professional Development

February 2017

Ottawa, ON

Hypertension 2017: New advances and foundational guidelines.

McKesson 360 Showcase

April 2017

Toronto, ON

Social Media Workshop

KidneyCON

April 2017

Little Rock, AKA, USA

Dr. Chris Kennedy

Oxidative stress in kidney disease.

The American Society of Nephrology – Basic Science Symposium

November 2016

Chicago, IL, USA

Mechanical forces and their impact upon the glomerular filtration barrier.

The American Society of Nephrology – Basic Science Symposium

November 2016

Chicago, IL, USA

Dr. Greg Knoll

Evaluation and Selection of candidates for kidney transplantation.

26th International Congress of the Transplantation Society

August 2016

Hong Kong, China

Consent considerations for transplant recipients.

Emerging Research Methods and Consent Challenge Workshop

September 2016

Banff, AB

Organ transplant outcomes.

Potential Organ Donor Identification and System Accountability Conference

September 2016

Ottawa, ON

Generic immunosuppression: Challenges moving forward.

Canadian Society of Transplantation/Québec Society of Transplantation Annual Scientific Meeting

October 2016

Québec, QC

ECD/DCD: Evaluation of the marginal kidney donor.

Canadian Society of Transplantation/Astellas Canadian Transplant Fellows Symposium

October 2016

Québec, QC

What trials and what end points make sense in antibody mediated rejection.

American Society of Nephrology Annual Scientific Meeting

November 2016

Chicago, IL, USA

Epidemiology and outcomes in the elderly kidney transplant recipients.

American Transplant Congress

April 2017

Chicago, IL, USA

Potential primary endpoints in clinical trials of antibody-mediated rejection.

US Food & Drug Administration (FDA) Public Workshop on Antibody Mediated Rejection in Kidney Transplantation

April 2017

Silver Springs, MD, USA

Heart failure in renal transplant recipients.

Kidney Disease Improving Global Outcomes Controversies Conference on Heart Failure in Chronic Kidney Disease

May 2017

Athens, Greece

Dr. Brendan McCormick

Peritoneal dialysis – Nephrologist's perspective.

University of Ottawa Continuing Professional Development

February 2017

Ottawa, ON

Dr. Marcel Ruzicka

2017 dialysis access and Interventions.

University of Ottawa Continuing Professional Development

February 2017

Ottawa, ON

Dr. Manish Sood

Polycystic kidney disease: Can we leverage existing data to improve care?

PKD Awareness Day – Ottawa Chapter

September 2016

Ottawa, ON

Can kidney disease be prevented?

Visiting Professorship

Nephrology Grand Rounds—University Health Network

November 2016

Toronto, ON

Safety and efficacy of warfarin ESKD.

National Kidney Foundation Annual General Meeting

April 2017

Orlando, FL, USA

CON: Warfarin for stroke prophylaxis in atrial fibrillation patients on dialysis.

National Kidney Foundation Annual General Meeting

April 2017

Orlando, FL, USA

Canadian organ replacement registry annual update.

Canadian Society of Nephrology 49th Annual General Meeting

May 2017

Montreal, QC

Comparison of Canadian and US dialysis practices: Results from the DOPPS Dialysis Practice Monitor.

DOPPS—Webinar

May 2017

Introduction to the DOPPS.

Canadian Society of Nephrology 49th Annual General Meeting

May 2017

Montreal, QC

Can kidney disease be prevented?

Children's Hospital of Eastern Ontario Health Information Technologies Program

May 2017

Ottawa, ON

Dr. Deb Zimmerman

Seniors and chronic kidney disease. Medication, symptoms and advanced care planning.

CME Conference for Primary Care Providers

June 2017

Ottawa, ON

Awards and Distinctions

Recipient	Year	Award
Dr. Dylan Burger	2017	Co-Chair Membership Committee for Hypertension Canada
	2017	Member of the International Society of Hypertension Regional Advisory Group for Western Europe and North America
Dr. Manish Sood	2017	Expert Advisor Canadian Institute for Health Information
Jamie Ghossein	2017	2017 Agostino Monteduro Italian Night Scholarship
Rameez Imtiaz	2017	2017 Agostino Monteduro Italian Night Scholarship

Visiting Speakers

Date	Scholar	Title of Presentation	Seminar
Sep. 6 2016	Richard E. Gilbert, MD, PhD, FRCPC Head, Division of Endocrinology Canada Research Chair in Diabetes Complications, St-Michael's Hospital. Professor of Medicine, University of Toronto. Toronto, ON	<i>A clinical trial of cell-based therapy for advanced diabetic kidney disease.</i>	Nephrology Grand Rounds
Oct. 4 2016	Christoph Licht, MD, FRCP(C), FASN Staff Nephrologist and Director of the Dialysis & Apheresis Program, Division of Nephrology, The Hospital for Sick Children. Toronto, ON	<i>Complement-mediated glomerulonephritis.</i>	Nephrology Grand Rounds
Oct. 13 2016	Dr. Rosendo A. Rodriguez, PhD Department of Medicine The Ottawa Hospital Ottawa, ON	<i>Fractality and chaotic measures of physiologic variability in the risk assessment of End-Stage renal disease: An overview.</i>	KRC Journal Club
Nov. 3 2016	Dr. John S.D. Chan, PhD Professor of Medicine, Faculty of Medicine, Université de Montréal. Chief, Laboratory of Molecular Nephrology and Endocrinology. Montréal, QC	<i>Oxidative stress and molecular regulation of intrarenal RAS expression in diabetes.</i>	KRC Journal Club
Dec. 1 2016	Dr. Elena Torban, PhD Associate Professor, Department of Medicine. Division of Nephrology, Faculty of Medicine, McGill University. Montréal, QC	<i>Planar cell polarity pathway in kidney development and disease.</i>	KRC Journal Club
Dec. 6 2016	Ronald Perrone, BS, MD Professor of Medicine, Tufts University School of Medicine. Associate Chief, Division of Nephrology Medical Director, Kidney Transplantation Scientific Director, Clinical and Translational Research Centre. Boston, MA, USA	<i>Using total kidney volume to predict disease progression and guide management of autosomal dominant polycystic kidney disease(ADPKD).</i>	Nephrology Grand Rounds

Date	Scholar	Title of Presentation	Seminar
Dec. 13 2016	David S. Goldfarb, MD, FACP, FASN, FNKF Chief, Nephrology Section, New York Harbor VA Health Care System. Clinical Chief, Nephrology Division, NYU Langone Medical Center. Professor of Medicine and Physiology, NYU School of Medicine. Co-Director, Kidney Stone Program, NYU Urology Associates. New York, NY, USA	<i>Update on Nephrolithiasis.</i>	Nephrology Grand Rounds
Jan. 26 2017	Brad Urquhart, PhD Associate Professor Department of Physiology & Pharmacology, University of Western Ontario. London, ON	<i>Variation of drug response in chronic kidney disease: Mechanisms and relevance.</i>	KRC Journal Club
Feb. 16 2017	Rory McQuillan, MB, BCh, BAO; MRCPI; MScCH Staff Nephrologist - University Health Network, Toronto General Hospital. Assistant Professor of Medicine, University of Toronto. Toronto, ON	<i>Bedside peritoneal catheter insertion by the Nephrologist – potential & pitfalls.</i>	Nephrology Grand Rounds
Feb. 23 2017	Nina Jones, PhD Associate Professor, Canada Research Chair, Department of Molecular and Cellular Biology, University of Guelph. Guelph, ON	<i>Molecular control of kidney podocyte morphology.</i>	KRC Journal Club
May 25 2017	Dr. Jeffrey Dickhout, PhD Assistant Professor, Department of Medicine, Division of Nephrology McMaster University and St. Joseph's Healthcare. Hamilton, ON	<i>Development of new techniques to treat proteinuria in chronic kidney disease.</i>	KRC Journal Club

This list includes Invited Scholars for the KRC Journal Club and Nephrology Grand Rounds.

The Kidney Research Centre—Ottawa Hospital Research Institute
Centre de recherche sur les maladies du rein—Institut de recherche de l'Hôpital d'Ottawa
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