



Kidney Research Centre

Annual Report

2015-2016



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Cover Photo: Dr. Richard Hébert(center) with Dr. Rania Nasrallah and lab technician Joe Zimpelmann working together to isolate kidney tubules for experimentation. Dr. Hebert’s group is testing how these tubules contribute to urine production and is one of only a handful in the world that possess the technical skills necessary to conduct these studies. Insert (top right) shows a single isolated proximal tubule.

Message from the Director

It is a great privilege to present the Kidney Research Centre Annual Report for 2015-16. Once again the report features exciting developments in research, recognitions, and information about our Important community support. I will take this opportunity to highlight some of the year's key news items.



Dr. Kevin Burns, Director of The Kidney Research Centre

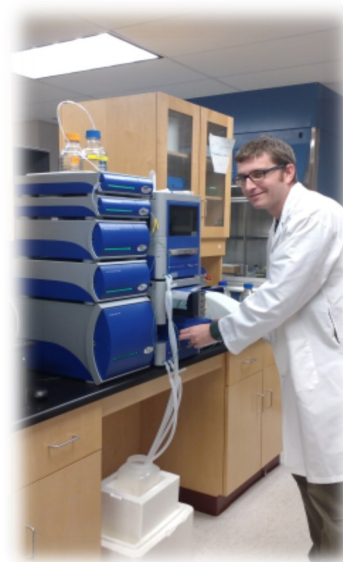
Researchers at the KRC published more than 60 peer-reviewed manuscripts in 2015-16. Of these, one study in particular must be highlighted, since it will undoubtedly change clinical practice in kidney transplantation around the world. In a randomized controlled clinical trial, Dr. G. Knoll and his colleagues showed that use of the blood pressure lowering medication ramipril (unexpectedly) did not significantly reduce the risk of end-stage kidney disease or death in recipients of kidney transplants who had proteinuria, compared to placebo treatment. This study was published in the high impact journal "Lancet" and demonstrates the importance of conducting high quality clinical trials to guide physician practice.

Examples of progress from the basic science laboratories includes published studies from Dr. Hébert's lab that showed a role for prostaglandins (substances blocked by commonly used anti-inflammatory medications) in regulating the kidneys' ability to reabsorb water in experimental diabetes, and from Dr. Burns' group that showed that injections of tiny vesicles isolated from human umbilical cord blood progenitor

cells can prevent kidney damage in animals with sudden loss of blood supply to the kidneys.

In the past year, Dr. Dylan Burger was awarded a major grant from the **Canada Foundation for Innovation**, which will allow his laboratory to purchase state-of-the-art equipment to isolate and characterize "microparticles" that are released from cells and that are thought to cause injury to blood vessels and kidney cells in disease states. Dr. Burger has also shown that these microparticles appear in urine and could be markers of early diabetic kidney disease. With this grant, he and his group are poised to become international leaders in this exciting new area of research.

Dr. Richard Hébert was awarded a 2 year grant from the **Kidney Foundation of Canada** to continue his novel research, which focuses on the effects of prostaglandins and anti-inflammatory medications on salt and water transport in the kidney. Dr. Hébert's laboratory is one of only a handful around the world capable of dissecting and perfusing microscopic tubules from kidneys in order to uncover the mechanisms of salt, water and electrolyte reabsorption.



Dr. Burger with the Asymmetric field flow fractionator, used to analyze cell microparticles.

Dr. Burns was a co-principal applicant on a \$12.5 M grant from the **CIHR** "Strategy for Patient Oriented Research," focused on improving the lives of Canadians with chronic kidney disease. As part of this grant, Dr. Burns will be working with colleagues at the OHRI and St. Michael's Hospital in Toronto to launch a first-in-human study that will determine the safety and efficacy of injections of blood vessel progenitor cells in people with advanced diabetic kidney disease.


Community fund-raising represents an important source of support for our centre and we are extremely grateful for this assistance. In 2015-16, KRC graduate students Maddison Turner (Dr. Burger's lab) and David Eckert (Dr. Hébert's lab) received KRC scholarships on behalf of the annual **Italian Night** fundraising event. These scholarships will support their research training and allow them to present their research findings at national and international meetings. Gratitude is extended to the **Kidney Foundation of Canada** for their support of the Italian Night and the allocation of these scholarships.

In addition to support provided by the Italian Night, funds for research were raised at the annual **Alive to Strive Kidney Fitness Project** event in April 2016. We are also extremely grateful for our **private donors**, who have made substantial donations to the KRC in the past year that will go to support biomedical and clinical research projects. Finally, an additional positive news item is that in early 2016, regular meetings were organized with **Mr. Sam Karkache**, a long-time KRC supporter, to re-launch our Annual Golf Tournament, with plans for the 13th event

in September 2016. We especially thank **The Ottawa Hospital Foundation** for their ongoing involvement and assistance with this event and for promoting community awareness about the KRC.

Finally, I would like to take this opportunity to acknowledge and thank Dr. Peter Magner for his strong support of the KRC over the past 10 years. Dr. Magner completed his 10-year term as Head of the Division of Nephrology at the Ottawa Hospital and University of Ottawa on June 30, 2016. The new Division Head is Dr. Greg Knoll, who is recognized nationally and internationally for his research to improve outcomes in kidney transplantation. 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. We are indeed fortunate to have highly qualified staff dedicated to research and improving the lives of people affected by kidney disease.

I hope you enjoy reading about the progress we are making.



Sincerely,

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

Message du directeur

C'est un grand privilège pour moi de présenter le Rapport annuel pour l'année 2015-16 du Centre de recherche sur les maladies du rein (CRMR). Une fois de plus ce rapport présente des développements importants dans divers domaines dont la recherche, reconnaissances individuelle, et des informations sur le soutien important de la communauté d'Ottawa. Je vais profiter de cette occasion pour mettre en évidence certains des principaux articles publiés année.

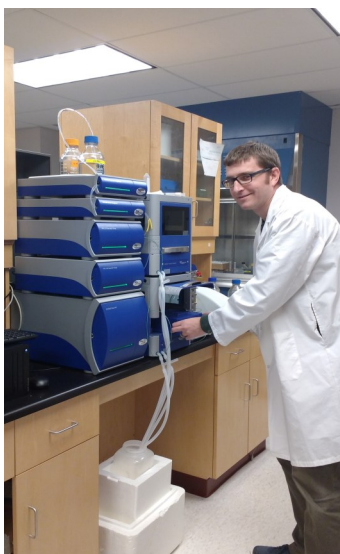
Les chercheurs du CRMR ont publié plus de 60 ouvrages reconnus par des pairs en 2015-16. Parmi ceux-ci, une étude en particulier doit être mise en évidence, car il n'y a aucun doute que cette étude changera la pratique clinique en transplantation rénale dans le monde entier. Dans un essai clinique contrôlé et randomiser, le Dr Greg Knoll et ses collègues ont montré que l'utilisation du ramipril, médicament utilisé pour abaisser la pression artérielle, n'a pas réduit de façon significative le risque de maladie rénale terminale ou de décès chez les receveurs de greffes de rein qui avaient une protéinurie, et ce par rapport au traitement placebo. Cette étude a été publiée dans la prestigieuse revue «Lancet» et démontre l'importance de mener des essais cliniques de haute qualité pour ainsi guider la pratique des médecins.



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

Une seconde étude provenant du laboratoire du Dr Richard L. Hébert a montré un rôle important pour les prostaglandines (substances bloqués par des médicaments anti-inflammatoires) dans la régulation de la capacité des reins à réabsorber l'eau dans le diabète expérimental. Aussi le groupe de recherche du Dr Burns ont montré que des injections de minuscules vésicules isolées à partir de cellules souches humaines venant du sang de cordon ombilical peuvent prévenir les lésions rénales chez les animaux avec une perte soudaine sanguine vers les reins.

Dans la dernière année, le Dr Dylan Burger a reçu une importante subvention de la **Fondation canadienne pour l'innovation**, qui permettra à son laboratoire l'achat d'équipement à la fine pointe de la technologie pour isoler et caractériser des "microparticules" qui sont libérés à partir de cellules causant des dommages aux vaisseaux sanguins et des cellules de rein dans les états pathologiques. Dr. Burger a également montré que ces microparticules apparaissent dans l'urine et pourraient être des marqueurs de début de néphropathie diabétique. Grâce à cette subvention, lui et son groupe sont en voie de devenir des leaders internationaux dans ce nouveau domaine de recherche passionnant.



Dr. Burger et l'équipement de fractionnement d'écoulement de champ, utilisé pour analyser les microparticules cellulaires.

Dr Hébert a reçu une subvention de 2 ans de la **Fondation canadienne du rein** pour poursuivre sa recherche innovatrice, axés sur les effets des prostaglandines et des médicaments anti-inflammatoires sur le transport de l'eau et de sel dans le rein. Le laboratoire du Dr Hébert est l'un

des rares dans le monde capable de disséquer et de perfuser des tubules microscopiques de reins afin de découvrir les mécanismes de transport du sel, de l'eau et des électrolytes au niveau rénal.

Le Dr Burns a reçu une subvention de 12,5 M \$ sur la «Stratégie de recherche axée sur le patient» des **IRSC**, qui vise à améliorer la vie des Canadiens ayant une maladie rénale chronique. Dans le cadre de cette subvention, le Dr Burns en collaboration avec des collègues à l'Hôpital de l'IRSO et St. Michael à Toronto ont réalisés une première étude chez l'humain qui permettra de déterminer l'innocuité et l'efficacité des injections de cellules progénitrices des vaisseaux sanguins chez les personnes atteintes de maladie rénale diabétique.

Les levées de fonds par la communauté représentent une source importante de soutien pour notre centre et nous sommes extrêmement reconnaissants de cette aide. En 2015-16, les étudiants diplômés du CRMR Maddison Turner (le laboratoire du Dr Burger) et David Eckert (le laboratoire du Dr Hébert) ont reçu des bourses CRMR au nom de «**La serata Italiana**», un grand événement de financement annuel pour **La fondation canadienne du rein**. Ces bourses vont ainsi leur permettre de présenter leurs résultats de recherche à des réunions nationales et internationales. Nous remercions la Fondation canadienne du rein pour leur soutien lors de l'évènement de «La serata Italiana» pour l'attribution des bourses.

Outre le soutien fourni par «La serata Italiana», des fonds pour la recherche ont aussi été amassés en avril 2106 par l'évènement annuel «Vivres ses défis». Aussi, nous sommes extrêmement reconnaissants de nos **donateurs privés**, qui ont fait l'an dernier des dons au CRMR pour soutenir des projets de recherche biomédicale et clinique. Finalement, un groupe de citoyens menés par **M. Sam Karkache** ont décidés de relancer avec

succès notre 13^{ième} tournoi de golf annuel pour septembre 2016. En particulier, nous remercions la Fondation de l'hôpital d'Ottawa pour leur participation continue à cet événement pour ainsi promouvoir le rôle important du CRMR dans la collectivité.

Enfin, je voudrais saisir cette occasion pour remercier le Dr Peter Magner pour son soutien continu du CRMR au cours des 10 dernières années. Dr Magner a terminé son mandat de 10 ans le 30 juin 2016 en tant que chef de la Division de néphrologie de l'Hôpital d'Ottawa et de l'Université d'Ottawa. Le nouveau chef de division est le Dr Knoll, qui est reconnu à l'échelle nationale et internationale pour ses recherches visant à améliorer le taux de succès en transplantation rénale. Nous remercions également les stagiaires, personnel de recherche, notre directeur de laboratoire Mme Gaby Cherton-Horvat, et le personnel administratif (Mme Brittany Hollingsworth et Mme Jennifer Brownrigg) pour leur contribution importante de la recherche au CRMR. Nous sommes vraiment fortunés d'avoir un personnel hautement qualifié et dédié à la recherche et l'amélioration de la qualité de vie des personnes touchées par une maladie rénale.

Je vous souhaite une bonne lecture sur les progrès que nous avons réalisés.

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. Deborah Zimmerman

Poised to Lead Canadian Nephrology in 2018



Dr. Deborah Zimmerman is a Clinician Investigator and Associate Professor of Medicine in the Division of Nephrology at The Ottawa Hospital and University of Ottawa. She is the current director of the Kidney Research Centre Clinical Research Program and was recently appointed President-Elect of the Canadian Society of Nephrology. We recently met with Dr. Zimmerman and asked her some questions about her career and other interests.

How did you become interested in nephrology?

It actually took me a long time to get there...when I graduated from high school, I completed a two year college program to become an animal health technologist. I returned to University with the idea that I would pursue a career in cardiology. I would mend broken hearts! After my first rotation as an internal medicine resident sitting in the ER and seeing every patient with chest pain, I decided that I needed a different focus. Dr Ken Taub who was a nephrologist in Calgary at the time and bought me about 100 cups of coffee (it took that many) to outline all of the amazing things about nephrology including the diverse patient population with a broad spectrum of care requirements and so much to be done in basic and clinical research. I have never regretted my decision to pursue this career.

When did you come to Ottawa?

Dr. Kevin Burns invited me to interview for a position with the Division of Nephrology when I was close to finishing my nephrology and clinical epidemiology training in Toronto in 1999. I am originally from Western Canada and I had intended to return to Calgary where I could raise my family, work in an academic centre and pursue my passion for horses. When my husband I came to visit Ottawa, we realized we could do all of those things here.

Tell us a little bit about your research interests?

As a clinician investigator, my research is driven by questions that arise when I am treating my patients. My major role in the Division of Nephrology is to provide care to patients who are treated by hemodialysis. The leading morbidity and mortality is vascular access and cardiovascular respectively. I have focused my research in these areas.

What is the most common question that patients ask you?

When will I get a kidney transplant?

You are the president elect for the Canadian Society of Nephrology, what would you like to accomplish during your term as president?

I would like the society to be seen as relevant to the entire nephrology community either directly or through our affiliation with other groups such as CANNET and CANSOLVE.

What do you like to do outside of the office?

Ride horses

Tell us about a recent situation where you were taken out of your comfort zone.

I recently participated in a Lip Synch contest at the gala dinner for the Canadian Society of Nephrology.

Five Faves:

City: The one that I am living in....so it changes (except Toronto – it was never my favorite)

Book: Spooky Old Tree – Danielle had this book memorized when she was 3 years old because we had read it so often.

Fruit: Cherries

Song: Follow Your Arrow (beautiful lyrics)

Medical Discipline (other than nephrology): Palliative Care

Community Events

Italian Night

La Serata Italiana continued its tradition of fundraising and celebration on Saturday March 5th 2016. The KRC joined in celebrating the 32nd Italian Night Dinner which raises funds for patient services, awareness initiatives, scholarships and research at the KRC. The dinner was held at the Sala San Marco and featured great food, networking, and entertainment.

Kidney Research Centre Masters students Maddison Turner and David Eckert were awarded the 2016 Agostino Monteduro Italian Night Scholarships. 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.



(Left to right) Gio Pantalone and Anna Monteduro (Italian Night Committee) with 2016 awardees of the Agostino Monteduro Italian Night Scholarship; Masters Students Maddison Turner and David Eckert.

Alive to strive



April 24 marked the 6th annual Alive to Strive Kidney Fitness Project Race. This year's edition featured more than 800 participants and marked two major fundraising milestones. The event has now raised more than \$125,000 for its active living grant program as well as over \$60,000 for the Kidney Research Centre and other supported charities! Thank you once again to Marie-Eve Chainey (President of the Board of Directors) and the entire Alive to Strive Organizing Committee!

CLV Golf Tournament

The 18th annual Ron Kolbus Memorial Charity Golf Tournament hosted by the CLV Group raised over \$321,000 for Ottawa Charities. The Kidney Research Centre was among the charities to receive funds. The KRC is very grateful to the CLV staff and the sponsors who gave their time and money to make this year's event such a huge success.



KRC Staff / Trainees

Research Personnel

Members of 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 University of Ottawa	Scientist, OHRI
Dr. Kevin D. Burns	Professor of Medicine Division of Nephrology University of Ottawa Director of Kidney Research Centre	Senior Scientist, OHRI
Dr. Edward Clark	Assistant Professor Division of Nephrology University of Ottawa	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 University of Ottawa	
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	Associate Professor Division of Nephrology	Clinician Investigator, OHRI

Members of 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	Head, Division of Nephrology 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. Marcel Ruzicka	Associate Professor Division of Nephrology	Clinician Investigator, OHRI
Dr. Manish Sood	Jindal Research Chair for Prevention of Kidney Disease University of Ottawa Assistant Professor Division of Nephrology	Associate Scientist, OHRI
Dr. Rhian Touyz	Adjunct Professor of Medicine Dept of Medicine University of Ottawa BHF Chair of Cardiovascular Medicine Director, Institute of Cardiovascular & Medical Sciences Professor of Medicine University of Glasgow	Affiliate Investigator, OHRI
Dr. Deborah Zimmerman	Associate Professor Division of Nephrology	Clinician Investigator, OHRI

Visiting Professor (Sabbatical)

<u>Name</u>	<u>Title</u>	<u>Home Institution</u>
Dr. Geert Branko Braam	Professor of Medicine Adjunct Professor of Physiology Internist / Nephrologist	University of Alberta Hospital Department of Medicine Division of Nephrology and Immunology

Clinical Scholars, Trainees and Fellows

<u>Name</u>	<u>Title</u>
Dr. Syed Amin	Clinical Fellow (RCPSC)
Dr. Rima Abou Arkoub	Clinical Fellow
Dr. Jitendra Goswami	Clinical Fellow
Dr. Caitlin Hesketh	Clinical Fellow (RCPSC)
Dr. Houssam Itani	Clinical Fellow
Dr. Vaibhav Keskar	Clinical Fellow
Dr. Dinesh Kumar	Clinical Fellow
Dr. Teerath Kumar	Clinical Fellow
Dr. Amit Langote	Renal Transplant Clinical Fellow
Dr. Praveen Malavade	Clinical Fellow
Dr. Krishna Patil	Clinical Fellow
Dr. Akash Ranka	Clinical Fellow
Dr. Partha Shetty	Renal Transplant Clinical Fellow

Research Associates

<u>Name</u>	<u>Supervisor</u>
Dr. Glauca Callera	Dr. R. Touyz
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. Tayze Antunes	Vascular (patho) biology of TRPM7 channels in hypertension	Dr. R. Touyz
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

Graduate Students

<u>Name</u>	<u>Project Title</u>	<u>Supervisor</u>
Randa Haneef	ECFC exosomes in acute kidney injury	Dr. K. Burns
Ramzi Hassouneh	The effect of prostanoids on diabetic mouse kidneys	Dr. R. L. Hébert
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 microparticle composition and bioactivity	Dr. D. Burger

Honours Students

<u>Name</u>	<u>Supervisor</u>
Shareef Akbari	Dr. D. Burger
Larissa Reid	Dr. D. Burger

Summer Students

<u>Name</u>	<u>Supervisor</u>
Jamie Ghossein	Dr. R. L. Hébert
Richard Hae	Dr. K. Burns
Eldjonai Kamto	Dr. C. Kennedy
William Knoll	Dr. K. Burns
Andrea Liu	Dr. C. Kennedy
Justin Morin	Dr. C. Kennedy
Milica Novakovic	Dr. C. Kennedy
Suzy Sun	Dr. D. Burger

Visiting Students

<u>Name</u>	<u>Supervisor</u>
Jay C Jha, PhD	Dr. C. Kennedy

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. **Abou Arkoub R, Wang D, Zimmerman D.** A Rare Cause of Reversible Renal Hemosiderosis. *Case Rep Nephrol* 2015:464059, 2015.
2. **Akbari A.** Hladunewich M, **Burns KD**, Moretti F, **Abou Arkoub R**, Brown PA, **Hiremath S.** Circulating Angiogenic Factors in a Pregnant Woman on Intensive Hemodialysis. *Can J of Kidney Health and Dis* 3:7, 2016.
3. Brett KE, Bennett A, Fergusson N, **Knoll GA.** Quality metrics in solid organ transplantation: protocol for a systematic scoping review. *Syst Rev* 5(1):99, 2016.
4. **Burger D, Viñas J, Akbari S, Dehak H, Knoll W, Gutsol A, Touyz RM,** Allan DS and **Burns KD.** Human Endothelial Colony Forming Cells Protect Against Acute Kidney Injury: Role of exosomes. *Am J Pathol* 185(8):2309-23, 2015.
5. **Burger D,** Erdbrugger U, **Burns KD.** RE: Microparticles: Markers and mediators of sepsis-induced microvascular dysfunction, immunosuppression, and AKI. *Kidney Int* 88(4):915, 2015.
6. **Burger D, Turner M, Munkonda MN, Touyz RM.** Endothelial Microparticle-Derived Reactive Oxygen Species: Role in endothelial signaling and vascular function. *Oxi Med Cell Longev* Volume 2016, 2016. [Article ID 5047954]
7. Chiu HH, Tangri N, Djurdjev O, Barrett BJ, Hemmelgarn BR, Madore F, Rigatto C, Muirhead N, **Sood MM,** Clase CM, Levin A. Perceptions of Prognostic Risks in Chronic Kidney Disease: A national survey. *Can J Kidney Health Dis* 2:53, 2015.
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10. **Clark EG, Burns KD.** Pincer Nails Following Arteriovenous Fistula Creation. *Kidney Int, 88* (4):918, 2015.
11. **Clark EG, Hiremath S.** Progressively Earlier Initiation of Renal Replacement Therapy for Acute Kidney Injury Is Unwarranted and Potentially Harmful. *Blood Purif* 41(1-3):159-165, 2016.
12. **Clark EG,** Kumar A, Langote A, Lapinsky S, Dodek P, Kramer A, Wood G, Bagshaw SM, Wood K, Gurka D, **Sood MM.** Septic Shock in Chronic Dialysis Patients: Clinical Characteristics, Antimicrobial Therapy and Mortality. *Intensive Care Med* 42(2):222-32, 2016.

13. **Clark EG**, Rodger MA, Ramsay TO, **Knoll GA**. Effectiveness of a Computerized Decision Support System for Anticoagulation Management in Hemodialysis Patients: A before-after study. *Hemodial Int* 2016.
14. **Clark EG, Zimmerman D**. Dialysate Calcium in Limbo: How Low Can You Go? *Am J Kidney Dis* 66(4):558-60, 2015.
15. Cowan J, Cameron DW, **Knoll GA**, Tay J. Protocol for updating a Systematic Review of Randomized Controlled Trials on the prophylactic use of Intravenous Immunoglobulin for patients undergoing Hematopoietic Stem Cell Transplantation. *BMJ Open* 5(8), 2015.
16. Cowan J, Hutton B, Fergusson N, Bennett A, Tay J, Cameron DW, **Knoll GA**. Clinical Outcomes of Immunoglobulin Use in Solid Organ Transplant Recipients: Protocol for a systematic review and meta-analysis. *Systematic Reviews* 4:167, 2015.
17. **Hassouneh R, Nasrallah R, Zimpelmann J, Gutsol A, Eckert D, Ghossein J, Burns KD, Hébert RL**. PGE₂ Receptor EP₃ Inhibits Water Reabsorption and Contributes to Polyuria and Kidney Injury in a Streptozotocin-Induced Mouse Model of Diabetes. *Diabetologia*. 59(6):1318-1328, 2016.
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21. **Holterman CE**, Read NC, **Kennedy CR**. Nox and Renal Disease. *Clin Sci (Lond)* 128:465-481, 2015.
22. **Holterman CE, Thibodeau JF, Kennedy CR**. NADPH Oxidase 5 and Renal Disease. *Curr Opin Nephrol Hypertens* 24(1):81-7, 2015.
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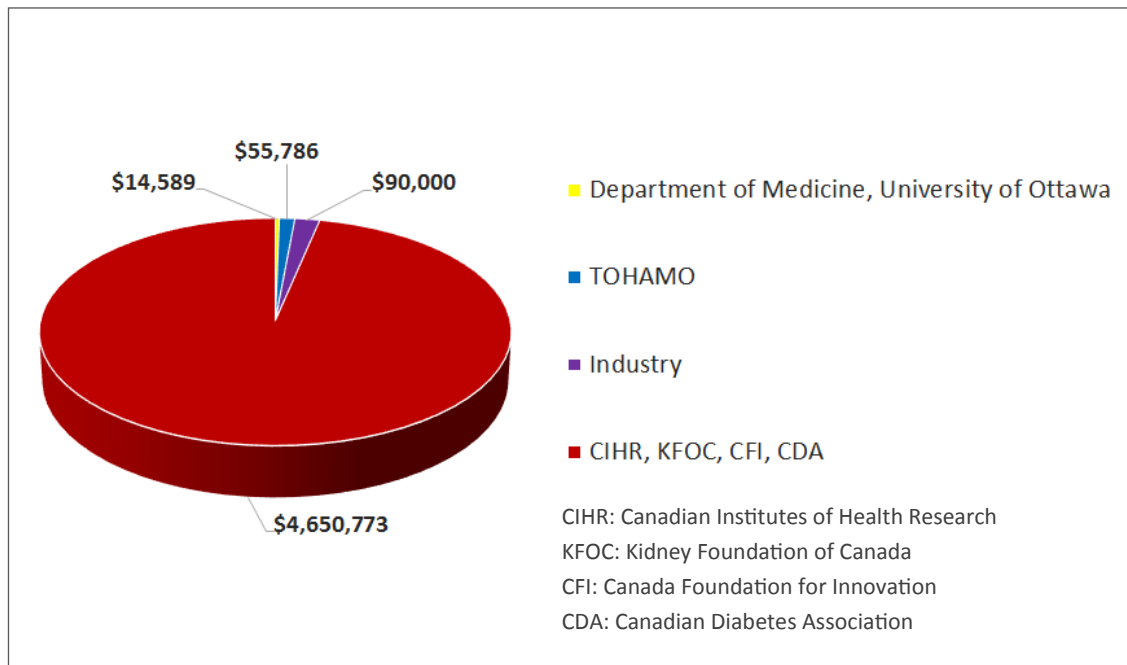
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KRC Grant Funding (2015-2016)

KRC Operating Grant Funding 2015-2016



Basic Science and Clinical Research Funded by Grants 2015-2016

Basic Science

Dr. Dylan Burger

- Podocyte microparticles in diabetic nephropathy—*Canadian Diabetes Association*
- Extracellular vesicles in vascular and renal disease—*Canada Foundation for Innovation*
- KRESCENT Infrastructure Award—*Kidney Foundation of Canada*

Dr. Kevin Burns

- Listening, Learning, Leading: Canadians Seeking Solutions and Innovations to Overcome Chronic Kidney Disease (Can-SOLVE CKD)—*Canadian Institutes of Health Research*
- Endothelial progenitor cell-derived microvesicles in acute kidney injury—*Kidney Foundation of Canada*

Dr. Richard Hébert

- Tubular dysfunction in diabetes: role of PGE2/EP receptors—*Canadian Institutes for Health Research*
- Insight into mechanisms and receptor(s) involved in PBI-4050's beneficial effect on kidney fibrosis and inflammation—*Prometic Life Sciences Inc.*

Basic Science Grant Funding continued...

Dr. Christopher Kennedy

- Nox5 derived reactive oxygen species in vascular and renal injury during hypertension—*Canadian Institutes of Health Research*
- Nox homologues, redox signaling and vascular biology in hypertension—*Canadian Institutes of Health Research*
- Targeting EP receptors to attenuate the actions of angiotensin II in diabetic nephropathy—*Kidney Foundation of Canada*

Clinical Research

Dr. Pierre Antoine Brown

- Introduction of an anemia management protocol for CKD patients at TOH: A quality improvement project—*Department of Medicine*
- Preventing severe hypomagnesemia from anti-cancer therapies: Assessment of clinical significance and defining a treatment strategy—*Department of Medicine*

Dr. Kevin Burns

- Arterial stiffness in healthy subjects and patients with End-Stage-Renal Disease: A feasibility study—*Department of Medicine*

Dr. Swapnil Hiremath and Dr. Marcel Ruzicka

- 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)*

Dr. Swapnil Hiremath and Dr. Marcel Ruzicka

- Thiazide diuretic-caused hyponatremia in the elderly hypertensives – Will a can of NEPRO a day keep the hyponatremia and doctor away – A Pilot Trial—*The Ottawa Hospital Academic Medical Organization (TOHAMO)*

Dr. Greg Knoll

- A randomized trial of screening for coronary artery disease in kidney transplant candidates—*Canadian Institutes of Health Research.*
- A research program to improve patient outcomes in kidney transplantation (CIHR Foundation Grant) —*Canadian Institutes of Health Research*
- ICES Kidney Dialysis and Transplantation Program—*Canadian Institutes of Health Research*
- The Canadian National Transplant Research Program: Increasing Donation and Improving Transplantation Outcomes— *Canadian Institutes of Health Research*

Investigators—Invited Presentations

Speaker	Month /Year	Presentation Title and Event
Dr. A. Akbari	Apr. 2016	Hypertension and Chronic Kidney Diseases. The University of Ottawa Continuing Professional Development. Limitations of Creatinine and eGFR. TOH Civic Campus, Ottawa Hospital. Ottawa, ON.
Dr. D Burger	Mar. 2016	The academic recruitment process: an overview. London Health Research Day, Western University. London, ON.
	May 2016	Do podocytes make things a “little bit” worse: Microparticles in diabetic kidney disease. Cell Biology Work in Progress Seminar Series, University of Ottawa. Ottawa, ON
Dr. K. Burns	Nov. 2015	ACE2- 10 years later. KRESCENT Workshop. Montreal, QC.
	May 2016	KRESCENT after 10 years. KRESCENT Workshop. Halifax, NS.
	Jun. 2016	Acute Kidney Injury and Use of Endothelial Progenitor Cells. Invited lecture, 6th Hospital, Division of Nephrology, Jiang Tong University. Shanghai, China.
	Jun. 2016	ACE2 in Diabetic Nephropathy: A Canadian Perspective. Opening lecture, Annual Diabetic Nephropathy Conference, Jiang Tong University. Shanghai, China.
Dr. E. Clark	Jan. 2016	Debate with Dr. Claudio Ronco: “Earlier Initiation of Renal Replacement Therapy for Acute Kidney Injury is Superior to Later Initiation (Against)”. 18th International Conference on Dialysis, Advances in Kidney Disease 2016. Miami, FL.
Dr. S. Hiremath	Sep. 2015	Tweets and Likes: Use of Social Media in Nephrology. National Kidney Foundation 47th Annual Medical Symposium. Foster City, CA, USA.
Dr. C. Kennedy	Feb. 2016	Work-life balance and how not to write a research grant proposal. Institute of Nutrition, Metabolism and Diabetes – New Investigator Meeting, Kelowna, BC.
	Feb. 2016	Nox and Prostaglandins – regulation of renal function. Institute of Nutrition, Metabolism and Diabetes. Semi-annual Institute Advisory Board meeting lectureship. Kelowna, BC.
	May 2016	NADPH oxidase in diabetic kidney disease. Canadian Oxidative Stress Consortium. Guelph University. Guelph, ON.
Dr. G. Knoll	Nov. 2015	Recent Transplantation Research. Invited presentation at the Ottawa Hospital Research Institute Board of Governors Meeting. Ottawa, ON.
	May 2016	Management of the Failed Kidney Transplant. Invited presentation at the 2nd Annual Ontario Transplant Forum. Toronto, ON.

Investigators—Invited Presentations

Dr. M. Sood	Oct. 2015	Atrial fibrillation and warfarin therapy in patient with late stage CKD. Cardiology and Nephrology Combined Rounds. Vancouver Island, BC.
	Nov. 2015	Tolvaptan for PCKD: Con. CSN in America debate. San Diego, CA, USA.
	Apr. 2016	Critical illness in chronic dialysis patients. National Kidney Foundation AGM. Boston, MA, USA.
	May 2016	Canadian Society of Nephrology 48th AGM. Disgruntled scientists, big data in AKI and the Vascular Access Working Group Recommendations. Halifax, NS.
Dr. D. Zimmerman	May 2016	Intra-Abdominal Pressure with Resistance Training in Peritoneal Dialysis Patients. Canadian Nephrology Trials Network Meeting Halifax, NS.
	Jun. 2016	Presentation on Protocol #20160377-01H. Development of a Simplified Method to Measure Intra-Abdominal Pressure in Peritoneal Dialysis Patients. Ottawa Health Science Network Research Ethics Board, full Board Meeting. Ottawa, ON.

Awards and Distinctions

Recipient	Year	Award
David Eckert	2016	2016 Agostino Monteduro Italian Night Scholarship
Naomi Boisvert	2015	Kidney STAR (Student and Residents) Award. American Society of Nephrology (Support for attendance at the ASN Annual Meeting; Faculty Mentorship)
Dr. C. Kennedy	2015	Appointed to the Advisory Board for the Canadian Institutes of Health Research- Institute of Nutrition, Metabolism, and Diabetes
Dr. G. Knoll	2015	Tier 1 Research Chair, University of Ottawa, Faculty of Medicine
Maddison Turner	2016	2016 Agostino Monteduro Italian Night Scholarship
Dr. D. Zimmerman	2016-2018	President-Elect of the Canadian Society of Nephrology

Visiting Speakers

Date	Scholar	Title of Presentation	Seminar
Oct. 13 2015	Dr. Michelle Hladunewich <i>Associate Professor of Medicine, University of Toronto, Department of Medicine</i>	Pregnancy at all Stages of CKD	Nephrology Fellows Rounds
Oct. 13 2015	Dr. Michelle Hladunewich <i>Associate Professor of Medicine, University of Toronto, Department of Medicine</i>	ORN Plan for Glomerular Disease in the Province of Ontario	Nephrology Grand Rounds
Oct. 20 2015	Dr. Arlene B. Chapman, MD <i>Professor of Medicine, Chief of Nephrology, University of Chicago, Department of Medicine, Chicago, IL</i>	New Frontiers in the Clinical Management of ADPKD	Nephrology Grand Rounds
Oct. 26 2015	Dr. Ambra Pozzi, PhD <i>Professor, Department of Medicine (Nephrology), Cancer Biology, Molecular Physiology and Biophysics, Vanderbilt University, Nashville, TN</i>	Targeting Matrix Receptors in Kidney Diseases	OHRI Seminar Series
Nov. 18 2015	Dr. Richard D. Wainford, PhD, FAHA <i>Whitaker Cardiovascular Institute, Department of Pharmacology & Experimental Therapeutics, Boston, MA</i>	Neural Control of the Kidney and the Pathophysiology of Salt-Sensitive Hypertension	Faculty of Medicine - BMI - Advances in Biomedical Research Seminar Series
Nov. 19 2015	Dr. Stephen Ferguson, PhD <i>Professor, Department of Cellular and Molecular Medicine, Faculty of Medicine, University of Ottawa</i>	Physiological Role of G Protein-Coupled Receptor Kinase Regulation of Vascular Activity	KRC Journal Club
Dec. 1 2015	Dr. Peter Blake, MD, FRCPC <i>Professor of Medicine, Division of Nephrology, London Health Sciences Centre - Victoria Hospital, London, ON</i>	What Are ORN Up To?	Nephrology Grand Rounds

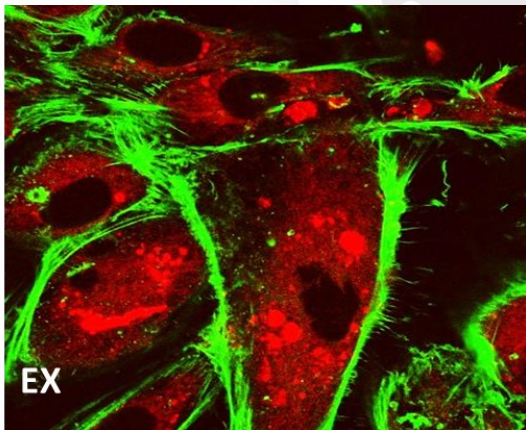
Visiting Speakers

Date	Scholar	Title of Presentation	Seminar
Dec. 10 2015	Dr. Jay C. Jha, PhD, MSc, BSc MLT <i>Research Officer, Diabetic Complications (Diabetes & Kidney Disease) Lab, Baker IDI Heart & Diabetes Institute, Melbourne, Australia</i>	The Role of NADPH Oxidase (Nox) in Diabetic Complications	KRC Journal Club
Jan. 21 2016	Dr. Smail Messaoudi, PhD <i>Postdoctoral Fellow, Laboratory Dr. Mona Nemer, Faculty of Medicine, University of Ottawa, Ottawa, ON</i>	Endothelial Gata5 Transcription Factor Regulates Blood Pressure	KRC Journal Club
Feb. 2 2016	Dr. Atul Humar, MD, MSc, FRCPC <i>Professor, Department of Medicine, University of Toronto</i>	Provincial Transplant Education Session: Sex, Drugs, & Rock 'n Roll: Using Organs from Increased-Risk Donors	Nephrology Grand Rounds
Feb. 18 2016	Dr. Rosendo A. Rodriguez, MD, PhD <i>Department of Medicine, The Ottawa Hospital, Ottawa, ON</i>	Arterial Stiffness: Risk Factor or Surrogate Marker for Cardiovascular Mortality in Chronic Dialysis Patients	KRC Journal Club
Mar. 24 2016	Dr. Keir J. Menzies, PhD, HBSc <i>Assistant Professor, University of Ottawa</i>	Moving Forward: New Tools and Therapeutic Strategies for Metabolic Diseases	KRC Journal Club
Apr. 5 2016	Dr. Jeffrey Zaltzman, MD, FRCPC, MSc <i>Professor of Medicine, University of Toronto</i>	Update on the New Ontario Kidney Allocation	Nephrology Grand Rounds
Apr. 14 2016	Dr. Khaled S. Abdelrahman, PhD, RPh <i>Postdoctoral Fellow, Lab of Dr. Stephen Ferguson, University of Ottawa, Faculty of Medicine</i>	Molecular Mechanisms Underlying Dysfunctional Cerebral Myogenic Response in Type 2 Diabetes	KRC Journal Club
May 10 2016	Dr. Michel Fischbach, MD <i>Head, Pediatric Nephrology Department, Professor of Pediatrics, University Hospital of Strasbourg (Faculty Louis Pasteur), Strasbourg, France</i>	Advancing Patient Centred Care in Peritoneal Dialysis	Nephrology Grand Rounds

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.

KRC Show and Tell...



Extracellular vesicles repair injured kidney cells.

Image shows uptake of progenitor cell vesicles (exosomes EX in red) into endothelial cells (outlined in green).

Images courtesy of KRC Research Associate Dr. Jose Vinäs.