



Kidney Research Centre

2012 - 2013 Annual Report > July 1, 2012 to June 30, 2013



The Ottawa Hospital
L'Hôpital d'Ottawa



Ottawa Hospital
Research Institute
Institut de recherche
de l'Hôpital d'Ottawa



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Faculté de médecine
Faculty of Medicine

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EXECUTIVE SUMMARY

It has been another very productive year for the Kidney Research Centre (KRC), and the many research accomplishments are cited in this annual report. I am particularly proud to note that KRC researchers received more than \$ 2 M in operating grant support in 2012-13, resulting in more than 60 peer reviewed publications in scientific/medical journals. In addition to this funding, **Dr. Greg Knoll** received a \$13.5 M grant as co-leader of a national transplant research program in Canada. Members of the KRC also received significant research salary awards from the Department of Medicine (DOM), the University of Ottawa and external sources, totaling approximately \$ 0.5 M.

KRC basic scientists continued their research in a number of key areas, with grant support from the Canadian Institutes of Health Research (CIHR), the Kidney Foundation of Canada (KFOC), the Heart and Stroke Foundation of Canada (HSFC), and the DOM. One of the major areas of investigation is the pathogenesis of diabetic kidney disease, and the discovery of markers of progression of chronic kidney disease. For example, **Dr. Chris Kennedy** and his laboratory continued their innovative work on the role of a protein called Nox5 in the progression of human diabetic kidney disease, using gene-targeted animal models. **Dr. Richard Hébert** and his laboratory have studied the role of prostaglandin receptors and the effect of anti-inflammatory drugs on the progression of diabetic nephropathy: in 2013 **Dr. Hébert** completed preparations for a dedicated facility at the KRC to conduct isolated tubule perfusion studies from mouse kidney, a technique that only a few laboratories can perform worldwide. **Dr. Kevin Burns** and his laboratory have been studying the role of a potential protective enzyme called “ACE2” in diabetic nephropathy, and the utility of measuring this enzyme in the urine as a potential biomarker of kidney disease. **Dr. Burns** is also collaborating with **Drs. David Allan** and **Dylan Burger** to study the potential protective effects of human umbilical cord blood-derived progenitor cells in acute kidney injury.

Dr. Todd Fairhead and his graduate student Andreea Slatculescu have been conducting novel studies in people with end-stage kidney disease to determine if increasing the frequency of dialysis has beneficial effects on the immune system. Finally, **Dr. Rhian Touyz**, who is the Director of the Cardiovascular Research Centre at the University of Glasgow in Scotland, is now an Honorary Scientist at the Ottawa Hospital Research Institute (OHRI), and she has maintained an active laboratory at the KRC to continue her important studies on the mechanisms of hypertension and vascular (blood vessel) injury. **Dr. Touyz** has also been leading translational research studies in Ottawa that employ the technique of myography to study isolated blood vessels from humans, and the effect of hypertension on their function. These techniques are relatively unique in Canada and have led to exciting research findings.

In May 2013, the KRC basic scientists hosted an Open House at the laboratory facility for the first time. Members of the public were invited to hear an overview of several topics, including “how kidneys function” (by **Dr. Robert Bell**) and the latest developments in renal denervation therapy (by **Dr. Marcel Ruzicka**). Tours of the lab were provided with explanations of the latest technologies and research projects. The overall feedback was highly positive and we hope to make the KRC Open House a regular occurrence.

EXECUTIVE SUMMARY cont.

On the clinical research front, in 2012-13 we witnessed enhanced productivity on an increasing breadth of topics. Some highlights are especially noteworthy: **Dr. Greg Knoll** is co-leader of a major (>\$5 M) national CIHR-funded initiative focused on increasing kidney donation and improving transplant outcomes. Receipt of this large grant received extensive press coverage, with an announcement from the Federal Minister of Health in Ottawa. **Dr. Deborah Zimmerman** has chaired a national committee at the Canadian Society of Nephrology (CSN) focused on developing guidelines for patients on frequent dialysis therapy. These guidelines should be published in a leading nephrology journal in the coming months and they will certainly have a significant impact on patient care. **Drs. Swapnil Hiremath and Ayub Akbari** have also been involved in national Guideline development at the CSN related to vascular access for dialysis, detection of kidney disease and measurement of kidney function. **Dr. Marcel Ruzicka** received a grant from The Ottawa Hospital Academic Medical Organization (TOHAMO) Innovation Fund to study the effect of renal sympathetic denervation in patients with resistant hypertension. **Dr. Ruzicka** and his colleagues at the University of Ottawa Heart Institute and the Dept. of Radiology have developed this technique in Ottawa, as one of the first Canadian centres to offer this new form of treatment. Of course, many of our clinical research studies have been supported by our expert team of research coordinators and staff, led by KRC Clinical Trials Manager Ms. Judy Cheesman. These are just a few highlights from the clinical research front and I invite you to review the results of these efforts, reflected in the many high level publications cited in this document.

The KRC is home to trainees at the undergraduate, graduate and post-graduate levels. Indeed, the international scope of KRC trainees was impressive in 2012-13, with students not only from Canada, but also visiting from Brazil, Spain, France, Germany, South Africa and Iran. Of note, Dr. Dylan Burger, a post-doctoral fellow in the laboratories of Drs. Burns and Touyz, was recipient of a HSFC/Pfizer Fellowship Award to continue his studies on the role of cell-derived microparticles in kidney injury and diabetes. Dr. Burger also received awards from the Canadian Hypertension Congress Annual Meeting and the CSN Annual Meeting for top trainee presentations. Ms. Naomi Read and Dr. Chet Holterman, both from Dr. Kennedy's lab, were awarded Scholarships from the Italian Night Committee in Ottawa, c/o of the KFOC; kudos go out to these excellent young scientists.

Dr. Amber Molnar, who completed her Royal College of Physicians and Surgeons of Canada Nephrology training in 2013, was awarded a DOM Research Fellowship and will undertake graduate studies in Epidemiology. Her research project will focus on the impact of acute kidney injury on kidney transplant function and long-term outcomes, under the supervision of **Dr. Knoll** and **Dr. Carl van Walraven**. In 2013, **Dr. Molnar** received an award from the DOM for the top oral presentation at the Annual Resident Research Day. **Dr. Edward Clark**, a Nephrology Research Fellow, has been completing his Epidemiology studies at the University of Ottawa and has collaborated actively with members of the Critical Care team, resulting in key publications in 2012 related to the appropriate timing for initiation of dialysis therapy in patients with acute kidney injury.

EXECUTIVE SUMMARY cont.

The KRC is a centre within the Chronic Disease Program of the OHRI at the University of Ottawa, a program led by **Dr. Alexander Sorisky**. We are thankful for the institutional support and recognition of our achievements. The DOM at the University of Ottawa has also been instrumental in supporting our scientists and staff, through research salary awards and operating grant support. Importantly, our Nephrologists (through their practice plan) have been strong supporters of the research mission, and annual funding contributions have directly assisted basic, clinical and translational research studies. The KRC has also received tremendous support through annual donations from the community, through The Ottawa Hospital Foundation. We are particularly grateful for the support of the Italian Night Committee and KFOC for donating their annual proceeds to support the KRC. The KRC also holds an annual golf tournament, directed by Mr. Sam Karkache and his staff. In 2013, the 12th Annual KRC Golf Tournament was held at the Meadows Golf Club and was a huge success, with local sports legend Brian Kilrea as the Honorary Chair. In addition, Mr. Karkache helped to organize two "Experts on Call" CFRA radio sessions for KRC scientists, to inform the public about kidney disease and the importance of research.

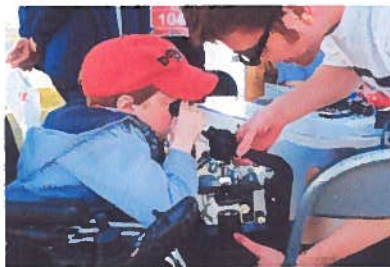
In last year's annual report I noted that the recruitment of the Jindal Research Chair for the Prevention of Kidney Disease would be a major objective for 2012-13. I am pleased to report that after a prolonged search and screening process, the Division of Nephrology has identified a strong candidate and is expecting to recruit this excellent scientist for the Jindal Chair in the Fall of 2013. We are confident that this recruitment will have a profound impact on clinical research at the KRC, which will translate to improved patient care. I am also very pleased to report that **Dr. Dylan Burger** will be appointed as a full-time Scientist at the KRC (Chronic Disease Program, OHRI) in July 2014. **Dr. Burger** has been a post-doctoral fellow at the KRC since 2009, and his recent research on microparticles is truly at the cutting edge of basic science. **Dr. Burger's** studies could uncover new strategies to identify people with early kidney disease, and lead to new approaches to treatment.

Kevin D. Burns, MD, FRCPC
Professor of Medicine, Division of Nephrology
Director, Kidney Research Centre

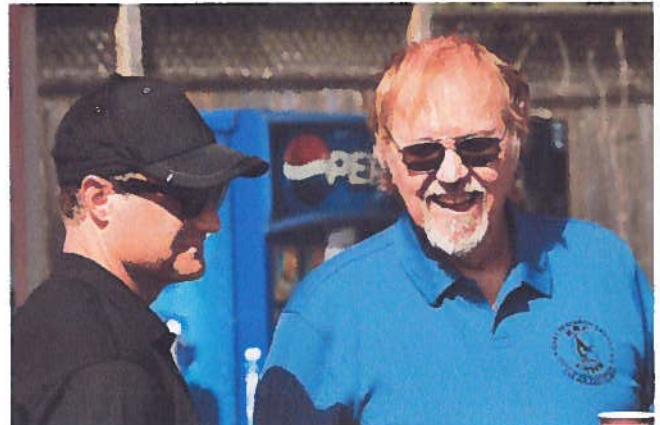
THROUGHOUT THE YEAR.....



Open House May 24th



Education and awareness at community events, Open house, Alive to Strive and WorldriderZ



Golf tournaments, where staff and patients participated and volunteered.

RESEARCH PERSONNEL

MEMBERS OF DIVISION OF NEPHROLOGY/KIDNEY RESEARCH CENTRE

NAME	TITLE	SCIENTIFIC RANK
Dr. Ayub Akbari	Associate Professor Division of Nephrology	Associate Investigator, OHRI
Dr. Robert Bell	Associate Professor Division of Nephrology	
Dr. Mohan Biyani	Assistant Professor Division of Nephrology	Clinical Investigator, OHRI
Dr. Pierre Antoine Brown	Assistant Professor Division of Nephrology	
Dr. Ann Bugeja	Assistant Professor Division of Nephrology	
Dr. Kevin D. Burns	Professor of Medicine Division of Nephrology Director of Kidney Research Centre	Senior Scientist, OHRI
Janet Davis	Assistant Professor Division of Nephrology	
Dr. Cedric Edwards	Assistant Professor Division of Nephrology	
Dr. Todd Fairhead	Assistant Professor Division of Nephrology	Associate Scientist, OHRI
Dr. Richard L. Hébert	Full Professor Dept of Cellular & Molecular Medicine University of Ottawa	
Dr. Swapnil Hiremath	Assistant Professor Division of Nephrology	Associate Investigator, OHRI
Dr. Stephanie Hoar	Assistant Professor Division of Nephrology	
Dr. Shiv Jindal	Associate Professor Division of Nephrology	
Jolanta Karpinski	Associate Professor Division of Nephrology	Clinical Investigator, OHRI

RESEARCH PERSONNEL cont.

MEMBERS OF DIVISION OF NEPHROLOGY/KIDNEY RESEARCH CENTRE - Page 2

<u>Name</u>	<u>Title</u>	<u>Scientific Rank</u>
Dr. Chris Kennedy	Associate Professor Division of Nephrology	Senior Scientist, OHRI
Dr. Greg Knoll	Professor of Medicine Division of Nephrology	Scientist, OHRI
Dr. Susan Lavoie	Associate Professor Division of Nephrology	Clinical Investigator, OHRI
Dr. David Z. Levine	Emeritus Professor Division of Nephrology	Affiliate Investigator, OHRI
Dr. Peter Magner	Associate Professor Division of Nephrology Head, Division of Nephrology	Clinical Investigator, OHRI
Dr. Brendan McCormick	Associate Professor Division of Nephrology	Clinical Investigator, OHRI
Dr. Steven Nadler	Associate Professor Division of Nephrology	
Dr. Marcel Ruzicka	Associate Professor Division of Nephrology	Clinical Investigator, OHRI
Dr. Rhian Touyz	Professor of Medicine, U of Ottawa Canada Research Chair in Hypertension Director- Institute of Cardiovascular & Medical Sciences Professor of Medicine, U of Glasgow	Honorary Scientist, OHRI
Dr. Deborah Zimmerman	Associate Professor Division of Nephrology	Clinical Investigator, OHRI

CONSULTANT FOR DIVISION OF NEPHROLOGY

<u>Name</u>	<u>Title</u>
Dr. Soraya Moghadam	Consultant Division of Nephrology

TRAINEES & STUDENTS

CLINICAL SCHOLARS, TRAINEES AND FELLOWS

NAME

Dr. Aditya Bhabhe	Clinical Fellow
Dr. Edward Clark	Clinical Research Fellow
Dr. Randah Dahlan	Clinical Fellow
Dr. Gavin Harman	Nephrology Trainee (RCPSC)
Dr. John Paul Harmon	Nephrology Trainee (RCPSC)
Dr. Amit Langote	Renal Transplant Clinical Fellow
Dr. Limesh Marisiddappa	Clinical Fellow
Dr. Andrea Mazarova	Clinical Fellow
Dr. Amber Molnar	Nephrology Trainee (RCPSC)
Dr. Ashish Nandwani	Clinical Fellow
Dr. Salahuddin Qutube	Clinical Fellow
Dr. Partha Shetty	Clinical Fellow
Dr. Hari Talreja	Clinical Fellow

POST-DOCTORAL RESEARCH FELLOWS - BASIC SCIENCE

NAME	PROJECT TITLE	SUPERVISOR
Dr. Tayze Antunes	Vascular (patho)biology of TRPM7 channels in hypertension	Dr. R. Touyz
Dr. Dylan Burger	Use of human progenitor cells in acute kidney injury	Dr. K. Burns
	Role of epidermal growth factor ligands in microparticle signaling during hypertension	Dr. R. Touyz
Dr. Chet Holterman	NADPH oxidase (NOX5) in diabetic nephropathy	Dr. C. Kennedy
Dr. Harold Majane	Nox5 derived reactive oxygen species in vascular and renal injury during hypertension	Dr. C. Kennedy
Dr. Aurelie Nguyen (CIHR Fellowship)	Role of c-Src in aldosterone and Ang II cross-talk in hypertension	Dr. R. Touyz
Dr. Jose Vinas	Characterization of human endothelial progenitor cell factors mediating protection in AKI	Dr. K. Burns

TRAINEES & STUDENTS (continued)

SUMMER STUDENTS

NAME	TITLE	SUPERVISOR
Shareef Akbari	Effect of Human Progenitor Cells on ROS Production in AKI.	Dr. K. Burns
Fadey Farid	Crosstalk between PGE2 and AVP on Na ⁺ /K ⁺ -ATPase expression in a mouse IMCD-K2 cell line.	Dr. R.L. Hébert
Andrew Karam	Interaction between PGE2 and AVP on AQP2 and Na ⁺ /K ⁺ -ATPase expression in murine IMCD-3 kidney cells.	Dr. R.L. Hébert
Nada Khalil	Elucidating the roles of alpha-actinin-4 and UCH-L1 in FSGS.	Dr. C. Kennedy
Chelsea Towajj	Nox5 in Diabetic Kidney Disease.	Dr. C. Kennedy

VISITING INTERNATIONAL PROFESSORS AND STUDENTS

NAME	TITLE	SUPERVISOR
Thiago Bruder	Graduate Student from Brazil	Dr. R. Touyz
Fatemeh Ghanesharbafe	Visiting MD from Iran	Dr. R.L. Hébert
Ulisses Hipolito	Graduate Student - Brazil	Dr. R. Touyz
Sabrina Serena	Catholic University, Rome	Dr. R. Touyz
Carlos Tiropelli	Visiting Professor - Brazil	Dr. R. Touyz
Roberto Ramírez	Universidad Autónoma de Madrid, Spain	Dr. R. Touyz

GRADUATE STUDENTS

NAMES	TITLE	SUPERVISOR
Gwendolyn Bugnot	Podocyte thromboxane receptors and the filtration barrier in diabetic kidney disease	Dr. C. Kennedy
Hajira Dehak	Effect of Endothelial Colony Forming Cell (ECFC) conditioned media on mouse aortic endothelial cells	Dr. K. Burns
Renisha Nadarajah	Effect of podocyte-specific ACE2 overexpression in diabetic nephropathy	Dr. K. Burns
Naomi Read	The role of UCH-L1 in actinin-4 associated FSGS.	Dr. C. Kennedy
Andreaa Slatculescu	Immunity in patients receiving extended home hemodialysis versus conventional in-center hemodialysis.	Dr. Todd Fairhead
Jean-Francois Thibodeau	Podocyte EP receptors and the filtration barrier in diabetic kidney disease	Dr. C. Kennedy
Danielle Zimmerman	The role of Ang(1-7) in a mouse model of renal fibrosis.	Dr. K. Burns Dr. R. Touyz

STAFF

RESEARCH ASSOCIATES

NAME	TITLE	SUPERVISOR
Dr. Glaucia Callera	Downregulation of C-terminal Src Kinase (Csk) and Csk-binding protein(cbp) is associated with increased aldosterone-induced c-Src phosphorylation in SHR vascular smooth muscle cells.	Dr. R. Touyz
Dr. Alexey Gutsol	Endothelial imaging in kidney	Dr. K. Burns
Dr. Rania Nasrallah	1)Role of PGE2/EP receptors in proximal tubule injury. 2)Interactions between collecting duct PGE2/EP and RAS to regulate salt and water transport: Implications for hypertension.	Dr. R. L. Hébert
Dr. Fengxia Xiao	Characterization of ACE2 shedding by proximal tubular cells	Dr. K. Burns

TECHNICAL STAFF

NAME	TITLE	SUPERVISOR
Anthony Carter	Senior Animal Technician	Dr. K. Burns
Gabriele Cherton-Horvat	KRC Lab Manager	Dr. K. Burns
Ying He	Senior Laboratory Technician	Dr. R. Touyz
Hiba Yussuf	Junior Laboratory Technician	Dr. R. Touyz
Lihua Zhu	Laboratory Technician	Dr. C. Kennedy
Joseph Zimpelmann	Senior Laboratory Technician	Dr. K. Burns

CLINICAL RESEARCH STAFF

<u>Name</u>	<u>Title</u>	<u>Supervisor</u>
Judy Cheesman	Clinical Research Manager	Dr. K. Burns
Valerie Cronin	Clinical Research Coordinator	J. Cheesman
Edita Delic	Clinical Research Coordinator	J. Cheesman
Sabrina Hamer	Clinical Research Coordinator	J. Cheesman
Scott Mullen	Clinical Research Assistant	J. Cheesman
Katrina Pizzino	University of Ottawa Student Research Assistant	J. Cheesman
Jessica Wagner	Clinical Research Coordinator	J. Cheesman
Lindsay Walter	University of Ottawa Summer Student	J. Cheesman

ADMINISTRATIVE RESEARCH STAFF

NAME	TITLE	SUPERVISOR
Pauline Messier	Research Administrative Assistant	Dr. K. Burns

PEER-REVIEWED FUNDING

AFP: Academic Health Sciences
 AUF: Agence Universitaire de la Francophonie
 BHF: British High Foundation
 CBS: Canadian Blood Services
 CIHR: Canadian Institutes of Health Research
 CRC: Canada Research Chair
 DoM: Dept of Medicine, Ottawa Hospital
 EC FP7: European Commission FP7

HRSDC: Human Resources & Skills Development Canada
 HSFO/HSFC: Heart and Stroke Foundation of Ontario/Canada
 JDRF: Juvenile Diabetes Research Foundation
 KFOC: Kidney Foundation of Canada
 KRESCENT- Kidney Research Scientist Core Education & National Training Program
 OGSST: Ontario Graduate Scholarship in Science & Technology
 TOHAMO: The Ottawa Hospital Academic Medical Org.
 U of O: University of Ottawa

PI	Source	Role	Term	Total amount	Title	Amount for 2012
Dr. K. Burns	CIHR	Co-Inv.	2013-18	\$166,035	Altered Angiotensin II AT1 Receptor in Cardiac and Renal Disease: Translational Development of Novel F-18 Labeled Ligands for PET Imaging	
	CIHR		2011-14	\$337,923	Translational Research on the Role of Tubular ACE2 in Kidney Disease Progression	\$ 130,178
	DoM		2012-13	\$30,000	Characterization of human endothelial progenitor cell factors mediating protection in AKI	\$ 30,000
Dr. R. L. Hebert	CIHR		2012-17	\$780,000	Tubular Dysfunction in Diabetes: Role of PGE2/EP Receptors	\$ 156,000
	KFOC		2012-14	\$100,000	The Role of PGE2/EP3 Receptors in the Diabetic Mouse Kidney.	\$ 50,000
Dr. S. Hiremath	CIHR	Co-App.	2011-14	\$328,530	Curcumin to Prevent Peri-operative Complications after Elective Abdominal Aortic Aneurysm Repair.	
	U of O	Co-App.	2013-14	\$114,775	The Prevention of Acute Kidney Injury following Contrast-Enhanced Computed Tomography: A Pilot Trial of Oral Fluid versus	\$ 14,347
Dr. C. Kennedy	CIHR		2012-17	\$665,550	Validating Nox5 as a target for diabetic renal complications	\$ 133,105
	CIHR	Co-PI	2011-16	\$759,286	Nox homologues, redox signaling and vascular biology in hypertension.	\$ 149,099
	CIHR /HOPE	Co-PI	2012-15	\$42,000	Nox5 derived reactive oxygen species in vascular and renal injury during hypertension.	\$ 15,309
Dr. G. Knoll	CIHR	Co-App.	2013-19	\$352,097	Safety and Outcomes of Accepting Hypertensive Individuals as Living Kidney Donors	
	CIHR	Co-App.	2013-19	\$917,071	Standard Criteria Living Kidney Donor Safety Study	
	CIHR	Co-App.	2013-18	\$13,850,000	The Canadian National Transplant Research Program: Increasing Donation and Improving Transplantation Outcomes.	
	CIHR		2012-17	\$802,025	ICES Kidney Dialysis and Transplantation Program	\$ 160,405
	CIHR	Co-App.	2013-14	\$100,000	Adding clarity to uncertainty in the study of drug safety	
	CIHR	Co-App.	2012-14	\$132,982	Optimizing the allocation of high-risk deceased donor kidneys: A Canadian perspective	
	CIHR	Co-App.	2012-14	\$185,439	Tranexamic Acid during Cystectomy Trial (TACT): Pilot Study	
	CIHR		2012	\$25,000	The Canadian National Transplant Research Program: Increasing Donation and Improving Transplantation Outcomes	\$ 25,000
	KFoC		2011-13	\$99,838	Access to and outcomes of kidney transplantation in Ontario: is there a socioeconomic gradient?	\$ 49,419
	CIHR	Co-App	2011-15	\$335,522	A randomized controlled trial of renal hypothermia during partial nephrectomy	
	CIHR	Co-App.	2011-14	\$273,952	Animals, Humans, and the Continuity of Evidence: A Study of Clinical Translation	
	DoM		2011-13	\$60,583	The implementation of a computerized decision support system for oral anticoagulant dosing in hemodialysis patients: a study of effectiveness and safety in a high-risk population	\$ 30,291
CIHR		2010-15	\$963,864	Effect of immunosuppressive medication use on patient outcomes following kidney transplant failure.	\$ 192,773	
U of O		2010-15	\$1 million	University of Ottawa Clinical Research Chair	\$ 200,000	
U of O	Co-App.	2010-13	\$559,712	University of Ottawa Centre for Transfusion Research Infrastructure Support		

PEER-REVIEWED FUNDING cont.

PI	Source	Role	Term	Total amount	Title	Amount for 2012
Dr. Knoll cont	CIHR		2005-14	\$2,946,260	ACE-Inhibition for the Preservation of Renal Function and Patient Survival in Kidney Transplantation	\$ 32,736
Dr. Touyz	CIHR		2010-15	\$891,000	Vascular (patho)biology of TRPM7 channels in hypertension	\$ 170,961
	JDRF	Co-App.	2010-13	\$1.4 million	Nox-derived ROS: Renal and vascular complications in type 1 diabetes.	\$ 167,994
	CRC		2005-12	\$1.4 million	Canada Research Chair in Hypertension.	
	CIHR	Co-Inv.	2011-16	\$780,000	Nox homologues, redox signaling and vascular biology in hypertension.	
	AUF	Co-Inv.	2011-12	\$99,384	Oxidative stress and complications of diabetes.	\$ 37,638
	EC-FP7	Co-App.	2012-16	280,000 euros	RADOX - RADical Reduction of Oxidative stress in cardiovascular diseases	\$ 95,571
	BHF	Co PI.	2013-17		4 year PhD Studentship Scheme	
	BHF		2013-18	£123,349.1	Chair of Cardiovascular Medicine Award	
	BHF		2013	£400,000	Infrastructure Grant	
	BHF		2013-18	£1, 200,000	Vascular Nox5 and hypertension: molecular mechanisms and therapeutic implications	
	BHF		2013-18	£3M	Research Excellence Award	
Dr. D. Zimmerman	KFoC	Sub-site	2012-13	\$2,100	The Effect of Bio-impedance Analysis and Vitamin D Supplementation Versus Usual Care on Left Ventricular Mass in Peritoneal Dialysis Patients: A Randomized Controlled Trial .."THE FLUID Study"	\$ 1,400
	Baxter	Co-Inv.	2011-13	\$130,000	A pilot study to develop a predictive tool for assessing the risk of peritoneal dialysis technique failure for patients receiving Peritoneal Dialysis therapy. Clinical Evidence Council – PD	
	Baxter		2012-15	\$156,000	Development of a "Phosphate Counting Program" on an iTouch to simplify Self-Management of Dietary Phosphate by Patients with ESRD Treated with Peritoneal Dialysis.	\$ 38,237
	Ortho-biotech	Co-Inv.	2008-14	\$162,430	Canadian Study of Prediction of Risk and Evolution to Dialysis, Death and Interim Cardiovascular Events Over Time (CanPreddict). OrthoBiotech Inc	
	CIHR	Co-Inv.	2008-13	\$3,625,000	Genetic Markers of Risk in Hemodialysis patients.	
Shareef Akbari	HRSDC		2013	\$2,878	Canada Summer Job scholarship for Shareef Akbari	\$ 2,878
Dr. D. Burger	HSF/Pfizer	Fellowship	2012-13	\$80,000	Role of Endothelial Microparticles in Vascular Dysfunction in Diabetic Nephropathy.	\$ 40,000
Dr. H. Majane	CIHR/ HOPE	Fellowship	2012-13	\$92,000	Nox5 derived oxygen species in vascular and renal injury during hypertension.	\$ 39,999
Dr. A. Molnar	DoM	Fellowship	2013-15	\$80,000	Department of Medicine Research Fellowship Award	\$ 40,000
J.F. Thibodeau	OGSSTP	Student-ship	2010-12	\$25,000	Prostanoid signaling in diabetic nephropathy: impact on podocyte health.	\$ 2,500

Total Operating Grants : \$ 1,680,463.13 + 13.5 M to Dr. Knoll for National Transplant Research Program

Total Salary Awards: \$ 325,377.13 + Dept of Medicine Research Salary Awards to Drs. Akbari, Burns, Fairhead Hiremath, McCormick, Ruzicka and Zimmerman.F63:G64

SCHOLARLY ACTIVITIES & ACHIEVEMENTS

PUBLICATIONS 2012-13

1. Corinaldi J, Nasrallah R, Clark J, Paris G, Miura P, Jasmin BJ, **Hébert RL**. Troglitazone induces extracellular matrix and cytoskeleton remodeling in mouse collecting duct cells. *J. of Biomedicine and Biotechnology*. vol. 2012, 10 pages doi:10.1155/2012/507057, 2012.
2. Nguyen Dinh Cat A, Montezano AC, Burger D, **Touyz RM**. Angiotensin II, NADPH Oxidase and Redox Signaling in the Vasculature. *Antioxid Redox Signal*. Apr 24. 2012. doi:10.1089/ars.2012.4641.
3. **Burger D**, Kwart D, Montezano AC, Thompson CS, **Touyz RM**. Microparticles Induce Cell Cycle Arrest through Redox-sensitive Processes in Endothelial Cells: Implications in Vascular Senescence. *J Am Heart Assoc*. Jun;1(3)2, 2012.
4. Sedeek M, Montezano AC, **Hebert RL**, Gray SP, Di Marco E, Jha JC, Cooper ME, Jandeleit-Dahm K, Schiffrin EL, Wilkinson-Berka JL, **Touyz RM**. Oxidative stress, nox isoforms and complications of diabetes-potential targets for novel therapies. *J Cardiovasc Transl Res*. Aug;5(4):509-18, 2012.
5. Drapeau N, Lizotte F, Denhez B, Guay A, **Kennedy CR**, Geraldès P. Expression of SHP-1 induced by hyperglycemia prevents insulin actions in podocytes. *Am J Physiol Endocrinol Metab*. Jun;304(11):E1188-98, 2013.
6. Hollingworth G, **Bell R**, Jalali A. Use of Team Based Learning to Promote Inter- and Intra-Professional Team Education. *Medical Education*; 46 (Suppl. 1): 7-8, 2012.
7. Rodger MA, Ramsay T, MacKinnon M, Westphal M, Wells PS, **McCormick B, Knoll G**. Tinzaparin versus dalteparin for periprocedure prophylaxis of thromboembolic events in hemodialysis patients: a randomized trial. *Am J Kidney Disease* Sep;60(3):427-34, 2012
8. **McCormick BB, Davis J, Burns KD**. Severe hypocalcemia following denosumab injection in a hemodialysis patient. *Am J Kidney Disease*. Oct;60(4):626-8, 2012.
9. **Zimmerman D**, Lok CE. Accessing the Access. *Clin J Am Soc Nephrol*. Oct 7(10):1458-50, 2012.
10. **Burger D**, Gutsol A, Carter A, Allan DS, **Touyz RM, Burns KD**. Human Cord Blood CD133+ Cells Exacerbate Ischemic Acute Kidney Injury in Mice. *Nephrol Dial Transplant*. Oct;27(10):3781-9, 2012
11. Varpio L, **Bell R**, Hollingworth G, Jalali A, Haidet P, Levine R, Regehr G. Is Transferring an Educational Innovation Actually a Process of Transformation? *Advances in Health Sciences Education*: 17(3), 357-367. 2012.
12. Der Sarkissian S, Tea B, **Touyz RM**, deBlois D, Hale T. Role of Angiotensin II Type 2 Receptor during regression of cardiac hypertrophy in spontaneously hypertensive rats. *J Am Soc Hypertens*. Mar-Apr;7(2):118-27, 2013.
13. Cherney DZ, Reich HN, Jiang S, Har R, **Hebert RL**, Nasrallah R, Lai V, Scholey JW, Sochett EB. Hyperfiltration and the effect of nitric oxide modulation on renal hemodynamic and endothelial function in humans with uncomplicated type 1 diabetes. *Am. J. Physiol*. Vol. 303: R710 – R718, 2012.
14. Lam N, Huang A, Feldman L, Gill JS, Karpinski M, Kim J, Klarenbach S, **Knoll GA**, Lentine K, Nguan C, Parikh CP, Prasad R, Treleaven D, Young A, Garg AX, for the Donor Nephrectomy Outcomes Research (DONOR) Network. Acute Dialysis Risk in Living Kidney Donors. *Nephrol. Dial. Transplant* Aug;27(8):3291-3295, 2012.
15. **Akbari A**, Grimshaw J, Stacey D, Hogg W, Ramsay T, Cheng-Fitzpatrick M, **Magner P, Bell R, Karpinski J**. Change in appropriate referrals to nephrologists after the introduction of automatic reporting of the estimated glomerular filtration rate. *CMAJ*. Mar 20;184(5):E269-76. 2012.
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SCHOLARLY ACTIVITIES & ACHIEVEMENTS cont.

PUBLICATIONS 2012-13

19. **Akbari A, White CA**, Shahbazi N, Booth RA, **Hiremath S, Knoll GA**. Spot urine protein measurements: are these accurate in kidney transplant recipients? *Transplantation*. Aug 94(4):389-95, 2012.
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SCHOLARLY ACTIVITIES & ACHIEVEMENTS cont.

PUBLICATIONS 2012-13 (page 3)

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SCHOLARLY ACTIVITIES & ACHIEVEMENTS cont.

PUBLICATIONS 2012-13 (page 4)

51. Cunha AR, Medeiros F, Umbelino B, Oigman W, **Touyz RM**, Neves MF. Altered vascular structure and wave reflection in hypertensive women with low magnesium levels. *J Am Soc Hypertens*. Jun 1, S1933-1711(13), 2013.
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53. **Touyz RM**. Combination antihypertensive treatment with aliskiren and blockers of the Renin-Angiotensin system-reassurance but with a note of caution. *Can J Cardiol*. May;29(5):521-3, 2013.
54. Chalmers J, Arima H, Harrap S, **Touyz RM**, Park JB. Global survey of current practice in management of hypertension as reported by societies affiliated with the International Society of Hypertension. *J Hypertens*. May;31(5):1043-8, 2013.
55. Clase CM, **Zimmerman DL**, Thomson BK. ACP Journal Club: adding renal dysfunction to CHADS2 did not improve prediction of stroke or systemic embolism in AF. *Ann Intern Med*. 158(8). 2013
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59. Shahbazi N, **Brown PA**, **Akbari A** and **Zimmerman D**, Variability of Serum Concentration of Calcium, Phosphate and Parathyroid Hormone Depending on Time of Blood Draw for Patients on Nocturnal Home Hemodialysis, *Open Journal of Nephrology*, 2(4). 65-71, 2012.
60. Miller M, **McCormick B**, **Lavoie S**, **Bivani M**, **Zimmerman D**. Fluoroscopic manipulation of peritoneal dialysis catheters: outcomes and factors associated with successful manipulation. *Clin J Am Soc Nephrol*. May;7(5):795-800. 2012.
61. **Molnar AO**, Parikh CR, Sint K, Coca SG, Koyner J, Patel UD, Butrymowicz I, Shlipak M, Garg AX. Association of Postoperative Proteinuria with AKI after Cardiac Surgery among Patients at High Risk. *Clin J Am Soc Nephrol*. 7(11):1749-60. 2012.

SCHOLARLY ACTIVITIES & ACHIEVEMENTS continued

BOOK CHAPTERS 2012-13

1. Montezano AC, Antunes TT, Callera GE, **Touyz RM**. Magnesium and Vessels, In Encyclopedia of Metalloproteins. Ed R. Kreitsinger, E. Permyakov, V. Uversky. Springer Publishers.
2. Antunes TT, Camellera C, **Touyz RM**. Vascular Biology of Magnesium: Implications in Cardiovascular Disease. In Magnesium in Human Health and Disease. Eds RR Watson, VR. Preedy and S Zibadi. Publishers Humana Press 2012. Section D, Chapter 14
3. **Touyz RM**, Montezano AC, Rosendorff C. Vascular Function. In Essential Cardiology 3rd edition. Ed. C. Rosendorff.
4. **Knoll GA** and **Fairhead T**. Selection of Prospective Kidney Transplant Recipients and Donors (Chapter 62) In: Primer on Kidney Diseases, 6th edition Editors: Scott J Gilbert, Daniel E Weiner, Debbie Gipson, Mark Perazella, Marcello Tonelli Saunders/Elsevier, Philadelphia, PA, 2013

RESEARCH AWARDS/DISTINCTIONS 2012-13

- 2013 **Dr. Chet Holterman**, from Dr. Chris Kennedy's lab. March , 2013. Post Doctoral Scholarship Award from the Italian Night Committee c/o Kidney Foundation of Canada.
- 2013 **Ms. Naomi Read**, from Dr. Chris Kennedy's lab March 2013. Graduate Student Scholarship Award from the Italian Night Committee c/o Kidney Foundation of Canada.
- 2013 **Dr. Dylan Burger** from Dr. Kevin Burns' lab. 1st place in the top trainee presentations at the 2013 Canadian Society of Nephrology Annual General Meeting held in Montreal.
- 2012 **Dr. Kevin Burns**. The Harold W. Ashenmil Award from the Kidney Foundation of Canada.
- 2013 **Dr. Robert Bell** Honorary Class President, Graduating Class of 2013, Anglophone stream, Faculty of Medicine, University of Ottawa.
- 2012 **Dr. Robert Bell** Canadian Society of Nephrology 2012 Educator of the Year Award.
- 2012 **Dr. Deborah Zimmerman**, Jean O'Callaghan Humanitarian Award, Recognition of Concern for People with Kidney Disease.
- 2013-15 **Dr. Amber Molnar**, Department of Medicine Research Day Top Oral Presentation (PGY5)
- 2012-14 **Dr. Amber Molnar**, Dept of Medicine, Research Fellowship.

SCHOLARLY ACTIVITIES & ACHIEVEMENTS cont.

INVITED PRESENTATIONS 2012-13

1. July 2-5th, 2012 - **Touyz RM.** Signaling networks between endothelial and vascular smooth muscle cells: role of reactive oxygen species. Physiology Society (Edin). Edinburgh.
2. July 4-6th, 2012 - **Touyz RM.** Endothelial signalling between TRPMS and NOXs implication in vascular pathobiology. British Microcirculation Meeting. Oxford.
3. July 15-19th, 2012 - **Knoll G.** Kidney Transplantation with Risk of Recurrent Disease, 24th International Congress of the Transplantation Society, Berlin.
4. Aug 28-29th, 2012 - **Touyz RM.** University of Iowa, Department of Pharmacology. Iowa.
5. Sept 28-Oct 4th, 2012 - **Touyz RM.** Emerging vascular targets-microparticles 24TH Scientific meeting of the International Society of Hypertension, Sydney.
6. Sept 29th, 2012 - **Touyz, RM.** Oxidative stress, antioxidants and hypertension – experimental evidence and clinical controversies” Pulse of Asia Sydney,
7. Oct 4th, 2013 - **Touyz, RM.** NADPH Oxidases in Vasculature. ISN Forefronts Symposium: Tubulointerstitial Disease in Diabetic Nephropathy, Melbourne.
8. Oct 11-13th, 2012 - **Touyz RM.** Basic Research in Cardiology and Vascular Medicine "Vascular and thrombosis". Monterrey, Mexico.
9. Oct 12th, 2012 - **Hiremath S.** New Start Unit. Inaugural Independent Dialysis Conference, Toronto.
10. Oct 16-19th, 2012 - **Touyz, RM.** Magnesium and vascular pathobiology. Plenary Speaker Presentation at the XIII International Symposium Mexico.
11. Oct 25th, 2012 - **Ruzicka M.** Core Curriculum Track The Ups and Downs of BP Targets in CKD: What Is the Target? At the 2012 Canadian Hypertension Congress, Toronto, Ontario.
12. Oct 30th, 2012 - **Touyz, RM.** New paradigms in vascular pathobiology of hypertension: Noxs, TRPMs and microparticles. Cardiovascular Seminar Series, University of Edinburgh, Edinburgh.
13. Oct 30th, 2012 - **Zimmerman D.** 2012 Cancer Screening in Patients with End Stage Kidney Disease – American Society of Nephrology; San Diego
14. Oct 30th, 2012 - **Touyz, RM.** NADPH Oxidases and Vascular Disease. ASN Kidney Week. San Diego.
15. Nov 2nd, 2012 - **Touyz, RM.** Endothelial Derived Microparticles and the Renin-Angiotensin System. AHA Scientific Sessions. Los Angeles.
16. Nov 19th, 2012 - **Touyz, RM.** USP Conferences 2012. Sao Paulo Brazil 19-20 November.
17. Dec 1st, 2012 - **Knoll G.** Quinolone Prophylaxis for the Prevention of BK Virus Infection in Kidney Transplantation. 13th Annual Canadian Transplant Forum; Threats to Success: Examining Factors that Contribute to Renal Allograft Loss. Toronto,
18. Dec 6th, 2012 - **Burns, KD.** KRESCENT Workshop. Montreal, QC.

SCHOLARLY ACTIVITIES & ACHIEVEMENTS cont.

VITED PRESENTATIONS 2012-13 page 2

19. Dec 14, 2012 - **Touyz, RM.** Grand Rounds Lecture, Maastricht University Medical Centre, Maastricht.
20. Jan 11th, 2013 - **Touyz, RM.** Novel Paradigms in vascular biology: Oxidative stress, "TRPM cation channels and microparticles". Chongqing Institute of Hypertension, Chongqing.
21. Feb 13th, 2013 - **Touyz, RM.** Vascular Noxs, External Research Seminar Programme. University of Nottingham.
22. Mar7th, 2013 - **Touyz, RM.** My life of discovery as a clinician-scientist: a wonderful journey and a privileged career. Univ of Glasgow. Head of College Scholars meeting. University of Glasgow.
23. March 10-12th, 2013 - **Dr. D. Zimmerman** Assessment of Blood Pressure and Management of HTN in Dialysis Patients – Annual Dialysis Conference; Seattle
24. March 10-12th, 2013 - **Dr. D. Zimmerman.** CPG for Intensive Dialysis – Guidelines from the CSN – Annual Dialysis Conference; Seattle
25. Mar2013 - **Zimmerman D.** Delivering High Dose Dialysis in the Home. International Talk - webinar.
26. Mar14th, 2013 - **Zimmerman D.** Providing Patients Options for High Dose Dialysis, Balancing the Risks and Benefits – European Dialysis and Transplant Meeting Paris, France
27. Apr 4th, 2013 - **Touyz RM.** Adipose Biology – New Paradigms in Cardiovascular Disease. University of Glasgow/A*star joint UK/Singapore workshop. Singapore.
28. Apr 12th, 2013 - **Touyz RM.** Aldosterone and Adipocytes – New partners in obesity-associated vascular dysfunction. XVI Capri Conference, Capri.
29. Apr 17th, 2013 - **Touyz RM.** Adipocytes, vascular biology and aldosterone – clinical implications. Sun Yat-sen University, Guangzhou.
30. Apr 19th, 2013 - **Touyz, RM.** TRPM7 and vascular (patho)biology. 2nd Yangtze River International Congress of Cardiology, Chongqing.
31. Apr 19th, 2013 - **Touyz, RM.** Resistant hypertension-new challenges and new treatments. 2nd Yangtze River International Congress of Cardiology, Chongqing.
32. Apr 20th, 2013 - **Bell R.** Use of Team Based Learning to Promote Inter- and Intra-Professional Team Education at the Canadian Conference on Medical Education 2012 in Quebec city, Canada.
33. Apr 24th, 2013 - **Hiremath S.** Review Course, Topic 'Renal Replacement Therapy in the ICU. Annual Meeting of Canadian Society of Nephrology in Montreal.
34. Apr 24th, 2013 - **Nadler S.** Review Course, Topic 'How to Run a Dialysis Unit" at Annual Meeting of Canadian Society of Nephrology in Montreal.
35. Apr 24th, 2013 - **Karpinski J.** How to get a job in Nephrology? Canadian Society of Nephrology Annual Trainee Course. Montreal, April 2013

SCHOLARLY ACTIVITIES & ACHIEVEMENTS cont.

INVITED PRESENTATIONS 2012-13 page 3

36. Apr 24th, 2013 - **Ruzicka M.** 'Carotid Baroreceptor Stimulation' at Annual Meeting of Canadian Society of Nephrology in Montreal.
37. Apr 24th, 2013 - **Zimmerman D.** CSN Guidelines Committee. "Intensive Hemodialysis" at Annual Meeting of Canadian Society of Nephrology in Montreal.
38. Apr 24th, 2013 - **Burns KD.** KRESCENT WORKSHOP, in Montreal.
39. May 2nd, 2013 - **Brown, PA.** Anémie et Cancer : Que faire avec le patient atteint de néphropathie chronique CSS Gatineau, Hull Hospital
40. May 9th, 2013 - **Brown, PA.** Anémie et Cancer : Que faire avec le patient atteint de néphropathie chronique Cité de la Santé, Laval, QC
41. May 2nd, 2013 - **Touyz RM.** New Paradigms in Vascular Signalling: Microparticles, Membrane Rafts and Reactive Oxygen Species. IX International Symposium on Vasoactive Peptides, Belo Horizonte.
42. May 5th, 2013 - **Hebert RL.** Invited Speaker by the Kidney Foundation of Canada, Québec Chapter. Title of the talk: "Les Anti-Inflammatoires dans le traitement des maladies rénales"
43. May 9th, 2013 - **Touyz RM.** Romanian Society of Physiology, Iasi.
44. May 10, 2013 - **Ruzicka M.** From Pharmacotherapy to Devices – Renal Denervation for Treatment of Resistant Hypertension at Health Science North - Sudbury Regional Hospital – Medical Rounds
45. May 15th, 2013 - **Touyz RM.** Vascular Endothelial Coupling, ASH Twenty-Eighth Annual Scientific Meeting, San Francisco.
46. May 15th, 2013- **Touyz RM.** Endothelial Cells and Microparticles, ASH Twenty-Eighth Annual Scientific Meeting, San Francisco.
47. June 3rd, 2013 - **Touyz RM.** New Frontiers in Cardiovascular Science, British Atherosclerosis Society/British Society of Cardiovascular Research, London.

SCHOLARLY ACTIVITIES & ACHIEVEMENTS cont.

SITING SCHOLARS 2012-13

1. Sept 6th, 2012 - **Dr. Jean-Yves Lapointe**, Professor, Physics Dept, University of Montreal presented "The renal Na/glucose cotransporters & the alternative access mechanism" at the Kidney Research Centre, Journal Club.
2. Sept 11th, 2012 - **Christine Ribic**, MD, FRCPC, MSc, Renal Transplant Clinical Scholar, McMaster University presented "Fundamentals of Anticoagulation In Hemodialysis" at Nephrology Grand Rounds.
3. Oct 10th, 2012 - **Dr. Jiankan Guo**, Assistant Professor, Division of Nephrology, Yale University School of Medicine presented "A simple and robust method to isolate and expand renal stem cells from adult kidneys" at Kidney Research Centre/ Chronic Diseases Program Research Seminar.
4. Oct 16th, 2012 - **Dr. Ronald Wald**, MDCM, MPH, FRCPC, Nephrologist from St-Michael's Hospital presented "Renal Replacement Therapy Modality and the Long-Term Outcomes of Critically Ill Patients with Acute Kidney Injury at Nephrology Grand Rounds.
5. Oct 23rd, 2012 - **Dr. Jeffrey Perl**, MD, SM, FRCPC, Nephrologist at St-Michael's Hospital, University of Toronto presented " "Technique Failure on PD: Failure of the Patient, the Therapy or the Treatment Team?" at Nephrology Grand Rounds.
6. Oct 23rd, 2012 - **Subhadeep Chakrabarti**, PhD, Postdoctoral Fellow, University of Alberta presented "Neuronal Nitric Oxide Synthase (nNOS): A Novel Regulator in the Vascular Endothelium" at Kidney Research Centre/ Chronic Diseases Program Research Seminar.
7. Nov 6th, 2012 - **Dr. Michael Walsh**, MD, MSc, FRCPC, Assistant Professor, Departments of Medicine (Nephrology) and Clinical Epidemiology and Biostatistics, McMaster University presented "ANCA Associated Vasculitis: Evolving Evidence in a Rare Disease" at Nephrology Grand Rounds.
8. Nov 22nd, 2012 - **Dr. Jean-Francois Cailhier**, M.D., Ph.D., FRCPC Professeur Adjoint de Clinique/Assistant Professor, Departement de Medicine, Faculte de Medicine, University of Montreal, presented "The apoptotic microenvironment and macrophage reprogramming, a MFG-E8 story" at the Kidney Research Centre, Journal Club .
9. Dec 4th, 2012 - **Dr. Robert P. Pauly**, MD, MSc, FRCPC, Associate Professor of Medicine, Division of Nephrology, University of Alberta presented "Survival Outcomes in Intensive Hemodialysis - Is There Too Much Hype?" at the Nephrology Grand Rounds.
10. Dec 11th, 2012 - **Paul Komenda**, MD, FRCPC, Assistant Professor of Medicine, Division of Nephrology, University of Manitoba presented "Allocative Efficiency: The Strategic Promotion of Optimal Chronic Kidney Disease Care in an Integrated Renal Program" at Nephrology Grand Rounds.
11. Jan 29th, 2013 - **Gihad Nesrallah**, MD, M.Sc.(c), FRCPC, Medical Director, In-Centre Hemodialysis, Deputy Chief, Nephrology Program, Humber River Regional Hospital, Adjunct Professor, The University of Western Ontario presented "Daily HD for the High-Risk Patient: Is it Time for A Clinical Trial?" at Nephrology Grand
12. Feb 5th, 2013 - **Jeffrey Zaltzman**, MD, M.Sc, B.Sc, FRCPC, Director, Renal Transplant Program, St-Michael's Health Centre, University of Toronto presented "The New Kidney Transplant Allocation in Ontario, and the Highly Sensitized Kidney Transplant Surgery" at Nephrology Grand Rounds.

SCHOLARLY ACTIVITIES & ACHIEVEMENTS cont.

VISITING SCHOLARS 2012-13 page 2

13. Feb 7th, 2013 - **Pedro Miguel Gerales**, Ph. D., Professeur adjoint, Chercheur-boursier, Junior 1, FRSQ Scholarship, Association canadienne du diabète, Service d'endocrinologie, Département de médecine, Faculté de médecine et des sciences de la santé Université de Sherbrooke presented "Inhibition of protecting factors in diabetic nephropathy" at the Kidney Research Centre Journal Club.
14. Feb 12th, 2013 - **Dr. Branko Braam**, MD, PhD, FASN, Division of Nephrology, Director of the Blood Pressure Assessment Clinic, Professor of Medicine, University of Alberta, presented "Old and new paradigms" at The Ottawa Hospital, Department of Medicine Grand Rounds (Sourirajan Lecture) and also presented "Cardiorenal Syndromes: The complex world of heart-kidney interactions at Nephrology Grand Rounds.
15. Feb 19th, 2013 - **Dr. Rita Suri**, MD, MSc, FRCPC, Associate Professor, Division of Nephrology Centre Hospitalier de l'Université de Montréal presented "Optimizing Hemodialysis Prescription – Past, Present and Future" at Nephrology Grand Rounds.
16. Feb 4th, 2013 - **Ming-Zhi Zhang** M.D., M. Sc. FASN, FAHA, Division of Nephrology and Hypertension, Department of Medicine, Vanderbilt University School of Medicine, Nashville presented "CSF-1-mediated proliferation and polarization of renal macrophages/dendritic cells is essential for recovery from acute kidney injury" at the Kidney Research Centre Journal Club.
17. Apr 23rd., 2013 - **Dr. Manish Sood**, MD., FRCPC., Assistant Professor, University of Manitoba, Medical Director of Hemodialysis, St Boniface Hospital, Winnipeg, Manitoba, Canada presented "Anticoagulation, atrial fibrillation and ESRD: always/ever/never?" at Nephrology Grand Rounds.