KRESCENT

KRESCENT Award Recipients:

2010-2014

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Canadian Society of Nephrology/
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CSN/SCN

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Institute of Nutrition, Metabolism and Diabetes
Institut de la nutrition, du métabolisme et du diabète

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2010 KRESCENT Award Recipients

Dr. Moumita Barua



KRESCENT Fellowship

Supervisor: Dr. Martin Pollak
Institution: Beth Israel Deaconess Medical Center/Harvard Medical School
Year: 2010-2013

Dr. Moumita Barua will pursue her post-doctoral fellowship under the supervision of Dr. Martin Pollak at the Beth Israel Deaconess Medical Center in Boston. Dr. Barua is interested in Focal and Segmental Glomerulosclerosis (FSGS), a disease that attacks the kidney's filtering system (glomeruli) and can lead to kidney failure. Studies of families with FSGS have revealed several disease-causing genes. Dr. Barua will study the contribution of these known disease-causing genes in a group of people with FSGS, both with and without a family history of the disease and hopes to discover new FSGS-causing genes. The project is intended to increase our understanding of the genetic basis of FSGS and is the first step in understanding the processes that malfunction in the kidney affected by FSGS, with an eventual goal of designing effective targeted therapies.

Dr. David Cherney



ACD-KRESCENT Joint New Investigator Award

Institution: University of Toronto
Year: 2010-2013

Dr. David Cherney is a new investigator at the University of Toronto. He obtained his MD from McGill University and completed a clinical nephrology fellowship at the University of Toronto. He completed his Post-Doctoral Fellowship with Dr. Judy Miller at the Toronto General Hospital. The aim of Dr. Cherney's work is to understand how diabetes affects kidney and blood vessel function. Diabetes mellitus (DM) damages blood vessels and is the leading cause of kidney failure. The factors that cause kidney and artery injury in DM include high blood sugars and stimulation of the renin angiotensin system (RAS). Activation of this hormone system leads to inflammation in both the kidney and blood vessels. Although the RAS can be blocked with medications such as angiotensin converting enzyme inhibitors (ACEi) and 'direct rennin inhibitors" (DRI) the effect of these medications, alone and in combination, on blood vessel function and on proteins that mediate kidney injury is unknown. The findings are expected to lead to new approaches to the management of diabetes mellitus.

Emmanuelle Cordat, PhD



Amgen - KRESCENT Joint New Investigator Award

Institution: University of Alberta
Year: 2010-2013
KRESCENT Infrastructure Support: 2010-2011

Dr. Emmanuelle Cordat is a new investigator at the University of Alberta. She obtained her M.Sc. and Ph.D. degrees from the Université Nice Sophia Antipolis (France) and completed post-doctoral training with Dr. Reinhart Reithmeier at the University of Toronto in 2007. Dr. Cordat's research focuses on understanding distal renal tubular acidosis and preventing the formation of kidney stones. \\ The kidney is the body's filter, ensuring all waste products are eliminated while retaining vital components. One of these vital molecules is bicarbonate, which must be retained to compensate for the acid produced while processing food. A specialized protein inside our kidney, the anion exchanger 1 (AE1), ensures that bicarbonate is pumped back into the blood. Some individuals are unable to properly retain bicarbonate because their AE1 bicarbonate pump is not working properly due to inherited mutations, and so bicarbonate is eliminated in the urine instead of being retained. As a result, those affected may produce kidney stones, may have difficulty to thrive, and may develop bone disease. For several years Dr. Cordat's research has focused on this disease, and great progress has been made to understand how it develops. She uses kidney cells to express these altered AE1 pumps and studies them to understand why they are not working properly. Once her team has a good understanding of why this malfunctioning pump is inducing the disease they will be able to look for tools to prevent it from developing.

Sunny Hartwig, PhD



KRESCENT New Investigator Award

Institution: University of Prince Edward Island
Year: 2010-2013
KRESCENT Infrastructure Support: 2010-2011

Dr. Sunny Hartwig is a new investigator at the University of Prince Edward Island. She obtained her Ph.D. from the University of Toronto and completed her Post-Doctoral Fellowship with Dr. Jordan Kreidberg at the Children's Hospital Boston, Harvard University. Dr. Hartwig will study the Role of Sox Proteins in Kidney Stem Cells, specifically the SoxC gene family of nuclear proteins – Sox4, Sox11 and Sox12, which are co-expressed with WT1 (Wilms' Tumor Suppressor) in kidney stem cells during early kidney development, and which are regulated by WT1. Sox family members are critical developmental genes that have been shown to coordinately control stem cell self-renewal, stem cell specification and stem cell differentiation in several non-renal tissues, including the developing nervous system, limbs, heart and skeleton. However, Sox genes have not been previously identified in the developing kidney, and their function in the kidney is unknown. Her work will define the function of a critical pathway during early kidney development, and will provide novel insights into the pathogenesis of Wilms' tumour. Results should reveal the mechanisms by which kidney stem cell self-renewal and differentiation are controlled, laying a foundation for new therapeutic stem cell-based strategies that will treat, reverse, and ultimately prevent kidney disease.

Dr. Jean-Philippe Lafrance

MSSS-KRESCENT Joint New Investigator Award



Institution: Maisonneuve-Rosemont Hospital Research Centre
Year: 2010-2013
KRESCENT Infrastructure Support: 2010-2011

Dr. Jean-Philippe Lafrance is a new investigator at the Hôptial Maisonneuve-Rosement Research Centre. He obtained his M.D. from the University of Montreal and also has a Masters in Epidemiology from McGill. More recently he completed his post-doctorate fellowship in pharmacoepidemiology under the supervision of Donald Miller at Boston University. Dr. Lafrance will study the incidence and risk factors of infection-related hospitalizations in patient receiving dialysis. Infections are the second leading cause of mortality, after cardiovascular disease, in patients receiving dialysis. Hospitalizations caused by an infection are highly frequent in patients undergoing dialysis treatments and may be followed by high risk of complications or death. Dr. Lafrance's research aims to group information already collected in different provincial or national registries in order to evaluate the medical complications in patients undergoing dialysis. More precisely, he wants to establish the frequency of hospitalizations caused by an infection and who (and why) is more susceptible to be hospitalized for that reason. Monitoring complications and mortality in dialysis patients is essential for administrators and other decision makers to plan resource allocation and to develop prevention strategies. These strategies will potentially reduce the burden of dialysis for the patients and for the health care system.

Dr. Mathieu Lemaire

KRESCENT Fellowship



Supervisor: Dr. Richard P. Lifton
Institution: Yale School of Medicine, Howard Hughes Medical Institute
Year: 2010-2013

Dr. Mathieu Lemaire is currently pursuing a Ph.D. at Yale in the laboratory of Dr. Richard Lifton (Investigative Medicine Program). He received his M.D. from McGill in 2004 and completed his pediatric nephrology training at Sick Kids (Toronto) in 2009. His project will focus on Dent's disease: a genetic disease of the proximal tubule. The proximal tubule is one of the most important parts of the kidney's filtration system, as it plays a key role in reabsorbing vital components such as sodium and other ions, water, glucose, and amino acids back into the blood. When the proximal tubule is unable to do this, patients become very sick because the body is unable to retain these vital elements. Unfortunately, genetic diseases of the proximal tubule are severe and never go away. Two genes have been identified in the development of Dent's disease: however, there is a large group of people who have a disease that looks exactly like Dent's disease but who do not have a mutation of these two genes. This suggests it is likely other genes are involved in Dent's disease.

Dr. Lifton's laboratory has established an international network to study Dent's disease. Dr. Lemaire will use cutting-edge genomic technology known as whole exome capture to make a snapshot of nearly all the human genes at once in order to identify the genes involved in Dent's disease. This project represents the first time this technology will be used on a large

group of patients that are not related to each other. Finding novel disease-causing genes for Dent's disease will have important diagnostic implications for these patients and may suggest new therapies, while also furthering our general understanding of proximal tubule function.

Annie Moisan, PhD

KRESCENT Fellowship



Supervisor: Dr. Nabeel Bardeesy
Institution: Massachusetts General Hospital Cancer Centre, Harvard Medical School
Year: 2010-2013

Dr. Annie Moisan will complete her post-doctoral fellowship under the supervision of Dr. Nabeel Bardeesy at Massachusetts General Hospital Cancer Centre/Harvard Medical School, where she will study how disturbances in regenerative cells lead to the development of cancer. Many cancers appear to arise in damaged regenerative cells that continually reproduce themselves in an unregulated manner and lose their ability to convert into mature, non-dividing cells. The pediatric kidney cancer Wilms' tumor provides a good model to investigate how disturbances in cells lead to cancer development. Wilms' tumors arise from kidney cells that have a compromised ability to undergo normal differentiation and Dr. Moisan's team recently identified mutations in a new gene, WTX, in 30% of Wilms' tumor cases. These findings predict that WTX is critical in controlling how kidney cells either differentiate or regenerate and suggest that mutations in WTX may increase the number of cells at risk of becoming cancer cells. \\ Dr. Moisan's proposed research aims at defining exactly how WTX controls cells and how loss of cell regeneration control leads to the development of cancer. This work should point to new strategies for developing drugs to prevent and treat cancers that have WTX mutations and thereby increase the quality of life of Canadian patients. In addition, understanding the role of WTX in stem cells throughout the body could lead to valuable insights for regenerative medicine aimed at repairing damaged tissues.

Caren Rose

PhD Candidate



KRESCENT Allied Health Doctoral Scholarship

Supervisors: Dr. Charlyn Black and Dr. John S. Gill
Institution: University of British Columbia
Year: 2010-2013

Caren Rose holds a master's degree in statistics from Dalhousie University, has spent the past 6 years working as a biostatistician in the field of kidney transplantation, and is currently enrolled in a Ph.D. in health services research at the University of British Columbia under the supervision of Dr. Gill and Dr. Black. Kidney failure patients can be treated with dialysis or transplantation. Compared to patients treated with dialysis, transplant recipients live longer, have a higher quality of life and utilize fewer health care resources. Unfortunately, the supply of kidneys for transplantation does not meet demand.

Although living kidney donation is part of the solution, deceased donors remain the primary source of transplantable kidneys, and despite a strong willingness among Canadians to donate their organs there has been no increase in deceased organ donation in Canada over the last decade. To understand the disparity between the apparent intention to donate and the actual act of donation, accurate measures of deceased organ donation activity are needed. The proposed work will apply a unique statistical method to administrative data that is currently collected in all Canadian hospitals in order to estimate the number of individuals eligible for deceased donation and calculate the corresponding donor conversion rate (i.e., proportion of actual organ donors among eligible organ donors who die in hospital). Accurately ascertaining the potential for deceased organ donation and the observed conversion rates will inform strategies to increase deceased organ donation, ultimately improving the lives of patients with kidney failure.

2011 KRESCENT Award Recipients

Morteza Ahmadi



PhD Candidate

NSERC - KFOC - KRESCENT Allied Health Doctoral Scholarship

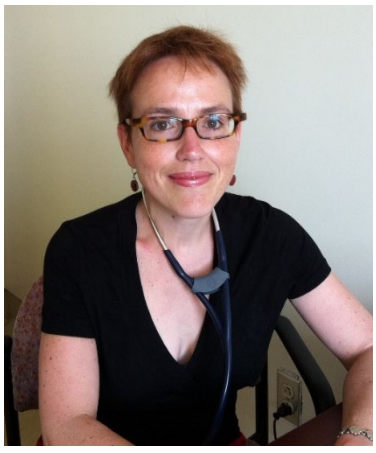
Supervisor: Dr. John T. W. Yeow
Institution: University of Waterloo
Year: 2011-2013

Mr. Morteza Ahmadi holds a master's degree from the University of Lethbridge and is currently enrolled in a Ph.D. in systems design engineering at the University of Waterloo under the supervision of Dr. John Yeow.

Kidney failure is a major health problem around the world. An increasing number of patients and inadequate number of transplants are two main issues. Dialysis technologies have played an important role in health care delivery over the last 65 years, and on average patients with renal failure need to visit a dialysis center for 4-6 hours, 3 times per week to remove toxins and waste from their blood. A compact, reliable and wearable artificial kidney carried by the patient 24 hours a day, 7 days a week could change the quality of life for these patients and help them lead a normal day-to-day existence.

This research project is focused on the design, fabrication and characterization of a compact, wearable artificial kidney based on nanotechnology. Nanotechnology is the science of making tiny structures as small as atoms and molecules, and with advances in nanotechnology membranes with a precise pore size have been produced. We employ such membranes in our wearable kidney to more efficiently filter out toxic molecules and waste from the blood, and the results of this research project may have a significant impact on the quality of life of patients who depend on dialysis.

Dr. Marie-Chantal Fortin, PhD



KRESCENT New Investigator Award, Co-funded with FRSQ

Institution: CRCHUM - Hôpital Notre-Dame
Year: 2011-2014
KRESCENT Infrastructure Support: 2011-2012

Dr. Marie-Chantal Fortin is a new investigator at the Centre hospitalier de l'Université de Montréal. She obtained her M.D. from the Université de Sherbrooke and completed a post-doctoral fellowship with Dr. Hubert Doucet at the Université de Montreal, funded

by the Kidney Foundation, the Canadian Society of Transplantation and the Institute of Immunity and Infection of the Canadian Institutes of Health Research.

Type O blood group recipients are at a disadvantage in kidney Exchange Programs (EPs) since they can only receive organs from type O donors, whereas type O is a universal donor type. One way to remedy this situation is to offer all type O blood group donors compatible with their non-O recipients an opportunity to participate in an EP. This approach raises important ethical issues, particularly concerning the fairness of allocation procedures. Our research project aims to document the perspectives of stakeholders (transplant professionals, referring nephrologists, pre-dialysis nurses and donor/recipient compatible pairs) regarding the possible participation of compatible pairs in EPs, and to develop preliminary ethical guidelines in this area.

Dr. Lakshman Gunaratnam

KRESCENT New Investigator Award

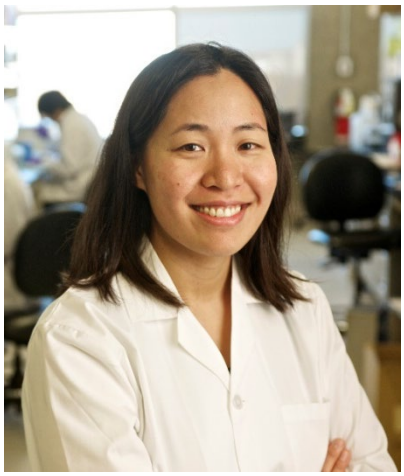


Institution: University of Western Ontario
Year: 2011-2014
KRESCENT Infrastructure Support: 2011-2012

Dr. Lakshman Gunaratnam is a new investigator at the University of Western Ontario. He obtained his MD from the University of Ottawa and then completed his Post-Doctoral Fellowship, funded by the KRESCENT Program, with Dr. Joseph Bonventre at the Brigham and Women's Hospital in Boston. Dr. Gunaratnam also received his clinical training in nephrology and transplantation at Harvard Medical School. The focus of his research program is acute kidney injury (AKI), which affects about 5% of all hospitalized patients. Despite considerable advances in diagnosis and management of AKI, the high mortality rates associated with severe AKI remain largely unchanged. AKI is most often caused by circulatory collapse resulting in reduced blood supply to the kidney (ischemia) that leads to widespread death of kidney epithelial cells. The rapid removal of dead cells occurs through a process known as "phagocytosis" that is vital to preventing further inflammation and hastening tissue repair. Recent advances suggest that surviving kidney epithelial cells express KIM-1, a gene product that enables surviving kidney epithelial cells to clear dead or dying cells from the injured kidney by phagocytosis. Dr. Gunaratnam's research aims to understand the complex cell signalling pathways that govern how KIM-1 enables kidney epithelial cells to mediate phagocytosis. His laboratory hopes to develop novel strategies to enhance this inherent (KIM-1 dependent) kidney protective mechanism to improve clinical outcomes in patients with AKI.

Dr. Juliet Ho

KRESCENT New Investigator Award



Institution: University of Manitoba
Year: 2011-2014
KRESCENT Infrastructure Support: 2011-2012

Dr. Juliet Ho obtained her M.D. from the University of Western Ontario and is a new investigator at the University of Manitoba. Kidney transplantation is one of the therapeutic options available to replace the loss of kidney function, offers better life expectancy and improved quality of life compared to dialysis, and due to immunosuppressive drug therapies life expectancy is quite good over the short term. However, when a transplanted kidney fails the return to dialysis is associated with lower quality of life, sensitization, additional financial cost and decreased life expectancy.

Chronic kidney transplant injury is the leading cause of transplant failure and 60-80% of patients with chronic transplant kidney injury develop progressive scarring of the kidney from potentially treatable causes. The goal of Dr. Ho's project is to develop non-invasive diagnostic urinary tests to identify patients at risk of developing kidney transplant scarring early in the course of their injury, and proteomic techniques will be used to identify novel urinary proteins that may indicate specific causes of scarring. Patients at risk of kidney scarring can then be targeted for monitoring and therapy to prevent progression of the injury.

Kara Schick Makaroff, PhD

KRESCENT Fellowship



Supervisor: Dr. Anita E. Molzahn
Institution: University of Alberta
Year: 2011-2015

Dr. Schick Makaroff is a registered nurse who will pursue her post-doctoral fellowship under the supervision of Dr. Anita Molzahn in the Faculty of Nursing at the University of Alberta in Edmonton. Dr. Schick Makaroff completed her Ph.D. at the University of Victoria, partially funded by The Kidney Foundation. She is interested in studying health-related quality of life from the perspective of people affected by kidney disease in order to improve provision of care to this population. For instance, the treatment of End-Stage Renal Disease (ESRD) is complex and involves dialysis or transplantation, diet restrictions, medication, exercise, and numerous medical appointments. It is therefore important to consider the patient's perspective on the quality of their lives and health status in light of these changes to their lifestyle, and this can only be assessed by the patient. Caring for patients with ESRD provides an opportunity for nurses to fully consider the patient's experience of illness in relation to their quality of life, and such assessments may provide necessary and often missing information for nurses to better support patients and manage their care. The purpose of the project is to measure patients' health-related quality of life through questionnaires using computer-based technology and then evaluate the results. Findings will provide data to nurses and other healthcare professionals who work with people living with ESRD to improve support for patients managing their illness, thereby reducing the burden of kidney disease and enhancing the patient's quality of life.

Theone Paterson

PhD Candidate



MSFHR - KFOC - KRESCENT Allied Health Doctoral Scholarship

Supervisors: Dr. Wendy J. Loken-Thornton and Dr. Jean R. Shapiro
Institution: Simon Fraser University
Year: 2011-2014

Theone Paterson holds a master's degree from Simon Fraser University and is currently enrolled as a doctoral candidate in clinical psychology under the supervision of Dr. Wendy Loken Thorton and Dr. R. Jean Shapiro. Ms. Paterson studied the relationships between traditional cognitive measures, depressive symptoms and medication adherence in renal transplant patients during her master's studies.

An important aspect of how well a transplant recipient functions in daily life is their ability to adhere to their medication schedule. Individuals who are not adherent to their anti-rejection medications are at increased risk of graft rejection and other negative outcomes. Research is needed to increase our understanding of why some renal transplant recipients do not adhere to their medication regime. Ms. Paterson's research project will use statistical methods to determine how a person's ability to think, reason, and remember things (cognitive abilities); a person's beliefs about their ability to adhere to their medications (self-efficacy); and a person's reports of depressive symptoms are related to their ability to adhere to their medication regimen following renal transplantation. The results of this study will shed light on the potential of these cognitive abilities, self-efficacy beliefs, and depressive symptoms to predict how well someone will adhere to their medication regimen following transplant.

The findings will be important for many reasons, as increased understanding of drivers to medication adherence will provide vital information to physicians and clinical health practitioners who interact with renal transplant recipients on a daily basis, and this will in turn impact how medical professionals handle issues related to the treatment and management of their patients' illness.

Dr. Susan Samuel



KRESCENT New Investigator Award, Co-funded with CCHCSP

Institution: University of Calgary
Year: 2011-2014
KRESCENT Infrastructure Support: 2011-2012

Dr. Susan Samuel obtained her M.D. from the University of British Columbia and is a new investigator at the University of Calgary. Dr. Samuel's research program is focused on children with kidney disease, and she is especially interested in the factors that cause death and disability among children with kidney failure.

Children with kidney failure are 30 times more likely to die than healthy children. To provide children with kidney failure the best chance for survival we need to identify patient-related and health care system-related risk factors for death and disability and identify groups of children who are at highest risk of death and disability. The data collected will be analyzed to direct future studies and guide the testing of strategies used to prevent death and disability. As part of her research Dr. Samuel will also study a difficult time in the life of a person with childhood onset kidney disease: the period of transition from childhood to adulthood and the transfer of medical care from child-oriented to adult-oriented healthcare services. It is thought that this transition period is dangerous because teenagers in general may engage in risk taking behaviour such as refusing to take their medications, not attending clinic appointments or not seeking medical attention at the appropriate time. Dr. Samuel's project aims to evaluate the risks associated with this transition period by looking at key variables that signal danger such as hospital admissions to the intensive care unit. The data obtained from this research study will help healthcare practitioners who care for patients with childhood onset kidney failure determine the best time to transfer a teenage patient to adult-oriented healthcare services and will also help determine whether extra support is needed once juvenile patients are transferred to adult hospitals.

Dr. Michael Walsh

KRESCENT New Investigator Award



Institution: University of Western Ontario
Year: 2011-2014
KRESCENT Infrastructure Support: 2011-2012

Dr. Michael Walsh is a new investigator at McMaster University. He obtained his MD from the University of Calgary. He completed his Post-Doctoral Fellowship, funded by the KRESCENT Program, with Dr. David Jayne at Addenbrooke's Hospital in Cambridge (U.K.) and Dr. Philip Devereaux at McMaster University. Annually, 2 million patients worldwide (30,000 Canadians) undergo heart surgery. Although this procedure can be life saving, 1 in 20 patients will not survive their hospital stay. Sudden kidney, heart and brain injuries that occur during surgery are important causes of death after heart surgery and patients with kidney disease are at particularly high risk for all of these injuries. Remote ischemic preconditioning involves the inflation of a tourniquet or blood pressure cuff on the thigh to briefly stop blood flow. This activates the body's own protective systems that can prevent damage to the kidneys, heart and brain. Preconditioning is a promising and simple treatment but there are no studies large enough to determine whether RIPC improves the outcomes most important to patients (e.g. survival). Dr. Walsh will perform a very large study of several thousand patients from around the world that will determine if Remote Ischemic Preconditioning reduces severe kidney injury, heart attacks, strokes or death in patients undergoing heart surgery. The study is called the Remote IscheMic Preconditioning in cArdiaC surgery Trial (Remote IMPACT).

2012 KRESCENT Award Recipients

Dr. Matthew James, PhD

KRESCENT New Investigator Award



Institution: University of Calgary
Year: 2012-2015
KRESCENT Infrastructure Support: 2012-2013

Dr. Matthew James is a new investigator at the University of Calgary. He obtained his M.D. at the University of British Columbia and completed a KRESCENT Post-Doctoral Fellowship in Nephrology Clinical Research with Dr. Brenda Hemmelgarn at the University of Calgary, where he also obtained his Ph.D. in Health Services Research and Epidemiology.

Dr. James' goal is to find ways to reduce Acute Kidney Injury (AKI) frequency and improve outcomes for patients with AKI in Canada. AKI is common in patients undergoing surgery and certain diagnostic imaging procedures, and is associated with serious complications including the need for dialysis. It often can be prevented by good medical care, and early detection can improve its consequences.

Dr. James' research will provide valuable data for patients and health care providers, and will focus on advancing population health, health services research, and clinical knowledge translation in these areas of AKI. As part of his research, he will also develop a novel database that will support ongoing study of AKI.

The results obtained from this research study will help inform the design of new interventions intended to improve the adverse hospital outcomes associated with acute kidney injury in Canada.

Dr. Ngan Lam

KRESCENT Fellowship



Supervisor: Dr. Amit Garg
Institution: Lawson Health Research Institute
Year: 2012-2015

Dr. Ngan Lam will complete her post-doctoral fellowship under the supervision of Dr. Amit Garg at the London Health Sciences Centre. She will study the prevention of renal injury in patients receiving antiviral drugs to treat herpes infection. Dr. Lam obtained her M.D. at the University of Toronto and is currently working on her master's in clinical epidemiology and biostatistics at Western University.

Shingles, a type of herpes, is caused by the chicken pox virus and is common among older people. It manifests as painful sores or rashes on the skin. Although effective in the treatment of shingles, acyclovir can form crystals in the kidneys,

thereby affecting their normal functioning. However, famciclovir (similar to acyclovir in its treatment) does not appear to have the same damaging effects on the kidneys. The aim of Dr. Lam's research is to study the risk of kidney injury from certain drugs used to treat shingles by studying all older patients in Ontario who have been prescribed these drugs, and her goal is to understand the extent of this problem and how the risk with acyclovir compares to that with famciclovir. This is an important area of research since the number of people over age 65 will increase to almost 6 million in Canada by the year 2016, with over 126,000 people being treated with these types of drugs on an annual basis. The findings will better inform doctors and their patients about the potential risks of acyclovir and may help prevent kidney injury in the future, as doctors may choose to monitor their patients more carefully or decide to use other drugs when treating shingles in this population.

Dr. Sacha De Serres

KRESCENT New Investigator Award



Institution: Laval University
Year: 2012-2015
KRESCENT Infrastructure Support : 2012-2013

Dr. Sacha De Serres is a new investigator at Laval University (Quebec City). He obtained his M.D. at Université de Montréal and trained in Internal Medicine and Nephrology at Laval University. He then completed a KRESCENT Post-Doctoral Fellowship in Transplantation Immunology at the Brigham and Women's Hospital at Harvard University (Boston, Mass), in Dr. Nader Najafian's laboratory. Dr. De Serres research focuses on the role of the immune system in transplantation.

The aim of his research is to study the role monocytes, a specific population of white blood cell, in organ rejection. More precisely, Dr De Serres' aim is to decipher when and how these cells become activated following kidney transplantation, how they interact with other components of the immune system, and to better understand how they affect the transplanted kidney. These cells are intriguing: they can either repair or damage the kidney, depending on the biological condition. Although their impact on kidney transplantation is still not well defined, there is increasing evidence that they play a key role in determining the fate of the graft.

Dr. De Serres' hope is that this knowledge will help to individualize immunosuppressive therapy and thus reduce the side effects of the anti-rejection drugs. It should also help to develop better treatments for chronic rejection, which will ultimately increase the life expectancy of the transplanted kidneys. These tools might prove beneficial not only to kidney transplant recipients, but eventually to the recipients of other organs.

Sandra Turcotte, PhD

KRESCENT New Investigator Award



Institution: University of Moncton
Year: 2012-2015
KRESCENT Infrastructure Support : 2012-2013

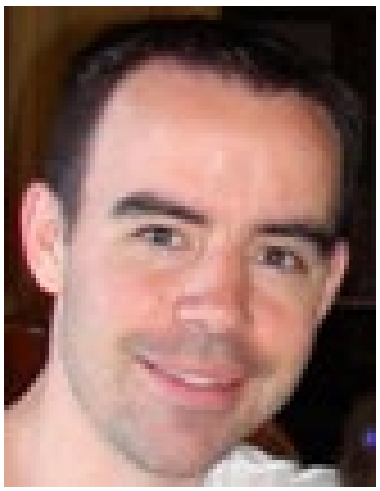
Dr. Sandra Turcotte is a new investigator at the Atlantic Cancer Research Institute and l'Université de Moncton. She completed her Ph.D. in biochemistry at l'Université du Québec à Montréal and post-doctoral fellowships at Stanford University and l'Université de Montréal.

Renal cancer is the most lethal of all urological cancers due to the lack of effective systemic therapy for advanced or metastatic Renal Cell Carcinoma (RCC). Inactivation of the von Hippel-Lindau (VHL) tumor suppressor gene occurs in 75% of RCC. Because VHL plays an important role in the early development of RCC, targeting cells where it has been inactivated represents a promising focus for the development of new therapies.

Dr. Turcotte's research will focus on characterizing VHL function in a cellular process called autophagy to further develop a new type of targeted anticancer therapy that selectively kills VHL-deficient cells, and her findings could lead to the development of a new type of targeted therapy for the treatment of RCC.

Dr. Chris Wiebe

KRESCENT Fellowship



Supervisor: Dr. Peter Nickerson
Institution: University of Manitoba
Year: 2012-2014

Dr. Chris Wiebe will complete his post-doctoral fellowship under the supervision of Dr. Peter Nickerson at the University of Manitoba, where he will study the correlation of immune targets with the development of new donor antibodies following kidney transplant. During his post-doctoral fellowship Dr. Wiebe will pursue his master's at the University of Manitoba, where he also received his M.D.

A kidney transplant is currently the best option for patients who develop kidney failure. Unfortunately for many patients the long-term success of kidney transplantation is shortened because the recipient's immune system attacks the donor's kidney. In recent years scientists have discovered that one of the most important predictors of a failed kidney transplant is the development of antibodies, proteins produced by the body's immune system when it detects harmful substances or mistakenly recognizes healthy tissue as a harmful substance.

Dr. Wiebe's project focuses on discovering the specific targets that are most likely to initiate an immune attack against a donor's kidney by comparing the targets of transplant patients who developed antibodies with those who did not. Findings may allow doctors to avoid these targets, resulting in a better and longer-lasting kidney transplant, and a greater understanding of the most important targets could help medical professionals decide which patients are likely to benefit from a reduction of their immune suppressing medications.

2013 KRESCENT Award Recipients

Dr. Meghan Elliott



KRESCENT Fellowship

Supervisors: Dr. Sharon Straus and Dr. Brenda Hemmelgarn
Institution: St. Michael's Hospital
Year: 2013-2015

Dr. Meghan Elliott will complete her post-doctoral fellowship under the supervision of Dr. Sharon Straus and Dr. Brenda Hemmelgarn at the University of Toronto. Her project will focus on the integration and prioritization of recommendations in practice guidelines. Dr. Elliott obtained her M.D. at Queen's University and completed her internal medicine and nephrology residencies at the University of Calgary.

General practitioners have only 6 to 9 minutes on average to spend with a patient, limiting the time available to address all the recommendations provided in practice guidelines. As a result, patients with chronic or complex conditions often don't receive appropriate care. The aim of Dr. Elliott's research is to understand how physicians and patients prioritize guideline recommendations and how physicians implement them in their practice.

This research will be performed within a scientific area called Knowledge Translation (KT) that aims to incorporate current research and recommendations into the delivery of high-quality patient care. Findings will support the design of tools that formally test how physicians prioritize recommendations given to patients and lead to improved health care delivery for patients with chronic diseases. The ultimate goal of Dr. Elliott's research is the development of an approach that integrates patient priorities with those of health care providers, thereby optimizing patient care.

Victor Jensen, PhD



KRESCENT Fellowship

Supervisor: Dr. Michel Leroux
Institution: Simon Fraser University
Year: 2013-2016

Dr. Jensen obtained his Ph.D. in medical genetics at the University of Columbia and will complete his post-doctoral fellowship under the supervision of Dr. Michel Leroux at Simon Fraser University, where he will study and identify novel cilia genes associated with multiple disorders.

The cilium is an extension on most cells/tissues that can be compared to a television antenna because it receives signals from its environment. When a mutation disrupts cilia function, cells no longer receive the appropriate environmental input. Mutations in cilia-related genes have been identified in patients with clinical diseases such as cystic kidneys, diabetes,

obesity and blindness. Many of the families suffering from such illnesses have unknown mutations, often because the mutated gene has not been identified. The aim of Dr. Jensen's research is to derive novel insights into the nature and function of disease genes and the link(s) between different genes and disease, as well as additional insight into the function of cilia, eventually leading to improved treatments for – and/or prevention of – common diseases.

Dr. Amber Molnar

KRESCENT Fellowship



Supervisors: Dr. Greg Knoll and Dr. Carl van Walraven
Institution: University of Ottawa
Year: 2013-2015

Dr. Amber Molnar obtained her M.D. at the University of Saskatchewan and is currently pursuing her master's in clinical epidemiology at the University of Ottawa. She will complete her post-doctoral fellowship under the supervision of Dr. Greg Knoll and Dr. Carl van Walraven at the Ottawa Hospital Research Institute. Her study will focus on how an episode of kidney failure impacts the risk of transplant failure or death among individuals with a kidney transplant.

The number of Canadians being treated for kidney failure has tripled over the last 20 years. A kidney transplant is often considered the best treatment for these patients, allowing them to live longer and with a greater quality of life than experienced on dialysis. Unfortunately, a transplanted kidney will fail after an average of approximately 10-15 years, forcing patients to return to dialysis. A better understanding of transplant failure is needed in order to increase the life span of transplanted kidneys.

Acute Kidney Injury (AKI), a rapid loss of kidney function, is one cause of kidney failure. While the causes of AKI are numerous, common causes include severe infection or heart attack. Dr. Molnar's study will closely examine the relationship between episodes of AKI resulting in death or the failure of a kidney transplant over time. The study will review the healthcare records of kidney transplant patients who suffered an episode of AKI to determine whether patients with AKI experienced failure of their kidney transplant or death sooner than patients without AKI. The study will also examine the characteristics that increase the risk of death or transplant failure among kidney transplant patients that experience AKI.

Findings will support doctors working on the prevention or treatment of AKI, as well as improve the monitoring of patients after an acute episode. Dr. Molnar believes that a better understanding of why kidney transplants fail over time will contribute to longer-lasting kidney transplantation.

Dr. Navdeep Tangri, PhD

KRESCENT New Investigator Award



Institution: University of Ottawa
Year: 2013-2015
KRESCENT Infrastructure Support: 2013-2014

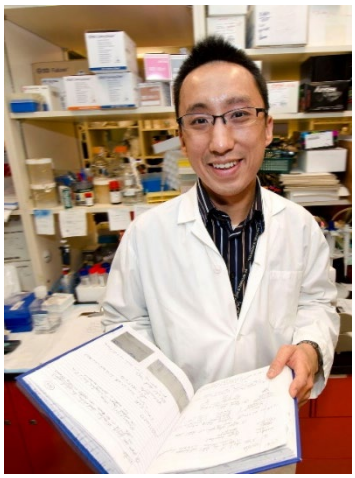
Dr. Navdeep Tangri is a new investigator at the University of Manitoba where he obtained his M.D. He completed a KRESCENT Post-Doctoral Fellowship in Nephrology Clinical Research with Dr. Andrew Levey at the Tufts University in Boston where he also

completed his Ph.D. in Clinical and Translational Science. Dr. Tangri's research focuses on the outcomes of chronic kidney diseases (CKD).

CKD affects over one million Canadians and causes an increased risk of heart disease and dialysis. The aim of Dr. Tangri's research is to study patients with atrial fibrillation (AF), an abnormal heart rhythm, and CKD. Atrial fibrillation can lead to strokes by forming blood clots in the heart and it is usually treated with the use of blood thinners. However, these anticoagulants have side effects including major bleeding. More precisely, Dr. Tangri will look at the long term risk of strokes and bleeding in patients with CKD to determine whether blood thinners are safe and effective in this population. Findings will help doctors provide better treatments for CKD patients and reduce the risk of strokes and bleeding in this population.

Dr. Darren Yuen, PhD

KRESCENT New Investigator Award



Institution: University of Ottawa
Year: 2013-2015
KRESCENT Infrastructure Support: 2013-2014

Dr. Darren Yuen is a new investigator at the University of Toronto where he obtained his M.D. and Ph.D. in the Faculty of Medicine. He previously held a KRESCENT Post-Doctoral Fellowship (2008-2011). His current study targets the actin cytoskeleton to treat kidney disease. It is aimed at developing and testing new therapies on the areas of change occurring in kidney cells at different stages following injury.

The cytoskeleton is a protein skeleton contained within a cell that determines its shape, motion and behavior. It plays an important role in kidney injury. For instance, the cytoskeleton of kidney endothelial cells, the inner lining of the blood vessels in the kidney, help control new blood vessel growth. In the healthy kidney, blood vessel growth and death are balanced, leading to preservation of the blood vessel networks in the kidney. Following many types of kidney injury, however, this balance is disrupted, in part due to changes in the endothelial cell cytoskeleton. Similarly, the cytoskeleton of fibroblasts, the cells responsible for scar tissue production, is altered by kidney injury in ways that predispose it to irreversible scarring of the kidneys.

Dr. Yuen will examine therapies that target a previously unrecognized regulator (Slit2) of cytoskeletal changes driving the excessive kidney blood vessel growth that occurs early in diabetes, and which predisposes to later injury. These proposed studies are based on extensive preliminary data and will use cutting edge techniques established in the lab.

Findings will increase the understanding of how cytoskeleton changes in kidney cells contribute to kidney injury and will help identify safe and effective therapies that will treat and prevent chronic kidney disease. In addition, future studies will build upon this initial work, exploring therapies targeting late-stage kidney disease that help reduce scarring and preserve kidney blood vessels when they begin to die off.

2014 KRESCENT Award Recipients

Dylan Burger, PhD

KRESCENT New Investigator Award



Institution: Ottawa Hospital Research Institute
Year: 2014-2017
KRESCENT Infrastructure Support: 2014-2015

Dr. Burger is a new investigator at the Ottawa Hospital Research Institute where he completed a KRESCENT Post-Doctoral Fellowship (2009-2012) in vascular biology under the mentorship of Dr. Rhian Touyz. Further Postdoctoral training was obtained in Dr. Kevin Burn's laboratory in renal physiology. He obtained his Ph.D. in Physiology and Pharmacology at the University of Western Ontario. Dr. Burger's research focuses on the role of microparticles in diabetes.

Diabetes is the primary cause of chronic kidney disease in Canada and is associated with a high mortality and significant cost to the health care system. Early detection can slow progression of the disease but at present, very few treatments exist causing a demand for new and more effective therapies for diabetic kidney disease.

The goal of this project is to examine the role of microparticles in diabetes. Cell and animal models will be used, as well as samples from diabetic patients in order to determine how microparticles are formed, whether they themselves contribute to kidney injury, and whether they can be detected in human diabetic patients. It is hypothesized that microparticles are an early sign of kidney injury in diabetes and that formation of microparticles directly contributes to the development of kidney disease in diabetes. Most drugs for individuals with kidney disease act on biological pathways that have been known for some time. However, until recently it was not known that microparticles were important in the body. If we can understand how microparticles are formed we may be able to identify new pathways for drug development.

Dr. Héloise Cardinal, PhD

KRESCENT Infrastructure Award

Institution: University of Montreal Hospital Research Center (CRCHUM)
Year: 2014-2015

Dr. Héloise Cardinal is a transplant nephrologist and independent investigator at the University of Montreal Hospital Research Center (CRCHUM). After finishing her residency in nephrology at the Université de Montréal, Dr. Cardinal completed a master's and Ph.D. in epidemiology at McGill University, where she developed an expertise in the characterization of biomarkers for the non-invasive diagnosis and follow-up of clinical conditions that she eventually translated to the transplantation setting.

When acute rejection occurs after a kidney transplant a biopsy is required to confirm whether the graft vessels were damaged. Previous studies have shown that particles and molecules (membrane vesicles, LG3) released by endothelial cells can fuel the development of antibodies (anti-LG3) and accelerate the damage. By measuring levels of membrane vesicles, LG3 and anti-LG3 in the blood of patients pre- and post-transplant, Dr. Cardinal's research aims to determine whether these biomarkers can be used to evaluate damage to the graft vessels, predict the survival of the kidney graft, and help identify transplant candidates who may be at risk of acute rejection.

Dr. Jeffrey Dickhout

KRESCENT New Investigator Award



Institution: McMaster University
Year: 2014-2017
KRESCENT Infrastructure Support: 2014-2015

Dr. Jeffrey G. Dickhout is a new investigator at the St. Joseph's Healthcare Hamilton Centre for Kidney Research and an Assistant Professor in McMaster University's Division of Nephrology. He completed his Ph.D. at McMaster University and received post-doctoral training in renal physiology at the Medical College of Wisconsin. During his doctoral and post-doctoral training Dr. Dickhout developed novel techniques to quantify vascular structure and relate it to functional changes in blood vessels during the development of hypertension.

When disease disturbs kidney function transporter proteins responsible for retaining important elements are lost in the urine, prompting the Endoplasmic Reticulum (ER) of kidney cells to increase production of these proteins. ER stress caused by excessive protein production contributes to the progression of chronic kidney disease over time by transforming normal kidney tissue into scar tissue. The objective of Dr. Dickhout's research is to determine how to inhibit the excessive production of transporter proteins in kidney cells as a means to prevent the progression of kidney disease.

Janine Farragher

PhD Candidate

KRESCENT Allied Health Doctoral Scholarship



Supervisors: Dr. Chaim Bell and Dr. Glenn Chertow
Institution: University of Toronto
Year: 2014-2015

Ms. Janine Farragher will complete her fellowship under the supervision of Dr. Sarbjit Vanita Jassal and Dr. Helene J. Polatajko at the University of Toronto, where she previously obtained a master's in occupational therapy and is currently pursuing a Ph.D. in rehabilitation science.

More than 23,000 Canadians are currently living with end-stage kidney failure and rely on regular dialysis treatment. One of the most troubling symptoms experienced by people with kidney failure is fatigue, which often interferes with their ability to perform daily activities such as working, taking care of themselves, and being active. People with fatigue due to other diseases such as multiple sclerosis have been found to benefit from a structured educational program delivered by

rehabilitation specialists on how to use energy more effectively throughout the day. This approach, called “energy conservation”, has the potential to help people on dialysis accomplish more and feel less tired. The objective of Ms. Farragher’s research is to develop and test an energy conservation education program designed for people with kidney failure on dialysis. Research findings will contribute to determining whether this novel approach may be an effective treatment for dialysis patients, help them better manage their fatigue, and improve their overall quality of life.

Zsuzsanna Lichner, PhD

KRESCENT Fellowship

Supervisors: Dr. George Yousef
Institution: Li Ka Shing Knowledge Institute, St. Michael's Hospital
Year: 2014-2017

Dr. Zsuzsanna Lichner will pursue her post-doctoral fellowship under the supervision of Dr. George Yousef at the Li Ka Shing Knowledge Institute of St. Michael’s Hospital in Toronto. Dr. Lichner wishes to enhance her understanding of the role of cancer stem cells in the pathogenesis of kidney cancer.

Cancer stem cells are able to maintain themselves by self-renewal or by initiating the growth of an entire tumor. Recent findings suggest the metastatic potential and therapy resistance of tumors may be attributed to their cancer stem cell content, so therapeutic elimination of these cells is necessary for the complete eradication of a tumor. Dr. Lichner’s research will focus on identifying the pathways that lead to cancer stem cell formation in kidney cancer and investigating the effect of microRNAs, small RNA molecules reported to regulate stem cell formation and maintenance. A better understanding of stem cell formation may lead to the identification of therapeutic targets for their elimination in kidney cancer and potentially in other types of cancer as well.

Dr. Samuel Silver

KRESCENT Fellowship



Supervisors: Dr. Chaim Bell and Dr. Glenn Chertow
Institution: University of Toronto
Year: 2014-2017

Dr. Samuel Silver is a nephrologist who recently completed a M.Sc. in Quality Improvement (QI) and patient safety at the University of Toronto. This post-doctoral fellowship will support his formal training under the supervision of leaders in QI methods, (Dr. Chaim Bell, University of Toronto), and AKI/clinical trial research, (Dr. Glenn Chertow, Stanford University).

Acute Kidney Injury (AKI) is defined as a rapid decline in kidney function over a period of days. AKI survivors are at increased risk of developing Chronic Kidney Disease (CKD), yet only 25% of patients with AKI see a nephrologist within one year of discharge. While a nephrology fellow at the University of Toronto Dr. Silver led the development of a weekly AKI follow-up clinic at St Michael’s Hospital to assess AKI survivors within 30 days of discharge, the window when a patient is most vulnerable and the coordination of care is crucial. Dr. Silver’s research will test whether early follow-up after AKI can improve patient survival and reduce repeat AKI, CKD, chronic dialysis, cardiac events, and hospitalizations.

Dr. Anna Tsampalieros

KRESCENT Fellowship

Supervisors: Dr. Greg Knoll and Dr. Dean Fergusson
Institution: Ottawa Hospital Research Institute
Year: 2014-2016

Dr. Anna Tsampalieros will pursue her post-doctoral fellowship under the supervision of Dr. Greg Knoll and Dr. Dean Fergusson at the University of Ottawa. Dr. Tsampalieros is a pediatric nephrologist at the Children's Hospital of Eastern Ontario and is currently completing a Ph.D. in epidemiology at the University of Ottawa. Her interest lies in identifying and measuring important outcomes in kidney transplant patients.

Many factors can affect patient and graft survival after a kidney transplant. While patient risk factors are fairly well understood, little is known on how differences in hospital and physician practices affect survival. Dr. Tsampalieros's study will review kidney transplant patient and graft survival rates over a 15-year period at all transplant hospitals in Ontario, using information collected through the Institute for Clinical Evaluative Sciences – Kidney, Dialysis and Transplantation Program. This will be the first Canadian study to compare patient care after a kidney transplant in Ontario transplant hospitals and assess how differences in care impact patient and graft survival.