

2013

RESEARCH REPORT



Crohn's and Colitis
Foundation of Canada

Fondation canadienne des
maladies inflammatoires
de l'intestin

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The Crohn's and Colitis Foundation of Canada brings the greatest researchers to the place where I'm treated (McMaster University) for ulcerative colitis. It's exciting to believe that through my commitment to the organization a cure might be found right here in my very own backyard. ”

– Jordy Shanlin, Hamilton, 13-year-old youth living with ulcerative colitis.



HIGHLIGHTS IN RESEARCH

\$1.6 MILLION

number of additional dollars leveraged from government and industry to match CCFC's investment of \$560,910 in support of IBD research

55

number of research grants supported by the CCFC through our Grants-in-Aid and partnership programs

15

number of major hospitals and universities across Canada supported by CCFC research grants & awards

2,500

number of subjects recruited to participate in CCFC's GEM study



ADVANCES IN RESEARCH



**MESSAGE FROM SCIENTIFIC & MEDICAL
ADVISORY COUNCIL AND CHIEF
SCIENCE & EDUCATION OFFICER**

This past year, the CCFC invested \$5.3 million to fund more than 36 promising research projects, as well as 19 young investigators, fellows and students across Canada. CCFC-funded research is attacking inflammatory bowel disease (IBD) on many fronts: uncovering the triggers of IBD; blocking inflammation; and treating complications associated with disease. Our medical and scientific community is making significant progress – publishing results in scientific journals and presenting at international medical conferences. These findings are getting us one step closer to new and improved treatments for IBD.

The Crohn’s and Colitis Foundation of Canada (CCFC) recently released a new Strategic Plan which marks an exciting period of growth and renewal for the CCFC. This plan represents a transformative shift – one that commits the CCFC to a broader scope of activities in order to improve the lives of the 233,000 Canadian children and adults living with inflammatory bowel disease. The CCFC remains committed to finding cures for Crohn’s disease and ulcerative colitis. In addition, we are also committed to having a more immediate impact on the lives of Canadian children and adults affected by these chronic diseases through an enhanced focus on prevention, treatments and health policy research. As such, in the coming year, the CCFC will launch its new Research Strategy to ensure that CCFC’s future investments will have the maximal impact and reflect the needs of its community of stakeholders.

The advances highlighted in this Research Report would not have been made possible without the unwavering support of our researchers, clinicians, donors, partners, sponsors and volunteers. Your commitment to the CCFC ensures that Canada remains a global leader in IBD research. We hope you enjoy learning about our accomplishments in this Research Report.

Warmest wishes,



John Wallace, PhD
Chair, Scientific &
Medical Advisory
Council

Aida Fernandes, MBA
Chief Science &
Education Officer

BUILDING CAPACITY IN THE IBD RESEARCH COMMUNITY

The CCFC supports IBD researchers throughout their careers, from undergraduate students working in research labs through to established senior scientists. By co-funding salary awards, fellowships, and student scholarships, we are building research capacity and ensuring that significant research effort remains focused on IBD.



TRAINING AWARDS ensure a reliable supply of highly-qualified personnel develop the knowledge and skills required to become a seasoned investigator. Through co-funding partnerships with other research funding agencies, these awards support top-ranked undergraduate, graduate and post-doctoral trainees who have demonstrated potential for a career in IBD-related research.

Fellowships

CCFC/Canadian Institutes of Health Research/ Canadian Association of Gastroenterology		
FELLOW	INSTITUTION	INVESTMENT
Laura Greenfield	Hospital for Sick Children	Year 1 of 2 \$22,500
Jean-Paul Motta	University of Calgary	Year 1 of 2 \$22,500
Yasmin Nasser	University of Calgary	Year 1 of 2 \$27,500
Sarah O'Donnell	Mount Sinai Hospital	Year 1 of 2 \$10,000
Galliano Zanello	University of Toronto	Year 1 of 2 \$22,500
David Prescott	University of Toronto	Year 2 of 2 \$17,500
David Reed	McMaster University	Year 2 of 2 \$27,500
Martin Stahl	BC Children's Hospital	Year 2 of 2 \$17,500

CCFC/Alberta Innovates		
FELLOW	INSTITUTION	INVESTMENT
Christina Hirota	University of Calgary	Year 2 of 2 \$19,000
Weiwei Wang	University of Alberta	Year 2 of 2 \$22,500

Studentships

Alberta Innovates		
STUDENT	INSTITUTION	INVESTMENT
James Cotton	University of Calgary	Year 2 of 2 \$3,900

CCFC Michael Smith Research Foundation		
STUDENT	INSTITUTION	INVESTMENT
Yanet Valdez	University of British Columbia	Year 2 of 3 \$10,167

CCFC/Fonds de recherche du Québec – Santé (FRQS)		
STUDENT	INSTITUTION	INVESTMENT
Joannie Allaire	University of Sherbrooke	Year 2 of 2 \$10,000
Maryse Dagenais	McGill University	Year 1 of 3 \$10,000
Émilie Degagné	Children's Hospital Oakland Research Institute	Year 1 of 2 \$15,000
Valérie Gagné	Laval University	Year 2 of 3 \$10,000

CCFC/CAG Summer Studentships, prizes & book awards		
FELLOW	INSTITUTION	INVESTMENT
Eun Young Kang	University of Calgary	\$5,000
Andrew Vegso	University of Calgary	\$5,000
Jenna Ries	University of British Columbia	\$5,000
Melissa Power	Dalhousie University	\$5,000
Wen Zao	University of Toronto	\$5,000
Joshua Terc	McMaster University	\$5,000
James Cotton	University of Calgary	\$750
Ziad Al Adham	Hospital for Sick Children	\$750

SUPPORTING YOUNG INVESTIGATORS



Photo: Dr. Julia Liu, University of Alberta

SALARY AWARDS provide salary support to young investigators showing outstanding promise of developing an independent research career in IBD. Dr. Liu, who has been awarded a New Investigator Award, states: “The Crohn’s and Colitis Foundation of Canada (CCFC) has a long standing tradition of fostering research excellence in IBD investigators. For me, winning the CCFC/CIHR/CAG New Investigator Award was the pinnacle of my career. The award provided me with critical salary support to continue my research in the understanding of intestinal epithelial cells in the development of the disease. By studying patient samples at the benchside, I will investigate the role of inflammatory cell death and then translate these findings to the bedside to help improve the care of patients. The New Investigator Award is serving the mission of CCFC. CCFC’s commitment to research excellence and continued support for young physician-scientists, like me, has made my research possible.”

CCFC/CIHR/CAG Salary Awards

INVESTIGATOR	INSTITUTION	INVESTMENT
Dr. Liu	University of Alberta	Year 2 of 5 \$30,000
Dr. Nguyen	University of Toronto	Year 2 of 5 \$30,500

CCFC RESEARCH CHAIR AT MCMASTER UNIVERSITY

This past year, the CCFC announced the appointment of Dr. Walter Reinisch to the Audrey Campbell Chair in Ulcerative Colitis at the Farncombe Family Digestive Health Research Institute at McMaster University. The position, created to ensure an ongoing focus on this chronic and debilitating disease, will guarantee that the most progressive and innovative projects lead to improved treatments and quality of life for patients suffering from ulcerative colitis.

Audrey Campbell, a philanthropist and daughter of Canadian media pioneer Roy Thomson, suffered from ulcerative colitis. Her three daughters, Linda Campbell, Gaye Farncombe and Susan Grange, have provided the initial \$2 million in funding for this position in her honour. The remainder of the funding is from the university. This \$3.5 million Chair is the first of its kind in Canada.

Dr. Reinisch is a world-class Clinician Scientist and has served as an associate professor of gastroenterology at the Medical University of Vienna in his native Austria. His research focus is on both individualized treatment approaches and, from an international perspective, finding a “common language of inflammatory bowel disease” to improve and build communication with patients.

CCFC/CIHR/CAG Salary Awards

INVESTIGATOR	INSTITUTION	INVESTMENT
Dr. Walter Reinisch	McMaster University	\$509,188 (final installment of \$2 million)



Photo: Dr. Walter Reinisch, clinician scientist and inaugural holder of the Audrey Campbell Chair in Ulcerative Colitis

GENERATING NEW IDEAS TO BETTER TREAT OR CURE IBD

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In order to generate new ideas to better treat or cure IBD, the CCFC supports a number of different research programs (Government Partnerships, Industry Partnerships, GEM Project, and Discovery Grants). Our continued investment in these programs ensures a diversified research portfolio which encourages innovation and builds on the scientific breakthroughs achieved to date.



INDUSTRY PARTNERSHIPS

The **CCFC-Vertex Sponsored Research Program** is intended to better our understanding of the underlying biology of IBD and to identify potential targets for future IBD medicines.

CCFC/Vertex Sponsored Research Program			
INVESTIGATOR	INSTITUTION	INVESTMENT	
Dr. Scott Gray-Owen	University of Toronto	Year 2 of 3	\$125,000
Dr. Brian Coombes	McMaster University	Year 2 of 3	\$100,000
Dr. Francois Boudreau	University of Sherbrooke	Year 2 of 3	\$90,580

CCFC/Vertex Sponsored Research Program 2013-2015		
INVESTIGATOR	PROGRAM	INVESTMENT OVER 2 YEARS
Dr. Dana Philpott University of Toronto	The role of isoforms in regulating autophagy	\$200,000
Dr. Maya Saleh McGill University	Novel therapeutic targets through genetic and functional analyses of intestinal barrier integrity and cell survival in IBD	\$200,000
Dr. Subrata Ghosh University of Calgary	Aberrant cell functions driven by IBD associated genetic mutations	\$200,000

GOVERNMENT PARTNERSHIPS

In collaboration with the **Canadian Institutes of Health Research (CIHR)'s Institute of Genetics and Institute of Infection and Immunity**, the CCFC has leveraged its funds to support cutting-edge team grants related to critical IBD issues.

CCFC/CIHR Team Grants			
INVESTIGATOR	INSTITUTION	INVESTMENT	
Dr. John Rioux	University of Montreal	Year 2 of 5	\$25,000
Dr. Ken Croitoru	Mount Sinai Hospital	Year 2 of 5	\$25,000
Dr. Andrew Stadnyk*	IWK Health Centre	Year 3 of 3	\$31,150

**In partnership with CIHR & Nova Scotia Health Research Foundation*

MOVING THE DIAL IN RESEARCH



Photo: Ruth Scully (CCFC Volunteer) and family at this year's Gutsy Walk

GEM

The **Genetic, Environmental and Microbial (GEM) Project** is a major, multi-centre clinical research study investigating how genetic predisposition, environmental influences and microbial influences combine to trigger the development of Crohn's disease.

By examining healthy first-degree relatives of people with the disease, investigators are attempting to identify the factors associated with the development of the disease. During the course of the study, some individuals develop Crohn's disease. These individuals could hold the key to unlocking the mystery of IBD.

Sherry Pang, a CCFC employee and former volunteer, has two children (Jake, 14, and Jesse, 10) involved with the GEM Project. Sherry states: "The GEM project is one of the most exciting and promising research projects that CCFC funds! My family was eager to be a part of it when my sons joined the study four years ago. The wonderful research coordinators helped make the initial registration process of providing bloodwork, urine and stool samples easy for everyone! Brief follow-up calls every six months track any health changes. We're confident that GEM will one day identify what triggers Crohn's and proud that for such little effort on our part, our sons will play a small role in finding causes and cures!"

Since 2007, the CCFC has contributed \$5.6 million to fund the first phase of the GEM project. Over the next three years, GEM II will focus on completing recruitment of 5,000 subjects. Over 2,500 participants from across 38 centres across Canada, the United States and Israel have been recruited. To date, 22 subjects have developed Crohn's disease.

Genetic, Environmental and Microbial (GEM) Project

INVESTIGATOR	INSTITUTION	INVESTMENT
Dr. Ken Croitoru	Mount Sinai Hospital	Year 5 of 5 \$500,652 (final installment of GEM I)

DISCOVERY RESEARCH GRANTS (GRANTS-IN-AID) support high-quality research projects that will enhance our understanding of IBD and have the potential to cure or more effectively control the disease. These grants build on the achievements and strengths of the world-class IBD research community in Canada by supporting the pipeline for discovery of new IBD therapies. The research projects funded by the foundation are devoted to finding the causes of IBD (bacterial and genetic triggers), developing new treatments that will block the inflammatory process, and treating the complications related to IBD.

The most promising Discovery Grants are identified through a peer review process, made up of scientific/clinical experts as well as lay stakeholders. Ruth Scully, a CCFC volunteer and mother of two children with IBD, states that "it is very valuable to have lay reviewers involved in the grants review process to represent the needs and priorities of our community of stakeholders who seek improvements to quality of life and hope that cure(s) will be found in the near future. I was honoured to be part of the process and impressed by the quality of the research and the integrity of the reviewers. It gives me great hope that my children's quality of life will improve and that cures for Crohn's disease and ulcerative colitis will be found in their lifetime."

FINDING THE CAUSES & UNDERSTANDING THE TRIGGERS OF IBD

Bacteria in the intestines play a pivotal role in Crohn's disease and ulcerative colitis. People with IBD respond differently to the normal bacteria that live in the gut. Research in this area is trying to understand how bacteria may contribute to or potentially even prevent the development of disease. This work may provide new insights into the causes of IBD and help identify new strategies to either prevent the disease or stop the inflammation.



MICROBIAL TRIGGERS

Dr. Elena Verdu
McMaster University
Investment (Year 3 of 3):
\$59,375

Dr. Verdu is investigating whether inflammation can be affected by bacteria or by adding a specific probiotic (*Bifidobacterium breve*). This work will determine the potential value of probiotics, or microbiota, to reduce or prevent IBD. Also, Dr. Verdu will be testing germ-free mice using bacteria from patients with IBD, to investigate how these bacteria impact inflammation in high-risk individuals.

Dr. Stephen Girardin
University of Toronto
Investment (Year 3 of 3):
\$59,680

The gene that was first identified to be associated with IBD is Nod2, which senses bacteria. Dr. Girardin aims to better understand how Nod proteins contribute to the host response to intestinal bacteria. His goal is to identify the bacterial triggers in order to find what causes the uncontrolled autoimmune response that ultimately leads to disease progression.

Dr. Andre Buret
University of Calgary
Investment (Year 2 of 3):
\$118,705

Acute infection with *Campylobacter jejuni* initiates and/or exacerbates intestinal inflammation in IBD patients. Dr. Buret is studying how *Campylobacter jejuni* may disrupt the gut microbiome and trigger the IBD disease process in motion. This work may shed new light on the mechanisms responsible for intestinal inflammation in IBD, and will help identify novel therapeutic targets in IBD.

Dr. Scott Gray-Owen
University of Toronto
Investment (Year 2 of 3):
\$119,445

In the search to understand a potential link between microbes and Crohn's disease (CD), Dr. Gray-Owen is investigating a bacterial pathogen called "adherent and invasive *E. coli*" (AIEC). AIEC appears to stick to and penetrate lining of the gut and potentially contribute to the chronic inflammation seen in IBD. These studies will provide new insights into the cause of IBD and may lead to novel strategies to either prevent CD or interrupt the inflammatory process.

Dr. Elaine Petrof
Queen's University
Investment (Year 2 of 3):
\$119,445

Dr. Petrof is investigating whether *Lactobacillus plantarum*, a common gut bacterium which is also a probiotic, has anti-inflammatory benefits that may block the development of colitis. Research into this area may lead to safer IBD treatments that would reduce the negative inflammatory response, while maintaining the body's critical host defenses.

Co-Investigator(s): **Dr. Nathan Magarvey**, University of Minnesota

Dr. Deanna Gibson
University of British Columbia
Investment (Year 1 of 3):
\$119,445

Dr. Gibson is investigating the impact of dietary fat intake on the intestinal microflora and is examining how this change affects intestinal immunity and susceptibility to IBD. The goal of the research is to identify dietary fats that promote beneficial microbes and protect the body against IBD.

Dr. Michael Surette
McMaster University
Investment (Year 1 of 3):
\$109,187

Dr. Surette is using a highly novel treatment where patients with active ulcerative colitis are given fecal enemas to try and replace their stool containing bacteria that may be driving their disease with that from a healthy donor. This study may reform targeted therapies in the future.

Co-Investigator(s): **Dr. Paul Moayyedi**, McMaster University | **Dr. Christine Lee**, St. Joseph's Healthcare | **Dr. John Marshall**, McMaster University | **Dr. David Armstrong**, McMaster University

GENETIC MARKERS AND PERSONALIZED MEDICINE – There are many genes associated with an increased risk of IBD. Research in this area is looking to identify which genetic markers are predictors of disease onset or severity so that healthcare professionals are better able to screen and personalize treatments. Genetic research is trying to understand the role of certain genes in turning on inflammation or decreasing the body’s ability to kill some bacteria.

<p>Dr. Mark Silverberg Mount Sinai Hospital Investment (Year 3 of 3): \$59,723</p>	<p>Dr. Silverberg is evaluating the genes and microbes that are associated with the onset and recurrence of inflammation following ileal resection for CD. This information will help healthcare professionals predict which CD patients are likely to develop recurrent inflammation after surgery.</p>
<p>Dr. Paul Beck University of Calgary Investment (Year 3 of 3): \$49,713</p>	<p>Many of the genes associated with an increased risk of IBD are involved in immune response. Dr. Beck is studying how mutations in the gene NLRP3 decrease our ability to kill some bacteria and induce hyper-inflammation in order to identify new targets to treat IBD.</p> <p>Co-Investigator(s): Dr. Subrata Ghosh, University of Calgary</p>
<p>Dr. Claude Asselin University of Sherbrooke Investment (Year 2 of 3): \$119,445</p>	<p>How the cells lining the gut respond to microbes is controlled by our genes. Dr. Asselin is studying the role of proteins, which control genetic and epigenetic information in gut cells during inflammation. In the long term, this research program will identify novel targets that could lead to better treatments for IBD.</p> <p>Co-Investigator(s): Dr. Fernand Pierre-Gendron, University of Sherbrooke</p>
<p>Dr. Mark Silverberg Mount Sinai Hospital Investment (Year 2 of 3): \$119,445</p>	<p>Dr. Silverberg is trying to find genetic markers that will, with a simple blood test, enable health care professionals to screen individuals with CD most likely to develop severe progressive or mild disease. This will enable more personalized therapies that will benefit patients’ quality of life and reduce the economic burden complications, such as hospitalizations and surgeries, bring to the patients and our health system.</p>
<p>Dr. Thierrey Mallevaey University of Toronto Investment (Year 1 of 3): \$119,445</p>	<p>Mutations in genes encoding key bacteria-sensing molecules, called Nod1 and Nod2, are associated with the development of IBD. Nod proteins are believed to provide protective signals that prevent or dampen intestinal inflammation during the development of IBD, although their mechanisms of action are just beginning to be unraveled. Dr. Mallevaey is investigating whether Nod-mediated bacterial signals induce iNKT cell activation and afford them with protective functions during the development of IBD.</p>
<p>Dr. Nicola Jones Hospital for Sick Children Investment (Year 2 of 3): \$119,445</p>	<p>Two gene mutations that are associated with CD are Nod2 (which senses bacteria within the cell) and ATG16L1 (which is needed for digesting and recycling material inside the cell – called “autophagy”). In cells where Nod2 and ATG16L are not working properly this causes excessive inflammation. Dr. Jones will be studying how these two genes might be involved in causing disease in order to develop better therapies to treat and prevent IBD.</p> <p>Co-Investigator(s): Dr. Dana Philpott, University of Toronto</p>

DEVELOPING NEW TREATMENTS THAT BLOCK INFLAMMATION

The immune response in persons living with IBD does not work properly. New treatments are needed that “turn off” the exaggerated response seen in IBD. Research in this area is studying how immune cells respond and control inflammation. This work will may lead to new therapies that can treat IBD or take advantage of the body’s natural “anti-inflammatory” features to promote healing.



BLOCKING INFLAMMATION

Dr. Alan Lomax

Queen's University

Investment (Year 1 of 3):

\$119,445

Dr. Lomax is examining how the sympathetic nervous system, a particular branch of the nervous system, can regulate the immune system and change the severity of inflammation. This work will determine whether the targeting the sympathetic nervous system is a viable treatment option for IBD.

Dr. Frank Jirik

University of Calgary

Investment (Year 1 of 3):

\$118,850

All humans carry a prion protein, which has protective effects in various cell and tissue types. Dr. Jirik is examining the nature of the protective and anti-inflammatory properties of this protein. This study may possibly reveal new targets for drug development that will be able to mimic the striking protective qualities of the prion protein during intestinal inflammation.

Dr. Derek McKay

University of Calgary

Investment (Year 1 of 3):

\$119,445

Dr. McKay is examining patient tissue to samples to determine whether bone-marrow derived activated macrophages (AAMs) can be used as a novel treatment for intestinal inflammation. If possible, this could be a novel and safe approach to treat and perhaps ultimately cure IBD.

Dr. Paul Kubes

University of Calgary

Investment (Year 3 of 3):

\$59,723

Intestinal bacteria play a pivotal role in IBD. The intestinal tract uses specific proteins to sense bacteria, including molecules called Toll-like receptors (or TLRs). Dr. Kubes is focusing on how bacterial signals trigger IBD in order to design new therapies that take advantage of our natural "anti-inflammatory" powers to promote intestinal healing in IBD patients.

Dr. Dana Philpott

University of Toronto

Investment (Year 3 of 3):

\$59,723

People with Crohn's disease, who have mutations in a bacterial-sensing protein, called Nod2, have a hyper-reactive immune response that may drive gut inflammation. Dr. Philpott is investigating how Nod proteins control inflammation in order help to discover novel treatment strategies for IBD.

Dr. Devendra Amre

CHU Ste-Justine

Investment (Year 1 of 3):

\$111,823

Certain chemical changes in a child's DNA can influence the expression of specific genes that may serve as markers for diagnosing Crohn's disease in children and also help predict which child is likely to suffer from complications and require surgery. Dr. Amre is studying the utility of these DNA markers to possibly assist in the implementation of management of Crohn's disease in children.

Co-Investigator(s): **Dr. David Mack**, Children's Hospital of Eastern Ontario
Dr. Colette Deslandres, CHU Ste-Justine

Dr. Nathalie Rivard
University of Sherbrooke
Investment (Year 3 of 3):
\$59,723

The cells lining the gut are called intestinal epithelial cells (IECs). IECs mount an effective immune response when the barrier to the external environment fails and coordinate with leukocytes (a type of white blood cells) present in the intestine. Dr. Rivard is studying a signaling molecule, which may be involved in the immune response in order to prevent gut inflammation.

Dr. Francois Boudreau
University of Sherbrooke
Investment (Year 3 of 3):
\$59,337

Dr. Boudreau is studying how inflammatory regulators, Cux1 and NCoR1, play a role in reducing inflammation. By identifying the specific signaling pathways and targets, genes affected by these regulators should lead to the new therapies that reduce inflammation and improve mucosal healing in IBD.

Co-Investigator(s): **Dr. Nathalie Perreault**, University of Sherbrooke | **Dr. Julie Carrier**, University of Sherbrooke

Dr. Kris Chadee
University of Calgary
Investment (Year 2 of 3):
\$119,445

The large intestine is covered with thick mucus that forms a protective barrier against bad bacteria and substances. However, in IBD the mucus layer is very thin and the inflamed gut becomes susceptible to bacterial invasion and other noxious substances that exacerbate inflammation. Dr. Chadee is studying the role of Muc2 mucin in maintaining a healthy microbiome and protective barrier as a treatment option for IBD.

Dr. Waliul Khan
McMaster University
Investment (Year 2 of 3):
\$119,254

Dr. Khan is examining what role a hormone called serotonin plays in regulating an immune response. This may lead to improved therapeutic strategies to combat gut inflammatory disorders, including IBD.

Dr. Kevan Jacobson
BC Children's Hospital
Investment (Year 2 of 3):
\$119,436

The cells lining the gut form a physical barrier between the contents of the digestive tract and the underlying immune and nervous systems. This is achieved by tight junction proteins that bind neighbouring cells together. In IBD this physical barrier is impaired. Dr. Jacobson is investigating ways to prevent disruption, and strengthen the barrier to develop new therapies for IBD.

Dr. John Wallace
McMaster University
Investment (Year 2 of 3):
\$119,445

Dr. Wallace is studying how inflammation is turned off and how the processes might be malfunctioning in IBD. Finding the defect in inflammation regulation, may lead to better drugs with less side effects that will promote healing and reduce symptoms in IBD. Such drugs may also prolong remission and allow patients to stop taking any medications. Dr. Wallace will be testing these experimental drugs in different types of intestinal inflammation to find the best doses and the best routes of administering the drugs.

Co-Investigator(s): **Dr. Jose G.P. Ferraz**, University of Calgary

TREATING COMPLICATIONS

Despite the use of drugs that can help control intestinal inflammation in IBD patients, there are still important complications that need to be addressed. A number of research projects are currently investigating certain complications associated with IBD including cancer, pain, scarring and depression.



TREATING COMPLICATIONS

Dr. Wallace MacNaughton
University of Calgary
Investment (Year 2 of 3):
\$119,445

Proteases are enzymes that break down proteins. Some types of proteases can trigger colonic inflammation but how this happens is not known. Dr. MacNaughton is studying protease-induced inflammation in order to identify potential targets for the development of drugs to treat IBD. This work may also help to better understand inflammation-associated colorectal cancer, which occurs in some UC patients.

Dr. Stephen Vanner
Queen's University
Investment (Year 3 of 3):
\$59,723

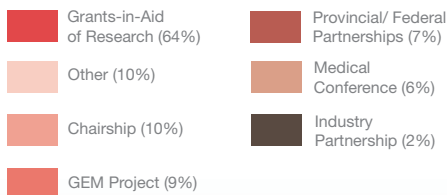
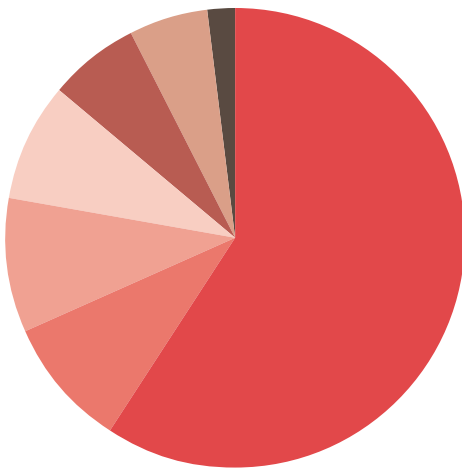
Dr. Vanner aims to understand the factors that control pain in IBD in order to develop new treatments. Cysteine proteases appear to be a possible target and Dr. Vanner is developing a detection system in humans to monitor their levels in order to guide therapy. Alternatively, understanding how to increase the levels of naturally-released opioids that reduce pain could be another avenue for treating pain.

Dr. Bruce Vallance
University of British Columbia
Investment (Year 3 of 3):
\$59,723

Repeated inflammation and injury to the intestine can cause “fibrosis” resulting in scar tissue in the intestine. Ultimately this can block normal gut function, causing illness and even death. Dr. Vallance is studying whether bacteria in the gut, and the specific parts of the immune system that recognize those bacteria, are responsible for stricture formation. This work may lead new clinical interventions that can treat or prevent strictures.

Dr. Michael Blennerhassett
Queen's University
Investment (Year 2 of 3):
\$119,418

The enteric nervous system is a large and complex network of nerve cells present throughout the GI tract, which extend axons to smooth muscle to regulate important intestinal functions. Dr. Blennerhassett is studying how axons and neurons are damaged and how this may lead to stricture formation. Overall, this will improve our understanding of neuron damage and repair in order to prevent stricture formation in IBD.



RESEARCH INVESTMENTS IN 2012/13

Grants-in-Aid	\$2,836,456
Other (Impact of IBD Report & allocated research program costs)	\$547,937
Chairship	\$509,188
GEM Project	\$500,652
Provincial / Federal Partnerships	\$455,717
Medical Conferences	\$328,823
Industry Partnership	\$105,193
Grand Total	\$5,283,966

WHAT LIES AHEAD FOR RESEARCH



DISCOVERY GRANTS (GIA'S) 2013-2016

<p>Dr. Geoffrey Nguyen Mount Sinai Hospital Investment (2 years): \$221,272</p>	<p>Evaluating the impact of regular telephone contact with nurse support during transition from pediatric to adult care</p> <p>Co-Investigator(s): Dr. Eric Benchimol, Children's Hospital of Eastern Ontario Dr. Maria Sino, University of Toronto</p>
<p>Dr. Laura Sly University of British Columbia Investment (3 years): \$374,080</p>	<p>Understanding regulatory macrophages in inflammatory bowel disease</p>
<p>Dr. Theodore Steiner University of British Columbia Investment (3 years): \$370,195</p>	<p>Laying the groundwork for T-regulatory cellular therapy for inflammatory bowel disease</p> <p>Co-Investigator(s): Dr. Megan Levings, University of British Columbia</p>
<p>Dr. Laura Targownik University of Manitoba Investment (1 year): \$118,279</p>	<p>Evaluating the use and benefits of outcomes and immunomodulator and biologic drugs in IBD</p> <p>Co-Investigator(s): Dr. Charles Bernstein, University of Manitoba Dr. Harminder Singh, University of Manitoba Dr. Lisa Lix, University of Manitoba</p>
<p>Dr. Bruce Vallance BC Children's Hospital Investment (3 years): \$375,000</p>	<p>Examining the role between inflammatory tissue and protective innate signaling</p>
<p>Dr. Stephen Vanner Queen's University Investment (3 years): \$370,112</p>	<p>Regulation of endogenous opioids modulates pain in IBD</p> <p>Co-Investigator(s): Dr. Alan Lomax, Queen's University</p>
<p>Dr. Elena Verdu McMaster University Investment (3 years): \$322,500</p>	<p>Commensal bacterial colonization strategies to modulate colitis</p> <p>Co-Investigator(s): Dr. Emma Allen-Vercoe, University of Guelph</p>



NEED FOR MORE FUNDING

38

Grants-in-Aid of Research proposals reviewed in 2012/2013 competition

22

Highly-ranked research proposals eligible for funding

7

New research projects CCFC could afford to fund

16

Highly-ranked research projects that remain unfunded

\$5.2 MILLION

Cost of unfunded research

PROMOTING KNOWLEDGE EXCHANGE

In November 2012, the CCFC hosted its second national **Future Directions in IBD Medical Conference** for researchers, gastroenterologists and other allied healthcare professionals. Medical experts and researchers from around the world discussed the latest ideas and advances in medical research and clinical care.

Conference Grants and Meeting Awards

help facilitate researchers and trainees with an opportunity to informally present their original research findings to the scientific community and build collaborations for future research endeavors.

THE FUTURE OF SCIENTIFIC EXCELLENCE

The CCFC appreciates the generosity and ongoing support of our donors, partners, sponsors and volunteers, who are making this progress in IBD research possible. The continued assistance of these individuals has helped the CCFC to become the second largest funder of non-governmental research in the world. CCFC funded research studies will have a monumental impact on improving treatments, cures and quality of life for individuals and families affected by IBD.

Additionally, the CCFC is honoured to have the guidance of our Scientific & Medical Advisory Council and Research Committee of the Board to help shape our future research strategy.

GRANTS REVIEW COMMITTEE

Dr. Derek McKay (Chair)
University of Calgary

Dr. Claude Asselin
University of Sherbrooke

Dr. Michael Blennerhassett
Queen's University

Dr. Kris Chadee
University of Calgary

Dr. Peter Ernst, UC San Diego

Dr. Deanna Gibson
University of British Columbia

Dr. Scott Gray-Owen (Scientific Officer)
University of Toronto

Dr. Kevan Jacobson
University of British Columbia

Dr. Waliul Khan
McMaster University

Dr. Justin MacDonald
University of Calgary

Dr. David Mack
University of Ottawa

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University of Calgary

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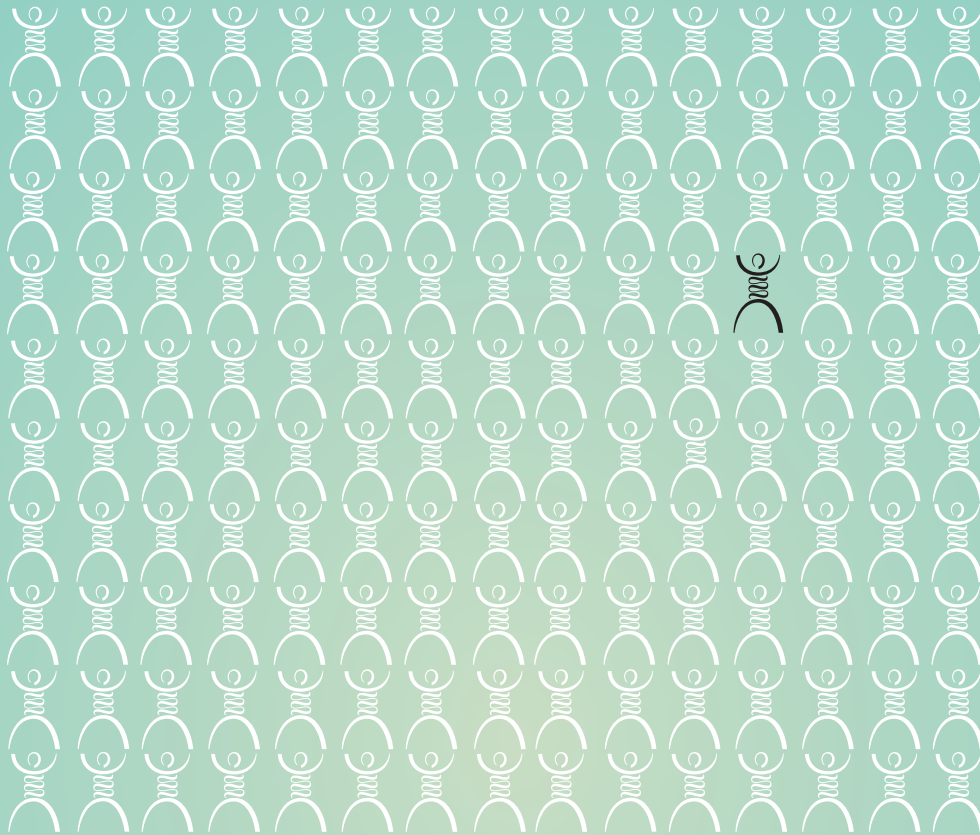
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