



Crohn's and
Colitis Canada
Crohn et
Colite Canada

RESEARCH REPORT 2015



Make it stop. For life.

\$6,002,215

INVESTED IN THE MOST
PROMISING RESEARCH TO FIND
CURES AND BETTER TREATMENTS



Ground-breaking GEM
study expands to **80**
sites worldwide



22 awards to support
promising trainees and
young investigators



20 major hospitals and
universities supported by our
research grants and awards



44 research grants



New drug treatment
approved for colitis
in Canada

INTRODUCTION

STOPPING CROHN'S AND COLITIS. FOR LIFE.
through investments in world-class research here in Canada.

Crohn's and Colitis Canada is the largest non-governmental funder of inflammatory bowel disease (IBD) research in Canada. We fund research with the greatest potential to advance our understanding and treatment of IBD and improve the quality of life for people living with Crohn's and colitis.

In alignment with our Research Strategy, our research investments focus on four fundamental areas:

1. Building Capacity (supports training of young scientists)
2. Moving Knowledge into Practice (supports scientific conferences to share knowledge between researchers and clinicians)
3. Targeting Research (supports partnerships and initiatives in strategic priority areas)
4. Supporting Innovation (supports discovery research through operating grants and pilot projects)

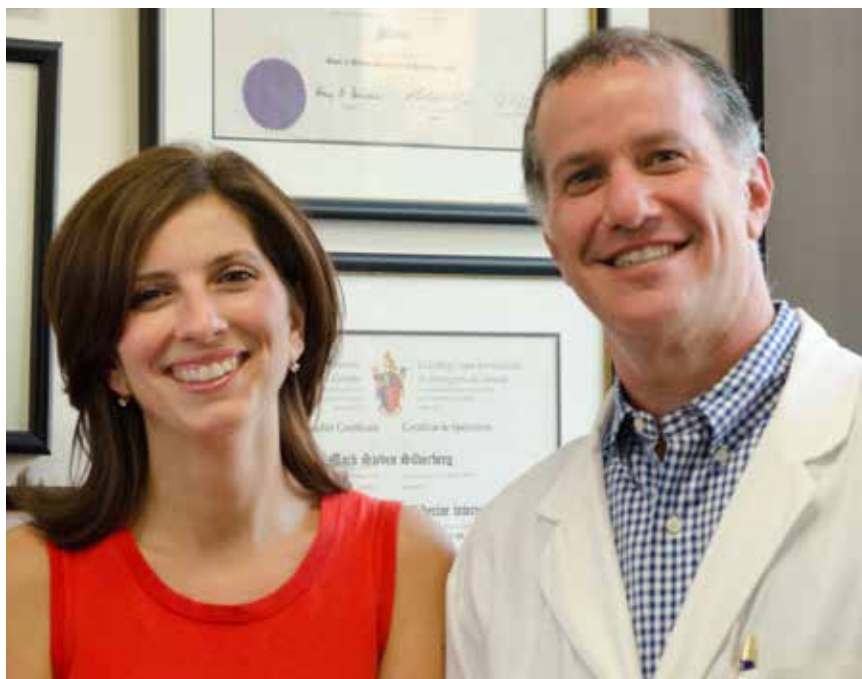
Our Research Strategy ensures that Crohn's and Colitis Canada's research investments will have utmost impact on the lives of nearly 250,000 Canadian children and adults living with

inflammatory bowel disease and reflect the needs of our stakeholder communities. In 2014/15, Crohn's and Colitis Canada invested more than \$6 million in leading-edge research supporting 44 research projects, 22 fellowship and studentship training awards, and three scientific conferences aimed at advancing Crohn's and colitis treatments and improving the quality of life for patients across the country.

However, there is still more work to be done to deliver on our Promise. Continued research investments in all of these areas are vital to cultivate research excellence in Canada, contribute to sustaining our economy, and advance new treatments.

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

Together, we will stop Crohn's and colitis. For life.



Aida Fernandes, MBA
Vice-President,
Research & Patient
Programs

Mark Silverberg, MD, PhD
Chair, Scientific & Medical
Advisory Council

2014/15 Highlights



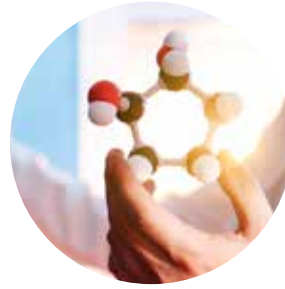
Building Capacity

22 trainee and young investigator awards



Moving Knowledge into Practice

3 medical conferences



Targeting Research

20 partnerships, and the GEM Study



Supporting Innovation

24 Discovery Grants (also known as Grants-in-Aid)



\$10M

Number of additional dollars leveraged from government and industry to match Crohn's and Colitis Canada's investment of \$630,077 in support of IBD research

44

Number of research grants supported by Crohn's and Colitis Canada through our Grants-in-Aid, Innovations in IBD & partnership programs

20

Number of major hospitals and universities supported by Crohn's and Colitis Canada research grants & awards

22

Number of promising trainees and young investigators

BUILDING CAPACITY

Crohn's and Colitis Canada supports researchers throughout their careers, from undergraduate students working in research labs through to established senior scientists. Through fellowships, studentships, and salary awards we are building research capacity and ensuring a reliable supply of highly-qualified personnel develop the knowledge and skills required to become seasoned investigators.

Training Awards support top-ranked undergraduate, graduate and post-doctoral trainees who have demonstrated potential for a career in IBD-related research. Crohn's and Colitis Canada co-funds training awards with a number of other research funding agencies to leverage our research investments.

Crohn's and Colitis Canada/Canadian Institutes of Health Research/Canadian Association of Gastroenterology

Fellow (Post-doctoral trainees)	Institution	Project	Our Contribution
James Butcher	University of Ottawa	Characterizing the gut microbiota composition of pediatric inflammatory bowel disease patients	Year 2 of 2 \$22,500
Hong Law	McMaster University	Influence of gastroenteritis and antibiotic use in Crohn's disease	Year 1 of 2 \$27,500
Qi Li	The Hospital for Sick Children	Understanding very early onset IBD using whole exome sequencing: functional analysis of novel candidates	Year 2 of 2 \$22,500
Cathy Lu	University of Alberta	Does point-of-care abdominal ultrasound improve outcomes in inflammatory bowel disease patients?	Year 2 of 2 \$27,500
Farhad Peerani	University of Alberta	Inflammatory response in Elderly onset vs. Young Adult onset IBD	Year 1 of 2 \$27,500
Aze Suzanne Wilson	Western University	Link between bile acid metabolism and IBD	Year 1 of 2 \$27,500

Crohn's and Colitis Canada/University of Ottawa

Fellow (Post-doctoral trainees)	Institution	Project	Our Contribution
Amanda Starr	University of Ottawa	The microbiota at the intestinal mucosa-immune interface: a gateway for personalized health	Year 2 of 4 \$25,000

Crohn's and Colitis Canada/Saskatchewan Health Research Foundation

Fellow (Post-doctoral trainees)	Institution	Project	Our Contribution
Whitney Duff	University of Saskatchewan	Exercise & nutrition in pre-pregnant women with IBD	Year 1 of 2 \$25,000
Juan-Nicholas Pena-Sanchez	University of Saskatchewan	Assessing quality of care of IBD patients	Year 1 & 2 of 2 \$50,000

Crohn's and Colitis Canada/Michael Smith Foundation for Health Research

Student (Masters or Doctorate-level students)	Institution	Project	Our Contribution
Vijay Morampudi	University of British Columbia	Do goblet cell mediators cooperatively prevent gut microbiota from causing spontaneous colitis?	Year 2 of 3 \$20,750

Crohn's and Colitis Canada/Fonds de recherche Santé – Québec

Student (Masters or Doctorate-level students)	Institution	Project	Our Contribution
Stéphanie Bussièrès-Marmen	McGill University	Investigating and understanding the role of TC-PTP in the development of B lymphocytes as well as its function in the inflammatory process using new tissue specific and inducible mouse models	Year 2 of 3 \$10,000

Crohn's and Colitis Canada/Canadian Association of Gastroenterology

Student (Undergraduate or graduate level students)	Institution	Project	Our Contribution
Robert Fedorak	University of Alberta Supervisor: Dr. Karen Madsen	Investigating the role of the gut microbiota and IL-22 in increasing colitis susceptibility induced by high sugar diets	\$5,000
Ellen Hamilton	The Hospital for Sick Children Supervisor: Dr. Aleixo Muise	Studies in Very Early Onset IBD (VEOIBD)	\$5,000
Kiera Harnden	University of British Columbia Supervisor: Dr. Laura Sly	Regulatory macrophages (Mregs): investigating the mechanism(s) required for IL-10 production	\$5,000
Ran Huo	University of Alberta Supervisor: Dr. Levinus Dieleman	The effect of simple versus complex carbohydrates on the colitis development and fructooligosaccharides prebiotic activity in a rat colitis model	\$5,000
Charles Lau	University of Toronto Supervisor: Dr. Dana Philpott	NLRs in human and experimental IBD	\$5,000
Robin Manaloor	University of Alberta Supervisor: Dr. Shairaz Baksh	The NOD2 obligate kinase, RIPK2 as a therapeutic target for IBD	\$5,000
Josie Libertucci	McMaster University	Fecal therapy in ulcerative colitis	\$750
Jennifer Beatty	University of Calgary	<i>Giardia duodenalis</i> infection in IBD	\$750

Salary awards provide salary support to young investigators showing outstanding promise of developing an independent career in Crohn's and colitis research. These awards help keep the best and brightest of new researchers focused on our area of research, supporting the new treatments of tomorrow and the search for cures.

Crohn's and Colitis Canada/Canadian Institutes of Health Research/Canadian Association of Gastroenterology Salary Awards

Researcher	Institution	Our Contribution
Dr. Eric Benchimol	Children's Hospital of Eastern Ontario	Year 2 of 5 \$30,000
Dr. Geoffrey Nguyen	University of Toronto	Year 4 of 5 \$30,000
Dr. Georgia Perona-Wright	University of British Columbia	Year 3 of 5 In name only
Dr. Johan Van Limbergen	Dalhousie University	Year 1 of 5 \$30,000



A woman with short brown hair and glasses, wearing a white lab coat over a black and white striped shirt, is looking down at a red folder held by another person. The background shows a laboratory setting with white cabinets and equipment.

Moving Knowledge into Practice

In November 2014, Crohn's and Colitis Canada hosted its 4th national **Canada Future Directions in IBD Medical Conference**, along with University of Alberta's Mentoring in IBD Conference, jointly referred to as "**Meeting of the Minds**". This educational event brings researchers, gastroenterologists and other allied healthcare professionals to discuss the latest ideas and advances in medical research and provide continuing health education in IBD.

The **Research Topics in Gastrointestinal Disease Meeting** held during Canadian Digestive Diseases Week provides a unique opportunity for graduate students, PhD and MD postdoctoral trainees engaged in gastrointestinal research to present their research findings and to engage in career development workshops and skill building exercises with research and clinical leaders in the IBD field.

Crohn's and Colitis Canada also partnered with Vertex Pharmaceutical Canada to sponsor a series of medical education events called the **McGill Seminar Series**. It brought clinicians and scientists together to discuss and debate innovative research discoveries and therapeutic approaches and to connect local laboratories and clinical centers with leading investigators to foster knowledge exchange and potential future collaborations.

TARGETING RESEARCH

In order to generate new ideas to better treat or cure IBD, Crohn's and Colitis Canada supports a number of targeted research programs (Government Partnerships, Industry Partnerships, GEM Project). Our continued investment in these programs ensures a diversified research portfolio and focuses strategically in programs that are key issues for our patient community.

Government Partnerships

In collaboration with the **Canadian Institutes of Health Research (CIHR)** and **Genome Canada**, Crohn's and Colitis Canada has leveraged its funds to support cutting-edge team grants related to critical IBD issues.

Researcher	Institution	Project	Our Contribution
Dr. John Brumell	The Hospital for Sick Children	NADPH oxidase function in the pathogenesis of pediatric IBD and Juvenile Idiopathic Arthritis	Year 1 of 1 \$2,900
Dr. Ken Croitoru	Mount Sinai Hospital	Influences of host genome on the HUMAN gut microbiome: studies in a healthy cohort carrying Crohn's disease risk alleles	Year 5 of 5 \$10,417
Dr. Bertus Eksteen	University of Calgary	Targeting chronic inflammation of the gut, liver and joint	Year 1 of 1 \$2,800
Dr. John Esdaile	University of British Columbia	Preventing complications from inflammatory skin, joint and bowel conditions	Year 1 of 1 \$2,900
Dr. Ruth Ann Marrie	University of Manitoba	Critical illness in inflammatory bowel disease, multiple sclerosis and rheumatoid arthritis	Year 1 of 1 \$2,800
Dr. David Park	University of Ottawa	Insights into Parkinson's disease, Crohn's disease, and leprosy	Year 1 of 1 \$2,800
Dr. Dana Philpott	University of Toronto	Linking innate immunity and inflammation to chronic disease	Year 1 of 1 \$2,900
Dr. John Rioux	Université de Montréal	IBD Genomic Medicine Consortium (iGenoMed): translating genetic discoveries into a personalized approach to treating IBD	Year 2 of 4 \$25,000
Dr. Alain Stintzi/ Dr. David Mack	University of Ottawa	The microbiota at the intestinal mucosa-immune interface: a gateway for personalized health	Year 2 of 4 \$7,500
Dr. Mark Swain	University of Calgary	Brain dysfunction in chronic inflammatory disease	Year 1 of 1 \$2,900

Industry Partnerships

The **Crohn's and Colitis Canada – 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.

Researcher	Institution	Project	Our Contribution
Dr. Dana Philpott	University of Toronto	The role of isoforms in regulating autophagy	Year 2 of 2 \$100,000
Dr. Maya Saleh	McGill University	Novel therapeutic targets through genetic and functional analyses of intestinal barrier integrity and cell survival in IBD	Year 2 of 2 \$100,000
Dr. Subrata Ghosh	University of Calgary	Aberrant cell functions driven by IBD associated genetic mutations	Year 2 of 2 \$100,000

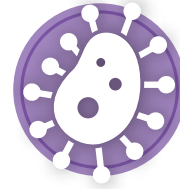




GENETIC
predisposition



ENVIRONMENTAL
influences



MICROBIAL
interactions



GEM PROJECT

The **Crohn's and Colitis Canada Inflammatory Bowel Disease 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. This study could hold the key to unlocking the mystery of IBD.

Researcher	Institution	Project	Our Contribution
Dr. Ken Croitoru	Mount Sinai Hospital	GEM II Project	\$2,888,184 Year 2 of 4

“Together, we are building the world’s most promising study on the triggers of Crohn’s disease.”

– Dr. Ken Croitoru, **GEM Project Lead Investigator**



GEM Highlights Since 2007:

3,600
subjects to date

>80
sites to date

40
new cases
of Crohn's in
study group

\$8,456,584
invested
to date





SUPPORTING INNOVATION



Discovery Research Grants (also known as Grants-in-Aid) and Innovation Grants support high-quality research projects that will enhance our understanding of Crohn’s and colitis and have the potential to cure or more effectively control the diseases. 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 therapies. The research projects funded by our organization are devoted to finding the causes of Crohn’s and colitis (environmental triggers and genetic markers) and developing new treatments (blocking inflammation, treating complications, improving therapy, and creating healthy gut ecosystems).

Finding The Causes And Triggers

ENVIRONMENTAL TRIGGERS


Discovering how what we eat, how we live and what bacteria we have in our guts impact on Crohn’s and colitis.

Researcher	Institution	Project	Our Contribution
<p>Dr. Andre Buret</p>  <p>Co-investigators: Dr. Hans Vogel Dr. Joe Harrison Dr. Paul Beck</p>	<p>University of Calgary</p> <p>University of Calgary</p> <p>University of Calgary</p> <p>University of Calgary</p>	<p>Biofilms are groups of microorganisms that cells stick to each other on a surface. Dr. Buret is studying how biofilms can cause flares in IBD after a gastrointestinal infection. This work may shed new light on the mechanisms responsible for flares in IBD, and will help identify novel therapies to treat them.</p> <p><i>Keywords: microflora biofilms; IBD pathophysiology; immune misreading mechanism; bacterial infections.</i></p>	<p>\$123,820 (Year 1 of 3)</p>
<p>Dr. Kris Chadee</p> 	<p>University of Calgary</p>	<p>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.</p> <p><i>Keywords: mucin in host defense; epithelial barrier function; tight junction proteins; permeability; gut leakiness.</i></p>	<p>\$123,820 (Year 1 of 3)</p>


Researcher	Institution	Project	Our Contribution
<p>Dr. Brian Coombes</p> 	McMaster University	<p>Dr. Coombes is looking at how an infection caused by bacterium, <i>E.coli</i>, is linked to irritable bowel syndrome (IBS) and inflammatory bowel disease.</p> <p><i>Keywords: adherent-invasive E.coli; IBS; polymicrobial interactions; chronic infection model; innate immune response.</i></p>	\$73,370 (Year 1 of 3)
<p>Dr. Simon Hirota</p>  <p>Co-investigator: Dr. Tomas Chang</p>	<p>University of Calgary</p> <p>University of British Columbia</p>	<p>Dr. Hirota is investigating how a protein, PXR, keeps the inner lining of the gut tight and protects against the damaging effects of inflammation and bacterial invasion. This work may reveal new insight into how IBD is triggered.</p> <p><i>Keywords: intestinal epithelium; environmental factors; mucosal immune cells; autophagy.</i></p>	<p>\$123,590 + \$5,000</p> <p>(Crohn's and Colitis Canada / CIHR New Investigator Prize)</p> <p>(Year 1 of 3)</p>

GENETIC MARKERS

Discovering which genes are predictors of disease onset and severity.

Researcher	Institution	Project	Our Contribution
<p>Dr. Stephen Girardin</p>  <p>Co-investigator: Dr. David Prescott</p>	<p>University of Toronto</p> <p>University of Toronto</p>	Targeted genome editing in human intestinal epithelial cells using organoids	\$50,000 (1 year)


Researcher	Institution	Project	Our Contribution
<p>Dr. Mark Lathrop</p>  <p>Co-investigator: Dr. Tomi Pastinen</p>	<p>McGill University</p> <p>McGill University</p>	<p>Dr. Lathrop is using high-tech sequencing to uncover new genetic factors that put people at risk of developing IBD.</p> <p><i>Keywords: susceptibility genes; next generation sequencing; gene variants; Crohn's disease.</i></p>	<p>\$123,820 (Year 1 of 3)</p>
<p>Dr. Aleixo Muise</p>  <p>Co-investigator: Dr. Daniella Rotin</p>	<p>The Hospital for Sick Children</p> <p>The Hospital for Sick Children</p>	<p>Dr. Muise is investigating how certain genes help control the leakiness of the gut found in IBD.</p> <p><i>Keywords: genes; gut leakiness; intestinal organoids (mini-guts); intestinal barrier defense.</i></p>	<p>\$123,820 (Year 1 of 3)</p>
<p>Dr. Mark Silverberg</p> 	<p>Mount Sinai Hospital</p>	<p>Dr. Silverberg is evaluating the genes and microbes that are associated with the onset and recurrence of inflammation following ileal resection for Crohn's disease. This information will help healthcare professionals predict which Crohn's disease patients are likely to develop recurrent inflammation after surgery.</p> <p><i>Keywords: Crohn's disease; disease recurrence; gene expression; mucosal inflammation; prognosis; surgery.</i></p>	<p>\$59,723 (Year 4 of 4)</p>
<p>Dr. Thierrey Mallevaey</p> 	<p>University of Toronto</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><i>Keywords: natural killer T cells; innate immunity; lipid antigens; gene mutations.</i></p>	<p>\$119,445 (Year 3 of 3)</p>




Researcher	Institution	Project	Our Contribution
<p>Dr. Nicola Jones</p>  <p>Co-investigator: Dr. Dana Philpott</p>	<p>The Hospital for Sick Children</p> <p>University of Toronto</p>	<p>Two gene mutations that are associated with Crohn's disease 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><i>Keywords: autophagy; miRNA; NOD-like receptors; translational research; gene mutations.</i></p>	<p>\$59,723 (Year 4 of 4)</p>

Discovering Novel Treatments

BLOCKING INFLAMMATION




Discovering how to prevent the inflammation that results in severe pain, diarrhea, and other debilitating symptoms.

Researcher	Institution	Project	Our Contribution
<p>Dr. Alan Lomax</p> 	<p>Queen's University</p>	<p>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 targeting the sympathetic nervous system is a viable treatment option for IBD.</p> <p><i>Keywords: neuroimmunology; sympathetic nervous system; immune regulation.</i></p>	<p>\$119,445 (Year 3 of 3)</p>
<p>Dr. Frank Jirik</p> 	<p>University of Calgary</p>	<p>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.</p> <p><i>Keywords: colitis; ileitis; endogenous prion protein; macrophages; anti-inflammatory.</i></p>	<p>\$118,850 (Year 3 of 3)</p>
<p>Dr. Derek McKay</p> 	<p>University of Calgary</p>	<p>Dr. McKay is examining patient tissue 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.</p> <p><i>Keywords: anti-inflammatory macrophages; adoptive transfer treatment strategy; bone marrow.</i></p>	<p>\$119,445 (Year 3 of 3)</p>

Researcher	Institution	Project	Our Contribution
<p>Dr. Theodore Steiner</p>  <p>Co-investigator: Dr. Megan Levings</p>	<p>University of British Columbia</p> <p>University of British Columbia</p>	<p>Dr. Steiner is developing a better approach to dampen unwanted inflammation by using the body's own tools—namely, white blood cells called T-regulatory cells (Tregs). Treg therapy (taking Tregs from patients' blood, stimulating them to multiply, and then infusing them back into the bloodstream) can help control inflammation in other diseases, but this has not yet been successful in IBD. In this project, Dr. Steiner will address the current barriers to Treg therapy in two different mouse models. If successful, Treg therapy for IBD patients may become a reality.</p> <p><i>Keywords: T-regulatory cells; flagellin; inflammasome; cell therapy.</i></p>	<p>\$123,391 (Year 2 of 3)</p>
<p>Dr. Stuart Turvey</p>  <p>Co-investigators: Dr. Laura Sly Dr. Hong Yang</p>	<p>University of British Columbia</p> <p>University of British Columbia</p> <p>University of British Columbia</p>	<p>Development of anti-inflammatory nanomedicine for inflammatory bowel disease</p>	<p>\$50,000 (1 year)</p>
<p>Dr. Bruce Vallance</p> 	<p>BC Children's Hospital</p>	<p>Dr. Vallance is investigating the immune signals and cell types involved in protecting intestinal tissues in order to better understand how the immune system normally balances inflammation with tissue protection. Ultimately, these studies will help to develop new therapies that will balance the immune response in people with Crohn's and colitis.</p> <p><i>Keywords: intestinal epithelial cells; mucosal integrity; innate immunity; enteric bacteria; tissue protection.</i></p>	<p>\$125,000 (Year 2 of 3)</p>




TREATING COMPLICATIONS

Investigating and creating novel treatments for the pain, cancer, scarring and depression that accompanies Crohn's and colitis.

Researcher	Institution	Project	Our Contribution
<p>Dr. Devendra Amre</p>  <p>Co-investigators: Dr. David Mack</p> <p>Dr. Colette Deslandres</p>	<p>CHU Ste-Justine</p> <p>Children's Hospital of Eastern Ontario</p> <p>CHU Ste-Justine</p>	<p>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.</p> <p><i>Keywords: DNA methylation; diagnostic markers; pediatric Crohn's disease; prognostic markers; pediatric.</i></p>	<p>\$76,704 (Year 3 of 3)</p>
<p>Dr. Dean Tripp</p>  <p>Co-investigator: Dr. Mike Beyak</p>	<p>Queen's University</p> <p>Queen's University</p>	<p>Dr. Tripp is investigating the psychosocial risk factors of pain and poorer quality of life in IBD. This work may help lead to new therapies to reduce overall pain experienced in IBD.</p> <p><i>Keywords: chronic pain; social support; quality of life; psychotherapy; stress.</i></p>	<p>\$87,650 (Year 1 of 3)</p>
<p>Dr. Stephen Vanner</p>  <p>Co-investigator: Dr. Alan Lomax</p>	<p>Queen's University</p> <p>Queen's University</p>	<p>Abdominal pain is a debilitating symptom for many patients with IBD and can result in emotional suffering and physical disability. This pain can be difficult to effectively treat, because its underlying cause isn't well understood. This complicates the decision on how to treat such pain, and whether to use strong opiate drugs like morphine. Dr. Vanner will study the mechanisms of pain to determine if existing pharmacological agents can prevent these events and to guide doctors in developing effective treatment plans to manage use of pain medications.</p> <p><i>Keywords: abdominal pain; pain management; neuroimmune interplay; effects of psychological stress; clinical steroids.</i></p>	<p>\$125,000 (Year 2 of 3)</p>



CREATING HEALTHY GUT ECOSYSTEMS

Investigating how to promote healthier gut ecosystems through environmental, genetic and other means.

Researcher	Institution	Project	Our Contribution
<p>Dr. Deanna Gibson</p> 	University of British Columbia	<p>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.</p> <p><i>Keywords: intestinal immunity; nutrition; enteric bacteria; polyunsaturated fatty acid supplementation; dietary fat.</i></p>	<p>\$119,445 (Year 3 of 3)</p>
<p>Dr. Michael Surette</p>  <p>Co-investigators: Dr. Paul Moayyedi Dr. Christine Lee Dr. John Marshall Dr. David Armstrong</p>	<p>McMaster University</p> <p>McMaster University</p> <p>St. Joseph's Healthcare</p> <p>McMaster University</p> <p>McMaster University</p>	<p>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 provide more specific targeted therapies in the future.</p> <p><i>Keywords: fecal biotherapy; microbiome; randomized control trial; ulcerative colitis.</i></p>	<p>\$110,006 (Year 2 of 2)</p>
<p>Dr. Elena Verdu</p>  <p>Co-investigator: Dr. Emma Allen-Vercoe</p>	<p>McMaster University</p> <p>University of Guelph</p>	<p>Dr. Verdu is studying how a specific probiotic, <i>Bifidobacterium breve</i>, can prevent flares in colitis mice. Her studies have shown that adding this probiotic to germ free mice can efficiently increase the production of an antibiotic-like molecule. The efficiency with which this probiotic stimulates the production of this "host antimicrobial" is higher than other normal bacteria living in our gut. Dr. Verdu's work can help identify a new treatment option for IBD that increases the antimicrobial capabilities and protects against gut inflammation in humans.</p> <p><i>Keywords: probiotics; experimental colitis models; commensal bacteria; dysbiosis and IBD; gut homeostasis.</i></p>	<p>\$107,500 (Year 2 of 3)</p>

Getting The Best Care

Exploring new ways to provide the best treatments and new models of care to patients.

Researcher	Institution	Project	Our Contribution
<p>Dr. Geoffrey Nguyen</p>  <p>Co-investigators: Dr. Eric Benchimol Dr. Maria Sino</p>	<p>University of Toronto</p> <p>Children's Hospital of Eastern Ontario</p> <p>University of Toronto</p>	<p>The transition to adult care can be a stressful time. Dr. Nguyen and his team are exploring how best to transition teens with IBD to an adult gastroenterologist. This study will determine whether increased contact with an IBD nurse during the transition period can improve patient satisfaction, knowledge of IBD, and continuity of health care.</p> <p><i>Keywords: pediatric to adult transition; IBD nursing; resource utilization; clinical care.</i></p>	<p>\$98,892 (Year 2 of 2)</p>
<p>Dr. Eric Benchimol</p>  <p>Co-investigators: Dr. Harminder Singh Dr. Anthony Otley Dr. Anne Griffiths Dr. Geoffrey Nguyen Dr. Matthew Carroll Dr. Alain Bitton</p>	<p>Children's Hospital of Eastern Ontario</p> <p>Winnipeg Children's Hospital</p> <p>IWK Hospital</p> <p>The Hospital for Sick Children</p> <p>Mount Sinai Hospital</p> <p>University of Calgary</p> <p>McGill University</p>	<p>Dr. Benchimol and a team of pediatric gastroenterologists are describing how different clinical care is being provided to children with IBD across the country, including wait-times, surgical rates, and hospitalization rates. This work will focus our attention on how we could improve IBD care for children.</p> <p><i>Keywords: children; clinical care; health services delivery.</i></p>	<p>\$123,820 (Year 1 of 3)</p>

Researcher	Institution	Project	Our Contribution
Dr. Charles Bernstein	University of Manitoba	Denosumab (common osteoporosis drug) for the treatment of Crohn's disease	\$50,000 (1 year)



Co-investigators:

- Dr. Laura Targownik University of Manitoba
- Dr. Hillary Steinhart Mount Sinai Hospital
- Dr. John Marshall McMaster University



WHAT LIES AHEAD – DISCOVERY GRANTS 2015-2018

In May 2014 our Grant Review Committee met to identify the most promising research to fund in the coming year and we are pleased to announce that nine additional Discovery Grants and four Innovations in IBD projects will be funded. These programs support high-quality innovative research projects that will enhance our understanding of Crohn’s disease and ulcerative colitis and have the potential to cure or more effectively control these diseases.

Discovery Research Grants (also known as Grants-in-Aid of Research)

Researcher	Institution	Project	Our Contribution
Dr. Jean-Eric Ghia	University of Manitoba	How Semaphorin 3E regulates relapse of quiescent experimental colitis	\$374,935 (3 years)
Dr. Stephen Girardin	University of Toronto	Epithelial-intrinsic role of Nod2 in ileitis: implications for Crohn’s disease	\$375,000 (3 years)
Dr. Nicola Jones	The Hospital for Sick Children	Epigenetic regulation of autophagy: linking environmental-gene interactions in IBD	\$375,000 (3 years)
Dr. Alan Lomax	Queen’s University	Mechanisms and mediators of IBD-related neuroplasticity	\$375,000 (3 years)
Dr. Derek McKay	University of Calgary	Macrophage immunotherapy for colitis	\$375,000 (3 years)
Dr. Michael Surette	McMaster University	Microbiome and host response in fecal microbiota transplant therapy in ulcerative colitis	\$324,000 (3 years)
Dr. Eytan Wine	University of Alberta	Pathobiont discovery in pediatric IBD	\$45,000 (3 years)

Innovations in IBD Grants

Researcher	Institution	Project	Our Contribution
Dr. Deanna Gibson	University of British Columbia	Designer probiotics engineered to efficiently colonize the gut for effective IBD therapy	\$50,000 (1 year)
Dr. Pere Santamaria	University of Calgary	Treatment of IBD by expanding gut-specific T-regulatory cells in-vivo	\$50,000 (1 year)



HOW WE FUND RESEARCH

Every year, Crohn's and Colitis Canada funds progressive and innovative projects that bring together the finest scientific minds to find new approaches and treatments for Crohn's and colitis. Our highly competitive granting process assigns funding applications to an independent peer review panel of scientific experts and lay reviewers who represent the needs and priorities of our community of stakeholders. Applications are evaluated on scientific merit, relevancy and potential benefit to Crohn's and colitis patients.

GRANTS REVIEW COMMITTEE 2014/15

Dr. Stephen Vanner (Chair)
Queen's University

Dr. Andre Buret (Scientific Officer)
University of Calgary

Marla Rosen
(Lay Reviewer)

Marc Steinberg
(Lay Reviewer)

Dr. Emma Allen-Vercoe
University of Guelph

Dr. Andrew Stadnyk
Dalhousie University

Dr. Brian Coombes
McMaster University

Dr. Christian Jobin
University of Florida

Dr. David Mack
Children's Hospital of Eastern Ontario

Dr. Elena Verdu
McMaster University

Dr. François Boudreau
Université de Sherbrooke

Dr. John Brumell
The Hospital for Sick Children

Dr. Mike Beyak
Queen's University

Dr. Hillary Steinhart
Mount Sinai Hospital

Dr. Simon Hirota
University of Calgary

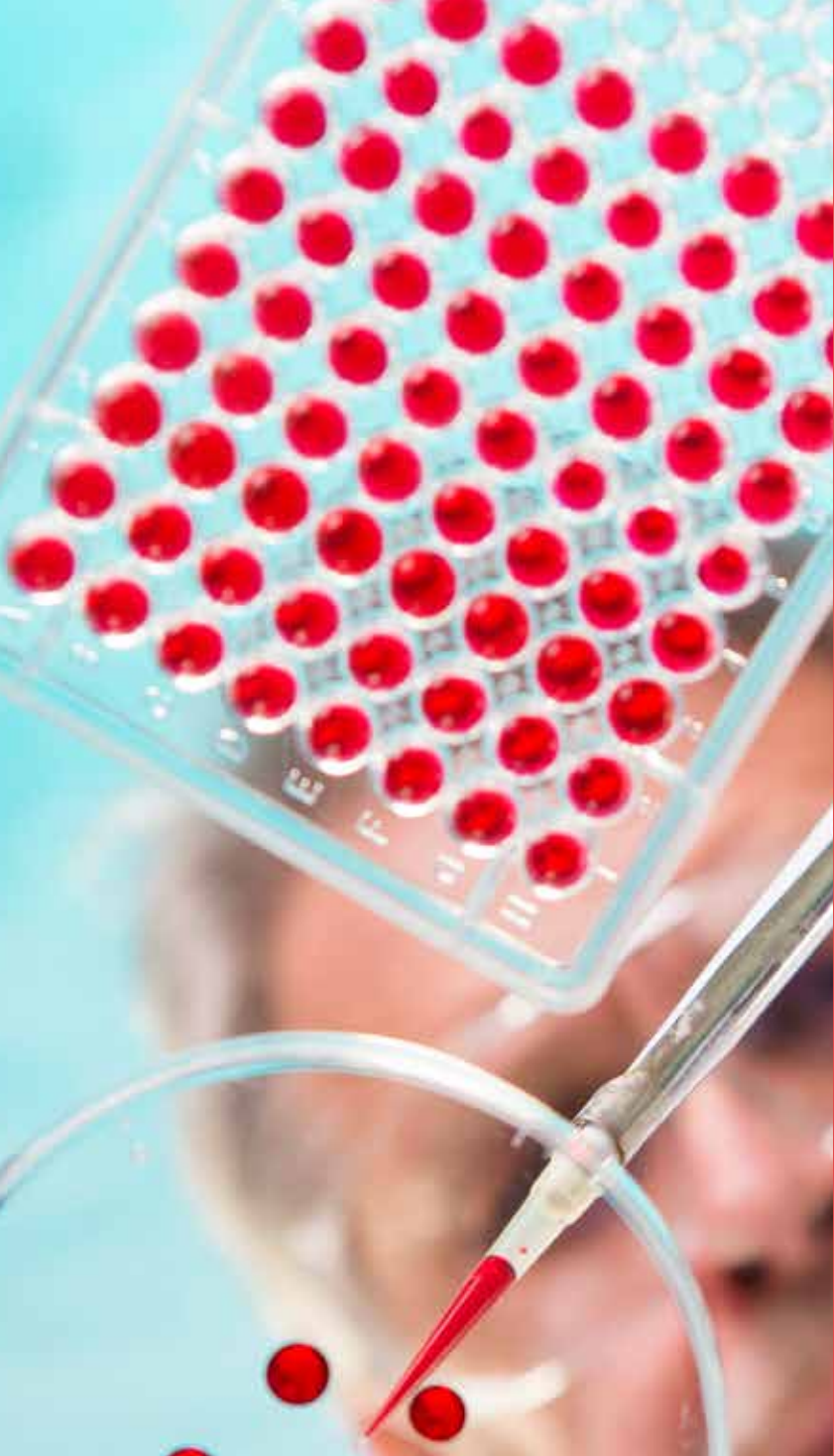
Dr. Keith Sharkey
University of Calgary

Dr. Laura Sly
University of British Columbia

Dr. Wallace McNaughton
University of Calgary

Dr. Peter Ernst
University of California San Diego

Dr. Theodore Steiner
University of British Columbia



How We Fund Research

STEP 1 | **CALL FOR PROPOSALS**
To Canada-based researchers and healthcare professionals.

STEP 2 | **GRANT REVIEW**
Grant Review Committee, made up of lay reviewers and scientific experts who review, score and rank each application based on merit and relevance.

STEP 3 | **FUNDING APPROVED**
Crohn's and Colitis Canada Board of Directors approves funding for highly-ranked projects based on availability of funds.

STEP 4 | **ACCOUNTABILITY**
Grant recipients provide annual progress reports and financial accounting ensuring projects and expenses are on track.

NEED FOR MORE FUNDING

57

Discovery Grant (Grants-in-Aid & Innovations grant) proposals reviewed in 2014/15 competition

37

Highly-ranked research proposals eligible for funding

9

New research projects Crohn's and Colitis Canada could afford to fund

28

Highly-ranked research projects that remain unfunded

\$6.9M

Cost of unfunded research



Thank You

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

Additionally, Crohn's and Colitis Canada is honoured to have the guidance of our Scientific & Medical Advisory Council and Research Committee of the Board that helps shape our future research strategy.

Scientific & Medical Advisory Council

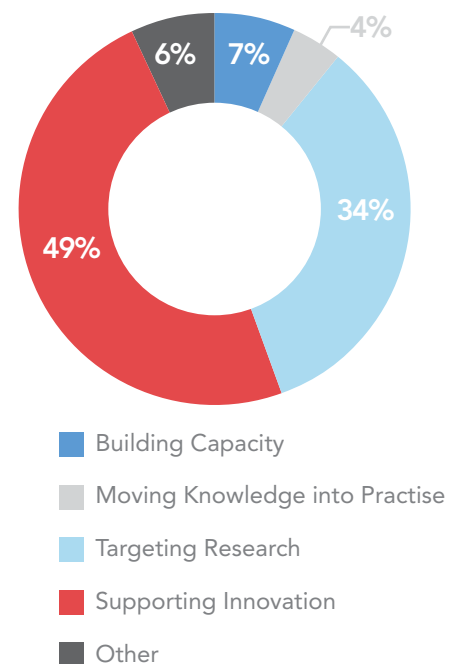
Dr. Eric Benchimol	University of Ottawa	Member-at-Large
Dr. Brian Bressler	University of British Columbia	Member-at-Large
Aida Fernandes	CSEO, Crohn's and Colitis Canada	Staff Representative
Dr. Nicola Jones	The Hospital for Sick Children	Member-at-Large
Dr. Gilaad Kaplan	University of Calgary	Awards Chair
Dr. John Marshall	McMaster University Medical Centre	Associate Chair Research
Mina Mawani	CEO, Crohn's and Colitis Canada	Staff Representative
Dr. Anthony Otley	Dalhousie University	Member-at-Large
Dr. John Rioux	Université de Montréal & Montréal Heart Institute	Vice-Chair
Dr. Mark Silverberg	Mount Sinai Hospital	Chair
Dr. Laura Sly	University of British Columbia	Member-at-Large
Dr. Stephen Vanner	University of Calgary	Research Chair

Research Committee of the Board

Janet Lambert (Chair)	Harvey Doerr
Lawrence Davis	Tom Tutsch
Har Grover	Aida Fernandes (Vice-President, Research & Patient Programs, Crohn's and Colitis Canada)
Mina Mawani (President and CEO, Crohn's and Colitis Canada)	

Research Investments in 2014/15

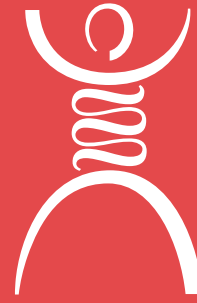
BUILDING CAPACITY	
Partnership Trainee & Salary Awards	\$407,250
MOVING KNOWLEDGE INTO PRACTICE	
Medical Conferences	\$227,623
TARGETING RESEARCH	
Industry Partnerships	\$2,012,917
Government Partnerships	
GEM Project	
SUPPORTING INNOVATION	
Discovery Grants	\$2,940,099
OTHER	
(Impact of IBD Report & allocated research program costs)	\$414,326
GRAND TOTAL	\$6,002,215







CROHN'S & COLITIS



Make it stop. For life.

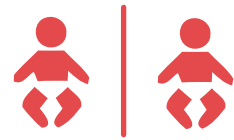
1 in 150 Canadians are living with Crohn's disease or ulcerative colitis. We have more reasons to be concerned than anyone else in the world.



We have among the highest reported rates of these diseases in the world



Families new to Canada are developing Crohn's and colitis for the first time – often within the first generation



The incidence of Crohn's disease in children under 10 in Canada has almost doubled since 1995

Crohn's and Colitis Canada is leading the way to a future without these lifelong diseases, and better lives for children and adults living with Crohn's and colitis today.

Crohn's and Colitis Canada is the only national, volunteer-based charity focused on finding the cures for Crohn's disease and ulcerative colitis and improving the lives of children and adults affected by these diseases. We are one of the top two health charity funders of Crohn's and colitis research in the world, investing over \$94 million in research to date. We are transforming the lives of people affected by Crohn's and colitis (the two main forms of inflammatory bowel disease) through research, patient programs, advocacy, and awareness. Our **Crohn's & Colitis – Make it stop. For life.** campaign will raise \$100 million by 2020 to advance our mission.

Follow us:    

Facebook.com/crohnsandcolitis.ca | Twitter @getgutsycanada | YouTube @Getgutsy | Instagram @crohnsandcolitiscanada



Crohn's and
Colitis Canada
Crohn et
Colite Canada



To donate now please call
1-800-387-1479 or visit
crohnsandcolitis.ca

Registered Charity | #11883 1486 RR 0001