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Shaping Our Future

2022 Annual Report

Shaping Our Future.

This past year has been an exciting journey for us at Crohn's and Colitis Canada. Together with our community, we embarked on a new Impact Strategy to guide us in better achieving and reporting on our Promise – we aspire to cure Crohn's disease and ulcerative colitis and improve the quality of life of everyone affected by these diseases.

Through a very comprehensive and highly engaged discovery process, we gathered feedback from our community that inspired us to rethink how we achieve our mission. We determined that we needed to put our mission impact at the centre of our strategy, with clear measures of our progress. And we needed to be bolder to reach and inspire more people to this important cause.

Our Impact Strategy centres around four key mission objectives that outline what we're going to do. These areas of focus have been important to us for years, but within this new strategy are seen through the lens of impact. We will accelerate the momentum of research, addressing key factors that speed up the timeline from discovery to impact. We will reach further, broadening the diversity of people reached through our patient programs, and making more effort to reach them in the early stages of diagnosis. We will drive system change through our advocacy efforts. And we will boost awareness and understanding of Crohn's and colitis by telling the real story of living with these diseases.

How we achieve these mission objectives is also a focus of our impact strategy. We are scaling our fundraising enterprise by investing in high-return revenue sources and embracing a donor-centric approach. We are adopting a sustainable digital-first approach in everything we do so that we can

collect and utilize data as well as give people more timely access to information. We are working to modernize how we engage employees and volunteers and create opportunities for skills-based, episodic volunteering; and we are deepening our commitment to diversity, equity and inclusion in all aspects of our work.

We know we can't do this alone – we are excited about what's ahead and the critical role we have as a contributor, a connector, and as a collaborator with others in this large inflammatory bowel disease (IBD) ecosystem. We are proud to say, as you will see in this report, that we have already started to make progress against many of these goals, and we have drafted an evaluation framework with key metrics that we will use to report publicly about that progress. The success of this plan will be based on how it truly impacts the lives of people living with and affected by Crohn's or colitis.

We would like to thank all of our community members for their dedication, time and contributions to this plan and to our work going forward. And we'd like to thank our volunteers and donors who make our work possible. Together, we are shaping a better future for those affected by Crohn's or colitis.



Lori Radke
President & CEO



Adrianna Czornyj
Co-Chair, Board of Directors



Ron Dunn
Co-Chair, Board of Directors

Impact Strategy

Promise

We aspire to cure Crohn's disease and ulcerative colitis and to improve the quality of life of everyone affected by these diseases.

Live the Values



Courageous
Be gutsy!



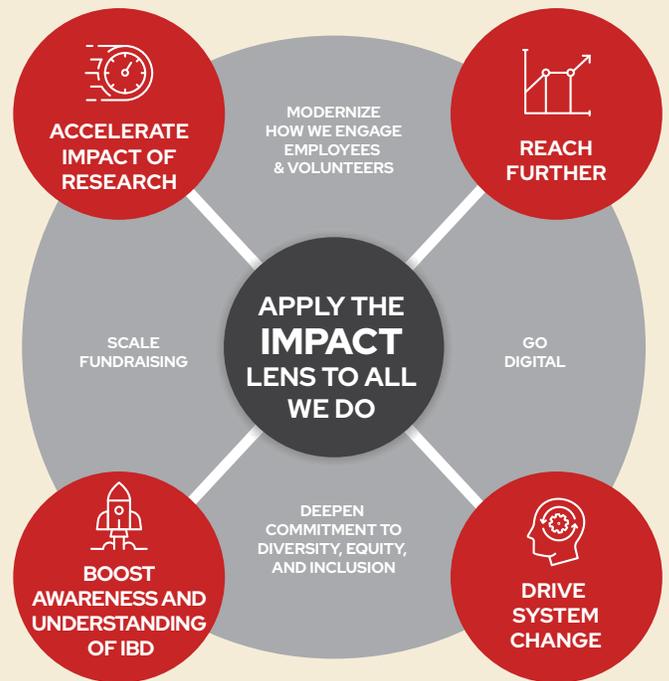
Inclusive
Be open!



Authentic
Be intentional!



Collaborative
Do together!



Collective Impact Goal

Crohn's and Colitis Canada collaborates with others to improve the quality of life of people with Crohn's disease and ulcerative colitis.

We measure and report publicly on the quality of life of people with Crohn's and colitis to account for the part we play in this collective impact.

Research Highlights

Crohn's and Colitis Canada has invested over \$145 million in more than 390 research projects since 1974.

In 2022:

\$5.3 million was invested in research activities.

We supported:



3
early career
researchers

41 
established IBD scientists

37 
research projects and initiatives
backed by Crohn's and Colitis
Canada funds



23
major hospitals and universities
were supported nationally



7
research awards that
were given to our funded
scientists to recognize
their innovative work

New findings:

- Our Grants-In-Aid (GIA) program supports the research of Dr. Ken Croitoru, who investigated the link between the microbiome and the origins of Crohn's disease. To learn more about this work, please refer to page 19.
- The Innovation Grant (INN) enabled Dr. Eileen Crowley to study the prevalence of arthritis among pediatric and adult IBD patients, with the aim of improving their quality of life. To learn more, see page 21.

- Experts attend the Meeting of the Minds Conference:
 - Meeting of the Minds is a yearly event that brings together Canada's skilled community of healthcare providers and researchers specializing in inflammatory bowel disease (IBD). The conference serves as a platform for sharing the latest research findings and best practices in clinical care for IBD.

51 

nurses attended the annual CANIBD
(Canadian Nursing in IBD) Conference



98
MDs

44 
faculty members



23
allied health professionals
(Pharmacists, Dietitians
and Research Coordinators)

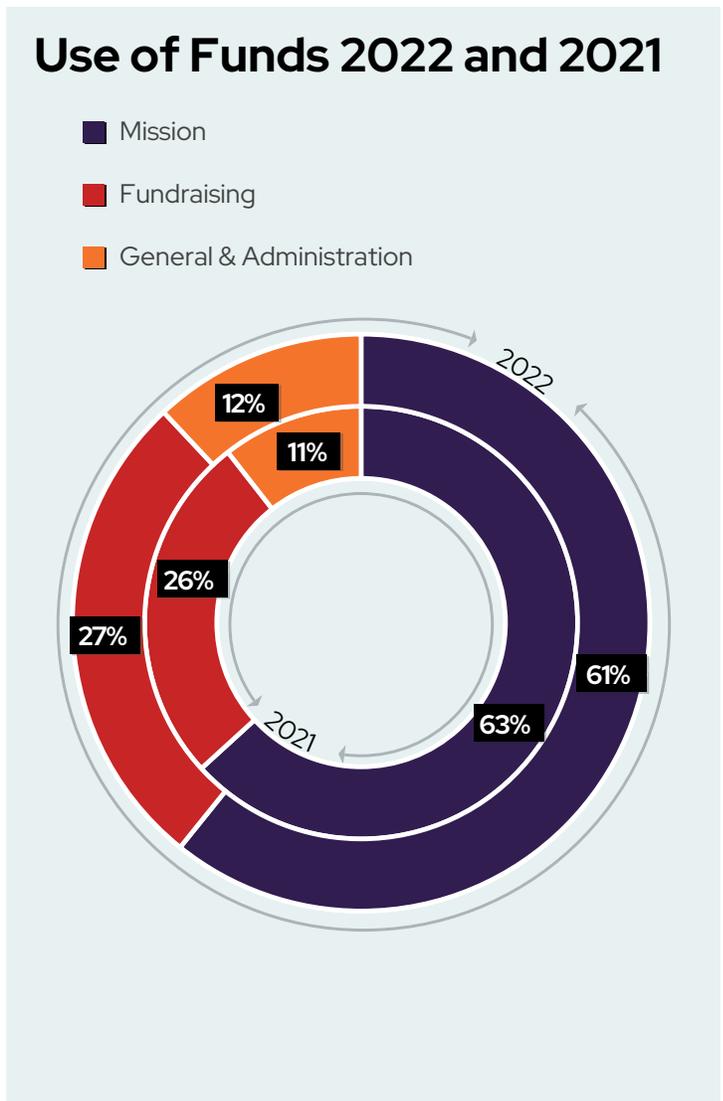
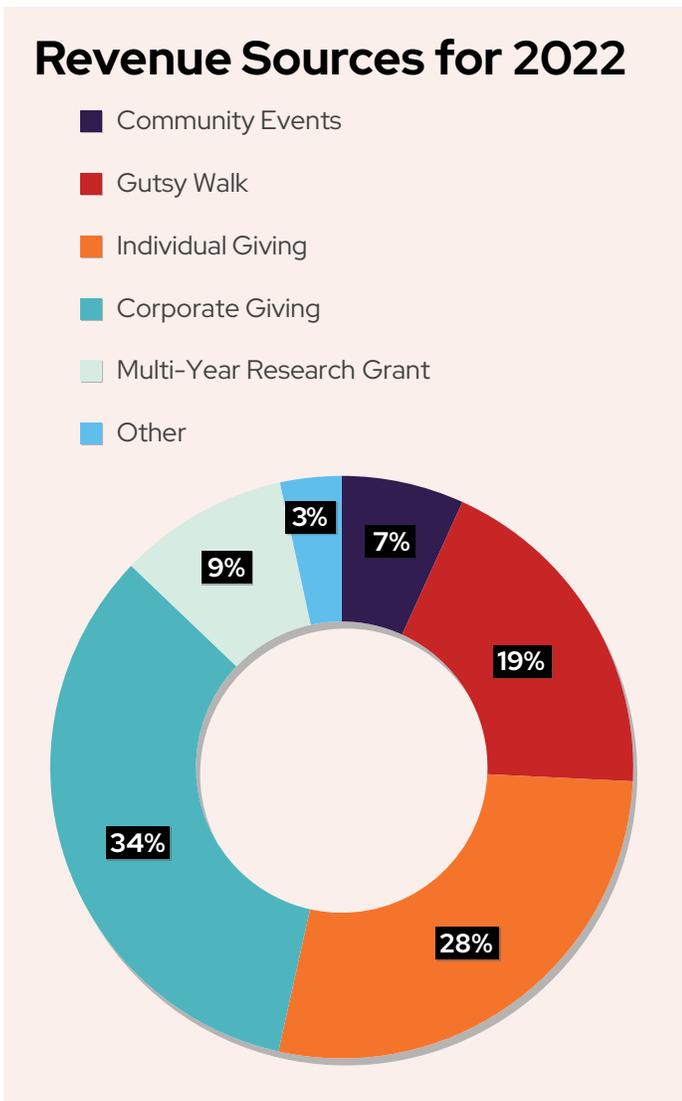
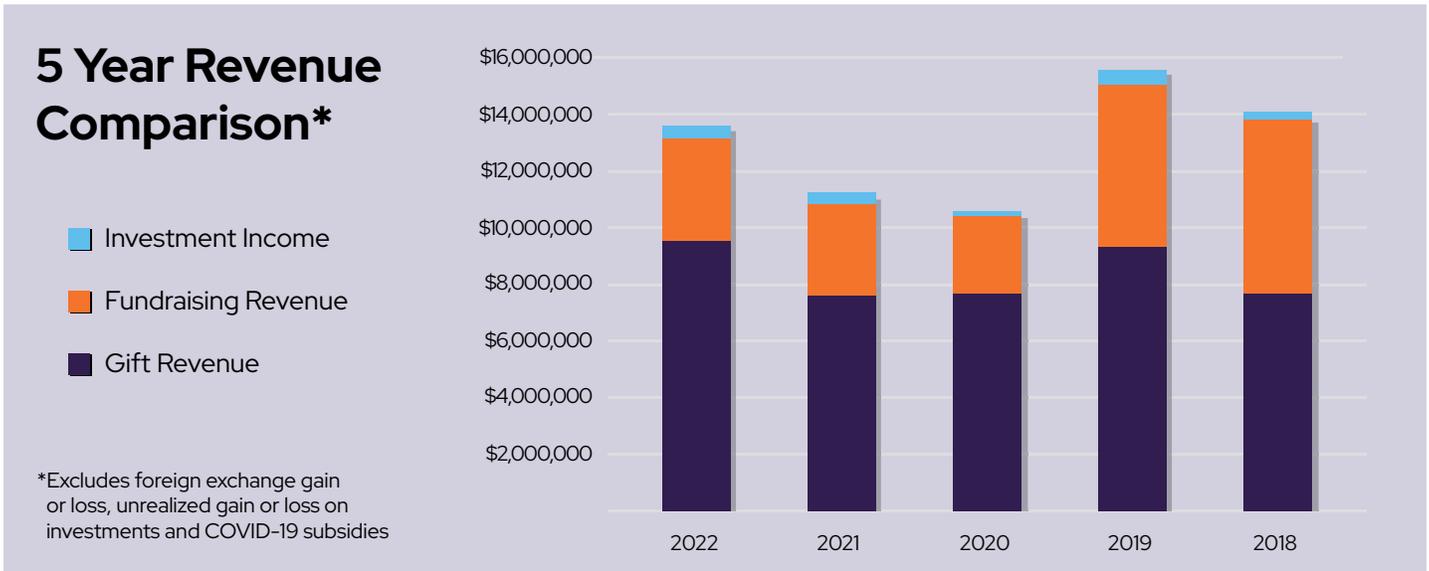
52 
nurses



24
fellows

Financial Highlights

Total 2022 Revenue: \$13.6 million



You are not alone.

A community is there for people with Crohn's disease or ulcerative colitis, every step of the way.



Every hour, someone in Canada is diagnosed with Crohn's disease or ulcerative colitis.



Canada has among the highest incidence rates of Crohn's and colitis in the world.

These staggering statistics are not news to Crohn's and Colitis Canada. And yet, if you are one of the 300,000 Canadians living with Crohn's or colitis, you also know that these diseases can make you feel very isolated and alone. In 2022, Crohn's and Colitis Canada launched a campaign to bring awareness to the broad community of people, resources, and support available to all Canadians affected by these difficult and challenging chronic diseases.

The campaign emphasized that whether someone was newly diagnosed or had lived with the disease for decades, that we understand their questions and challenges, and are here to support Canadians living with these diseases every step of the way. Titled "You're Not Alone on Your Journey", the multimedia campaign included online, print, television and radio spots in English and French, and generated over 80 million impressions.



After 27 years, Gutsy Walk continues to inspire.

Returning as an in-person event for the first time in two years, the 2022 Gutsy Walk™ raised over \$2.5M for research and programs for Crohn's and Colitis Canada. Together as one, more than 3,500 people attended one of the 53 Gutsy Walk events held at locations across Canada on June 5th. An additional 17 events were staged virtually.

“It was a momentous occasion to see people out once again coming together as one to support those living with Crohn's disease and ulcerative colitis. The creativity and passion of volunteers, participants and teams was inspiring,” says Lori Radke, President & CEO of Crohn's and Colitis Canada. “Across the country, a strong statement was sent that we are committed to finding a cure for these lifelong diseases. We thank our incredible community for supporting this cause, and we thank our network of volunteers who worked hard to bring the event to life.”

The family-friendly Gutsy Walk is the largest fundraiser for Crohn's and Colitis Canada and has raised more than \$50 million since its inception 27 years ago in 1996. Visit gutsywalk.ca to support this annual event.

gutsywalk.ca

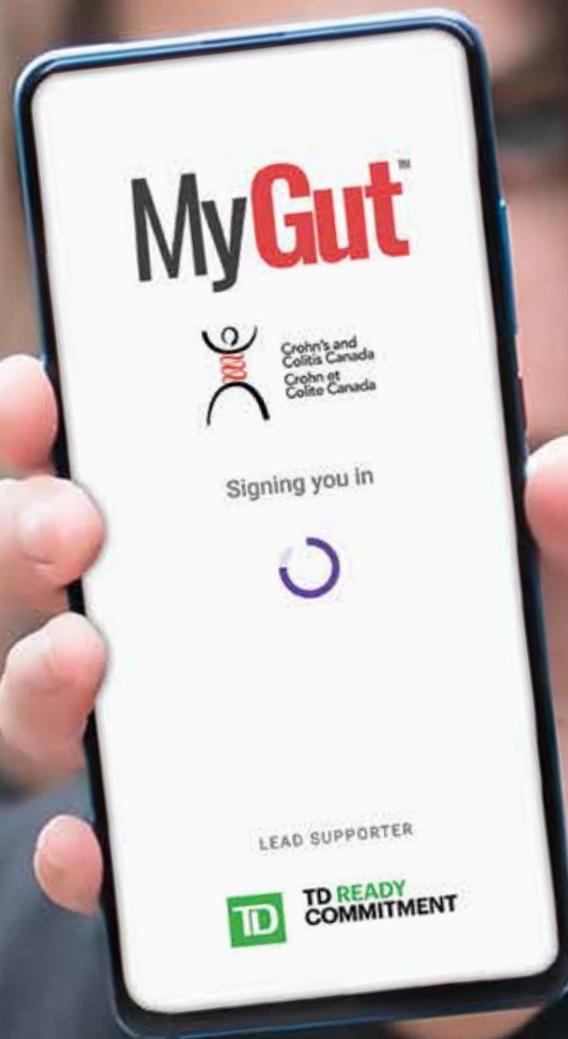


MyGut™ receives funding to expand reach.

Launched in 2019, MyGut™ is a free, easy-to-use app that enables people to track, understand, and manage their journey with Crohn's or colitis. MyGut provides a simple platform to keep track of symptoms, such as pain and washroom usage, and lifestyle habits, such as sleep and diet, which can then be shared with their health care providers. The app features a personalized dashboard with curated educational content based on a user's unique needs and interests. TD Bank Group (TD) recently awarded Crohn's and Colitis Canada \$600,000 to continue developing, promoting, and increasing the number of users for the app.

As part of the organization's goal to provide a one-stop shop for people living with Crohn's or colitis, a web-based provider portal links to MyGut. Co-designed and piloted with clinicians, the provider portal connects patient-reported data with their provider(s) to offer a mechanism to monitor the patient's health and communicate with patients in between clinic visits.

"There isn't any other app that offers this level of support. Being able to track my symptoms and daily activities provides a better understanding of how I have been feeling and what a normal day looks like. I wish an app like this existed when I was diagnosed, as it would have helped me better manage my disease earlier," said Jordan LoMonaco, a business intelligence analyst in Toronto who has lived with ulcerative colitis for six years. "MyGut offers a range of educational resources, too. Whether you're looking to learn about the disease as you're newly diagnosed or have questions about specific topics, the app arms you with a wealth of knowledge."



Almost

9,000

MyGut users

“Through the TD Ready Commitment, we're proud to support innovative solutions and technology like Crohn's and Colitis Canada's MyGut app that help enable effective treatment to improve the lives of people in Canada with chronic diseases”

Alicia Rose
Associate Vice President, Social Impact
TD Bank Group

GoHere™ Washroom Access program adopted by more cities in Canada.

A primary lifestyle concern for people living with Crohn's or colitis is accessing washrooms when they are away from home. Faced with the anxiety of an accident due to incontinence, many choose to stay at home. Those that do not must plan their activities around publicly accessible washroom locations.

The GoHere Washroom Access Program makes it possible for individuals to escape the social isolation these diseases can cause. Crohn's and Colitis Canada works with businesses to help create communities that are understanding, supportive and accessible for Canadians with disabilities that cause incontinence in three ways: business outreach and storefront signage; a digital and dynamic app designed to develop a route for the user providing accessible washrooms before leaving home; and an access card, to raise awareness when faced with questions regarding inflammatory bowel disease and its accommodation needs.

The city of Coquitlam, B.C. recently added 36 municipal washroom facilities to the GoHere app.

"Barriers to inclusion are not always visible. This invisibility may indirectly result in a person feeling 'othered' or excluded by simply being," says Manisha Dutta, Coquitlam's Manager Equity, Diversity, and Inclusion. "The experiences of people living with Crohn's or colitis, or other chronic illnesses, shines a light on this issue. The GoHere Washroom Access Program breaks barriers by providing accessible washroom information, which we know is important to those with urgent washroom requirements. The City of Coquitlam is proud to be able to participate in this program and support the diverse needs of both our residents and those who visit our community."

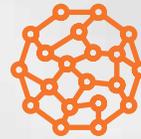
Since 2015, the doors to over 3,000 washrooms across Canada have been opened to the public. Crohn's and Colitis Canada continues to advocate to governments and businesses to join the program.



Over

41,000

downloads since launch



3,200+

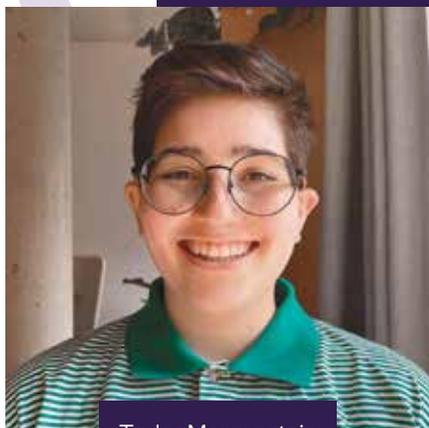
locations on app



Digital tools help manage the Crohn's and colitis journey.

Living with a chronic disease is challenging and poses barriers to participating fully in an active and productive life. Crohn's and Colitis Canada is committed to investing in the development of digital health tools that give people living with Crohn's or colitis timely and convenient access to information and resources so they can lead more active, productive, and fulfilling lives.

Scholarship supports post-secondary students with IBD.



Taylor Morganstein

Being diagnosed with Crohn's disease can mean an identity shift – especially when you are diagnosed at 20, like Taylor Morganstein. Already in post-secondary school and nearing the end of her BSc in Science, Taylor recognized her symptoms being described in a lecture about Crohn's, which helped her follow up with her doctor for a diagnosis.

“Finding out I had Crohn's meant I had to shift how I approached school; I couldn't just rely on my own personal abilities. Suddenly I was a person with a disease - I had to vouch and fight for accommodations. I had to be brave and believe in what I deserved to equal the playing field, especially when it came to missing large amounts of school because of my symptoms. It felt like it was a constant conversation.”

In 2022, Taylor was one of fifteen students awarded the AbbVie IBD Scholarship. The funds helped

Taylor pay for half her tuition for the first year of medical school, but the reward was so much more than financial. “I was so grateful that the challenges I faced with my disease and school were recognized – it was a ray of sunshine. Sometimes you feel like school or certain career pathways aren't available to you because of your disease. Being able to meet this community of young people was amazing – I've made some great friends, and I was inspired to see all the paths we're following.”

The award has opened many other opportunities, including authorship in a scientific journal, and being invited to join a research group as a patient researcher. Taylor has many more years of school and training in her future as a physician, and while she has decided not to pursue gastroenterology – “it's a little too close to home” – she hopes she can bring her experiences as a student with Crohn's to her future patients.

“Representation is so important – receiving this scholarship was a recognition of this disease and gave me hope. As a physician, I want to bring that same hope and representation to my patients, to treat them with empathy and understanding, because I know what its like to live with a disease.”

For more information visit ibdscholarship.ca

The AbbVie IBD Scholarship fund awards \$5,000 to fifteen inspiring students attending a Canadian post-secondary institution for the upcoming fall semester. The program helps alleviate financial barriers, enabling students to spend more time on their studies, pursue their passions, and get involved with causes close to their hearts. About 125 students have benefited from this award since its inception in 2012.

As of 2022, one deserving recipient of the AbbVie IBD Scholarship is also awarded the \$5,000 Clinton Shard Memorial Scholarship which honours the memory and impact of Clinton Shard, a 2012 AbbVie IBD Scholarship recipient who made significant contributions to the inflammatory bowel disease community.

Camp Got2Go lets kids focus on fun.

Blayke Schumacher was diagnosed with Crohn's disease when she was seven, and in the middle of the pandemic. It was a difficult time for both Blayke and her family.

"I was working from home, and Blayke was so sick. We were locked down and there were very few resources for kids with Crohn's," said Morgan Schumacher, Blayke's mom. "I found Camp Got2Go on the Crohn's and Colitis Canada website and thought it would be a fantastic way for Blayke to meet others in a person-to-person, inclusive environment."

Blayke attended camp in July of 2022 when she was nine. She was a little nervous at first, having never been away from family for an extended period before. "But when I got to camp that first day, I could see I was going to have a lot of fun."

Camp Got2Go helps build confidence, fosters new relationships, encourages independence, and creates opportunities for self-discovery – and the activities are first-rate, according to Blayke.

"We got to do amazing things that a lot of kids don't get to do, like having a water-fight and getting to spray real firefighters with water!" Blake said. "And I got to meet people like me who had the same disease – I'd never had that before. I'd always hidden my Crohn's from most people. We shared crazy stories about our diagnosis and our hospital visits around the campfire. And I learned that you can get a scholarship just for having Crohn's, which surprised me. But best of all, I was having so much fun, I totally forgot I had Crohn's – it was one of the best experiences of my life!"



Blayke Schumacher

As a parent, Morgan was impressed and grateful, too. "The camp facilities were so clean and well-kept. We were given a tour when we arrived that settled all our concerns – there are nurses on-site 24/7 to help administer medications and monitor nutrition, and they called me half-way through camp to let us know how Blayke was doing. And after camp, Blayke talked non-stop about her experience. It was so wonderful to hear. I would encourage any parent to enroll their child – we're certainly applying for next year!"

“It is truly amazing to see how quickly the campers bond and make friends. Watching them connect on similar experiences whether it be through humour or heartfelt conversations is the highlight of my experience as Camp Coordinator. The volunteers are also a huge part of the Camp Got2Go experience – they help make camp feel like a safe space, and it's incredibly important that the campers have mentors with lived experience whom they can connect with and look up to.”

Emma Foran
Coordinator, Child and Youth Programs,
Crohn's and Colitis Canada

Your Donation Drives Research Nationally

Crohn's and Colitis Canada is able to fund these important research activities and more, thanks to your support.

LEGEND

GIA - Grants-in-Aid of Research: These are investigator driven research that fall under 4 domains: finding causes and triggers, discovering novel treatments, helping manage symptoms, and getting the best care.

INN - The Innovation in IBD grant aims to finance creative and original methods for conducting research on inflammatory bowel disease (IBD). It is designed to encourage and facilitate research that may not fit into the conventional framework of medical research.

PACE - The Promoting Access and Care through Centres of Excellence (PACE) network brings together leading inflammatory bowel disease centres from across the country to improve health outcomes, address gaps in care, and develop solutions that can create changes in the public healthcare system.

The New Frontiers Award - A cutting-edge initiative that seeks to empower researchers to explore novel and innovative approaches to tackling inflammatory bowel disease (IBD).

GEM - The Genetic, Environmental, Microbial (GEM) Project is a global research study that looks to uncover possible triggers of Crohn's disease.

Matching Partnerships - Co-funding partnerships with other organizations to support a research project.

CIRC - The Canadian Inflammatory Bowel Disease Research Consortium is a network of clinician scientists working together to promote and conduct clinical research in inflammatory bowel diseases through collaboration of multiple Canadian centres.

CANIBD - A Community of Practice for nurses working across Canada in the field of inflammatory bowel disease (IBD) with a vision of improving the quality of care of people living with IBD.

Meeting of the Minds - An annual conference that brings together Canada's talented community of IBD researchers and healthcare providers to share best practices in clinical care and latest research in IBD.



Table of Funded Research

Program	Study Title	Researcher	Institution	Province	Funding start year	Year of Funding	Amount funded in 2022
INN	Understanding how proteins protect the gut from harmful bacteria	Jennifer Jones	Dalhousie University	NS	2022	Year 1 of 1	\$44,239
INN	Investigating immune mechanisms underlying ulcerative colitis in the elderly	Farhad Peerani	University of Alberta	AB	2022	Year 1 of 1	\$49,828
INN	Unravelling the link between Crohn's disease and Type-2 diabetes	Dana Philpott	University of Toronto	ON	2022	Year 1 of 1	\$50,000
GIA	Understanding the causes of ulcerative colitis using a new lab model	David Lohnes	University of Ottawa	ON	2022	Year 1 of 3	\$62,500
GIA	Understanding inflammatory arthritis among people living with IBD	Eileen Crowley	London Health Sciences Centre Research	ON	2022	Year 1 of 3	\$46,490
GIA	Understanding how microbes and viruses affect colitis	Markus Geuking	University of Calgary	AB	2022	Year 1 of 3	\$62,500
GIA	Function of follicular dendritic cell secreted protein in ulcerative colitis	Jean-Eric Ghia	University of Manitoba	MB	2022	Year 1 of 3	\$62,470
GIA	Unravelling the link between Crohn's disease and Type-2 diabetes	Stephen Girardin	University of Toronto	ON	2022	Year 1 of 3	\$62,500
GIA	Understanding how E.Coli infects the lining of the colon among colitis patients	Bruce Vallance	University of British Columbia	BC	2022	Year 1 of 3	\$62,500
GIA	Understanding how proteins protect the gut from harmful bacteria	Fernand-Pierre Gendron	Université de Sherbrooke	QC	2022	Year 1 of 3	\$62,500
GIA	Deciphering the role of the gut microbiota in the development of Crohn's disease	Ken Croitoru	University of Toronto	ON	2022	Year 1 of 3	\$62,450
GIA	The role of microbial metabolism in food intolerances associated with inflammatory bowel disease	Alberto Caminero	McMaster University	ON	2021	Year 2 of 3	\$62,500
GIA	Ascertaining population-based long-term outcomes in inflammatory bowel disease patients with primary sclerosing cholangitis	Amanda Ricciuto	The Hospital for Sick Children	ON	2021	Year 2 of 3	\$31,250
GIA	Defining time-trends, regional variations, and impact of health-care utilization on pregnancy outcomes in women with inflammatory bowel disease	Geoffrey Nguyen	Sinai Health System	ON	2021	Year 2 of 3	\$43,309
GIA	Novel P2Y6 antagonists as a potential therapy for inflammatory bowel disease	Jean Sévigny	Université Laval	QC	2021	Year 2 of 3	\$125,000
GIA	The use of SGLT2 inhibitors in the treatment of inflammatory bowel disease	Karen Madsen	University of Alberta	AB	2021	Year 2 of 3	\$62,500
GIA	Role of the gut mucin sialome in protection from microbiota-driven colitis	Kirk Bergstrom	University of British Columbia, Okanagan Campus	BC	2021	Year 2 of 3	\$62,500
GIA	Using intestinal organoids to model chronic injury and repair in IBD	Theodore Steiner	University of British Columbia	BC	2021	Year 2 of 3	\$31,250

“ Over the past 30 years we have seen the pain, the endless days in the hospital, the surgeries and the general impact that Crohn’s has had on the lives of two of our daughters. Our middle daughter started to show symptoms at a time when we didn’t know much about the disease and ten years later the disease impacted us again. We’ve realized how important research is and supporting Crohn’s and Colitis Canada in finding a cure. Until there is an answer, we worry as parents that there is a point at which the drugs will no longer work and new medication is needed. Our support started with the Gutsy Walk and has continued with yearly and monthly donations from family members. ”

Alan and Susan

“ I give to Crohn’s and Colitis Canada because I have a very close friend who was diagnosed around the age of 12 with Crohn’s. For 21 years, my friend suffered mostly alone. At age 34, she had an ostomy and it’s been life-changing! I donate what I can because of my friend – to hopefully make things better for the future. The pain, the surgeries, the impact on her everyday life, it’s more than most people can understand. ”

Jason

“ I was diagnosed with colitis in 1994 and our youngest daughter was diagnosed with the same horrible disease in 2013. We have family members with both Crohn’s and colitis. As our daughter’s disease worsened, my husband and I turned to Crohn’s and Colitis Canada to learn as much as possible about the disease. We attended many seminars and lectures here in Calgary. As a family, we began participating in the Gutsy Walk to raise funds and awareness for the disease. Our friends and family kindly rallied around us and quickly became incredible supporters, both financially and emotionally, allowing our daughter’s team (The Spastic Colons) to be one of the leading fundraisers for a number of years. We have been blessed with numerous caring doctors and nurses who have seen our daughter through, well, too many surgeries. I am so thankful for Crohn’s and Colitis Canada. As a family we will continue, whenever possible, to support Crohn’s and Colitis Canada, with the hope that someday a cure will be found for these diseases. I wish the organization abundant success in helping to increase awareness, advocating for patients, and raising much-needed funds for research. ”

Loriann

“ I donate to Crohn’s and Colitis Canada because I have been living with Crohn’s disease for 17 years and want to find a cure. When I was first diagnosed, the organization provided me with a sense of community. I was able to meet people living with the same disease as me, learn from them and we helped each other. ”

Jenna

Paying it forward.

An impactful journey with Crohn's and colitis.

When he was diagnosed with Crohn's disease at 15, Peter Dobranowski never dreamed he would end up on the path he is now. His experience demonstrates how this disease and our community can have a profound and far-reaching impact on someone's journey.

As a teenager, Peter hid his symptoms – he felt different, alone, and weak. He began to make decisions about his future based on his disease and how he could manage it.

Then Peter began attending and volunteering with the B.C. chapter of Crohn's and Colitis Canada. He was awed by the electrifying experience of talking with others with the same lived experience. As President of the chapter, he based his term on his desire to build on the support he felt in that community. "Until then, I had no frame of reference. Even my recovery and returning to what I'd given up – it felt like I was trailblazing, that I was alone," Peter said. "Sharing my experience with others suddenly made me realize what I had been missing all along."

With support and the right medication, Peter has continued his studies, propelled by a passion to understand and treat the disease. He received the AbbVie IBD Scholarship in 2019 for his Master's program. And the leadership qualities he developed at Crohn's and Colitis Canada helped make him a successful candidate for the Vanier Scholarship to fund a PhD program at the University of Ottawa.

"My project is translational, and I chose that purposefully. If we can better understand the microbiome in our gut and its association with the disease, and if we can correct that microbiome, then we'll have found another way to treat this disease without all the side-effects," Peter said.

Peter attends Meeting of the Minds

Each year, Crohn's and Colitis Canada brings together experts for the annual Meeting of the Minds conference for researchers, gastroenterologists, nurses and allied health professionals to collaborate, share best practices, the latest research and in recognizing leaders through a number of awards.

We invited Peter Dobranowski to attend the 2022 conference in Toronto. Peter had a unique perspective of the importance of bringing the community together to share the latest information.

Scan the QR code to read about Peter's experience at Meeting of the Minds:





“As a researcher, it was highly motivating to see the latest research, meet the giants in the field and get a better sense of where we’ve been and where we’re going. I am excited that people smarter than me are dedicated to finding new treatments for the future. As a patient and a volunteer, it inspired me with hope – hope for more treatments, a better understanding of the causes and complexities of this disease, and more attention on mental health and our community, where people will feel less alone.”

Peter Dobranowski

Lessons from the pandemic. COVID-19 & IBD Task Force.



Dr. Gil Kaplan (left)
Dr. Eric Benchimol (right)

The COVID-19 pandemic forever changed the way the world understands and reacts to a global health crisis. People affected by Crohn's disease or ulcerative colitis had many questions and were seeking support. Our community of experts quickly rose to this challenge, coming together to provide guidance and information to those living with inflammatory bowel disease (IBD), with the formation of the COVID-19 & IBD Task Force in March of 2020.



62,998
online webinar views

The task force, led by Dr. Eric Benchimol and Dr. Gil Kaplan was comprised of infectious diseases and IBD experts, patient representatives and

community leaders, and provided public health guidance through the lens of immunocompromised and vulnerable populations. They compiled evidence-based guidelines and advice for patients and caregivers, and released recommendations adapted for an international registry of worldwide cases of COVID-19 in people with IBD. The recommendations included guidance such as risk stratification, management of immunosuppressant medications, physical distancing, and mental health. A knowledge translation initiative was also launched to provide critical information and education for the IBD community through weekly webinars and other online resources. Visits to the Crohn's and Colitis Canada website increased dramatically during the height of the pandemic, revealing the critical role our organization plays as a trusted resource for our community.



30 COVID-19 & IBD webinars

In November 2021, the Task Force released a summary report of their learnings and accomplishments, which was published in the Journal of the Canadian Association of Gastroenterology. It is a testament to the dedicated care and resilience of our community and shares lessons for the future of IBD care delivery. Crohn's and Colitis Canada thanks the COVID-19 & IBD Task Force and the many people behind developing critical research, programs, and the report. The results of this work were tremendous in helping people in Canada and around the world.



14,900
webinar attendees

In the gut microbiota we find clues to the origins of Crohn's disease.

The Genetic, Environment and Microbiome (GEM) Project is the world's largest prospective study to investigate the causes of Crohn's disease, propelled by a \$12.5 million commitment from Crohn's and Colitis Canada.

Since 2008, researchers have monitored the diet, immune function, intestinal barrier, microbiome, genetics, and environmental factors in thousands of healthy but high-risk individuals across seven countries. Our goal: to unearth what factors trigger the disease, as people begin to be diagnosed.

During this current phase, GEM project architect Dr. Ken Croitoru is studying how gut bacteria functions differently before Crohn's is diagnosed, and which microorganisms protect or expose people to the disease. In an innovative new approach, his team at Toronto's Mt. Sinai Hospital is culturing bacterial communities from 800 stool samples of GEM participants.

"By testing these cultured communities, we in turn have a renewable microbiome resource linked to health and disease," says Dr. Croitoru. "We can also test their functional properties, and understand the conditions that may prevent or promote beneficial or harmful effects."

By culturing, researchers can study the complex ecosystem of microorganisms inside our intestines. It is a window to isolate how specific bacteria functions – and their resulting impact on human health.

Early returns show that the microbiota plays a major role in how Crohn's develops, and the team aims to pinpoint the specific gut bacteria responsible – opening new therapeutic targets for patients. Since each person's microbiota behaves differently, we may be able to develop treatment plans and preventative strategies that are personalized in nature.

This builds on other recent discoveries through GEM, including finding an abnormal gut barrier function, higher levels of antimicrobial antibodies, and a specific bacterial signature in healthy people who later developed Crohn's. We know now that these are predictive signals of the disease and help us protect those at risk.

"Without the recognition by Crohn's and Colitis Canada donors and their ongoing commitment to the GEM project, we would not be in the position we are today to explore the mechanisms that lead to Crohn's disease," says Dr. Croitoru.



Dr. Ken Croitoru

Blocking key molecules may be new treatment focus for IBD.

Quebec researchers have identified specific molecules that amplify “danger signals” in our intestines that can spark inflammation, and also proved that by blocking their signal, inflammatory bowel disease (IBD) can be stopped in its tracks.

Crohn’s and Colitis Canada funding now enables them to test if blocking the molecular receptor P2Y₆ could lead to a new, safe and accessible IBD treatment.

“This type of molecular study is essential for finding new ways to support over 300,000 Canadians with Crohn’s or colitis for whom effective treatments are limited,” Dr. Jean Sévigny, professor of medicine at Université Laval.

His team previously found gut inflammation is prevented by blocking “nucleotides” (danger signals) from attaching to the P2Y₆. In mice, when P2Y₆ was blocked or simply absent, inflammation disappeared.

In this next phase of their work, Dr. Sévigny’s team is testing more specific P2Y₆ blockers both in mice that mimic human IBD, and in actual tissue samples from patients (collected during surgery). By doing so, they can investigate whether these P2Y₆ blockers trigger an anti-inflammatory effect in the intestines.

This dual testing builds on early findings that the danger signals are present across species – suggesting we can take what we learn from mice and consider new treatments in people that target this new pathway to inflammation.



Sévigny Lab

Dr. Sévigny says that, in theory, a medication that results from this new area of study would inherently be less expensive and better tolerated than current immunotherapies.

This is the latest step in innovative work by Dr. Sévigny that leverages Crohn’s and Colitis Canada funding. He obtained his first Crohn’s and Colitis Canada research grant in 2019 while investigating a novel therapy for this same inflammation pathway – results that enabled the team to earn a five-year CIHR grant of over \$880,000.

“This research is sparked by Crohn’s and Colitis Canada, and is really taking off in our lab,” he says. “We are able to now test two possible ways to control inflammation that will hopefully lead to two separate methods to treat Crohn’s and colitis in the future.”

First-of-its-kind study focuses on the connection of Crohn's and colitis to arthritis – and patient journeys through the system.

As many as half of all adults with Crohn's disease or ulcerative colitis experience joint pain tied to their disease, a figure believed to be even higher in children. These musculoskeletal problems risk unfolding into chronic, life long joint disease – causing further physical and mental health challenges for Canadians already dealing with inflammatory bowel disease (IBD).

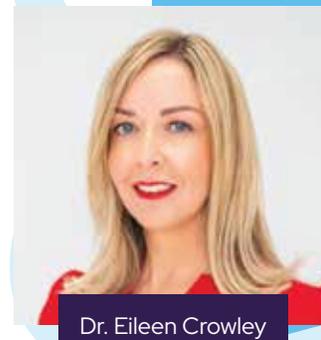
Dr. Eileen Crowley and Dr. Roberta Berard, two clinical researchers at the London Health Sciences Centre, are conducting the first research of its kind in Canada to evaluate the musculoskeletal manifestations of Crohn's and colitis – such as inflammatory arthritis – in people of all ages.

“We wanted to gain insight into not only the prevalence of inflammatory arthritis in children and adults with Crohn's or colitis, but also understand what pain management, health and mental health services they seek,” says Dr. Crowley. “Identifying these journeys and outcomes will allow us to intervene to improve the care of this subgroup of patients.”

This “population study” targets two decades of data from the Institute for Clinical Evaluative Sciences (ICES), which captures how Ontarians interact with the health system. Crohn's and Colitis

Canada funding has been instrumental in providing resources to conduct this extensive research. In it, Dr. Crowley's team, including gastroenterology and rheumatology experts as well as ICES analytics staff, will assess the broader impact of inflammatory arthritis – including what happens to children with Crohn's or colitis many years down the road.

Researchers will share results with the wider community of clinicians, researchers and patients in order to motivate health-care researchers and institutions to evaluate how we can provide optimal care for as many people as possible experiencing the connected problems of IBD and joint disease.



“The more understanding we have of the burden of inflammatory arthritis on the Crohn's and colitis community, the better we will be able to inform and formulate policies to support early access to specialist care and optimize long-term outcomes,” says Dr. Crowley.

“We want to empower the community to help advance treatments, advocate to governments on behalf of those affected with chronic diseases, and improve patient quality of life and patient services for this understudied group of Canadians.”

Studying how certain E. coli initiate colitis reveals new approaches to care.

Much of how ulcerative colitis develops, and why symptoms are more severe for some people, remains unknown. It's believed that some E. coli bacteria – called “pathobionts” – play a role by breaching our intestinal wall to cause inflammation.

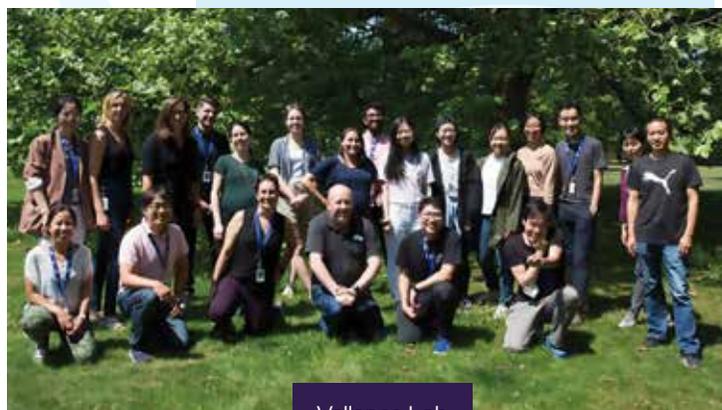
Our funded researchers at B.C. Children's Hospital have discovered how one such microbe cuts through the “mucus layer” to cause damage and how dietary choices could provide protection.

“Intestinal mucus is at the centre of gut health,” says Dr. Bruce Vallance, Canada Research Chair in Pediatric Gastroenterology. “For some patients with colitis, these bacterial pathobionts may explain why their disease is so difficult to manage.”

Using intestinal stem cells, his team identified one damaging strain, “p19A”, confirmed that it helped trigger colitis in mice, and then saw how it crossed the mucus barrier – by absorbing sugars – and stuck to colon walls.

Yet, on a positive note, the team proved that fibre can both fend off pathobionts and strengthen intestinal barriers. Low-fibre diets led to thinner mucus layers, boosted p19A's ability to attach to the gut surface, and limited the ability of beneficial (“commensal”) bacteria to produce protective fats.

“Our work helps show that keeping a healthy diet with fibre-rich vegetables feeds you and your commensal microbes,” says research associate Hyungjun Yang.



Vallance Lab

According to Dr. Vallance: “The more we learn about these pathobionts, the more likely it is we can either prevent IBD or reduce its severity in susceptible people – including children – before signs of disease even emerge.”

Crohn's and Colitis Canada provided a grant of \$375,000 to Dr. Bruce Vallance in 2022 for this work.

The long road to drug development is paved with dollars and hard work.

Drug development is a complex and lengthy process that relies on a diverse ecosystem of people, organizations, and regulatory bodies. It can take up to 15 years from the initial discovery of a compound to its approved use as a drug by patients. And it takes a great deal of funding to make it happen.

Since 1974, Crohn's and Colitis Canada has strategically used donor dollars to fund impactful research, supporting significant advancements in the generation of novel IBD therapies.

For example, starting in 2011, our funding helped generate the research data that allowed two Canadian researchers, Dr. Andre Buret and Dr. John Wallace, to develop a platform for a gaseous-releasing (hydrogen sulfide) compound as part of Antibe Therapeutics Inc., a publicly traded company. The compound shows striking effects in the treatment of IBD by stabilizing the microbiota found in the 'bio-slime' of the gut and preventing inflammation.

"To develop a drug like this, you need approximately \$80M," said Dr. Andre Buret. "You need to have a platform to secure that funding, and you need strong research data to move into drug development, and to file the patents to protect the research. The production of strong data and training of highly qualified personnel to conduct research is secured through grants like those from Crohn's and Colitis Canada. Without this critical funding of basic research, we would never have been able to develop this drug to the point we have. And it would never reach the patients who need it most."

Explore more

of what Crohn's and Colitis Canada achieved in 2022. Read more about these stories on our website at crohnsandcolitis.ca/2022annualreport or scan the QR code below:



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