BENAROYA RESEARCH INSTITUTE
Virginia Mason

INFLAMMATORY BOWEL DISEASE RESEARCH FACT SHEET

Inflammatory bowel disease (IBD) refers to two different diseases − Crohn's disease and ulcerative colitis (UC). In these diseases, the body's immune system attacks the intestines, resulting in intestinal inflammation, abdominal pain and bleeding. IBD usually strikes people early in life, leading to many years of suffering and disability. IBD affects approximately 1.4 million Americans (almost 1 in 200), evenly divided between UC and Crohn's disease, and between men and women. It is more common in northern latitudes, like the Pacific Northwest, where an estimated 50,000 IBD patients are thought to reside. Some likely factors that contribute to this geographic effect are vitamin D deficiency from lack of natural sunlight, genetic predisposition in the North European/Scandinavian heritage, and unknown environmental triggers.

Crohn's disease and UC differ primarily in where the inflammation occurs. In UC, inflammation is contiguous and limited to the lining (or "mucosa") of the colon. Crohn's disease can be patchy, and can involve any location in the GI tract, but most commonly involves the last part of the small intestine (called the ileum) and the colon. Inflammation in Crohn's can burrow beneath the mucosa, causing scarring, abscesses, or leaking holes called fistulas.

BRI's immunology research in IBD focuses on understanding the processes that initiate and perpetuate the inflammation, on designing targeted immune therapies to block or reverse these processes, and on clinical trials to evaluate effectiveness and safety of immune modulation in patients with ongoing disease.

BRI and IBD Research

BRI works closely with the Digestive Disease Institute (DDI) at Virginia Mason Medical Center (VMMC), where approximately 2,000 IBD patients are followed by one of the most highly acclaimed gastroenterology divisions in the Pacific Northwest. The DDI maintains a robust IBD clinical research program with extensive experience in national clinical trials including past studies with abatacept and natalizumab, and ongoing studies with even more novel immunotherapies.

- Clinical trials are led by BRI scientists James Lord, MD, PhD, and Elisa Boden, M.D., as well as Michael Chioren, MD, and Richard Kozarek, MD, the Executive Director of the DDI and past President of the World Gastroenterology Organization.
- In 2007, BRI founded its IBD biorepository, in which research-quality tissue samples from surgically resected intestine specimens of Virginia Mason IBD patients are archived. To date, specimens from more than 275 patients have been added to BRI's IBD biorepository.
- In 2010, BRI was awarded a grant from the Crohn's and Colitis Foundation of America (CCFA) that expanded IBD research at BRI to include blood and endoscopically biopsied intestinal mucosa in its archive. The response of patients has been unprecedented, with 84 individuals participating in the study in the first six months alone, and over 625 participants to date. BRI scientists are now comparing

the samples donated by these research participants with existing samples from over 800 healthy donors to advance our understanding of how and why IBD develops, and identify how genetic risk factors for IBD affect the immune system to cause disease.

Clinical Research

While BRI is committed to eliminating autoimmune diseases, currently there is no cure for them. On the path to a discovery for a cure, BRI scientists are having success in finding better diagnostics, treatments and therapies for diseases. For information about BRI's clinical trials in IBD, please call (206) 342-6524 or email CRP@BenaroyaResearch.org.

Laboratory Research

- James Lord, MD, PhD, has established an IBD-specific clinic at VMMC and has received grants from the NIH, the CCFA, the Broad Foundation, the Rainin Foundation, the American College of Gastroenterology (ACG), VMMC's DDI, and industry partnerships to establish the IBD biorepositories to understand how regulatory T cells fail to control inflammation in IBD. He is also collaborating with other investigators at BRI to understand how genetic risk factors for IBD can influence how immune system cells communicate with each other through cytokines.
- Elisa Boden, MD, has a clinical practice in IBD at Virginia Mason Medical Center. Dr. Boden studies defects in T cell immune regulation in a model of colitis. She additionally studies novel therapeutics for IBD that target the T cell receptor in humans, and has recently been characterizing T cell specific for intestinal bacteria in IBD.
- Adam Lacy-Hulbert, PhD, recently joined BRI to study how specialized immune cells living in the intestine can influence the development and function of local regulatory T cells through cell-surface receptors, called integrins.
- Jane Buckner, MD, Director of BRI's Translational Research Program, examines how genes associated with autoimmunity lead to disease. Recently her group has demonstrated how one gene associated with both IBD and type 1 diabetes, PTPN2, alters the function of immune cells and their ability to communicate with each other.
- Steven Ziegler, PhD, Director of BRI's Immunology Research Program, studies factors that regulate immune responses at barrier surfaces such as the gut, and also have a role in colitis-associated cancer.
- Dan Campbell, PhD, Principal Investigator in BRI's Immunology Research Program, studies how a group of immune cells known as regulatory T cells are generated and function to prevent autoimmune and inflammatory diseases like IBD.

Community Support

BRI needs community support to continue its crucial work of unlocking the immune system and eliminating autoimmune diseases. For more information about supporting BRI please call (206) 583-6083 or visit BenaroyaResearch.org/donate-now.