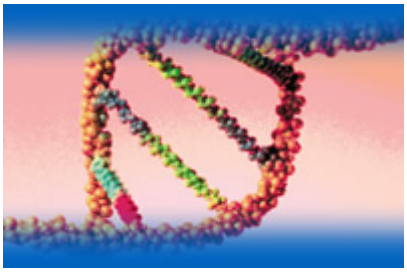
An explanation of current knowledge in IBD genetics



The last few years have seen many new developments in the research and treatment of pediatric inflammatory bowel disease (IBD). Arguably, the most exciting area of current investigation is genetics. While researchers suspect a complicated interplay of environment and genetics at the heart of disease development, it is our genes that play a major role in determining susceptibility to and progression of IBD.

Because IBD is a disease of chronic inflammation in the gut, we must ask two important questions: First, what starts the inflammation and, second, what keeps it going? Most researchers believe that something in the environment triggers inflammation in people whose genes have made them susceptible to IBD. Once the inflammation begins, genes play a large role in maintaining (or not maintaining) the inflammatory reaction.

It is likely that IBD has several different, and as yet unnamed, subtypes. In other words, there may be several different forms of Crohn's disease and ulcerative colitis. Each subtype would have a different genetic and environmental profile, but mostly the same symptoms. Only further investigation can clarify this issue.

Investigation is providing evidence that specific genes do influence the development and progression of IBD. After the discovery of a gene called NOD2 (also called CARD15) in 2001, scientists concluded that this gene is associated with Crohn's disease. The chance of finding the NOD2 gene increases in patients who develop strictures (narrowing) of the intestine that lead to surgical operation in Crohn's disease (i.e. 18 years old) and among those who have a strong family history of Crohn's disease. Further studies are now under way to study many other genes that may increase the risk of IBD and the influence of these genes on the course and response to therapies.

Genetic information may also explain why some drugs work better in some people than in others. This information should make choosing treatments less hit or miss than in the past. For example, if a gene is overactive, scientists can look for ways to turn off its effects or to interfere with its activity. If a gene is under active or defective, scientists can look for ways to turn it on or increase its activity. Scientists also believe that genes will tell us a lot, from an unaffected person's risk of developing IBD, to the way we can expect the disease to progress in a person who has already been diagnosed with IBD. In fact, current research is attempting to analyze Crohn's disease genes and the clinical features associated with them (e.g., symptoms and the patterns doctors see when they look at the results of endoscopies and other tests). There is hope that we will be able to predict a particular patient's disease course and tailor treatment to that person's needs, based largely on the strengths and weaknesses found in his or her genes. These discoveries will be the precursors of a trend toward individualized medicine.

The extent that we are able to move in these directions with genetic research relies completely on people's willingness to participate in genetic research studies. The reliability of our results is directly related to the number of samples that we have to study. This is why it is so important, as a patient or parent, to take an active role in helping researchers to discover the information wrapped up in our genes. Your participation in genetic research studies is the key to finding the cause and some day, the cure for IBD.