What is gluten?
Gluten is a protein contained in the grains wheat, barley, rye, and oats. It is a unique protein based on its structure that lends a doughy/elastic consistency to flours derived from these grains. This is why over the centuries, gluten-containing grains have come to be used so extensively in breads and other baked goods.

How can gluten, a protein from a naturally occurring foodstuff, be harmful?
First, it must be understood that the gluten-containing grains we eat today are actually domesticated and now genetically hybridized versions of what originally were wild grasses endemic to the Tigris-Euphrates river basin. Presumably, due to pressures from shortages of other foods, or ingenuity of ancient peoples, these grasses became a source of food and calories. Learning how to cultivate and farm these and other plants alleviated the pressures of the hunting/gathering lifestyle, paving the way for more abundant and readily available food, which in turn, paved the way for the more stable and populated Agrarian societies that followed. It is believed and seems sensible, that this shift to agriculture-based societies was responsible for the flourishing (note the word flour in flourishing) civilizations of Mesopotamia and Egypt that followed. Thus, wheat, barley, rye, and oats are genetic derivatives of wild grass, and therefore pose the possibility that eating a wild plant may possess some toxicity.

The nature of the toxicity, although to some extent stems directly from the chemical nature of gluten, is mostly due to a reaction that occurs by the immune system of individuals in possession of certain genes that recognize gluten for the foreign protein that it is and hence toxic. The immune system genes in control of this reaction are actually not rare, and may be present in up to 60% of Americans (based on my research). However, there are other, as of yet undetermined, genes that control whether or not a toxic reaction will occur, and further, whether and how much the reaction will result in damage to the intestine and other tissues. It is speculated that the structure of gluten may be similar to an infectious agent (for example a virus) and that is really why the gene is present in the immune system in the first place. It is even possible that the gene controlling reactivity to gluten is so common because millions of years ago it lent a survival advantage against dying from infections to those possessing it. Thus, having an immune system that recognizes gluten as a foreign, potentially toxic protein actually may be a sign of an immune system that is particularly sensitive and protective. Although this may portend protection against infections, the down side is that the same genes lead to more severe, longer lasting immune responses to foods, environmental allergens, and even the human body itself. The consequences of these reactions are food sensitivities (of which gluten sensitivity is just one), allergies/asthma, and autoimmune disease, respectively.

What is gluten sensitivity and how is it diagnosed?
Gluten sensitivity implies that there is an ongoing immune reaction to gluten in the diet, usually detected as antibodies against a subprotein of gluten called gliadin. Although recently these antibodies were looked for only in the blood and are found in 12% of the general American public, my research has revealed that these antibodies can be detected in the stool in as many as 30% of what are otherwise normal people (U.S. and International patents). If high risk patient populations are tested, or people with symptoms, the percentage usually exceeds 50%. It makes sense that the antibodies are more easily detected in the intestine because the immune system reaction to food is mainly a response occurring inside the intestinal tract. Thus, the end product of intestinal transit, stool, is the most logical (albeit more messy) place to look. This is the rationale of the new tests developed by EnteroLab to serve the testing needs of celiac patients.

What are the symptoms of gluten sensitivity?
Although there may be no detectable symptoms of the immune response to gluten, the typical symptoms people develop occur when the reaction begins to damage the intestines. The symptoms, resulting from malabsorption or improper digestion of dietary nutrients, include abdominal bloating or pain, diarrhea, constipation, gaseousness, or nausea with or without vomiting. It appears that acid reflux in the esophagus, manifesting as heartburn, may be a potential symptom as well. Other symptoms people experience include fatigue, joint pains, mouth ulcers, bone pain, abnormal menses in women, and infertility.

How is Gluten Sensitivity Diagnosed?
In recent years, testing for gluten sensitivity and celiac sprue usually is initiated with blood tests for antibodies against gliadin, the toxic subfraction of wheat gluten, or for an antiendomysial antibody that is produced against an enzyme present in the intestine and elsewhere in the body called tissue transglutaminase. These tests have revolutionized testing for celiac sprue because they allow for detection of the syndrome before extensive
irreparable damage to the intestine, bones, and other tissues has occurred. Up until recently it was thought that nearly all patients with clinically important gluten sensitivity had these antibodies detectable in blood. However, recent studies, including my own, have shown that this is not true. In the early phases of the reaction, or especially when the disease is of a more mild variety, antigliadin and antiendomysial/antitissue transglutaminase antibodies may be absent from blood. Knowing that the immune reaction to gluten and other foods takes place inside the intestinal tract, we began testing the hypothesis that these antibodies may be present in the intestinal tract in gluten sensitive individuals, even if they are absent from blood. Extensive research has revealed that this hypothesis is true, and has resulted in the development of new methods for detection of gluten sensitivity, celiac sprue, and other food sensitivities (U.S. and International patents). This test has shown to be 100% sensitive for picking up celiac sprue in those so affected. This test is being offered at an affordable price by EnteroLab.

Can I have gluten sensitivity if screening blood tests for celiac sprue are negative or indeterminate?
The answer to this question is definitively yes. Originally screening tests for gluten sensitivity/celiac sprue consisted of blood tests against the damaging protein in gluten called gliadin (antigliadin antibodies). However, with heightened awareness of the possibility of gluten sensitivity in family members of diagnosed celiacs, or in people with syndromes associated with celiac sprue, it has become clear that not all people suspected of being immunologically intolerant to gluten have positive blood tests. This is problematic because these individuals are told outright that they are not gluten intolerant based on negative blood tests. Many times patients themselves are able to deduce that it is wheat that causes them to feel ill or have intestinal symptoms, but when blood tests are negative they are diagnosed with irritable bowel syndrome or sometimes "wheat allergy". It is not surprising to me that blood tests in the early phase of gluten sensitivity are negative. This is because the immunologic reaction to gluten begins and occurs inside the intestinal tract and not in the blood per se. For this reason, I had an idea about a year ago that these antibodies should be more frequently detected in the stool of gluten sensitive individuals rather than in the blood. This turned out to be the case based on extensive analysis of more than 500 normal people or people with various medical syndromes (including bonafide celiacs, patients with microscopic colitis, a form of colitis genetically and clinically related to gluten sensitivity, and patients with chronic diarrhea of unknown origin). Based on this research and its importance, I have brought this new test to the public directly via the internet from www.EnteroLab.com This new stool test can detect antigliadin antibodies in stool whether a person has symptoms or not. It is ideal for children who do not have to be stuck with a needle. Samples can be mailed from your home without having to go to the hospital or a doctor's office. Furthermore, you can decide if you want to be tested and do not have to beg a doctor to test you for gluten sensitivity.

Thus, because the antibodies produced as the result of gluten sensitivity are mainly secreted into the intestine rather than the blood, analyzing stool turns up many more positive tests than blood tests. It is only when the immune reaction has been present for long periods of time and/or the process is far advanced that antibodies are produced in quantities sufficient to leak into the blood.

Why is a Stool Test a Logical Test for Gluten or Other Food Sensitivity?
The immune cells present in the intestinal tract comprise the largest mass of tissue in the body assigned the function of protecting against foreign invaders. These invaders are present in the form of proteins called antigens. Although the intestine's immune cells probably evolved originally to ward off infecting organisms, in fact, their most frequent exposure to foreign antigens comes from food. One of the first lines of defense against foreign antigens (food or infections) is the secretion of a special antibody called secretory IgA into the intestinal lumen (i.e., the hollow center of the intestine). Here, these antibodies bind the antigen by a sort of lock and key recognition mechanism, in an attempt to neutralize the antigen so that it cannot enter the body. Because these antibodies do not get reabsorbed after entering the intestinal tract, they travel all the way through the intestine where they can be recognized in the stool. This is the rationale for the new gluten and other food sensitivity testing methodology invented and offered by EnteroLab (U.S. and International patents)

Do I have to be eating gluten for a gluten antibody test to be positive?
Because production of antigliadin antibodies is under genetic control, your body continues to make these antibodies for an extended period after gluten is removed from the diet, albeit, in lesser quantities the longer gluten is removed from the diet. Research has shown that these antibodies continue to be produced at lower levels for months, even 1-2 years after gluten is removed from the diet. Stool tests can continue to detect these low levels of antigliadin antibody produced in the intestine over this 1-2 year period (and longer if there is still small amounts of gluten in the diet, even hidden gluten); tests for antigliadin antibody in the blood routinely become negative after 3-6 months on a gluten-free diet.