

## **FUNCTIONAL MEDICINE UPDATE**

**February 2014**

**Vol. 34, No. 2**

### **The Gastrointestinal Health “Mini Course” Continues**

Following on the heels of Dr. Bland’s January interview with Dr. Alessio Fasano, a noted expert on celiac disease and non-celiac gluten sensitivity, he continues his series on current research in the field of gastrointestinal health this month. This issue focuses on the gut microbiota and the influence the composition of this community has on systemic health. There is a particular focus on the relationship between the gut and the liver, as this month’s guest is an expert in the fields of both gastroenterology and hepatology.

### **Clinician/Researcher of the Month**

**Antonio Gasbarrini, MD**

**Faculty of Medicine and Surgery**

**Catholic University of Rome**

**Rome, Italy**

Professor Antonio Gasbarrini graduated in medicine with honors from the University of Bologna and completed additional training at the University of Pittsburgh. He is a specialist in internal medicine, gastroenterology, and digestive endoscopy. Since 2000, he has been an associate professor of internal medicine at the Catholic University of Rome. From 2006 to 2008, he was appointed secretary of the Italian Association for the Study of the Liver (AISF), and since 2009 he has served as president of the Italian Research Foundation in Hepatology (FIRE). Professor Gasbarrini’s main areas of interest are the diseases of the liver and biliary tract, and the organic and functional diseases of the digestive system.

With more than 800 published papers to his credit, Professor Gasbarrini is now recognized as a leading expert on the gut immune system, and in particular on the role of leaky gut (increased intestinal permeability) as a determinant of disease. It is now understood that an increase in intestinal permeability can result in the translocation of bacteria across the GI epithelium into the bloodstream, which can then result in metabolic endotoxemia, inflammation, and chronic disease states. Professor Gasbarrini and Dr. Bland discuss the differences between physiological versus pathological hyper permeability. In addition, Professor Gasbarrini comments on the role of steatohepatitis of the liver, often caused by hepatitis B or C or by cirrhosis.

The conversation continues with a focus on the gut microbiota, which Professor Gasbarrini calls the “concept of the future,” as this is now the subject of multidisciplinary research efforts around the world. The intestinal community of microbes and the balance of the bacterial strains of the gut have now been

linked to diabetes, rheumatoid arthritis, obesity, and other chronic conditions. The ratio of *Firmucutes* to *Bacteroides*, in particular, is now thought to play a central role in obesity, and this is a topic discussed in the interview.

The interview concludes with a discussion of pre- and probiotics. While evidence of the health benefits of supplementation has been demonstrated in very specific conditions such as diarrheal diseases and in certain instances of irritable bowel syndrome, Professor Gasbarrini feels it is still too soon to make any conclusive judgments about overall health and disease. This is because—as he explains—there are many strains of gut bacteria that are not currently produced in supplement form, and so it is not possible to measure benefit. He hopes to see very targeted studies on pre- and probiotics in the future—studies that will determine specific functions for specific bacteria.

### **In Closing: Fecal Transplants**

Fecal transplants: the process of transplanting a fecal sample from a healthy individual into the gut of a recipient. It is a concept that is both old and new. It is a subject that makes many—if not most—uncomfortable. And for a small number of patients battling *Clostridium difficile* infections—those for whom no other treatment proved effective—fecal transplant may have been life-saving. In the future—if current research continues and yields evidence—fecal transplant may play a role in treating obesity. Dr. Bland closes this issue with a review of some current articles on this subject, many from top tier journals such as *Gastroenterology*, *Science*, and *Nature*. He expands upon and endorses Professor Gasbarrini's view that we have entered the era of the gut microbiome. The research in this field is accelerating, and we may see it quickly be translated into clinical application.

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