

PRESS RELEASE

Europe's gastroenterologists search for the key to the cause of Crohn's disease

UEGF expert Dr Simon Travis: inflammatory bowel diseases (IBD) are the result of a combination of environmental factors and genetic predisposition

(Barcelona, 26 October 2010) European scientists are carrying out intensive research into the causes of inflammatory bowel diseases (IBD), including Crohn's disease. The inflammatory process is attributable to a troublesome combination of genetic (mis)information and environmental factors, most probably by an influence on gut bacteria, said Dr Simon Travis of the University of Oxford, GB, at a press conference of the 18th United European Gastroenterology Week (UEGW) in Barcelona. Scientists from throughout Europe are investigating new approaches to successful treatment of this chronic illness, as well as the causes of the disease.

Research has shown that human intestines harbour several hundred and possibly over 1,000 different types of bacteria. "We might all be just 10% human," says Dr Travis, "because there are ten times more bacteria in the gut than all other cells in the body put together." Patients with inflammatory bowel disease such as Crohn's disease suffer severe inflammation of their intestinal mucosa. The intestinal mucosa is what separates gut bacteria from the rest of the body, so it is in effect the battleground between this microbial flora and the body, which then suffers collateral damage when signals between bacteria and the body provoke inflammation. The genetic make-up and diversity of the human microbial flora is currently the subject of large-scale research projects such as the European MetaHIT study. This has implications for the immune system, human health and novel approaches to treatment.

Five billion euro annual direct treatment cost of Crohn's disease

Crohn's disease is a chronic illness which progresses over time and – unlike ulcerative colitis – can affect the small intestine as well as the large intestine. Most frequently affected is the area around the terminal ileum, the transition between small and large intestine. The inflammation causes severe abdominal pain, diarrhoea and weight loss. Of about 500,000 people in Europe with Crohn's disease, two thirds need intestinal surgery and a third need more than one operation. 15 per cent of patients are permanently fitted with a stoma bag. "The Europe-wide direct treatment costs are estimated at around five billion euro per annum," explained Dr Travis. However, the indirect costs are far higher, because

the disease frequently occurs for the first time in young adults, which may lead to disability and unemployment. “That is why we need to understand the cause of the disease, so that we can change its course.”

Tracing the causes of IBD

The causes of IBD have been the subject of research for years. Disturbance of the gut bacteria (“intestinal dysbiosis”) is thought to precede the onset of Crohn’s disease, but no studies have examined events that precede disease onset. “If microbes are the key to Crohn’s disease, then genetic susceptibility appears to be the lock,” says Dr Travis. A host of genes associated with Crohn’s disease have been discovered, many of which are associated with the way intestinal cells handle bacteria and their products, some through bacterial recognition (pattern recognition receptors) and others through handling of bacteria or their products (autophagy). Yet genes alone cannot account for the rapid increase in the number of people with Crohn’s disease. Environmental risk factors are implicated, but research is hampered for practical reasons, by studies on patients *after* disease has developed.

Genes are responsible for producing proteins that convey messages between cells to co-ordinate interactions between bacteria and the body. Intestinal bacteria also aid digestion and have a metabolic function that may be linked to a wide variety of conditions, including obesity. Generally speaking, normal intestinal bacteria live in peaceful coexistence with human immune cells. Severe inflammatory reactions only occur in cases where a genetic modification is present, sending misinformation in response to normal bacteria.

Research project investigates environmental influences

Exactly which factors are involved is planned by a research project (European ORIGIN project). Over a period of five years, 6,500 healthy first-degree relatives of patients with Crohn’s disease will be examined and interviewed. During this period, the intention is to gather microbial, genetic, immune and environmental information which is expected to provide some explanation of the causes of the disease, since a few (perhaps 40) will go on to develop Crohn’s disease. Their samples, collected before the onset of the disease, will put events that precede the disease under the microscope.

New knowledge will improve the range of therapies

“The research efforts, which are being carried out predominantly by French scientists within the UEGF, will contribute toward improving understanding of inflammatory bowel disease,” Dr Travis is convinced. UEGF supported the start of this research by awarding its €100,000 research prize to Professor Jean-Frédéric Colombel from Lille, last year. According to Dr Travis, the research will lead to new techniques for detecting the disease and new therapeutic approaches, which patients badly need.

Press contact

impressum health & science communication
Katharina Kegel
Adenauerallee 10
20097 Hamburg, Germany
E-mail: kegel@impressum.de
Tel.: +49 (0)40 – 31 78 64 10
Fax: +49 (0)40 – 31 78 64 64



UEGF Secretariat
UEGF Public Affairs
Committee

E-mail: office@uegf.org
Internet: www.uegf.org