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Celiac Disease Foundation Newsletter

LATEST NEWS IN CD RESEARCH AND POSSIBLE TREATMENT THERAPIES

Since Celiac Disease was identified and defined in the late 19th century by Dr. Samuel Gee and in 1950 by Dr. Willem Dicke, the only treatment has been strict adherence to a gluten-free diet. Through the years, for most people with celiac disease following the gluten-free diet has been a challenging and difficult task. Finding safe, gluten-free food and pharmaceutical products and locating restaurants with staff that understand what "gluten-free" means is an on-going chore that can take the enjoyment out of eating. If only there was another way…

Over the past decade there has been ongoing research to find possible therapies for celiac disease. There are a handful of scientists across the globe who have been studying the range of possibilities to treat Celiac Disease at a deeper, more therapeutic level – some involving a vaccine, a key protein and various enzymes.

Bob Anderson, MB, ChB PhD FRACP is Head of the Celiac Center at the Royal Melbourne Hospital, Melbourne, Australia and the Walter and Elisa Hall Institute in Melbourne. He has been conducting research on a possible vaccine for celiac disease. Founder and Director of Nexpep, Dr. Anderson, a gastroenterologist and recognized world leader in celiac disease research, began working in this area in 1998 at Oxford University. Dr. Anderson and his team made ground-breaking research at Oxford that identified the specific set of protein sequences in gluten that cause damage to the guts of those with celiac disease. In addition to finding a possible cure for celiac disease the team's research could open the door for a specific diagnostic test for the disease, new treatment and prevention strategies, and even the possibility of producing grains that do not contain the harmful sequences. Dr. Anderson's research has been focusing on proving that a specific "toxic peptide" can be used to desensitize or induce tolerance in people with celiac disease, and any vaccine would likely be the "toxic peptide" itself or a modified form of it. Under Dr. Anderson's direction, Nexpep is developing novel diagnostics, preventatives, and a non-dietary therapeutic 'vaccine' product for celiac disease. Phase I clinical trials are due to begin in 2008. (Source: **Nexpep** www.nexpep.com.au)

Alessio Fasano, MD, Medical Director, University of Maryland School of Medicine Center for Celiac Research has been conducting studies for years. In his ongoing research Dr. Fasano discovered zonulin which appears to be involved in many disease states in which leakage occurs in the cells of the small intestine lining and thus may play an important potential role in the treatment of auto-immune and inflammatory diseases. Zonulin is a signaling protein that transiently and reversibly opens the tight junctions ("tj") between the cells of the intestinal mucosa, blood brain barrier and pulmonary epithelia.

Dr. Alessio Fasano is co-founder of Alba Therapeutics Corporation which is a privately held biopharmaceutical company based in Baltimore, Maryland. Alba is dedicated to commercializing disease-modifying therapeutics, vaccine and drug delivery adjuvants based on the zonulin pathway. Alba's lead molecule, AT-1001, is targeted towards the treatment of Celiac Disease and Type 1 Diabetes. Phase II Trial For Zonulin Antagonist AT-1001 is currently being conducted. (Source: **Alba Therapeutics Corp.** http://www.albatherapeutics.com)

Chaitan Khosla, PhD, Professor and Department Chair, Chemical Engineering, Stanford University has been studying the possibility of a therapeutic treatment for celiac disease since his son was diagnosed with the disease. With his background in chemical engineering, Dr. Khosla set out to discover more about the disease's biological mechanisms. Some researchers had discovered a new structure for a key enzyme associated with celiac disease, a finding that could lead to the design of new medications for the common digestive disorder. Although scientists have previously obtained the X-ray crystal structure of human TG2, they have only revealed its "closed" or inactive form. Now Dr. Khosla, and his colleagues at Stanford report the first ever determination of the "open" structure of the enzymes, in which its active site is accessible to substrates (a molecule upon which an enzyme acts). This finding could help scientists design inhibitors of the enzyme that could serve as medications for celiac disease and other related conditions. (Source: **Science Daily** www.sciencedaily .com/releases/2008/01/080107104321.htm)

Chaitan Khosla, PhD is also co-founder of Alvine Pharmaceuticals, Inc., a Palo Alto-based biopharmaceutical company dedicated to developing and commercializing therapeutics for the treatment of Celiac sprue.

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