

## **Jeffrey Epstein, Science Philanthropist Supports Key Discoveries in the Late Onset of Alzheimer's.**

Although there is a genetic disposition for Alzheimer's Disease, the late onset of Alzheimer's and by far the most common, is still a mystery. It's also expected to double by 2050. Today however, renowned New York science investor, Jeffrey Epstein, whose foundation has provided funds to the American Alzheimer's Association, has heralded new findings into the late developing disease.

The findings come from researchers at Mount Sinai Hospital in New York City, the Icelandic Heart Association, Sage Bionetworks and Merck Research Laboratories, who have determined that a cluster of genes connected to the brain's inflammatory response mechanism, play a role in driving late onset Alzheimer's. Specifically, the research team analyzed the DNA of 376 deceased patients with late Alzheimer's along with gene expression and the emanating biological pathways. What resulted was a comparative mathematical model, a unified map of not only the prevailing genes present in late Alzheimer's but the various pathways that they trigger.

One such gene, *TYROBP*, not typically connected to Alzheimer's but linked to brain inflammation, was shown to interact with TREM2, a gene recently connected to Alzheimer's by Rita Guerreiro, University College London, and Thorlakur Jonsson, deCODE Genetics, et al. Researchers determined that the reoccurring TREM2-TYROBP pathway could be playing a main role in the onset of late Alzheimers.

The discovery is critical, explains Dr. Bin Zhang, a co-lead author of the study and Associate Professor of Genetics and Genomic Sciences at Mount Sinai. Because we can now "evaluate drugs that impact the TREM2-TYROBP pathway as potential therapies... and design more specific compounds that target these key steps precisely, in contrast to existing anti-inflammatory drugs that may be less ideal for hitting this target." Jun Zhu, PhD, Professor of Genetics and Genomic Sciences at Mount Sinai and also an author of the study, stated "These discoveries, provide unequivocal proof that inflammation plays a central role in Alzheimer's disease, which is a consistent theme among common complex diseases that also include obesity and type II diabetes." Valur Emilsson, PhD, Head of Systems Medicine at Icelandic Heart Association and also a senior author of the paper, added, "Currently, we see a long lag time between appearance of amyloid on brain scans of patients and the appearance of clinical symptoms. An individual's inflammatory response could well play a role in the disease progression, and an appropriate anti-inflammatory drug, given after amyloid is detected but before symptoms begin, could be an important part of dementia prevention."

"The use of a mathematical model to understand the genetic /... Is pivotal in science research today," Jeffrey Epstein asserted. "One can detect patterns that are otherwise hidden." Indeed, Jeffrey Epstein is

not new to the use of mathematics in science. In 2003, he founded the Program for Evolutionary Dynamics, at Harvard University, the first of its kind to study the evolution of micro-biology with the use of mathematics.

Mr. Epstein has been a Trustee of the Institute of International Education Inc. since October 2001. He is a former member of the Trilateral Commission, the Council on Foreign Relations, the New York Academy of Science and a former board member of Rockefeller University. Mr. Epstein is actively involved in the Santa Fe Institute, the Theoretical Biology Initiative at the Institute for Advanced Study in Princeton, the Quantum Gravity Program at the University of Pennsylvania, and also sits on the Mind, Brain & Behavior Advisory Committee at Harvard University. He is an active member of The Edge Organizatin Inc. an online group of award winning academics and authors in the sciences and social sciences.