

## **UCSB Center for the Study of Macular Degeneration Shares in \$14,800,000 Research Grant**

The National Eye Institute has awarded a \$14.8 million multicenter research grant to hasten the development of new diagnostics and therapies for the treatment of age-related macular degeneration (AMD). The major participating research centers are located at the University of Iowa School of Medicine, the University of California, Santa Barbara (UCSB) and Columbia University, New York. Dr. Gregory Hageman, Professor in the Department of Visual Science and Ophthalmology at the University of Iowa will serve as principal investigator, and he will be assisted by three co-principal investigators: Drs. Don H. Anderson and Lincoln V. Johnson at the Center for the Study of Macular Degeneration, Neuroscience Research Institute, UCSB; and Dr. Rando Allikmets in the Departments of Ophthalmology and Pathology at Columbia. Also included in this research consortium is an international team of cell biologists, molecular immunologists, geneticists, microbiologists, ophthalmologists, and pathologists who have expertise in areas of special relevance to AMD. The five year research program is designed specifically to bridge the gap between early stage scientific discovery and the translation of those results into the development of new diagnostics and therapeutics.

The award comes on the heels of a major discovery by this group and three other groups of researchers showing that common variants in the Factor H gene can account for up to 50% of the 50,000,000 individuals worldwide who are afflicted with AMD. Factor H is a protein in the blood that regulates an ancient part of the immune system known as the complement cascade. The primary job of the complement cascade is to recognize, attack, and kill bacteria and other invading microbes. However, if the complement system is not tightly regulated, it may also attack and kill the body's own cells and tissues. It is highly likely that the protein encoded by the genetic variant of Factor H is less able to fulfill its normal regulatory function, and that puts retinal cells in the macula at increased risk for disease.

One of the first goals of the new research effort will be to develop genetic screening tests that can identify those individuals who are most at risk of developing AMD late in life. This will enable clinicians to monitor susceptible individuals from an early age, and to evaluate new treatments in the beginning stages of the disease before the onset of vision loss. A second goal will be to design and test new pharmacological treatments based upon the identification of the complement cascade as the prime therapeutic target pathway.

Today, the average life expectancy in developed nations is over 80 years and climbing. And yet, the quality of life during those additional years can be significantly diminished by the effects of age-related, degenerative diseases like Alzheimer's disease, atherosclerosis, and AMD. As our understanding of the biological and genetic factors responsible for these diseases continues to expand rapidly, so will the prospects for novel diagnostic and therapeutic approaches that will dramatically improve the quality of our prolonged lifespan.