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Early Interventions May Yield Alzheimer's Clues *Benefactors' Gifts Build Synergy Among Researchers, Schools*

The most common cause of dementia in the elderly, Alzheimer's disease currently affects 5.2 million Americans and their families—and that number is rising. And while there are treatments to reduce the symptoms of the disease, there are no medications that provide significant, long-term help to patients, a fact that Ed Owens (Col '68) knew only all too well.

As a health care fund manager, Mr. Owens was quick to recognize that providing for the nation's growing number of Alzheimer's patients was largely an unmet need.

"Professionally, I could see there were real problems with the number of people who would be diagnosed in their lifetimes," he explained. "Personally, I watched my mother pass away from the disease. I knew how tremendously difficult Alzheimer's is on families."

A longtime supporter of U.Va.'s Jefferson Scholars Program, Mr. Owens wanted to make a contribution to the sciences at the University. In 2007, he found his chance.

On a trip back to U.Va., Mr. Owens met George Bloom, professor of biology and cell biology in the College of Arts & Sciences. Dr. Bloom had just published a paper linking the actions of two proteins, tau and beta-amyloid, closely associated with the plaques and tangles seen in

Alzheimer's brains. (A second paper has just been accepted for publication in the journal *Nature*.)

Dr. Bloom and Michelle King, then a research assistant professor of biology, showed that the toxicity of tau was initiated by beta-amyloid, an important step in establishing the pathway by which memory loss occurs in Alzheimer's. This interaction leads to the destruction of neurons, or nerve cells, which accounts for the loss of memory and cognitive skills that characterize the disease. A typical patient with Alzheimer's loses 30 percent of the neurons in his or her brain over the course of the disease.

"Understanding what it is that causes neurons to die is important, especially when it comes to developing disease-modifying drugs and diagnostics," Dr. Bloom said. "We're making major progress in understanding the origins of the disease."

Mr. Owens' initial gift gave Dr. Bloom the resources to continue his work at a key point in the scientific process. "I knew this discovery could open the way for potential new treatments for Alzheimer's," Mr. Owens remembered. "I wanted to help advance George's work and show the University how important this research was."

The timing of Mr. Owens' support was ideal. U.Va. already possessed a small, but excellent, clinical program in Alzheimer's and fostered innovative research into the disease. When Dr. Steven T. DeKosky, vice president and dean of the School of Medicine, arrived in 2008, he set the University on an aggressive pursuit of new treatments for Alzheimer's. His pioneering work into novel neuroimaging techniques had proved that PET imaging (nuclear medicine imaging that produces a three-dimensional image) would allow researchers to reliably visualize and measure brain changes in those with very early stage Alzheimer's.

Now the team that is coalescing at U.Va. will expand the use of PET imaging by developing new, more flexible compounds, allowing researchers to more quickly measure the usefulness of new



A meeting between biologist George Bloom (left) and alumnus Ed Owens led to a series of gifts that have advanced U.Va.'s Alzheimer's research. treatments and to identify new targets for drug development.

"These techniques and tools can allow doctors to accurately measure changes in the brain over a period of time," explained Dr. DeKosky, "even before a patient is showing outward signs of disordered thinking."

Mr. Owens' most recent gift continues to support Dr. Bloom's work and helps John Lazo, associate dean for basic research in the School of Medicine, apply his expertise to the challenges of Alzheimer's. "One thing Ed's gifts have helped us do is develop synergy among departments and schools at U.Va," Dr. Bloom said. Drs. Lazo and Bloom are now applying novel screening strategies to pave the way for possible new treatments for Alzheimer's patients.

Private support from several sources will accelerate the team's work. In addition to Mr. Owens, leadership support from the Harrison Family Foundation and Nan Stuart—who is continuing the philanthropic work of her late father, E. Hadley Stewart (Col '41)—have advanced research on a number of fronts.

By slowing or stopping the progression of Alzheimer's, many patients may be able to live out their lives unencumbered by the disease. The partnership between U.Va.'s researchers and benefactors may increase our understanding of the disease, and give us the power to one day defeat it. 🏠

To learn more about supporting U.Va.'s Alzheimer's research program, contact Cindy Reynolds, director of development, neurological programs, at 800-297-0102 or creynolds@virginia.edu.



Nationally renowned researchers Drs. Steven DeKosky (right) and John Lazo are part of a multidisciplinary team at U.Va. looking to uncover the mysteries behind Alzheimer's disease.