UNLOCKING THE MYSTERY BEHIND ALZHEIMER’S DISEASE

Alzheimer’s disease and other forms of dementia affect more than 5.4 million Americans—and that number is rising rapidly. No treatment is available to cure Alzheimer’s disease. While there are a few drugs that temporarily improve symptoms, none of the treatments available today alters the underlying course of this fatal disease.

Researchers at the University of Virginia are studying dozens of treatment strategies that may have the potential to change the course of the disease. Within the next 10 years, scientists at UVA expect to introduce pioneering new drugs and treatments that will offer real hope for patients.

Today, every discovery gives doctors more opportunity to change the progression of a person’s disease before significant deficits have occurred, positively impacting the quality of life for patients and their families.

What does it take?

- Faculty Recruitment & Retention
- Funds for Basic Science & Clinical Research
- Lab & Equipment Support

REDUCING THE RISK FOR ALZHEIMER’S DISEASE

The more we learn about Alzheimer’s disease, the more it becomes clear that heart health and brain health are closely linked. In fact, it’s now apparent that the same risk factors that lead to heart disease—high cholesterol, high blood pressure, obesity—also put you at risk for Alzheimer’s.

Carol Manning, director of UVA’s Memory Disorders Clinic, and her team are examining the relationship between vascular risk factors, mild cognitive impairment, and dementia.

Understanding how these factors relate to changes early in the dementia process will help identify those at increased risk for dementia, with an aim toward prevention and early treatment. Dr. Manning’s work examines the impact of these risk factors on cognition even before the onset of clinical dementia.
UVA researchers and physicians are pioneering new ways to diagnose and treat Alzheimer’s disease and other forms of dementia.

- Dr. Steven DeKosky’s groundbreaking work into novel neuroimaging techniques proved that PET imaging could allow researchers to reliably visualize and measure brain changes in those with very early stage Alzheimer’s. He plans to expand the use of PET imaging through the development of new, more flexible compounds, which could give doctors a chance to slow the progression of the disease.

- Professor George Bloom has found that the interaction of an especially toxic form of beta-amyloid—a form that tends to be present in the brains of those with Alzheimer’s—leads to the destruction of nerve cells, which accounts for the loss of memory and cognitive skills that characterize Alzheimer’s. Now Bloom and School of Medicine Associate Dean for Basic Research John Lazo are applying novel screening strategies to pave the way for possible new treatments for patients.

- Dr. Matt Barrett is investigating the genetic connection between Alzheimer’s disease and other forms of dementia, including Parkinson’s disease dementia. He is also examining the psychiatric difficulties found in people with dementia. Understanding these relationships opens the door to developing and sharing treatments across these conditions.

- Deficits in visual perception are common in early Alzheimer’s and lead to disorientation, wandering, and unsafe driving. Dr. Roberto Fernandez is looking to characterize early changes in brain function that could shed light on the cause and mechanisms of the disease. His work may lead to new tools for early diagnosis and help identify unfit drivers among mildly impaired individuals.

- Dr. Erin Foff is investigating the role of genetic mutations in causing disease in patients suffering from certain types of early-onset and aggressive dementias. She is also initiating a “rapid access” clinic, which will improve patient access to UVA’s multidisciplinary teams and facilitate clinical research.

- Pathologist Dr. Beatrice Lopez studies the brains of Alzheimer’s patients after death to see the effect of repeated concussions and traumatic brain injury (TBI) on the brain. Her work will speed investigations into the connection between TBI and Alzheimer’s.

DEVELOPING NOVEL SYSTEMS OF CARE

CHALLENGE

The needs of Alzheimer’s patients constantly change as their disease progresses. How can we create novel, more effective ways to care for and support these patients? Can we diagnose the disease earlier so that patients receive the care they need?

IMPACT

Alzheimer’s disease has a significant impact on patients and their families. If we can find ways to recognize and diagnose the disease earlier, we can slow the onset of symptoms, improving quality of life for patients. And, as the disease progresses, we need to find new treatments and better ways to deliver care, not only in a clinical setting but also closer to home.

ACTION

By identifying the fundamental mechanisms of Alzheimer’s and other forms of dementia, researchers are uncovering new drug targets for future treatments. At the same time, UVA physicians are developing ways to measure the effectiveness of treatments, giving them the ability to quickly refine therapies and improve results.

UVA is also pioneering new training methods for primary care physicians so that people with Alzheimer’s are diagnosed earlier and begin receiving the care they need.

DID YOU KNOW? One in eight older Americans has Alzheimer’s disease. It is the sixth-leading underlying cause of death in the United States. More than 15 million Americans provide unpaid care for a person with Alzheimer’s or other dementias. At the same time, payments for care are estimated to be $200 billion in 2012.

LOOKING AT ALZHEIMER’S DISEASE DIFFERENTLY