

National Institute on Aging: Alzheimer's Disease Research Centers

Much of the progress in Alzheimer's disease research in the United States over the past 20 years has been made through the NIH-supported Alzheimer's Disease Centers, where ADC scientists have conducted exemplary research and provided rich resources to investigators across the community of Alzheimer's disease researchers.

Lead Agency:

National Institute on Aging (NIA)/National Institutes of Health (NIH)

Agency Mission:

Support and conduct genetic, biological, clinical, behavioral, social, and economic research related to the aging process, diseases and conditions associated with aging, and other special problems and needs of older Americans.

Foster the development of research and clinician scientists in aging.

Communicate information about aging and advances in research on aging to the scientific community, health care providers, and the public.

Principal Investigator:

Creighton Phelps, Ph.D.
National Institute on Aging
Division of Neuroscience
7201 Wisconsin Avenue
Bethesda, MD 20892

General Description:

Alzheimer's Disease Research Centers

Much of the important progress made in Alzheimer's disease (AD) research in the United States over the past 20 years has come through studies conducted by the NIH-supported Alzheimer's Disease Centers (ADCs). For example, ADC scientists have conducted much of the research on protein processing related to plaque and tangle formation – the hallmark of AD. Other studies are examining changes in brain structure at different clinical stages of AD, developing brain imaging technologies, and conducting neuropathology autopsy evaluations. ADC researchers have also focused on evaluating cognitive changes associated with normal aging, the transitions to mild cognitive impairment and early dementia, and factors that contribute to changes in cognitive abilities. Relationships and commonalities between Alzheimer's and other neurodegenerative diseases are also emphasized as well as the contributions of non-neurological co-morbid conditions such as cardiovascular disease, diabetes, and inflammation.

By pooling resources and working cooperatively, the ADCs have produced research findings and developed resources resulting in accomplishments that could not have been achieved by individual investigators. In addition, the ADCs have provided resources for

hundreds of research projects conducted outside of the ADC network. Shared resources include biological samples and data from longitudinal studies on the development of dementia in particular populations, brain and specimen banks comprised of well-characterized specimens collected under standardized protocols, and a National Cell Repository for Alzheimer's Disease which collects and stores blood, well-documented phenotypic data, DNA, and cell lines from families that have multiple affected members. The repository is part of the NIA AD Genetics Initiative to identify genetic risk factors for late onset AD. Other ADC collaborative efforts that have led to the establishment of other research resources such as the Consortium to Establish a Registry for Alzheimer's Disease, the National Alzheimer's Coordinating Center, the Alzheimer's Disease Cooperative Study, and the Alzheimer's Disease Neuroimaging Initiative.

Excellence: What makes this project exceptional?

The ADC program has brought together the top experts in the country to accelerate progress in developing a more comprehensive understanding of the mechanisms that underlie the development of AD. The program has also greatly enhanced the work of many more researchers by providing much needed resources to the larger community of AD researchers as they search for better strategies to prevent and treat the disease.

Significance: How is this research relevant to older persons, populations and/or an aging society?

Alzheimer's disease (AD) is the most common form of dementia among older people. It is a neurodegenerative disease that damages the parts of the brain controlling thought, memory, and language. AD is estimated to affect approximately 4.5 million older people in the United States. Although occasionally it is diagnosed in patients in their forties and fifties, AD most frequently is associated with advancing age. The disease doubles in prevalence with every 5 years past the age of 65; thus, extending life by 10 years quadruples the probability of the disease occurring. AD is the most frequent cause of institutionalization for long-term care. It destroys the active productive lives of its victims and devastates their families financially and emotionally.

Effectiveness: What is the impact and/or application of this research to older persons?

The ADCs have produced research findings and developed resources that could not have been achieved by individual investigators working alone. Biological samples from Alzheimer's patients have provided the materials for hundreds of non-ADC funded projects including genetic projects currently underway. Several major longitudinal studies on the development of dementia in particular populations rely on ADC core facilities, and integrate their findings with those of the centers.

Innovativeness: Why is this research exciting or newsworthy?

It has been estimated that the United States spends as much as \$148 billion per year for the direct and indirect costs of care for patients with AD. With the rapidly increasing percentage of the population over the age of 65, the number of people with AD will increase proportionately, as will the toll it takes. If interventions cannot be found, the large number of people who will develop AD will overwhelm the health care system. As

we learn about the causes of AD, we are better positioned to finding new interventions and, ultimately, a cure for this devastating disease.