



The  
**MELIORA**  
CHALLENGE

THE CAMPAIGN for the  
UNIVERSITY OF ROCHESTER

# Alzheimer's Disease Care and Research

*Frederick Marshall, M.D.*  
Neurology

# The Age of Alzheimer's Disease



*Dr. Robert G. Holloway and Dr. Yeates Conwell*

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**ON THE COVER:** *Anton P. Porsteinsson, M.D., the William and Sheila Konar Endowed Professor and director of the Alzheimer's Disease Care, Research and Education Program, and Frederick J. Marshall, M.D., director of URM's Memory Care Program, review a patient's brain scan at the Memory Care Clinic.*

Alzheimer's disease, the most common form of dementia, is progressively becoming an emotional and economical burden that touches our community and reaches across the nation. As many as 25,000 people in the Finger Lakes region are estimated to suffer from Alzheimer's disease, and the occurrence of the disease is on the rise. By 2050, Alzheimer's disease is projected to be the leading cause of death nationally, eclipsing cancer and heart disease. But these figures do not convey the full impact of the disease. For every person with the disease, it is estimated that three additional people—often family members—provide that person with support and care, and they too carry heavy emotional, physical, and social burdens.

The challenge to battle Alzheimer's disease is real, and we need to move quickly. Thirty years ago we knew little about Alzheimer's disease. Today, through clinical studies and trials, we have a much clearer understanding of how the disease evolves, and have identified better ways to care for people suffering from its devastating effects. Partnerships amongst our research and clinical teams at the University of Rochester Medical Center (URMC) have helped target the underpinnings of the disease and have enhanced our ability to turn scientific discoveries into better treatments.

Our Alzheimer's Disease Care, Research and Education Program (AD-CARE) is recognized among the top Alzheimer's clinical research programs in the world, giving patients access to tomorrow's treatments today. We incorporate advanced imaging techniques that detect and track brain changes even decades before the onset of cognitive problems, as well as the most promising therapies that aim to prevent, stop or slow progression of cognitive and functional decline.

Our Memory Care Program is a component of the URM's Office for Aging Research and Health Services (OARHS). It was created to address a vital unmet community need to meet the rising demand for care for individuals with Alzheimer's disease and other memory disorders. The program uses a team-based approach to the assessment and management of both the patient and family caregivers.

We thank the many individuals who have generously participated in research or provided funding to help make a difference for science and for society. These relationships have changed the way we think about and diagnose Alzheimer's disease. With further support, our approaches to providing multidisciplinary care could prove to be new national models, and research carried out here could halt the progression and prevent the onset of Alzheimer's disease. Our goal is to beat this terrible disease. With your generosity, that dream could become a reality.

## HOPE PREVAILS

From the time Ron Wilkins noticed that his late wife, Pat, was having difficulty driving, she had already experienced a rapid decline in her mental health. In 2006, Pat was diagnosed with Alzheimer's disease. Deteriorating skill behind the wheel proved to be a modest beginning to a disease that left her in a condition where she could no longer use a fork. Pat received care through the Memory Care Program at the University of Rochester Medical Center. Pat was given support that helped her and Ron cope with the disease until she lost her brave battle in October 2013.

Ron created the Wilkins Family Foundation to help prevent other families from experiencing the pain and suffering his family has endured. The Wilkins family's recent foundation gift to the Memory Care Program helps to fuel breakthrough research for Alzheimer's disease. It is their hope that this research will move us closer to solving the puzzles of this complex disease.



*Ron and Pat Wilkins*



*Barbara and Tom Clark*

## Leaders in Advancing Care

A family caring for a loved one with Alzheimer's disease faces many challenges. Finding proper health care should not be one of their concerns. In 2008, Barbara and Tom Clark made a generous gift to the Medical Center to give people with Alzheimer's disease, and other forms of dementia, access to comprehensive evaluation, care, and support. Thanks to the Clarks' support, we now have the Memory Care Program. A multidisciplinary team of caregivers—including specialists in neurology, psychiatry, geriatrics, social work, nursing, as well as marriage and family therapists—work together to create a comprehensive and integrated program.

Our health care team provides each patient with the highest quality of care, using the most progressive diagnostics, technologies, treatments, and research. The program also provides support and education for the entire family, showing them how quality of life is still possible in the face of this disease.

The Memory Care Program simplifies and relieves some of the stress of the care process from diagnosis, to treatment, to the long-term support that evolves as the disease progresses. The Clarks' leadership was critical in bringing this program to life and in bringing memory disorder care, research, and education together in Rochester.



*Dr. Yeates Conwell*

## CONNECTING THE DOTS

"This has to go forward. We can't stand still." These are the words Yeates Conwell, M.D., director of Office for Aging Research and Health Services (OARHS), uses when describing his program's challenge to investigate, test, and develop novel, more efficient and lower cost ways to provide health care to the elderly. Described as the "Silver Tsunami" or the "Golden Wave," older people are the fastest growing segment of the population, causing the incidence of Alzheimer's disease and other forms of dementia to rapidly climb the list of health care woes which are both complicated and costly. The Memory Care Program showcases what Conwell and his colleagues hope to accomplish with OARHS by redesigning a system that cares for people with dementia. Though OARHS, we can bring together the resources to create innovative approaches which will improve health care for older people in Rochester and its surrounding communities, and serve as a model for other communities across the country.

**By 2020**, it is estimated that the cost to care for people with Alzheimer's disease will reach \$2 trillion, and by 2050, \$20 trillion. Our researchers are using creativity and ingenuity to understand how the disease develops in the brain and find new treatments that stop the causes of the disease directly.

**Maiken Nedergaard, M.D., D.M.Sc.**, the Frank P. Smith Professor of Neurosurgery, and her colleagues are dedicated to ultimately discovering how to modulate the brain's system for removing toxic waste to treat Alzheimer's and other neurodegenerative diseases. The complex network of waste removal, dubbed the glymphatic system, was first disclosed by URMCM scientists in August 2012 in the journal, *Science Translational Medicine*. A hallmark of Alzheimer's disease is the accumulation of the protein amyloid beta in the brain. Understanding how certain key 'players' in the glymphatic system can be manipulated to break down and remove amyloid beta could point the way to new treatments.

**Rashid Deane, B.Sc., Ph.D.**, and his colleagues conducted a series of experiments that have pinpointed the molecular mechanisms by which copper speeds up the pathology of Alzheimer's disease. Copper's presence is found everywhere from drinking water to fruits and vegetables. It is beneficial for nerve conduction, bone growth, the formation of connective tissue, and hormone secretion. However, the new study shows that copper can also accumulate in the brain and cause the blood-brain barrier to break down, resulting in the toxic accumulation of amyloid beta.

**Mark Mapstone, Ph.D.**, and his colleagues are identifying the earliest changes of Alzheimer's disease, before the first signs of memory loss are apparent, by looking at small molecules obtained from a simple blood sample. His work suggests that it is possible to identify these changes in cognitively healthy individuals, years before the clinical symptoms are apparent, when researchers may have a better chance to modify the underlying biology of the disease. Mapstone is also working to identify small molecules in older adults who have superior memory well into their 80's to develop approaches that promote successful cognitive aging.

## Your gift helps us *make an impact in Alzheimer's Disease Care and Research*

Finding new treatments for Alzheimer's disease—and even beating it—is within our reach. With your support, we can do so much more.

### ENDOWED AND DISTINGUISHED PROFESSORSHIPS IN ALZHEIMER'S CLINICAL CARE AND RESEARCH—\$1,500,000 to \$2,000,000+

Professorships are among the most coveted and defining rewards that a faculty member can receive. They provide invaluable support that helps the recipient expand research projects, conduct clinical studies, and mentor Ph.D. candidates and junior faculty. An endowed professorship is a long-term commitment to excellence that links its donors to quality medical education, research, and patient care in perpetuity.

### ALZHEIMER'S DISEASE CARE AND RESEARCH FACILITY—\$50,000 to \$1,500,000

As the number of people with Alzheimer's disease continues to rise, we need space for research and clinical care that will increase research productivity and enhance recruitment of faculty, as well as provide more space for our patients. Your gift will help us create an environment where innovators and clinicians work side by side to harness scientific breakthroughs and develop new treatments that make a difference for patients and their families. Opportunities also exist to name spaces such as exam rooms, labs, and conference rooms. Your support will help us build a stronger, invigorated medical community that is better prepared to fight one of the most challenging diseases of our time.

### TEAM SCIENCE FUNDS—\$500,000 to \$1,000,000+ (multi-year)

Most scientific discoveries are not made by one scientist. Generally, breakthroughs are the result of years of intensive work by teams of researchers that include graduate students, postdoctoral fellows, and laboratory technicians. You can support the contributions of our entrepreneurial, innovative research teams who have a legacy of working collaboratively across disciplines and with scientists from other institutions. You can also support the technology that speeds the path to new therapies and cures, yet adds heavily to research costs.

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### ENDOWED PROFESSIONAL TRAINING AND EDUCATION FUNDS—\$250,000 to \$500,000

Your support of professional training and continuing education opportunities for our scientific and health care workforce will help ensure that we encourage new ideas and lead the nation in amazing discoveries, groundbreaking technologies, and a nurturing partnership with our patients and families to improve their well-being.

### PILOT PROJECTS/SEED FUNDS—\$50,000 to \$100,000 (annually)

Gifts for seed funding are "risk capital." They allow scientists to shift the direction of their research to follow promising leads or new ideas, propelling scientific discoveries in new ways. You can help give researchers the time they need to push the boundaries of science and allow innovative ideas to reach their full potential.

### PATIENT- AND FAMILY-CENTERED CARE FUNDS—\$25,000 to \$75,000

The demands of day-to-day care and changing family roles can put stress on families and loved ones. A balance is needed between the patient's autonomy and recognizing when intervention of care is required, while making family members feel supported as well. Our unique program collaborates extensively with local organizations such as the Alzheimer's Association to provide "wrap-around" support services for caregivers, patients, and families in Rochester and surrounding communities. Your gift can help fund important needs such as support groups and educational programs for patients and families, or transportation/basic needs for the most vulnerable patients to ensure they continue their care.



MEDICINE of THE HIGHEST ORDER