BU ADC Bulletin

Boston University Alzheimer's Disease Center

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In This Issue:

The Importance of Research Participation

Alzheimer's disease (AD) poses a major health threat to our aging population. More than 5.4 million Americans have AD, and this number is expected to increase to 7 million by 2030 and increase to 16 million by 2050. AD doesn't just affect those adults 60 or older; a growing number of individuals age 60 and younger experience symptoms of younger onset AD. The national cost of caring for people with AD is about $183 billion every year. Luckily, research offers hope of prevention and an eventual cure for AD.

AD affects not just individual patients, but also their loved ones. Currently, an estimated 15 million caregivers in the U.S. provide 17 billion hours of unpaid care for individuals with dementia. Caregivers not only suffer emotionally but also physically, from stress-associated disorders and illness. Because of the toll of caregiving, dementia caregivers had $7.9 billion in additional health care costs in 2010. In short, there is an AD crisis that is growing in size and scope.

Research participation is one of the most important contributions anyone can make toward resolving the AD crisis. In the past 10 years, there have been major strides in understanding the cause of AD, developing more accurate methods of diagnosing AD and creating new treatments. Technological advances in the ability to diagnose and treat AD start in basic science laboratories, where it typically takes years to develop a procedure or medicine that can be studied in humans. One of the costs of this process, both in terms of money and time, is the recruitment of individuals

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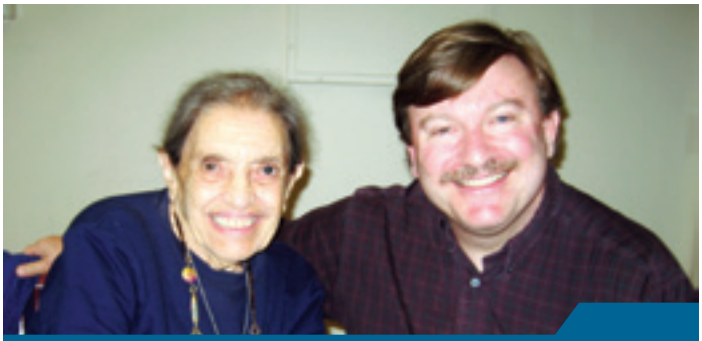


HOPE Study research participant Ora McGuire and HOPE Project Manager Eric Steinberg. Ora has volunteered 13 years with the HOPE study and plans to donate her brain to the ADC.

A Lifetime of Service

Honoring Alzheimer's disease advocate Richard H. Roye, Sr.

Richard Roye, Sr., who served the Boston University Alzheimer's Disease Center (BU ADC) as a Community Action Council (CAC) member, passed away this summer at the age of 78. A longtime community advocate, Roye generously contributed his time, advice and strength of character to the BU ADC for more than 10 years.

Roye leaves behind a legacy of both compassion and action. He grew up in Boston, graduating from Roxbury Memorial High School and attending Boston State College before joining the U.S. Army. Upon earning his master of social work from the Boston University School of Social Work, he worked tirelessly to improve the living conditions of low-income and homeless people.

Roye launched his social work career at Norfolk House and Roxbury Neighborhood House, eventually becoming executive director of the West Medford Community Center. He later began a 35-year career with the Department of Veterans Affairs, where he created new programs, oversaw clinical groups and mentored countless social workers. Under his leadership, the Boston VA Homeless Program gained national recognition.

In retirement, Roye worked to secure housing and other necessities for homeless veterans. Notably, he secured the donation of a van that enabled more efficient transportation for the food pantry. He was an active member of the Black History Committee and choir at Twelfth Baptist Church, and he recently joined the Roslindale Baptist Church and sang in their choir. As American Legion Post Commander at the William E. Carter Post #16, Roye started the annual Martin Luther King Jr. Memorial Breakfast and the 60-Plus Veterans Group.

As co-leader of the 60-Plus Veterans Group, he arranged for BU ADC faculty to present research and

A Lifetime of Service continued on page 3 >

BU ADC Launches New T32 Post-doctoral Program

The Boston University Alzheimer's Disease Center (BU ADC) recently received a $1.48 million Ruth L. Kirschstein National Research Service Award Institutional Research Training Grant (T32) from the National Institutes of Health to offer a new post-doctoral fellowship program, Alzheimer's Disease Translational Research Training.

Translational research focuses on the interaction between basic scientific discoveries and their practical applications in order to improve human health. The translational research approach emphasizes coordination among basic researchers, who study disease at the cellular or molecular level, and clinical researchers, who focus on how disease affects patients. The new BU ADC fellowship program aims to address a growing need for well-trained Alzheimer's disease (AD) researchers capable of facilitating their own translational studies.

The program provides structured translational research post-doctoral training for both basic and clinical researchers, positioning them to make major contributions to the field of AD. Trainees will benefit from the BU ADC's rich training resources, increasing their knowledge of a broad spectrum of AD fundamentals and participating in collaborative research projects with program faculty and other trainees.

"Our new T32 program will provide essential research and professional skills to a new generation of basic and clinical scientists interested in pursuing careers in AD research," said Dr. Angela Jefferson, principal investigator of the new T32 grant and Director of the BU ADC Education and Information Transfer Core. "Such training will enhance translational research efforts in AD and position these early career scientists to make major contributions to the field."

New fellows will be selected for the program each year, and each fellow will receive funding from the program for up to three years. The first fellows, Dr. Katherine Youmans and Dr. Katherine Gifford, have already started working on the T32.

Youmans received a doctoral degree in anatomy and cell biology from the University of Illinois at Chicago. She is working with Dr. Ben Wolozin to examine the effects of intraneuronal Abeta and stress granule proteins on long-term potentiation, which measures the ability of neurons to form memories.

The first T32 fellows, Dr. Katherine Gifford (left) and Dr. Katherine Youmans

"I am hoping to enhance my knowledge about the neuropathology underlying neurodegenerative disease progression, while also learning new techniques, such as electrophysiology," Youmans said. She also hopes to enhance her "understanding of the various overlapping mechanisms by which brain cells communicate and work together towards prevention of disease."

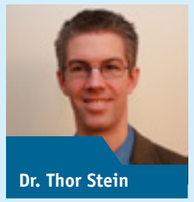
Gifford earned her doctorate in clinical psychology from the Florida Institute of Technology. Her research at the BU ADC is focused on early identification of abnormal cognitive aging – in particular, mild cognitive impairment (MCI) – and refining the diagnostic properties for MCI to provide more accurate prognoses to patients and their families. She works with Dr. Jefferson.

Gifford said she's excited about her work because "early identification of individuals at risk for abnormal cognitive changes with age increases the possible efficacy of treatments for AD as new therapies emerge."

The program funding is for five years and was awarded by the National Institute on Aging, which is part of the National Institutes of Health. The National Institute on Aging also funds the BU ADC research grant.

While the current fellowship positions are filled, the BU ADC is releasing a request for applications for another T32 fellowship slot that will begin in summer or fall of 2012. For more information about the training program, contact Elizabeth Daube, BU ADC education programs manager: edaube1@bu.edu or 617-414-1077.

New Faculty Member



Dr. Thor Stein

The Boston University Alzheimer's Disease Center (BU ADC) is pleased to welcome Thor Stein, MD, PhD as a new faculty member and Associate Director of the Neuropathology Core. Dr. Stein works at the Boston Veterans Affairs Medical Center, where he studies the role of chronic traumatic encephalopathy (CTE) in Alzheimer's disease and amyotrophic lateral sclerosis. In addition, he contributes his skills as a neuropathologist to the BU ADC Brain Bank.

Dr. Stein completed his undergraduate and graduate degrees at the University of Wisconsin-Madison, where he studied neuroscience. As a graduate student, he researched the role of a novel neuroprotective pathway in a mouse model of Alzheimer disease. At Massachusetts General Hospital, Dr. Stein completed his residency in pathology and fellowship in neuropathology, working with Dr. Bradley Hyman and Dr. Teresa Gomez-Isla to investigate presumed neuroprotective pathways in the brains of individuals who had significant Alzheimer's pathology, but had not been diagnosed with any dementia.

< *Importance of Research continued from page 1*

to participate in research. Many people are surprised to learn that recruiting research volunteers is so expensive, but even major medical centers with well-known AD programs – such as the Boston University Alzheimer's Disease Center (BU ADC)– have a tremendous need for research participants.

There are many ways to get involved as a research volunteer. There are clinical trials to test new treatments for individuals with AD or with mild cognitive impairment (MCI). Some studies focus on the caregiver. Other studies focus on developing new imaging or blood work methods of diagnosing AD or to better understand relations between heart health and brain health. Some studies address issues of everyday life and independent functioning, such as driving skills. The BU ADC's "flagship" study, the Health Outreach Program for the Elderly (HOPE), involves an annual half-day evaluation. It is open to cognitively healthy individuals, as well as those with MCI or AD. Results of the memory evaluation are shared with participants and – with the participant's permission – their doctors. In other words, there is likely a research study to meet the interests of any potential participant.

Survey results from our participants suggest people may be hesitant to come to the city for research participation, due to traffic, travel distance or cost. However, many research studies at the BU ADC provide transportation for participants and study partners at no charge. In addition, for some studies, participants can be seen at one of our satellite sites in Bedford or Weymouth. Travel concerns are often easier to address than people might expect.

Some older adults view research participation as an altruistic contribution to the scientific community's critical efforts to prevent or cure AD. Research participation also can provide important benefits for the participant. Some people gain a sense of empowerment by taking an active role in their health care or a feeling of satisfaction that they are doing something to improve the health of future generations, such as their grandchildren. Many participants enjoy interacting with research staff who understand AD and its toll on patients, caregivers and family members. Some studies offer the potential that a new investigational drug or other intervention might lead to positive treatment outcomes. Research participation can fulfill an important need for everyone touched by disease: a sense of hope.

Every research volunteer makes a tremendous contribution to the BU ADC mission and matters a great deal to advancing AD research progress. If you or your loved one has AD or MCI, please consider getting involved in research and spreading the word about the importance of participating in research.

Contributed by Dr. Robert Stern, BU ADC Clinical Core Director and Professor of Neurology and Neurosurgery at BU School of Medicine

< *A Lifetime of Service continued from page 1*

education, which inspired some 60-Plus Veterans Group members to join the BU ADC Health Outreach Program for the Elderly (HOPE) study. As president of the Elder Health Care Disparities Coalition, he oversaw the growth of the organization to almost triple its original membership.

Richard H. Roye, Sr. Photo courtesy of Tony Irving and The Bay State Banner

"Mr. Roye was an inspiration to us all. His dedication to seniors, the community and the people he served and cared about will not be forgotten," said Dr. Nancy Emerson Lombardo, Adjunct Research Assistant Professor of Neurology. "Roye has inspired a great many people to care about others and demonstrated that one person can make a very big difference."

BU ADC Grant Renewed Until 2016

The Boston University Alzheimer's Disease Center (BU ADC) is funded by a P30 research grant from the National Institute on Aging, and the center is pleased to announce that this research grant was recently renewed for another five-year funding cycle.

Founded in 1996, the center will celebrate its 20th anniversary during the upcoming cycle. The BU ADC is part of a national network of Alzheimer's Disease Centers (ADCs) funded as part of a Congressional mandate initiated in 1984. This ADC network was designed to enhance progressive Alzheimer's disease (AD) research in medical, behavioral and clinical science and to provide investigators access to resources to facilitate innovative AD research. The mission of the BU ADC is well aligned with the broader ADC network. The center aims to conduct and facilitate cutting-edge AD research, enhance clinical care for AD patients and their families and provide education regarding AD to both professionals and lay audiences in the greater Boston area and beyond.

During the most recent funding competition, strong leadership, prolific research activities and novel programs made the BU ADC stand out. During the next funding cycle, the BU ADC will increase its research emphasis on better defining normal aging and the transition to mild cognitive impairment and the earliest stages of dementia, as well as enhancing the clinical and pathological characterization of chronic traumatic encephalopathy. The BU ADC will also continue its efforts to research and address the needs of diverse populations, including the African American community.

Actively Recruiting Studies

Study Type	Study Title	Study Description
BU ADC Research Registry	Health Outreach Program for the Elderly (HOPE)	This longitudinal study examines age-related changes in memory and thinking. It serves as the Boston University Alzheimer's Disease Center (BU ADC) research registry, where participants agree to be contacted about other BU ADC-approved studies. HOPE participants are encouraged to participate in the actively recruiting studies summarized below.
Caregiving Support	Health Pathways	This study looks at how caring for a person with dementia affects one's physical and emotional health. Participants attend four yearly face-to-face interviews where they will be asked questions about their health and about the person they care for, along with some lab work.
Early Detection	RETINA Study	This study uses routine ophthalmological tests to detect biomarkers that predict the onset of Alzheimer's disease (AD). The study includes one visit to the Massachusetts Eye and Ear Infirmary. Participants must be 50 years of age or older and enrolled in the HOPE Study. Participants will need a study partner who can accompany them to study visits.
Education	PAIRS Program	This program pairs first-year Boston University medical students with patients who have early-stage AD. The program educates medical students about the care and support related issues faced by patients with AD, and provides patients with the opportunity to mentor students. Student-patient pairs meet monthly to participate in social activities throughout the academic year.
Evaluation of Daily Living	SAFE Drivers	This study aims to develop a brief, office-based evaluation of driving safety for older drivers that accurately predicts on-road driving performance. Two study visits involve office-based cognitive tests and an on-the-road driving evaluation conducted by a certified driving instructor. Study participation is open to adults 55-95 years of age who drive at least one time per week.
Memory & Cognition	False Memory in AD	This study seeks to understand why patients with AD and other dementias frequently remember things that never happened. The goal of this study is to provide ways to reduce false memories in patients with dementia. Study participation is open to cognitively normal adults age 50 years or older and adults with AD age 65-85.
	Vision & Cognition	This study examines the relationship between vision and thinking abilities in normal aging and AD. Participants perform tests of vision, cognition and daily functions, and a free eye exam is included. Study participation is for adults age 55 or older.
Neuro-imaging	Alzheimer's Disease Neuroimaging Initiative (ADNI-2)	This study uses different kinds of imaging to determine whether imaging of the brain can help predict the onset of cognitive changes and monitor such changes. Researchers are looking for persons 55-90 years of age and who are in good general health but have memory problems or concerns.
Treatment	Bapineuzumab	This multi-center treatment trial will evaluate whether a new medication, Bapineuzumab, increases the clearance of Abeta from the brain. Abeta is believed to be the initial cause of AD. This treatment study is for adults 50-89 years of age with an AD diagnosis. Participants will need a study partner to accompany them to study visits.
	Nutritional Supplements Combination Therapy	This study will determine whether nutritional supplements are well tolerated and safe for cognitively normal older adults and whether the supplements have an effect on brain health. The study requires three visits over nine months. Participants must be 60-90 years of age, be willing to take nutritional supplement pills and agree to lab work.
	Vitamin E and Memantine in AD	This multi-center clinical trial will evaluate the combination of memantine and Vitamin E in the treatment of mild to moderate AD. Memantine has been shown to improve function and cognition in late stages of AD, while Vitamin E has been found to delay the progression of AD. The study is only open to veterans with a diagnosis of mild or moderate AD. Participants need a caregiver to accompany them to all visits.

For more information, please contact the BU ADC Outreach & Recruitment Coordinator at 617-414-1326.

Research Updates

Heart health is related to brain health

Dr. Angela Jefferson is studying how heart health impacts brain health as adults age. In November, the American Journal of Cardiology published the findings of Dr. Jefferson and her colleagues at the Framingham Heart Study in the article, "Relation of left ventricular ejection fraction to cognitive aging." Left ventricular ejection fraction (LVEF) is a common clinical measure of heart health. The study found a nonlinear association between LVEF and measures of abnormal cognitive changes with age.

Memory complaint and cognitive impairment

Post-doctoral fellow Dr. Katherine Gifford presented findings at the July 2011 Alzheimer's Association International Conference in Paris in collaboration with Dr. Angela Jefferson. Dr. Gifford's research found that individuals with mild cognitive impairment, a purported precursor to dementia, who complain of memory problems and have caregivers corroborate these memory complaints have a greater risk of converting to dementia in the long term as compared to individuals with no complaint. In particular, Dr. Gifford's findings highlight the importance of corroborating patient memory complaints.

Neuroinflammation and brain regeneration

Dr. Tsuneya Ikezu is studying the effect of neuroinflammatory regulation on memory and neurogenesis – the birth of neurons – using transgenic mouse models of Alzheimer's disease (AD). He recently published an article in Gene Therapy on how the adeno-associated virus (AAV)-mediated gene delivery of interleukin-10 (IL-10), an anti-inflammatory cytokine, enhances spatial learning and neurogenesis in AD transgenic mice. Dr. Ikezu's study shows that IL-10 gene therapy is potentially beneficial for memory function and neuroregeneration in the brain. His team will also present the effect of basic fibroblast growth factor (FGF2) gene therapy on enhancement of hippocampal functions in AD transgenic mice at the Society for Neuroscience meeting in November.

Signaling pathways of anti-aging protein Klotho

Dr. Carmela Abraham gave a presentation entitled "Klotho enhances oligodendrocyte maturation and myelination" at the 12th International Conference on Alzheimer's Drug Discovery in September. Dr. Abraham and her colleagues found that Klotho is a growth factor that improves the brain's formation and repair of myelin, which allows for the communication between nerve cells that is crucial to learning, reasoning and memory. Dr. Abraham's group also found that a certain chemical modification, called methylation, occurs as a function of aging and prevents the production of the Klotho protein. This finding has been published in an article, "Promoter methylation and age-related downregulation of Klotho in rhesus monkey," in the journal Age.

PAIRS Program Welcomes New Students

The Boston University Alzheimer's Disease Center (BU ADC) PAIRS Program recently launched its fifth year by selecting a new group of student participants for the 2011-2012 academic year. PAIRS stands for Partnering in Alzheimer's Instruction Research Study. The educational program pairs first-year Boston University medical students with an early stage individual with Alzheimer's disease (AD) – their "buddy" – giving the students informal opportunities to interact with their buddies. The goal of PAIRS is to increase the students' understanding of AD and its various impacts on patients' lives. The PAIRS Program, directed by Dr. Angela Jefferson, director of the BU ADC Education & Information Transfer Core, is a replication of the award-winning Buddy Program directed by Darby Morhardt, MSW, at the Northwestern University ADC.

The 2011-2012 PAIRS Program Students, clockwise from back left row: Kenneth Fan, Robert Lindsay, Arvind Nishtala, Mauro Caffarelli, Megan Janeway, Priyanka Bearelly, Julie Bartolomeo, Alyson Kaplan, Michelle Min, Marie Carillo.

Alzheimer's Walk Raises $700k

More than 18,000 people raised $712,812 for Alzheimer's disease care, support and research at the 2011 Greater Boston Walk to End Alzheimer's. The annual event was one of more than 600 walks taking place in communities nationwide in an effort to fundraise for the Alzheimer's Association. On Sept. 25, the faculty, staff, participants and friends of the Boston University Alzheimer's Disease Center (BU ADC) and Senior Living Residences, one of our continuing care retirement community affiliates, participated in the Greater Boston Walk.

BU ADC Happenings

Welcome

The Boston University Alzheimer's Disease Center (BU ADC) would like to extend a warm welcome to new staff members: Elizabeth Daube, MSW, BU ADC Education Programs Manager; and Raymond Romano, Research Assistant to Dr. Angela Jefferson. The BU ADC would also like to welcome new Neuropsychology Post-doctoral Fellow Dr. Daniel Seichepine.

Congratulations

The BU ADC would like to congratulate the following faculty members on their recent promotions: Dr. Ann McKee, Professor of Neurology and Pathology and Laboratory Medicine; Dr. Sudha Seshadri, Professor of Neurology; Dr. Robert Stern, Professor of Neurology and Neurosurgery.

The BU ADC would like to congratulate Dr. Angela Jefferson for her recent promotion to Associate Director of the BU ADC. Also, Dr. Jefferson was recently awarded a $1.48 million five-year grant from the National Institute on Aging for the Ruth L. Kirschstein National Research Service Award Institutional Research Training Grant (T32). Details on the new post-doctoral fellowship program, Alzheimer's Disease Translational Research Training, are provided on page 2.

Dr. Katherine Gifford is a recent recipient of a National Alzheimer's Coordinating Center Junior Investigator Award. Her study, "Subjective memory complaint and cognitive aging," will provide a better understanding of how patient and informant memory complaint predicts a decline in memory and thinking abilities over time.

Dr. Lee Goldstein was recently awarded a $1.35 million three-year grant from the National Aeronautics and Space Administration. The study, "Effects of space radiation on hippocampal-dependent learning and neuropathology in wild-type and Alzheimer's disease transgenic mice," will use mice to examine the long-term impact of space radiation on learning and memory and how this impact may accelerate Alzheimer's disease (AD). The team will also evaluate a new, non-invasive, laser-based eye scanner that Dr. Goldstein and his group designed to detect molecular changes in the lens of the eye induced by AD pathology.

"At the Crossroads," a support group leaders kit on AD, dementia and driving developed collaboratively by the BU ADC, Hartford Financial Services Group, Inc. and the Massachusetts Institute of Technology AgeLab, was honored by Today's Caregiver magazine with the Caregiver Friendly Award. Dr. Robert Stern served as principal investigator for the project, which developed and evaluated a four-session course about dementia and driving for caregivers.

Goodbyes

Thank you and best of luck to former BU ADC faculty member Dr. Brandon Gavett, who accepted a position in the Psychology Department at the University of Colorado, Colorado Springs. Dr. Gavett completed a two-year post-doctoral fellowship at the BU ADC and joined the Boston University School of Medicine faculty as an Instructor in 2009.

Many thanks and best wishes to BU ADC staff members who have recently left: Amanda Gentile, MRes, Research Coordinator of the Heart & Brain Aging Study, who has taken a position at Brigham & Women's Hospital; Fareesa Islam, MPH, Research Assistant to Dr. Angela Jefferson, who completed a master's degree at the Boston University School of Public Health and has taken a position at the Children's Hospital Boston; Carol Rossi, RN, BSN, Clinical Research Manager, who is attending the Nurse Practitioner Program at Northeastern University; and Silvia Serrano, MPH, Outreach & Recruitment Coordinator, who has taken a position with the Boston Public Health Commission.

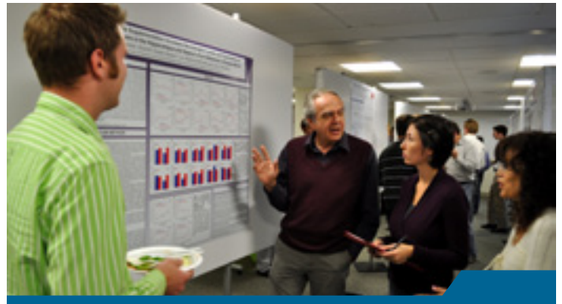
Thank you and best wishes to our recent student trainee: Pooja Parikh, HOPE Study Intern, who completed a master's degree at Boston University and will be working at the Boston Veterans Affairs Medical Center and Boston University Medical Center.

New Handbook on Alzheimer's

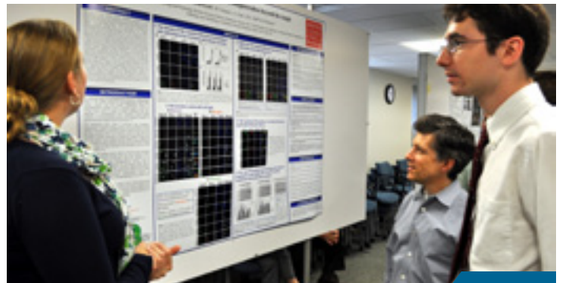
A new book co-edited by Drs. Andrew Budson and Neil Kowall, "The Handbook of Alzheimer's Disease and Other Dementias," was recently published by Wiley-Blackwell. The book provides a comprehensive review of Alzheimer's disease (AD) and other dementias from both basic and clinical neuroscience perspectives.

The book features both a broad introduction to AD and an up-to-date review of important scientific advances, making it a useful text for a variety of professional health audiences, including physicians, psychologists, scientists, graduate students, nurses and social workers. Paper and electronic copies are available for purchase at Amazon.com.

Alzheimer's Disease Research Day



Dr. J. Krzysztof Blusztajn discusses research findings with students and colleagues



From left: Graduate student Tara Vanderweyde presents her poster to Dr. Benjamin Wolozin and undergraduate student G. William Chapman, IV

The Boston University Alzheimer's Disease Center (BU ADC), Department of Biochemistry, Department of Pharmacology and the Graduate Program for Neuroscience hosted the 9th annual Boston University Alzheimer's Disease Research Day in October. Dr. Junying Yuan, professor of cell biology at Harvard Medical School, provided the keynote presentation on "Global mechanisms that regulate autophagy and the relevance to Alzheimer's Disease." BU ADC faculty member Dr. Carmela Abraham served as faculty host for the event, which included an interactive poster session for faculty and students to share their research.

Keynote speaker, Dr. Junying Yuan, with faculty host Dr. Carmela Abraham

Honorary and Memorial Contributions

The Boston University Alzheimer's Disease Center (BU ADC) is involved in a variety of clinical, research and educational activities. Often, research study participants, families or community leaders wish to contribute to the fight against Alzheimer's disease (AD), and these private donations are important to advancing the BU ADC's mission. The BU ADC welcomes honorary and memorial donations, as these gifts are an excellent way to pay tribute to a family member or friend while making a contribution to the advancement of research in the field of AD. Please call Harriet Kornfeld at 617-638-5676 or visit us online at www.bu.edu/alzresearch if you would like to make a donation.

The BU ADC would like to recognize the following private donors for their greatly appreciated contributions:

In memory of Cynthia Bond
Phyllis Blumsack

In memory of Doreen A. Croke
Esther Aghai
Jeff and Susan Allen
Leonard and Terry Glick
Charles F. Murphy
Mr. and Mrs. F. Waters

In memory of Maria Jose Da Silva
Victor Severino

In memory of Norman Lester
David Seldin

In memory of Edith Loverme
Norma Jones

In memory of Shirley Lurie
Marlene Newberg

In memory of Elizabeth Newton
Patrick Boles
Stephen and Paula Snyder

In memory of Elizabeth Vaas
Patricia Galeno

In memory of Lillian Winograd
Gail Spatz

Alzheimer's Disease Center Leadership

The Boston University Alzheimer's Disease Center (BU ADC) is primarily supported through a grant from the National Institute on Aging. The BU ADC supports cutting-edge research and provides education and clinical care to individuals and families affected by Alzheimer's disease. Its leadership is listed below, alphabetically by Center Core.

Neil Kowall, MD, *Center Director and Administrative Core Director*

Andrew Budson, MD, *Center Associate Director of Research*

Robert Stern, PhD, *Clinical Core Director*

Christine Chaisson, MPH, *Data Management & Statistics Core Director*

Angela Jefferson, PhD, *Center Associate Director and Education & Information Transfer Core Director*

Ann McKee, MD, *Neuropathology Core Director*

Thor Stein, MD, *Neuropathology Core Associate Director*

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