

Early Detection: The Future of Alzheimer's Research

Alzheimer's drugs have failed to stop the disease's progression, but hope lies in early detection — and eventually, early intervention

After decades of clinical trials and new drug research, no treatments have been found that can halt Alzheimer's disease after symptoms have begun. However, researchers at Boston University and around the globe have a new and promising goal: stopping Alzheimer's before it starts.

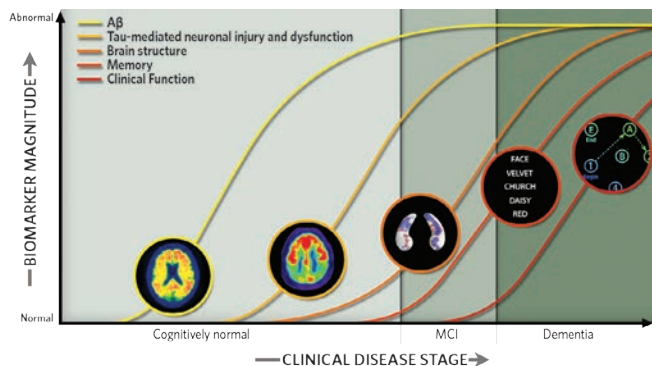
Studies are under way that collectively aim to track the development of Alzheimer's over time, determine accurate early-detection tools for the disease and find treatments that could *prevent* the disease — as opposed to reversing its effects. A key example is the nationwide Alzheimer's Disease Neuroimaging Initiative (ADNI).

At nearly 500 participants, ADNI is the largest observational study of Alzheimer's disease ever done. The study has ambitious aims to develop an accurate early-detection test for AD. The study tracks biomarkers and health outcomes in a huge group of patients over time — including people with or without memory complaints. The Boston University Alzheimer's Disease Center is one of ADNI's study sites.

"The consensus seems to be that past clinical trials have been unsuccessful because they were with symptomatic patients, and too much damage to the brain had already occurred," said Eric Steinberg. He manages BU's HOPE research registry, which is also expanding collection of biomarkers for Alzheimer's. "If we can accurately diagnose Alzheimer's disease before this degree of brain damage

occurs, hopefully experimental medications will be successful."

A biomarker, or biological marker, is a substance, measurement or indicator of a biological state. Biomarkers can sometimes be used to detect a disease well before its symptoms begin. The graph at left shows the conditions and tests that ADNI studies and how the changes associated with each curve theoretically demonstrate the progression of Alzheimer's:



- **Increased beta amyloid**, a protein associated with Alzheimer's pathology, detected in cerebrospinal fluid (CSF) and positron emission tomography (PET) imaging
- **Neurodegeneration**, detected by rise of CSF tau – another protein associated with Alzheimer's pathology – and synaptic dysfunction measured via PET
- **Brain atrophy and neuron loss**, measured with magnetic resonance imaging (MRI)
- **Memory loss**, measured by cognitive assessment
- **General cognitive decline**, measured by cognitive assessment

"We think Alzheimer's disease starts with beta amyloid, and only later do tau abnormalities develop in the brain," said Neil Kowall, MD, director of the BU ADC and principal investigator of ADNI at BU. He added that each test detects unique biomarkers, and the results need to be compared over time to see which will serve as the most accurate early-detection test. "The florbetapir PET scan can show us if there is beta amyloid," Kowall said, "but only the CSF test can detect both beta amyloid and tau."

In This Issue

"Steve taught me that while Alzheimer's challenges are severe, there is so much enjoyment and human connection possible when we focus on the patients' remaining skills, hopes and desires — instead of focusing on their disabilities."

— Student Robert Lindsay, Reflecting on PAIRS . . . 3



PAIRS buddy Steve Morse and student Robert Lindsay

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Physicians have already started using some of these tests. The florbetapir PET scan used to only be available for research, but the Food and Drug Administration approved it for clinical use in April. An early detection test can prove useful when a patient has signs of dementia, but the cause is unclear. In those cases, some tests – such as PET imaging – can help confirm that the cause of dementia likely is or is not Alzheimer's. Because Alzheimer's is not the only possible cause of dementia, diagnosis is important for making decisions about treatment options. Although the disease cannot be stopped yet, there are drugs available that temporarily alleviate symptoms for many Alzheimer's patients.

Preventive research will increase once researchers have verified that the early-detection tests are not just informative, but predictive: that they can reliably identify otherwise-healthy people who will soon develop Alzheimer's. Then, new studies will explore drugs that could potentially ensure those patients never experience actual symptoms.

Early-Detection Tests

Imaging Scans

A relatively new PET scan product, florbetapir, can detect abnormal levels of beta amyloid in the brain. In this test, a small amount of a radioactive dye — with about the amount of radiation that you would receive during an x-ray — is injected intravenously. The dye then sticks to the beta amyloid if it is present in the brain, and one can see the dye in the imaging scan.

MRI scans use magnets to image water molecules inside the brain. MRIs are particularly useful for seeing the structure of the brain and detecting some changes in its size and shape.

Lumbar Puncture

CSF testing can detect abnormal levels of both beta amyloid and tau proteins. A small amount of the fluid is withdrawn from the lower back by lumbar puncture, and the proteins are then measured in a laboratory.

Blood Draw

In this test, blood is drawn from a vein in the arm. Blood contains biochemical and genetic information that might prove useful when researchers analyze the factors that contribute to the development of Alzheimer's.



Q&A: What does lumbar puncture involve?

The lumbar puncture, also known as a spinal tap, often concerns study participants. Many people misunderstand the lumbar puncture procedure and what it involves.

The image to the left shows where the lumbar puncture needle is inserted: into the space between two spinal vertebrae at the lower back.

"We're [inserting the needle] below where the spinal cord ends," said Samuel Frank, MD, a BU Associate Professor of Neurology who regularly performs lumbar punctures for the Center for the Study of Traumatic Encephalopathy's DETECT study. "There's a special noncutting needle we use because it's so thin ... It's like a blood draw from the back."

The procedure begins with local anesthetic to numb the area. After the needle is inserted, Frank said, about 20 milliliters of the spinal fluid are removed — which takes just about half an hour for the body to regenerate. Frank added that slight soreness at the puncture site is somewhat common, and as

"You're always afraid of that initial big push of that needle, [but] I didn't even feel it."

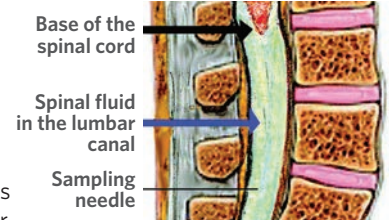
long as the needle used is thinner than 24-gauge, less than 1 percent of patients get a headache after the procedure.

Patients are encouraged to limit their physical activity after getting a lumbar puncture. If they do develop a headache, Frank said, "It's an intense pressure sensation in the back of the head and neck and shoulders. It's usually treated with fluids and caffeine and, within a couple days, goes away."

Richard Hamilton, PhD, recently agreed to a lumbar puncture as part of his participation in the ADC's HOPE study. He said he was willing to do it because of his commitment to Alzheimer's research.

"I didn't have any pain at all," Hamilton said, noting that several doctors and nurses were involved in preparing him for the procedure and performing it. "They primed me very well psychologically ... They discussed everything they were going to do."

"You're always afraid of that initial big push of that needle," he added, "[but] I didn't even feel it."



Artwork provided courtesy of the University of Pennsylvania Memory Center

About Us

The Boston University Alzheimer's Disease Center (BU ADC) aims to reduce the human and economic costs of Alzheimer's disease through the advancement of knowledge. We conduct cutting-edge Alzheimer's research and provide education about aging and dementia to professionals and communities in Boston and beyond. The ADC is also associated with the BU Center for the Study of Traumatic Encephalopathy.

The BU ADC Education & Outreach team publishes the *BU ADC Bulletin* twice per year. It includes stories about research findings, new studies and more.

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Reflecting on PAIRS

Student Robert Lindsay looks back on his year in Boston University Alzheimer's Disease Center's PAIRS Program, which teaches medical students about Alzheimer's through relationships with early-stage patients.

I've learned a lot about the challenges of living with Alzheimer's disease through my friend Steve, but I've also been forced to reexamine my personal beliefs about aging, memory and happiness.

Before meeting Steve through PAIRS, I basically viewed the disease as one that is completely insurmountable — an affliction that requires palliative care for patients who can do little more than suffer. I believed that families were doomed to decades of sadness as they watched someone they love melt into neurological oblivion.

Steve taught me that while Alzheimer's challenges are severe, there is so much enjoyment and human connection possible when we focus on the patients' remaining skills, hopes and desires — instead of focusing on their disabilities. Steve may not have much memory left, but he has more humor than any of my other friends. Preserving his ability to enjoy moments and friends must be the goal of Alzheimer's treatment, and physicians must help families exploit those opportunities for happiness.

I've learned that it's crucial to maintain patient independence for as long as possible. Every morning, Steve goes walking through the Blue Hills, a pleasure that has become a primary focus of his life. His wife, Donna, gives him a tremendous level of trust. I know many people would certainly fear the prospect of letting someone with memory deficits walk alone in the woods, and I imagine many patients would be incapable of navigating alone safely. That said, it is obvious to me that Steve's cognitive abilities and happiness are tremendously helped by his walks. If he did stop his walks for a month, he might lose his ability to keep doing them. Patients with Alzheimer's can easily lose mental functioning if they cease stimulation or their medication, even for just a few weeks. Donna's trust in Steve's current abilities provides a benefit to his treatment.

“These moments also helped me understand how precious each moment with Steve was. Even if the memory isn't present, that doesn't mean that Steve and I can't enjoy time together and share a human connection.”

One of my favorite days with Steve was the New England Boat Show. I had never seen a real yacht or proper sailboat before. Some were 30 feet long and worth half a million dollars. We were allowed to explore, and Steve was a great guide. He had been an engineer in the Navy before becoming an architect and had owned a private sailboat. He had a lot to tell me about the yachts, and we had a great time together.

When we went to get lunch, I realized that he couldn't remember anything that we had done just a few hours earlier. I tried to jog his memory and showed him a magazine I had purchased at the show, but he couldn't even remember taking the train to Chinatown. Moments like these gave me insight into the reality of Alzheimer's and the incredible neurological damage that patients experience. These moments also helped me understand how precious each moment with Steve was. Even if the memory isn't present, that doesn't mean that Steve and I can't enjoy time together and share a human connection.

At the same time, spending time with Steve and Donna made me appreciate the challenges a family undergoes. The time, money and patience required are staggering. Sometimes it was obvious when Donna had reached her limit: after Steve asked the same question over and over, or when she needed to get work done and Steve didn't understand why he needed to get ready to go.

Donna was able to work part-time, mostly from home, so she could keep close tabs on Steve. Both of them were financially successful and careful with their money. Steve was able to retire much younger than anticipated. I know many families are not so lucky, and Alzheimer's can be a shockingly expensive disease when medications, adult day care and doctor's appointments get tallied up. Furthermore, it is not a quick disease. Many patients will survive for decades without the ability to work, requiring constant or near-constant care. This experience opened my eyes to how important early financial planning can be if a long-term illness strikes. While I will certainly take that lesson to heart in my own life, I will also be far more likely to explore such issues with my future patients.

When I become a physician, I hope my experience with PAIRS will help guide my practice. The most important lesson Steve taught me is that a patient with tremendous challenges to their memory, verbal skills and other functions is still capable of enjoying a rich life on a day-to-day basis.

PAIRS is modeled after the highly successful Northwestern University Buddy Program. For more information, visit: www.bu.edu/alzresearch/education-resources/education/pairs/



Actively Recruiting Studies

AD = Alzheimer's Disease; MCI = Mild Cognitive Impairment

STUDY TITLE	CURRENTLY RECRUITING	STUDY DESCRIPTION
BU ADC Registry-Health Outreach Program for the Elderly (HOPE)	Healthy adults, MCI, AD	HOPE is the main registry of participants at the BU ADC. People who join HOPE attend a yearly visit in which their memory and thinking abilities are evaluated. They also participate in other BU ADC-affiliated studies. Interested volunteers may join this important registry if they can attend a yearly visit with a study partner, and are 65 or older with or without memory concerns or 55 or older with memory concerns.
AD Neuroimaging Initiative (ADNI-2)	MCI, AD	ADNI-2 is an important nationwide study that uses brain scans and biomarkers, along with tests of participants' memory and thinking abilities, to help researchers better diagnose and track AD and related disorders. The study is currently recruiting volunteers who have memory concerns and who are between the ages of 55 and 90. Participants are compensated for their time.
Bapineuzumab	AD	This research study is investigating whether Bapineuzumab, or BAPI for short, can slow the progression of AD. BAPI is an anti-amyloid drug given through an infusion. Participants may receive the investigational drug or a placebo. To participate in BAPI, volunteers must have a diagnosis of AD, be between the ages of 50 and 88 and be able to have an MRI.
False Memory in AD	Healthy adults, MCI, AD	The False Memory study seeks to understand why patients with AD and other dementias frequently remember things that never happened. The goal of this study is to find ways to reduce false memories in patients with dementia. Study participation is open to adults age 65-85 with or without memory concerns.
REVEAL IV	MCI	Many people with mild memory concerns wonder whether they will develop AD. The goal of this study is to use genetic information to help predict whether someone with mild memory problems will develop AD. Volunteers may be able to participate if they are 55 or older and have mild memory problems. A study partner is required for this study.
Health Pathways	Healthy adults, Caregivers	The Health Pathways study looks at how caring for a person with dementia affects physical and emotional health. Participants attend four annual face-to-face interviews in which they are asked questions about their health and about the person they care for. They also complete lab work. Participants may be eligible if they have no memory concerns and are age 60 or older.
Memory Benefits of Sleep in Healthy Young, Elderly and Mild AD Patients	Healthy adults	The goal of this study is to examine the effects of sleep on memory processing for healthy young adults and healthy elderly individuals. Volunteers participate in a daytime nap study or an overnight study. Participants may be eligible if they are between the ages of 65 and 80, are in good physical and mental health and do not have any sleep complaints.
CIRCA	Healthy adults, MCI	Both AD and cerebrovascular disease can cause changes in the brain that are associated with changes in memory, thinking and organizational skills. This study is looking closely at how brain structures relate to cognitive changes and how risk factors for cerebrovascular disease may affect individuals with and without MCI. Volunteers may be able to participate if they are between the ages of 45 and 85 and have MCI or no memory concerns.
Effects of Parkinson's Disease on Perception and Gait	Healthy adults	Parkinson's disease is a neurological disease that affects both motor and non-motor abilities. This study is looking at neurological changes associated with Parkinson's and the relationships between basic vision, visuospatial abilities and daily function. Volunteers may be eligible to participate if they have no memory concerns, good vision and no conditions that affect walking ability.
PAIRS Program	AD	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 issues faced by patients with AD and provides patients with an opportunity to mentor students. Student-patient pairs meet monthly to participate in social activities throughout the academic year.
Vitamin E and Memantine in AD	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.

Interested? Contact the BU ADC recruitment coordinator at 617-414-1078 or joinADC@bu.edu.

Research Updates

Small compounds inhibit beta amyloid protein formation

In May, the *American Journal of Neurodegenerative Diseases* published findings from Dr. Carmela Abraham's lab. Pauline So, PhD, screened a collection of 78,000 small molecules in search of compounds that would reduce beta amyloid, which is believed to play a major role in the development of Alzheimer's disease. She discovered two such molecules that now will be tested for efficacy in animal models of Alzheimer's. If successful in mice, these compounds could be tested in clinical trials as a potential therapeutic intervention.

Abraham examines ApoE and Klotho in Israel

Dr. Abraham recently returned from a 2.5-month sabbatical at Tel Aviv University, where she studied the connection between Apolipoprotein E (ApoE), a gene associated with increased risk of Alzheimer's, and her protein of interest, Klotho, in ApoE transgenic mice. While in Israel, Dr. Abraham also delivered invited lectures at Tel Aviv University, Hadassah Medical Center at the Hebrew University, Shiba Medical Center and the Weizmann Institute.

Veterans with blast exposure at risk of neurological disease

Drs. Lee Goldstein, Ann McKee and other ADC faculty recently discovered signs of chronic traumatic encephalopathy, a degenerative brain disease, in combat veterans exposed to roadside bombs in Iraq and Afghanistan. The condition is believed to be identical to what the Center for the Study of Traumatic Encephalopathy has found in athletes who experienced repetitive head trauma. To learn more, see the article in *Science Translational Medicine* or media coverage, including a May 16 *New York Times* article.

Positive aspects of Alzheimer's caregiving

In February, *Aging and Mental Health* published Dr. Maureen K. O'Connor's study, "The relationship between self-efficacy and positive aspects of caregiving in Alzheimer's disease caregivers." The current study found that caregivers with higher self-efficacy — the perceived ability to manage caregiving tasks — were more likely to report positive aspects of caregiving. Self-efficacy can be enhanced by paying attention to caregiving successes, observing other caregiver's successes, getting encouragement from others and learning to manage negative emotions like anxiety and depression.

Wolozin lab identifies new treatment approaches for Alzheimer's

Neurodegenerative Diseases recently published findings from Dr. Ben Wolozin's lab that show certain autophagy-stimulating compounds protect against the harmful effects of tau protein aggregation in neurons. (Autophagy disposes of the tau, a protein that is part of Alzheimer's pathology.) These compounds include rapamycin, currently used to treat some cancers, and ridaforolimus, currently being tested by the company Ariad Pharmaceuticals in phase II trials for cancer. Both are being examined as potential treatments for Alzheimer's and Parkinson's disease.

Stress granules represent a major part of Alzheimer's pathology

In July, the *Journal of Neuroscience* will publish work from Dr. Wolozin's lab: "Contrasting pathology of the stress granule proteins TIA-1 and G3BP in tauopathies." Diagnostic and therapeutic approaches to Alzheimer's disease focus on beta-amyloid and tau proteins. This article makes important advances on both of these fronts. Wolozin's group has identified a novel group of proteins, called RNA-binding proteins, which accumulate in the brains of patients with Alzheimer's disease and are present at much lower levels in subjects who are cognitively intact. This work opens up novel approaches to diagnose Alzheimer's disease based on these RNA-binding protein biomarkers, as well as new approaches to drug development.



Study Coordinator and Psychometrician Theresa McGowan, right, with Meenakshi Chivukula, who will transition into Theresa's role on the ADNI study later this year.

Staff Profile: Theresa McGowan

What does she do?

Theresa coordinates the Boston University Alzheimer's Disease Center's contributions to the Alzheimer's Disease Neuroimaging Initiative (ADNI), a national study that looks at biomarkers and brain imaging scans over time to develop a reliable early-detection test for Alzheimer's.

Why does she do it?

A former neuroscience major at Brown University, Theresa finds Alzheimer's research and neuropsychological tests fascinating. She enjoys getting to know patients and "being involved in every aspect" of the ADNI study, from scheduling to interviewing families to inputting data. Theresa is excited about ADNI and its potential. "It's contributing in a very meaningful way to Alzheimer's research and our understanding of the disease," she said.

What does she do outside of the ADC?

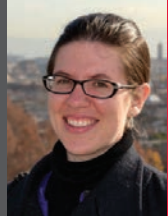
Theresa has a passion for learning about how food can prevent diseases or reduce their symptoms. She volunteers her spare time for Cooking Matters, a non-profit nutrition program that teaches mothers how to make healthy, appealing meals for themselves and their children.

BU ADC Happenings

Welcome

The Boston University Alzheimer's Disease Center (BU ADC) and its affiliate, the Center for the Study of Traumatic Encephalopathy (CSTE), would like to extend a warm welcome to new staff members and interns:

Alissa Greenwood started work as the **ADC Recruitment Coordinator** in the spring. Please contact Alissa to learn more about research participation: joinadc@bu.edu or 617-414-1078



Ayman Bodair, Intern for CSTE. Ayman is studying biology, chemistry and music at Boston College.

Danielle Borin, Psychometrician for the HOPE study. She recently graduated from Brandeis

University with bachelor's degrees in neuroscience and biology.

Alexandra Bourlas, Intern for CSTE. She received her bachelor's in behavioral biology from Johns Hopkins University and is studying for a master's in medical science at Boston University.

Andrew Brennan, Intern for CSTE. He is studying health sciences at Northeastern University.

Liza Elkin, Psychometrician for HOPE. Liza focused her undergraduate studies at the University of Pennsylvania on the biological basis of behavior.

Nathan Fritts, Research Assistant for CSTE. He recently received a bachelor's degree in biology from Bowdoin College.

Philip Montenegro, Graduate Researcher for CSTE. Phil is studying for his MD/PhD at Boston University and will be conducting research at the Center.

Bosede Opetubo, Education Programs Assistant for the ADC. Bosede is a graduate of Tufts University and is pursuing her MPH at Boston University School of Public Health.

Clifford Robbins, Research Coordinator for CSTE. He previously worked as a research assistant and lab manager for Harvard University studies focusing on memory and aging.

Brian Stamm, Intern for CSTE. Brian is currently studying biochemistry at Boston College and is a member of the school's Arts & Sciences Honors Program.

Goodbyes

Many thanks and best wishes to departing BU ADC and CSTE staff:

Nicole Cantwell, Research Coordinator for Dr. Angela Jefferson's lab, took a new position at Children's Hospital.

Daniella DiNizo, Research Assistant at the ADC, recently left to pursue her MD at University of North Carolina at Chapel Hill.

David Riley left the CSTE after two years as a Research Assistant. He will be studying for his MD at University of Massachusetts Medical School.

Ray Romano, Research Assistant for Dr. Angela Jefferson, will continue working part-time for Dr. Jefferson and studying for his MPH at Boston University School of Public Health.

Sunali Shah, Psychometrician for HOPE, will leave the ADC this summer to study for her MD at Boston University School of Medicine.

Congratulations

Christine Baugh, Research Coordinator for CSTE, was one of two winners of the 2012 Rex Fendall Award for Excellence in Writing at Boston University School of Public Health.

Meenakshi Chivukula, Psychometrician for the HOPE study, will soon take on a new position as a Research Coordinator. She will work on the Alzheimer's Disease Neuroimaging Initiative and new ADC studies.

Dan Daneshvar, Graduate Researcher for CSTE, received First Prize from the Henry I Russek Student Achievement Awards at Boston University School of Medicine's Graduate Division of Medical Sciences.

Daniella DiNizo, Research Assistant at the ADC, received the "Best Overall" award for her poster at the Spring 2012 Boston University School of Public Health Practicum Poster Session.

Daniel Seichepine, PhD, a Postdoctoral Researcher at the ADC and CSTE, recently received a "Young Clinician Research Award" from the Center for Integration of Medicine and Innovative Technology.

Max Wallack, a research intern at the ADC, was one of 10 national winners of the AXA Achievement Scholarship, which is sponsored in partnership with *U.S. News & World Report*. His Puzzles To Remember organization has distributed 8,500 puzzles to Alzheimer's care facilities, and he is the science editor of *AlzheimersReadingRoom.com*.

New Faculty: Hoon Ryu



Hoon Ryu, PhD

The Boston University Alzheimer's Disease Center is pleased to welcome **Hoon Ryu**, PhD as a new research affiliate. Ryu is a basic scientist collaborating with ADC investigators researching the molecular pathological mechanism of Alzheimer's disease. He is an Associate Professor of Neurology at Boston University School of Medicine.

Ryu is also director of the laboratory for Neuronal Gene Regulation and Epigenetics.

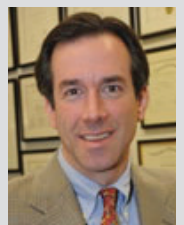
Leadership Change: Education & Outreach



Angela Jefferson, PhD

Angela Jefferson, PhD, Center Associate Director and Education Core Director, recently left the BU ADC for a new opportunity. The Center offers its gratitude for her years of service and wishes her well in her new roles: Associate Professor of Neurology at Vanderbilt University and Director of the Vanderbilt Memory & Alzheimer's Center.

The ADC welcomes Andrew Budson, MD as the new Education & Outreach Director. Budson also serves the ADC as Associate Director of Research. He is a Professor of Neurology at Boston University School of Medicine.



Andrew Budson, MD

A Decade of HOPE

Joyce Westner talks life, learning and long-term study participation

Curiosity brought Joyce Westner to the Boston University Alzheimer's Disease Center's HOPE study. A decade later, the experience has taught her a lot – and meant more to her family than expected.

"I was always interested in how the brain works," Westner said, reflecting on what drew her to research participation. "How do we acquire knowledge? How do we keep knowledge?"



Joyce Westner has participated in BU ADC studies for more than a decade.

A retired industrial trainer and returned Peace Corps volunteer, Westner has a passion for learning. She's provided training on new computer systems to all kinds of professionals, even air traffic controllers. To teach well, Westner said, she "had to figure out how to turn what an engineer would tell me into what a user could use...and engineers don't understand that nobody understands them."

At the BU ADC, Westner has participated in HOPE and a variety of other studies that examine memory, movement and more. She describes the tests as largely "interesting"

and "fun," and she's enjoyed getting to know the staff.

"I've learned that all the people who are trying to find an answer to Alzheimer's are so dedicated," Westner said. "Eric has been just a great source of help for me because, ironically, my mother – who participated in the tests for many years as well – developed Alzheimer's."

At age 96, Westner's mother has advanced Alzheimer's and lives in a nursing home. Westner visits her. She stays up to date on the latest Alzheimer's news and remarks that "there's more knowledge" coming out of research all the time. Westner's family struggle with Alzheimer's drives her continued participation in BU ADC studies.

"Knowing firsthand what this disease is like makes me much more motivated to help wherever I can," she said. "There are so many ways to volunteer your time, but what way is going to help people in the future more than participating in an important study? How [else] can I help the grandchildren I don't even have yet?"

In her free time, Westner creates botanical art and spends time with her family. She has been married to her husband, August, for 42 years. They have two children in their 30s.

Although she participates largely to benefit future generations, HOPE's cognitive testing has also been helpful to Westner's immediate health and peace of mind. About 1 in 8 people over the age of 65 develop Alzheimer's. Westner and her friends sometimes worry.

"I have a friend who panics when he can't remember where he parked his car, and he thinks it means he has Alzheimer's," Westner said. "We [research participants] know better. That it's normal."

She said she's learned a lot about memory, on her own and at study visits. "It's a great comfort," she added, "the phrase: 'normal, age-related memory changes.'"

Honorary and Memorial Contributions

The Boston University Alzheimer's Disease Center is involved in a variety of clinical, research and educational activities. Research study participants, families and community leaders often wish to contribute to the fight against Alzheimer's disease. We welcome honorary and memorial donations. These gifts are an excellent way to honor a family member or friend while contributing to the advancement of Alzheimer's research. **To make a donation, please call Lawrence Crimmins in the BU Development Office at 617-638-5676 or visit us online: www.bu.edu/alzresearch**

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

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Mr. and Mrs. Steven M. Sisselman



THE NEWSREEL:

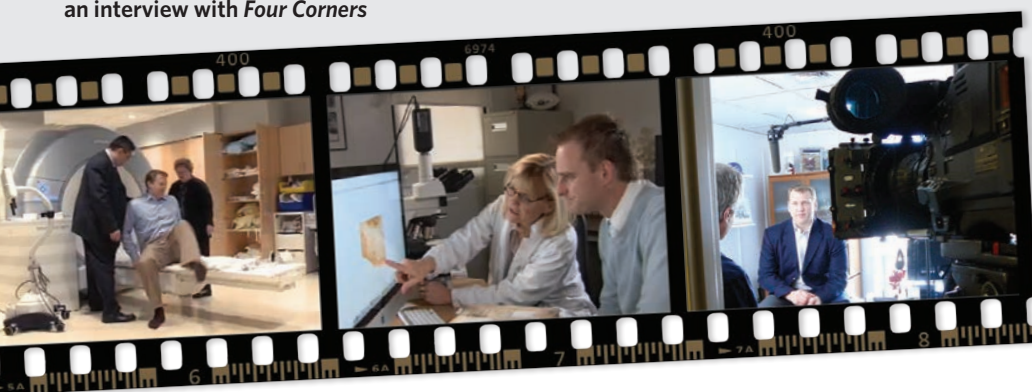
BU brain trauma research gets global attention

A renowned documentary news show recently featured faculty from the Boston University Alzheimer's Disease Center and Center for the Study of Traumatic Encephalopathy. The Australian Broadcasting Corporation show *Four Corners* interviewed Chris Nowinski and Drs. Robert Cantu, Ann McKee and Robert Stern about their research on repetitive head trauma, including sports-related concussions. As reporter Quentin McDermott put it, "In America, cutting-edge research is taking place, which may help save the lives of younger footballers in Australia and around the world."

Watch the show: www.abc.net.au/4corners/

Learn more about chronic traumatic encephalopathy: www.bu.edu/cste/

Left: From *Four Corners*, Nowinski preparing for an imaging scan of his brain Middle: Dr. Ann McKee analyzing a sample from a donated brain in *Four Corners* Right: Chris Nowinski during an interview with *Four Corners*



Dr. Andrew Budson gives a talk on the brain's memory systems.

Save the Date: Aging or Alzheimer's course

The Boston University Alzheimer's Disease Center will host a continuing medical education course, "Aging or Alzheimer's disease? How to detect and treat memory loss in the primary care setting," Oct. 29 at Waltham Woods. The course is designed for physicians, nurses, psychologists and social workers.

Sign up for event updates by visiting www.bumc.bu.edu/cme/ and following the link for the Conference Calendar. Upcoming community and professional educational events are also posted on the BU ADC online calendar: www.bu.edu/alzresearch/calendar/