

CNADC NEWS

Produced by the COGNITIVE NEUROLOGY

AND ALZHEIMER'S DISEASE CENTER

INITIATIVE KICKS OFF TO EXPAND THE CNADC'S RESEARCH AND PATIENT CARE ENTERPRISE

Northwestern Medicine recently announced an initiative to raise \$10 million to provide much needed additional space for the Cognitive Neurology and Alzheimer's Disease Center in a setting designed to integrate clinical with basic research. The plan calls for the

naming of the center after M.-Marsel Mesulam, MD, the founder and current director of the CNADC. This initiative will allow for the center's growth as it moves into its next phase of leading-edge research and patient care. The creation of an environment wherein researchers, clinicians, and social

service staff can conduct work side by side will bolster both communication and collaboration.

"Multidisciplinary integration is essential for addressing Alzheimer's disease, primary progressive aphasia, and related disorders," said Dr. Mesulam.

"The new space will allow basic science laboratories of the CNADC to be located next door to laboratories for imaging and cognitive testing. Faculty from different disciplines will work collaboratively, learn from each other, and train the next generation of clinicians and investigators. The custom-built space will enable a much needed expansion of the research enterprise so that our patients can ultimately become the beneficiaries of the progress," he said.

The initiative will also focus on raising endowment support that will aid in the recruitment of an additional leader in neurodegenerative maladies who will be able to carry forward the groundbreaking vision of Dr. Mesulam

Famous Faces Help Reveal Early-Onset Dementia

Simple tests that measure the ability to recognize and name famous people such as Albert Einstein, Bill Gates, and Oprah Winfrey (below) may help doctors identify early dementia, according to Northwestern research published in *Neurology*, the medical journal of the American Academy of Neurology.

Thirty people with primary progressive aphasia, a type of early-onset dementia that mainly affects language, and 27 people without dementia were tested. The average age of all was 62.

Existing face recognition tests to identify dementia are outdated and more suitable for an older generation. The famous faces for this study were chosen for their relevance to people under age 65. They included the faces of Einstein, Gates, Winfrey, John F. Kennedy, Lucille Ball, Princess Diana, Martin Luther King Jr., and Elvis Presley.

Participants were given points for each face they could name. Subjects who could not name a face were asked to identify the person through description. Participants

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Initiative Kicks Off, *continued from page 1*

into the future. The horizon of the CNADC holds even greater potential through the growth of its endowment as well as the continuation of annual gifts to research that support daily activities.

The First Extraordinary Commitment

The future of the CNADC is made brighter by the opportunity to endow the center in perpetuity, and Linda and Craig Grannon have made an extraordinary investment in this future by making the first commitment to kick off the initiative. “Marsel’s leadership and positioning of the CNADC form the bridge between the patient care and research components of the center, which is unique to the CNADC. Both of these aspects are so important as they work in partnership with one another,” said Mr. Grannon, who is a former chair of the CNADC Advisory Board. “Our personal and familial experience with the devastating effects of Alzheimer’s disease makes the research and care going on at the CNADC very important to us.”

“Craig was a transformative chair of the CNADC Advisory Board, and I continue to consult with him when in need of critical advice,” shared Dr. Mesulam. “I was truly honored and thrilled to learn that Craig and Linda made this commitment to advance the work of the faculty and staff of our center.”

The initiative will also focus on raising endowment support that will aid in the recruitment of additional faculty.

To learn more about how you can support the initiative to endow the CNADC, please contact Courtney Weeks at 312-503-3080 or c-weeks@northwestern.edu.

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The advisory board was founded by the late Jerome Rosenstone, who served as chair from 1998 to 2008.

The CNADC is one of 30 Alzheimer’s Disease Centers funded by the National Institute on Aging, National Institutes of Health.

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CNADC PARTNERS WITH COMMUNITY ORGANIZATIONS

In the Korean American Community

The CNADC has been partnering with Korean American Community Services in Chicago since 2011, when the community-based research partnership KARE: Korean American Alzheimer's Research and Education was developed to increase mutual capacity to conduct research in the Korean American community.

After a year of partnership building using community-based participatory research principles, KACS and the CNADC received a seed grant from the Alliance for Research in Chicagoland Communities to research Alzheimer's disease-related knowledge, cultural factors, and help-seeking patterns in Chicago's Korean American community.

The methodology included focus groups and individual interviews with Korean American older adults, family caregivers, and personnel working with older Korean Americans who have AD. The taped interviews revealed that Korean Americans stigmatized AD, thinking that it is caused by mental illness, eating spicy food, lack of mental stimulation, unconsciously wanting to forget painful memories, and feeling lonely and isolated. Although caregivers said they tried to be positive, they reported feeling guilty about not preventing the illness, as well as burdened, exhausted, helpless, and isolated because they did not want to disclose the illness outside the family. Challenges participants identified were the language barrier, not knowing where to get help, and feeling shame about asking for help. They thought the main need is educational material in Korean about a dementia diagnosis and treatment, as well as information about and referral to services and resources.

Considering the high prevalence of dementia and the rapidly growing size of the Korean American elderly population in the greater Chicago area (6.8 percent of the population in 2000 and 11 percent in 2010), a significant number of Korean American families are expected to be affected by AD.

"Our analysis of the life experiences of Korean American older adults and family caregivers of those with dementia revealed a range of attitudes toward dementia and Alzheimer's disease and considerable confusion regarding the cause of dementia," said CNADC social worker and director of education Darby Morhardt, PhD, LCSW. "Korean Americans face significant emotional, physical, and financial challenges and are in need of culturally relevant material and services to educate and support them." The CNADC continues to partner with KACS to develop such educational programs and services.

For further information on KARE, contact Morhardt at d-morhardt@northwestern.edu.

In the South-Side African American Community

The CNADC; the Endeleo Institute, a nonprofit community service organization; and seven faith-based organizations on Chicago's South Side have developed a research and educational partnership to help alleviate the burden of African Americans caring for persons with dementia. The project responds to the growing number of older African Americans with Alzheimer's disease, the strong religious beliefs and spirituality among African Americans, and the lack of research in collaboration with faith-based organizations in the community.

So far, the team has explored the African American community's attitudes about Alzheimer's disease, caregiving, and barriers to seeking help. The next step is to hold focus groups of caregivers from each of the faith-based organizations to help better identify their experiences and challenges. These focus groups will inform the development of culturally tailored interventions that promote mental and physical health and provide education on how to handle demands in caring for persons with dementia.

The CNADC is grateful to the Alliance for Research in Chicagoland Communities at Northwestern University for supporting this project with an ARCC partnership-building seed grant

In the Latino Community

The CNADC has partnered with a group of Chicago-area academic faculty and individual stakeholders to form LA CARE, the Latino Alzheimer's Coalition for Advocacy, Research, and Education. LA CARE's mission is to empower Latinos with Alzheimer's disease, or at risk for developing it, and their families to obtain greater access to education, family support services, and research opportunities.

According to the Alzheimer's Association, Latinos are 1½ times more likely than non-Hispanic whites to develop Alzheimer's disease. With the population of aging Latinos expected to increase, LA CARE collaborators are working to examine the experiences and unmet needs of dementia caregivers in Chicago's Latino population.

In November 2014 LA CARE hosted a community forum at Casa Central, a community-based organization serving Latino families, which included a screening of the Emmy Award-winning film from Terra Nova Films, *Compassion for Those We Love: A Town Meeting on Caregiving for Alzheimer's in the Hispanic Community*, and a panel discussion.

New Trials

The Alzheimer's Disease Cooperative Study group will conduct three new studies through grants from the National Institutes of Health, the Alzheimer's Association, and private industry.

Anti-Amyloid Treatment in Asymptomatic AD (A4)

It is well known that the biological changes in the brain causing the dementia associated with Alzheimer's disease develop many years before the memory loss becomes obvious. A test called an amyloid PET scan can now detect these biological changes. A4 is a "secondary prevention" trial to treat older people who show biomarker evidence of brain amyloid accumulation on PET scans.

Adults 65 and older who have normal cognitive test scores will be screened using PET amyloid imaging. Those with elevated amyloid who meet other stringent study criteria will be eligible to enroll in the trial. Subjects will be treated for three years with an anti-amyloid drug or a placebo.

Enrollment will continue through 2015 and into early 2016. Study staff conduct prescreenings by telephone to assess initial eligibility.

Northwestern is one of 65 sites participating in the groundbreaking study.

AZD0530 Treatment for Early AD

CONNECT is a multicenter, double-blind, placebo-controlled phase IIa study to evaluate whether AZD0530 (saracatinib), an investigational medicine, will slow progression in early, mild-stage Alzheimer's disease. AZD0530 is thought to work by protecting neurons from damage caused by the amyloid beta peptide. Conducted over 12 months, the study will assess AZD0530's effects, safety, and tolerability.

The 152 participants will be randomly assigned to receive either AZD0530 or a placebo. The study requires a minimum of four visits during the 6-week screening and 13 to 14 visits during the 52-week treatment period. Participants will be closely monitored for the duration.

Study of Nasal Insulin to Fight Forgetfulness (SNIFF)

SNIFF aims to evaluate whether a type of insulin administered as a nasal spray improves the memory of adults with amnesic mild cognitive impairment or early Alzheimer's disease. It will also look at the effect of insulin on brain structure and function, cerebrospinal fluid biomarkers, and blood biomarkers.

The rationale behind the study is the growing evidence that insulin carries out multiple functions in the brain and that poor regulation of insulin may contribute to AD abnormalities. Insulin resistance, reduced cerebrospinal fluid insulin levels, and reduced brain insulin signals have been found in people with a diagnosis of AD dementia.

People between ages 55 and 85 with a diagnosis of amnesic mild cognitive impairment or early AD may be considered for the study.

The SNIFF study is currently on hold because of issues with the device. Although quality issues did not create safety risks to participants, inconvenience resulting from the unreliability and limited availability of devices motivated the directors to suspend enrollment while the manufacturer solves the design issues. Once the study resumes, participants will be given a nasal spray device with either insulin or a placebo to use for 12 months. Then all participants will receive insulin for six months.

Ongoing Trial

Alzheimer's Disease Neuroimaging Initiative—2

The Feinberg School of Medicine recently completed recruitment for the first national study to detect Alzheimer's disease in older people before they begin to have significant memory loss. The CNADC is one of 53 National Institute on Aging sites participating in the study, an expansion of the National Institutes of Health's Alzheimer's Disease Neuroimaging Initiative.

The next phase of the ADNI study is projected to begin in 2016.

The Alzheimer's Disease Neuroimaging Initiative is funded by the National Institutes of Health; the Food and Drug Administration; pharmaceutical, imaging, and clinical trial management companies; nonprofit organizations, including the Alzheimer's Association and the Alzheimer's Drug Discovery Foundation; and private donors.

To find out more about these research studies, contact project manager Kristine Lipowski at 312-503-2486. To check their status, please visit the Research and Clinical Trials section of our website, www.brain.northwestern.edu.

Famous Faces, continued from page 1

gained more points by providing at least two relevant details about the person.

"The test differentiated between recognizing a face and actually naming it, which can help identify the specific type of cognitive impairment a person has," said lead author Tamar Gefen, a postdoctoral fellow in neuropsychology at the CNADC. Gefen did the research in the lab of senior author Emily Rogalski, associate professor at the CNADC.

Researchers found that the people with PPA performed significantly worse on the test than those free of dementia. The former group scored an average of 79 percent on recognition of famous faces and 46 percent on naming the faces, compared with the latter group's 97 percent on recognition and 93 percent on naming.

The study also used quantitative software to analyze MRI brain scans to understand the brain areas important for naming and recognizing faces. People who had trouble putting names to the faces were more likely to have a loss of tissue in the left temporal lobe of the brain, and those with trouble recognizing the faces had tissue loss on both the left and right temporal lobes.

"In addition to its practical value in helping us identify people with early dementia, this test also may help us understand how the brain works to remember and retrieve its knowledge of words and objects," Gefen said.

The study was supported by grants DC008552 from the National Institute on Deafness and Other Communication Disorders, AG13854 (Alzheimer Disease Core Center) from the National Institute on Aging, 5KL2RR025740 from the National Center for Research Resources, 1R01NS075075-01A1 from the National Institute of Neurological Disorders and Stroke and the National Center for Research Resources, and 5UL1RR025741 and 8UL1TR000150 from the National Center for Advancing Translational Sciences. All institutes are members of the National Institutes of Health.

—Marla Paul

ANNUAL FTD AND PPA CONFERENCE SUPPORTS AFFECTED FAMILIES

With limited information and resources available to families living with frontotemporal degeneration and primary progressive aphasia, the annual FTD and PPA Caregiver Conference continues to be a source of knowledge, connection, and support for those coping with these devastating conditions.

The 2013 conference drew more than 250 family caregivers and professionals from all over the country. It included an update on research by CNADC director M.-Marsel Mesulam; presentations by CNADC education director Darby Morhardt, PhD, LCSW, speech pathologist Becky Khayum, SLP, and people whose family members are affected by the diseases; a panel discussion with professionals and family members; breakout sessions on aspects of the disease; and support groups.

The conference was made possible by the generous support of the Glen and Wendy Miller Family Foundation,



the Association for Frontotemporal Degeneration, and the National Aphasia Association. Conference materials are available online at www.brain.northwestern.edu/about/events/ftdppa.html.

Efforts Made to Coordinate Research and Services

Since the National Alzheimer's Project Act (NAPA) became law in 2011, the CNADC has been promoting linkages between research and support services nationally and locally.

The Administration on Aging within the Administration for Community Living, the National Institute on Aging (NIA), and the Northwestern and Rush Alzheimer's Disease Centers began to discuss how to better coordinate research and patient and family caregiver services in support of NAPA's goal of prevention and effective treatment of AD by 2025.

Beginning in 2012, annual webinar series were developed and disseminated by the Administration on Aging's network and the NIA to reach the disparate audiences of NIA Alzheimer's Disease Centers researchers and providers of services such as case management, respite, home-delivered meals, and transportation. Sandra Weintraub and Darby Morhardt of the CNADC have contributed lectures on non-Alzheimer's and younger-onset dementias and the problems of patients and families. In 2013 this national collaboration won the people's choice Health and Human Services HHS *innovates* Award for innovation and usefulness.

CNADC has also helped develop a collaboration at the state level. In January 2012 the Illinois Cognitive Resources Network was formed to improve interactions among Illinois's three Alzheimer's Disease Assistance Centers (Northwestern, Rush, and Southern Illinois University School of Medicine), the Illinois Aging and Disability Network, the Illinois Department of Public Health, and the four Illinois Alzheimer's Association chapters. This collaboration aims to promote access to support services, education, research, and training programs, to serve as a template for a national model, and potentially to attract funding for those researching new interventions for dementia prevention, treatment, and care.



For more information on the ICRN, visit ilbrainhealth.org or contact **Darby Morhardt** at d-morhardt@northwestern.edu or **312-908-9432**. Materials from the 2012–15 webinars are posted at www.aoa.acl.gov/AoA_Programs/HPW/Alz_Grants/index.aspx.

The CNADC thanks Amy Wiatr, MSW, Administration for Community Living, and Raj Shah, MD, Rush Alzheimer's Disease Center, for their contributions to this article and their leadership in the federal (Wiatr) and local (Shah) initiatives.

Northwestern Receives \$12 Million for an Aphasia Research Center

A School of Communication researcher has received a \$12 million grant from the National Institutes of Health for Northwestern to establish a center devoted to research on aphasia, a devastating disorder that essentially robs the brain of language.

“In the United States alone, more than 1 million people suffer from aphasia, rendering normal communication impossible,” said Cynthia Thompson, the Jean and Ralph Sundin Professor of Communication Sciences, who will direct the new Center for the Neurobiology of Language Recovery. “For the first time, the best researchers in the field will work together to find biomarkers that can predict language recovery.”

The center will bring Thompson, a world-renowned researcher on aphasia, brain plasticity, and language recovery, and top aphasia researchers from Johns Hopkins, Harvard, and Boston Universities together to do large-scale investigations of how language is processed in healthy people and how language recovers when impaired by stroke or other neurological disease processes.

The center, which will study more than 200 patients, is expected to significantly affect clinical intervention practices for aphasia patients and to generate a large database for other researchers to access.

At Northwestern, Thompson will continue her focus on agrammatic aphasia, which affects the ability to understand and produce sentences. At Harvard and Boston, researchers David Caplan and Swathi Kiran will study anomia, which affects processing of spoken words. At Johns Hopkins, Brenda Rapp will conduct research on the neurobiology of the recovery of spelling (writing) processes.

—Wendy Leopold

MESULAM AWARDED POTAMKIN PRIZE

CNADC director M.-Marsel Mesulam, MD, has received the American Academy of Neurology and American Brain Foundation’s 2014 Potamkin Prize, given annually to a scientist for helping advance the understanding of neurological disorders, including Alzheimer’s and Pick’s diseases.

The \$100,000 prize, an internationally recognized tribute for advancing dementia research, “honors not only my work but also the entire CNADC and the culture of multidisciplinary collaboration at Northwestern,” said Mesulam, the Ruth Dunbar Davee Professor in Neuroscience and professor of neurology.

Mesulam received the award in April 2014 at the American Academy of Neurology’s annual meeting, the world’s largest gathering of neurologists.

Throughout Mesulam’s career, which includes 20 years at Northwestern, he has made major discoveries regarding the brain and what goes wrong in various forms of disease. His papers have been cited more than 45,000 times. In the early 1980s Mesulam discovered the neurological syndrome primary progressive aphasia, which impairs the ability to access words, by devising a method to map connections in the monkey brain.

“Understanding the anatomical foundations of mental function and how they are disrupted by neurodegenerative diseases is an essential precursor to discovering means for prevention and treatment,” Mesulam said. “It was not all that long ago when the terms ‘dementia’ and ‘Alzheimer’s’ were used synonymously, and when memory loss was considered an invariant feature of dementia. We now know that there are multiple diseases that can cause dementia without Alzheimer’s pathology or memory loss. Conversely, we are also finding out that Alzheimer’s disease comes in different forms, some of which leave memory intact.”

The goal of the Potamkin Prize is to attract the best medical minds and most dedicated scientists in the world to the field of dementia research.

“Once a neurodegenerative disease is evident, the damage is irreversible,” Mesulam said. “The only realistic goal is to prevent the disease or stop its progression, and this can only happen if we understand the disease so well that we can either predict it before symptoms emerge or diagnose it at the very initial stages.”

—Roger Anderson

ALZHEIMER DAY ENTERS THIRD DECADE

On the 21st Annual Alzheimer Day in May 2015, the CNADC continued the tradition of providing a community showcase for Northwestern research on Alzheimer's disease and related disorders. Researchers, clinicians, and families in the Chicago area discussed patient care, advances in research, and hope for the future. The CNADC also took the opportunity of Alzheimer Day to recognize the contributions of patients, families, researchers, clinicians, and staff who have supported its growth over more than two decades.

The more than 375 attendees heard Mendelson Lecturer Keith A. Johnson, MD, professor of radiology at Harvard Medical School, speak on "Seven Ages of Man and Seven Stages of Tau: Shakespeare versus Braak." There were 34 poster presentations by Northwestern clinicians and scientists; the 2015 Marie and Carl Duncan Prize in Memory Research went to Dina Simkin for her poster "Calbindin-D28K Restores the Intrinsic Excitability Properties of Aged CA1 Pyramidal Neurons to Young-Like State."

The previous year's Alzheimer Day, attended by more than 400 people, included a keynote address on "Using Biomarkers



Eric Neilsen (right), dean of the Feinberg School of Medicine, greets CNADC director M.-Marsel Mesulam at the 20th Annual Alzheimer Day.

for Diagnosis and Treatment Monitoring of Alzheimer's Disease: The Alzheimer's Disease Neuroimaging Initiative" by Michael Weiner, MD, of the University of California at San Francisco School of Medicine. Northwestern clinicians and scientists participated in the 44 poster presentations over lunch; the 2014 Duncan Prize was awarded to Daniel M. Curlik II for his poster "Ameliorating Age-Related Cognitive Impairments by Reducing Expression of L-type Calcium Channels in Area CA1 of the Hippocampus." Three families who had participated in a five-week pilot storytelling workshop shared their stories in the afternoon town hall session, which received wonderful feedback from attendees.



Board members Linda and Bob Mendelson (right) and their son and fellow Board member David Mendelson (left) with Mendelson Lecturer Keith A. Johnson at the 21st Annual Alzheimer Day



Northwestern scientists and clinicians present their research to the community.



Storytellers Dr. Daniel and Jean Winship share their crafted story with the community.



Keith Johnson presents the Mendelson Lecture at the 21st Annual Alzheimer Day.



Carly Oboudiyat, MD, participates in the panel for the town hall session "Don't Look Away: Using Storytelling to Give Voice, Find Connections, and Change Perceptions."

Research Programs Advance Understanding and Treatment of PPA

The primary progressive aphasia programs at the CNADC investigate the pathologies underlying PPA and the effects of PPA on language abilities and serve as an informational resource for the PPA community. For information on the PPA research programs or to participate, please contact their coordinator, Ben Rader, at benjamin.rader@northwestern.edu or **312-908-9681**.

Language in Primary Progressive

Aphasia Program: Funded by the National Institute on Deafness and Other Communication Disorders, this study is led by CNADC director M.-Marsel Mesulam, MD. It brings persons with PPA and their companions to Chicago for cognitive tests, language-processing experiments, electrophysiological investigations, and MRI scans of the brain. Innovative tasks are administered by investigators to understand how PPA affects grammar and word comprehension. Some participants return every two years so that the effects of PPA over time can be examined.

The study recently completed its eighth year and has enrolled 130 participants with PPA; 60 participants have returned for a two-year follow-up. Study findings have already led to more than 50 publications that will be used to guide clinical recommendations and new treatment. For this project the CNADC collaborates with other researchers at Northwestern and elsewhere.

To qualify for the study, participants need to have a diagnosis of PPA, be right-handed, have mild to mild-moderate symptoms at their first visit, and be able to have an MRI scan safely. Travel and accommodations are provided.

MRI, Anatomy, and Progression in Primary Progressive Aphasia Study:

Funded by the National Institute of Neurological Disorders and Stroke and led by Emily Rogalski, PhD, this study aims to better understand the underlying neuropathology factors that contribute to progression of PPA. Each participant completes four visits at six-month intervals that include neuropsychological testing and structural MRIs. Participants also have one PET scan of the brain using an imaging agent that identifies amyloid plaques, a component of Alzheimer pathology. Forty participants have enrolled in the study in its three years. Right-handed people with PPA for whom MRI and PET scanning is safe are eligible. Travel and accommodations are provided.

International PPA Connection

(IMPPACT) website: Maintained by the CNADC, the site (www.ppaconnection.org) serves as an international resource for the PPA community—patients, families, clinicians, researchers, and the public. Its 211 registered researchers represent 127 institutions from 29 countries. The site was recently updated to include research classification videos and other informative materials for clinicians and researchers.

INVESTIGATING SUPERAGERS' REMARKABLE MEMORY



Participants in the study met one another in spring 2013 when the CNADC threw “An Affair to Remember” at the Feinberg School of Medicine.

In 2012, scientists at Feinberg’s Cognitive Neurology and Alzheimer’s Disease Center captured national attention by identifying for the first time a group of people over 80 with remarkable, age-defying memory power. Now, the same scientists have received a five-year, \$2.28 million National Institutes of Health grant to continue studying these “SuperAgers” to find out how they resist cognitive decline.

“This project started as proof of concept. We wanted to know if it was possible to find individuals with unusually superb memory performance for their age,” said Emily Rogalski, research associate professor at the CNADC and one of the principal investigators of the study. “So far we have shown that not only is it possible, but there are also some biologically interesting things about these individuals’ brains.”

Memory loss is one of the most common complaints from older adults. At the same time, age is the biggest risk factor for Alzheimer’s disease. By studying people in their 80s and 90s who score very well on memory tests—at least as well or even better than individuals in their 50s and 60s—the scientists hope to find clues to help treat patients with Alzheimer’s disease and other types of dementia.

“We want to know what these cognitively healthy individuals have in common—biologically, psychosocially, and genetically,” said Rogalski. “The goal is to identify modifiable factors that we can share with others.”

In an earlier study, Rogalski’s team found physical and

genetic differences between 12 SuperAgers and normal agers, including a thicker cortex and less of a protein associated with Alzheimer’s disease risk. In the next iteration of this research, funded by the NIH’s National Institute on Aging, the scientists will follow a larger cohort—so far there are about 60 participants—for the rest of their lives. Most have already agreed to donate their brains after death, too.

All participants undergo standardized neuropsychological and neurological evaluations and brain scans. The scientists will also look for connections between memory power and other variables, including additional cognitive abilities, such as IQ score, and lifestyle factors, such as physical health. But early observations indicate that not all SuperAgers are highly educated, nor in top physical health.

“The goal is to use the data that we collect to launch new ideas about how we might approach aging and Alzheimer’s disease,” said Rogalski. “How can this data propel us toward the idea of living long and living well, rather than just living long?”
—Nora Dunne

The SuperAging program is supported by the Ken and Ruth Davee Neurobiology Research Initiative Fund and the National Institute on Aging. M.-Marsel Mesulam, MD, Ruth Dunbar Davee Professor in Neuroscience and director of the CNADC, and Changiz Geula, PhD, research professor at the CNADC, are also principal investigators of this study.

NEW MOLECULES SHOW PROMISE IN HALTING MEMORY LOSS

A new class of experimental drug-like small molecules developed in the Northwestern laboratory of D. Martin Watterson, PhD, is showing great promise in targeting a brain enzyme to prevent early memory loss in Alzheimer's disease. The molecules halted memory loss and fixed damaged communication among brain cells in a mouse model of Alzheimer's.

"It's possible someday this class of drugs could be given early on to people to arrest certain aspects of Alzheimer's," said Watterson, lead author of a paper on the study and the John G. Searle Professor of Molecular Biology and Biochemistry. The study is a collaboration between the Feinberg School of Medicine, Columbia University

Medical Center, and the University of Kentucky. It was published in the journal *PLOS ONE*.

Watterson and his collaborators have received a new National Institutes of Health award to refine the compound to the point of starting a phase 1 clinical trial. Called MW108, the novel drug-like molecule reduces the activity of an enzyme that is overactivated during Alzheimer's and is considered a contributor to brain inflammation and impaired neuron function. Strong communication between neurons in the brain is an essential process for memory formation.

The compound strikes at a stress-related protein kinase target whose overactivation is a major contributor

to brain network dysfunction. Recent neuroscience research has shown that the target is activated in neurological disorders such as Alzheimer's, amyotrophic lateral sclerosis, Parkinson's disease, and frontotemporal dementia. The new drug selectively disables the protein kinase.

"I'm not aware of any other drug that has this effect on the central nervous system," Watterson said.

The single-target approach of MW108 is novel. The prevailing view has been that multiple kinases in a network had to be disabled in order to restore normal function. The research of Watterson and collaborators shows that striking the right one can be highly effective.

—Marla Paul

The research was supported by the Thome Memorial Foundation, an Alzheimer's Association Zenith Award, and grants R01 NS064247 and R01 NS056051 from the National Institute of Neurological Disorders and Stroke at NIH and grants R01 AG031311, F32 AG037280, and U01AG043415 from the National Institute on Aging at NIH.

New Student Group Supports CNADC

Northwestern economics major Jordan Gross watched his grandfather struggle with Alzheimer's and wanted to do something to fight the disease. He enlisted friends Will Rosenthal and Harris Goodison to start the University's first student-run AD awareness organization—They Forget, We Remember—last spring. They initially thought about raising money for the Alzheimer's Association but then learned about the CNADC and decided to focus closer to home.

"With the amazing Alzheimer's research going on here at Northwestern, we thought we should allocate our money to our researchers," Gross said.

In its first few months, They Forget, We Remember has already involved 37 students. Its first fundraiser was a storytelling event to which storytellers from the CNADC's research program "Don't Look Away: Using Storytelling to Give Voice, Find Connections, and Change Perceptions" were invited. An improvisational comedy show followed.

The proceeds from these events were given to the CNADC to pursue a cure for Alzheimer's.

It is hoped that the relationship between the CNADC and the student organization will grow. "The work we do will contribute to the building of a new Alzheimer's research center so that the CNADC can perform more studies and help optimize the patient experience," said Gross.

"The CNADC is excited to work with this group of enthusiastic young students who have made it their goal to raise Alzheimer's awareness through education, support, volunteer, and fundraising efforts," said Kevin Connolly, CNADC's administrator.

Webinars Increase PPA Knowledge of Speech and Language Pathologists

More than 200 speech and language pathologists took advantage of webinars designed to help them improve understanding and treatment of patients with primary progressive aphasia.

The CNADC partnered with the National Aphasia Association and the Association for Frontotemporal Degeneration to develop the Dr. Lawrence Albert Memorial Webinar Series after surveys found that many speech and language pathologists, who play a critical role in the care team of PPA patients, have limited training in PPA.

The three-part webinar series was made possible by the generous sponsorship of Kathi and Peter Arnow, the family of Larry Albert, who battled PPA until 2011.

The first webinar, “The ABCs of PPA for SLPs” by CNADC neuropsychologist and professor of psychiatry and behavioral sciences Sandra Weintraub, PhD, focused on a description of dementia and the specific clinical syndromes that can be identified early in PPA, Alzheimer’s, and behavioral variant frontotemporal dementia. She discussed the underlying neuropathologic diseases that cause each syndrome; PPA symptoms, including decreased speech fluency and difficulties with word finding; treatment options; the important contributions of other disciplines to the care of

persons with PPA; and case examples of PPA subtypes and symptom clusters.

The second webinar, “Treatment for Persons with PPA: An Adaptable Communication Support Approach,” was presented by Melanie Fried-Oken, PhD, CCC-SLP, of Oregon Health and Science University and Maya Henry, PhD, CCC-SLP, of the University of California, San Francisco. Discussing the role of the speech and language pathologist with persons who have PPA, they provided an evidence-based foundation for intervention as well as concrete, practical tools.

The final webinar, “Living with Primary Progressive Aphasia,” addressed how speech and language pathologists can support patients with PPA. It was presented by CNADC social worker and director of education Darby Morhardt, PhD, LCSW, and Jamie Reilly, PhD, CCC-SLP, of the University of Florida. It focused on the impact of PPA on both the patient and family members, who are often younger, and included a review of available support services.

The webinars are archived and available for viewing free of charge by PPA patients and families, speech and language pathologists, and other professionals. To view any of the webinars, go to bit.ly/17vMt38.

CLINICAL TRIALS

Study Assesses Web-Based Speech Therapy

Emily Rogalski, PhD, an associate professor at the CNADC, has received grants from the Association for Frontotemporal Degeneration and the Alzheimer’s Association to assess the feasibility and benefits of offering speech therapy over the web for people with dementia.

The language disturbance known as aphasia can be a key feature in primary progressive aphasia and Alzheimer’s dementia. There are no effective medications, but limited research suggests that speech therapy may allow people with dementia to communicate

more effectively, thus improving mood and quality of life and promoting independence. Unfortunately, access to therapy is limited; few clinicians specialize in providing care for dementia patients, who may need to travel long distances to specialized centers, making routine therapy unfeasible.

Participants in the study receive an initial evaluation, eight therapy sessions, and three evaluations at two, six, and twelve months after treatment from a therapist skilled in dementia. A user-friendly, intuitive, personalized web portal is used for video-chat therapy

sessions as well as for home exercises that include personalized material.

More than 30 participants have enrolled in the study thus far. Initial results suggest that web-based speech therapy provides an effective mechanism for improving access to speech language therapy for individuals with dementia.

“In the absence of a cure for dementia,” Rogalski said, “it is important to offer strategies that help people maintain an optimal quality of life for as long as possible, and this project takes one step toward that goal.”

PROGRAMS PROVIDE CREATIVE OUTLET

The CNADC partners with Chicago arts organizations to offer persons affected by dementia opportunities to experience the arts as spectators and participants. For information about either of the programs described here, please contact Mary Rastetter, **mary.rastetter@northwestern.edu** or **312-503-0604**.



ilUMAnations Explores Art

After a pilot session found that exploring art can facilitate communication between persons with cognitive impairment and their care partners, the CNADC and the Loyola University Museum of Art have continued the *ilUMAnations* program, launching the most recent series in fall 2015.

Modeled on a program at the Museum of Modern Art in New York and based on

research demonstrating that persons with cognitive impairment are positively affected by engaging with the arts, *ilUMAnations* brings participants to LUMA for five 90-minute sessions on Monday afternoons, when the museum is closed to the public. Discussions are led by docents who are both knowledgeable in the exhibits and trained by CNADC staff about Alzheimer's disease and related disorders.

When *ilUMAnations* was piloted in early 2013, staff observations and focus group feedback indicated that the program was enjoyed and that multiple benefits were perceived. Participants found the program cognitively stimulating and socially engaging, were comforted by its small-group size and intimate setting, and felt inspired to seek out opportunities for life-enriching activities. One member said, "This made me more confident in myself."



Memory Ensemble Offers Improv Acting

Now in its fifth year, the Memory Ensemble™ continues to serve as an outlet for creative expression and social engagement for people in the early stages of cognitive decline.

Generous donations from two members funded the 2014 and 2015 seasons of the improvisational acting experience. Eight-week spring and fall sessions culminated in a final performance in which family and friends were invited to share.

A partnership between the CNADC and the Lookingglass Theatre Company, the Memory Ensemble aims to improve the quality of life for persons living with Alzheimer's disease and related dementias through the intervention of improvisational theater; to investigate the benefits of this nonpharmacological intervention; and to translate the benefits to others working with people with cognitive decline. Research findings and participant feedback show that participation in the Memory Ensemble yields feelings of success, hope, normalcy, confidence, connection, and empowerment and reduces feelings of stigma.



Members of the Memory Ensemble participate in structured improvisational exercises that include a metaphor-based check-in, a warm-up, and skill-building activities.

VOLUNTEERS PROVIDE DATA FOR CLINICAL CORE'S RESEARCH

This past year the CNADC's Clinical Core supported more than 20 studies and 64 scientific publications. The 500-plus volunteers currently in the core's registry, and the some 1,900 who participated over two decades, have allowed researchers to conduct cutting-edge studies of Alzheimer's disease and other dementias. Some of the volunteers have AD, primary progressive aphasia, or behavioral variant frontotemporal dementia, and others are cognitively healthy older adults who serve for comparison.

Among the papers core researchers published in the last year, these two demonstrate the breadth of research at Northwestern:

- Tamara Gefen, Alfred Rademaker, and M.-Marsel Mesulam studied people older than age 80 with better than normal memory for their age. They seem to have distinctive features in an area of the brain called the cingulate, which is important for social-interpersonal interactions as well as for concentration and attention. Not only do the subjects typically not show age-related Alzheimer pathology in this region, they possess a large number of special brain cells, von Economo neurons, that are important for social-interpersonal interactions. These findings suggest that some people may have protective factors in the brain that prevent degeneration.
- People with primary progressive aphasia, a form of dementia affecting the language parts of the brain, have difficulty speaking and naming objects, but patterns of their eye movements can tell how they are processing words. In

this study headed by Robert Hurley and Mustafa Seckin, investigators used a sophisticated method of tracking where the eyes look when someone is asked to find an object on a computer screen. A person with PPA was asked to find a pumpkin among several objects on the screen that included other vegetables and nonvegetables. He was distracted by the other vegetables but not by objects in other categories. The eye patterns were able to reveal that early PPA causes the brain to blur the boundaries between objects in the same category but not between categories. These findings have implications for treating PPA with speech therapy interventions.

Volunteers are active in a variety of CNADC studies on cognitive aging and dementia. The center gathers information about medical and family history and annually evaluates cognitive functions. Participants are asked to donate blood to be stored for research on risk factors for disease and to consider postmortem brain donation. The availability of brain tissue from people who have been studied in detail during their lives is invaluable to researchers trying to find the causes of memory loss and other forms of dementia and to design medications. All information is entered anonymously into a national database to which all 30 National Institute on Aging-funded Alzheimer research centers contribute.

The Clinical Core has been continuously funded by the NIA and the Illinois Department of Public Health since 1996 to promote research on Alzheimer's disease and related disorders. For more information about its studies with volunteers, see www.brain.northwestern.edu.

Mindfulness Training Aids Patients and Caregivers

Learning mindfulness together is beneficial for both people with early-stage dementia and their caregivers, easing depression and improving sleep and quality of life, reports a Northwestern study published in the *American Journal of Alzheimer's Disease and Other Dementias*.

Lead author Ken Paller, PhD, a CNADC member, director of Northwestern's cognitive neuroscience program, and professor of psychology in the Judd A. and Marjorie Weinberg College of Arts and Sciences, said the training helped participants "learn to focus on the present, deriving enjoyment in the moment with acceptance and without excessive worry about the future. You don't have to be drawn into wishing things were different."

Previous studies have shown that caregivers of people with neurodegenerative diseases such as Alzheimer's tend to have health concerns, such as anxiety, depression, and immune dysfunction, and an increased mortality rate. Caregivers often don't have much time on their own for activities that could relieve their emotional

burden. This is the first study to show that the caregiver and the patient both benefit from undergoing mindfulness training together.

The training also helps the patient and the caregiver accept new ways of communicating, the researchers said.

"The practice of mindfulness places both participants in the present and focuses on positive features of the interaction, allowing for a type of connection that may substitute for the more complex ways of communicating in the past," noted study coauthor Sandra Weintraub, a professor of psychiatry and behavioral sciences at the Feinberg School of Medicine and a neuropsychologist at Northwestern Memorial Hospital.

The study included 37 participants, more than three-quarters of whom were part of a patient-caregiver pair. Patients with mild to severe memory loss were able to use other cognitive functions to participate in the eight sessions specially designed for them and their caregivers.

"We saw lower depression scores and improved ratings on sleep quality and

quality of life for both groups" on the assessments participants completed after the program, said Paller.

Other Northwestern authors of the paper, titled "Benefits of Mindfulness Training for Patients with Progressive Cognitive Decline and Their Caregivers," were Jessica Creery, Susan Florczak, M.-Marsel Mesulam, Paul Reber, Jessica Kiragu, Joshua Rooks, Adam Safron, Darby Morhardt, Mary O'Hara, Kathryn Gigler, John Molony, and Michael Maslar.

—Marla Paul

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Thursday, May 12, 2016

For information about all events, contact

Darby Morhardt at **312-908-9432** or
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