



Neural Activities

Volume 8 Number 2 Fall 2017

THE NEWSLETTER OF THE CENTER FOR VITAL LONGEVITY

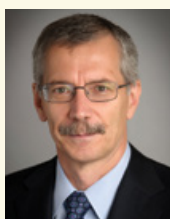
DIRECTOR'S MESSAGE

Funding Success

On behalf of us all at the CVL, welcome to our Fall newsletter. The past few months have been an exciting time for us; as you will see, we have enjoyed a surge in extra-mural funding that will allow us to both maintain our existing research programs and to take our research in exciting new directions. Notably, each of the Center's six research groups has been awarded at least one new grant since April, taking the total value of our current external funding to more than \$12 million.

Our success in winning grants is crucial in allowing us to conduct research and support trainee scientists, as you know. In addition, it affirms the quality and importance of our research, as judged by fellow scientists who subject our applications to competitive review. We are conscious, however, that grants are a means to an end, and that ultimately scientists are evaluated on the productivity and impact of their research. I am proud to say that we fare well in this respect also: in this year alone, CVL researchers have so far published more than 20 peer-reviewed papers in leading scientific journals.

We look forward to even higher productivity in the years to come. ☀



Dr. Michael Rugg

Michael Rugg
Dr. Michael Rugg

CVL Science Symposium Joining with UT Southwestern for Day of Imaging Talks

For the first time, the Center for Vital Longevity at UT Dallas is holding its upcoming biennial Science Symposium in conjunction with UT Southwestern Medical Center, in an all-day event entitled "Neuroimaging is a Team Sport: The Promise of Multimodal Imaging and Cross-Institutional Collaborations."

The Jan. 26, 2018 meeting on the campus of UT Southwestern will highlight the many collaborations that exist between our institutions, across three sessions: 1) Collaborative Projects that Work; 2) Amyloid and Tau Imaging; and 3) Resources for the Community.

This large collaborative project includes CVL faculty Drs. Gagan Wig, Kristen Kennedy and Karen Rodrigue, Dr. Park said, noting that "the funding of this project illustrates the strength of a team-approach to science and what can be accomplished when researchers join forces within the institution, and reach out to outside experts, as well.

Dr. Clifford Jack of the Mayo Clinic, serving as the visiting keynote speaker, will deliver a talk on the future of Alzheimer's Disease research. The conference will be opened by Drs. Richard Benson and Daniel Podolsky, the Presidents of UT Dallas and UT Southwestern respectively. Among the speakers from the Center are Drs. Michael Rugg, Gagan Wig and Denise Park, CVL's director or research.

"The complexity of the brain combined with the technical aspects of neuroimaging requires many different kinds of expertise,"



The north campus of UT Southwestern

said Dr. Park, one of the three primary conference organizers, in addition to Drs. Rathana Subramaniam and Joseph Maldjian of UT Southwestern. "Collaborations of UTD and UTSW faculty have resulted in unique projects that have fared very well when reviewed by National Institutes of Health grant panels."

Please visit imagingasteamsport.org for a complete agenda and to learn more about this exciting event. ☀

WHAT'S INSIDE

Councilmember Profile: Lisa Shardon	2
Donor Evening Features Presentation by UTSW Department Chair of Psychiatry	2
Annual Powderpuff Football Game Benefits Center for 2nd Year	3
National Institute on Aging Grant Makes New Longitudinal Imaging Study Possible	3
Park Lab Receives \$5.7M Award to Continue Landmark Brain Study on Again	4
National Science Foundation to Fund Center Research on Brain Networks	5
CVL Study: Increased Amyloid Plaque Leads to Increased Cognitive Decline	5
New Faces	6
Give a Gift that Pays You Back	7
PhD Student Chosen for New Fellowship	7
The Center's New Look Online	7
Advisory Council 2017-2018	8



CVL Advisory Councilmember Lisa Shardon, CEO Home Health Companions

Aging Life Care™ professional, Lisa guides families in selecting appropriate care options while removing the worry and stress that surround such decisions. She has first-person insight as a geriatric care manager into the challenges, frustrations and opportunities for better care options, including finding quality round-the-clock care for people with cognitive impairments.

Lisa helps members of the “Sandwich Generation” nearly every day, either through her work at Home Health Companions or the organizations where she serves in an advisory role.

“In addition to raising their own children, members of this generation are helping parents who are beginning to have their own unique dependencies,” Lisa explains. “These clients are ‘stuck in between’ two age groups that depend on their support. They may even face significant financial decisions in caring for parents while planning for their own children’s college tuition.”

Financial obligations may not be the only challenge they face. Finding the right

level of care for family members is a big concern for her clients.

“I work with caregivers who already have a background in dementia care, and we make sure they get more in-depth training in order to deliver the appropriate level of care to these clients,” she says.

Her passion to help others walk through dementia-related care challenges extends into her other volunteer roles, too. In addition to her work with the CVL, Lisa serves on the executive board for the Dallas Area Gerontology Society (DAGS) and the Aging Mind Foundation. She also serves The Alzheimer’s Association Greater Dallas Chapter on the Care and Support Advisory Committee.

Working with cognitively impaired patients and their families has taught her a central truth about the ravages of the disease.

“It impacts the people supporting the person with Alzheimer’s just as much — if not more — than the one with the disease,” she says. ☀️

Lisa Shardon can easily recite the 10 signs of Alzheimer’s.

She speaks frequently on issues of care and the concerns surrounding the disease, while running a thriving healthcare company and serving on the Executive Committee of the Advisory Council for the Center for Vital Longevity.

Lisa is the chief executive officer of Home Health Companions, an in-home healthcare company that provides compassionate caregivers and private duty nurses for daily living services 24-hours a day, seven days a week. A certified

Donor Evening Features Presentation by UT Southwestern Department Chair of Psychiatry

The Director’s Research Circle (DRC) convened for a highly informative evening in early October, to learn from UT Southwestern’s Dr. Carol Tamminga about psychotic illnesses and their connection to memory disorder.

Dr. Tamminga, the chairman of UTSW’s department of Psychiatry, explained how cognitive impairments in schizophrenia might arise from a memory disorder caused by a malfunctioning hippocampus — a region deep within the brain that plays a key role in memory. The aim of her research is to understand the biological underpinnings of schizophrenia and related illnesses, she said, in order to develop rational, individualized treatments.

Until relatively recently, psychiatric illnesses like schizophrenia were diagnosed by their behavioral symptoms or “phenomenology,” Dr. Tamminga told the group. An important goal is to identify biological markers of the different manifestations of psychosis.

“We don’t yet know how psychotic symptoms are generated,” she added. “When patients are suffering from psychosis, I’m always asking myself: ‘How do we discover and treat the physical basis for this disease?’”

The DRC is the giving society for the Center for Vital Longevity. By making a minimum gift of \$2,500 annually, donors are recognized as members of the Director’s Research Circle and are invited to private receptions, lectures



The 8th floor boardroom at CVL was setting for the Oct. 4 DRC with Dr. Carol Tamminga.

and dinners with internationally recognized scientists three times a year. Please visit supportcvl.org to learn more about the benefits of joining. ☀️



Annual Powderpuff Football Game Benefits Center for 2nd Year

The Center for Vital Longevity was among the beneficiaries of the 10th annual BvB (formerly Blondes vs. Brunettes) Dallas powderpuff football game this summer.

On August 12, the anti-Alzheimer's cause BvB raised \$650,000 in support of four local organizations engaged in Alzheimer's research or care. The CVL lab directed by Dr. Karen Rodrigue received a portion of the proceeds, supporting her work on the role played by different neurotransmitters in cognitive function, and helping her to track the cognitive health of study participants over time.

Members of CVL, including Dr. Rodrigue, descended onto the field of the Cotton Bowl at half-time for the ceremonial check presentation. Two years ago, it was the Center's Dr. Kristen Kennedy receiving the check, after BvB announced that some of the proceeds from the 2015 game would support genetic testing of more than 200 participants in one of the studies she is leading.

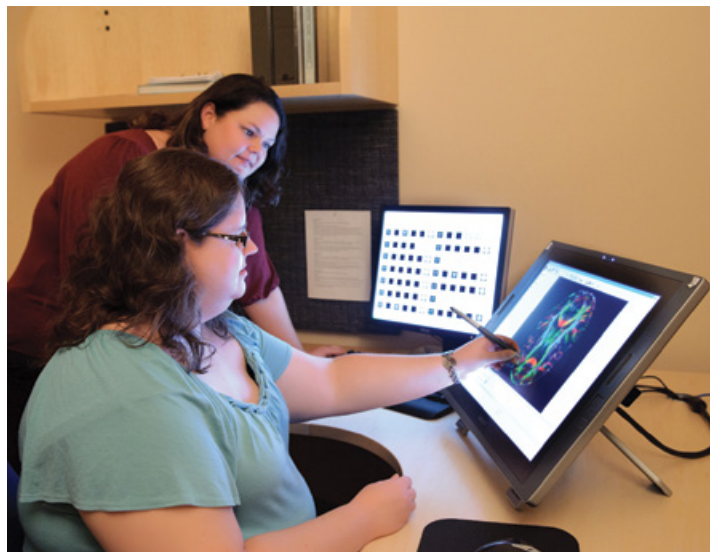
After a competitive first half, the Brunette team pulled away for their fourth straight victory over the Blondes. The final score: 58-35. 🌞



National Institute on Aging Grant Makes New Longitudinal Imaging Study Possible

Dr. Kristen Kennedy's Neuroimaging of Aging and Cognition Lab has received more than \$2.5 million in federal funding for a six-and-a-half year study aimed at better understanding the factors that influence changes in brain structure and function over time, and their relationship to changes in cognitive performance.

Approximately 180 people will be studied at three timepoints to track age-related changes in cognitive function. Dr. Karen Rodrigue is a co-investigator on this competitively awarded National Institute on Aging R01 grant. Together, Drs. Kennedy and Rodrigue will collect imaging data from their



Drs. Kristen Kennedy and Karen Rodrigue are co-investigators on a recently awarded NIH R01.

participants to identify factors that contribute to the brain's ability to adjust its activity to meet increasing cognitive demands. Among other

factors to be examined are the structural integrity of connections across the brain, as well as the plasticity of synapses. These data will be related to a range of characteristics for each study participant, including whether their brains have amyloid deposits suggestive of early Alzheimer's pathology.

"Longitudinal studies are the only way to understand individual differences in aging trajectories," Dr. Kennedy says. "We hope that this study will contribute to

the deeper understanding of what sets a person on a healthy versus a pathological aging trajectory." 🌞



Dr. Denise Park

Park Lab Receives \$5.7 Million Award from National Institute on Aging to Continue Landmark Brain Study on Aging

Dr. Denise Park, CVL's Director of Research, has received competitively awarded research funding that will allow her laboratory to continue its seminal Dallas Lifespan Brain Study (DLBS), a project that began when Dr. Park first arrived in Dallas from the University of Illinois at Urbana-Champaign in 2008.

The \$5.7 million grant was awarded to Dr. Park by the National Institute on Aging, part of the National Institutes of Health. It will allow Dr. Park and colleagues to continue to study for five more years the changes in the structure and function of the brain as people age, and then relate these brain changes to declines in cognition.

The 465 participants ranged in age from 20 to 89 at the beginning of the study, so the scientists can examine a decade or more of brain changes in young, middle-aged and older adults. The project funds a large team of researchers from UT Dallas, the University of Texas Southwestern Medical Center, as well as consultants from Harvard University, the University of Michigan and the Georgia Institute of Technology.

The study includes measurement of amyloid plaques, a marker of Alzheimer's Disease. All participants were healthy at the time

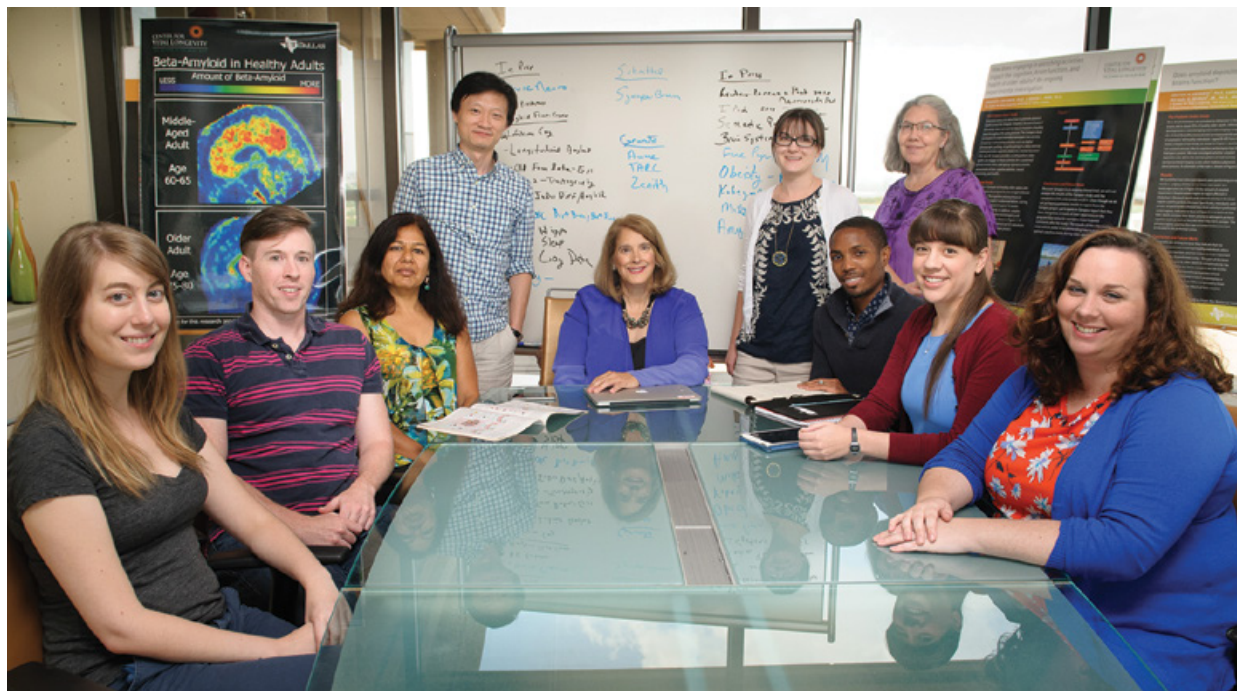
of enrollment, so the study provides one of the earliest looks at when in the lifespan markers of Alzheimer's begin to appear in the brains of healthy adults, how rapidly the deposits progress, and what their impact is on cognition. In sum, the research will provide a window into how healthy brains transition into disease, and how early in the lifespan the markers of Alzheimer's can be detected, Dr. Parks says.

The project will also yield a great deal of information about what mechanisms underlie the maintenance of a healthy mind. Dr. Park expects that many adults will show little change in memory and reasoning over 15 years and that the research team will be able to develop a "neural footprint" of what predicts

cognitive decline or cognitive stability as people age.

Two waves of data collection, approximately four years apart, have been conducted since the project's inception, with a third wave set to begin soon.

"This third wave of data collection is perhaps the most exciting scientifically," Dr. Park says. "We will see clearly who has maintained cognitive function over a prolonged period, as well as those who are experiencing precipitous cognitive decline. The study will provide critical information about what lifestyle variables are important for maintaining both brain and cognitive health, as well as how early in the lifespan individuals can be targeted to be high risk for decline so that early interventions can occur." ☀



Members of Dr. Park's Aging Mind lab, both past and present, have been instrumental in keeping the DLBS project going.



Dr. Gagan Wig

National Science Foundation to Fund Center Research on Targeted Stimulation of Brain Networks to Possibly Enhance Memory

In September, the National Science Foundation (NSF) awarded Dr. Gagan Wig nearly \$150,000 to investigate whether certain cognitive abilities can be enhanced by directly manipulating a corresponding brain system using non-invasive brain stimulation.

The NSF's funding mechanism for this research is the Early-concept Grants for Exploratory Research program, which is specifically used to support exploratory work in its early stages on untested, but potentially transformative, research ideas or approaches.

With the aid of this funding, Dr. Wig, who leads the Cognitive Neuroimaging Laboratory at the Center for Vital

Longevity, will attempt to use "network-guided" non-invasive brain-stimulation to directly alter the functioning of brain networks to affect executive function and long-term episodic memory in healthy young adults.

While previous work has used non-invasive brain stimulation applied to numerous target locations to modify various aspects of cognition, actually improving the function of the relevant networks has been difficult to achieve. Where stimulation-associated gains in cognitive ability have been noted in previous work, Dr. Wig says, there has been "sparse evidence linking behavioral change to changes in underlying neurophysiology."



As part of the study, the researchers will stimulate the brain using a magnetic coil that briefly alters the function of a small patch of the brain's cortex — a technique known as trans-cranial magnetic stimulation, or TMS.

"This research could possibly provide an approach for modifying cognitive ability within an individual," he says. "It should also help us further understand the brain mechanisms that mediate cognitive dysfunction in impaired individuals across the lifespan, and may allow application of the research program toward delaying or even preventing cognitive dysfunction in vulnerable individuals, using brain stimulation." 🌟

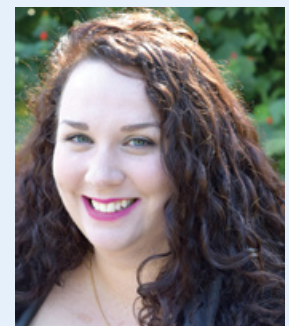
CVL Study: Increased Amyloid Plaque Leads to Increased Cognitive Decline

A CVL study has found that the amount of amyloid plaques in a person's brain predicts the rate at which his or her cognition will decline in the next four years.

The study, published in *JAMA Neurology*, used positron emission tomography (PET) scans to detect amyloid in 184 healthy middle-aged and older adults participating in the Dallas Lifespan Brain Study. Amyloid plaques, a sticky buildup that gradually gathers outside of neurons and is a hallmark of Alzheimer's Disease, are believed to start accumulating in the brain 10 to 20 years before the onset of dementia.

"We think it is critical to examine middle-aged adults to detect the earliest possible signs of Alzheimer's Disease, because it is becoming increasingly clear that early intervention will be the key to eventually preventing Alzheimer's," said Michelle Farrell, a Ph.D. student at the Center and the lead author of the study.

The study presents some of the first data on amyloid and its cognitive consequences in adults ages 40 to 59. The results suggest that a new approach might be needed to provide physicians and patients with information about the future for someone with amyloid deposits. Amyloid PET scan results are



**Doctoral Candidate
Michelle
Farrell**

typically presented as either positive or negative, but the new findings suggest that the amount of amyloid in the brain provides useful prognostic information about how rapidly cognition may decline in the future. 🌟

NEW FACES



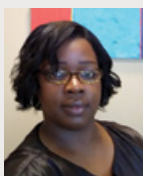
Camila Cristiani — Administration

Camila Cristiani joined CVL this summer as associate director. For the past 10 years, she worked as a contracts and grants manager at the Foothill AIDS Project in Claremont, Calif., where she was responsible for the fiscal and administrative compliance for the organization's federal and non-federal funding. A native of El Salvador, Camila's first exposure to Texas was actually as an undergraduate at Texas A&M. The self-proclaimed proud Aggie — "whoop!" — majored in economics, with a minor in business administration. In 2015, Camila completed her master's in business administration from Southern New Hampshire University, taking advantage of its distance-learning offerings. About her future at CVL she says, "I've never worked in academia but it's similar enough to the non-profit environment I'm familiar with. But it's vastly different at the same time, so it'll be challenging." Outside of work, Camila loves baking brownies. "It's my therapy, and cheaper, too." She is also the new owner of a rescued puppy, which she adopted from a Texas animal shelter during her move. 🌻



Chen Gonen — Rodrigue Lab

Chen joined the Rodrigue lab this fall as she began her Ph.D. studies in the Cognition and Neuroscience program at UT Dallas. She previously attended California State University at Northridge, where she received her bachelor's in psychology and chemistry. During her undergraduate education, she was part of Dr. Alyssa Arentoft's lab, which looked at cognitive outcomes in HIV+ individuals and how these outcomes are shaped by factors such as disease comorbidity, quality of health care, and efficacy of different medications. Her interest in aging developed when she volunteered at a local community college to help teach older adults basic computer and internet skills. Through training in cognitive testing and working with older adults, she developed a deep interest in researching cognitive changes through the lifespan and their neural correlates. She is especially interested in the effect of vascular health factors (e.g., hypertension) on the relationship between aging and cognition. In her spare time, Chen enjoys cooking, apartment gardening, petting animals and philosophical pondering. 🌻



Ieshia Griffith — Administration

Ieshia joined the Center in late spring as CVL's Manager of Research Administration. She moved to Dallas from Columbia, Mo. after working at the University of Missouri for 17 years, where she was a grants and contracts supervisor at UMC's Sinclair School of Nursing. While there, she oversaw more than \$30 million in federal grants, including NIH and Health Resources and Services Administration funding. Her alma mater is Columbia College, where she earned a bachelor's of science in business administration. An avid professional basketball fan, Ieshia's favorite teams in the NBA are the Golden State Warriors, the Cleveland Cavaliers, and the Boston Celtics. Ieshia is not really new to Dallas — the mother of four has been visiting relatives in Dallas for years, and she enjoys spend time with them whenever life permits! 🌻



Paul Hill — Rugg Lab

Paul joined the Functional Neuroimaging of Memory Lab as a research associate after earning his Ph.D. in biological psychology from Virginia Tech under the direction of Dr. Rachel Diana. Paul completed his undergraduate studies at Hendrix College before working as a research assistant at the University of Arkansas for Medical Sciences. Paul received his master's in experimental psychology from Appalachian State University where he worked with Dr. Lisa Emery to study the relationship between autobiographical memory and executive function. Paul's graduate research at Virginia Tech combined behavioral, neuroimaging, and computational disciplines to characterize the neurocognitive mechanisms supporting episodic memory, episodic future thinking, and decision-making. At CVL, Paul will work with Dr. Michael Rugg to study how episodic memory processes change during healthy and pathological aging. In his spare time, Paul enjoys kayaking and backpacking trips with his dog. 🌻



Song Liu — Rugg Lab

Song earned her bachelor's in psychology at St. Edward's University in Austin. She did graduate work at Claremont University in Claremont, Calif., where she conducted research in Dr. Andrew Conway's Cognition lab and Dr. Paul Zak's Neuroeconomics lab. At Claremont, she earned a master's in industrial and organizational psychology and evaluation. After her graduate work, Song worked in the Lewis-Peacock lab at UT Austin, a cognitive neuroscience lab studying memory. While there, she contributed to research projects on prospective memory, and overlapping of cortical representations of semantic, phonological and visual stimuli. In the Rugg Lab, her research will focus on episodic memory and aging. In her spare time, she likes to draw, paint, read and travel. She maintains a rather impressive photo gallery online. 🌻



Marcelle Morrison — Kennedy and Rodrigue Labs

Marcelle joined the Center this summer after graduating from Baylor University with a bachelor's in psychology and neuroscience in May. While in Waco, she studied the effects of diet on memory and conducted research using electroencephalography as a tool to measure the cognitive effects of diets that are low in salt, refined sugar and processed foods. Born in New Orleans, but raised in Houston, Marcelle is glad to call Dallas home for the next two years, prior to applying to graduate school in clinical psychology or neuropsychology. Some of Marcelle's duties as the lab manager for both the Kennedy and Rodrigue Labs have been to coordinate the scheduling of participant testing, as well as work with UT Southwestern's Institutional Review Board. Away from the lab, Marcelle is the proud parent of her dog, Leo. She also enjoys hiking, biking and "anything outdoors." 🌻



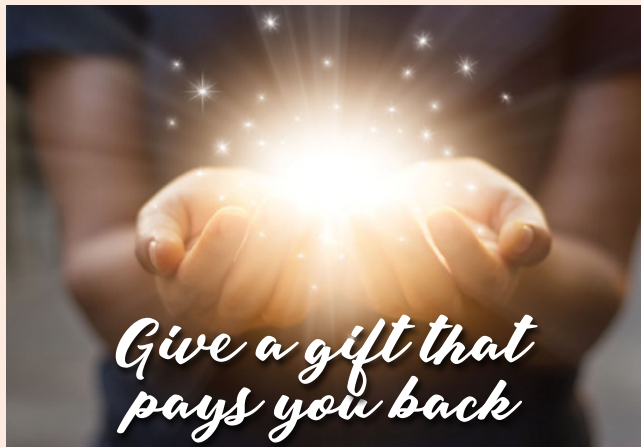
Anupama Nair — Wig Lab

Anupama joined the Wig lab shortly after completing her M.Sc. in brain and cognitive sciences from the University of Amsterdam, the Netherlands. During her master's degree, she spent a year in the Multisensory Perception Lab at the University of Michigan as a visiting graduate student, where she worked on topics dealing with the interaction of audiovisual senses in the brain. She is interested in understanding the neural substrates of higher executive functions in the brain using novel brain imaging techniques. She hopes her experience, as the lab manager for Wig Lab, will be a springboard for advanced educational opportunities in cognitive neuroscience. Outside of the lab, she enjoys outdoor activities, indulging her culinary interests and traveling. 🌻



Ekarin Pongpipat — Rodrigue Lab

Ekarin joined Rodrigue Lab this summer as a doctoral student, after working as a private tutor to university students needing to better understand statistics and enhance their manuscripts. He received his master's in psychology at San Diego State University, where his thesis sought to understand how metabolic syndrome alters functional connectivity in the taste areas of the brain, and its effects on eating disinhibition. Prior to San Diego, he earned his bachelor's in psychology from California State University, Northridge. On top of his coursework and research, he worked as a graduate teaching assistant for an undergraduate statistics for psychology laboratory course as a lecturer in helping students understand, hand calculate, and use software to provide fundamental descriptive and inferential statistics during his first year. In the subsequent year, he was the graduate teaching assistant for the master's level advanced statistics in psychology course, earning a teaching assistant of the year award. Now, Ekarin is excited to join Rodrigue Lab where he will continue to learn and apply functional magnetic resonance imaging techniques, in addition to other neuroimaging modalities, to better understand aging and Alzheimer's Disease. 🌻



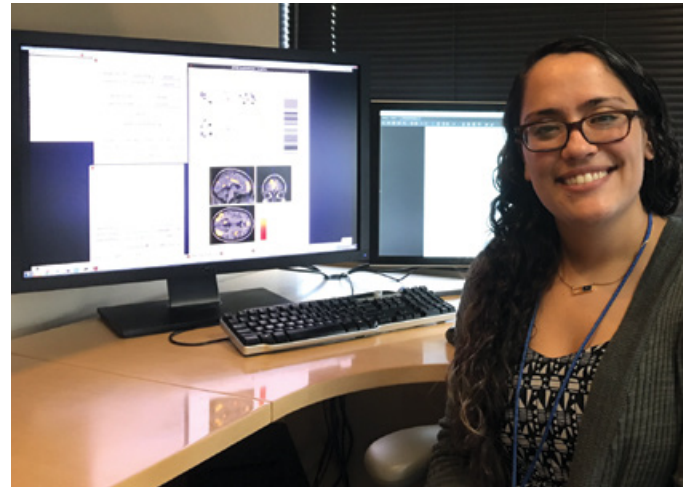
Support the Center while earning income up to 9 percent. A gift of at least \$10,000 will secure a steady income for life and qualify for an immediate tax deduction. Establish a legacy that inspires the next generation of bold thinkers and innovative research at CVL:

Age	Payment Rate	Charitable Deduction
55	4.0%	\$1,850
60	4.4%	\$2,231
65	4.7%	\$2,955
70	5.1%	\$3,691
75	5.8%	\$4,267
80	6.8%	\$4,791
85	7.8%	\$5,501
90	9.0%	\$6,242

Rates effective as of April 2017. Minimum annuity amount is \$10,000. Information is not intended as legal or tax advice. For more information, contact Diana Aguirre, director of development, at diana.aguirre@utdallas.edu or 972-883-3728 or visit utdallas.plannedgiving.org.

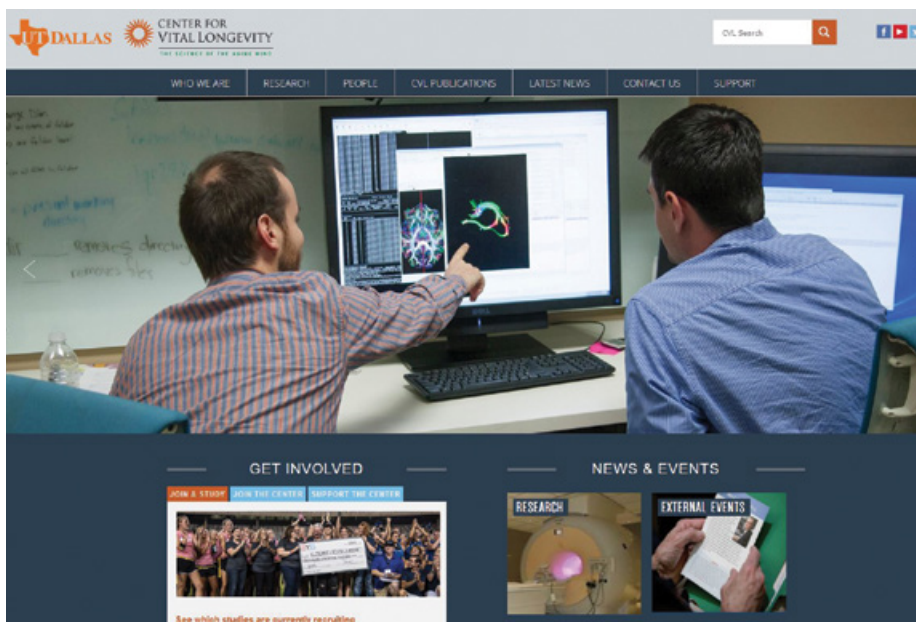
PhD Student Chosen for New Fellowship

In September, the trustees for the P.M. & J.G. Williamson Foundation awarded a grant to partially fund a new graduate fellowship at the Center, and CVL faculty in turn appointed Maria Boylan, a graduate student in UTD's Cognition and Neuroscience doctoral program, and a key member of the Kennedy Neuroimaging of Aging and Cognition Lab.



"The gift allows me the opportunity to focus more on research," Boylan said. "I am grateful to the Williamson foundation trustees for their dedication to students and to the faculty for selecting me." Since joining CVL in 2015, Maria has been exploring the relationship between functional neuroimaging of cognitive difficulty and aging. Congratulations, Maria!

Check out the Center's New Look Online!



CVL debuted a newly re-designed website over the summer, enhancing the ease with which online visitors can learn about the latest news and activities taking place at the Center, and beyond. The website also reflects an effort to better address the needs of prospective and current participants in our studies, in terms of finding a study that might interest them, as well as details of different ways to interact with the Center. We encourage you to check us out online if you haven't already at cvlinfo.org. Many thanks to the people (in and outside of the Center) whose feedback we depended on to complete this endeavor. Comments or questions can be sent to Alex Lyda, manager of communications, at alyda@utdallas.edu or 972-883-3783.

Neural Activities is published by the Center for Vital Longevity at UT Dallas.

Alex Lyda, Editor

Susan McReynolds, Designer



THE SCIENCE OF THE AGING MIND

Center for Vital Longevity
The University of Texas at Dallas
1600 Viceroy Drive, Suite 800
Dallas, Texas 75235
972-883-3200

CENTER FOR VITAL LONGEVITY ADVISORY COUNCIL 2017–2018



Lawrence Warder (Chair)

Retired CFO, US Department
of Education

Chela Abdallah

Community Volunteer

Mary Susan Barnhill

Owner, MSB Interiors

Cassie Crosby

Community Volunteer

Giles Davidson

Managing Partner, GoWest

Lisanne Glew

First Vice President, UBS

Roslyn Thibodeaux Goodall

Community Volunteer

Jannah Hodges

Managing Partner
Hodges Partners

Laree Hulshoff

Community Volunteer

Linda Ivy

Community Volunteer

Ken Kay

Partner, Armanino, LLP

Ocie Kazee-McCallister

District Director, State Representative
Toni Rose

Lindsey Kluempers

Vice President
Boyd, Shackelford & Barnett

Joan E. Mason

Portfolio Manager
Morgan Stanley Wealth Management

Scott Murray

Chairman/CEO, Murray Media

Nancy M. O'Neil

Community Volunteer

Charles Seay

Clinical Applications Specialist
Baylor Scott & White

Lisa Shardon

CEO, Home Health Companions

John Stilwell

Clinical Professor, UT Dallas