

# Neural Activities

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THE NEWSLETTER OF THE CENTER FOR VITAL LONGEVITY

## DIRECTOR'S MESSAGE

### Pioneering Research

As we describe in this issue, the CVL has just celebrated its five-year anniversary. The occasion allowed us to look back and savor our accomplishments, and to recognize the seminal contributions of one of the country's leading Alzheimer's researchers, Dr. Reisa Sperling of Harvard University. It was an honor to present her with the Center's inaugural Award for Distinguished Research into the Aging Mind. We at the Center can think of no scientist who is more deserving.

Our anniversary also serves as a stimulus to think about what the future holds for cognitive aging research. Two things are clear. First, successful and unsuccessful cognitive aging are a continuum rather than a dichotomy. This increases the importance of studying how the brain maintains cognitive vitality, in addition to studying changes in the brain related to cognitive decline. Second, the changes in the brain that lead to Alzheimer's Disease start years (perhaps decades) before symptoms appear. This means that interventions and treatments for Alzheimer's will need to begin early. In turn, this will require that we can identify those people at risk while they are still cognitively healthy.

Understanding successful cognitive aging, and identifying early indicators of risk for Alzheimer's have been major components of research in the Center since its inception. In that short time, we have made substantial progress. We hope that you will support us as we strive to make even more rapid progress over the next five years. ☀

*Michael Rugg*  
Dr. Michael Rugg



(L-R) Director Dr. Michael Rugg, Director of Research Dr. Denise Park, Aging Mind Awardee Dr. Reisa Sperling of Harvard, and anniversary emcee CVL councilman Mr. Scott Murray.

## CVL Marks Five Years with Cheers to Many More

The Center for Vital Longevity opened its doors five years ago with a kick-off that included Gov. Rick Perry as well as many community supporters and UT Dallas officials.

On Sept. 18, almost five years to the day, the Center held an anniversary party at Dallas' Highland Hotel that included many who have supported the Center since its inception.

Joining in the celebration of the Center's anniversary and its national stature as a leader in the study of the aging mind was Dr. Reisa Sperling, a world-renowned researcher in Alzheimer's Disease from Harvard University. Dr. Sperling leads a national study on early intervention for still-healthy individuals at high-risk for Alzheimer's.

The anniversary dinner party provided a chance to recognize the accomplishments of a Center that

has quickly achieved impressive marks of scientific achievement. To name a few: CVL scientists have published over 126 scientific articles in the past five years and the publications of its faculty have received more than 30,000

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## Advisory Council Chairman Larry Warder Recounts International Life of Finance

Once the chief financial officer of the Department of Education under George W. Bush, Larry Warder started working in education at a point when reforms would not directly benefit his own children, which makes his commitment to learning and knowledge all the more selfless. The 71-year-old CVL advisory council member says it was his way of serving his country since he never served in uniform.

In addition to serving as chair of the CVL's advisory council, the one-time political appointee now spends his waking hours steering the financial resources of the O'Donnell Foundation, as its chief operating officer. Earlier this year, the Foundation established the Peter O'Donnell Jr. Brain Institute at UT Southwestern Medical Center by way of a \$36 million gift.

Born and raised in Akron, Ohio, Warder received a bachelor's degree in mathematics from the University of Akron and a master's in business administration from Kent State.

His first job out of business school was with Deloitte & Touche (then Touche Ross) in Detroit in 1970. That same year, his business school alma mater erupted in gunfire when the Ohio National Guard was mobilized to quell a group of students protesting the Vietnam War.

Warder's first project involved consulting with Chrysler and others in the Motor City. He would later become a partner at Deloitte in 1977, then he was promoted at a rapid pace: Director of Southwest Operations in Dallas in 1981; Director of Northeast Operations in New York in 1992; Operating Director of the Deloitte global consulting subsidiary in 1996; Director of European Operations in 1998, and returning to New York as Global Director of Operations in 2001, all while balancing a family with two children who had grown into adults and college graduates themselves: his son is a UT Dallas alum, his daughter an SMU Mustang.

**"The needs of the aging population and the important role the Center will play in improving their quality of life will always be dear to my heart."**



Council Chairman Larry Warder introducing a Directors' Research Circle speaker at the CVL.

After more than three decades with Deloitte, he retired to the sunnier climes of Austin, where he began a project with the public school system to increase access to Advance Placement classes. He also served on the University of Texas System's Internal Auditing & Compliance Committee. President Bush nominated Warder as the Chief Financial Officer of the Department of Education in April 2006, and the Senate confirmed him in July 2006.

First he had to pass a federal background check.

"An FBI agent out of San Antonio went digging through my past," Warder recalls over a recent breakfast at Lucky's on Oaklawn, where Warder in a dark wool suit, crisp white shirt and bright tie sometimes holds court, armed with the *Wall Street Journal*. "They had to do it in the event that the Secretary of Education [Margaret Spellings] became unable to perform her duties — I was actually in the line of succession," he said.

Warder says his days working with the Washington establishment were instructive and enjoyable. "I was actually able to get a lot done because I had very little to lose. I didn't need to worry about re-election and was able to think in terms of how much we could get done, not simply what might make it

through Congress."

Over his all-American breakfast, Warder reflected on how he became involved in education and, ultimately, with the Center.

"My mother passed away suffering from dementia," Warder said. "She was 98 and so had lived a full life, but in learning more about cognitive decline, I realized it's something that affects everyone as they age."

In terms of his own cognitive health, the only area where he seems to be slowing slightly is with numbers. Always the numbers man, he used to be able to calculate large sums in his head, and now needs a calculator from time to time, he says.

"My vocabulary is intact," Warder says with a smile and his trademark silver shock of hair, just before leaving for a meeting with the president's office at UT Southwestern, newspaper tucked under one arm.

In looking ahead to the Center's next five years, Larry knows his term as chair of the Advisory Council will end. His commitment to the Center remains unflagging, however.

"The needs of the aging population and the important role the Center will play in improving their quality of life will always be dear to my heart," Warder says. ☀



# Not Enough Sleep? Effects May Range Beyond Tomorrow

We all know some of the immediate behavioral effects that tend to accompany disturbed sleep: irritability, forgetfulness and an inability to concentrate, to name a few. But what about the effects of lack of sleep on brain function long term? Could there be deleterious effects on the brain?



*Dr. Zhuang Song*

Dr. Zhuang Song, a research scientist in the Park Aging Mind Lab, has hypothesized that poor sleep quality in normal adults might be associated with degraded brain structure, particularly brain tissue volumes in both middle-aged and older adults.

To test this hypothesis, he recently studied cognitively healthy adults in middle age (40 to 59 years) and old age (60 to 79 years) from the Dallas Lifespan Brain Study (see related news, next page), assessing their sleep with the Pittsburgh

Sleep Quality Index—a clinically validated survey that gauges sleep quality and disturbances over one month.

Dr. Song found that for the middle-aged adults, a poor sleep quality score was primarily related to a larger ventricle, and less volume of the caudate nucleus. Researchers generally interpret a larger ventricle as an indication of adjacent brain tissue atrophy.

For the older group, more interestingly, poor sleep quality was related to less volume in the superior prefrontal cortex.

“The link between sleep quality and brain structure is already noticeable in the middle-aged group, but seems more prominent in the older group,” said Dr. Song, who presented his findings at the Alzheimer’s Association International Conference in Washington this summer. “The finding in the prefrontal cortex was particularly relevant

because of its important role in sleep physiology, especially during vital deep sleep.”

In sum, the data raise the intriguing possibility that poor sleep quality is detrimental to brain structure in both middle aged and older adults. ☀



Poor sleep quality could be associated with degraded brain structure.

## CVL among Beneficiaries of Latest AWARE Grants

The AWARE Foundation has this summer awarded Dr. Denise Park, the Center’s director of research, a grant for her role in “making a difference every day in the fight against Alzheimer’s.” The grant will help fund the creation of an online repository of data from her Dallas Lifespan Brain Study (DLBS), which she directs.

The DLBS tracks changes in the structure and function of the brain through imaging, while following participants over time to map how brains maintain cognitive health or, alternatively, transition to an unhealthy brain. The DLBS is a large study that is funded by the National Institute on Aging.

The AWARE grant provides additional funding to disseminate the data, primarily costly brain scans, to other researchers interested in using the data to answer their research questions.



Dr. Park (center), the primary investigator for the DLBS, with members of her lab.

The grant, among seven others announced by AWARE this summer, will also fund the effort needed to prepare the data for uploading to an online database, allowing researchers access worldwide. The data are unique because they include the entire adult lifespan age 20 to 89, rather than just older or young adults. The data also track neural responses associated with active learning, according to Dr. Park. Most studies on predictors of Alzheimer’s measure only brain structure and not function, she said.

“The study has a strong focus on middle age, a period that has received little study by brain researchers,” she said. “We hope to learn how to predict healthy versus unhealthy aging years ahead by studying patterns of brain activity that characterize those who are at risk much later for Alzheimer’s Disease.” ☀

# New Aging Mind Fellow Announced

Dr. Sara Festini has been awarded the Aging Mind Foundation Postdoctoral Fellowship at the Center for Vital Longevity. Dr. Michael Rugg announced at the CVL's anniversary celebration on Sept. 18.

The fellowship, funded by the Aging Mind Foundation, supports research and training in the cognitive neuroscience of aging.

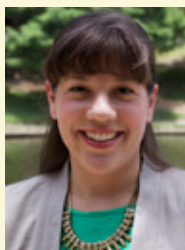
More than \$200,000 raised at the "Salute to Bob Wilson" event earlier this year (see Spring issue) will go to support to Dr. Festini over the next three years. She was awarded the fellowship on a competitive basis by a search committee constituted by the Dean of the School of Behavioral and Brain Sciences.

Dr. Festini joined the Park Aging Mind lab in 2014 from the University of

Michigan, where she earned her Ph.D. in psychology with a focus on cognition and cognitive neuroscience. While at Michigan, Dr. Festini explored the short- and long-term consequences of "directed forgetting" in working memory. She received her bachelor's from Scripps College in 2009.

"I'm grateful to the Aging Mind Foundation for their enthusiastic support of research in cognitive aging," Dr. Festini said. "I'm also honored to serve as an Aging Mind Foundation Postdoctoral Fellow."

Dr. Rugg, CVL's director, added, "I



Dr. Sara Festini

too am very grateful to the Aging Mind Foundation for their support, and I'm thrilled that we have been able to appoint such a talented and promising researcher to the fellowship."

"Sara is doing incredibly innovative work on cognition and brain function in busy people versus people who are more relaxed," said Dr. Denise Park, whose Aging Mind Lab is where Dr. Festini's research is being conducted. "I think she's defining a new research area that will yield some important insights in the best way we can spend our time to maintain a healthy mind. She is most deserving of this support, and we are grateful to the Aging Mind Foundation for recognizing the importance of this research." ☀

## CVL MARKS 5 YEARS

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citations in scientific literature; CVL's faculty together have won a total of 15 highly competitive grant awards from the National Institutes of Health; and two of its postdoctoral fellows have each received a generous "Path To Independence" award in a single year, when a total of only eight awards were given by the National Institute on Aging in 2014.

"The Center has achieved rapid international visibility based on a series of fantastic hires of prominent scientists — most of whom are in the early stages of their career. Every faculty member has a research program funded by competitive research grants. The fact that all share the common research goal of discovering how healthy aging minds work and identifying interventions that



Dr. Park blows out the candles on a special "brain cake" baked in honor of CVL's five years.



Members of the CVL and friends gathered on the pool deck of the Highland Hotel for the five-year party.

will help maintain cognitive vitality for life adds to the Center's impact," said the Center's founding director, Dr. Denise Park, who came to Dallas from the University of Illinois at Champaign-Urbana.

In 2011, the Center recruited Dr. Michael Rugg from the University of California, Irvine, as a Distinguished Chair in Behavioral and Brain Sciences. Since then, the Center has expanded from two to six research laboratories, and from a complement of fewer than a dozen people to a vibrant community numbering more than 50.

To recognize her seminal work in leading a broad-based research effort toward early diagnosis and treatment of Alzheimer's, Dr. Rugg presented Harvard's Dr. Sperling with CVL's Award for Distinguished Research in the Science of the Aging Mind.

"We desperately need more of the work that CVL is doing in the field of aging," Dr. Sperling said. "To characterize aging and memory changes over the healthy lifespan is of critical importance to understanding Alzheimer's Disease."

In the spirit of giving in-the-moment, the chairman of the advisory council, Larry Warder (see profile, p. 2), kicked things off with a generous gift from him and his wife, Emily. Norman and Chela Abdallah, also a CVL council member, quickly followed suit.

Members of the CVL Directors' Research Circle who attended the anniversary dinner included Bill Booziotis (chair of the Circle) with Nancy Shutt, as well Steve and Linda Ivy, Nancy O'Neil, Dr. John Stilwell and Mary Susan Barnhill. ☀



# Grants Administrator at CVL Wins ESPN's Tournament Challenge

More than 11 million people entered ESPN's NCAA college basketball Tournament Challenge this year — President Barack Obama, Will Ferrell and countless sports experts among them — yet only one entrant could be crowned the winner. After the initial winner was disqualified, CVL's very own manager of research administration, Richard Innis, was the last one standing.

Through a great deal of skill and a little luck, Richard snagged the top spot — along with \$20,000 in Best Buy gift cards, a trip to the Maui Jim Maui Invitational this November, and lifelong bragging rights.

By combining what he saw on the court with hard statistics, he defied the odds and secured a place in the top 1 percent of all entrants.

"I was actually at work when my parents called saying I had a letter from ESPN," he said. "At first I didn't think much of it, but after doing some research online, I realized I might have won." After contacting ESPN, he was informed that his name had been randomly drawn from a pool of the top 1 percent.

An avid basketball fan and player, Richard credits his time spent watching numerous games throughout the season as a key element in winning.

"I knew who the final teams would be after the Duke vs. Wisconsin game in December," he said, "I saw two teams that had the necessary skill and killer-instinct to make it to the end."

With his winnings, Richard made sure his mom had a great



Richard "Richy" Innis holds his winning bracket. He also plays basketball.

Mother's Day, buying her new appliances and stocking his dad's music studio with high-end equipment.

The previously announced winner — a 12-year-old boy from Illinois who had been disqualified over age-related eligibility rules — did not walk away empty-handed, though. Best Buy awarded him \$1,000 as a consolation. 🌟

## Sweet Home Alabama— Dr. Ian McDonough Joins the Crimson Tide

Dr. Ian McDonough is now also Prof. McDonough, having begun a new job at the University of Alabama at Tuscaloosa this fall.

After four years at CVL as a post-doctoral researcher, Dr. McDonough moved to the Heart of Dixie to start a lab (tentatively called MAC2) and teach undergraduates.

Dr. McDonough came to CVL from the University of Chicago, and before that UCLA, with a limited background in functional imaging and no background in structural or molecular imaging. At the Center, he used fMRI, PET imaging and DTI (Diffusion Tensor Imaging) to gain an understanding

of the neural correlates of aging and seek new imaging biomarkers that might predict preclinical phases of Alzheimer's Disease.

"The Center gave me a new perspective on the bigger questions of cognitive aging, such as the impact of aging on brain structure," Dr. McDonough said recently. "Also, rich data sets already exist at CVL, and so the approach of designing studies around



Dr. Ian McDonough

raw information instead of the other way around was a new step for me."

Coming from a long line of teachers in his family, Dr. McDonough says he enjoys explaining complexities in simple terms. That's part of the reason Dr. McDonough was CVL's back-up tour guide whenever the Center hosted distinguished visitors: he did a good job explaining a hub of complex science.

"Ian has been a central figure in the Dallas Lifespan Brain study," Dr. Denise Park said. "He was incredibly generous with his time when others in the lab needed help and I know he will make an outstanding professor. He is greatly missed." 🌟

## Aaron Dotson—Park Lab



Los Angeles-native Aaron Dotson joined the Park Lab in June, after completing his undergraduate studies in neuroscience with a minor in music at UT Dallas. His primary interest is in investigating the neural pathways of drug addiction. He's also interested in synaptic plasticity and became familiar with CVL after volunteering as a student ambassador at several CVL events. ☀

## Evan Smith—Basak Lab



Evan started his doctoral studies in cognition and neuroscience at UT Dallas this past August, but has been a fixture in the Basak lab since 2013, starting off as a lab volunteer during his masters studies. He has a bachelor's in cognitive psychology from the State University of New York at Purchase. As part of the Basak Lab, Evan

has been focused on understanding the effect of videogame training on cognitive function, skill acquisition and gray matter. ☀

## Victor Faner—Park Lab



Victor earned his bachelor's degree in psychology from UT Dallas in 2013. After graduation, he worked for two years as an academic adviser at the University of North Texas before returning to UTD in April, joining the Park lab as a research assistant. As an undergraduate he volunteered for a year in Dr. Robert Ackerman's lab

investigating narcissism and other personality traits. ☀

## Tiera Harris—Administration



Tiera joined CVL over the summer as a financial analyst, after moving to work for UT Dallas from Alaska, where she previously worked for the University of Alaska, Anchorage. She holds a master's in education and a bachelor's in business administration. Prior to academia, Tiera served for several years in the United

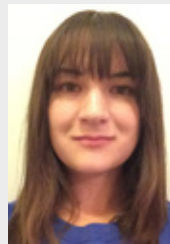
States Air Force. At CVL she is looking forward to further standardizing business operations in concert with UT Dallas; Tiera has already begun representing CVL on UTD's Staff Council after winning an election this summer. ☀

## Colleen McNamee—Kennedy and Rodrigue Labs



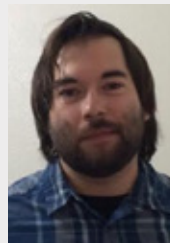
Colleen joined the Rodrigue and Kennedy labs after graduating with dual bachelor's degrees in psychology and English from the University of Michigan. As an undergraduate, she worked as a social psychology research assistant for two years exploring emotions and decision-making. She is interested in emotional regulation and self-control, as well as the recall process of memory. ☀

## Allison Parker—Park Lab



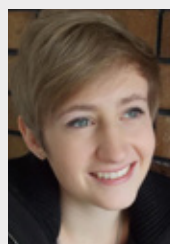
Allison recently received her bachelor's degree in psychology and cognitive science from Rice University where she completed a senior project on caffeine dependence. She worked at CVL as an intern in the summer of 2011 and is thrilled to be back with Dr. Park's lab. She is particularly interested in understanding how our cognition adapts to the loss of brain matter as we age. ☀

## Nicholas Ray—Basak Lab



Nicholas is interested in cognitive training, especially using strategy video games. Now having completed the first year of his studies in pursuit of a Ph.D. in cognitive neuroscience at UT Dallas, Nick began working with more participants over the summer, through two separate Basak Lab studies. Nick grew up in Pittsburgh and earned a bachelor's in psychology, and a bachelor's in crime, law and justice from Penn State. ☀

## Nedra Hauck—Rugg Lab



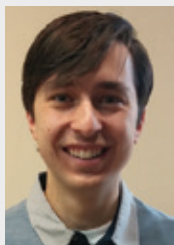
Nedra joined the Rugg lab fresh out of Colorado State University where she graduated with a bachelor's in psychology and biomedical sciences in May. Recently she began work in the lab helping to investigate neural structures related to memory and cognitive function over the lifespan. Her research interests include skill acquisition, working memory and the application of cognitive neuroscience to the mental adaptation and reasoning of astronauts. ☀

## Giuseppe Miranda—Kennedy Lab



Giuseppe graduated from the University of Dayton with a bachelor's in psychology. While in Dayton, Giuseppe worked as a research assistant under the mentorship of Dr. Susan T. Davis. Giuseppe also worked as an intern in applied neuroscience at Wright-Patterson Air Force Base. At CVL, Giuseppe is involved in research memory for location, visual and auditory vigilance, and aesthetics. ☀

## Chris Loehrlein—Administration



Chris received his bachelor's in neuroscience this past May from UT Dallas, joining CVL in September. He looks forward to his support role at CVL as an administrative assistant. During his studies at UT Dallas, he became fascinated by memory, particularly memory retrieval. This interest led Chris to his role at CVL, where he hopes to help streamline procedures. ☀

## Maria Boylan—Kennedy Lab

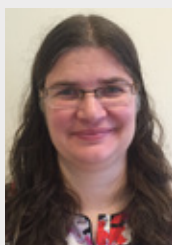


Maria is interested in the relationship between neuroimaging, cognitive assessments, and aging. Maria graduated from Virginia Tech with a bachelor's in psychology in 2013. After graduation, Maria was a post-baccalaureate fellow at the Brain Imaging and Analysis Center at Duke University. ☀

## Liang Han—Wig Lab



Liang joined the Wig lab in August. He is currently a Ph.D. student in cognition and neuroscience at UT Dallas. His research interests center on understanding the functional parcellation of human brain using resting-state fMRI and how functional networks composed of these parcels vary across adult lifespan. Liang earned his bachelor's degree in English in 2002 and master's degree in psychology in 2005 from Qufu Normal University. ☀



## Melissa Rundle—Park Lab

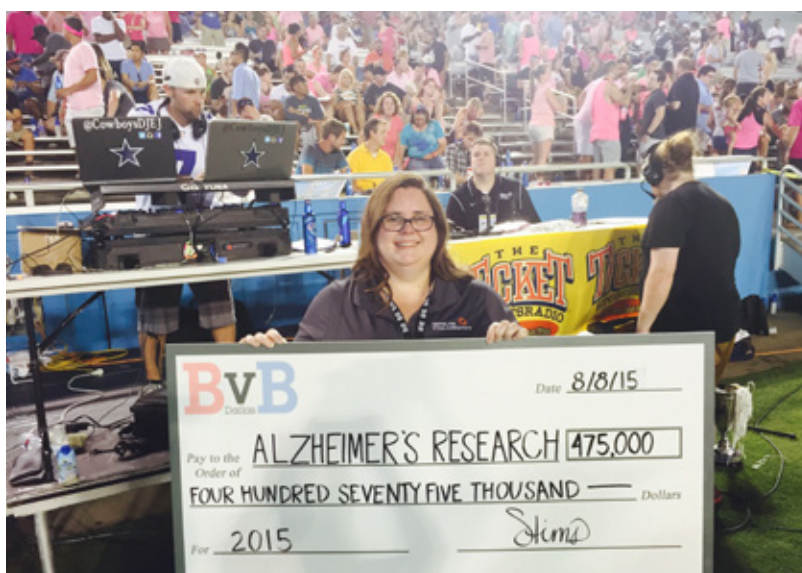
Melissa joined the Park Lab in September as Manager of Scientific Operations. She obtained her Ph.D. in experimental and molecular medicine under the supervision of Dr. Richard Granger at Dartmouth College. Her research focused on understanding cognitive processes such as semantic memory and linguistics. In her spare time, she plays a lot of Minecraft with her nephews. ☀

## Funding Update; Ways to Give

A portion of the funding from the this summer's BvB Dallas powder-puff football benefit for Alzheimer's research will support Dr. Kristen Kennedy, who applied for the funding. Dr. Kennedy is genotyping participants in a study that involves DNA samples from some 180 people and counting.

Researchers at the Center for Vital Longevity are working together to address one of greatest challenges facing our society: ensuring the long-term cognitive health and vitality of our population.

With your support, our dedicated team can advance the frontiers of aging-mind research. We welcome your contributions to further our progress. Please visit [cvlinfo.org/support](http://cvlinfo.org/support) for ways to give. ☀



Dr. Kristen Kennedy clasps the symbolic check presented by BvB at halftime.

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