

Shiley Marcos Alzheimer's Disease Research Center

SPRING 2021

SHILEY-MARCOS ALZHEIMER'S DISEASE RESEARCH CENTER

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UPDATES IN RESEARCH AND RESOURCES

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From left: Behavioral Variant of FTD (bvFTD), bvFTD with Amyotrophic Lateral Sclerosis, Non-Fluent Variant of Primary Progressive Apahasia (nfvPPA). All scan images: Amy Wolf, UCSF Memory and Aging Center

"The Memory Loss for Words": A Couple's Journey with Primary Progressive Aphasia

By Rachel Graef, MSW Intern

Married for 40 years, Mike* and Laura* sit close together in front of their webcam for the now all-too-familiar scene of having a meeting on Zoom. Mike with his coffee and Laura with her notepad, they are here to share their journey with dementia, and of finding gratitude and support.

"I listen to music, work on jigsaw puzzles, do word searches and Sudoku; I walk 10 miles a day. I am able to do all of that stuff easily. The only thing is the memory loss, specifically the memory loss for words. I have 'word-loss situations.' Those are the things that frustrate me." Laura is describing primary progressive aphasia (PPA), a neurological disease that affects one's ability to communicate—to speak, read, write, understand language or, in Laura's case, to find the right words in a conversation. PPA falls under the umbrella of frontotemporal lobar degeneration (FTLD) syndromes, characterized by deterioration of the frontal and temporal areas of the brain involved with speech, memory, reasoning, and judgment. Incredibly rare, with symptoms often beginning before age 65, the disease often goes undetected.

Researching Frontotemporal Lobar Degeneration: A Critical Step to Discovering Treatments

By Dana Soriano, SMADRC Undergraduate Volunteer

As a part of the ADRC's Brain Blast series on YouTube, Dr. Douglas Galasko, MD, elaborates upon the fundamentals and ongoing research regarding Frontotemporal Lobar Degeneration (FTLD). The Brain Blast Series gives ADRC faculty a chance to highlight exciting research topics and to make complex concepts about brain aging more accessible for the general public.

Frontotemporal Lobar Degeneration encompasses a group of progressive neurodegenerative disorders. These disorders are mostly caused by genetic factors or sporadic elements, with three clinical categories: behavioral, language progressive aphasia, and movement disorder. The brain regions impacted by FTLD are the frontal and temporal lobes; displayed symptoms depend on which area of the brain is affected.

Dr. Galasko continues to emphasize how clinical presentations of FTLD relate to brain anatomy. When neurodegeneration is localized in one's frontal lobe, this supports a diagnosis for the behavioral variant of FTLD, which involves personality changes, difficulty with problem-solving, marked



From left: Corticobasal Syndrome (CBS), Progressive Supranuclear Palsy (PSP), Semantic Variant of Primary Progressive Aphasia (svPPA). All scan images: Amy Wolf, UCSF Memory and Aging Center

The Memory Loss for Words continued from page 1

When the couple moved to California in 2014, Laura already knew something was wrong. Yet like many with PPA, she continued with daily life. Mike describes Laura as a "social, upbeat, active, and very happy person" who kept in touch with a network of friends and worked as an event planner. If anyone else noticed that something seemed off, it was simple to dismiss. "It's very easy for someone to spend an hour talking to her and say, 'Well, she forgot something, but who doesn't forget?" Mike explains. "It is very easy to fake it." It was not until after the death of her mother in 2016 that Laura underwent cognitive testing at a memory clinic in San Diego County. Their primary doctor referred Laura to a neurologist for an MRI, but her problems were chalked up as "psychological—losing her mom, moving to California, and losing her friends." Though Laura did have feelings of anxiety and depression, she and Mike knew it had to be more than that. "It was very obvious to me that

something was not right and we didn't want to settle for that," Mike says. At UCSD, the couple was connected with neurologist Dr. Gabriel Léger. He reviewed Laura's original

I have a lot of gratitude for what I have in life, so therefore I try to make things feel better, think better, all that, because I didn't create this—I tell myself that all the time.

MRI as well as newer results, including those from a CT scan and cognitive testing, and in 2018 she was diagnosed with primary progressive aphasia. She was just 57 years old.

For many like Laura and Mike, who spend years wondering if such changes are just part of the normal aging process, then see specialists and undergo even more medical tests, finally receiving a diagnosis can bring about a mixed bag of emotions. In one way, there's relief to have determined "where this all fits in." Mike and Laura had different ways of working through the diagnostic process. "I'm an engineer. In my mind, I was always doing the analysis ... but it would create a lot of friction," Mike recalls. "I would ask her, 'Well, have you thought about it that way?' You know, me trying to fix her." Laura noticed that she was anxious and frustrated, bristling at suggestions to think differently: "If I was able to, I would." Yet, she tells herself, "I have a lot of gratitude for what I have in life, so therefore I try to make things feel better, think better, all that, because I didn't create this—I tell myself that all the time."

Like all dementias, PPA is progressive, degenerative, and has no treatment. For now, Mike and Laura consider themselves lucky. "We just had a review comparing the 2018 MRI and 2020 MRI and the difference is very minimal," Mike says. "We are thankful at this stage that it is progressing slowly." Almost three years after her PPA diagnosis and approaching her 60th birthday, Laura is still social and talkative, "a very fun person to be around."

Once Laura's diagnosis was "settled," the couple was referred to the Young Onset Support Group through the Shiley-Marcos Alzheimer's Disease Research Center. With support groups now held in a virtual format, Ivonne Arias,

> MSW, meets with care partners for one hour and with diagnosed participants in the next hour. "Ivonne has been absolutely understanding and is very compas-

sionate," Laura says. Through this monthly support group, Mike and Laura have been able to meet other couples experiencing dementia, and through these relationships they have been able to work through a lot of the grief that comes with a neurodegenerative diagnosis. According to Mike, their faith has helped. "We are Christians and believe strongly in faith, but at the same time we are going to find a way to deal with this."

Though PPA does not have a cure, Laura has worked tremendously hard to follow the "doctor's orders" for keeping the brain healthy. Laura maintains an active lifestyle by walking, riding a stationary bike and eating a Mediterranean diet. Lastly, "she needed to let some of her close friends and family know what we're dealing with," Mike says. Of these recommendations, Laura has struggled most with the last.

"I'm so lucky because I have a lot of friends and family, but there's certain people that I do not give any information to, just because I felt that they were going to end up talking to somebody else about it and I'm not comfortable with that," Laura says. "But I have really good friends, and ... I told them what's going on. I asked them to please keep it between us, and every single one is kind, considerate, and caring." Laura asked that she and Mike remain anonymous for this article, but remained adamant about establishing a circle of support who understands the diagnosis. Close friends and family "have been so generous about anything; if I have a question I can ask, and they'll say, 'Well, this is called a ...' and I'm like, 'Oh yeah, that's right.' That aspect of it is really helpful for me, and I am fortunate that I have a lot of friends and wonderful sons and daughters-in-law." Though Laura did not create her disease, she has been able to create a circle of formal and informal sources of support from friends, professionals, and peers with similar circumstances are all important ..

Laura stopped working in January 2020, and Mike retired that April. Amid the pandemic, "We feel like the entire

world retired with us! I still get bored sometimes, but I know it's not just my pandemic, everybody is stuck with this now," Laura says. Connecting with people in a virtual Young Onset Support Group may be more difficult for Laura, but Mike notes that "what happens is amazing, though those kinds of conversations are much easier if people are sitting next to each other, face to face. You give them a hug and try to show how much you care."

Part of learning to live with dementia involves a major shift in lifestyle—both in the day-to-day cognitive struggles and grappling with an uncertain future. Sometimes Laura experiences fear and anxiety around her disease. It is from thoughts of her late mother that she draws strength. "I … know that she wouldn't want me to be sad; she would tell me to knock it off! She would want me to be happy. It has taken me a long time to feel that way. I have a lot of gratitude toward that, but it took me a long time."

*Names have been changed to protect participants' privacy.

Researching Frontotemporal Lobar Degeneration continued from page 1

atrophy, and lobe shrinkage. For someone with localized neurodegeneration in the temporal lobe, a diagnosis of Primary Progressive Aphasia (PPA) might explain language changes like struggling with naming things, expressing full sentences, and understanding what words mean. UCSD is involved in several initiatives that contribute to FTLD research. A collaboration between the ADRC and the ALLFTD national study aims to characterize, study, and follow people with behavioral-variant FTD and PPA through a longitudinal program. This program consists of interviews, cognitive testing, brain MRIs, as well as the collection of

Dr. Galasko highlights the importance of research as he enumerates the unknowns surrounding FTLD. The main objectives of the clinical aspect of FTLD studies include mastering accurate diagnosis, characterizing symptoms, and tracking any observable changes over time. As for FTLD biomarkers, more efforts are being dedicated to analyzing brain imaging,



blood and CSF samples. The program's partnership with Alzheimer's San Diego and the Association for FTD offers social support resources, genetic counseling, and testing. Another exciting research development is Alector, Inc.'s sponsorship to make UCSD a research site for therapy for genetic FTLD focused on the progranulin protein. Progranulin is essential for brain

testing for numerous elements in cerebrospinal fluid (CSF), and using blood tests to obtain more information about brain processes. Genetic research and risk-factor analysis are also being conducted to better understand the mechanisms that prompt FTLD, and to aid the development of strategies to slow the progression symptoms. Learning more about the genetic causes of FTLD may allow for the targeting of abnormal genes, pathways, or proteins that contribute to the disorders, and will help guide the development of personalized therapeutics for FTLD disorders.

signaling, and patients with FTLD secrete low levels of the protein. This 18-month trial tests the effects of an antibody, administered once a month, to prevent the breakdown of progranulin and to restore its levels.

Further information can be found at the following links: The ALLFTD Study: https://www.allftd.org/

FTD and Resources YouTube Video: https://www.youtube. com/watch?v=HypqiiSzQXU





Using Social Media to Bridge the Social Distance

Thanks to the efforts of SMADRC volunteers, we have made substantial progress expanding its presence in the virtual world this past year. The change to remote operations stimulated a need to pivot to electronic communications for outreach, education, and ongoing updates regarding the status of center operations, available resources, and upcoming activities. We have transitioned to conducting visits, support groups, quality-of-life programming, and educational events via Zoom. We have created a virtual education series for the public and recorded outreach and education

presentations using YouTube to provide greater access and broader dissemination of this valuable content. We are building out our social media to include frequent communication about events and activities, announcements about enrolling studies and quality-of-life programs, and posts about research findings and resources to assist caregivers and those living with a diagnosis. We hope you take advantage of these resources, visit our pages, and follow us to stay connected! A summary of these resources can be found below.

YouTube: New Professional Development Series Videos Posted! Visit our SMADRC YouTube Channel, at **adrc.ucsd.edu/youtube.html**, to find frequently updated educational content. To supplement the Virtual Brain Blast Series playlist, comprising brief research presentations designed to update the community about enrolling and ongoing studies, we have created a Professional Development Series playlist that consists of full-length academic presentations from faculty about a wide array of ADRD-research related topics. These recorded lectures originate from our Lunch and Learn talks and our Neurodegeneration Seminars, two series hosted each month to provide continuing education for the professional and academic communities. Now, the reach of these excellent talks is expanded to a wider audience, giving scholars, practitioners, and the broader community access to thoughtfully prepared, full-length presentations highlighting the current state-of-the-art science in the rapidly changing area of research. Scholars with expertise in numerous disciplines, from bench science and basic biology to clinical specializations (such as neuroimaging and CSF biomarkers), are featured on this new playlist.



New Website: Visit our new SMADRC website at **adrc.ucsd.edu**. The updated site is more interactive, featuring new videos and upcoming events in an easy-to-access window on the landing page. It makes navigation easier, clearly pointing each user to pages specifically designed for various groups. It includes a wider array of enrolling research studies under our umbrella, with quick links to available videos with study overviews when available. We have added an events calendar to the landing page to make upcoming lectures, support groups, and educational events easy to find and sync to your personal calendar. We will continue to make improvements and add information in an ongoing way to best serve our participants, families, researchers, and community partners.

Facebook: With a following of close to 500 and growing, our Facebook page, at **facebook.com/adrc.ucsd**, has been a valuable asset in reaching and educating a larger audience about Alzheimer's disease. The ADRC Facebook page offers followers an invaluable opportunity to stay current on ADRC resources and recent developments in the world of Alzheimer's and related dementia research. In light of the pandemic and distancing,

staying connected is more important than ever, and Facebook offers us that opportunity. Take full advantage of the resources and knowledge that the ADRC has to offer by following us on Facebook!

Instagram: After our success with Facebook, we decided to branch out within the realm of social media by making an Instagram account, at instagram.com/ucsd.adrc. Though Instagram and Facebook are both social media sites, Instagram disseminates its content in a more visual way. We plan to use this more visual medium to create high-quality content that keeps our audience up-to-date on groundbreaking developments made in the field of Alzheimer's disease research and also inform our followers about the events and opportunities that the ADRC offers. Such opportunities include updates on our quality-of-life programs and memory screening services offered to the community, updates on our latest Brain Blast videos, and helpful statistics and educational content to help keep you informed. In order to be part of these exciting developments, be sure to give us a follow on Instagram as we continue to investigate the cause, treatment, and prevention of Alzheimer's disease and related dementias. If you don't have an instagram page, reach out to us at participate@ucsd.edu or a loved one to help you through the easy process of making an account!

eventbrite

Eventbrite: A move to online event registration marks another way the SMADRC has shifted operations. Over the past year, Eventbrite has been a valuable tool for organizations that suddenly find themselves hosting events online, via Zoom or other video-conferencing platforms. We've set up a page at **smadrc.eventbrite.com** to list the SMADRC's upcoming events. So far, we have used it to facilitate participation in virtual versions of the annual Open House, as well as the monthly Memories at the Museum quality-of-life program. The move to remote events has opened up participation to people who may have had a hard time attending in person, and with Eventbrite visibility, people from around the world have registered for our programs. Signing up ahead of time through Eventbrite ensures that partici-



pants will receive the most up-to-date information for each event.

Virtual Memories at the Museum: Building on the success of a free program that began in 2006, Memories at the Museum (MATM) returned in November 2020 after a several-month hiatus—only now, it's online via Zoom. Staff from the SMADRC and the Alzheimer's Association San Diego Imperial Chapter worked with participating museums to determine the

best ways to offer the same type of enriching programming. In the past, small groups of people with memory disorders and their care partners would visit one of several museums in Balboa Park, accompanied by a social worker from the SMADRC, for an interactive tour and discussion. Education about specific artwork isn't the main goal; rather, the event is designed to stimulate conversation and evoke memories that participants can share with one another. The art serves as a tool for the trained docents to use for stimulating the senses, engaging in reminiscence and inviting social interaction for persons with cognitive changes.

The COVID-era version of MATM has the same objectives. On the first Tuesday of every month from 2 to 3 p.m., participants join a Zoom meeting with a trained facilitator from one of three co-sponsoring museums (rotating among San Diego Museum of Art, the Timken Museum, and the Museum of Photographic Arts). Attendees, often in pairs, review slides of the artwork and consider details that docents point out, such as facial expressions, use of color, or symbolism. Participants are invited to share any experiences or feelings that the art prompts. Even with the remote format, participants are enjoying MATM and endorsing the benefits of participating. "Overall it was such a wonderful program and a really pleasant hour for us to spend together," one care partner told us. "My [person with dementia] said 'Oh, I'm so glad we did that,' when it was over."

The SMADRC is excited to announce that beginning in May, MATM will be offered quarterly in Spanish through collaboration with the Museum of Photographic Arts. In 2021, the Spanish virtual tours will be offered May 18, August 13, and November 16 from 2pm to 3pm. Visit the center's website or Eventbrite page for the most up-to-date information on all of our quality-of-life programming. To make sure you have the Zoom meeting link and any other relevant information ahead of time, register for MATM at **http://smadrc.eventbrite.com**.



Observational Studies

COGNITIVE AGING LONGITUDINAL STUDY (ALSO AVAILABLE IN SPANISH)

PI: Douglas Galasko, MD

CONTACT: Tracey Truscott, LCSW (858) 822-4800 or ttruscott@ucsd.edu

TIME INVOLVED: Annual visit until the end of life

DESCRIPTION: The purpose of this study is to learn how the brain changes as we age. This is an observational study that collects behavioral, medical, and cognitive data and assesses neurological functioning. It does not involve an intervention. This is done annually from the time of enrollment to death. Information about strategies for healthy brain aging is provided, as is feedback about one's annual performance on cognitive testing. We continue to obtain blood and cerebrospinal fluid (CSF) samples to compare changes detected in blood and CSF to changes in cognition and brain structure.

REQUIREMENTS: Age 65 and older if normal cognition or diagnosis of MCI or early dementia due to Alzheimer's, FTD, or DLB; study partner; lumbar puncture (LP) and magnetic resonance imaging (MRI) required; brain autopsy required.

EVOKED RESPONSE POTENTIALS

PI: James Brewer, MD, PhD

CONTACT: Nichol Ferng, nferng@ucsd.edu

TIME INVOLVED: Minimum 2 years

DESCRIPTION: This study is to examine the utility of non-invasive measures of the brain's electrical activity as an early marker of Alzheimer's disease. Electroencephalogram recordings (EEG) and EventRelated Potentials (ERP) have shown promise in small studies, but no study has examined how they compare to other markers more commonly used in clinical trials of Alzheimer's disease. We will collect EEG and ERP data along with brain imaging using magnetic resonance imaging (MRI) to assess brain atrophy and use positron emission tomography (PET) to assess for the presence of proteins associated with Alzheimer's disease. We will determine whether EEG and ERP measures are powerful enough to serve as surrogates for these more expensive markers of disease. Clinical/ cognitive, imaging (MRI and PET scans), biomarker, and genetic characteristics will be assessed across the three cohorts: Normal controls (NC), Mild Cognitive Impairment (MCI), and mild Alzheimer's disease (AD). Visits will occur once every three years for all subjects with telephone contacts in-between visits.

REQUIREMENTS: Age 60-90; fluent English speakers (as of age 12), with normal cognition or a diagnosis of MCI or AD; have corrected visual acuity of at least 20/50 for distant vision; have overall good general health. Subjects are required to undergo an MRI, PET scan, and EEG.

ALZHEIMER'S DISEASE NEUROIMAGING INITIATIVE 3 (ADNI)

PI: James Brewer, MD, PhD

CONTACT: Nichol Ferng, nferng@ucsd.edu

TIME INVOLVED: Minimum 5 years

DESCRIPTION: The primary goal is to discover, optimize, standardize, and validate clinical trial measures and biomarkers used in ongoing Alzheimer's disease research. The Alzheimer's Disease Neuroimaging Initiative (ADNI) plays a central role in improving treatment trials. Since the study's launch, ADNI investigators with regulators in both the US and abroad have facilitated the design of major

completed and ongoing drug trials. ADNI 3 is a continuation of this work. ADNI 3 is a non-randomized, natural history, non-treatment study. Clinical/cognitive, imaging (MRI and PET scans), biomarker, and genetic characteristics will be assessed across the three cohorts: Normal controls (NC), Mild Cognitive Impairment (MCI), and mild Alzheimer's disease (AD). Visits will occur annually for MCI and AD subjects and every two years for NC subjects.

REQUIREMENTS: Age 55-90; normal cognition or a diagnosis of MCI or AD; a study partner; overall good general health. Subjects are required to undergo MRI and PET scans and a lumbar puncture.

Intervention Trials for MCI and Early Alzheimer's Disease, and Other Dementias

A clinical trial is a research study in which a human subject is assigned to one or more interventions (which may include an investigational drug, placebo or other control) to evaluate the effects of those interventions on health-related or behavioral outcomes. When you volunteer to take part in clinical research, you help doctors and researchers learn more about disease and improve health care for people in the future.

The ADRC Clinical Trials Unit has a variety of clinical trials available for participants with Alzheimer's disease and related dementias. We add new studies to our portfolio regularly and encourage individuals who are interested in participating to reach out to the ADRC. Studies currently in the pipeline that will be starting recruitment in the near future include:

PEACE-AD

Phase 2b clinical trial of the drug prazosin in Alzheimer's disease. The goal of the PEACE-AD clinical trial is to identify a well-tolerated treatment for people with severe agitation in the later stages of Alzheimer's disease (AD). The total length of the trial is 22 weeks.

MAIN REQUIREMENTS: Participants must be experiencing agitation that disrupts their daily life; the participant must reside at home with full-time caregiving and have a primary caregiver who participates as a study partner.

JANSSEN

Phase 2 study to slow the progression of prodromal and mild Alzheimer's disease by preventing the propagation of tauopathy. Trail length is up to 4.5 years.

ALECTOR AL001-3

Phase 3 study for individuals at risk for or with frontotemporal dementia due to mutations in the progranulin gene. This study will provide genetic testing for individuals with a family history who may be eligible to participate. The

MAIN REQUIREMENTS: Age 55-80; evidence of patho-

logical tau on a screening PET scan

length of trial ranges from 48 to 96 weeks depending on the treatment condition.

MAIN REQUIREMENTS: Age 18-85; carriers of heterozygous loss-of-function progranulin gene (GRN) mutations

DISCOVER:

Phase 1b study of Posiphen, which may have a potential to delay the onset or slow the progression of Alzheimer's disease via decreased amyloid production. This study will investigate whether Posiphen is safe and tolerated. This short-term study is up to two months and will require at least five study clinic visits, including a three-day stay at UCSD clinical research unit.

MAIN REQUIREMENTS: Age 55-89; MMSE 17-30; diagnosis of MCI or mild Alzheimer's disease

BIOGEN EMBARK

Phase 3 study targeting amyloid-beta in participants with mild cognitive impairment due to Alzheimer's disease or mild Alzheimer's disease. Please note that this is a re-

dosing study that is only open to participants who were previously enrolled in the Aducanumab studies (221AD103, 221AD301, 221AD302, 221AD205).

Please contact Nobuko Kemmotsu, PhD, at clinicaltrialsADRC@health.ucsd.edu or (858) 246-1267 to learn more about clinical trials.





SMADRC Open House Presenters: James Brewer, MD, PhD; Douglas Galasko, MD; David Salmon, PhD; Howard Feldman, MD, FRCP (C)

SMADRC Researchers Give Updates in Virtual Open House

By Dana Soriano, SMADRC undergraduate volunteer

A virtual adaptation of SMADRC's annual Open House event was held via Zoom on Wednesday, January 27, 2021, to express our center's appreciation for our research participants while respecting COVID-19 guidelines. The remote event allowed Dr. James Brewer, Dr. Douglas Galasko, Dr. David Salmon, and Dr. Howard Feldman to provide updates about recent progress of their respective studies as well as the center's new projects. In a question-and-answer portion of the event, featured faculty responded to submitted inquiries.

Dr. Brewer started by reflecting upon the challenges of 2020 and acknowledged the resilience of the SMADRC team, who remained dedicated to achieving a better understanding of Alzheimer's disease (AD) and corresponding therapies despite the limitations imposed by the pandemic. He introduced new assessment opportunities like the incorporation of genome wide screenings and home collections of the gut microbiome as methods to identify detectable risk factors for AD.

Dr. Galasko moved on to explain pathologies that define AD, like amyloid plaques, tau tangles, brain shrinkage, and neuron loss. He emphasized the importance of evaluating a participant's cognition in combination with assessing for the presence of the specified biomarkers.

Results of the survey on participants' access to interactive video technology, essential for virtual testing, were revealed by Dr. Salmon. He shared encouraging results, which suggest that the majority of participants who responded to the survey have internet access, are familiar with available digital gadgets and apps, and are willing to participate in remote cognitive testing.

An educational online platform, HALT-AD, was presented by Dr. Feldman as a means to empower and motivate behavioral change through easily understood information about modifiable risk factors of Alzheimer's disease. HALT-AD also involves moderated group support via Zoom and provides users with personalized risk profiles. As for updates on drug-based interventions, Dr. Feldman highlighted aducanumab and lecanemab as two amyloid-lowering immune-based therapies in the last phase of clinical trials and FDA approval.

*A recording of the entire event is posted on our YouTube channel. https://youtu.be/-AoeVHvPW-M. The slides from the event are also available on our website. **Q**: Are you doing any in person visits?

Dr. Brewer: Yes, but very cautiously with minimal contact. For new patients, limited in-person visits have restarted and the vaccine will likely help ramp up.

Q: How often do I need to repeat procedures for the longitudinal study?

Dr. Brewer: Yearly visits are essential to assess cognition and plasma is collected every two years.

Q: I have already completed a lumbar puncture (LP) for the study; will I have to do it again?

Dr. Galasko: We strongly encourage people who did an LP more than three years ago to repeat the procedure because we are now measuring different components of the spinal fluid than we did in the past.

Q: How will you be able to tell if my memory has changed based on a telephone call?

Dr. Salmon: One of the phone tests is identical to a test we have given for years. This allows us to compare results collected in-person to results from telephone assessments and suggest a change in memory.

Q: Does getting the COVID vaccination change my eligibility for clinical trials?

Dr. Feldman: No, but getting vaccinated is encouraged because older populations are at risk of COVID-19's ill effects.

The MADURA Program: Mentoring Diverse Undergraduates

The Shiley-Marcos ADRC is honored to be one of the placement and training sites for The Mentorship for Advancing Diversity in Undergraduate Research on Aging (MADURA) program. TThe MADURA program provides paid internships for underrepresented undergraduate students. MADURA interns receive faculty mentorship, training and supervision, and site placement to work eight hours per week at a variety of Aging or ADRD approved research placements including the SMADRC. Students can continue in the MADURA program, and in specific research placements, for multiple quarters ranging in length. The MADURA program training grant is funded by the NIH's National Institute on Aging to support Latinx and underrepresented minorities (URM) in academic success and degree completion. The MADURA program also aims to increase URM applications for

graduate studies in Aging and Alzheimer's researchrelated fields and increase URM participation in Aging and Alzheimer's-related MSTEM careers to diversity the workforce and better serve the needs of diverse communities. The SMADRC currently hosts eight students in the MADURA program: six through formal placements and two additional students through our volunteer program. Faculty and staff mentoring and supervision are provided by Dr. Guerry Peavy, Dr. Nadine Heyworth, Dr. Christina Gigliotti, Emily Little, MPH, and Ivonne Arias, MSW. Students are assisting with a variety of research projects, attending academic research presentations and case conferences, shadowing remote research visits and quality-of-life programs, and learning critical research and professional skills to build their résumés and become more competitive candidates in the job market upon graduation.

The Impact of Your Giving

Philanthropic support has helped position us to embark on a future of limitless possibilities in scientific learning, exploration and discovery that can transform lives.

Your support of the Shiley-Marcos Alzheimer's Disease Research Center provides scientists with the vital resources needed to advance groundbreaking research into Alzheimer's disease, and make the leap from laboratory bench to patient bedside. We use unrestricted donor support to jumpstart the careers of young investigators by providing them with seed funding for research projects. As the research gains data and promise, projects can be leveraged for National Institutes of Health or other grant dollars that help propel this important work. Philanthropy is often present where big breakthroughs begin.

Donor funds also play a critical role in maintaining and growing our quality-of-life programs. These vital programs extend to families struggling with isolation. For more information about how you can support SMADRC's researchers, clinical trials, vital research equipment, young talent and specialized programs for pa-

SOME PRIDE POINTS

1,327

No-cost memory screenings since 2017

1,300+

Peer-reviewed publications published by the UC San Diego SMADRC since 1985

1,274

Caregivers received quality-of-life training to support persons with dementia and their families in 2020 300

Quality-of-life program hours offered in English and Spanish to the public, caregivers and practitioners in 2020

214

Small-group peer support training hours delivered to practitioners in 2020

80

SMADRC-affiliated faculty awarded federal and state grant funding in 2019 giving, memorial gifts or volunteer opportunities, please contact us, by calling Kim Wenrick at (858) 735-5137 or by email to kwenrick@ucsd.edu.

tients and caregivers through estate

To make a gift by check, mail to:

UC San Diego Health Sciences Advancement Attn: Shiley-Marcos ADRC 9500 Gilman Drive, #0937 La Jolla, CA 92093;

To make a gift online, please visit **giveto.ucsd.edu** (enter fund "E2140" for the SMADRC)

28

Academic lecture hours presented to undergraduate and graduate students in 2020

24

Internships awarded to graduate and postdoctoral trainees in 2020

5+

SMADRC pilot awards presented to early career investigators each year 10 CURRENTS

Neurofeedback Training to Improve Working Memory in MCI

Mild cognitive impairment (MCI) is a precursor stage to Alzheimer's disease (AD), a neurodegenerative disease that damages memory and brain function. Once the brain has reached this point, the effects of the degeneration are

irreversible, as there is currently no cure for AD. Individuals with MCI have a greater risk of developing AD in the future. Therefore, one of the goals of providing treatment to people with MCI is to slow disease progression to AD. Common symptoms of MCI are misplacing items often, forgetting events or appointments, and having trouble producing words, all of which require the use of a specific type of memory known as Working

Memory (WM). In the Functional Neuroscience Lab, we are testing a neurofeedback intervention in individuals with MCI to improve WM and/or reduce the progression from MCI to AD.

Neurofeedback training is a self-regulating procedure where participants are able to watch their brain activity and can work to change it in order to reach a set goal. Participants wear an EEG-cap with electrodes that measure their brain's electrical activity. Brain activity is then presented in the form of a set of moving images on a computer screen and accompanying music. During training, participants work to achieve video and music progression, which are coupled to their brain response.

If the video stops, it indicates that the participant needs to get to a new brain state to make the video progress again. As participants achieve mastery over their brain activity, the difficulty level is increased incrementally to facilitate brain training.

Participants come to the lab twice a week for 12 weeks to receive non-invasive neurofeedback training. Each training session lasts

approximately 45 minutes, including setup and breakdown time. Participants receive up to \$375 for completing all study visits, and parking cost reimbursement. Transportation is provided for those unable to drive. We are recruiting 50- to 85-year-old men and women with memory complaints. Participation in the study and completion of this clinical trial is anticipated to pave the way to further research, which is cost-effective, clinically feasible and dedicated to treating patients with MCI. Please contact us at (858) 267-2257.

Using Virtual Reality to Screen for Cognitive & Balance Problems

Raeanne Moore, PhD

If we have learned anything from the COVID-19 pandemic, it is that there is a need for remote healthcare options. Traditional methods for early identification of cognitive change have many challenges; they can be expensive and

time-consuming. Mobile technologies can be used in a clinic waiting room or even at home. In our lab at UC San Diego, we are investigating whether a new virtual reality tool can assess patterns of neurocognitive change and associated factors that may indicate someone is at risk for cognitive issues, such as Alzheimer's disease.

We are testing a portable 3-D virtual reality automated tool, called DETECT, to measure changes in cognition and balance over time in older adults with varying degrees of cognitive impair-

ment. DETECT was developed for rapid and brief cognitive testing in diverse settings and can accurately discriminate between normal cognition, mild cognitive impairment, and dementia. The device is also accurate for diagnosing risk of falling using a new technique in which balance problems are assessed while a person is seated. Further, to assess sensory change we have an audiologist on the team who is performing hearing tests.

> We are actively recruiting for this study! This study lasts for 2 years and includes 5 study visits, each 6 months apart. Visits alternate between full visits (including a medical interview, blood draw, and hearing test) and brief virtual reality-only visits. Visits can take place during business hours Monday to Saturday. To participate in the study, you must be fluent in English, 60 years or older, not diagnosed with Alzheimer's disease or another dementia, and meet other study inclusion criteria at screening. Participants receive up to

\$375 for completing all study visits, and parking permits are provided. Transportation is also provided for those unable to drive. If interested in learning more, please contact us at (619) 543-5000.

Longitudinal Participants Invited for Microbiome Research

The SMADRC is one of 14 academic institutions participating in the Alzheimer's Gut Microbiome Project. The Alzheimer Gut Microbiome Project (AGMP) is an initiative funded by the National Institute on Aging (NIA) to investi-

gate the role of the gut microbiome and metabolome in Alzheimer's Disease pathogenesis and in the development of neuropsychiatric symptoms. The goal is to define the role of complex bidirectional interconnections involving the diet, exposome, lifestyle influences, gut microbiome, genome on the metabolome to inform about individuality, vulnerability, and unique trajectories of Alzheimer's disease (AD). By measuring thousands of chemicals produced by a commensal relationship between

the study of Alzheimer's Disease. To qualify for this study, you have to be enrolled in the Shiley-Marcos ADRC, but friends and family that are interested can participate in a similar study by enrolling here: https://microsetta.ucsd.

edu/american-gut-project/.

All procedures are experimental. Fecal and blood samples will be collected from study participants at two different time points. The study makes use of non-invasive sampling in the comfort of your own home. This is accomplished using kits designed by the American Gut Project and now modified for higher biomass collection, as needed for this biobanking effort. Fifty SMADRC participants agreed to join this exciting initia-

the host and the gut microbes, we aim to define how the brain is connected and influenced by peripheral factors that contribute to disease pathogenesis. Big data is generated and used to enable a precision medicine approach for tive and worked with SMADRC staff to consent to the study, collect the sample, and return the kits by mail in under a month. Thank you for your support and stay tuned for updates on this exciting initiative.

Update about the SMADRC Brain Autopsy Program

One donated brain can make a huge impact, potentially providing information for hundreds of research studies to better understand Alzheimer's and dementia. Our team of neuropathologists maintain a state of the art Alzheimer's brain bank with well characterized cases from our longitudinal study cohort. Many neurodegenerative diseases can only be conclusively made by examining post-mortem brain tissue to identify the characteristic pathological proteins. Autopsy provides valuable information that can educate and enlighten families, physicians, and researchers, who are working to discover more reliable tests for ADRD.

The autopsy results of participants who have been followed over time at our SMADRC are especially valuable because in conjunction with the substantial treatment and care histories that are collected, researchers can obtain information essential to the search for effective treatments for AD. This research will contribute to our eventual understanding of the chain of events that leads to AD and related dementias.

Participants and families have many questions about our brain autopsy program and processes. We have created an educational packet to clearly communicate about this process and to provide information and resources for

proactive planning. We hope that the educational materials in conjunction with discussions with our staff will help our participants and their families have important and proactive discussions about end of life planning. Many of our participants have questions about our relationship to the UCSD body donation program. We are a separate program with differing policies and procedures; however, participants that would like to donate to both entities can definitely do so and an explanation about the process is included in our packet. We have posted this resource on our website under the research procedures link along with a brief video recording of our Neuropathology Core Director, Dr. Rissman. His video includes an overview about the importance of brain autopsy and provides responses to some of the most commonly asked questions by our participants.

Throughout COVID we have continued to honor brain donations for ADRC participants. Special COVID precautions are being taken by our neuropathology team.

If you have questions about our brain autopsy program or processes, please reach out to our autopsy coordinator, Bailey Hofmann for additional information: bhofmann@ucsd.edu or 619-354-6764.

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Virtual Memories at the Museum

Live Zoom • 2 to 3 p.m. First Tuesday of every month

Trained docents provide interactive tours to participants with memory disorders and their care partners at exceptional museums in Balboa Park.

Participants are given opportunities for meaningful engagement in developmentally appropriate activities that are carefully designed to support the varying experience and ability levels of each individual in a group setting to facilitate success and socialization.

- SMADRC trained facilitators
- No obligation to participate in research
- · No cost to participate

in collaboration with the Alzheimer's Association

alzheimer's $\begin{subarray}{c} \end{subarray}$ association[®]

San Diego Museum of Art Mingei International Museum: Closed for renovation until 2021 Timken Museum of Art Museum of Photographic Arts

Pre-Registration is required at http://smadrc.eventbrite.com