Senate Special Committee on
Aging: Alzheimer's and Other Cognitive Diseases: An Arizona Perspective
Roberta Diaz Brinton, Ph.D.
Opening Statement

Good morning, Senators Collins and McSally, colleagues, and members of the public.

Thank you for the opportunity to address you on the Arizona Perspective on Aging: Alzheimer's and Other Cognitive Diseases. I am Dr. Roberta Diaz Brinton, director of the Center for Innovation in Brain Science at the University of Arizona (https://www.cibs.uahs.arizona.edu/) (https://youtu.be/KQWDXstgXkE). Our mission is to create innovations in brain science of the future for those who need a cure today. We are an *all brains on deck* translational ecosystem dedicated to addressing the urgent national health crisis of Alzheimer's disease. I am honored to share with you the advances being made in Arizona to prevent and cure Alzheimer's disease.

1. Historical and Future Perspective on Alzheimer's Disease

In 1903, the Wright brothers achieved the first manned flight at Kitty Hawk. Sixty years later, Americans walked on the moon. Three years after the Kitty Hawk flight, in 1906, Dr. Alois Alzheimer first described the pathological hallmarks of the disease. Over a hundred years later, a cure for Alzheimer's remains elusive. By 2025, Arizona will experience a 43% increase in the number of Alzheimer's patients, the largest percentage nationally. Curing Alzheimer's is not rocket science; *it's harder*. That's the bad news. But *I'm here to give you the good news.*

2. The Arizona Advantage

Arizonans have a bold pioneering spirit and innovative culture that is exemplified through the Center for Innovation in Brain Science. Across the state, researchers and clinicians are working together to prevent, delay and cure Alzheimer's Disease through the Arizona Alzheimer's Consortium.

3. The University of Arizona Advantage

The University of Arizona is uniquely positioned to become the epicenter of Precision Aging nationally and globally. The University of Arizona has made strategic investments in our Center for Innovation in Brain Science dedicated to curing age-associated neurodegenerative diseases, the Precision Aging Network which will create a nationwide platform to map the genetic and environmental factors of resilient brain aging, and the Aging for Life strategic initiative that spans the university, Tucson and our state will bring innovations in science, technology, architecture and biomedical engineering to meet the challenges of an aging population world-wide.

4. The University of Arizona Center for Innovation in Brain Science Advantage

The University of Arizona's Center for Innovation in Brain Science (CIBS) was created to address the challenge that in the 21st century there is not a single cure for a single neurodegenerative disease. Operating as a University-Biotech hybrid focused on age-associated neurodegenerative diseases, CIBS is unique in the nation and perhaps globally. CIBS is a mission driven "all brains on deck" translational ecosystem that integrates the discovery prowess of academia with the best-practices of biotech.

Our pipeline of innovative therapeutics for Alzheimer's disease include regenerative therapeutics that activate neural stem cells in the brain, promote energy production in brain, reduce neuro-inflammation and prevent generation of Alzheimer's pathology. A prime example of the success of our efforts, after decades of painstaking research supported by National Institute on Aging, we are conducting a Phase 2 clinical trial of allopregnanolone, the first regenerative therapeutic to regenerate the Alzheimer's brain.

5. Delivering on the National Alzheimer's Project Act (NAPA) Goals

The National Alzheimer's Project Act (NAPA) is an ambitious plan to *Prevent and Effectively Treat Alzheimer's Disease by 2025*. Through the transformative and innovative leadership team at the National Institute on Aging, Dr.s' Richard Hodes, Eliezer Masliah, Suzana Petanceska, Laurie Ryan, Lorenzo Refolo, Zane Martin, Bradley Wise, Nina Silverberg and Molly Wagster, we are closer than ever to delivering on these goals. Federal investments have resulted in discovery of mechanisms and drivers of Alzheimer's and a broad portfolio of therapeutics currently in clinical trial.

To deliver prevention and treatment of Alzheimer's by 2025, two advances are critical.

Big Data Analytics for Precision Prevention:
Electronic medical records held by the federal government hold the key to detecting and preventing Alzheimer's disease in at-risk populations. For example, using existing NIH funded clinical trial data, we were able to identify women at increased risk for Alzheimer's disease when they were still healthy and when they could be treated with currently approved therapeutics to reverse their risk profile. Using Medicare date, we demonstrated that specific statins reduced the risk of Alzheimer's in an ethnically diverse national population. Using insurance claims data, we were able to demonstrate that specific breast cancer therapies reduce the risk of developing Alzheimer's in women later in life. A comparable analysis of prostate cancer treatments is in progress. We are now partnering with VA researchers to determine which therapies for type 2 diabetes reduce or increase the risk of developing Alzheimer's. Through big data analytics, we can inform clinical care to prevent Alzheimer's disease in at-risk populations.

Our veterans face a unique constellation of risk-factors for Alzheimer's including high-stress, sleep deprivation, toxin exposure and traumatic brain injury. The challenges associated with accessing and analyzing veteran health records puts this group at risk when we could prevent Alzheimer's. Through their medical records, our heroic veterans on the battlefield can be heroes again in the fight against Alzheimer's disease.

I urge you to find a way to safely, securely and efficiently expand access to electronic medical records held by the federal government and mandate the sharing of HIPPA compliant patient level data from federally funded clinical trials.

Precision Medicine Cures for Alzheimer's Requires Arizona Commercialization Innovation:
Big pharma and venture capital are abandoning Alzheimer's and other age-associated neurodegenerative diseases. Their departure is Arizona's opportunity to become the new biotech hub for curing Alzheimer's.

A challenge to delivering our discoveries to patients is that commercialization of federally funded therapeutic development ultimately reaches the "valley of death". Universities have limited resources

to fund the expertise and budgets required for intellectual property development and academic start-ups. Critical to delivering precision medicine cures for Alzheimer’s is an accessible network of innovation experts to advance intellectual property opportunities, start-up capital, business development and the commitment to find a way to *Yes* to achieve the goal for the American public.

The National Institutes of Health SBIR, STTR and Commercialization Accelerator Program (CAP) are engines of commercialization that, with modest adjustments, could catapult therapeutic development across the “valley of death”.

6. Arizona and Precision Medicine for Alzheimer’s

The war against Alzheimer’s Disease is being fought on many fronts, from the homes of patients and caregivers to the research laboratories of scientists and clinicians across this great nation. Millions of Americans are counting on us to win this fight. We can, we must, and we will win.

Arizona with its bold pioneering spirit and entrepreneurial culture has a unique opportunity to lead the nation and the world in the science of aging and innovative therapeutic development for Alzheimer’s and age-associated neurodegenerative disease. Arizona can deliver precision medicine of the future for those who need a cure today.

Thank you for your commitment to our nation and to Arizona. Through your efforts we are closer than ever to a cure for Alzheimer’s.