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ALZHEIMER’S ASSOCIATION ACCELERATES RESEARCH ON
POTENTIAL SEX DIFFERENCES IN ALZHEIMER’S

–Initiative Explores Why More Women than Men Are Living with the Disease–

CHICAGO, August 30, 2016 – The first-ever Alzheimer’s Association Sex and Gender in Alzheimer’s (SAGA) research grant awards will provide $2.2 million to nine projects to advance understanding of the disproportionate effect of Alzheimer’s disease on women.

Almost two-thirds of the more than 5 million Americans with Alzheimer’s are women. Among Americans age 71 and older, 16 percent of women have Alzheimer’s or dementia compared with 11 percent of men, according to the Alzheimer’s Association 2016 Alzheimer’s Disease Facts and Figures. It is unknown why more women than men are living with this disease. There are several theories, including differences between the sexes regarding length of life, duration of disease, and when they approach their doctor for guidance/diagnosis. In addition, there may be distinct biological and genetic contributions that differ between the sexes.

“Research showed us how women experience heart disease differently from men. We need to look at Alzheimer’s in a similar way. If we can better understand the disease processes and progression in men and women, we have an opportunity to tailor how we approach detection, diagnosis, and therapeutic approaches based on sex,” said Maria Carrillo, Ph.D., Alzheimer’s Association chief science officer. “As a core part of this discussion, we must explore fundamental differences in biological characteristics and lifestyle factors between the sexes that may play a role to the disproportionate impact on women.”

Each of the SAGA grant-funded projects will receive approximately $250,000. The majority of the investigations are examining relationships between hormones, genetics and the development of Alzheimer’s. Other key themes include differences in men’s and women’s brains that may contribute to the development or progression of the disease, and sex-specific response to Alzheimer’s risk factors.

**Understanding Potential Sex Differences in Alzheimer’s**

Emerging evidence suggests the higher frequency for Alzheimer’s in women may, in part, be due to biological or genetic differences, or different life experiences, such as type and amount of education, occupational choices or rates of cardiovascular disease.
In May 2015, the Alzheimer’s Association hosted a think tank of biological sex and Alzheimer’s experts. The meeting identified three gaps in understanding the influence of sex on the disease:

- The role genetics plays in Alzheimer’s.
- Hormonal factors, including changes over time that may affect differences in development and progression of Alzheimer's.
- Lifestyle factors, such as why the brains and cognitive health of women may have more vulnerability to factors such as stress, sleep disorders, depression and metabolic disorders.

“The link between sex and Alzheimer’s is complex and likely due to multiple factors. Discovering those factors and translating those discoveries into therapy is critical,” said Roberta Brinton, Ph.D., director of the Center for Innovation in Brain Science at the University of Arizona Health Sciences and a think tank co-chair. “We all can agree that as women and men, we have different experiences as we age. For example, as a SAGA-funded researcher, I am investigating the influence of estrogen loss and genetic risk for Alzheimer's on brain health, and if that combination of factors impacts the development of Alzheimer’s in women.”

As a direct result of the think tank, the Alzheimer’s Association announced the SAGA funding initiative. SAGA is the only active, multi-project, research funding effort focused on filling previously identified knowledge gaps related to potential sex differences in Alzheimer's.

“With SAGA, there is a potential for discovery that could open a whole new world in terms of how we treat people with dementia in the physician’s office,” adds Brinton. “There is also an opportunity to improve the way we test new therapies. By better understanding how the disease progresses differently in men and women, we can adjust treatment and the ways we measure effectiveness to be more precise. This could lead to potentially better, more successful clinical trials.”

**Making the Funding Possible**
The Alzheimer’s Association funding for the SAGA grant initiative is made possible by:

- Alzheimer’s Association Zenith Society members John and Crystal Beuerlein; The Judy Fund and Gelfand Family; and the Sigma Kappa Foundation.
- Alzheimer’s Association supporters Stuart and Lisa Alperin; Michelle and Lawrence Herbert; the W.C. English Foundation; Ellen Yankellow, Pharm.D.; and Bill Chapman.
- Part the Cloud, an Alzheimer's Association fundraising initiative led by philanthropist Michaela “Mikey” Hoag.
- Move for Minds, an initiative of Maria Shriver and A Woman's Nation.
- Alzheimer’s Association National Board members Jim and Carla Grossmann and Diana R. Kerwin, M.D.
- Alzheimer’s Association Celebrity Champion Kimberly Williams-Paisley.
“These research efforts are possible because of the generosity of these visionary donors,” said Carrillo. “They understand the potential of this research for field-altering discoveries that will bring us closer to new Alzheimer’s treatments for both men and women. We are grateful for their selfless and substantial commitment to this cause.”

SAGA is a core component of the Alzheimer’s Association Women’s Initiative. The broader initiative highlights the multiple and disproportionate effects of Alzheimer’s on women as caregivers, advocates and people living with this disease. It launched in June 2014 with a major goal to engage more women in the fight against Alzheimer’s.

“Through the Alzheimer’s Association Women’s Initiative, we have ignited a global conversation about the striking impact Alzheimer's has on women and its far-reaching consequences,” added Carrillo.

About the Alzheimer’s Association®
The Alzheimer’s Association is the leading voluntary health organization in Alzheimer's care, support and research. Our mission is to eliminate Alzheimer’s disease through the advancement of research, to provide and enhance care and support for all affected, and to reduce the risk of dementia through the promotion of brain health. Our vision is a world without Alzheimer’s. For more information, visit the Alzheimer’s Association at alz.org or call the 24/7 helpline at 800-272-3900.

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Alzheimer’s Association Fact Sheet

Capsule Descriptions of the August 2016 SAGA-Funded Projects

- A study of whether sex differences in brain structure and hormonal changes during aging interact to affect the development of Alzheimer’s. The scientists will test whether estrogen treatment can help prevent these changes in Alzheimer’s-like rats. The principal investigator (PI) is Terrence Christopher Town, Ph.D., of the University of Southern California.

- An investigation in men and women of how multiple risk factors for Alzheimer’s, including genetic and hormonal factors, interact to influence overall risk for the brain changes associated with the disease. The study will be conducted in collaboration with the Banner Alzheimer’s Institute. The PI is Natalie Rasgon, M.D., Ph.D., of Stanford University.

- An analysis of whether there is an optimal level of testosterone that can promote healthy brain function and reduce the risk of Alzheimer’s as people age. Researchers will examine brain scans of and cognitive test results of men who took testosterone supplements. Victoria S. Pelak, M.D., of the University of Colorado Denver, is the PI.

- A study of whether the sex hormone allopregnanolone can be used to prevent the loss of myelin, a fatty material that insulates the wiring system needed for brain cell communication, in female and male mice at genetic risk for Alzheimer’s. Roberta Diaz Brinton, Ph.D., at the University of Arizona Health Sciences, leads this project.

- A study of how sex, estrogen levels, and genetics interact to (a) impact brain changes associated with Alzheimer’s and (b) promote changes in nerve cell communication and cognitive function in mice. The researchers will also examine how the mice are affected by estrogen treatment. Karyn M. Frick, Ph.D., of the University of Wisconsin-Milwaukee is the PI.

- An investigation of how hormones generated as a response to stress, which also have been linked to increased severity of dementia in people with Alzheimer’s, contribute to several dementia-related brain changes, including the production of the hallmark amyloid plaques of Alzheimer’s. The study is being done in mice with genetic changes that alter how these hormones are processed in the brain. The project is led by John R. Cirrito, Ph.D., at Washington University in St. Louis.

- A study on why female mice are able to preserve short-term memory capacity better than males but show greater declines in long-term memory capacity. Researchers will look at whether loss of sex hormones in mid-life, and age-related damage to certain brain regions, in Alzheimer’s-like mice is involved. Elvira De Leonibus, Ph.D, of the Fondazion Telethon in Naples, Italy, leads this project.

- A study on the link between women’s increased risk for both depression and Alzheimer’s. Researchers will measure the activity of certain genes that affect the brain’s serotonin network, which impacts mood, using brain tissue collected from humans and non-human primates. P. Hemachandra Reddy, Ph.D., of the Texas Tech University Health Sciences Center is the PI.

- An investigation of whether natural variations of a gene linked to increased risk for Alzheimer’s impacts brain inflammation and risk for the disease differently in male and female mice, and if anti-inflammatory drugs can impact this process. Christian J. Pike, Ph.D., of the University of Southern California leads this project.

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