ALZHEIMER

A project from the Institute for Neurosciences CSIC-UMH will study how sleep quality favors resilience to Alzheimer's

- IN researcher Jose Vicente Sánchez Mut has been awarded a research project from the Pasqual Maragall Researchers Program 2022.

Identifying new therapeutic strategies to increase resilience to Alzheimer's disease is the aim of a project that will be led by Jose Vicente Sánchez Mut, principal investigator at the Institute of Neurosciences (IN), a joint center of the Spanish National Research Council (CSIC) and the Miguel Hernandez University (UMH) of Elche. This research proposal is one of the three projects awarded, among more than 60 applications, by the Pasqual Maragall Foundation, which announced the grant winners today.

Resilient patients are those who, although they present Alzheimer's pathology, do not develop the disease's symptoms. Recently, these patients have been in the limelight because Alzheimer's is generally diagnosed when it is already in a state that is too advanced to stop the progression of the disease, which is why scientists are working to try to promote resilience. In this sense, evidence suggests that better quality sleep could promote resilience to Alzheimer's, but the mechanisms remain still unknown.

In this context, the award of this project will allow the development of a large-scale study, with the aim of not only determining the effects of sleep quality on resilience to Alzheimer's disease but also knowing through what mechanisms this process is carried out. "Finding the mechanisms involved in this process would allow us to find potential therapeutic targets to improve the patients' resilience", explains Sánchez Mut.

To develop this project, a mouse model that presents a correlation between cognitive ability and pathology will be investigated. In this way, researchers will be able to modify the mice's sleep hours and, through cognitive tests, verify that those mice with higher-quality sleep are less susceptible to cognitive deficits and, therefore, more resilient. In addition, the brains of the rodents used in the study will be analyzed to understand what happens in this process at a molecular level.

The professor at the Cardenal Herrera University (CEU), collaborator of the IN, and electrophysiology expert Jorge Brotons Mas will characterize how rodents behave in the different sleep phases. Likewise, the researcher Johannes Gräff, from the Swiss Federal Institute of Technology in Lausanne (EPFL), will

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collaborate during the study in the processes of modifying genes that may be altered, causing or modifying resilience.

The next stage of the project will consist of comparing the data obtained in mice with human tissue samples from the Spanish National Registry of Biobanks. This is a fundamental tool since it offers samples of healthy people, resilient patients, and patients with already-diagnosed Alzheimer's disease. “This stage will allow us to check if what we discovered in mice also occurs in humans”, Sánchez Mut clarifies.

The study will have the collaboration of researchers Julius Popp and Christopher Clark, from the University of Zurich (Switzerland), where Alzheimer's disease and sleep specialists develop longitudinal studies, in which blood samples and extensive patient data are collected over several years. Validating the work developed at the IN with this data will take the research one step further because it will allow the identification of biomarkers of resilience and monitoring the progression of the disease.

Sánchez Mut leads the Functional Epi-Genomics of Aging and Alzheimer’s Disease laboratory at the IN, which focuses on investigating how the interaction between genome and environment modulates the risk of suffering from this disease. “The support of the Pasqual Maragall Foundation means a recognition of our work and a step forward in consolidating ourselves as an emerging group at a national and international level”, says the researcher.

It is estimated that neurodegenerative diseases such as Alzheimer's currently affect 900,000 people. These pathologies are one of the main causes of mortality, disability, and dependency. With life expectancy increasing, in the year 2050 the number of cases could triple worldwide, exceeding one and a half million people just in Spain, a fact that could collapse health and care systems, if no effective solution is found.

About Pasqual Maragall Foundation

Pasqual Maragall Foundation is a private non-profit entity that was born in April 2008, in response to the commitment made by Pasqual Maragall, former mayor of Barcelona and former president of the Government of Catalonia, when he announced that he had been diagnosed with Alzheimer's.

Around 200 professionals work at the foundation, which pursues a double mission: promoting research to prevent Alzheimer's and offering solutions that improve the quality of life of affected people, their families, and their caregivers.

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Its work is possible thanks to the support of fifteen entities and a social base of more than 61,000 members, who contribute financially to the continuity of the project.

The objective of the Pasqual Maragall Researchers Programme grants is to promote the search for solutions against dementia. In this first call, 1.5 million euros have been destinated to finance the three award-winning projects. “It is an investment in the future of scientific research and a firm commitment to the health and well-being of our society. Through this program, we reaffirm our commitment to research into Alzheimer's and other age-related neurodegenerative diseases, with the conviction that science will guide us toward a future in which they are eradicated", says Arcadi Navarro, director of the Pasqual Maragall Foundation.

You can collaborate with the Pasqual Maragall Foundation at the following link: https://fpmaragall.org/donativos/

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