



New funds for the study of neurodegenerative diseases



Two projects to investigate experimental models

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Two new European grants have been awarded to Giuseppe Legname, professor at SISSA in Trieste, to study neurodegenerative diseases. The projects awarded the grants involve, in addition to SISSA, other major international centres mainly based in Europe but some in the United States as well. The projects focus on experimental models to study this type of disease.

Giuseppe Legname, of the International School for Advanced Studies (SISSA) in Trieste, has obtained two new European grants (for a total of 500,000 Euro) which will be used to study neurodegenerative diseases. Both grants have been given for projects involving international partners (European and American) and furthering knowledge about experimental models for the study of conditions like Alzheimer's, Parkinson's, frontotemporal dementia and prion disease.



These neurodegenerative diseases, which are currently incurable, affect around 50 million people worldwide with their devastating effects. Alzheimer's, by far the most widespread neurodegenerative disease, affects 6% of the population over 65 years of age and is one of the leading causes of death among the elderly. However, it is not only the mortality rate that makes these diseases devastating, since they all drastically reduce the quality of life of patients and their families, with huge costs for public health. At a research level, knowledge about the pathological mechanisms that cause these diseases is still limited and the experimental models used to study them are still too gross. Both of the projects being funded aim to address these shortcomings.

The projects

Legname is the coordinator of the project entitled "Pathway complexities of protein misfolding in neurodegenerative diseases: a novel approach to risk evaluation and model development" (REfrAME). Started on 1 September, the project aims to study the bases of the heterogeneity of symptoms and features of neurodegenerative diseases. In the future, the results of this project could have major diagnostic and therapeutic implications (with social effects).

"High-throughput, high-content screening of human neuroectodermal organoids for innovative drug discoveries in neurodegenerative diseases" (3D MiniBrain) is the title of the second project, which is led by the French CEA (Commissariat à l'Énergie Atomique). Other partners apart from SISSA are the German Centre for Neurodegenerative Diseases and the French INSERM (the French national institute of health and medical research). The project investigates a new experimental model ("brain organoids" or minibrains) consisting of re-programmed cells to be used in the study of neurodegenerative diseases. Once validated, this instrument could revolutionise research into new drugs (and, in the long term, it may become an alternative to the use of animal models).

IMAGE:

- **Giuseppe Legname with Nobel Prize winner Erik Kandel – Credits: SISSA**

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