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ANI

## New molecular mechanisms involved in Alzheimer's development identified

2010-12-17 13:30:00

**Curr. Alzheimer Research**

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Scientists have discovered new molecular mechanisms that may be involved in the development of Alzheimer's disease.

The study, a collaboration between bioinformaticians and cell biologists, was led by IRB Barcelona group leader and ICREA researcher Patrick Aloy.

This study reveals new molecular and functional data that could help researchers gain a better understanding of the disease and potentially to develop new therapies.

In this study, rather than looking at individual proteins as been done in many previous studies, the scientists analyzed the biology behind Alzheimer's disease using a global approach.

"We have combined computational and experimental methods to study the connections between proteins and put them in the context of their environment", said Aloy.

To do so, the researchers used genetic methods to study the thousands of possible interactions between proteins known - or thought likely - to be involved in the disease, including proteins derived from the genes located on the chromosomes related to the Alzheimer's disease. They obtained a total of 200 new interactions.

This information, added to what is already known, brings the total number of Alzheimer's-related interactions to 6000, and involves 1700 proteins, resulting in the largest network of interactions between proteins related to Alzheimer's disease.

The computational analysis of these interactions, performed by the MareNostrum Supercomputer of the Barcelona Supercomputing Center (BSC), revealed that many of the groups of proteins are highly interconnected and have similar functions in cells. Some of these functions suggest new molecular mechanisms that could be linked to Alzheimer's. A clear example is a protein called ECSIT, that relates oxidative stress to inflammation and changes in the mitochondria, indicating that these processes may play a role in the development of the disease.

The study has been published in the Genome Research, a reference journal in the field of genomics. (ANI)

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