

Epigenetic modification of mitochondrial genes in Alzheimer's disease (AD)

<https://neurodegenerationresearch.eu/survey/epigenetic-modification-of-mitochondrial-genes-in-alzheimers-disease-ad/>

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United Kingdom

Title of project or programme

Epigenetic modification of mitochondrial genes in Alzheimer's disease (AD)

Source of funding information

Alzheimer's Research UK

Total sum awarded (Euro)

€ 40,674

Start date of award

01/06/2013

Total duration of award in years

2.8

Keywords

Research Abstract

Mitochondria, the 'power-plants' of the cell produce energy via a process called the electron transport chain (ETC). Although most of a cell's DNA is contained in the cell nucleus, the mitochondrion has its own independent genome (DNA). Of the 97 proteins involved in the ETC, 13 are encoded by genes located in the mitochondria. The 'expression' of these genes is very tightly regulated to ensure enough energy is produced to fuel the cells. In Alzheimer's disease (AD) there appear to be changes in mitochondria, although we are unsure of the exact molecular mechanisms driving this.

The expression of genes in the nucleus is regulated by 'epigenetic' processes that can turn genes on and off. We have shown that epigenetic changes occur in AD brain implicating these processes in disease. Recently, scientists have shown that DNA methylation, a key epigenetic mark, also regulates genes in the mitochondrial genome. This project will use cutting-edge methodologies to address the hypothesis that mitochondrial dysfunction in AD brain is a result of epigenetic changes to the mitochondrial DNA. Excitingly this project could identify new targets for drug development as epigenetic changes are potentially reversible and epigenome-altering drugs are already in development for treating cancer.

Further information available at:

Types:

Investments < €500k

Member States:

United Kingdom

Diseases:

N/A

Years:

2016

Database Categories:

N/A

Database Tags:

N/A