Phosphorylation of kinesin light chain and calsyntenin-1/alcadein mediated axonal transport and processing of APP in Alzheimer’s disease

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Country

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Title of project or programme

Phosphorylation of kinesin light chain and calsyntenin-1/alcadein mediated axonal transport and processing of APP in Alzheimer’s disease

Source of funding information

Alzheimer's Research UK

Total sum awarded (Euro)

€ 354,186

Start date of award

01/10/2012

Total duration of award in years

3.7

Keywords
Research Abstract
Neurons comprise cell bodies and wire-like processes called axons and dendrites that connect to each other at structures called synapses. There are up to 100 billion neurons and 100 trillion synapses in the human brain and this network enables the computing of information. Most

neuronal proteins are made in the cell body and since axons and dendrites require proteins to function, they have to be transported from the cell body into and through the axons and dendrites to the synapse. This transport of protein “cargoes” involves “molecular motors” that run on “rails” and utilize a “fuel” called ATP. One key axonal motor is kinesin which moves along microtubule “rails”. As such, axonal transport is like a train journey with an engine (kinesin) using fuel to move cargoes along rails. We now know that axonal transport goes wrong in Alzheimer’s disease but it is not clear which aspect is defective. Like a train journey, there could be a problem with the engine, fuel supply, rails, signaling or even the cargoes themselves. We have discovered a new signaling pathway that has major implications for defective axonal transport in Alzheimer’s disease. This project is to study further, its role in Alzheimer’s disease.

Further information available at:

Types:
Investments < €500k

Member States:
United Kingdom

Diseases:
N/A

Years:
2016

Database Categories:
N/A

Database Tags:
N/A