

RNA editing and its functional consequences in the human brain

<https://www.neurodegenerationresearch.eu/survey/rna-editing-and-its-functional-consequences-in-the-human-brain/>

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Country

Sweden

Title of project or programme

RNA editing and its functional consequences in the human brain

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Swedish Research Council

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Start date of award

01-01-2013

Total duration of award in years

4

The project/programme is most relevant to:

Motor neurone diseases

Keywords

Research Abstract

High throughput (HTP) sequencing analysis have revealed that adenosine to inosine RNA editing is a more common event in the human transcriptome than previously anticipated. A-to-I editing have the potential to diversify the code of mRNAs since I is read as guanosine during translation. However, the functional consequences of many of these RNA editing events are still unknown. We will analyze human specific RNA editing and determine their role in brain function.

Using RNA-Seq we will investigate if A-to-I editing can induce alternative splicing and polyadenylation, an event that previously has been ignored. We will do this by analyzing altered RNA processing in mouse brain deficient for the editing enzyme. Premature polyadenylation caused by editing will also be analyzed in the glutamate transporter EAAT2. Altered editing of EAAT2 has been suggested as part of the cause of motor neuron death in patients with amyotrophic lateral sclerosis (ALS). The cause of the aberrant editing in ALS patients will be investigated. Finally, we want to continue our analysis on the role of RNA editing in the regulation of the GABA-A receptor during brain development. Transgenic mice with or without the ability to edit the receptor will be made and analyzed for the possibility of gating deficiencies in dopamine neurons. By analyzing these modifications in the human transcriptome we have a chance to solve some of these enigmas and understand the molecular cause of several neurological disorders.

Lay Summary

Further information available at:

Types:

Investments > €500k

Member States:

Sweden

Diseases:

Motor neurone diseases

Years:

2016

Database Categories:

N/A

Database Tags:

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