

Mass Spectrometry Imaging with Nano-DESI: New Methods and Application to Neurodegenerative Diseases

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Sweden

Title of project or programme

Mass Spectrometry Imaging with Nano-DESI: New Methods and Application to Neurodegenerative Diseases

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Swedish Research Council

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€ 391,730

Start date of award

01/01/2014

Total duration of award in years

4

Keywords

Research Abstract

Mass spectrometry imaging (MSI) enables the creation of images that show localization of ionizable molecules on a surface without the need for labeling. This project will use the novel MSI technique nanospray desorption electrospray ionization (nano-DESI) to provide fundamental knowledge about lipids and metabolites correlating to L-DOPA induced dyskinesia (LID) in rat models of Parkinson's disease. Nano-DESI MSI is an ambient technique which

enables sensitive imaging of molecules in rat brain tissue sections without sample pretreatment. Contrary to traditional MSI techniques, nano-DESI MSI offers a distance between desorption and ionization which, in combination with the liquid-based nano-DESI probe, will be used to incorporate a capillary electrophoresis (CE) separation of the desorbed molecules. On-line surface sampled CE MSI will add a new dimension to MSI where even isomeric lipids and metabolites are imaged quantitatively and without sample preparation. Additionally, this project will develop reactive nano-DESI MSI for imaging and identification of molecules containing a specific functional group. Identification and quantification of molecules involved in LID will enable elucidation of affected biological pathways, hence development of treatments to reduce patient suffering are made possible. The novel techniques used and developed in this project complement current MSI technology and will benefit biomedical research in Sweden well beyond the scope of this project.

Further information available at:

Types:

Investments < €500k

Member States:

Sweden

Diseases:

N/A

Years:

2016

Database Categories:

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