Mapping of multicompartmental anisotropic water diffusion in nervous tissue

Fact Sheet

Project Information

NEUROWATERDIF

Grant agreement ID: 46386

Project closed

Start date
1 February 2007

End date
31 January 2008

Funded under
Human resources and Mobility in the specific programme for research, technological development and demonstration "Structuring the European Research Area" under the Sixth Framework Programme 2002-2006

Total cost
No data

EU contribution
€ 40 000,00

Coordinated by
THE HENRYK NIEWODNICZANSKI INSTITUT OF NUCLEAR PHYSICS, POLISH ACADEMY OF SCIENCES
Poland

Objective

The aim of the proposed research is to specify mechanisms of the anisotropic water

diffusion in multi-compartmental nervous tissue of the spinal cord, and to correlate them with structure and state of the tissue.

The main investigations will be conducted on an animal model (a rat) in vivo, using a 4.7 T-Magnetic resonance imaging research system dedicated for small animals. Additionally, in vitro measurements using MR Microscope 11.7 T are planned on extracted spinal cord to specify details which will be difficult or impossible to perform in vivo.

Methods of the measurements of anisotropic diffusion, based on spin echo and ultra-short spin echo (UTE) will be used. Results will be correlated with relaxation times T2 and T1 and with histopathology of tissue. It will allow for discrimination between components of the diffusion originating from water of different mobility within myelin, as well as inside and outside axons.

Detailed measurements of the diffusion components in normal spinal cord together with simulations of the diffusion will be used for elaboration of the model of anisotropic diffusion, and for choosing optimal parameters for imaging of the components of the anisotropic and multi-compartmental diffusion in nervous tissue.

Fields of science (EuroSciVoc)

natural sciences > biological sciences > **neurobiology**

natural sciences > physical sciences > optics > **microscopy**

social sciences > sociology > social issues > **social inequalities**

natural sciences > mathematics > pure mathematics > **geometry**

Keywords

anisotropic diffusion | axons | magnetic resonance imaging | multicompartmental diffusion | nervous tissue | spinal cord | white matter

Programme(s)

FP6-MOBILITY - Human resources and Mobility in the specific programme for research, technological development and demonstration "Structuring the European Research Area" under the Sixth Framework Programme 2002-2006

Topic(s)

MOBILITY-4.1 - Marie Curie European Reintegration Grants (ERG)

Call for proposal

FP6-2004-MOBILITY-11
See other projects for this call

Funding Scheme

EIF - Marie Curie actions-Intra-European Fellowships

Coordinator

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EU contribution

No data

Total cost

No data

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Links

Contact the organisation Website
HORIZON collaboration network

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