Neurobiological mechanisms of endogenous pain modulation

Fact Sheet

Project Information

Pain modulation

Grant agreement ID: 273805

Project closed

Start date
1 September 2011

End date
31 August 2013

Funded under
Specific programme "People" implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013)

Total cost
€ 200 049,60

EU contribution
€ 200 049,60

Coordinated by
THE CHANCELLOR, MASTERS AND SCHOLARS OF THE UNIVERSITY OF OXFORD
United Kingdom

Objective

Chronic pain is one of the largest medical health problems in Europe, affecting about 20% of all adults. To combat chronic pain, we need an improved understanding of the mechanisms underpinning pain. We know that pain is not an invariant mapping from the physical intensity of sensory stimulation to perception, but is subject to various modulating factors that reduce or enhance pain perception. Endogenous pain

modulation involves systems that originate in cortical areas, which communicate – via subcortical and brainstem structures – with the spinal cord, where nociceptive processing is controlled. Previous research has focused on anti-nociceptive mechanisms, but it is becoming increasingly clear that pro-nociceptive mechanisms also play an important role in chronic pain.

This proposal will therefore be investigating the neurobiological mechanisms that underlie both directions of pain modulation, by using the models of placebo analgesia and nocebo hyperalgesia in functional magnetic resonance imaging (fMRI) and magnetoencephalography (MEG) studies. A first objective is to investigate bidirectional brainstem control of spinal cord responses with dedicated fMRI tools. The second objective – which involves ultra high-field fMRI – is to characterize the subcortical-brainstem networks in detail that intervene between cortical and spinal processing. Finally, a third objective is to determine cortical pain control mechanisms by using MEG in combination with analysis of evoked and induced responses. All three objectives will put a strong emphasis on connectivity analyses.

The proposal will provide important insights into pro- and anti-nociceptive pain-modulatory processes at an unprecedented level of detail. Such an endeavor is clinically important, as malfunction of pain control systems is a key underlying factor in the generation and maintenance of chronic pain, which is an enormous burden not only for the affected individual, but also for health-care systems worldwide.

Fields of science (EuroSciVoc)

engineering and technology > electrical engineering, electronic engineering, information engineering > electronic engineering > **control systems**

engineering and technology > medical engineering > diagnostic imaging > **magnetic resonance imaging**

Programme(s)

FP7-PEOPLE - Specific programme "People" implementing the Seventh Framework Programme of the European Community for research, technological development and demonstration activities (2007 to 2013)

Topic(s)

FP7-PEOPLE-2010-IEF - Marie-Curie Action: "Intra-European fellowships for career development"

Call for proposal

FP7-PEOPLE-2010-IEF
See other projects for this call

Funding Scheme

MC-IEF - Intra-European Fellowships (IEF)

Coordinator

THE CHANCELLOR, MASTERS AND SCHOLARS OF THE UNIVERSITY OF OXFORD

EU contribution

€ 200 049,60

Total cost

No data

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Region

South East (England) > Berkshire, Buckinghamshire and Oxfordshire > Oxfordshire

Activity type

Higher or Secondary Education Establishments

Links

Contact the organisation Website
Participation in EU R&I programmes
HORIZON collaboration network

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