

## **Impact of neuroinflammation and neurodegeneration on brain and spinal cord homeostasis: relevance to nociception**

**by Fátima Gimeno-Ferrer (ESR 8)**

The term homeostasis refers to the group of mechanisms of autoregulation that allow the composition and properties of an organism or a system to remain constant. These mechanisms work to regulate the ion concentrations (Potassium, Sodium, Calcium, Chloride...), the pH, the extracellular space volume (volume between cells) and the permeability of cells and vessels. By doing so homeostasis maintains the energy supply of a system and, in the case of Nervous System, the retrieval of neurotransmitters and mediators used for communication between cells.

My main aim in the Project number 8 of TOBeATPAIN is to study if these mechanisms of homeostasis are disrupted when the brain has inflammation (phenomenon called neuroinflammation) and when the brain is affected by a neurodegenerative disease such as Alzheimer's disease.

To achieve this goal, I perform recordings of the electrical waves that allow the communication between neurons in the brain. The comparison of different characteristics of these waves may reveal a disruption of the brain homeostasis.

From February 2019 until the current time, I am focused on the neuroinflammation model characterization, looking for evidence whether the brain presents a disruption of the homeostasis mechanisms. I have started with the neurodegeneration model of Alzheimer's disease but we expect a disruption of homeostasis in a similar manner in other neuroinflammatory diseases as well.



This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie Grant Agreement No 764860