



LIGHTPAIN \ \ DECIPHERING THE ROLE OF PERIPHERAL AND CENTRAL NERVOUS SYSTEM METABOTROPIC GLUTAMATE RECEPTORS IN NEUROPHATIC PAIN WITH PHOTOACTIVABLE LIGANDS

Austria \ Belgium \ Canada \ Finland \ France \ Germany \ Israel \ Italy \ Luxembourg \ Poland \ Portugal \ Romania \ Spain

PROJECTS RECOMMENDED FOR FUNDING

Pain is one of the main medical problems that quite often results into a chronic disease with limited effective treatment. Pain transmission is a complex process involving nerves, the dorsal horn and the brain in a fast and effective communication. The way whereby pain is transmitted from local injury to the brain is complex and only partially known. It involves high precision biological machinery with a number of processes and elements working in a coordinated fashion. The limited knowledge of this mechanism hampers the development of better drugs and treatments for pain.

The LIGHTPAIN project is aimed to the control of drug activity by molecules that can be switched on by light, and their use to understand the role of metabotropic glutamate (mGlu) receptors in pain transmission. The objective is to develop subtype-selective mGlu receptor ligands (positive or negative allosteric modulators) that are photochemically triggered and can therefore interact with mGlu receptors only at sites (peripheral or central) that are spatiotemporally exposed to light. These light-controlled molecules and the techniques for optical ligand delivery to the spinal cord, brain and peripheral nerves will be used to understand how mGlu receptors critically regulate pain threshold under pathological conditions.

The acquired knowledge will help to better understand the mechanism involved in pain and to establish a pharmacological technique based in the local light activation of receptors that can be applied to other drug targets.



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