



**OFERTA PROYECTO PARA AYUDAS PARA CONTRATOS PREDOCTORALES
PARA LA FORMACIÓN DE DOCTORES 2017**
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REFERENCIA PROYECTO
SAF2016-77233-R
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TÍTULO PROYECTO
Papel de los canales iónicos sensoriales en el dolor, la mecanosensibilidad y la osmoregulación
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RESUMEN PROYECTO/PROJECT SUMMARY

Sensing and reacting to changes in the environment is key for animal survival. Moreover, similar sensing mechanisms participate in the homeostatic loops that regulate vital physiological parameters like blood pressure, core body temperature and plasma osmolality. For this vital task, the skin and internal organs are densely innervated with sensory nerve endings that monitor changes in the physicochemical milieu, transmitting this information to the central nervous system for further processing.

Nociceptors are primary afferent fibers of the somatosensory system specialized in the detection of noxious stimuli that give rise to the sensation of pain. Transient Receptor Potentials (TRP) channels have been recognized as key molecular detectors of thermal and chemical stimuli in nociceptor endings. More recently, the identification of Piezo proteins provided novel insight into the molecular mechanisms of mechanosensitivity.

Our research programme aims at understanding how peripheral sensory neurons detect different environmental signals and produce a coded message that eventually leads to a sensation. More specifically, our focus is on the structure and function of TRP channels, and Piezo channels, that act as molecular transducers of thermal and mechanical signals in peripheral nerve terminals. A major goal of the current project is to study changes in the expression and function of ion channels in different animal models of chronic pain. This knowledge is fundamental to eventually use these molecular receptors as analgesic targets.

We use a broad range of techniques that include *in vivo* electrophysiology, patch-clamp recordings, calcium imaging, optogenetics, cell culture, molecular biology and behavioral assays.