Animal Model

SLP3 mutant mice; an animal model lacking touch-evoked neuropathic pain

Reference Number 03-00249

Abstract

Challenge

Touch and mechanical pain are first detected at our largest sensory surface, the skin. The cell bodies of sensory neurons that detect such stimuli are located in the dorsal root ganglia, and subtypes of these neurons are specialized to detect specific modalities of mechanical stimuli. Molecular mechanisms involving membrane-associated proteins that mediate mechanosensation only have been identified in vertebrates so far, however, comparable protein factors in mammals are unknown.

Technology

MEC-2 is a stomatin-domain-containing protein from *Caenorhabditis elegans*, known to be relevant for touch receptor function. Recently the mouse protein SLP3 (stomatin-like protein 3) has been identified, that is highly homologous to MEC-2. SLP3 is expressed in sensory neurons and phenotypic analysis of SLP3 knock-out mice showed that a substantial proportion (~40%) of touch receptors are non-functional in SLP3 mutant mice. Furthermore tactile-driven behaviours are also impaired in SLP3 mutant mice, including touch-evoked pain caused by neuropathic injury and tactile discrimination ability. The data indicate a function for SLP3 as a peripheral target for neuropathic pain control, either directly or via modulation of gating of ASIC channels that have previously been shown to be implicated in the transduction of mechanical stimuli by sensory neurons. SLP3 mutant mice can be used to study the importance of SLP3 for the function and maintenance of mechanoreceptors and the molecular mechanism of mechanosensation in mammals. The SLP3 mice are unique in that they practically lack neuropathic pain behaviour and could be used to screen drugs that interfere with mechanosensory mechanisms.

Commercial Opportunity

Breeding pairs of SLP3$^{-/-}$ mice are available under Tangible Property Licence Agreement.

Patent Situation

No patent application has been filed.

Further Reading

Wetzel C. et al., Nature (2007), 445(7124), 206-209

MDC MAX-DELBRÜCK-CENTRUM FÜR MOLEKULARE MEDIZIN IN DER HELMHOLTZ-GEMEINSCHAFT

Licensing Contact:
Dr Anja Zimmermann
Equity Management & Valuation
T: +49 89 318814-13
zimmermann@ascenion.de

Ascenion GmbH
Herzogstraße 64
D-80803 München
T: +49 89 318814-0
info@ascenion.de
www.ascenion.de