

TOBeATPAIN – E-Seminar 4B presented by Fátima Gimeno-Ferrer ESR8

Paper: Emerging role of Schwann Cells in Neuropathic Pain: Receptors, Glia Mediators and Myelination' published by Zhongya Wei, Ying Fei, Wenfend Su, and Gang Chen in *Frontiers in Cellular Neuroscience* 2019

Fatima described neuropathic pain as a pathological state caused by a primary lesion, injury, dysfunction, or disease in the nervous system. Neuronal mechanism has been the main focus on this research. However, recently glia cells are showing more importance in maintenance of the nociception. Schwann cells are at the centre of attention for peripheral neuropathic pain. In this seminar, Fatima explained the current state and knowledge about the Schwann cell function and modulation in neuropathic pain as well as their underlying mechanisms.

Nerve injury or trauma is followed by reaction of Schwann cells, involving changes in markers and morphology. Upregulation or downregulation of receptors in these cells produces cytokine and chemokine release, which generates a nociceptive response or a feedback response in Schwann cells. They are originated from neural crest and there are two phenotypes, myelinating and nonmyelinating. After nerve injury, the myelinating cells degrade their myelin and become nonmyelinating cells (known as repair Schwann cells). Fatima explained different channels that are activated under neuropathic pain such as purinergic receptors, toll like receptors and TRPA1. Schwann cells produce or release growth factors (BDNF), cytokines (TNF $\alpha$ , IL-1, IL-6, IL-10) and chemokines (COX2, MCP-1).

Demyelination contributes to the development of neuropathic pain by disrupting the molecular and structural features of nerve fibres. The researchers highlight that the accurate relation of remyelination with neuropathic pain will require further study. This paper overall support the relevant role of Schwann cells in the regulation of neuropathic pain, underlying neurobiological mechanisms would allow the development of successful targeted pain therapy.

Review by Jeiny Luna-Choconta ESR6