UNIVERSITÀ DEGLI STUDI DI TRIESTE

Dipartimento di
Scienze della Vita

Seminari di Dipartimento 2022

Venerdì 6 maggio
Aula A, edificio A

DSV SEMINARS

Ore 11.00

Why females are more prone to migraine: insights from the sex-dependent TRPM3 channels in meningeal nociceptors

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Host: prof. Annalisa Bernareggi
(for the International Master's Degree in Neuroscience)

It is puzzling why females are more sensitive to pain. Migraine is the most striking example as women are 3-times more prone to this common brain disorder than men. The worst symptom of migraine is the severe pulsatile pain. Such pain is likely mediated by the activation of mechanosensitive channels in meningeal afferents. Given the role of TRPM3 channels in mechanical activation of sensory neurons, as well as their regulation by sex hormones, these channels may determine the gender difference in migraine. By using a unique recording of nociceptive spikes directly from mouse nerve terminals in the meninges, we found that the selective agonists of TRPM3 channels largely activated peripheral trigeminal nerve fibers. TRPM3 activation also produced a massive release of the main migraine mediator neuropeptide CGRP and was associated with large calcium influx in neurons. Most notable, a remarkable sex difference was observed, with much more prominent TRPM3 mediated firing in female mice. This was specific to TRPM3 channels, as Piezo1 or capsaicin activating TRPV1 channels did not show a sex difference. As the natural inhibitors of TRPM3 channels oestrogen and progesterone drop during menses, our data suggest TRPM3 channels as a potential novel candidate for the generation of migraine pain in females.