**Mouse models for research into pain and itch**

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Pain is fundamentally unpleasant and a subjective individual experience composed of sensory, affective, and cognitive dimensions. Pain relief is rewarding. The affective dimension (or the aversiveness) of pain, as well as the reward from pain relief, is encoded by brain reward/motivational mesolimbic circuitry. However, our understanding in the affective dimension of pain is limited. Especially, the impact of chronic pain on reward/motivational circuits is largely unknown. Mouse models have been successfully used to probe the underlying mechanism of pain and pain relief from molecular to circuitry to behaviors. Here we will use acid-induced chronic muscle pain as an example to show how mouse models can advance our understanding in the development of chronic pain. Next, we will discuss the possible way to use optogenetic technique in the research into pain relief. In parallel, we will discuss another unpleasant sensation-itch and whether itch relief is rewarding.