Ion channel modulators to treat itch (ICMI)

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Chronic itch can be devastating to such an extent that some patients report a willingness to accept a shorter lifespan in return for an alleviating treatment. Itch, or pruritis, is commonly associated with a primary skin disorder; however, in a substantial subset of patients, pruritis originates from an unknown origin. Even though pruritus occurs in nearly 20% of adults, treatment options are typically limited to over-the-counter drugs or not effective. To efficiently address itch disorders with safe therapeutics, a vital step is to enable pharmacological manipulation of relevant sensory neuron pathways, which is the essence of the project that we propose here. We will build on our previous work in which we reported a clinical case of debilitating itch resulting from a mutation in SCN11A, a gene that encodes for $Na_V1.9$ which is involved in transmitting sensory signals from the skin to the brain. To further investigate the role of $Na_V1.9$ in itch, we propose to establish a discovery platform to help identify molecules capable of tackling the clinical problem of chronic itch and dramatically expand our understanding of its working mechanism. The results of this project will ultimately lead to new, more effective and safe itch treatments.