

Identifying the presence of *Scn4a*, *Scn5a*, and *Scn9a* in the Mammalian Clitoris

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Between 40 and 50% of women report experiences of sexual dysfunction (SD). This includes an inability to achieve sexual arousal, experience sexual pleasure and/or achieve an orgasm. Though there is no evidence of SD interfering with the ability to conceive, the condition impacts affected individuals' quality of life. Of particular interest are the mechanisms involved in the process of female sexual arousal. SD is often viewed as a psychological condition and limited information is known about the biological underpinnings of this condition. The goal of our laboratory is to identify the role of voltage-gated ion channels in the mammalian clitoris. These candidate genes are of interest based on studies examining patients with epilepsy reporting decreased ability to achieve sexual arousal after taking common antiepileptic drugs carbamazepine or phenytoin. These drugs function by blocking sodium current from voltage-gated ion channels in excitable cells. This suggests that voltage-gated sodium channels may be present in the clitoris, and thusly play a role in sexual function. In this project, we sought to identify if voltage-gated ion channels commonly found in the peripheral nervous system were expressed in the mammalian clitoris. This includes *Scn4a*, *Scn5a*, and *Scn9a*. Utilizing a RT-PCR profiler assay for neuronal ion channels (Qiagen, inc), we examined the expression pattern of these transcripts in the C57B/6J mouse clitoris tissue. Expression patterns were then confirmed with single RT-PCR. Transcripts with a ≥ 2 fold difference were considered significant. We found that *Scn9a* was expressed in this excitable tissue at significant levels, suggesting its role in arousal and the potential for therapeutic intervention.