

**REGULATION OF VOLTAGE SENSING STRUCTURES OF Ca_v1.2 CALCIUM CHANNEL
BY THE AUXILIARY β-SUBUNIT**

Tesis entregada a

LA UNIVERSIDAD DE VALPARAÍSO

en Cumplimiento Parcial de los requisitos para optar al grado de

Doctorado en Ciencias con Mención en Neurociencia

Facultad De Ciencias

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Abril, 2023

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Voltage-gated Calcium Channels (CaV) are the main entryway for calcium influx into excitable cells. High Voltage-gated Calcium Channels (HVA) have four homologous but nonidentical repeats encompassing a voltage-sensing domain (VSD) and a quarter of the pore. In a physiological context, HVA can be modulated at least by two accessory subunits $\alpha_2\beta$, and α_1 . In 1993, Neely et al. reported that CaV α_1 subunits could facilitate channel opening without altering gating currents' voltage dependence, suggesting that the energetic interaction between voltage sensors and the pore is modified.

I tested this hypothesis using the Voltage Clamp Fluorometry technique to track the movement of human CaV1.2 individual VSDs in the presence or absence of CaV α_1 subunits. I expressed α_1c pore-forming subunit with $\alpha_2\beta$ -1 in *Xenopus oocytes* and used the cut-open technique to implement voltage-clamp. I found that CaV α_1 modulates mostly VSD II with negligible impact on VSD III and VSD IV behavior and that this VSDII is moving in two steps.