



**SAN**

**Sociedad Argentina de Investigación  
en Neurociencias**

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## P8.-Expression and function of KCNQ channels in Ciliary Body

Esteban Pablo Barila, Olga Lorena German, Camila Carignano, Guillermo Spitzmaul

INIBIBB- CONICET / Departamento de Biología, Bioquímica y Farmacia (DBByF) UNS  
[esteban.barila@gmail.com](mailto:esteban.barila@gmail.com)

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The ciliary epithelium (CE) consists of two layers of secretory cells which are responsible for aqueous humor formation. One strategy in the treatment of glaucoma is to reduce the inflow of aqueous humour, which relies on Cl<sup>-</sup> movement through the epithelia. The rate of anion secretion depends on pumps, transporters, Na<sup>+</sup> channels and still-unknown K<sup>+</sup> channels, which aid the outflow of Cl<sup>-</sup> by increasing its driving force. KCNQ channels (Kv7) are voltage-gated K<sup>+</sup> channels with 5 members in mammals (KCNQ1-5). Among some of their functions they participate in cell volume regulation and epithelial transport. We study the role of KCNQ channels in this process using KO mice for each channel. Whole-eye RT-PCR analysis showed expression of KCNQ3, 4 and 5. Total homogenates of CE exhibited immunoreactive bands for KCNQ4. Using KO controlled immunohistochemistry we found specific labeling for KCNQ4 on the membrane of the pigmented cells (PC) of the CE, while KCNQ3 and 5 were not present. KCNQ4 was confined to the basolateral as well as the apical membrane of PCs, co-localizing with Connexin-43. Preliminary patch-clamp studies of non-pigmented cells lacking KCNQ4 expression, showed no changes in potassium currents. We conclude that KCNQ4 is expressed in the pigmented cells of the CE. This channel could contribute to the Cl<sup>-</sup> movement from the ciliary body stroma to the aqueous humor, being responsible for the K<sup>+</sup> current.