

Calcium activated chloride channel (CaCC) in GtoPdb v.2025.4

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Abstract

Chloride channels activated by intracellular Ca^{2+} (CaCC) are widely expressed in excitable and non-excitabile cells where they perform diverse functions [29]. CaCCs are activated by a rise in intracellular free Ca^{2+} concentration ($[\text{Ca}^{2+}]_i$), typically following activation of G_q protein coupled receptors (G_qPCR). This section centres on CaCC channels encoded by the TMEM16A gene (HUGO gene nomenclature: Anoctamin 1). The TMEM16 family consists of 10 paralogs (TMEM16A-K; Anoctamin 1-10). The TMEM16A and TMEM16B genes (*ANO1* and *ANO2*) encode for CaCCs, while the other members function as lipid scramblases or have combined scramblase and non-selective ion channel function [31, 58, 22, 1, 52]. TMEM16A has a broad tissue distribution and a variety of established cellular roles, while the main physiological role for TMEM16B identified thus far is in olfaction [37, 18]. Alternative splicing regulates the voltage- and Ca^{2+} -dependence of TMEM16A and such post-transcriptional process may be tissue-specific and contribute to functional diversity [23]. TMEM16A is a potential drug target for a variety of conditions spanning from respiratory to vascular (see "Comments" section for further detail).

Contents

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