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Sommario	Olfactory sensory neurons (OSNs) use a Ca2+-activated Cl? channels amplification mechanism in olfactory transduction. Odor binding to odorant receptors in the cilia of OSNs leads to an increase of intraciliary Ca2+ concentration by Ca2+ entry through cyclic nucleotide-gated channels. Ca2+ activates a Cl? channel that leads to an efflux of Cl? from the cilia, contributing to the depolarization in OSNs. The molecular identity of the olfactory Ca2+-activated Cl? channel is not definitely established. Bestrophin2 and TMEM16b/anoctamin2 are located at the surface of the olfactory epithelium, in the cilia of OSNs where olfactory transduction takes place. Moreover when expressed in heterologous systems each of these proteins produces Ca2+-activated Cl? currents. Both proteins have been indicated as a candidate for being a molecular component of the olfactory Ca2+-activated Cl? channel. In the first part of this Thesis we analyzed knockout (KO) mice for bestrophin2. We compared the electrophysiological properties of Ca2+-activated Cl? currents in OSNs from WT and KO mice for bestrophin2. Our data show that Ca2+-activated Cl? currents are still present in the cilia of OSNs from KO mice for bestrophin2 and that their properties are not significantly different from those of WT mice. These results indicate

	that bestrophin2 does not appear to be the main molecular component of the olfactory Ca2+-activated Cl? channel. Therefore further studies are required to determine the physiological function of the bestrophin2 in the cilia of OSNs. In the second part of this Thesis we measured functional properties of the native Ca2+-activated Cl? current in mouse OSNs and compared them with those of TMEM16b/anoctamin2-induced current in transfected HEK cells. We found a similar extracellular blocking potency for some Cl? channels blockers, a similar anion permeability sequence and a reversal potential time-dependency. Therefore, we conclude that the measured electrophysiological properties are largely similar and further indicate that TMEM16b/anoctamin2 is likely to be a major subunit of the native olfactory Ca2+-activated Cl? current.
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