Abstract:
Ca2+ influx through various ion channels is an important determinant of the cytosolic Ca2+ concentration, which plays a pivotal role in countless cellular processes. The cardiac L-type Ca2+ channel, Ca(v)1.2, represents a major pathway for Ca2+ entry and is in many cells expressed together with other high- and low-voltage-activated Ca2+ channels. This article will focus on the use of conditional transgenic mouse models to clarify the roles of Ca2+ channels in several biological systems. The phenotypes of conditional Ca2+ channel transgenic mice have provided novel, and often unexpected, insights into the in vivo function of L-type and T-type Ca2+ channels as mediators of signaling between cell membrane and intracellular processes in blood pressure regulation, smooth muscle contractility, insulin secretion, cardiac function, sleep, learning, and memory.

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