

Calcium-activated potassium channels

Vergara, Cecilia

Latorre, Ramon

Marrion, Neil V.

Adelman, John P.

Calcium-activated potassium channels are fundamental regulators of neuronal excitability, participating in interspike interval and spike-frequency adaptation. For large-conductance calcium-activated potassium (BK) channels, recent experiments have illuminated the fundamental biophysical mechanisms of gating, demonstrating that BK channels are voltage gated and calcium modulated. Structurally, BK channels have been shown to possess an extracellular amino-terminal domain, different from other potassium channels. Domains and residues involved in calcium-gating, and perhaps calcium binding itself, have been identified. For small- and intermediate-conductance calcium-activated potassium channels, SK and IK channels, clones have only recently become available, and they show that SK channels are a distinct subfamily of potassium channels. The biophysical properties of SK channels demonstrate that kinetic differences between apamin-sensitive and apamin-insensitive slow after hyperpolarizations