

Voltage-gated potassium (Kv) channels are proteins located in the membrane of all excitable membranes including neurons or the cells of the heart muscle. Kvs play a dual role, they return the electrical potential to its resting value after an excitation and they determine the sensitivity of the excitable cells to electrical stimuli. The Kvs adapt their response to input stimuli dependent on strength and frequency, which alters the behaviour of the neurons. We used a combination of electrophysiology, fluorescence spectroscopy, molecular simulations and kinetic modeling to investigate the internal mechanisms of these macromolecules and collaborated with geneticists to link them to neurodevelopmental disorders in patients.