HEK Cells with Stable Expression of Human Brain Sodium Channel Nav1.1 Subunits (SCN1A, SCN1B, and SCN2B)

Published date: March 20, 2013

Technology description

This is a human embryonic kidney cell line that stably expresses the three component proteins of the brain Navl.l voltage-gated sodium channel (SCNIA, SCNIB and SCN2B). The invention is important because mutation of the gene SCNIA is the most common cause of inherited epilepsy syndromes. In addition, voltage- gated sodium channels are important drug targets for anticonvulsant therapies. To our knowledge, this is the first cell line to simultaneously express all three components of Navl.l. The expression of all three proteins has been confirmed using western blot analysis. The stable cell line expresses the appropriate Nav1.1channel biophysical activities (including activation, fast inactivation and slow inactivation) when assayed by conventional (pipette-based) whole-cell patch clamp or highthroughput (planar-based) whole-cell patch clamp recordings.
The cells are valuable for basic science work studying the biophysical properties and regulation of the Navl.l channel. More importantly, this cell line holds great potential as a drug discovery tool for academic and commercial applications. Although voltage-gate sodium channels are an important drug target for both CNS and PNS disorders (epilepsy and pain, respectively), these molecular targets are current underrepresented by modern pharmacotherapies. This cell line will facilitate drug screening as serving as a primary target for CNS acting drugs and as a negative control for PNS acting drugs.

Institution

Vanderbilt University

Inventors

Kris Kahlig
Research Fellow
Pharmacology
Alfred George
Professor
Genetic Medicine

联系我们

叶先生

电 话：021-65679356

手 机：13414935137

邮 箱：yeyingsheng@zf-ym.com