

PrecisION[®] hTRPV4 Recombinant Stable Cell Line

Catalog Number CYL3064

Lot Number

See Vial

Contents 2 Vials, 2 x 10⁶ to 4 x 10⁶ in 1 mL

Background Information

Transient receptor potential (TRP) channels are cation-selective channels gated by a wide variety of ligands, thermal, mechanical, and osmotic stimuli. There are currently 28 mammalian genes encoding TRP subunits (Clapham et al., 2005). Transient receptor potential channels are thought to be 6TM channels with a structure, as yet undetermined, similar to that of a bacterial voltage-gated K channel (see Clapham et al., 2005 and references therein). Additional information can be found on page 2.

Product Information

Description Recombinant HEK 293 cell line expressing the human TRPV4 transient receptor potential cation channel

Family TRP

Target TRPV4

	Target Protein	Accession Number
1	TRPV4	NM_021625.4
2	N/A	N/A
3	N/A	N/A
4	N/A	N/A

Species Human

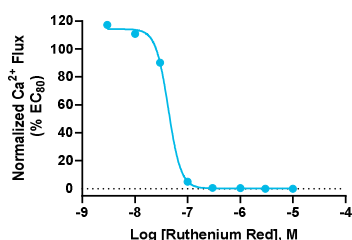
Host Cell Type HEK 293

Application Electrophysiology assay (conventional patch clamp and fluorescent plate-based platforms)

Storage Vials are to be stored in vapor phase of liquid nitrogen

Functional Performance

HEK293 cells expressing hTRPV4 were characterized in terms of their pharmacological and biophysical properties using FLIPR calcium assay.



Electrophysiology Method FLIPR

Reference Agonist GSK1016790A

Reference Antagonist Ruthenium Red

Antagonist IC₅₀ (μM) 0.04

Passage Stability

This cell line has been confirmed to be stable through at least 12 passages with no significant drop in assay window or change in pharmacology.

Mycoplasma Testing

This lot was tested and found to be free of mycoplasma contamination. Data available upon request.

Notes

Additional functional (pharmacological and electrophysiological) validation on multiple platforms is available upon request.

Additional Ligand Information

Control Compound Ruthenium Red

Vendor Name : Sigma-Aldrich

Vendor Catalog No. R2751

Additional Background Information

TRPs V5 and V6 have the highest calcium selectivity with $PCa/PNa > 100$, whereas most of the others members in the family are either monovalent-selective (TRPM4 and M5) or relatively nonselective. As studied by Voets et al. (2002), mouse TRPV4 expressed in HEK 293 cells has a PCa/PNa value of 6.9, a PMg/PNa value of 2.5, and for monovalent cations the permeability series is $K > Cs > Rb > Na > Li$. The human TRPV4 gene encodes the pore-forming subunit of the TRPV4 ion channel. McKay et al. (2000) designed an oligonucleotide probe after the bovine TRPV4 sequence to amplify a fragment from HEK 293 cells; this was then used to design an oligonucleotide that isolated a full-length TRPV4 clone from a human kidney library. Dominant mutations for this gene in humans have been linked to skeletal dysplasias including dominant brachyolmia, spondylo-metaphyseal dysplasia Kozlowski type, and metatropic dysplasia (Andreucci et al., 2011); in addition to these skeletal disorders there are also degenerative disorders of peripheral nerves (for review, see Dai et al., 2010). Although the biological function of TRPV4 channels in humans is still being described, these "TRPV4-pathies" suggest that TRPV4 could be an interesting target for multiple human diseases.

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