AddexBio
Research Services

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Specification Sheet: HUMAN SODIUM/CALCIUM EXCHANGER STABLE CELL LINE

Catalog #: S0017001

Product Name	Human sodium/calcium exchanger stable cell line
CHANNEL/RECEPTOR	Sodium/calcium exchanger
Catalog #	S0017001
Expression System	CHO-K1 cells
Growth Condition	Details enclosed in shipping specification sheet
Subculture	1:2 to 1:3 using 0.25% trypsin or trypsin/EDTA, 5% CO2; 37°C
Freezing	Complete culture medium supplemented with 5% (v/v) DMSO
Morphology and Properties	Adherent epithelium
Gene Name	NCX1, SLC8A1
Sequence	GenBank accession number NM_001112802
Mycoplasma Status	Negative (MycoAlert Kit)
Packaging	Cryopreserved cells, 1 x 10^6 cells/vial
Storage Recommendation	Vapor phase of liquid nitrogen
Background	The **sodium-calcium exchanger** (**NCX**) is an antiporter membrane protein that removes calcium from cells. It uses the energy that is stored in the electrochemical gradient of sodium (Na^+) by allowing Na^+ to flow down its gradient across the plasma membrane in exchange for the countertransport of calcium ions (Ca^{2+}). The NCX removes a single calcium ion in exchange for the import of three sodium ions.[1] The exchanger exists in many different cell types and animal species.[2] The NCX is considered one of the most important cellular mechanisms for removing Ca^{2+}.
References	Yu, SP; Choi, DW. "Na^+–Ca^{2+} exchange currents in cortical neurons: concomitant forward and reverse operation and effect of glutamate". *European Journal of Neuroscience* 1997; 9 (6): 1273–1281.

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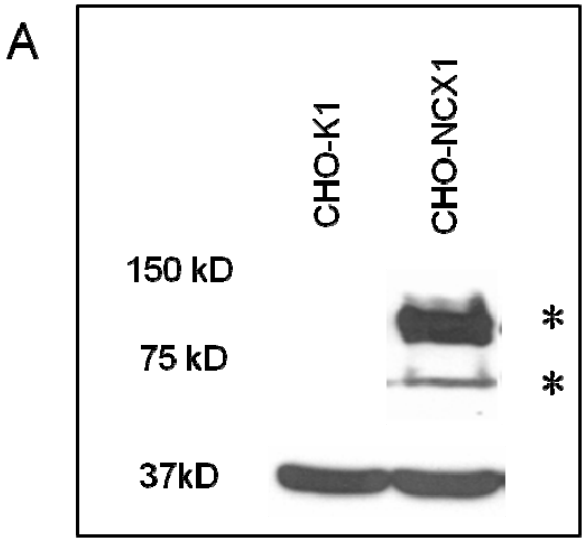
Validation Data



Overexpression of NCX1. (A) Western blot analysis of total cell lysates of CHO-K1 or CHO-NCX1 cells. PVDF were probed with the anti-NCX1 (*), and anti-GAPDH (about 37 kD). n=3 (B) Immunofluorescent microscopic image of a CHO-NCX1 cell. NCX1 was revealed by interaction with an FITC-conjugated NCX1 antibody.

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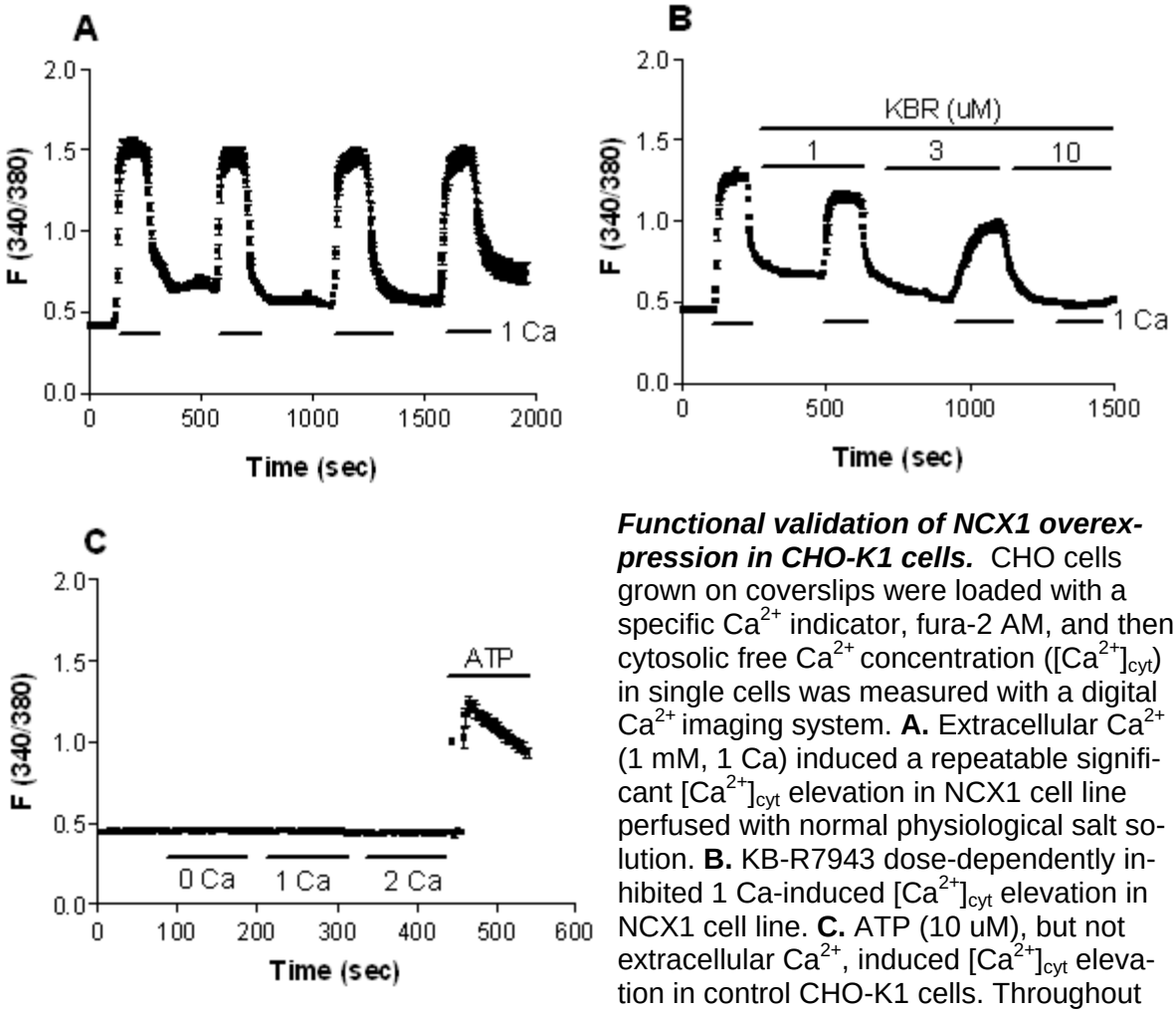

Functional validation of NCX1 overexpression in CHO-K1 cells. CHO cells grown on coverslips were loaded with a specific Ca^{2+} indicator, fura-2 AM, and then cytosolic free Ca^{2+} concentration ($[Ca^{2+}]_{cyt}$) in single cells was measured with a digital Ca^{2+} imaging system. **A.** Extracellular Ca^{2+} (1 mM, 1 Ca) induced a repeatable significant $[Ca^{2+}]_{cyt}$ elevation in NCX1 cell line perfused with normal physiological salt solution. **B.** KB-R7943 dose-dependently inhibited 1 Ca-induced $[Ca^{2+}]_{cyt}$ elevation in NCX1 cell line. **C.** ATP (10 uM), but not extracellular Ca^{2+}, induced $[Ca^{2+}]_{cyt}$ elevation in control CHO-K1 cells. Throughout the experiments, normal physiological salt solution contains gramicidin (1 ug/ml) to increase $[Na^{+}]_{cyt}$ and switch NCX1 into its Ca^{2+} entry mode. N =50 cells for each group.