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SZABO-SCANDIC HandelsgmbH

Quellenstraße 110, A-1100 Wien

T. +43(0)1 489 3961-0

F. +43(0)1 489 3961-7

mail@szabo-scandic.com

www.szabo-scandic.com

[linkedin.com/company/szaboscandic](https://www.linkedin.com/company/szaboscandic) 



6044 Cornerstone Court W, Ste E
San Diego, CA 92121
Tel: 1.858.829.3082
Fax: 1.858.481.8694
Email: info@bpsbioscience.com

Data Sheet

CFTR – HEK293 Recombinant Cell Line

Catalog #: 60506

Background

Cystic fibrosis transmembrane conductance regulator (CFTR) is a protein that in humans is encoded by the CFTR gene. CFTR is an ABC transporter-class ion channel that transports chloride and thiocyanate ions across epithelial cell membranes. Mutations of the CFTR gene affect functioning of the chloride ion channels in these cell membranes, leading to cystic fibrosis [1]. It is characterized by the triad of chronic bronchopulmonary disease (with recurrent respiratory infections), pancreatic insufficiency (which leads to malabsorption and growth retardation) and elevated sweat electrolytes [2].

Description

The CFTR-HEK293 Cell Line expresses full length, human cystic fibrosis transmembrane conductance regulator (CFTR) protein (Genbank # P13569). The expression of CFTR is confirmed by Western blotting.

Sequence

A synthetic codon-optimized DNA sequence encoding human CFTR protein [2] with C-terminal Streptavidin-Binding Peptide (SBP) [3] tag is stably integrated in 293HEK-Trex cells.

Application

- Drug compound screening
- Functional Assays
- Efficient antigen for mouse immunization

Format

Each vial contains 2×10^6 cells in 1 ml of Sigma Freezing Medium (Cat. # C-6164).

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Host cell

293HEK-Trex

Recommended Storage

Immediately upon receipt, store in liquid nitrogen.

Propagation Medium

Growth Medium 4A (BPS Cat. #79535):

Thaw Medium 4 (BPS Cat. #60181) + 10 µg/ml Blasticydin, 0.2 mg/ml Zeocin

Thaw Medium 4, Blasticydin, Zeocin: DMEM/F12 (1:1) (Hyclone # SH30271.01) supplemented with 10% FBS (Life Technologies #26140-079), 1% Penicillin/Streptomycin (Hyclone # SV30010) and 10 µg/ml Blasticydin, 0.2 mg/ml Zeocin.

Induction of target protein expression

Growth Medium 4C (BPS Cat. #79631):

Thaw Medium 4 (BPS Cat. #60181) + 1 µg/ml Doxycycline (Biochemika #44577) and 3 mM Na-butyrate (Acros Organics #263190250):

Thaw Medium 4, Doxycycline, Na-butyrate: DMEM/F12 (1:1) (Hyclone # SH30271.01) supplemented with 10% FBS (Life Technologies #26140-079), 1% Penicillin/Streptomycin (Hyclone # SV30010) 1 µg/ml Doxycycline (Biochemika #44577) and 3 mM Na-butyrate (Acros Organics #263190250)

During 20-24 hrs. before cell harvesting.

Stability

Stable after minimum of seven continuous passages. Upon receipt, amplify the cells in culture and make several frozen aliquots for future use.

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Figure 1. Western Blot of the CFTR expressing cells. 1. CFTR-GFP-SBP fusion, 2. CFTR-SBP fusion; detection via Streptavidin-AP.

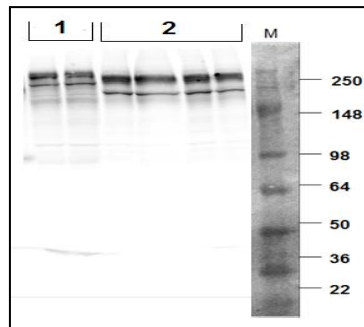
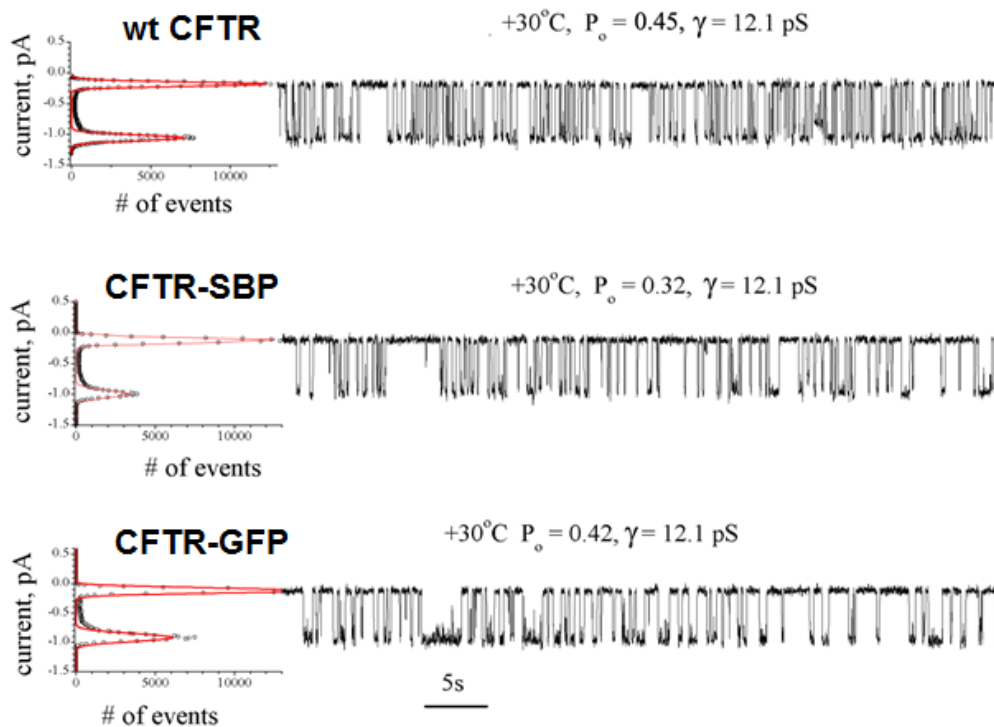


Figure 2. Electrophysiological analysis of CFTR cells. Comparison of wt CFTR vs. CFTR-SBP and CFTR-GFP.



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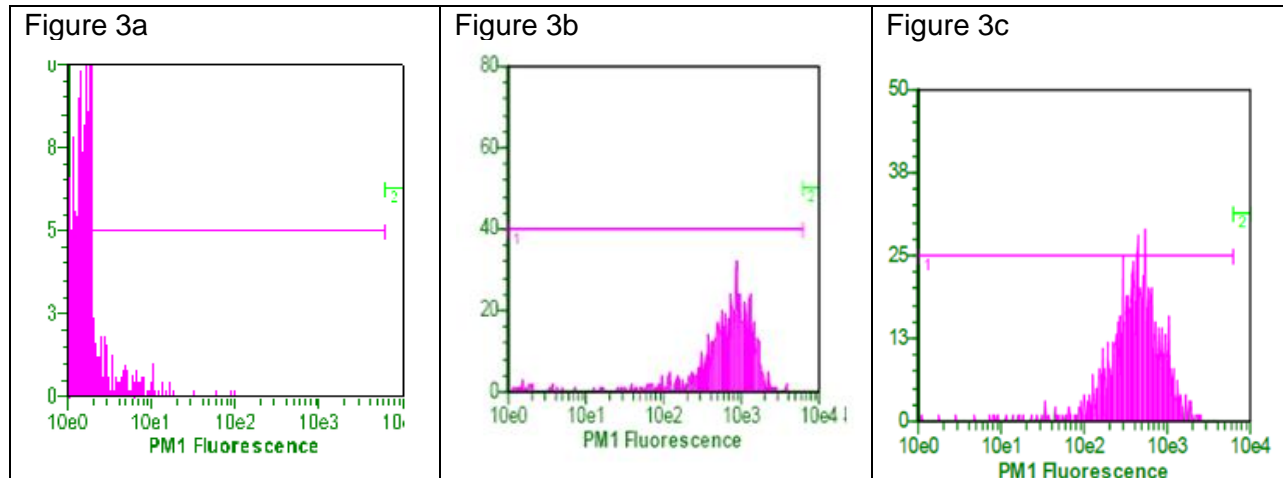
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Figure 3. Cells staining: CFTR expression profile



CFTR expression on cell surface measured by flow cytometry (FACS) using intracellular cells staining by Streptavidin-PE.

Figure 3a: Host cells, Figure 3b: CFTR expressing cells, Figure 3c: CFTR-GFP expressing cells

References:

1. Gadsby, D.C., *et al. Nature* **440** (7083): 477–483 (2006).
2. Hillier, L.W., *et al. Nature* **424**:157-164 (2003).
3. McCann, C. M., *et al. BioTechniques* **38** (6): 945–952 (2005).

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