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TECHNICAL DATA SHEET

THUNDER™ Phospho-SMAD2 (S465/S467) TR-FRET Cell Signaling Assay Kit

bioauxilium
BETTER TOOLS. REAL DISCOVERIES.

CATALOG NUMBERS KIT-SMAD2P-100 (100 tests)
KIT-SMAD2P-500 (500 tests)

Store at -80°C
For research use only.
Not for use in diagnostic procedures.

PRODUCT DESCRIPTION

This assay kit measures intracellular levels of **phospho-SMAD2 (S465/S467)** protein in cell lysates using a simple, rapid and sensitive immunoassay based on the homogeneous (no-wash) THUNDER™ TR-FRET technology. The kit is compatible with both adherent and suspension cells.

SPECIFICITY

This assay kit contains two specific and selective antibodies, one that recognizes **SMAD2** phosphorylated at **Ser465** and **Ser467** and another that recognizes an invariant epitope of **SMAD2**.

SPECIES REACTIVITY

Human (Swiss-Prot Acc.: Q15796; Entrez-Gene Id: 4087).

Other species should be tested on a case-by-case basis.

TR-FRET ASSAY PRINCIPLE

The **Phospho-SMAD2 (S465/S467)** assay kit is a homogeneous time-resolved Förster resonance energy transfer (TR-FRET) sandwich immunoassay (Figure 1). The THUNDER™ Cell Signaling assay workflow consists of 3 steps (Figure 2). Following cell treatment, cells are first lysed with the specific Lysis Buffer provided in the kit. Then **Phospho-SMAD2 (S465/S467)** in the cell lysates is detected with a pair of fluorophore-labeled antibodies in a simple "add-incubate-measure" format (single-step reagent addition; no wash steps). One antibody is labeled with a donor fluorophore (Europium chelate; Eu-Ab1) and the second with a far-red acceptor fluorophore (FR-Ab2). The binding of the two labeled antibodies to distinct epitopes on the target protein takes place in solution and brings the two dyes into close proximity. Excitation of the donor Europium chelate molecules with a flash lamp (320 or 340 nm) or a laser (337 nm) triggers a FRET from the donor to the acceptor molecules, which in turn emit a TR-FRET signal at 665 nm. Residual energy from the Eu chelate generates light at 615 nm. The signal at 665 nm is proportional to the concentration of **Phospho-SMAD2 (S465/S467)** in the cell lysate. Data can be expressed as either the signal at 665 nm or the 665 nm/615 nm ratio.

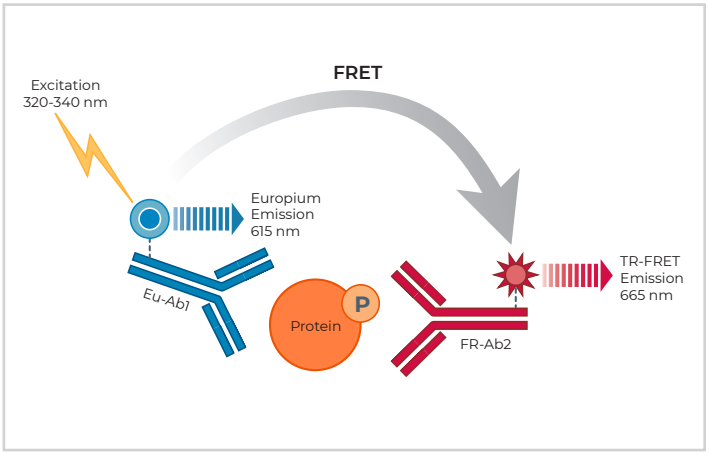


Figure 1 Schematic representation of the TR-FRET cell signaling assay principle.

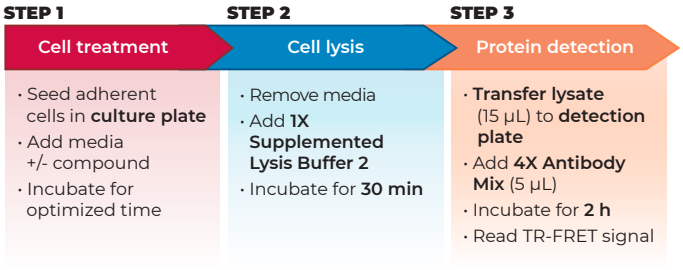


Figure 2 Assay workflow using the 2-plate (transfer) protocol.

KIT COMPONENTS

	100 points*	500 points*
Eu-labeled phospho-SMAD2 (S465/S467) antibody (Eu-Ab1)	5 µL	25 µL
Acceptor-labeled phospho-SMAD2 (S465/S467) antibody (FR-Ab2)	20 µL	100 µL
Lysis Buffer 2 (5X)	1 mL	5 mL
Detection Buffer (10X)	50 µL	250 µL
Positive control cell lysate	100 µL	500 µL

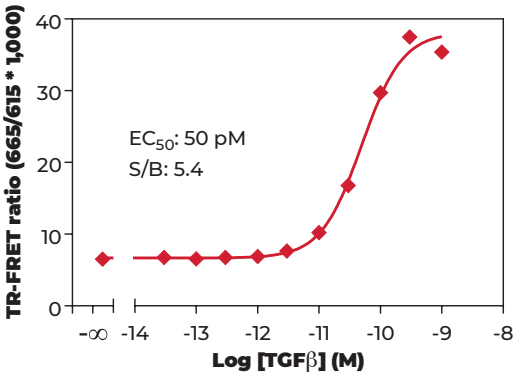
* The number of assay points is based on an assay volume of 20 µL in half-area 96-well or low-volume 384-well assay plates using the kit components at the recommended concentrations (refer to the User Manual).

VALIDATION DATA

This assay kit has been validated for the relative quantification of phospho-SMAD2 (S465/S467) in HeLa cell lysates using the 2-plate assay protocol.

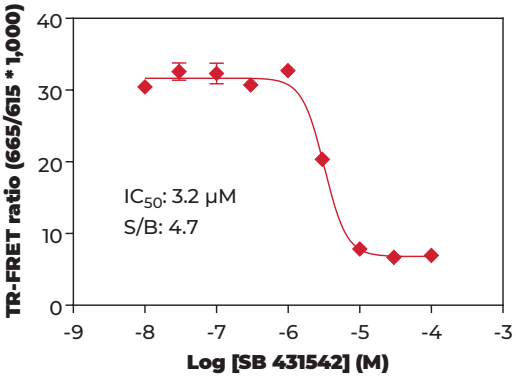
- Adherent cells were cultured overnight in a 96-well tissue culture plate (DMEM +10% FBS) and then serum starved for 3 hours.
- Following cell treatment, the media was removed and cells were lysed with the 1X **Lysis Buffer 2** (50 µL) supplemented with the phosphatase inhibitors sodium fluoride (1 mM) and sodium orthovanadate (2 mM).
- Following a **30-min** incubation at room temperature (RT) on an orbital shaker (400 rpm), lysates (15 µL) were then transferred to a 384-well assay plate followed by addition of the labeled antibodies Eu Ab1 and FR Ab2 (5 µL) for detection of phospho-SMAD2 (S465/S467).
- The plate was incubated at RT for **2 hours** and the TR-FRET signal was recorded at 665 and 615 nm (EnVision®; lamp excitation).

STIMULATION OF PHOSPHO-SMAD2 (S465/S467) IN HELA CELLS



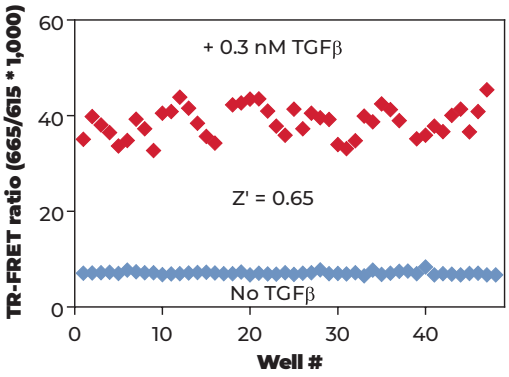
HeLa cells (80,000 cells/well; in triplicate) were incubated with serial dilutions of TGFβ for 60 min at RT. Data show that treatment of HeLa cells with TGFβ stimulates phosphorylation of SMAD2 at S465/S467.

INHIBITION OF PHOSPHO-SMAD2 (S465/S467) IN HELA CELLS



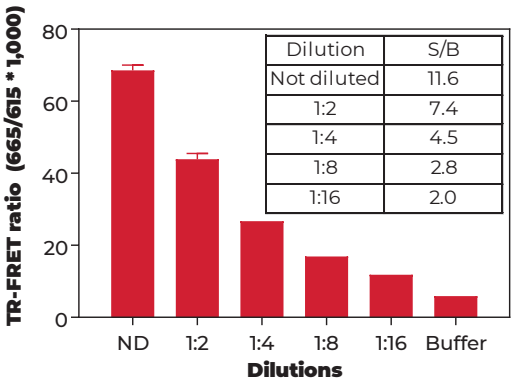
HeLa cells (80,000 cells/well; in triplicate) were incubated with serial dilutions of SB 431542 for 30 min at RT. Cells were then stimulated with 0.3 nM TGFβ for 60 min at RT. Data show that treatment of HeLa cells with SB 431542 inhibits phosphorylation of SMAD2 at S465/S467 by TGFβ

Z'-FACTOR DETERMINATION IN HELA CELLS



HeLa cells (80,000 cells/well) were incubated without or with 0.3 nM of TGFβ for 60 minutes at RT. The Z' factor value was determined using a total of 48 wells for each treatment group. The Z'-factor value of 0.65 indicates that the assay is robust and suitable for HTS.

HELA CONTROL LYSATE TITRATION (QC TEST)



Dilution	S/B
Not diluted	11.6
1:2	7.4
1:4	4.5
1:8	2.8
1:16	2.0

Quality Control: the phospho-SMAD2 (S465/S467) assay kit is routinely tested against TGFβ-treated HeLa lysates. Hela cells were cultured in a T175 flask to 90% confluence, serum starved for 3 hours and stimulated with 0.3 nM of TGFβ for 60 min at RT. Following cell lysis using 4 mL of 1X Lysis Buffer 2, lysates were serially diluted with 1X Lysis Buffer 2 and tested in triplicate. Data show a linear relationship between lysate dilutions and TR-FRET ratio values.

FOR MORE INFORMATION ON DEVELOPING AND OPTIMIZING TR-FRET CELL SIGNALING ASSAYS, CONSULT THE USER MANUAL.