

TECHNICAL DATA SHEET

THUNDER™ Phospho-GSK3β (S9) + Total GSK3β TR-FRET Cell Signaling Assay Kit



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CATALOG NUMBERS KIT-GSK3PT-500
400 points for phospho-GSK3β
and 100 points for total GSK3β

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

PRODUCT DESCRIPTION

This assay kit measures intracellular levels of **phospho-GSK3β (S9)** and **total GSK3β** 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 antibody pairs, one that recognizes **GSK3β** phosphorylated at **Ser9** and another that recognizes **total** (both phosphorylated and unphosphorylated) **GSK3β**.

SPECIES REACTIVITY

Human (Swiss-Prot Acc.: P49841; Entrez-Gene Id: 2932).

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

TR-FRET ASSAY PRINCIPLE

The **Phospho-GSK3β (S9) + Total GSK3β** 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-GSK3β (S9)** and **Total GSK3β** in the cell lysates are detected in separate wells with two pairs of fluorophore-labeled antibodies in a simple "add-incubate-measure" format (single-step reagent addition; no wash steps). For detection of the phosphorylated protein, one antibody is labeled with a donor fluorophore (Europium chelate; Eu-Ab1) and the second with a far-red acceptor fluorophore (FR-Ab2). The same approach is used for the second antibody pair detecting the total protein (Eu-Ab3 and FR-Ab4). The binding of the two matched labeled antibodies to distinct epitopes on the target protein (either **phospho-GSK3β** or **total GSK3β**) 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-GSK3β (S9)** and **Total GSK3β** in the cell lysate. Data can be expressed as either the signal at 665 nm or the 665 nm/615 nm ratio.

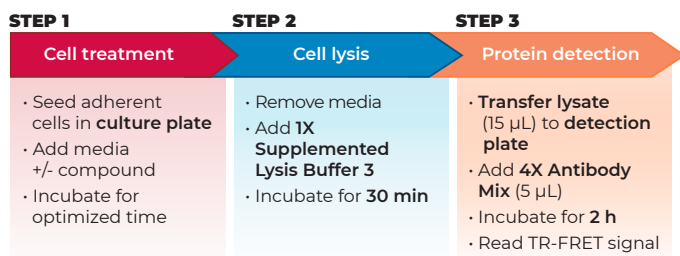


Figure 2 Assay workflow using the 2-plate (transfer) protocol.

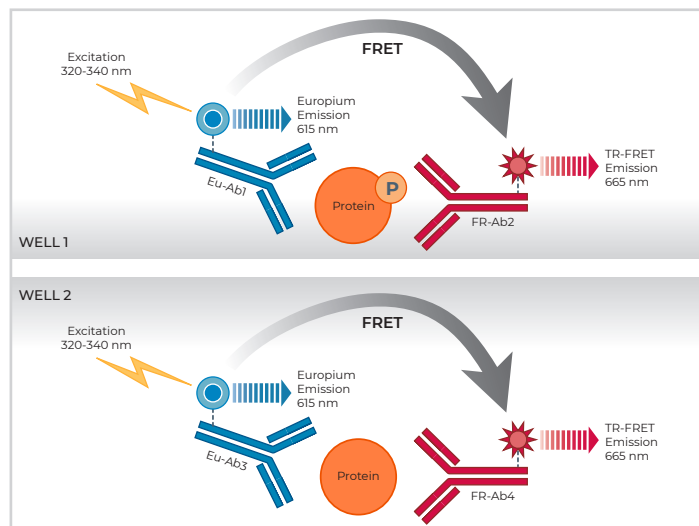


Fig. 1 Schematic representation of the TR-FRET cell signaling assay principle.

KIT COMPONENTS

	500 points*
Eu-labeled phospho-GSK3β (S9) antibody (Eu-Ab1)	20 µL
Acceptor-labeled phospho-GSK3β (S9) antibody (FR-Ab2)	80 µL
Eu-labeled total-GSK3β antibody (Eu-Ab3)	5 µL
Acceptor-labeled total-GSK3β antibody (FR-Ab4)	20 µL
Lysis Buffer 3 (5X)	5 mL
Detection Buffer (10X)	250 µL
Positive control cell lysate	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).

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Phospho-GSK3 β (S9) + Total GSK3 β

VALIDATION DATA

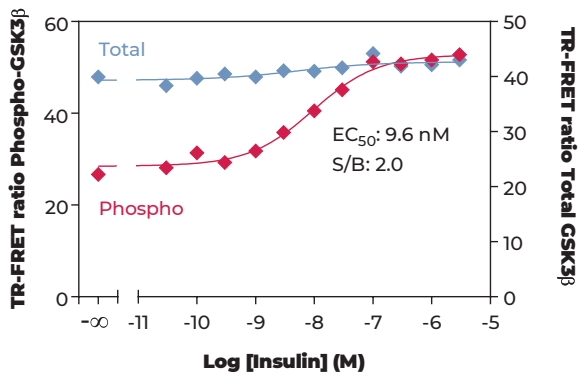
This assay kit has been validated for the relative quantification of phospho-GSK3 β (S9) and total GSK3 β in MCF7 cell lysates using the 2-plate assay protocol.

- Adherent cells were cultured overnight in a 96-well tissue culture plate (EMEM +10% FBS).
- Following cell treatment, the media was removed and cells were lysed with the 1X **Lysis Buffer 3** (50 μ L) 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 μ L) were then transferred to a 384-well assay plate followed by addition to separate wells of either the labeled antibodies Eu-Ab1 and FR-Ab2 (5 μ L) for detection of phospho-GSK3 β (S9) or Eu-Ab3 and FR-Ab4 (5 μ L) for detection of total GSK3 β .

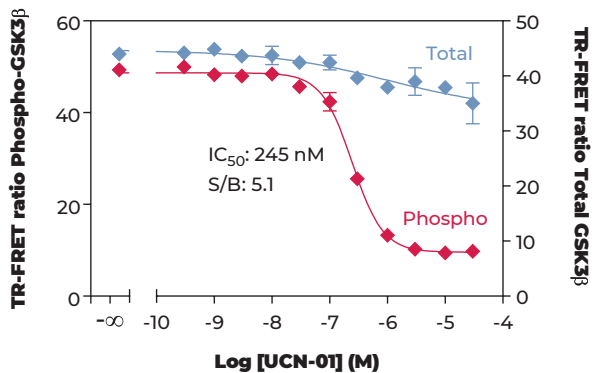
- The plate was incubated at RT for **2 hours** and the TR-FRET signal was recorded at 665 and 615 nm (EnVision[®]; lamp excitation).

STIMULATION OF PHOSPHO-GSK3 β (S9) IN MCF7 CELLS



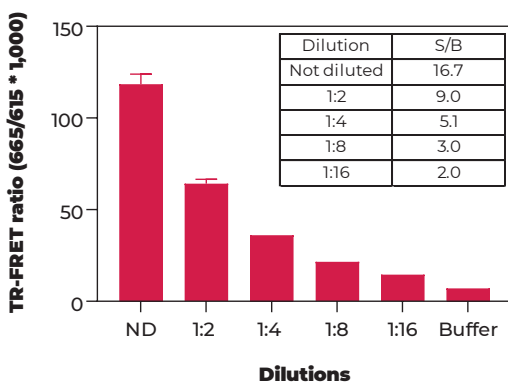
MCF7 cells (75,000 cells/well; in triplicate) were incubated with serial dilutions of Insulin for 30 min at RT. Data show that treatment of MCF7 cells with EGF stimulates phosphorylation of GSK3 β at S9 but does not affect the levels of total GSK3 β .

INHIBITION OF PHOSPHO-GSK3 β (S9) IN MCF7 CELLS



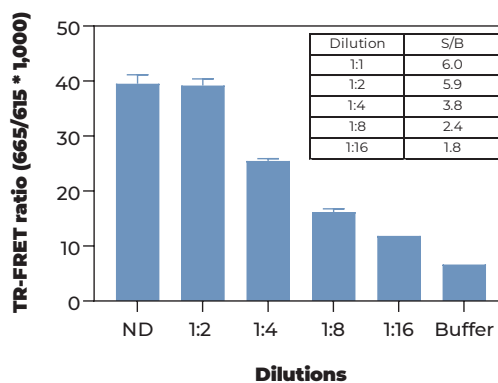
MCF7 cells (75,000 cells/well; in triplicate) were incubated with serial dilutions of the UCN-01 for 2 hours at RT. Cells were then stimulated with 100 nM Insulin for 30 min at RT. Data show that treatment of MCF7 cells with UCN-01 inhibits phosphorylation of GSK3 β at S9 by Insulin, but does not affect the levels of total GSK3 β .

MCF7 CONTROL LYSATE TITRATION (QC TEST) PHOSPHO-GSK3 β (S9)



Quality Control: the Phospho-GSK3 β (S9) + Total GSK3 β assay kit is routinely tested against Insulin-treated MCF7 lysates. MCF7 cells were cultured in a T175 flask to 65% confluence and stimulated with 3 μ M Insulin for 30 min at RT. Following cell lysis using 4 mL of 1X Lysis Buffer 3, lysates were serially diluted with 1X Lysis Buffer 3 and tested in triplicate and in separate wells for phospho-GSK3 β (S9) and total GSK3 β . Data show a linear relationship between lysate dilutions and TR-FRET ratio values. Note that due to the very high sensitivity of the Total GSK3 β kit, lysates from the T175 flask required at least a 1:2 pre-dilution in order to be within the dynamic assay range.

MCF7 CONTROL LYSATE TITRATION (QC TEST) TOTAL GSK3 β



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

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