

## TECHNICAL DATA SHEET



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# THUNDER™ Phospho-p53 (S15) + Total p53 TR-FRET Cell Signaling Assay Kit

**CATALOG NUMBERS** KIT-P53PT-500  
400 points for phospho-p53 and 100 points for total p53

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

## PRODUCT DESCRIPTION

This assay kit measures intracellular levels of **phospho-p53 (S15)** and **total p53** 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 **p53** phosphorylated at **Ser15** and another that recognizes **total** (both phosphorylated and unphosphorylated) **p53**.

## SPECIES REACTIVITY

Human (Swiss-Prot Acc.: P04637; Entrez-Gene Id: 7157).

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

## TR-FRET ASSAY PRINCIPLE

The **Phospho-p53 (S15) + Total p53** 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-p53 (S15)** and **Total p53** 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-p53** or **total p53**) 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-p53 (S15)** and **Total p53** in the cell lysate. Data can be expressed as either the signal at 665 nm or the 665 nm/615 nm ratio.

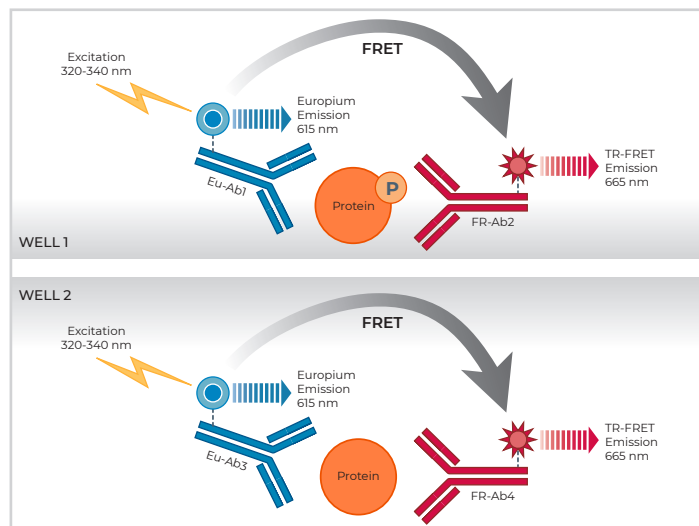


Fig. 1 Schematic representation of the TR-FRET cell signaling assay principle.

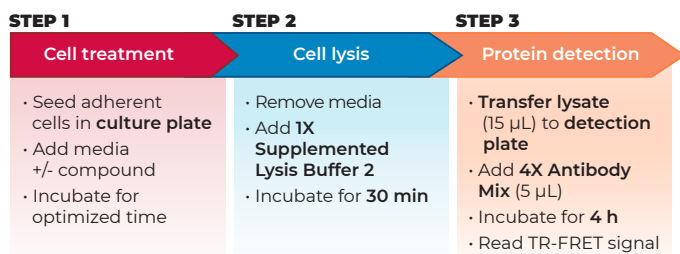


Figure 2 Assay workflow using the 2-plate (transfer) protocol.

## KIT COMPONENTS

	500 points*
Eu-labeled phospho-p53 (S15) antibody (Eu-Ab1)	20 µL
Acceptor-labeled phospho-p53 (S15) antibody (FR-Ab2)	80 µL
Eu-labeled total-p53 antibody (Eu-Ab3)	5 µL
Acceptor-labeled total-p53 antibody (FR-Ab4)	20 µL
Lysis Buffer 2 (5X)	5 mL
Detection Buffer (10X)	250 µL
Positive control cell lysate	200 µL
Phosphatase Inhibitor Cocktail (100X)	250 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

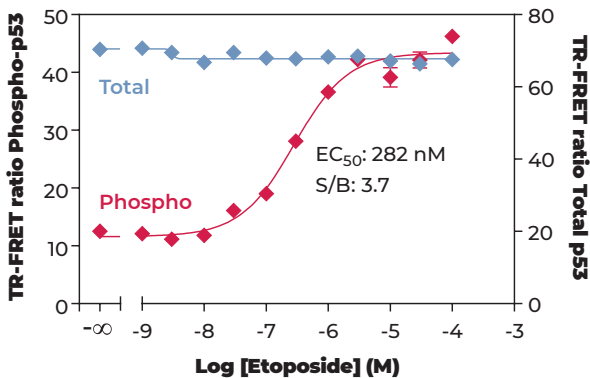
This assay kit has been validated for the relative quantification of phospho-p53 (S15) and total p53 in HEK293 cell lysates using the 2 plate assay protocol.

- Adherent cells were cultured overnight in a 96-well tissue culture plate coated with poly-L-lysine (EMEM +10% FBS).
- Following cell treatment, the media was removed and cells were lysed with the 1X **Lysis Buffer 2** (50  $\mu$ 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  $\mu$ 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  $\mu$ L) for detection of phospho-p53 (S15) or Eu-Ab3 and FR-Ab4 (5  $\mu$ L) for detection of total p53.

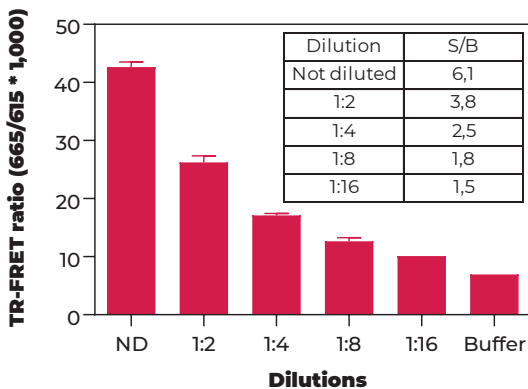
- The plate was incubated at RT for **4 hours** and the TR-FRET signal was recorded at 665 and 615 nm (EnVision<sup>®</sup>; lamp excitation).

## STIMULATION OF PHOSPHO-p53 (S15) IN HEK293 CELLS

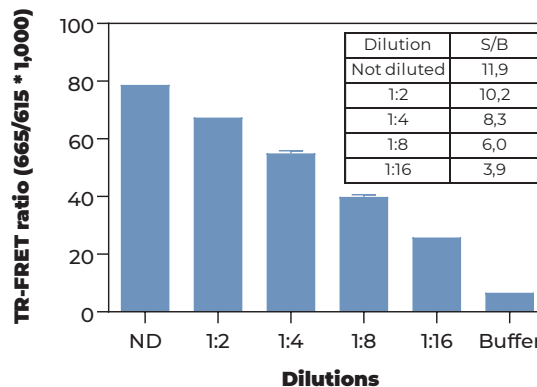


HEK293 cells (100,000 cells/well; in triplicate) were incubated with serial dilutions of Etoposide for 4 hours at 37°C. Data show that treatment of HEK293 cells with Etoposide stimulates phosphorylation of p53 at Ser15, but does not affect the levels of total p53.

## HEK293 CONTROL LYSATE TITRATION (QC TEST) PHOSPHO-p53 (S15)



## HEK293 CONTROL LYSATE TITRATION (QC TEST) TOTAL p53



Quality Control: the Phospho-p53 (S15) + Total p53 assay kit is routinely tested against Etoposide-treated HEK293 lysates. HEK293 cells were cultured in a T175 flask to 90% confluence and stimulated with 30  $\mu$ M of Etoposide for 4 hours at 37°C. Following cell lysis using 4 mL of 1X Lysis Buffer 2, lysates were serially diluted with 1X Lysis Buffer 2 and tested in triplicate and in separate wells for phospho-p53 (S15) and total p53. Data show a linear relationship between lysate dilutions and TR-FRET ratio values.

