TECHNICAL DATA SHEET

THUNDER™ Total IRAK4
TR-FRET Cell Signaling Assay Kit

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CATALOG NUMBERS

KIT-IRAK4-100 (100 tests)
KIT-IRAK4-500 (500 tests)
KIT-IRAK4-2500 (2500 tests)
KIT-IRAK4-5000 (5000 tests)
KIT-IRAK4-10000 (10000 tests)

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

Visit Product Page

PRODUCT DESCRIPTION

This assay kit measures intracellular levels of **Total IRAK4** 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 that recognize **Total IRAK4**.

SPECIES REACTIVITY

Human (Swiss-Prot Acc.: Q9NWZ3; Entrez-Gene Id: 51135).

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

TR-FRET ASSAY PRINCIPLE

The **Total IRAK4** 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 **Total IRAK4** 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 **Total IRAK4** in the cell lysate. Data can be expressed as either the signal at 665 nm or the 665 nm/615 nm ratio.

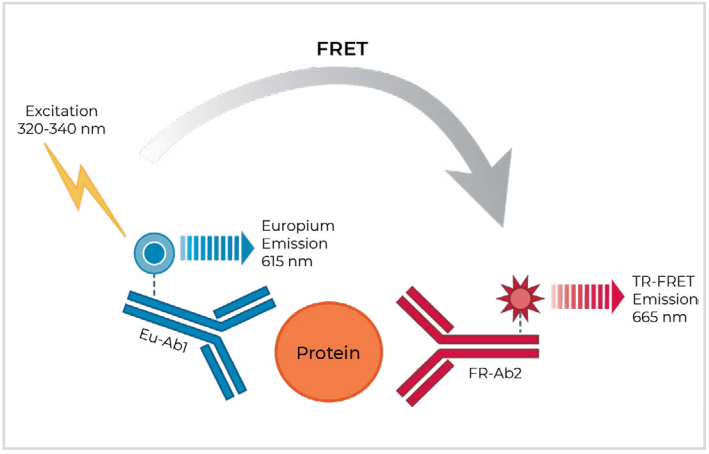


Figure 1 Schematic representation of the TR-FRET cell signaling assay principle.

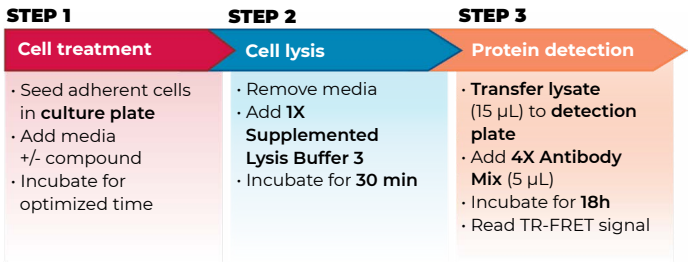


Figure 2 Assay workflow using the 2-plate (transfer) protocol.

KIT COMPONENTS

	100 points*	500 points*
Eu-labeled Total IRAK4 antibody (Eu-Ab1)	5 µL	25 µL
Acceptor-labeled Total IRAK4 antibody (FR-Ab2)	20 µL	100 µL
Lysis Buffer 3 (5X)	1 mL	5 mL
Detection Buffer (10X)	50 µL	250 µL
Positive control cell lysate	100 µL	500 µL
Phosphatase Inhibitor Cocktail (100X)	50 µL	250 µL

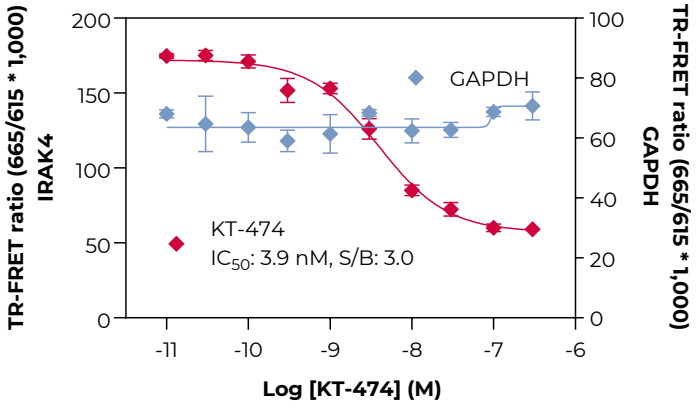
* The number of assay points is based on an assay volume of 20 µL in half-area 96-well or low-volume 384-well assay plates using the kit components at the recommended concentrations (refer to the User Manual).

VALIDATION DATA IN THP-1

This assay kit has been validated for the relative quantification of Total IRAK4 in THP-1 cell lysates using the 2-plate assay protocol.

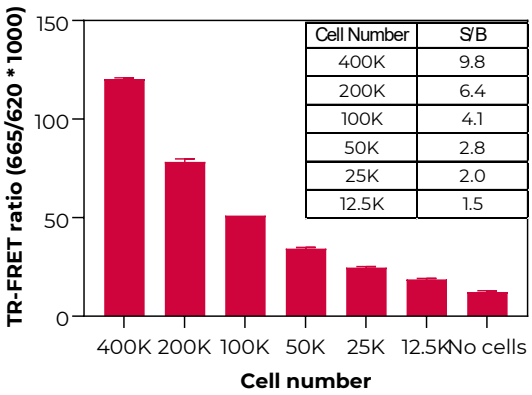
- Non-adherent cells were cultured in RPMI+10% FBS before being centrifuged and resuspended at the desired density in RPMI without serum.
- Following cell treatment, the cells were lysed with the 5X **Lysis Buffer 3** supplemented with the 100X Phosphatase Inhibitor Cocktail diluted at 5X.
- Following a **30-min** incubation at room temperature (RT) on an orbital shaker (400 rpm), lysates (15 µL) were transferred to a 384-well assay plate followed by addition of the labeled antibodies Eu-Ab1 and FR-Ab2 (5 µL) for detection of total IRAK4.
- The plate was incubated at RT for **18 hours** and the TR-FRET signal was recorded at 665 and 620 nm (PHERASTAR® *FSX*; laser excitation).

DEGRADATION OF IRAK4 IN THP-1



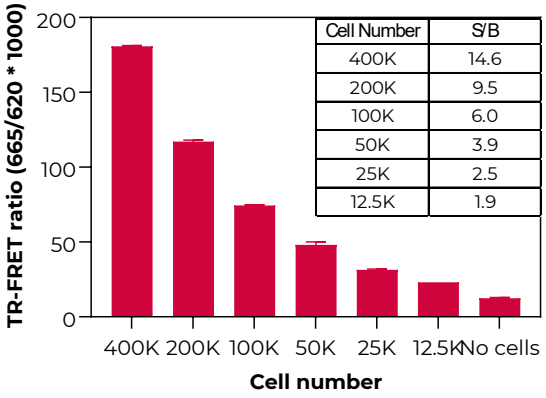
THP-1 cells (200,000 cells/well; in triplicate) were incubated with serial dilutions of KT-474 for 24 Hours at 37°C. Data show that treatment of THP-1 cells with the PROTAC compound KT-474 degrades total IRAK4. In contrast, levels of housekeeping total GAPDH (measured as a control) remain stable.

THP-1 CELL DENSITY - 4H-DETECTION



Cell Number	S/B
400K	9.8
200K	6.4
100K	4.1
50K	2.8
25K	2.0
12.5K	1.5

THP-1 CELL DENSITY - 18H-DETECTION



Cell Number	S/B
400K	14.6
200K	9.5
100K	6.0
50K	3.9
25K	2.5
12.5K	1.9

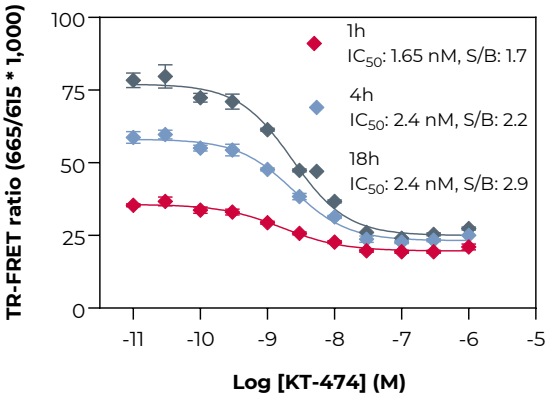
THP-1 cells were seeded starting at 400,000 cells per well and serially diluted 1:2 down to 12,500 cells. This experiment aimed to quantify endogenous IRAK4 levels at decreasing THP-1 cell densities after 4 and 18 hours of incubation.

VALIDATION DATA IN MCF-7

This assay kit has been validated for the relative quantification of Total IRAK4 in MCF-7 cell lysates using the 2-plate assay protocol.

- MCF-7 adherent cells were plated at 50K cells/well and incubated for 18 hours 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 µL) supplemented with the 100X Phosphatase Inhibitor Cocktail diluted at 1X.
- Following a **30-min** incubation at room temperature (RT) on an orbital shaker (400 rpm), lysates (15 µL) were transferred to a 384-well assay plate followed by addition of the labeled antibodies Eu-Ab1 and FR-Ab2 (5 µL) for detection of Total IRAK4.
- The plate was incubated at RT for **18 hours** and the TR-FRET signal was recorded at 665 and 620 nm (PHERAstar® *FSX*; laser excitation).

DEGRADATION OF IRAK4 IN MCF-7



MCF-7 cells (50,000 cells/well; in triplicate) were incubated with serial dilutions of KT-474 for 24 Hours at 37°C. Data show that treatment of MCF-7 cells with the PROTAC IRAK4 degrader KT-474 degrades total IRAK4 in a concentration-dependent manner.