Technical Manual

Human/Mouse/Rat Phospho-Tau (T181) Quantitative ELISA Kit

- Catalogue Code: SBRS2027
- Sandwich Principle
- Research Use Only

Contents

Key features and Sample Types

Aliases:

Microtubule-associated protein tau, Neurofibrillary tangle protein, Paired helical filament-tau, PHF-tau

Gene Names:

MAPT, MAPTL, MTBT1, TAU

Uniprot:

P10636, P10637, P19332

Detection method:

Sandwich

Sample Type:

Cell Lysates, Cerebrospinal Final (CSF), Plasma, Serum, Tissue Lysates

Reactivity:

Human, Mouse, Rat

Storage:

2-8°C for 6 months

Expiry:

See Kit Label

Introduction

How do our ELISA kits work?

Assay Genie's Phospho-Tau (Thr181) Quantitative ELISA kit is a very rapid, convenient and sensitive assay kit that can monitor the activation or function of important biological pathways in Human, Mouse & Rat cell lysates. By determining phosphorylated Tau protein in your experimental model system, you can verify pathway activation in your cell lysates. You can simultaneously measure numerous different cell lysates without spending excess time and effort in performing a Western Blotting analysis.

This Sandwich ELISA kit is an in vitro enzyme-linked immunosorbent assay for the quantitative measurement of Human, Mouse & Rat phospho-Tau. An anti-pan Tau antibody has been coated onto a 96-well plate. Standard and Samples are pipetted into the wells and Tau present in a sample is bound to the wells by the immobilized antibody. The wells are washed and biotinylated anti-phospho-Tau (Thr181) antibody is used to detect phosphorylated Tau. After washing away unbound antibody, HRP-conjugated streptavidin is pipetted into the wells. The wells are again washed, a TMB substrate solution is added to the wells and color develops in proportion to the amount of Tau (Thr181) bound. The Stop Solution changes the color from blue to yellow, and the intensity of the color is measured at 450 nm.

Storage & Expiry

The entire kit may be stored at -20°C for up to 6 months from the date of shipment. Avoid repeated freeze-thaw cycles. For extended storage, it is recommended to store at -80°C. For prepared reagent storage, see table below.

Kit Contents

Each kit contains reagents for 96 assays including:

No.	Component	96-Well Kit	Storage
1	Microplate coated with anti-pan-Tau.	8 x 12	1 month at -20°C*
2	Wash Buffer Concentrate (20X)	25ml	1 month at 4°C*
3	Phospho Tau Standard Protein	2 vials	1 week at -80°C
4	Phospho Detection Antibody Tau (Thr181)	2 vials	5 days at 4°C
5	HRP-Streptavidin concentrate (300x)	1 vial (200µl)	Do not store and reuse.
6	TMB One-Step Substrate Reagent	12ml	N/A
7	Stop Solution	8ml	N/A
8	Assay Diluent (5X concentrated buffer)	15ml	1 month at 4°C
9	Cell Lysate Buffer (2X)	10ml	1 month at 4°C

*Return unused wells to the pouch containing desiccant pack, reseal along entire edge.

Additional materials required:

1. Microplate reader capable of measuring absorbance at 450 nm.
2. Protease and Phosphatase inhibitors.
3. Shaker.
4. Precision pipettes to deliver 2 µl to 1 ml volumes.
5. Adjustable 1-25 ml pipettes for reagent preparation.
6. 100 ml and 1 liter graduated cylinders.
7. Absorbent paper.
8. Distilled or deionized water.
9. Log-log graph paper or computer and software for ELISA data analysis.
10. Tubes to prepare the positive control or sample dilutions.

Sample Preparation

Cell Lysate Preparation: Rinse the cells with PBS, making sure to remove any remaining PBS before adding the lysis buffer. Solubilize cells at 4 x 10^7 cells/ml in prepared Cell Lysate Buffer (see Reagent Preparation step 3). Pipette up and down to resuspend the pellet. Incubate the lysates with shaking at 2-8°C for 30 minutes. Microcentrifuge at 13,000 rpm for 10 minutes at 2-8°C and transfer the supernatantes into a clean test tube. Lysates should be used immediately or aliquoted and stored at -70°C. Avoid repeated freeze-thaw cycles. Thawed lysates should be kept on ice prior to use.

For the initial experiment, we recommend a serial dilution, such as a 5-fold to 50- fold dilution, for your cell lysates with prepared Assay Diluent (see Reagent Preparation step 2) before use.

Note: The fold dilution of sample used depends on the abundance of phosphorylated proteins and should be determined empirically. More of the sample can be used if signals are too weak. If signals are too strong, the sample can be diluted further

Reagent Preparation

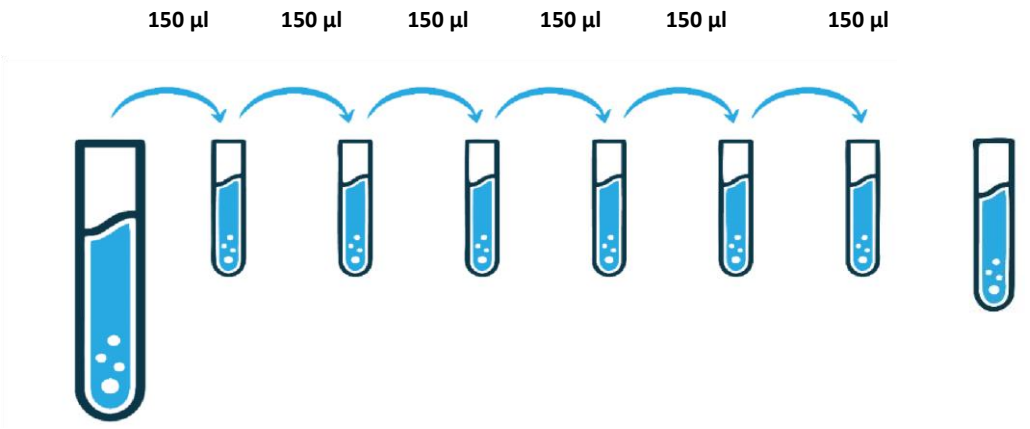
1. Bring all reagents and samples to room temperature (18 – 25 ºC) before use

2. 5X Assay Diluent should be diluted 5-fold with deionized or distilled water before use.

3. Cell lysate buffer should be diluted 2-fold with deionized or distilled water (for cell lysate and tissue lysate). We also recommend the addition of protease and phosphatase inhibitors (not included) to the lysis buffer prior to use.

4. Preparation of Positive Control: Briefly spin the Standard Vial. Add 800 µl of prepared 1X Assay Diluent into Item S to prepare a 72 pM standard solution. Gently mix the powder to allow it to dissolve thoroughly. Pipette 300 µl 1X Assay Diluent into each tube. Use the standard solution to produce a dilution series (shown below). Mix each tube thoroughly before the next transfer. 1X Assay Diluent serves as the blank.

DILUTION SERIES



		Std1	Std2	Std3	Std4	Std5	Std6	Zero Standard
Diluent	Standard	300 µl	300 µl	300 µl	300 µl	300 µl	300 µl	300 µl
Volume	Protein + 800 µl							
Conc.	72 pM	24pM	8pM	2,7pM	0.9pM	0.3pM	0.1pM	0pM

5. If the Wash Concentrate (20X) contains visible crystals, warm to room temperature and mix gently until dissolved. Dilute 20 ml of Wash Buffer Concentrate into deionized or distilled water to yield 400 ml of 1X Wash Buffer.

6. Preparation of biotinylated anti-phospho-Tau (Thr181) antibody: Briefly spin the vial of biotinylated anti-phospho-Tau (Thr181). Add 100 µl of 1X Assay Diluent into the vial to prepare a phospho detection antibody concentrate. Pipette up and down to mix gently (the concentrate can be stored at 4°C for 5 days or at -80°C for one month). The concentrate should then be diluted 55- fold with 1X Assay Diluent and used in step 4 of the Assay Procedure.

7. Preparation of HRP-conjugated streptavidin: Briefly spin the vial of HRP-conjugated streptavidin concentrate before use. HRP-conjugated streptavidin should be diluted 300-fold with 1X Assay Diluent and used in step 7 of the Assay Procedure.

For example: Briefly spin the vial. Add 5 µl of HRP-conjugated anti-rabbit IgG concentrate into a tube with 5.0 mL 1x Assay Diluent, pipette up and down to mix gently to prepare a 1000-fold diluted HRP-conjugated anti-rabbit IgG solution. Mix well.

Assay Procedure

1. Bring all reagents and samples to room temperature (18 - 25ºC) before use. It is strongly recommended to run all positive controls and samples in at least duplicate.

2. See plate layout (page 6) and label removable 8-well strips as appropriate for your experiment.

3. Add 100 µl of each standard (see Reagent Preparation step 4) and sample into appropriate wells. Cover the wells and incubate for 2.5 hours at room temperature or overnight at 4ºC with gentle shaking.

4. Discard the solution and wash 4 times with 1X Wash Solution. Wash by filling each well with Wash Buffer (300 µl) using a multi-channel Pipette or auto-washer. Complete removal of liquid at each step is essential for good performance. After the last wash, remove any remaining Wash Buffer by aspirating or decanting. Invert the plate and blot it against clean paper towels.

5. Add 100 µl of prepared 1X biotinylated anti-phospho-Tau (Thr181) (see Reagent Preparation step 6) to each well. Incubate for 1 hour at room temperature with gentle shaking.

6. Discard the solution. Repeat the wash as in step 4.

7. Add 100 µl of prepared HRP-conjugated streptavidin solution (see Reagent Preparation step 7) to each well. Incubate for 1 hour at room temperature with gentle shaking.

8. Discard the solution. Repeat the wash as in step 4.

9. Add 100 µl of TMB One-Step Substrate Reagent to each well. Incubate for 30 minutes at room temperature in the dark with gentle shaking.

10. Add 50 µl of Stop Solution to each well. Read at 450 nm immediately.

Assay Procedure Summary

1. Prepare all reagents, samples and standards as instructed.

2. Add 100 µl of each standard and sample to each well. Incubate 2.5 hours at room temperature or overnight at 4ºC with gentle shaking.

3. Add 100 µl prepared detection antibody to each well. Incubate for 1 hour at room temperature with gentle shaking.

4. Add 100 µl prepared HRP-Conjugated solution. Incubate for 1 hour at room temperature with gentle shaking.

5. Add 100 µl TMB One-Step Substrate Reagent to each well. Incubate 30 minutes at room temperature.

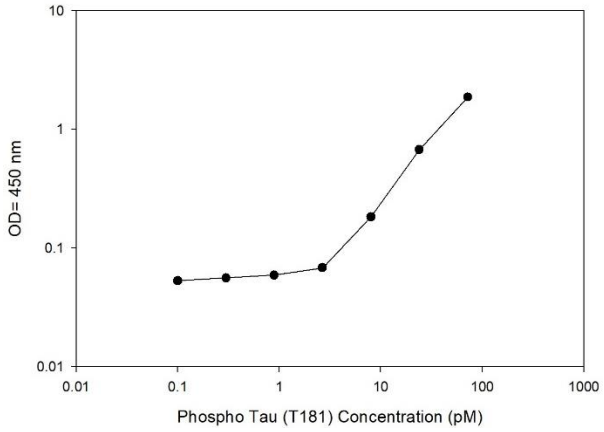
6. Add 50 µl Stop Solution to each well. Read at 450 nm immediately.

Typical Data

Calculate the mean absorbance for each set of duplicate standards, controls and samples, and subtract the average zero standard optical density. Plot the standard curve on log-log graph paper or using Sigma plot software, with standard concentration on the x-axis and absorbance on the y-axis. Draw the best-fit straight line through the standard points.

A. Standard Curve

These standard curves are for demonstration only. A standard curve must be run with each assay.



B. Sensitivity

The minimum detectable dose of Phospho Tau (T181) is 0.41pM.

Minimum detectable dose is defined as the analyte concentration resulting in an absorbance that is 2 standard deviations higher than that of the blank.

C. Spiking and Recovery

The recovery of Phospho Tau (T181) spiked to levels throughout the range of the assay was evaluated. Samples were diluted prior to assay.

Sample Type	Average % recovery	Range
Serum (n=2)	92.8	76-109

D. Reproducibility

Intra-Assay CV%: <10%

Inter-Assay CV%: <12%

Specificity

This ELISA antibody pair detects human, mouse and rat Phospho Tau (T181).

Troubleshooting

Problem	Causes	Solutions
Low signal in samples	• Sample concentration is too low • Improper preparation of detection antibody • Too brief incubation times • Inadequate reagent volumes or improper dilution	• Increase sample concentration • Briefly spin down vials before opening. Dissolve the powder thoroughly. • Ensure sufficient incubation time; assay procedure step 3 may be done overnight • Check pipettes and ensure correct preparation
High signal in samples	• Sample concentration too high	• Reduce sample concentration
Large CV	• Inaccurate pipetting • Air bubbles in wells	• Check pipettes • Remove bubbles in wells
High background	• Plate is insufficiently washed • Contaminated wash buffer	• Review the manual for proper wash. If using a plate washer, ensure that all ports are unobstructed. • Make fresh wash buffer
Low sensitivity	• Improper storage of the ELISA kit • Stop solution • Improper primary or secondary antibody dilution	• Store your standard at <-70ºC after reconstitution, others at 4ºC. Keep substrate solution protected from light. • Add stop solution to each well before reading plate • Ensure correct dilution

Assay Genie 100% money-back guarantee!

If you are not satisfied with the quality of our products and our technical team cannot resolve your problem, we will give you 100% of your money back.

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