Anti-Tau pS238 Data Sheet

Antibody Clonality: Monoclonal
Host Species: Mouse
Immunogen: Human Tau phosphorylated at Ser238
Clone Number: 12G10

Antibody Key Facts

- Immunogen: phosphopeptide H-CTPPKSPS\text{pSAKSLQTAPVPMP-NH}_2.
- Recognises human Tau protein phosphorylated at Ser238
- Antibodies were tested as hybridoma supernatants, no affinity purification was required
- Available for testing as supernatants or hybridoma cryovials.
- Direct ELISA results from positive clones: absorbance 405nm
  Negative control: 0.1226
  Positive control: 0.5697
  Clone 12G10: 0.5496

Hybridomas Key Facts

- Cells have normal viability after 1 week recovery
- Freezing composition: 10% DMSO in FBS
- Cell culture Medium: DMEM 10% FBS, 1% Penicillin/Streptomycin, 2mM l-Glutamine
- Recommended Culture Conditions: 37°C, 5% CO₂, culture between 0.3 – 0.7 x 10⁶ cells/ml, seeding at 0.3 x 10⁶ cells/ml

Tau: Background

Tau is a phosphoprotein distributed primarily in axons of the central nervous system, where it plays major roles in the regulation of microtubule
dynamics and axonal transport. Aberrant Tau phosphorylation has been implicated in Alzheimer’s disease and related neurological disorders termed Tauopathies (e.g. corticobasal degeneration, Pick’s disease, frontotemporal dementia and Parkisonsism linked to chromosome 17 [FTDP-17]). Tau becomes increasingly phosphorylated at both physiological and non physiological sites (commonly referred to as “disease-associated” sites) which result in neuronal deposition of highly phosphorylated Tau. Phosphorylation-dependent antibodies that recognize Tau from the brain tissue of AD patients but not from age-matched controls have been used as specific diagnostic markers of Tauopathies (e.g. PS181 and AT100).

Fleming researchers have identified phospho-Ser238 as a non-physiological phosphorylation site that mediates Tau neurotoxicity in vivo. On the basis of these data, Fleming scientists generated monoclonal antibodies that specifically recognise phosphorylated Ser238 of human Tau protein. The anti-pS238 antibody detects potentially toxic Tau species and shows no cross-reaction with Tau protein that is not phosphorylated at Ser238, or with Tau where a non-phosphorylatable Alanine replaces Ser238.
**Antibody Testing**

The antibody has been tested by ELISA (data shown above) and on Western Blots. Tissue culture supernatant was used at 1:10 dilution in 3% milk.

**Supporting Data**

![Image](image-url)

**Figures A:** Immunoblot analysis using the novel pS238 monoclonal antibody performed in transgenic flies expressing pan-neuronally wild type human Tau (isoforms 0N4R and 2N4R) and the FTDP-17 linked mutants R406W and V337M. **B:** A series of Tau mutants in which disease-associated Serines or Threonines have been replaced by Alanines, have been tested for pS238 immunoreactivity.

All toxic wt and FTDP-17-associated mutants display positive pS238 signal (figure A). As a control for the specificity of the antibody, flies that express the mutant 2NSTA, in which Ser238 is mutated to Alanine, have been used. As shown in figure A this mutant is not recognized by the antibody. pS238 immunoreactivity is absent in the mutants that abolish Tau toxicity, such as the S2A mutants [1, 3, 4, 5].

In our analyses, we also included a series of mutants in which Serines or Threonines which are not normally phosphorylated, or whose phosphate load increases significantly on pathological Tau, were replaced by alanines.
These sites are located either upstream (T111A/T153A, T175A/T181A, S199A/T217A, S202A/T205A, T21A, S214A) or in the microtubule-binding domain (Par-1 phosphorylation site Ser262 -S262A). All these mutants retain toxicity and react with the anti pS238 antibody, with the exception of the S262A mutant, which is not toxic and not recognized by the antibody.

These data demonstrate the clear association of phospho-Ser238 of human Tau with neurotoxicity in an animal model and the specificity of the antibody for phospho-Ser238.

References


Disclaimer: BSRC Alexander Fleming has used reasonable endeavours to ensure that the experiments described in this datasheet have been carried out in accordance with accepted scientific principles and standards but makes no representation or warranty that any of the described antibodies or hybridomas will be fit for any particular purpose, and accepts no responsibility for their use unless otherwise agreed in writing.