Data Sheet

BioTracker™ Tau Filaments pFTAA Cell & Tissue Probe

Tissue Probe

SCT066

Pack Size: 1 mg

Store at –20 °C

FOR RESEARCH USE ONLY

Not for use in diagnostic procedures. Not for human or animal consumption.

Background

Certain neurological disorders such as Alzheimer's Disease are directly caused by accumulation of misfolded proteins, typically referred to as amyloid. Increasing prevalence in amyloid-related diseases has garnered strong interest for a sensitive detection method targeted at identifying and characterizing these misfolded protein structures. Luminescent conjugated oligothiophenes (LCOs) have improved identification of disease-associated amyloids over the conventional ligands that have been used previously such as thioflavin T and Congo red.

The BioTracker™ Tau filaments pFTAA cell dye is a novel fluorescent LCO probe that can bind to and discriminate between amyloid-b (Aβ) plaques and tau neurofibrillary tangles (NFTs) in Alzheimer's disease (AD)-like pathology in transgenic mouse brain tissue sections. The pFTAA probe shows significant improvements over conventional amyloid detection methods in its ability to identify a more diverse set of disease-associated protein aggregates. The pFTAA probe may also prove useful in understanding the early stages of amyloid fibril maturation and formation.

Source

The BioTracker™ Tau Filaments pFTAA Cell & Tissue Probe (SCT066) does not contain genetically modified organisms.

Spectral Properties

Absorbance: 425 nm

Emission: 525 nm

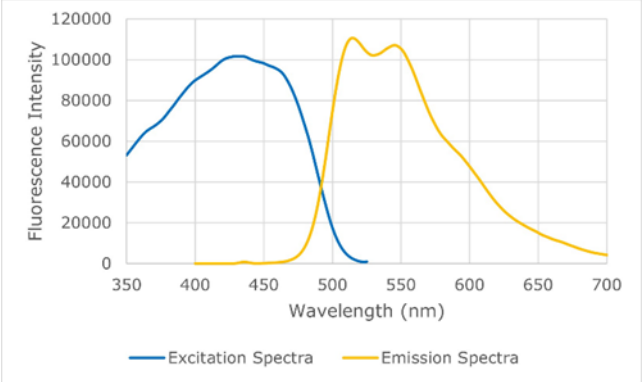

Figure 1. Probe excitation and emission data. 7 µL of probe at stock concentration (3 mM) was diluted in 1 mL of DMSO before undergoing excitation and emission scans. Spectral scans were conducted using a PerkinElmer FL8500 Fluorescence Spectrophotometer.

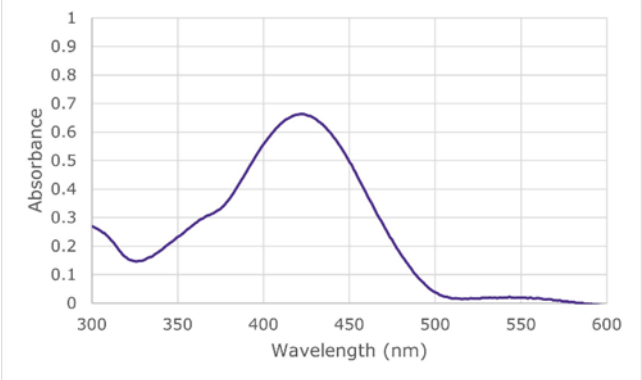

Figure 2. Probe absorbance data. 7 µL of probe at stock concentration (3 mM) was diluted in 1 mL of DMSO before undergoing an absorbance scan. Spectral scans were conducted using a PerkinElmer FL8500 Fluorescence Spectrophotometer.

Quality Control Testing

Purity: ≥ 98% confirmed by HNMR, LC-MS and HPLC and elemental analysis.

Molar Mass: 704.65 g/mol

Storage and Handling

Store BioTracker™ Tau Filaments pFTAA Live Cell Dye at –20 °C, desiccate and protect from light

Note: Centrifuge vial briefly to collect contents at bottom of vial before opening.

Presentation

Lyophilized

Representative Data

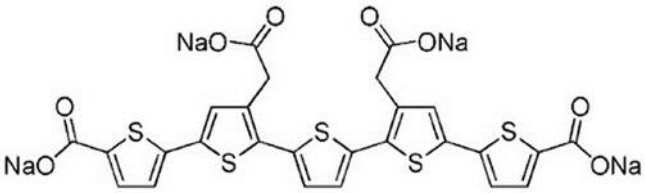

Figure 3. Chemical structure of BioTracker™ Tau Filaments pFTAA live cell dye.

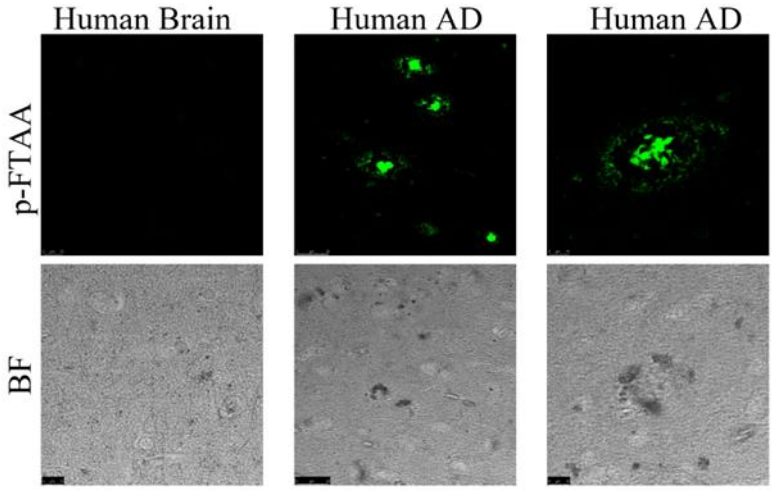

Figure 4. Normal human brain and Alzheimer's diseased brain tissue slides were prepared and incubated with 3 µM pFTAA probe for 30 minutes at room temperature.

Protocols

Reagent Preparation

1. Before opening the vial, spin down the solid to the bottom by a microcentrifuge or by a desktop centrifuge.
2. Warm the vial to the room temperature and add DMSO to make a 1000X stock solution of 3 mM (freeze aliquots at –20 °C).

Procedure (for deparaffinized tissue sections)

3. Wash deparaffinized tissue slides with deionized water and equilibrate in 1 mg/mL sodium borohydride for 20 minutes then equilibrate in PBS for 10 minutes.
4. Dilute pFTAA probe to 3 µM in PBS and add to brain tissue slides. Incubate for 30 minutes at room temperature.
5. Rinse slides in 1X PBS and mount cover slide with mounting media.
6. Allow slides to cure for 30 minutes at room temperature, after which slides are ready to image.

   Note: Optimal concentration must be determined by end user.

References

1. Therése Klingstedt, Hamid Shirani, Aslund A, Cairns NJ, Sigurdson CJ, Goedert M, Nilsson PR. 2013. The Structural Basis for Optimal Performance of Oligothiophene-Based Fluorescent Amyloid Ligands: Conformational Flexibility is Essential for Spectral Assignment of a Diversity of Protein Aggregates. Chemistry: A European Journal. 19(31):10179–10192.

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