

Hello Bio, Inc.  
304 Wall St., Princeton, NJ 08540 USA

T. 609-683-7500  
F. 609-228-4994

customercare-usa@m2stage.hellobio.com



# DATASHEET

## Thioflavin X (ThX)

### Product overview

<b>Name</b>	Thioflavin X (ThX)
<b>Cat No</b>	HB17774
<b>Biological description</b>	<p>Novel, next generation blue-green, cell-permeable fluorescent amyloid stain. Shows 5x increase in brightness and 7x increase in binding affinity to amyloidogenic proteins (<math>\alpha</math>-syn) to display superior photophysical and binding properties compared to <a href="#">Thioflavin T (ThT)</a>. Thioflavin X (ThX) outperforms Thioflavin T as a single-aggregate probe of <a href="#"><math>\beta</math>-Amyloid Peptide (1-42) (human)</a> and P301S tau as ThX is able to detect greater numbers of fluorescent species of each than ThT.</p> <p>Unlike Thioflavin T, Thioflavin X (ThX) can be used for monitoring structural changes of amyloid <math>\beta</math> oligomers. The improved optical properties (extinction coefficient, quantum yield and brightness) of Thioflavin X (ThX) allow monitoring of structural differences in oligomeric species which is not observable with Thioflavin T imaging. It is suitable for studying unique structural amyloid features in bulk and on a single-aggregate level and also allows detection of amyloid <math>\beta</math>-sheet species at the early stages of protein aggregation. Also used to super-resolve the structures of tau aggregates (especially early aggregate species with lengths under 100-200 nm). Suitable for use in super-resolution microscopy with ~20nm resolution.</p> <p><a href="#"><math>\beta</math>-Amyloid Peptide (1-42) (human)</a> also available.</p>
<b>Species of origin</b>	Synthetic
<b>Biological action</b>	Dyes & stains
<b>Purity</b>	>97%
<b>Description</b>	Next generation, cell-permeable fluorescent amyloid stain with superior photophysical properties compared to Thioflavin T

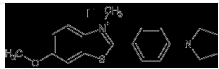
### Biological Data

<b>Application notes</b>	Please see our <a href="#">Amyloid Beta Protocol</a>
--------------------------	--

### Solubility & Handling

<b>Storage instructions</b>	-20 °C
<b>Solubility overview</b>	Soluble in DMSO (100mM) and in EtOH (10 mM)
<b>Handling</b>	<a href="#">Needham et al</a> prepared stock solutions to 10mM in DMSO. These were then diluted into 0.02 $\mu$ M filtered PBS (pH 7.4) to the experimentally required concentration.
<b>Important</b>	This product is for RESEARCH USE ONLY and is not intended for therapeutic or diagnostic use. Not for human or veterinary use

### Chemical Data

<b>Chemical name</b>	6-methoxy-3-methyl-2-(4-pyrrolidin-1-ylphenyl)-1,3-benzothiazol-3-ium iodide
<b>Molecular Weight</b>	452.35
<b>Chemical structure</b>	
<b>Molecular Formula</b>	C <sub>19</sub> H <sub>21</sub> IN <sub>2</sub> OS
<b>CAS Number</b>	2683063-26-3
<b>PubChem identifier</b>	170907366
<b>SMILES</b>	[I-].COC1=CC2=C(C=C1)[N+](C)=C(S2)C1=CC=C(C=C1)N1CCCC1
<b>Source</b>	Synthetic
<b>InChiKey</b>	IJDBRVINIKHPDK-UHFFFAOYSA-M
<b>Appearance</b>	Orange solid
<b>Excitation</b>	420
<b>Emission</b>	494

---

## References

### Cavity Lasing Characteristics of Thioflavin T and Thioflavin X in Different Solvents and Their Interaction with DNA for the Controlled Reduction of a Light Amplification Threshold in Solid-State Biofilms.

Rusakov K et al (2023) ACS applied optical materials 1

**PubMedID** [38149104](#)

### ThX - a next-generation probe for the early detection of amyloid aggregates.

Needham LM et al (2020) Chemical science 11

**PubMedID** [34122915](#)

### Hyperphosphorylated tau self-assembles into amorphous aggregates eliciting TLR4-dependent responses.

Meng JX et al (2022) Nature communications 13

**PubMedID** [35577786](#)

---