

# Amyloid Beta Protein

Human Synthetic Amyloid Beta 1-42 Pre-formed  
Fibrils  
Catalog No. SPR-487



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distributed in the US/Canada by:

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## Product Name

Amyloid Beta Protein

## Description

Human Synthetic Amyloid Beta 1-42 Pre-formed Fibrils

## Applications

WB, In vivo Assay, In vitro Assay

## Concentration

Lot/batch specific. See included datasheet.

## Conjugates

No tag

## Nature

Synthetic (TFA preparation)

## Species

Human

## Expression System

N/A

## Amino Acid Sequence

DAEFRHDSGYEVHHQKLVFFAEDVGSNKGAIIGLMVGGVVIA

## Purity

>95%

## Protein Length

42 amino acids

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**Field Of Use**

Not for use in humans. Not for use in diagnostics or therapeutics. For in vitro research use only.

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**Properties**

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**Storage Buffer**

10 mM HCl + 2% DMSO

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**Storage Temperature**

-80°C

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**Shipping Temperature**

Dry Ice. Shipping note: Product will be shipped separately from other products purchased in the same order.

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**Purification**

N/A

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**Cite This Product**

Human Synthetic Amyloid Beta Pre-formed Fibrils (StressMarq Biosciences Inc., Victoria BC CANADA, Catalog # SPR-487)

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**Certificate Of Analysis**

Certified >95% pure using mass spec and HPLC.

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**Biological Description**

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**Alternative Names**

Abeta Protein, Abeta peptide, Amyloid beta peptide, Beta amyloid peptide, amyloid beta precursor protein peptide, APP, Abeta Pre-formed Fibrils Protein, Abeta Pre-formed Fibrils Protein, Amyloid beta peptide, Beta amyloid peptide, amyloid beta precursor protein peptide, APP, Abeta Protein PFF, Abeta peptide PFF, Beta amyloid PFF

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**Research Areas**

Alzheimer's Disease, Amyloid, Neurodegeneration, Neuroscience

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**Cellular Localization**

Cell membrane, Intracellular Vesicles

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**Gene ID**

351

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**Swiss Prot**

P05067

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**Scientific Background**

Our Amyloid Beta 1-42 (A $\beta$ 42) Pre-formed Fibrils are generated from Amyloid Beta Peptide 1-42 pre-treated with 1,1,1,3,3,3-Hexafluoro-2-propanol (HFIP) using a previously published method (1,2). Our A $\beta$ 42 fibrils present as long strands when observed under TEM and AFM, and have a unique high molecular weight signal on a Western Blot with an anti-amyloid beta antibody. Our A $\beta$ 42 fibrils were also demonstrated to be toxic to primary rat cortical neurons in a dose-dependent manner after an initial sonication step. In the brain, amyloid beta peptide (A $\beta$ ) is generated by protease cleavage of amyloid precursor protein (APP), which aggregates into oligomers, protofibrils, fibrils and ultimately plaques in neurodegenerative diseases. The accumulation of A $\beta$  plaques in the brain is considered a hallmark of Alzheimer's disease (AD), and most of the drugs tested for AD in the past 20 years have targeted amyloid beta accumulation (3). Soluble A $\beta$  oligomers isolated from the brains of AD patients or those generated in vitro potently impaired synapse structure and function (4). A $\beta$  oligomers generated in vitro were toxic to PC12 cells (2) and SH-SY5Y cells (5). A $\beta$  was demonstrated to interact with tauopathies to affect neurodegeneration in AD patients (6) and accumulations of A $\beta$  were shown to be associated with lower survival rates in Parkinson's disease patients with dementia (7).

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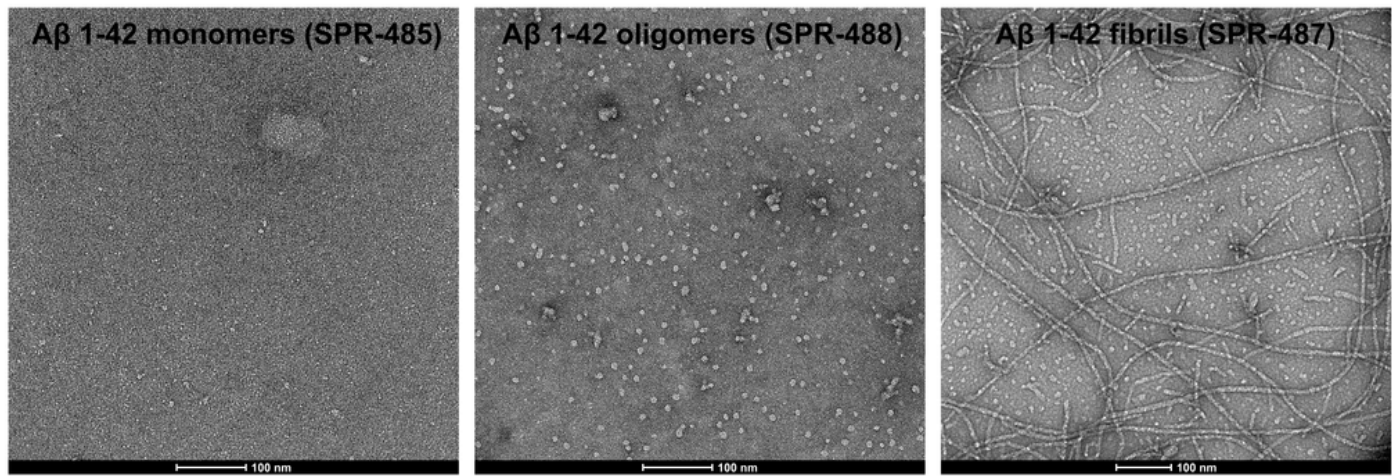
**References**

1. Stine et al. 2003. JBC. 278(13):11612-22. doi: 10.1074/jbc.M210207200
2. Chromy et al. 2003. Biochemistry. 42:12749-12760. doi: 10.1021/bi030029q
3. Panza et al. 2019. Nat Rev Neurol. 15:73-88 <https://doi.org/10.1038/s41582-018-0116-6>
4. Shankar et al. 2008. Nat Med. 14(8):837-842. doi: 10.1038/nm1782
5. Kaye et al. 2003. Science. 300(5618): 486-489. doi: 10.1126/science.1079469
6. Want et al. 2016. JAMA Neurol. 73(9):1070-7. doi: 10.1001/jamaneurol.2016.2078
7. Kotzbauer et al. 2012. Arch Neurol. 69(10): 1326-1331. doi: 10.1001/archneurol.2012.1608

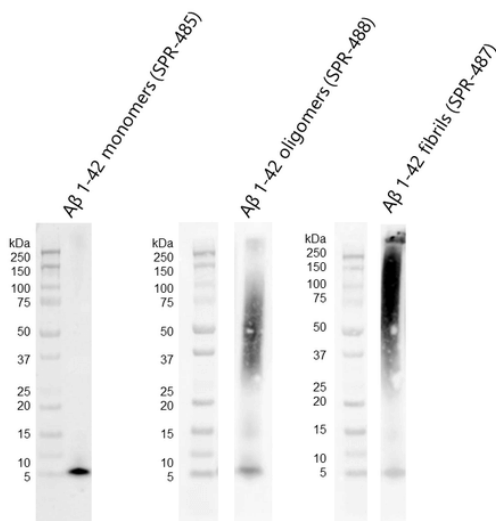
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**Product Images**

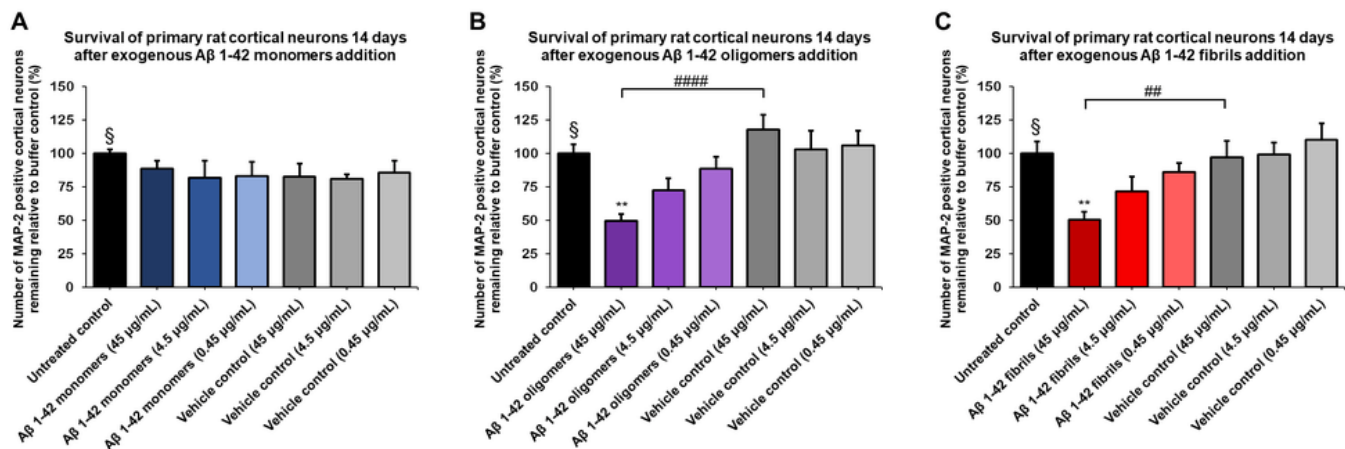
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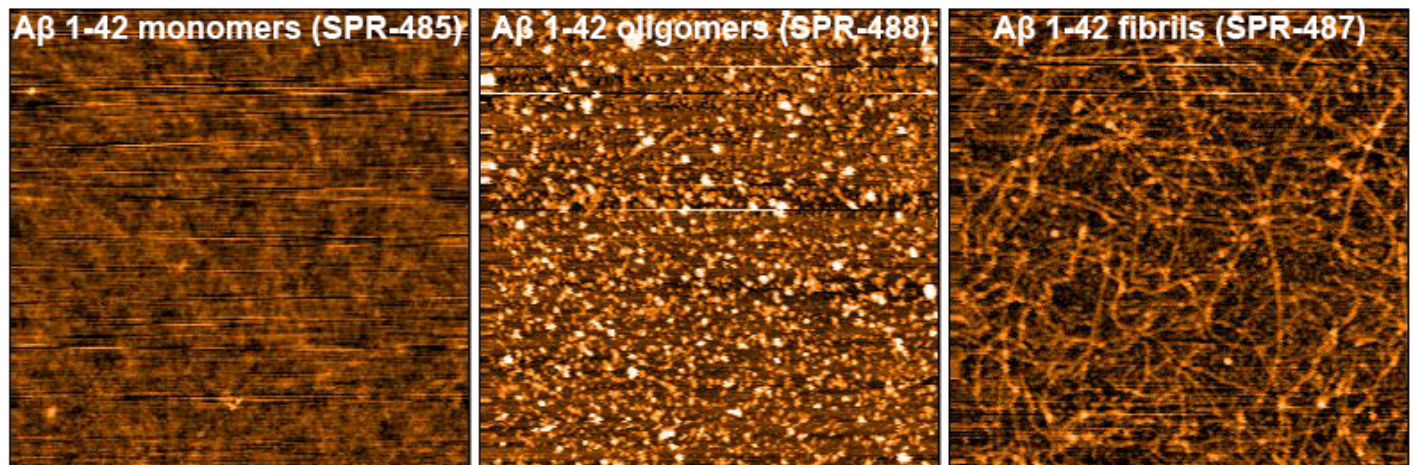
TEM of amyloid beta 1-42 monomers (SPR-485, left), oligomers (SPR-488, middle) and fibrils (SPR-487, right). Negative stain transmission electron microscopy images acquired at 80 Kv on carbon coated 400 mesh copper grids using phosphotungstic acid and uranyl acetate stain. Scale bar = 100 nm.



Western blot of amyloid beta 1-42 monomers (SPR-485, left), oligomers (SPR-488, middle) and fibrils (SPR-487, right) using anti-amyloid beta 6E10 antibody. Amyloid beta constructs at 160 pmol were run on 4-12% Bis-Tris SDS-PAGE, transferred to nitrocellulose in the presence of 0.02% v/v Tween-20, and blotted with 1:1000 mouse 6E10 primary antibody (Biolegend). Oligomers observed under TEM/AFM appear as distinct dimer/trimer bands at ~37-75 kDa on Western Blot with 6E10 antibody (middle). Fibrils observed under TEM/AFM appear as a distinct signal at greater than 100 kDa in the stacking gel (right).



Amyloid beta 1-42 oligomers (SPR-488) and fibrils (SPR-487) show a dose-dependent toxicity to primary rat cortical neurons, but not monomers (SPR-485). Survival of rat primary cortical neurons 14 days after treatment with different concentrations of (A) monomers, (B) oligomers or (C) fibrils quantified by MAP2 positive neurons and expressed as a percentage of control. Fibrils and respective vehicle controls were initially sonicated in a Bioruptor. Test conditions were run in the same plate as untreated control and vehicle controls, which consisted of buffer without amyloid beta 1-42 protein. Data expressed as mean  $\pm$  s.e.m. (n=6). A global analysis of the data was performed using a one-way ANOVA followed by Dunnett's test; \*\* p<0.01 stats vs control; ## p<0.01, ##### p<0.0001 stats vs vehicle control. § represents untreated control condition.



AFM of amyloid beta 1-42 monomers (SPR-485, left), oligomers (SPR-488, middle) and fibrils (SPR-487, right). Atomic force microscopy analysis of 1.0 mg/mL samples diluted to 0.1 mg/mL in dH<sub>2</sub>O, mounted on freshly cleaved mica, washed, dried and analyzed with tapping mode. Representative images are 2.5 x 2.5  $\mu$ m x-y with a z-range of 10 nm.

## Product Citations (0)

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Currently there are no citations for this product.

## Reviews

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There are no reviews yet.