

Alpha Synuclein Protein

Active Human Recombinant Alpha Synuclein
Pre-Formed Fibrils (Type 1)
Catalog No. SPR-322



Discovery through partnership | Excellence through quality



EAGLE BIOSCIENCES

EAGLEBIO.COM | INFO@EAGLEBIO.COM

P: 617-419-2019 | F: 617-419-1110

Product Name

Alpha Synuclein Protein

Description

Active Human Recombinant Alpha Synuclein Pre-Formed Fibrils (Type 1)

Applications

WB, SDS-PAGE, In vivo assay, In vitro assay

Concentration

Lot/batch specific. See included datasheet.

Conjugates

No tag

Nature

Recombinant

Species

Human

Expression System

E. coli

Amino Acid Sequence

MDVFMKGLSKAKEGVAAAEEKTKQGVAEAAGKTKEGVLYVGSKTKEGVVHGVATVAEKTKEQVTNVGGAVTGVTAVA
QKTVEGAGSIAAATGFVKKDKLQKNEEGAPQEGILEDMPVDPDNEAYEMPSEEGYQDYPEA

Purity

>95%

Protein Length

Full Length

Biological Activity

Endogenous alpha-synuclein phosphorylation. 100 μ M alpha synuclein protein monomer (SPR-321) seeded with 10 nM alpha synuclein protein PFF (SPR-322) in 25 μ M Thioflavin T (PBS pH 7.4, 100 μ l reaction volume) generated a fluorescence intensity of 13,000 Relative Fluorescence Units after incubation at 37°C with shaking at 600 rpm for 24 hours. Fluorescence was measured by excitation at 450 nm and emission at 485 nm on a Molecular Devices Gemini XPS microplate reader.

Field Of Use

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

Properties

Storage Buffer

PBS

Storage Temperature

-80°C

Shipping Temperature

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

Purification

Ion-exchange Purified

Specificity

~14.46 kDa

Cite This Product

Human Recombinant Alpha Synuclein Protein (StressMarq Biosciences Inc., Victoria BC CANADA, Catalog # SPR-322)

Certificate Of Analysis

Certified >95% pure using SDS-PAGE analysis.

Biological Description

Alternative Names

Active Alpha synuclein PFFs, Active Alpha synuclein aggregates, Active Alpha synuclein protein aggregates, Active Alpha synuclein aggregates, Active Alpha-synuclein protein, Non-A beta component of AD amyloid protein, Non-A4 component of amyloid precursor protein, NACP protein, SNCA protein, NACP protein, PARK1 protein, SYN protein, Parkinson disease familial 1 Protein, Active Alpha synuclein protein seed

Research Areas

Alzheimer's Disease, Neurodegeneration, Neuroscience, Parkinson's Disease

Cellular Localization

Cytoplasm, Membrane, Nucleus

Accession Number

NP_000336.1

Gene ID

6622

Swiss Prot

P37840

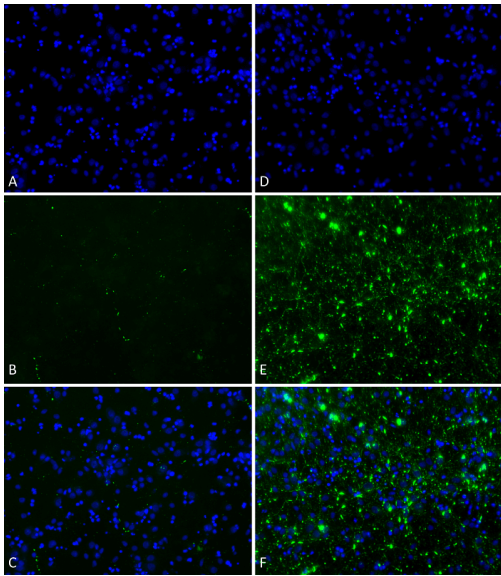
Scientific Background

Alpha-Synuclein (SNCA) is expressed predominantly in the brain, where it is concentrated in presynaptic nerve terminals (1). Alpha-synuclein is highly expressed in the mitochondria of the olfactory bulb, hippocampus, striatum and thalamus (2). Functionally, it has been shown to significantly interact with tubulin (3), and may serve as a potential microtubule-associated protein. It has also been found to be essential for normal development of the cognitive functions; inactivation may lead to impaired spatial learning and working memory (4). SNCA fibrillar aggregates represent the major non A-beta component of Alzheimer's disease amyloid plaque, and a major component of Lewy body inclusions, and Parkinson's disease. Parkinson's disease (PD) is a common neurodegenerative disorder characterized by the progressive accumulation in selected neurons of protein inclusions containing alpha-synuclein and ubiquitin (5, 6).

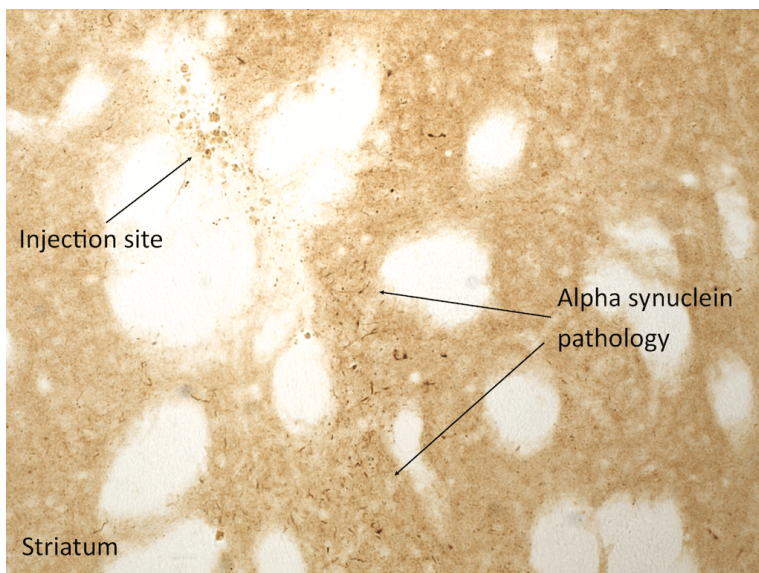
References

1. "Genetics Home Reference: SNCA". US National Library of Medicine. (2013).
2. Zhang L., et al. (2008) Brain Res. 1244: 40-52.
3. Alim M.A., et al. (2002) J Biol Chem. 277(3): 2112-2117.
4. Kokhan V.S., Afanasyeva M.A., Van'kin G. (2012) Behav. Brain. Res. 231(1): 226-230.
5. Spillantini M.G., et al. (1997) Nature. 388(6645): 839-840.
6. Mezey E., et al. (1998) Nat Med. 4(7): 755-757.

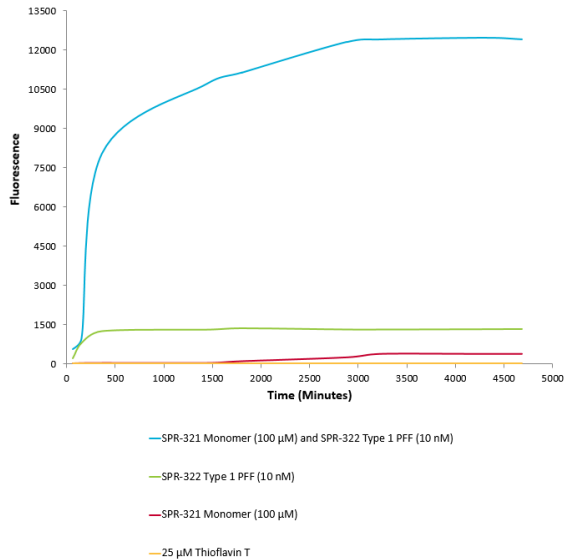
Product Images



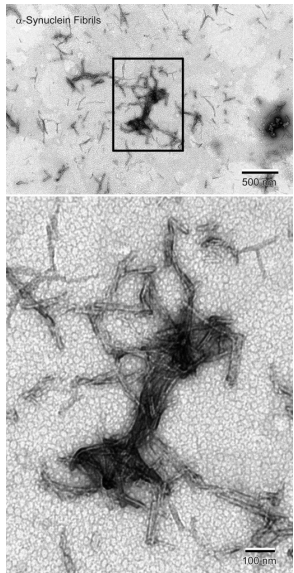
Primary rat hippocampal neurons show lewy body inclusion formation when treated with Type 1 Alpha Synuclein Protein Preformed Fibrils (SPR-322) at 4 $\mu\text{g/ml}$ (D-F), but not when treated with Type 2 Alpha Synuclein Protein Preformed Fibrils (SPR-317) at 4 $\mu\text{g/ml}$ (A-C). Tissue: Primary hippocampal neurons. Species: Sprague-Dawley rat. Fixation: 4% formaldehyde from PFA. Primary Antibody: Mouse anti-pSer129 Antibody at 1:1000 24 hours at 4°C. Secondary Antibody: FITC Goat Anti-Mouse (green) at 1:700 for 1 hours at RT. Counterstain: Hoechst (blue) nuclear stain at 1:4000 for 1 hour at RT. Localization: Lewy body inclusions. Magnification: 20x.



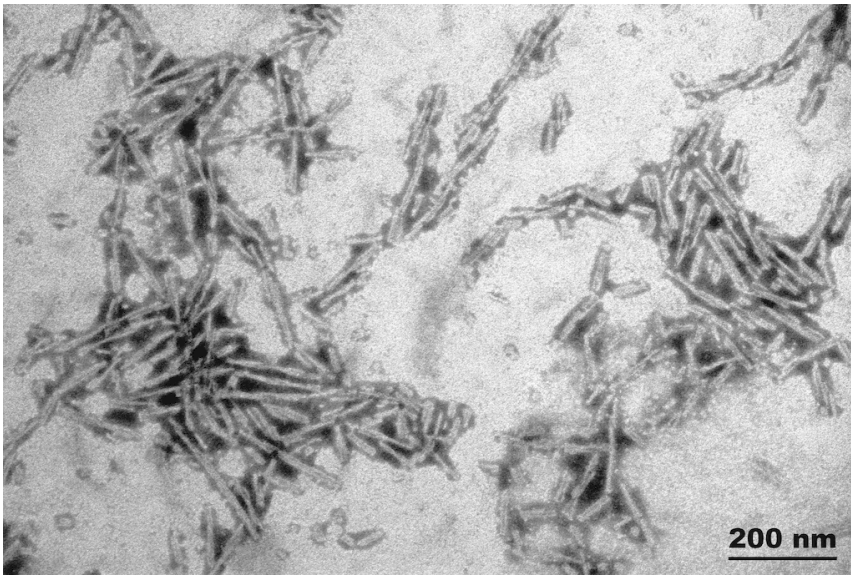
Immunohistochemistry analysis of rat brain injected with Type 1 human alpha synuclein PFFs (SPR-322). Species: Female Sprague-Dawley Rat. Rat was injected with 2 μL Type 1 human alpha synuclein PFFs (SPR-322) in each of 2 injection sites: AP+1.6, ML+2.4, DV-4.2 from skull; and AP-1.4, ML+0.2, DV-2.8 from skull. 30-days post-injection. Fixation: Saline perfusion followed by 4% PFA fixation for 48 hrs. Secondary Antibody: Biotin-SP Donkey Anti-Rabbit IgG (H+L) at 1:500 for 2 hours in cold room with shaking. ABC signal amplification, DAB staining. Magnification: 20X. Alpha synuclein pathology is seen in the striatum close to an injection site.



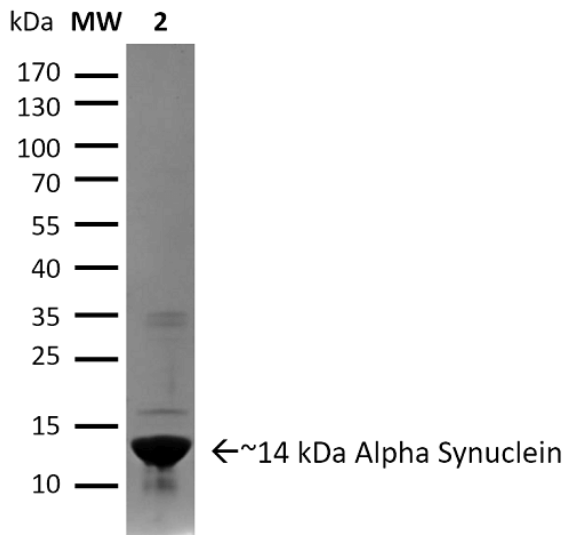
Type 1 alpha synuclein preformed fibrils (SPR-322) seed the formation of new alpha synuclein fibrils from the pool of alpha synuclein monomers (SPR-321). Thioflavin T is a fluorescent dye that binds to beta sheet-rich structures, such as those in alpha synuclein fibrils. Upon binding, the emission spectrum of the dye experiences a red-shift, and increased fluorescence intensity. Thioflavin T emission curves show increased fluorescence (correlated to alpha synuclein protein aggregation) over time when 10 nM of Type 1 alpha synuclein preformed fibrils (SPR-322) is combined with 100 μM of alpha synuclein monomer (SPR-321), as compared to Type 1 alpha synuclein preformed fibrils (SPR-322) alone and alpha synuclein monomer (SPR-321) alone. Thioflavin T λ_{ex} = 450 nm, λ_{em} = 485 nm.



TEM of Type 1 human alpha synuclein preformed fibrils (SPR-322). Fibrils were sonicated and treated with uranyl acetate. Top: 50kx magnification. Bottom: 100kx magnification.



TEM of Type 1 Alpha Synuclein Preformed Fibrils (PFFs) (SPR-322)



SDS-PAGE of ~14 kDa Type 1 Human Recombinant Alpha Synuclein Protein Preformed Fibrils (SPR-322). Lane 1: Molecular Weight Ladder (MW). Lane 2: Type 1 Alpha Synuclein Protein Preformed Fibrils (SPR-322).