

Supplemental information

Screening of a Fraction with Higher Amyloid β Aggregation Inhibitory Activity from a Library Containing 210 Mushroom Extracts Using a Microliter-Scale High-Throughput Screening System with Quantum Dot Imaging

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Supplemental table S1: The names and classifications of 210 mushrooms from Hokkaido.

ND = not determined.

phylum	Class	Order	Scientific name	EC ₅₀ (μ g/mL)
Ascomycota	Leotiomycetes	Helotiales	<i>Neobulgaria pura</i>	ND
Ascomycota	Leotiomycetes	Helotiales	<i>Bulgaria inquinans</i>	ND
Ascomycota	Pezizomycetes	pezizales	<i>Morchella conica</i>	ND
Ascomycota	Pezizomycetes	pezizales	<i>Peziza vesiculosa</i>	ND
Ascomycota	Pezizomycetes	pezizales	<i>Helvella crispa</i>	ND
Ascomycota	Pezizomycetes	pezizales	<i>Aleuria aurantia</i>	ND
Ascomycota	Sordariomycetes	Hypocreales	<i>Cordyceps sinensis</i>	ND
Ascomycota	Gepglossales	Geoglossales	<i>Spathularia flavida</i>	ND
Basidiomycota	Exobasidiomycetes	Tremellales	<i>Pseudohydnum gelatinosum</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Rhodophyllus abortivus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Rhodophyllus sinuatus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Rhodophyllus rhodopolius</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Pluteus atricapillus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Agrocybe praecox</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Agrocybe farinacea</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Lyophyllum decastes</i>	74.4
Basidiomycota	Agaricomycetes	Agaricales	<i>Laccaria amethystea</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Collybia butyracea</i>	ND

Basidiomycota	Agaricomycetes	Agaricales	<i>Clitocybe clavipes</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Lyophyllum connatum</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Laccaria laccata</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Tricholoma saponaceum</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Tricholoma sejunctum</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Tricholoma robustum</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Armillariella mellea</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Leucopaxillus giganteus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Tricholoma ustale</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Clitocybe nebularis</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Lepista nuda</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Tricholoma albobrunneum</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Tricholoma flavovirens</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Clitocybe robusta</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Lyophyllum fumosum</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Tricholoma album</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Lepista irina</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Tricholoma virgatum</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Flammulina velutipes</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Panellus serotinus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Oudemansiella mucida</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Marasmius maximus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Tricholomopsis rutilans</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Collybia acervata</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Clitocybe inornata</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Mycena pura</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Clitocybe lignatilis</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Lepista sordida</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Rhodocollybia maculata</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Oudemansiella brunneomarginata</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Lampteromyces japonicus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Laccaria laccata</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Clitocybe gibba</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Lyophyllum shimeji</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Clitocybula esculenta</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Pseudoclitocybe cyathiformis</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Tricholoma</i>	ND

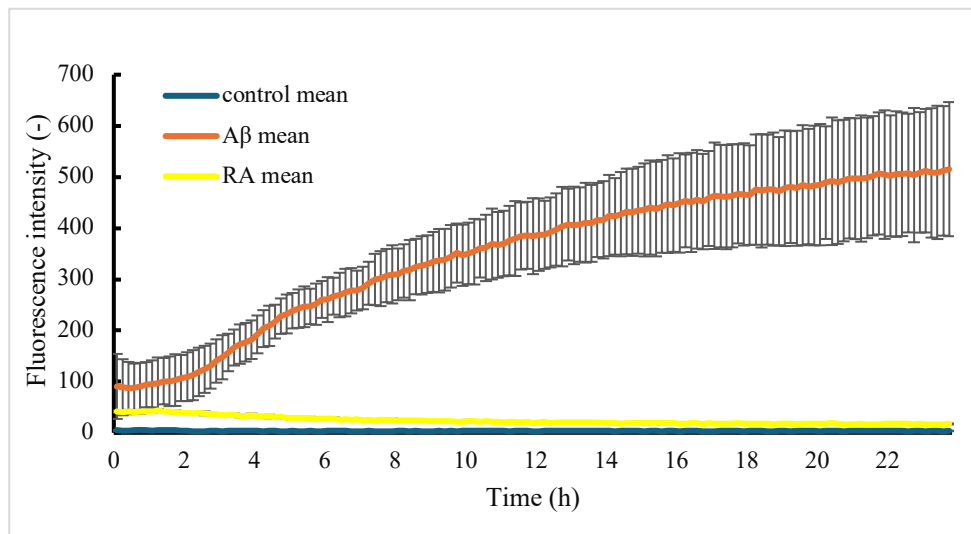
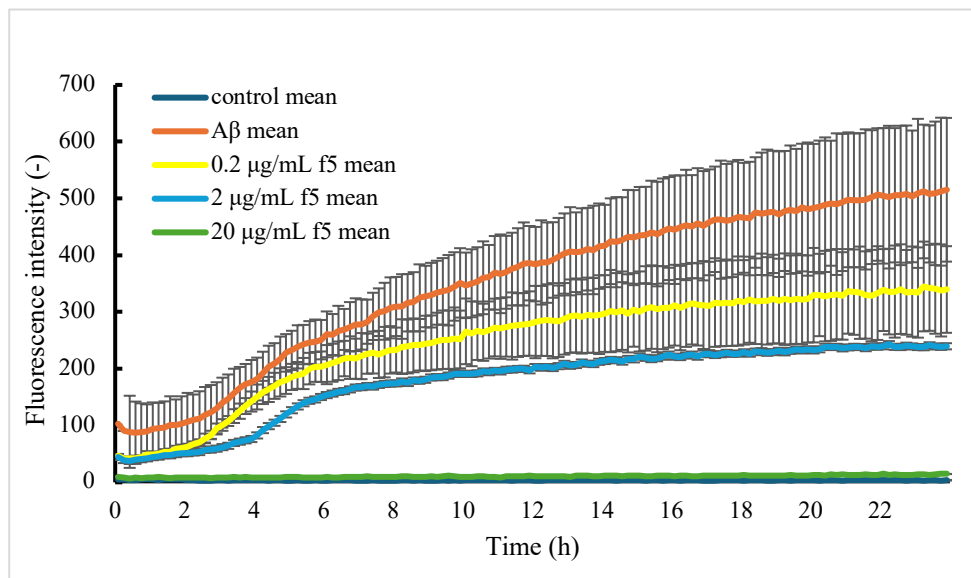
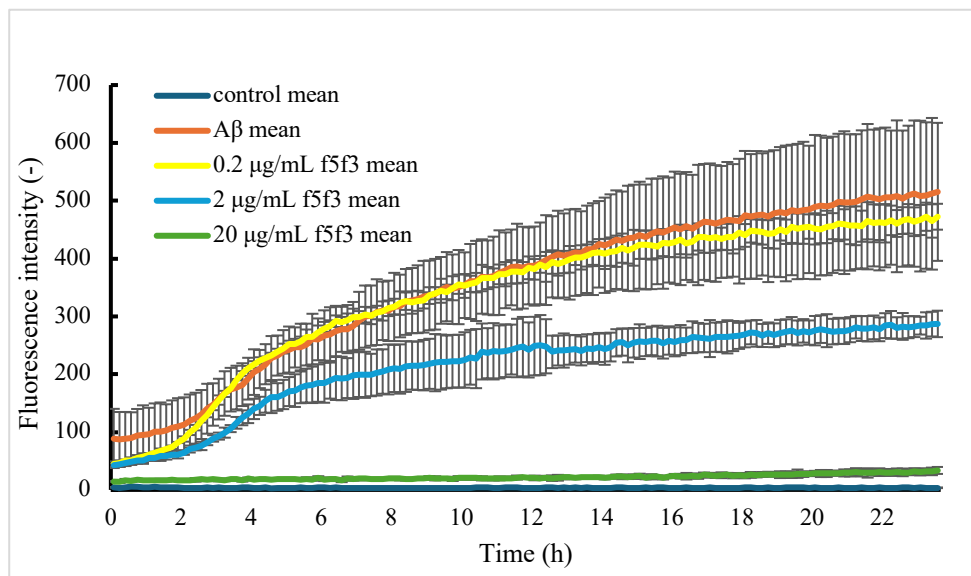
			<i>portentosum</i>	
Basidiomycota	Agaricomycetes	Agaricales	<i>Hypsizigus marmoreus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Pleurocybella porrigens</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Amanita subjunquillea</i>	55.7
Basidiomycota	Agaricomycetes	Agaricales	<i>Amanita hemibapha</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Amanita pantherina</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Amanita muscaria</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Amanita Imazekii</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Amanita rubescens</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Amanita citrina</i> var. <i>citrina</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Amanita ibotengutake</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Hygrophorus russula</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Hygrophorus</i> <i>calophyllus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Hygrophorus chrysodon</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Hygrophorus</i> <i>camarophyllus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Hygrophorus lucorum</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Hygrophorus eburneus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Hygrophorus</i> <i>leucophaeus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Hygrophorus pudorinus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Camarophyllus</i> <i>virgineus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Armillaria nigrescens</i> Kawam.	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Camarophyllus</i> <i>pratensis</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Macrolepiota procera</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Leucoagaricus</i> <i>naucinus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Agaricus abruptibulbus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Phaeolepiota aurea</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Agaricus campestris</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Cystoderma</i> <i>amianthinum</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Agaricus subperonatus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Psathyrella candoliana</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Coprinus comatus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Psathyrella velutina</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Psathyrella multissima</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Pleurotus ostreatus</i>	ND

Basidiomycota	Agaricomycetes	Agaricales	<i>Pleurotus pulmonarius</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Schizophyllum commune</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Pleurotus cornucopiae</i> var. <i>citrinopileatus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Lentinellus ursinus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Lentinellus cochleatus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Lentinus edodes</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Cortinarius crocolitus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Cortinarius vibratilis</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Cortinarius triumphans</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Cortinarius purpurascens</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Cortinarius aureobrunneus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Cortinarius trivialis</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Descolea flavoannulata</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Inocybe fastigiata</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Inocybe umbratica</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Dermocybe cinnamomea</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Gymnopilus liquiritiae</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Cortinarius allutus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Cortinarius azureus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Cortinarius xanthophyllus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Cortinarius duracinus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Cortinarius purpurascens</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Russula delica</i> var. <i>glaucophylla</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Lactarius torminosus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Lactarius flavidulus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Lactarius laeticolorus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Russula sanguinea</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Lactarius akahatsu</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Russula nigricans</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Lactarius piperatus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Lactarius necator</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Lactarius scrobiculatus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Russula emetica</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Lactarius chrysorrheus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Russula cyanoxantha</i>	ND

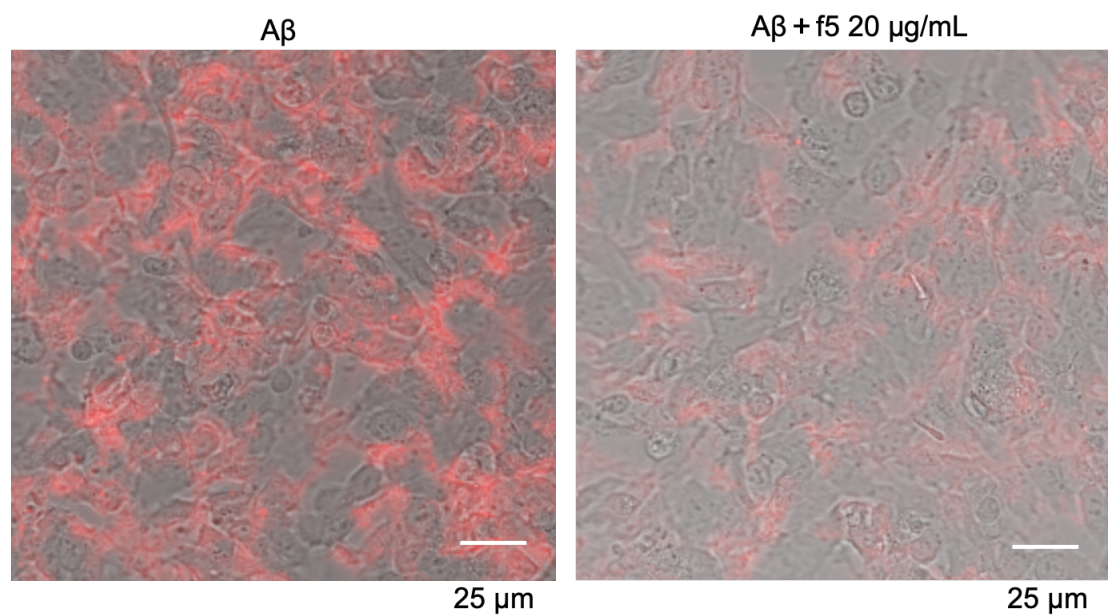
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Basidiomycota	Agaricomycetes	Agaricales	<i>Russula foetens</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Lactarius volemus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Lactarius uvidus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Russula mariae</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Lactarius hysginus</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Lycoperdon perlatum</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Calvatia craniiformis</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Pholiota flammans</i>	15.8
Basidiomycota	Agaricomycetes	Agaricales	<i>Pholiota aurivella</i>	47.7
Basidiomycota	Agaricomycetes	Agaricales	<i>Naematoloma sublateritium</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Pholiota terrestris</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Pholiota nameko</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Pholiota squarrosa</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Naematoloma fasciculare</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Naematoloma gracile</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Pholiota spumosa</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Stropharia rugosoannulata</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Pholiota albocrenulata</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Pholiota squarrosoides</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Stropharia aeruginosa</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Pholiota lubrica</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Pholiota lenta</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Naematoloma capnoides</i>	ND
Basidiomycota	Agaricomycetes	Agaricales	<i>Pholiota adiposa</i>	ND
Basidiomycota	Agaricomycetes	Boletales	<i>Suillus grevillei</i>	ND
Basidiomycota	Agaricomycetes	Boletales	<i>Leccinum versipelle</i>	ND
Basidiomycota	Agaricomycetes	Boletales	<i>Leccinum scabrum</i>	ND
Basidiomycota	Agaricomycetes	Boletales	<i>Suillus granulatus</i>	ND
Basidiomycota	Agaricomycetes	Boletales	<i>Boletinus cavipes</i>	ND
Basidiomycota	Agaricomycetes	Boletales	<i>Suillus americanus</i>	ND
Basidiomycota	Agaricomycetes	Boletales	<i>Boletus edulis</i>	ND
Basidiomycota	Agaricomycetes	Boletales	<i>Tylopilus fumosipes</i>	ND
Basidiomycota	Agaricomycetes	Boletales	<i>Boletus fraternus</i>	ND
Basidiomycota	Agaricomycetes	Boletales	<i>Boletus subvelutipes</i>	ND
Basidiomycota	Agaricomycetes	Boletales	<i>Phylloporus bellus</i>	ND
Basidiomycota	Agaricomycetes	Boletales	<i>Tylopilus vinosobrunneus</i>	ND
Basidiomycota	Agaricomycetes	Boletales	<i>Boletus aereus</i>	ND

Basidiomycota	Agaricomycetes	Boletales	<i>Tylopilus neofelleus</i>	ND
Basidiomycota	Agaricomycetes	Boletales	<i>Boletus venenatus</i>	ND
Basidiomycota	Agaricomycetes	Boletales	<i>Gyrodon lividus</i>	ND
Basidiomycota	Agaricomycetes	Boletales	<i>Suillus laricinus</i>	ND
Basidiomycota	Agaricomycetes	Boletales	<i>Leccinum holopus</i>	ND
Basidiomycota	Agaricomycetes	Boletales	<i>Boletus reticulatus</i>	ND
Basidiomycota	Agaricomycetes	Boletales	<i>Strobilomyces cofusus</i>	ND
Basidiomycota	Agaricomycetes	Boletales	<i>Pisolithus tinctorius</i>	7.15
Basidiomycota	Agaricomycetes	Boletales	<i>Paxillus involutus</i>	ND
Basidiomycota	Agaricomycetes	Geastrales	<i>Geastrum triplex</i>	ND
Basidiomycota	Agaricomycetes	Gomphales	<i>Ramaria formosa</i>	ND
Basidiomycota	Agaricomycetes	Gomphales	<i>Ramaria flava</i>	ND
Basidiomycota	Agaricomycetes	Phallales	<i>Phallus impudicus</i>	ND
Basidiomycota	Agaricomycetes	Auriculariales	<i>Auricularia auricula</i>	ND
Basidiomycota	Agaricomycetes	cantharellales	<i>Cantharellus cibarius</i>	ND
Basidiomycota	Agaricomycetes	cantharellales	<i>Mycoleptodonoides aitchisonii</i>	ND
Basidiomycota	Agaricomycetes	Hymenochaetales	<i>Phellinus igniarius</i>	7.54
Basidiomycota	Agaricomycetes	Hymenochaetales	<i>Fuscoporia obliqua</i>	7.94
Basidiomycota	Agaricomycetes	Hymenochaetales	<i>Onnia scaura</i>	10.4
Basidiomycota	Agaricomycetes	Polyporales	<i>Polyporus squamosus</i>	ND
Basidiomycota	Agaricomycetes	Polyporales	<i>Fomes fomentarius</i>	17.2
Basidiomycota	Agaricomycetes	Polyporales	<i>Tyromyces sambuceus</i>	53.5
Basidiomycota	Agaricomycetes	Polyporales	<i>Fomitopsis pinicola</i>	58.0
Basidiomycota	Agaricomycetes	Polyporales	<i>Heterobasidion insularis</i>	77.1
Basidiomycota	Agaricomycetes	Polyporales	<i>Grifola frondosa</i>	85.2
Basidiomycota	Agaricomycetes	Polyporales	<i>Polyporellus badius</i>	ND
Basidiomycota	Agaricomycetes	Polyporales	<i>Polyporellus brumalis</i>	ND
Basidiomycota	Agaricomycetes	Polyporales	<i>Piptoporus betulinus</i>	ND
Basidiomycota	Agaricomycetes	Polyporales	<i>Daedalea dickinsii</i>	ND
Basidiomycota	Agaricomycetes	Polyporales	<i>Bondarzewia montana</i>	ND
Basidiomycota	Agaricomycetes	Polyporales	<i>Coriolus versicolor</i>	ND
Basidiomycota	Agaricomycetes	Polyporales	<i>Tyromyces spumens</i>	ND
Basidiomycota	Agaricomycetes	Polyporales	<i>Polyporus alveolaris</i>	ND
Basidiomycota	Agaricomycetes	Polyporales	<i>Oligoporus tephroleucus</i>	19.2
Basidiomycota	Agaricomycetes	Polyporales	<i>Laetiporus sulphureus</i> var. <i>miniatus</i>	ND
Basidiomycota	Agaricomycetes	Polyporales	<i>Sparassis crispa</i>	ND
Basidiomycota	Agaricomycetes	Aphylllophorales	<i>Polyporus umbellatus</i> Fries	ND
Basidiomycota	Agaricomycetes	Aphylllophorales	<i>Poria cocos</i> Wolf	ND

Basidiomycota	Agaricomycetes	Aphyllophorales	<i>Elfvigia applanata</i>	18.1
			<i>Elfvigia applanata</i> (Purchased)	6.21
Basidiomycota	Agaricomycetes	Aphyllophorales	<i>Ganoderma lucidum</i>	63.3
Basidiomycota	Agaricomycetes	Russulales	<i>Albatrellus dispansus</i>	71.9
Basidiomycota	Agaricomycetes	Russulales	<i>Albatrellus</i> <i>caeruleoporus</i>	ND
Basidiomycota	Agaricomycetes	Thelephorales	<i>Boletopsis leucomelas</i>	37.5
Basidiomycota	Agaricomycetes	Thelephorales	<i>Thelephora palmata</i>	81.1
Basidiomycota	Agaricomycetes	Thelephorales	<i>Sarcodon scabrosus</i>	ND
Basidiomycota	Agaricomycetes	Thelephorales	<i>Sarcodon leucopus</i>	ND
Basidiomycota	Agaricomycetes	Thelephorales	<i>Sarcodon aspratus</i>	ND
Basidiomycota	Agaricomycetes	Thelephorales	<i>Hydnellum caeruleum</i>	ND
Basidiomycota	Agaricomycetes	Thelephorales	<i>Hydnellum conrescens</i>	ND

A**B****C**

Supplemental figure S1. The aggregation inhibition activity of three inhibitors (RA, f5, f5f3) against A β was evaluated by the ThT assay. (A) Control: 5% DMSO + 1 \times PBS + ThT solution; A β : A β solution + ThT solution; RA: RA solution + A β solution + ThT solution. (B) Control: 5% DMSO + 1 \times PBS + ThT solution; A β : A β solution + ThT solution; f5: f5 solution (0.2, 2 and 20 μ g/mL) + A β solution + ThT solution. (C) Control: 5% DMSO + 1 \times PBS + ThT solution; A β : A β solution + ThT solution; f5f3: f5f3 solution (0.2, 2 and 20 μ g/mL) + A β solution + ThT solution. Final concentration (A β : 25 μ M; RA: 300 μ M; ThT: 20 μ M). (n = 3). The Microplate Reader (SH-9000, Yamato, Tokyo, Japan) employed the following settings: 450 nm excitation wavelength, 490 nm emission wavelength.



Supplemental figure S2. Merge images of the fraction f5 of t037 on extracellular A β deposition in SH-SY5Y cells. The left one is the merge image of the A β group, and the right one is the merge image of the A β plus f5 20 μ g/mL group.