



COSMO BIO USA
Inspiration for Life Science

Neuroscience Research Reagents



GLIAL CELLS

Astrocytes (Mouse, Rat)

These frozen astrocytes are isolated from fetal rat or mouse brain tissues. Researchers can use them to investigate how astrocytes respond to oxidative stress and inflammation, examine their interactions with various cytokines, and model gliosis (glial scar formation that occurs after brain injury).

Features

Capable of co-culture with nerve cells

GFAP-positive confirmed

Cell Origin

- **Astrocytes (Rat):**
Cerebrum of fetal SD rat
- **Astrocytes (Mouse):**
Cerebrum of fetal C57BL/6N mouse

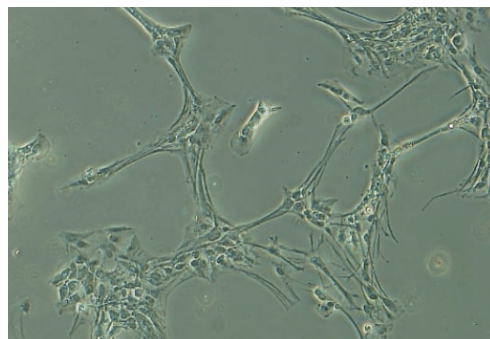


Fig.1 Cell morphology of cultured rat astrocytes

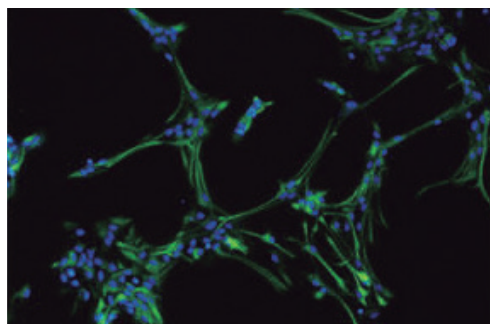


Fig.2 Immunostaining of cultured rat astrocytes (green), anti-GFAP antibody staining Blue: nuclear staining



Q1 Is it possible to subculture these cells?

A1 Since these primary cells are isolated from organs, we do not recommend subculturing, as non-astrocytic cells with higher proliferative capacity tend to become dominant during subculture.

Q2 Have you measured the purity of the astrocytes?

A2 We have not measured the purity of the astrocytes quantitatively; however, visual observation by immunostaining has confirmed that more than 90% of the cells are GFAP-positive.

If the frozen cells are not used immediately after receipt, please store them in liquid nitrogen (-70°C or below).

Please use the cells together with the designated culture medium.

Due to significant lot variations, we accommodate custom orders and lot specifications.

PRODUCT NAME	SIZE	CATALOG NUMBER
Astrocytes (Rat)	1 vial (1×10 ⁶ cells/vial)	PMC-AST01C
Astrocytes (Mouse)	1 vial (1×10 ⁶ cells/vial)	PMC-AST02C
Astrocyte culture medium	250 mL	PMC-ASTM



Rat Neuronal Stem Cell Line 1464R

The 1464R cell line is a neural stem cell line derived from the brain tissue of adult male Fischer 344 rats. These immortalized cells can be cultured for an extended period of time while maintaining their characteristics through multiple passages.

Features

The cell phenotype is stable

Can differentiate into three types: neurons, astrocytes, and oligodendrocytes

Culture medium and coating are available

Differentiation Capabilities

When treated with retinoic acid, 1464R cells stop dividing and differentiate into three types of brain cells:

- Neurons (approximately 70%) - identified by tubulin β -III (TuJ1) expression
- Astrocytes (20-30%) - identified by GFAP expression
- Oligodendrocytes (10%) - identified by O4 expression

Applications

These cells are useful for neural stem cell research and can be used in co-culture experiments. For example, they have been successfully co-cultured with rat Schwann cells (IFRS1 line, cat. no. PMC-SWN-IFRS1C) to study cell-to-cell interactions in the nervous system (Please see the reference noted below).

Reference

Ishii T, Kawakami E, Endo K, Misawa H, Watabe K. (2017). Myelinating cocultures of rodent stem cell line-derived neurons and immortalized Schwann cells. *Neuropathology*. 37(5):475-481. doi: [10.1111/neup.12397](https://doi.org/10.1111/neup.12397). PMID: [28707715](https://pubmed.ncbi.nlm.nih.gov/28707715/).

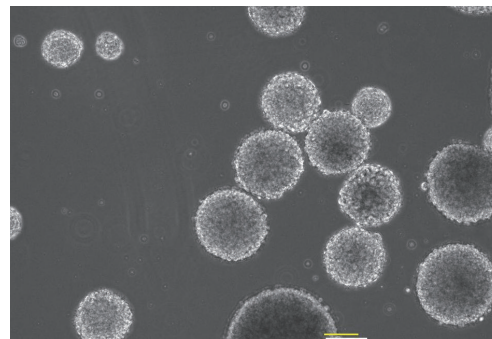


Fig.1 Floating culture of undifferentiated neurosphere.

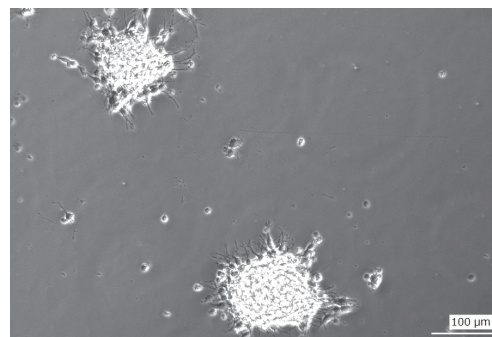


Fig.2 Phase-contrast microscope image of undifferentiated cells.

Cell Origin

Neuronal stem cell line 1464R:

Brain stem cultures of adult male Fischer 344 rat

If the frozen cells are not used immediately after receipt, please store them in liquid nitrogen (-70°C or below).

Please use the cells together with the designated culture medium.

Due to significant lot variations, we accommodate custom orders and lot specifications.

*This product was developed by Professor Kazuhiko Watabe of the Laboratory of Molecular Neurobiology, Kyorin University School of Health Sciences, and is sold under license from the Tokyo Metropolitan Institute of Medical Science.

PRODUCT NAME	SIZE	CATALOG NUMBER
Neuronal stem cell line 1464R (Rat)	1 vial (1×10^6 cells/vial)	PMC-RNSCL-C
Supplement for maintaining 1464R cells	1 Set	PMC-RNSCL-SM
Differentiation medium for 1464R cells	1 Set	PMC-RNSCL-DM
Coating powder A for maintaining 1464R2 cells	1 Bottle	PMC-RNSCL-CSA01
Coating Solutions B for Differentiating 1464R2 cells	1 mL	PMC-RNSCL-CSB

GLIAL CELLS (CONT)

Schwann Cell Line (Rat, Mouse)

IFRS1 (rat) and IMS32 (mouse) are immortalized Schwann cell lines derived from long-term cultures of rat or mouse dorsal root ganglia and peripheral nerves. These cells retain many characteristics of mature Schwann cells. They are easy to grow and maintain using appropriate Schwann cell culture media (sold separately and listed in the product table below).

Applications

These Schwann cell lines are valuable tools for studying many aspects of neuronal biology, including:

- Nerve regeneration and repair mechanisms
- Neuroprotection
- Development and testing of potential therapies for neurological disorders

Features

There are published papers on co-culture systems with PC12 and DRG neurons

Cell Origin

- **Rat Schwann Cell Line (IFRS1):**
Dorsal Root Ganglion and Peripheral Nervous System adult
- **Mouse Schwann Cell Line (IMS32):**
Dorsal Root Ganglion and Peripheral Nervous System adult ICR mouse

This product was developed by Professor Kazuhiko Watabe of the Laboratory of Molecular Neurobiology, Kyorin University School of Health Sciences, and is sold under license from the Tokyo Metropolitan Institute of Medical Science.

PRODUCT NAME	CELL ORIGIN	SIZE	CATALOG NUMBER
Schwann cell Line (IFRS1), (Rat)	F344 rat	1 vial (5×10 ⁵ cells/vial)	PMC-SWN-IFRS1C
Schwann cell (IFRS1) medium	—	250 mL	PMC-SWNMR
Schwann cell Line (IMS32), (Mouse)	ICR mouse	1 vial (5×10 ⁵ cells/vial)	PMC-SWN-IMS32C
Schwann cell (IMS32) Medium	—	250 mL	PMC-SWNMM

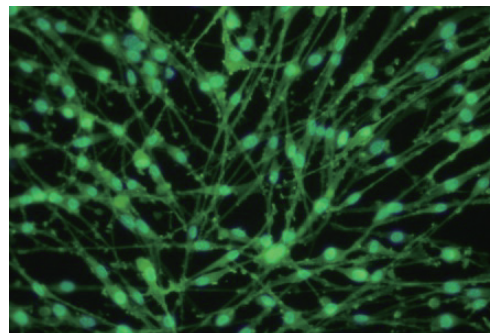


Fig.1 Immunofluorescence of IMS32 cells. Anti-p75NTR (green), nuclear staining (blue)

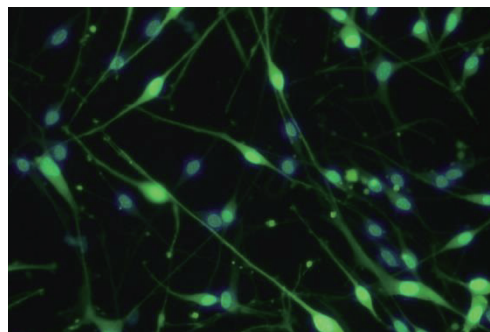


Fig.2 Immunofluorescence of IMS32 cells. Anti-p75NTR (green), nuclear staining (blue)

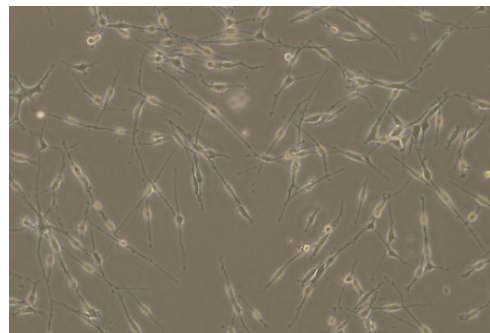


Fig.3 Phase contrast microscope image of IMS32 cells.

NEURODEGENERATION



α-Synuclein Aggregation Assay Kit

The α-Synuclein Aggregation Assay Kit enables researchers to model the formation of α-synuclein aggregates in cells - a key feature of Parkinson's disease and related neurodegenerative disorders. This system allows for screening of potential therapeutic compounds that may prevent or reduce protein aggregation.

Features

Recreates aggregation of α-synuclein in cells

Aggregate observation is also possible when combined with the Amyloid Fluorescent Staining Kit (see page 7)

Use this Kit to Investigate:

- Kinetics of α-synuclein aggregation over time
- Structural properties of protein aggregates
- Pathological effects of aggregation in cellular models
- Effects of candidate drugs or compounds on aggregate formation
- Biological and chemical factors that influence aggregation

What's Included:

This kit contains all essential reagents needed to perform seeded aggregation assays using the Nonaka *et al.* method. Researchers can use their own cell lines to study α-synuclein aggregate formation:

- pCMV-SNCA (α-synuclein expression plasmid vector)
- pCMV-NC (negative control vector)
- pCMV-dGFP (dGFP expression plasmid vector)
- Tris-HCl
- α-synuclein fibrils
- Multifectam (transfection reagent)

This product is licensed from Dr. Naruhito Hasegawa and Dr. Takashi Nonaka from Dementia and Higher Brain Function Research Division, Tokyo Metropolitan Institute of Medical Science.

The plasmid vector used in this product is a commercial product synthesized by ATUM Inc.

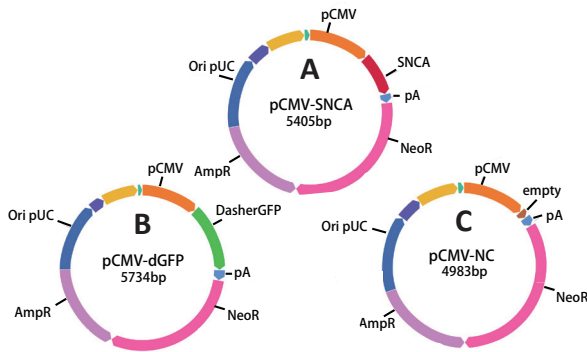


Fig.1 Vector map. A. pCMV-NC (Negative Control Vector)
B. pCMV-SNCA (α-Synuclein Expression Plasmid Vector)
C. pCMV-SNCA + F-αSyn (α-Synuclein Introduction)

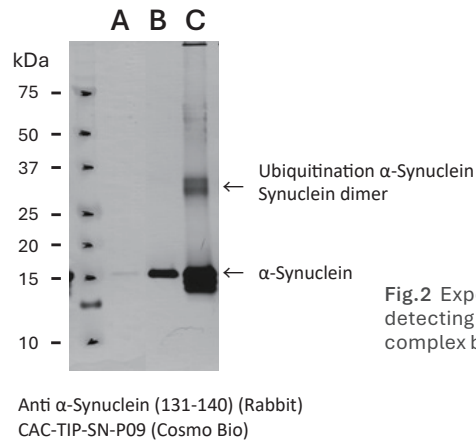
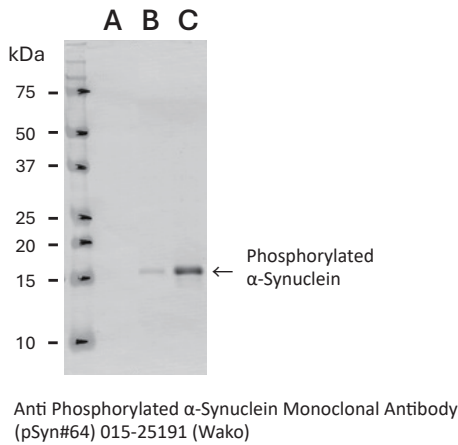


Fig.2 Experimental example of detecting synuclein aggregation complex by western blotting

PRODUCT NAME	SIZE	CATALOG NUMBER
α-Synuclein aggregation assay kit	1 kit (300 tests using 24 well plate)	CSR-SYN01

NEURODEGENERATION (CONT)

α-Synuclein Fibrils

This product is sonicated, preformed human or mouse α-synuclein fibrils confirmed to function as seed fibrils in a system similar to the human α-Synuclein Aggregation Assay Kit (CSR-SYN01).

This product is manufactured under license from Takashi Nonaka, Ph.D. and Masato Hasegawa, Ph.D. of Department of Dementia and Higher Brain Function, Tokyo Metropolitan Institute of Medical Science



- Q1** Can cat. no. CSR-SYN03 be detected using a phosphorylation-specific antibody?
- A1** CSR-SYN03 is a fibrillized recombinant α-synuclein monomer purified from *E. coli* and is not phosphorylated.
- Q2** Does CSR-SYN03 contain monomers?
- A2** After the fibrillation process of CSR-SYN03, two rounds of ultracentrifugation are performed. It has been confirmed that almost no monomer remains in the supernatant.

PRODUCT NAME	PURITY	SUSPENSION	SIZE	CATALOG NUMBER
α-Synuclein fibrils (Human)	≥ 80% (RP-HPLC)	Saline	0.1 mg	CSR-SYN03
α-Synuclein fibrils, azide (Human)	≥ 80% (RP-HPLC)	Saline (0.1% NaN ₃)	0.1 mg	CSR-SYN03RT
α-Synuclein fibrils (Mouse)	≥ 80% (RP-HPLC)	Saline	0.1 mg	CSR-SYN05

α-Synuclein, Recombinant

E. coli expressed human α-synuclein has been widely used in structural and functional studies. Masuda *et al.* [1] have reported that approximately 20% of *E. coli* expressed human α-synuclein is mistranslated resulting in a Cys residue instead of Tyr at position 136 and causing an increase in the levels of dimeric α-synuclein.

Recombinant human α-synuclein (cat. no. CSR-SYN04) is expressed from a plasmid in which the TAC codon coding for Tyr136 in the mouse protein is replaced by TAT to produce protein expressing Tyr at position 136 homogeneously. It can be used as human α-synuclein under similar conditions to that of *in vivo*.

Reference

[1] Masuda M, Dohmae N, Nonaka T, Oikawa T, Hisanaga S, Goedert M, Hasegawa M. Cysteine misincorporation in bacterially expressed human alpha-synuclein. *FEBS Lett.* 2006 Mar 20;580(7):1775-9 PMID: 16513114

This product is manufactured under license from Takashi Nonaka, Ph.D. and Masato Hasegawa, Ph.D. of Department of Dementia and Higher Brain Function, Tokyo Metropolitan Institute of Medical Science

Recombinant human α-synuclein can also be used for comparison (control) of human α-synuclein fibrils (cat. no. CSR-SYN03). Similarly, Recombinant mouse α-synuclein can be used for comparison (control) of mouse α-synuclein fibrils (cat. no. CSR-SYN05).



- Q1** Has cat. no. CSR-SYN04 been purified or filtered (e.g., by ultrafiltration)?
- A1** No, it has not.
- Q2** Can CSR-SYN04 be detected using a phosphorylation-specific antibody?
- A2** No. CSR-SYN04 is a recombinant α-synuclein monomer purified from *E. coli*, and it is not phosphorylated.
- Q3** Does CSR-SYN04 contain any tag sequences?
- A3** No, it does not.

PRODUCT NAME	MOLECULAR WEIGHT	PURITY	SUSPENSION	SIZE	CATALOG NUMBER
α-Synuclein, Recombinant (Human)	14.5 kDa	≥ 80% (RP-HPLC)	30 mM Tris-HCl (pH7.5)	1 mg	CSR-SYN04-1
α-Synuclein, Recombinant (Human)	14.5 kDa	≥ 80% (RP-HPLC)	30 mM Tris-HCl (pH7.5)	0.1 mg	CSR-SYN04-2
α-Synuclein, Recombinant (Mouse)	-	≥ 80% (RP-HPLC)	30 mM Tris-HCl (pH7.5)	0.1 mg	CSR-SYN06-1
α-Synuclein, Recombinant (Mouse)	-	≥ 80% (RP-HPLC)	30 mM Tris-HCl (pH7.5)	1 mg	CSR-SYN06-2



Amyloid Fluorescent Staining Kit

The Amyloid Fluorescent Staining Kit for histological staining employs a green fluorescent dye that selectively localizes to amyloid deposits and exhibits a dramatic increase in fluorescent brightness upon binding. A second fluorescent (blue) DNA binding dye is included in the kit for nuclear co-staining.

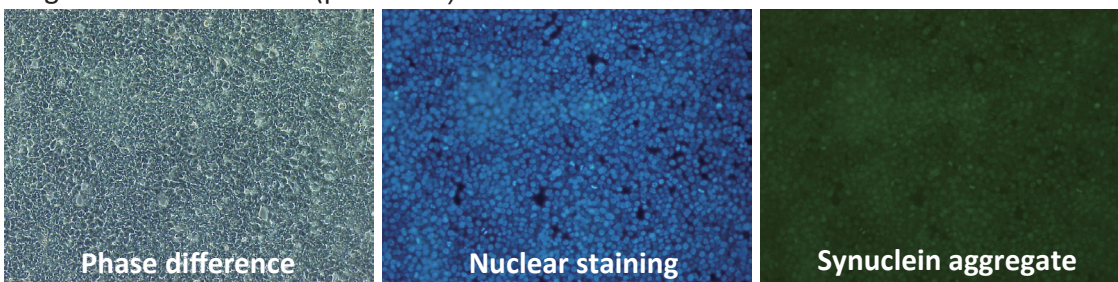
This kit is designed to be used in place of (or in addition to) western blotting for detecting aggregates formed in the α -Synuclein Aggregate Detection Kit (cat. no. CSR-SYN01, see page 5) but should also be applicable to staining amyloids in other systems (cells or tissue).

Kit Components

- Amyloid fluorescent staining reagent 200x (100 μ L)
- Nuclear staining reagent 500x (100 μ L)
- Fluorescence enhancer

This product utilizes technology developed by RIKEN, the National Institute of Advanced Industrial Science and Technology of Japan.

Negative control vector (pCMV-NC)



α -Synuclein introduction (pCMV-SNCA+ F- α Syn)

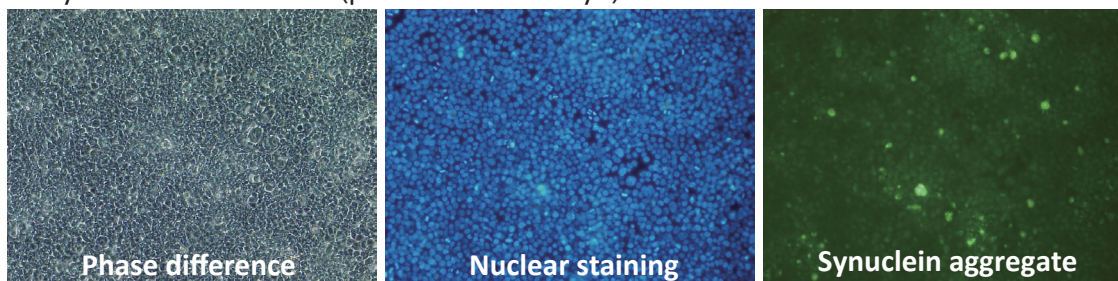


Fig. 1 Example of detection using Amyloid Structure Fluorescent Staining Kit. Using this kit, dual staining of aggregated α -synuclein and nuclei is possible.

PRODUCT NAME	SIZE	CATALOG NUMBER
Amyloid fluorescent staining kit	1 kit (100 tests)	CSR-SYN02

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