Ajinomoto Co., Inc. to Confirm StemFit® AK03N, Cell Culture Medium for Clinical Research, Performed iPS Cell Proliferation Proficiently

Cell and Gene Therapy Catapult conducted the comparative cultivation testing in different culture systems

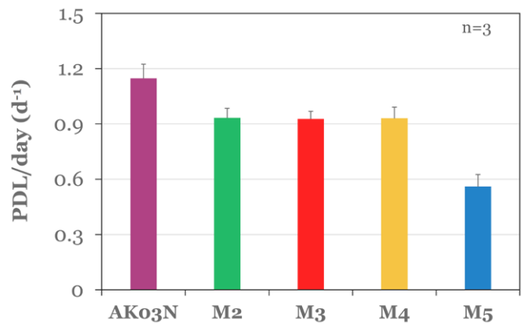
TOKYO, June 9, 2017 – Ajinomoto Co., Inc. ("Ajinomoto Co.") confirmed that StemFit® AK03N, a cell culture medium for clinical research into regenerative medicine, showed superior cell proliferation performance compared with different products, using iPS cells by The Cell and Gene Therapy Catapult By providing products with the world's highest-class performance, Ajinomoto Co. continues to contribute to the rapid realization of regenerative medicine around the world.

StemFit® AK03N
iPS/ES cell culture medium for clinical research

Regenerative medicine is considered to be one of the most thriving and advancing fields of research for both clinical and practical applications. The global market for peripheral regenerative medicine-related industries, such as equipment, supplies and services, was JPY 240 billion as of 2012, with the United States accounting for approximately half. By 2050, it is expected to grow to JPY 15 trillion (2013 Ministry of Economy, Trade and Industry survey)

In the FY2017 - 2019 Medium-Term Management Plan, Ajinomoto Co. set priority on the expansion of the portfolio of the AminoScience business by building new business pillars. As a new growth driver, Ajinomoto Co. is working on launching business in the peripheral region of advanced biomedical areas such as culture medium and related materials. Based on StemFit® AK03 successfully developed in collaboration with the Center for iPS Cell Research and Application at Kyoto University in 2014, Ajinomoto Co. has been selling StemFit® AK03N, cell culture medium for clinical research, widely in Japan since 2016. StemFit® AK03N is the cell culture medium that has been domestically approved for use in clinical research. It consists solely of refined substances completely free of animal- and human-derived components through the use of recombinant proteins made with biotechnology.

The Cell and Gene Therapy Catapult (CGT) is an independent center of excellence to advance the growth of the UK cell and gene therapy industry, by bridging the gap between scientific research and full-scale commercialization. The Industrialization group of CGT aims to develop cost-effective processing platforms for the commercial manufacture and industrialization of iPSC-derived cell therapy products. In this research, media of different formulations were compared with StemFit® AK03N for culture of iPS cells throughout five consecutive passages. As a result, iPS cells cultured with StemFit® AK03N performed not only with higher cell proliferation, but also showed characteristics such as homogeneity of gene expression compared with iPS cells cultured with 4 other media without any chromosomal abnormalities.



Evaluation of cell proliferation

The figure shows the average level of population doublings per day (PDL/day(d-1)

Ajinomoto Co. continues to promote the development of cell culture media for clinical research for the global market, and plans to roll out the StemFit® series in various countries.
By marketing StemFit® cell culture media for iPS/ES cells, the Ajinomoto Group will contribute to the realization of regenerative medicine and the development of new pharmaceuticals, and thus to healthy human lives.

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StemFit®

Reference

Product Overview

(1) Product name:	StemFit® AK03N
(2) Features:	A culture medium that enables maintenance and a high rate of expansion of undifferentiated iPS/ES cells. It offers both a high level of safety and a high proliferation rate for clinical research needs.
(3) Product format:	Three component solutions to be mixed when used. One set makes approximately 500 mL of culture medium.

Overview of The Cell and Gene Therapy Catapult

(1) Name:	The Cell and Gene Therapy Catapult
(2) Location:	London, U.K.
(3) Established:	2012
(4) Representative:	Keith Thompson, CEO
(5) Business description:	The Cell and Gene Therapy Catapult was established as an independent center of excellence to advance the growth of the UK cell and gene therapy industry, by bridging the gap between scientific research and full-scale commercialization. With more than 130 employees focusing on cell and gene therapy technologies, it works with partners in academia and industry to ensure these life-changing therapies can be developed for use in health services throughout the world. It offers leading-edge capability, technology and innovation to enable companies to take products into clinical trials and provide clinical, process development, manufacturing, regulatory, health economics and market access expertise. Its aim is to make the UK the most compelling and logical choice for UK and international partners to develop and commercialize these advanced therapies.
(6) URL:	https://ct.catapult.org.uk/

Glossary

iPS cell:
Induced pluripotent stem cell. A cell made by introducing various types of reprogramming factors into human somatic cells. iPS cells can differentiate into various tissue and organ cells and proliferate indefinitely in culture.

ES cell:
Embryonic stem cell. A stem cell derived from the inner cell mass of a human blastocyst (a very early embryo) that is capable of differentiating into the various tissue and organ cells that make up the body.

Recombinant proteins:
Proteins created with biotechnology using microbes, yeast or other substances. Recombinant proteins are widely used as biopharmaceuticals, including treatments for cancer and rheumatism.

Homogeneity of gene expression:
A state suggesting that the gene expression, an indicator of cell properties, is uniform, and the cell properties are stable during culture. Changes in the iPS cells properties during culture are regarded as a major challenge towards the realization of regenerative medicine; thus, a high-quality culture system is required to stabilize the cell properties.

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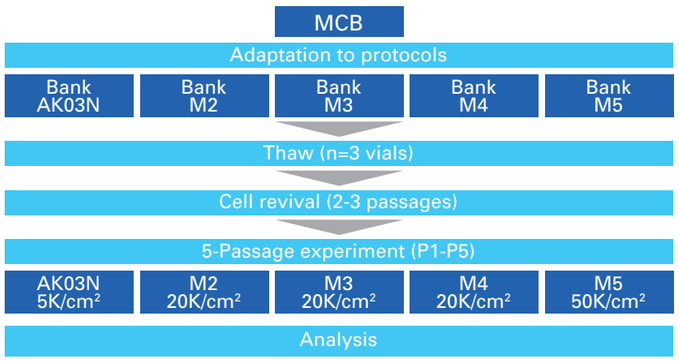
Superior performance of StemFit® AK03N for the culture of induced pluripotent stem cells

-Cell and Gene Therapy Catapult conducted the comparative cultivation testing in different culture systems-

Experimental Layout and Results



Culture cycle (feeding scheme)

AK03N (7days)	M2 (5days)	M3 (5days)	M4 (5days)	M5 (3+4days)
Feed d1/4/5/6	Feed d1/2/3/4/5	Feed d1/2/3/4/5	Feed d1/2/3/4/5	Feed d1+pssg (d3)+d4

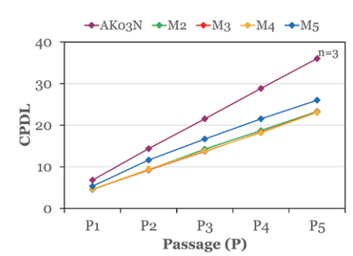
- Culturing CGT-RCiB10 in adherent culture with vitronectin.
- CGT-RCiB10 is a HLA-Homo iPSC line from a cGMP pre-seed lot.
- M2, M3, M4, M5 are commercially available iPSC culture media.
- Passage and feeding schedule was as per manufacturer protocol and expansion protocol.
- All experiment in this poster were designed and performed by CGT Catapult.

Table 1. Features of StemFit® AK03N observed in current evaluation

Cell Growth	**Easy expansion (Figure 1)**
Stability	**Consistent gene expression profile throughout 5 passages (Figure 2)**
	Normal karyotype (Table 2)
Metabolic Profile	**Low lactate accumulation in culture supernatant (Figure 3)**
Pluripotency	Maintenance of pluripotency (available in CGT Catapult full poster)
	Confirmed potency of differentiation into the 3-germ layers of Embryoid Body (available in CGT Catapult full poster)

Figure 1. Easy expansion

(A) Cumulative Population Doublings (CPD)



(B) Average Population Doublings (PD) throughout 5 passages

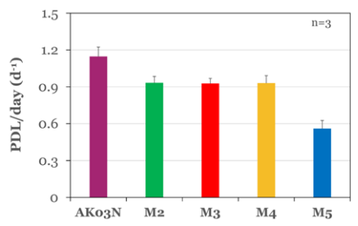


Figure 2. Consistent gene expression profile

Gene expression data profiled employing the TaqMan® ScoreCard™ assay (n=3)

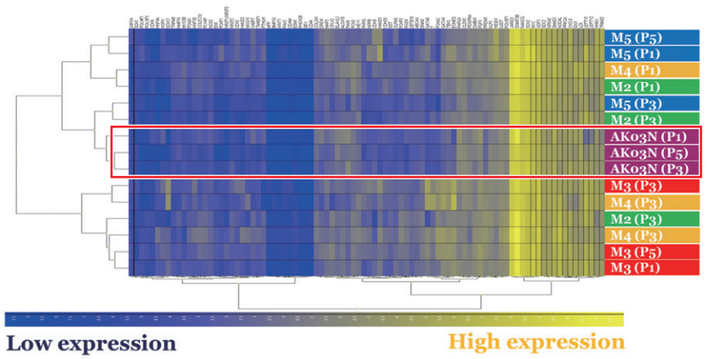
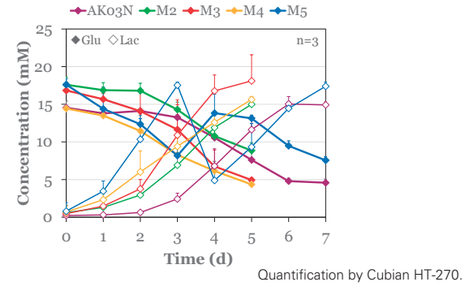


Table 2. Result of karyotyping (CGH array) analysis after expansion

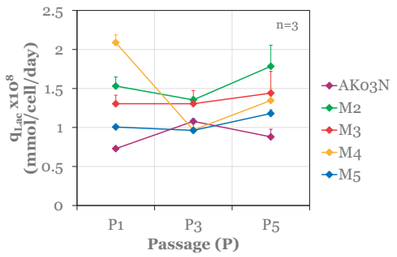
	AK03N	M2	M3	M4	M5
Bank	Normal	Normal	Normal	Normal	Normal
+P9/P10	Normal	Normal	Abnormal	Normal	Normal

Figure 3. Low lactate accumulation

(A)



(B) Quantification by Cubian HT-270.



The Cell and Gene Therapy Catapult

- The Cell and Gene Therapy Catapult (CGT Catapult) is a non-for-profit centre of excellence to advance the growth of the UK cell and gene therapy industry, by bridging the gap between scientific research and full-scale commercialisation
- The Industrialisation group of CGT Catapult aims to develop cost-effective processing platforms for the commercial manufacture and industrialisation of iPSC-derived cell therapy products using 2D and 3D culture systems
- Detailed methods and results are available at CGT Catapult website **https://ct.catapult.org.uk/**

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