

Contribution to health issues

Performance

GRI203-2

Making regenerative medicine^[1] a reality

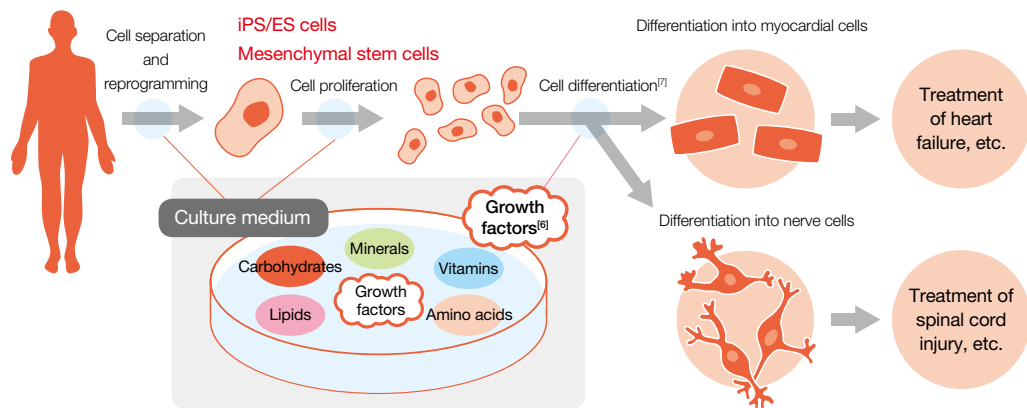
Commercial cell culture media^[2] for regenerative medicine

Today, scientists around the world are researching regenerative medicine as a radical treatment for solving problems in organ transplantation. The Ajinomoto Group supplies pharmaceutical-grade amino acids, which are a key ingredient in cell culture media. In 2014, the Group developed *StemFit*[®] *AK03*, an iPS^[3]/ES^[4] cell culture medium free of animal-derived ingredients and launched this product in 2016 as *StemFit*[®] *AK03N*. In 2019, we began selling another iPS cell culture medium, as well as a culture medium for mesenchymal stem cells^[5] and hepatocyte differentiation and purification.

In 2018, we established Ajinomoto Kohjin Bio Co., Ltd., a joint venture with Kohjin Bio Co., Ltd. In February 2020, the joint venture completed construction of a plant to manufacture clinical culture media for regenerative medicine. The company completed validation work (confirming equipment operates as designed) and is preparing for the start of full-scale production.

The Ajinomoto Group will continue to help making regenerative medicine a reality and developing new medicines through our production and sales of cell culture media.

Role of cell culture medium in regenerative medicine



- [1] Medical treatment of dysfunctional, non-functional or defective tissues. Artificially reproduced functional cells or tissues are transplanted to regenerate tissue and replicate function.
- [2] A nutrient solution that contains a balanced mixture of amino acids, carbohydrates, lipids, vitamins, minerals and growth factors required for cell growth.
- [3] Induced pluripotent stem cells generated from human body cells by adding several types of factors. These stem cells exhibit pluripotency (ability to differentiate into various tissues and organs) and an almost limitless capacity for proliferation.
- [4] Embryonic stem cells created using inner cell mass from human blastocysts. These cells exhibit the ability to differentiate into various human tissues and organs.
- [5] Cells with the capacity to differentiate into osteoblasts, fat cells, muscle cells, chondrocytes, and other cells categorized as mesenchymal stem cells. These cells are expected to be used in the rebuilding of bones, blood vessels, myocardia, and other regenerative medicine applications.
- [6] Proteins that promote the proliferation and differentiation of specific cells in human and animal bodies.
- [7] The conversion of iPS/ES cells into cells of different tissues and organs that make up the body.

Contribution to Solve Food and Health Issues

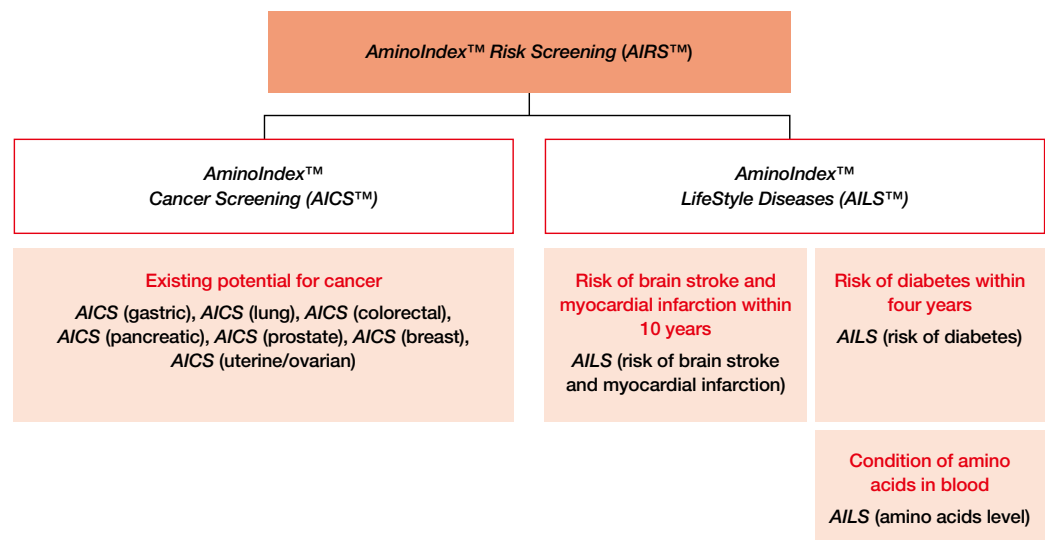
“AminoIndex technology”

AminoIndex™ Risk Screening (AIRS™) is a unique Ajinomoto Group service that can assess the risk of the three major diseases (cancer, stroke, heart disease) and other conditions from a single blood test. *AIRS™* assesses risk based on the balance of amino acid concentrations in blood.

In September 2019, Scientific Reports Magazine published a paper that validated the inspection performance related to cancer discovery in a multicenter prospective study^[1]. This study adds a level of evidence for cancer evaluation using *AIRS™* and confidence among doctors. In October 2019, we signed an agreement related to the prevention of the three major diseases with a Japanese life insurance company and other entities, and are working for the wider use of *AIRS™* tied to early detection and treatment for the three major diseases, as well as joint research in developing new *AIRS™*-based services. In November 2019, we signed a research and development agreement with the Kanagawa Cancer Center related to stratification^[2] marker search in connection with lung cancer treatment. The aim of this research and development is to offer cancer patients more appropriate treatment options, to alleviate the physical burden on cancer patients, and to reduce treatment costs. In this project, we will be aided by the Japan Agency for Medical Research and Development (AMED) with the Kanagawa Cancer Center acting as the representative organization.

In the future, we plan to develop services related to cognitive function decline risks, further expanding *AIRS™* as a preventive solutions service.

Key features of *AminoIndex™ Risk Screening (AIRS™)*



[1] A research method in which the subjects of the study are divided into multiple groups based on the presence or absence of possible disease factors. The population is tracked over time to examine the occurrence of diseases, the impact on health, etc. Cohort study.

[2] Technology to perform appropriate treatment for each patient by selecting patients in advance for whom a benefit is expected.

TOPIC

Launching an industry-academia research course on extending the healthy life expectancy (Japan)

In April 2020, Hirosaki University and Ajinomoto Co., Inc., established the Digital Nutrition and Health Sciences Course, a joint research course^[1] on extending the healthy life expectancy under the Hirosaki University Graduate School of Medicine. The course, available from fiscal 2020 through fiscal 2024, aims to create a new concept in nutritional studies through joint research.

With the support of the Japan Science and Technology Agency (JST), the Hirosaki University Center of Innovation (COI) program^[2] analyzes health-related big data from the Iwaki Health Promotion Project^[3] operated by Hirosaki City in Aomori Prefecture. Many companies are also participating in this project, aiming toward social implementation. The goal of this joint research is to establish new digital risk screening protocols and develop assessment methods through a combination of health-related big data analysis and the "AminoIndex technology" of Ajinomoto Co., Inc. We are also conducting research into extending the healthy life expectancy through human intervention studies using low-sodium and protein-enhancing products.

We plan to build an ecosystem for new solutions to health issues with the cooperation of local governments and the facilities of the Hirosaki University COI. In so doing, we expect to also create concepts for new products and services.

[1] A research organization founded by the university and funded by private companies and other organizations.

In addition to providing researchers, facilities, and equipment, the university hosts researchers from funding corporations and other organizations. In this way, the university and companies providing funding operate the research organization on an equal footing.

[2] A large-scale research program supported by the Ministry of Education, Culture, Sports, Science and Technology and the JST. This program involves long-term research (up to nine years) to create a leap forward in innovation by conducting research activities backcasting from *an ideal society envisioned 10 years from now* and implementing the results in society.

[3] A large-scale project launched in 2005 for health surveys and health promotion activities. In this project, Hirosaki University, Hirosaki City (formerly Iwaki Town), the Aomoriken Sougou Kenshin Center, and other entities are working together to prevent lifestyle-related diseases and maintain/promote health among the citizens living in the Iwaki district of Hirosaki City, leading to longer healthy life expectancies.