

Eat Well, Live Well.



## **Ajinomoto Co., Inc. Business Briefing**

# **Growth Strategy for the Biopharmaceutical and Regenerative Medicine Culture Media Business**

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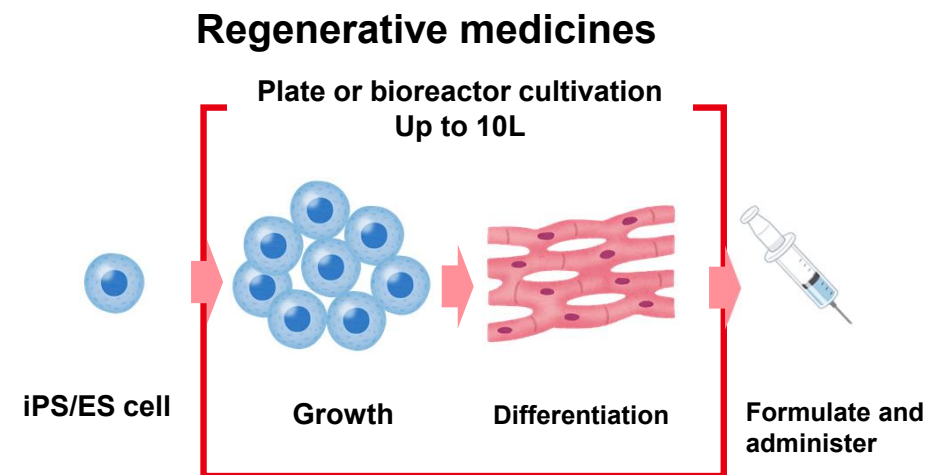
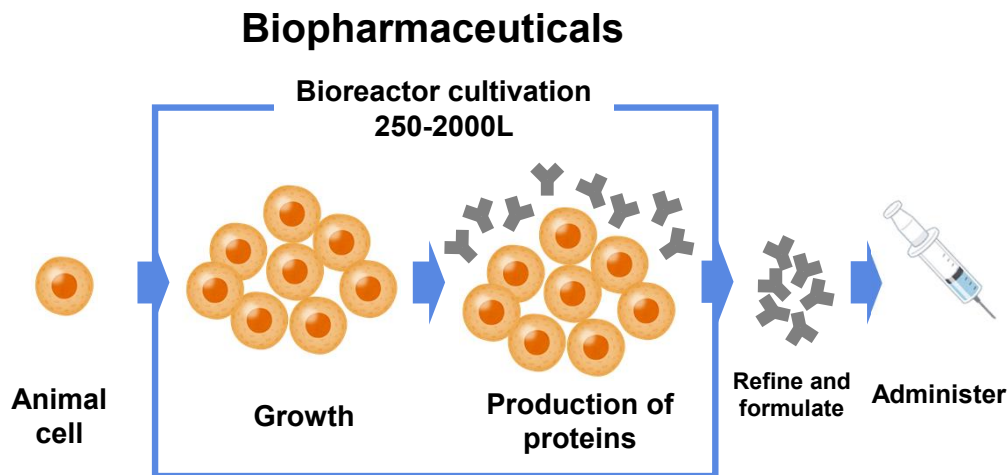
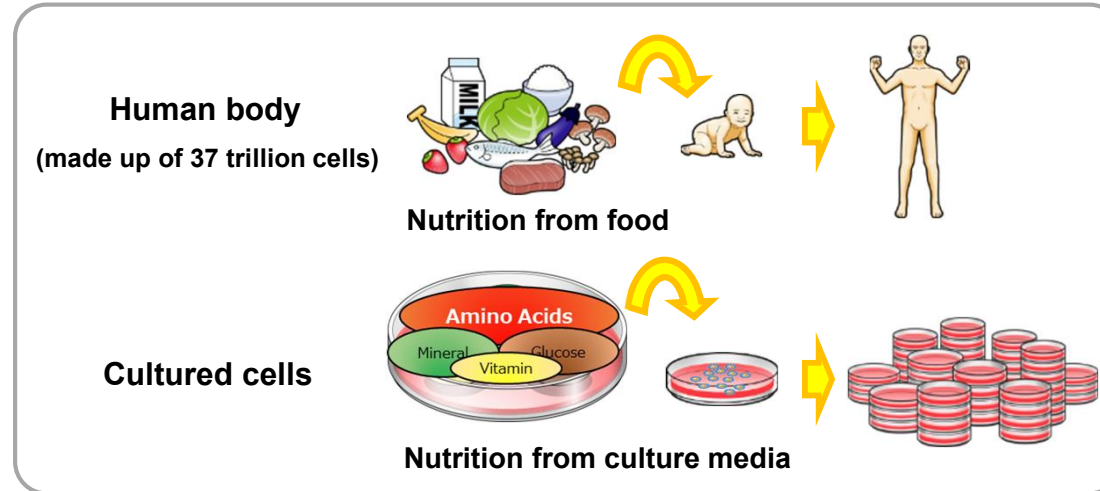
**Research & Business Planning Department**

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# What are cell culture media?

Sources of nutrition for the cultured cells used to create biopharmaceuticals or grow.



# Our culture media products

We offer pharmaceutical production culture media for two different purposes.

CELLiST™

**Biopharmaceutical culture medium / CELLiST™  
(powdered culture medium)**

Cultivates **animal cells** for biopharmaceutical production



 StemFit®

**Regenerative medicine culture medium / StemFit®  
(liquid culture medium)**

Cultivates **iPS/ES cells** for cellular medicine production



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## Strengths in the biopharmaceutical culture media business

We leveraged our knowledge of “**AminoScience**,” including amino acid nutrition and pharmaceutical R&D, and fermentation production technology, to realize the **earliest development of cell culture media in Asia**.



### Our strengths in the culture media business

#### Advanced and rapid culture development

High level nutritional and metabolite analysis technology backed by a 36-year history of producing serum-free culture media

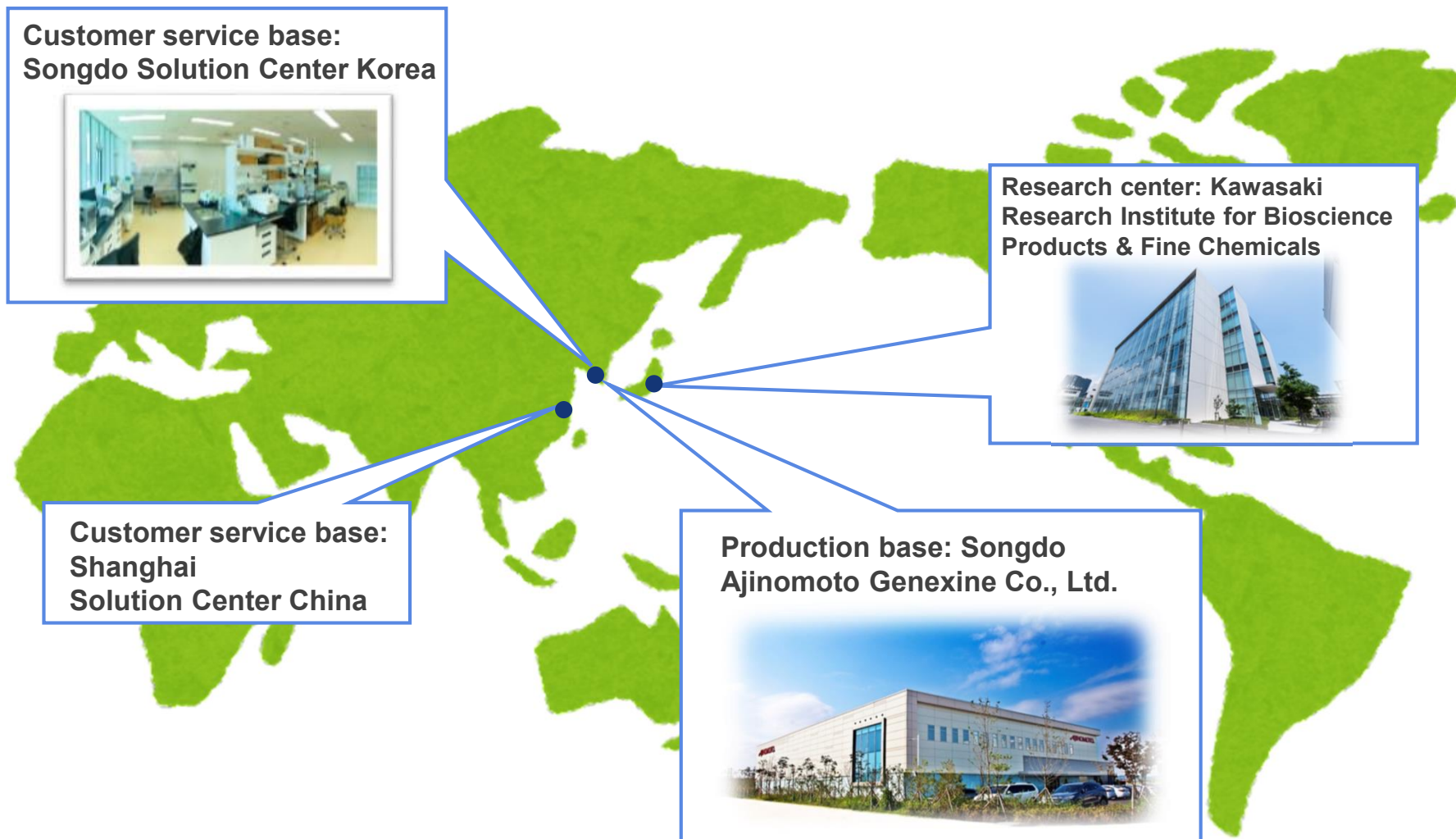
Customer service base in South Korea facilitates the rapid development of culture media in line with customers' needs

#### Stable supply chain

Key raw materials, amino acids, produced within the Ajinomoto Group  
Speedy and stable supply to the fast-growing Asian market (including Japan) from our South Korean culture production base (Ajinomoto Genexine Co., Ltd.)

# Biopharmaceutical culture media business bases

We boast a **strong presence in Asia** through production and customer support functions located in South Korea. We can **supply stably** by leveraging our position as the No. 1 producer of amino acids and our geographical advantage.





# Biopharmaceutical culture medium *CELLiST*<sup>TM</sup>

We provide high-quality, high-performance culture media to customers who use CHO cells\* to produce antibodies, etc.

\*Chinese hamster ovary cells. Animal-derived cells that are often used in biopharmaceutical production.

## General-sale products

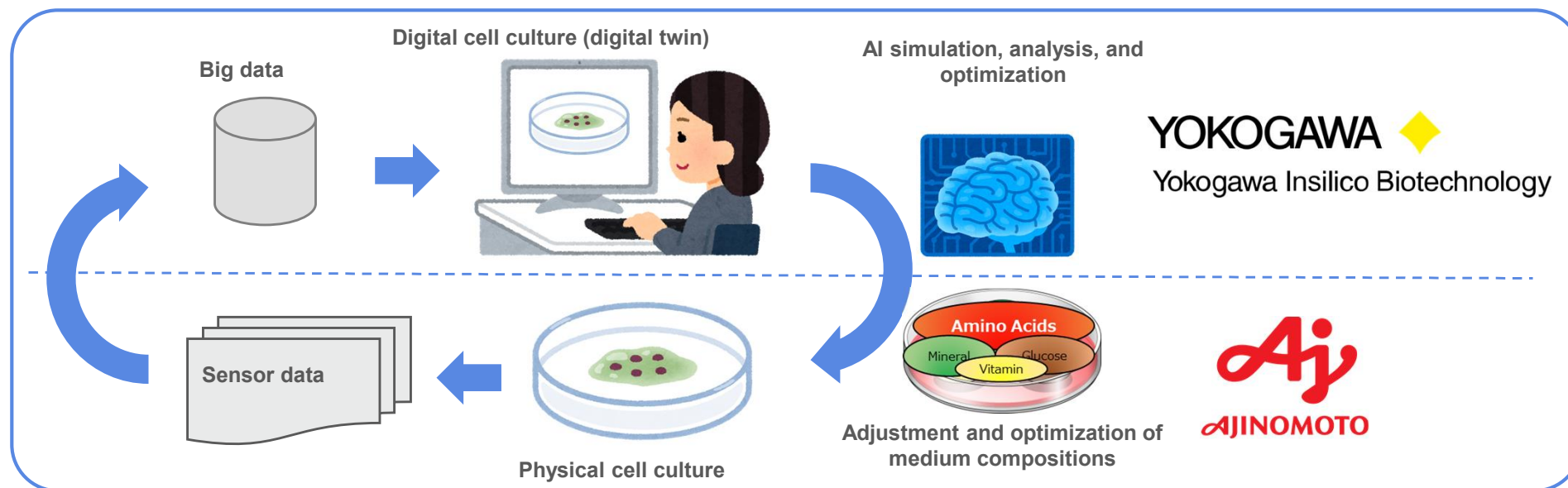
- We determined the **optimal medium composition for typical CHO cell strains** and provide it as a standard culture medium

## Customized products

- Production and sale of **cGMP-compliant** culture media products since 2014
- Used by customers in many countries, including the US, Japan, and South Korea

## Technical support using AI and digital twins

- Rapid optimization of culture medium composition and cultivation conditions
- Efficient scaling up through reaction control of antibody production





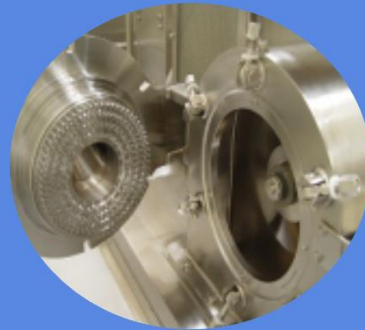
## Contract biopharmaceutical culture media manufacturing service

Ajinomoto Genexine Co., Ltd. carries out contract manufacturing of custom culture media based on customers' recipes. Its GMP-compliant facility can manufacture powdered culture media ranging from laboratory-scale to industrial-scale. We leverage our expertise in nutrient blending and powder control technology to provide a high-quality, cost-competitive service.



### 1. Weighing

Accurate weighing of ingredients, in units from mg to kg.



### 2. Powdering

Accurate mixing is ensured by turning each raw material into a uniform powder beforehand.



### 3. Mixing

A uniform mixture of raw materials is achieved through a multi-step mixing process using a container mixer.



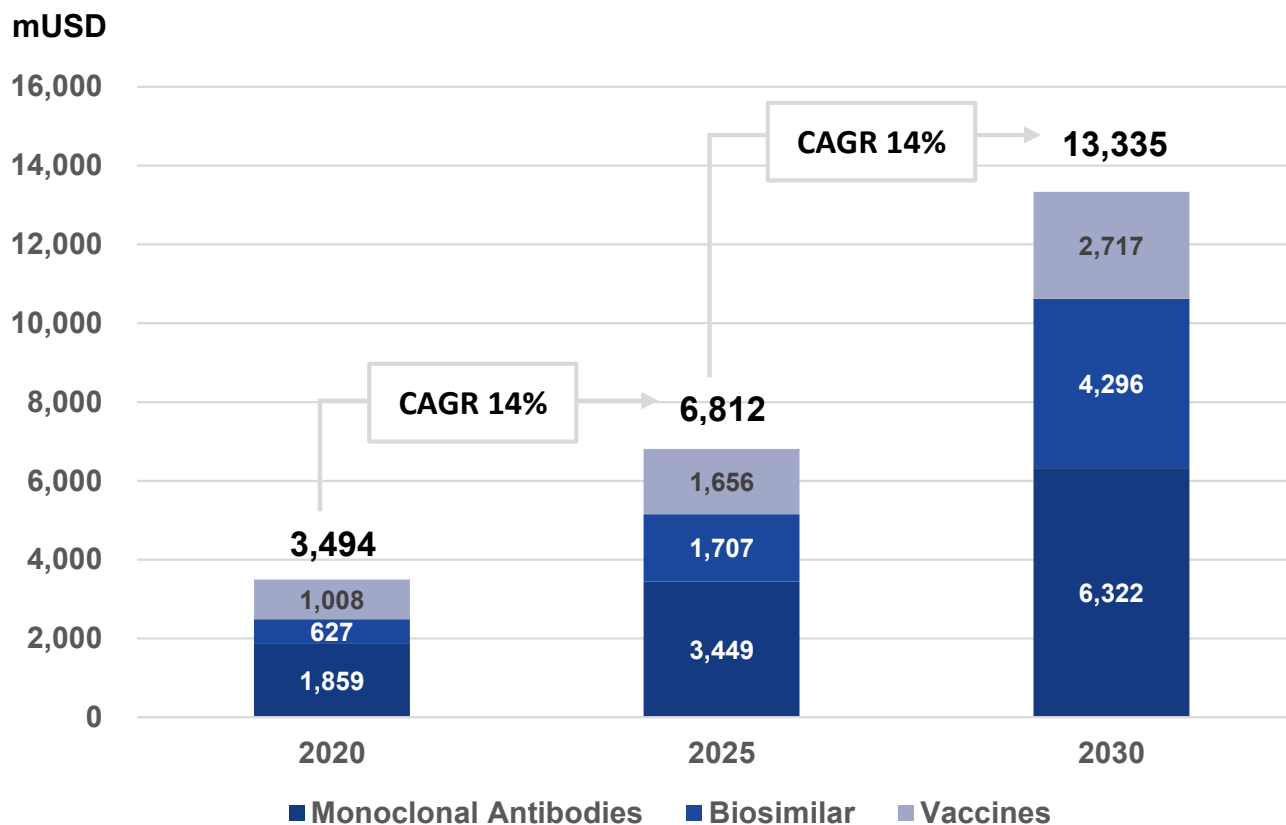
### 4. Packaging

Packed into pretreated, sterilized packaging in a clean room. Final products are stored at low temperatures until shipping.

# From no.1 in Asia to a global business

In the biopharmaceutical culture media market, a market with an expected **stable, high growth potential (CAGR 14%)**, we will aim to expand faster than market growth, by providing solutions to prospective customers' **development pipelines, which are primarily for antibody drugs.**

### Global Biopharmaceutical Culture Media Market



Source: Research by Aranca

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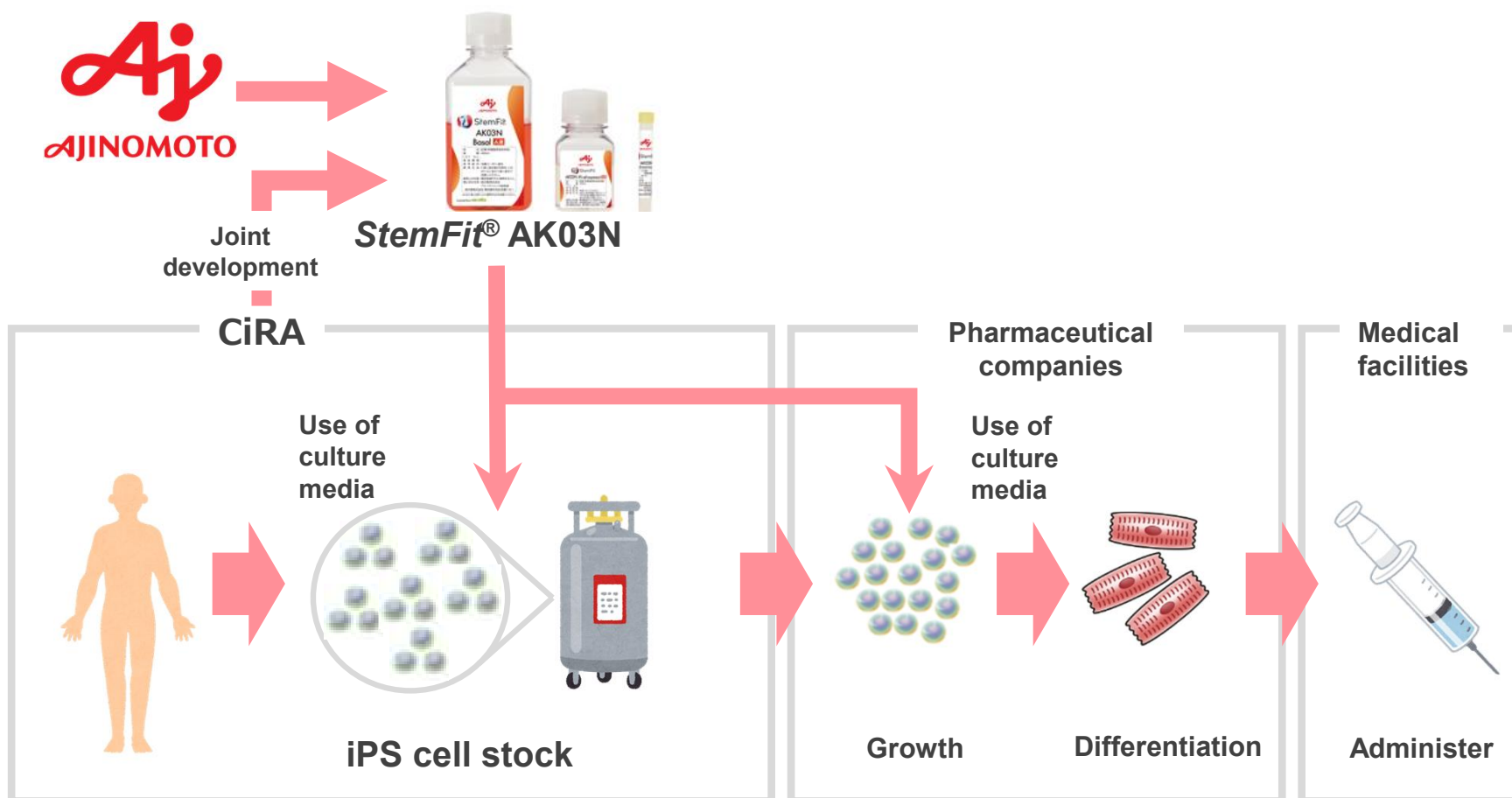
Cultivates **iPS/ES cells** for cellular medicine production



# StemFit® culture medium, progressing alongside iPS cells

StemFit® was **jointly developed** with the Center for iPS Cell Research and Application, Kyoto University (CiRA). CiRA **produces iPS cell stock using the StemFit® culture medium** and distributes it to researchers and pharmaceutical companies.

Alongside CiRA's iPS cell stock, the StemFit® culture medium has become the **de facto standard in Japan**.

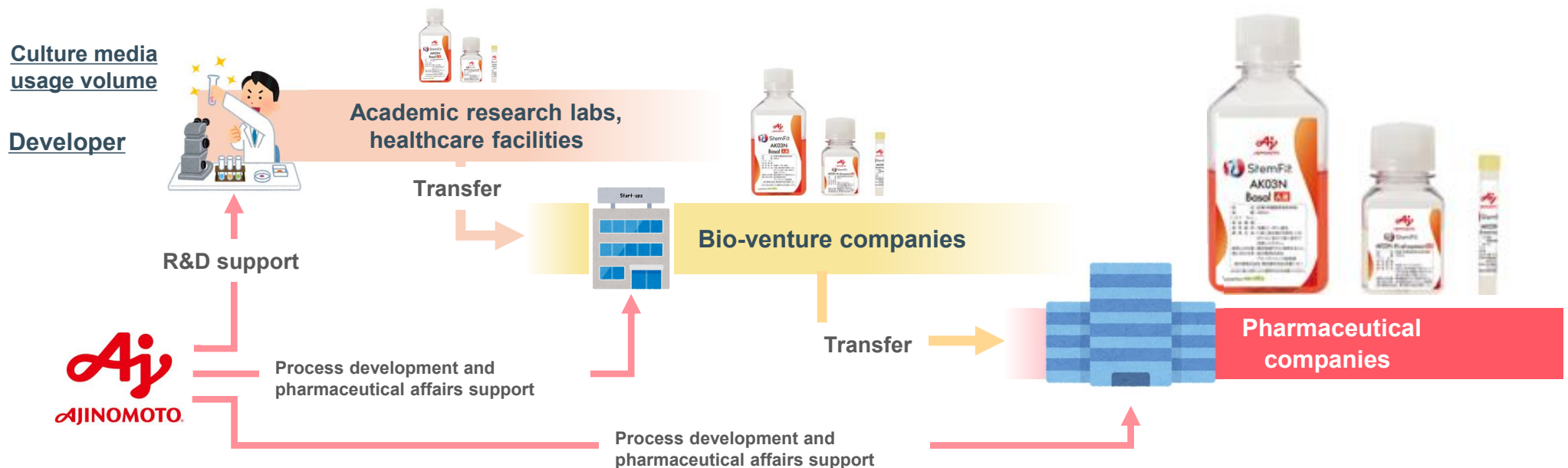


# StemFit® culture medium, progressing alongside customer pipelines

Culture media usage volumes increase as customer pipelines **advance to the clinical development stage**. Culture media incorporated into manufacturing processes **do not change, regardless of production scale or developer**.

We are contributing to regenerative medicine with our customers through **maximized support and services**.

## Clinical development stage



## Global development of culture media for regenerative medicine

Our culture media business is expanding globally alongside pipelines for **iPS cells developed in Japan**. Europe and the US have been using culture media for ES cells, and this is also being used for iPS cells. We are focusing market cultivation in **North America, a major market**.



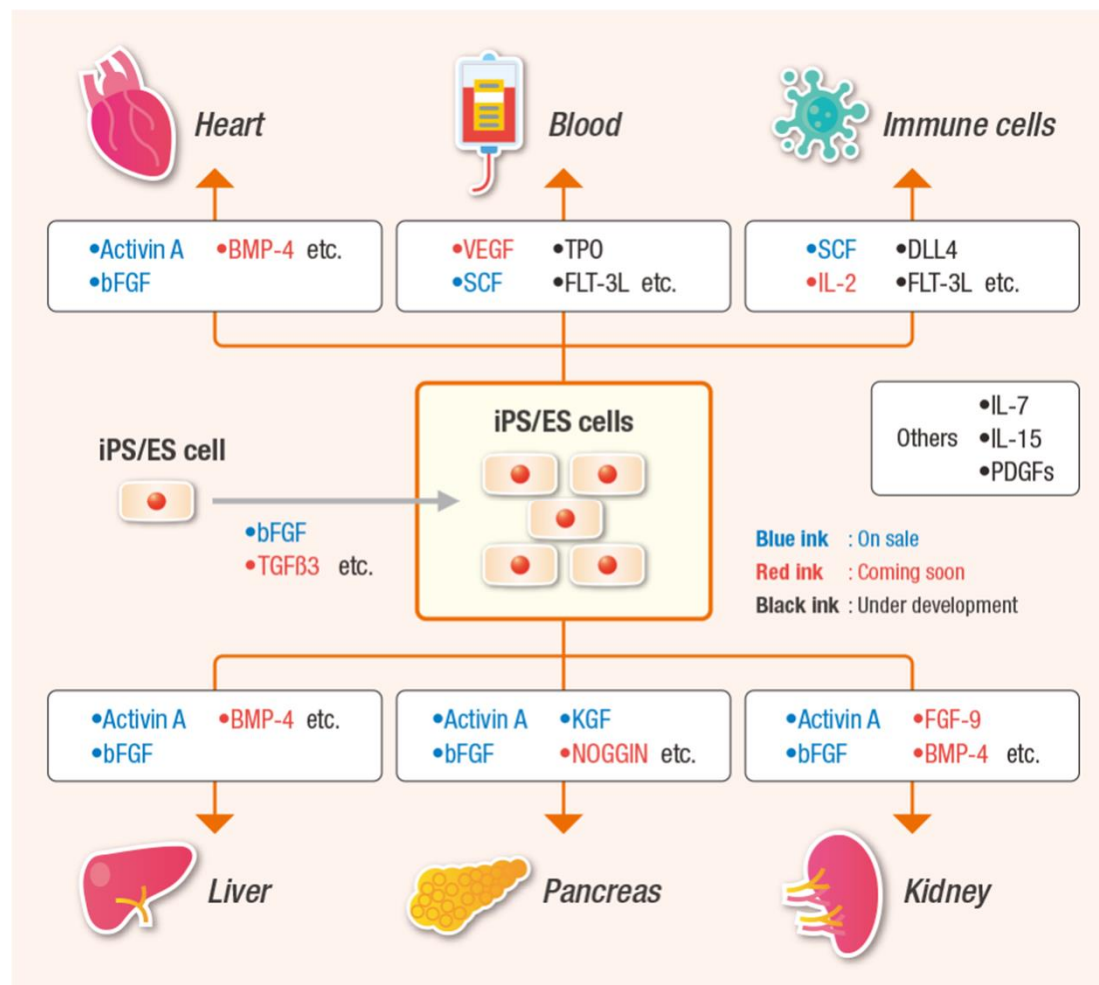


# Delivering the growth factor *StemFit Purotein*<sup>®</sup>

We use fermentation technologies cultivated over many years to realize high-quality, low-cost production of the **growth factor\*** needed for iPS and ES cell differentiation.

**This is delivered together with culture media** in line with customers' needs.

\*A proteinaceous factor that gives cells a signal to prompt differentiation or propagation. They are manufactured using GM microorganisms.



## ■ GMP-compliant products

Product	Concentration (mg/ml)	Size
Activin A	0.1	1mg
bFGF	0.3	1mg

## ■ Non-GMP-compliant (clinical research grade) products

Product	Concentration (mg/ml)	Size
Activin A	0.1	10ug, 50ug, 1mg
SCF	0.1	10ug, 50ug, 1mg
KGF	0.1	10ug, 50ug, 1mg

## ■ Products due for market launch

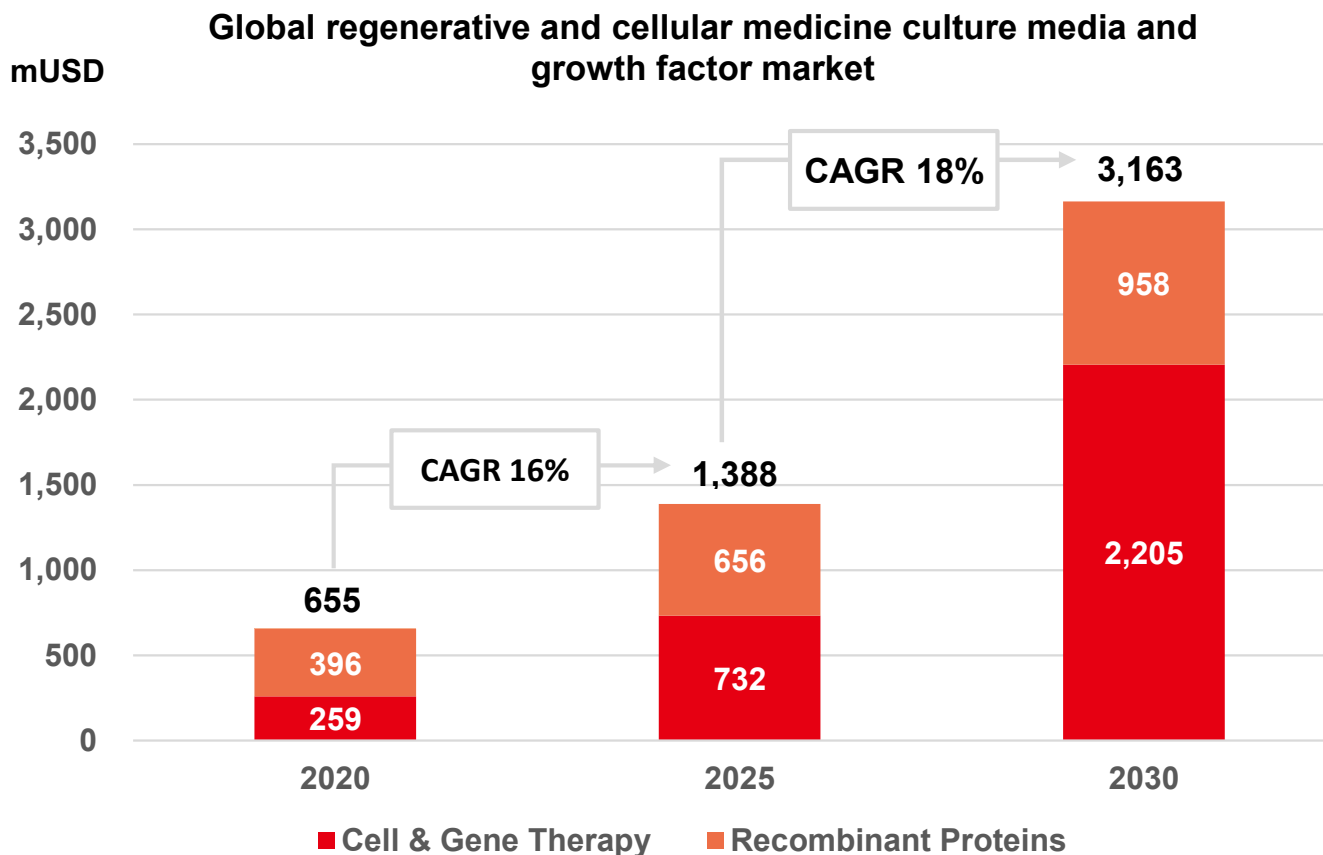
IL-2, BMP-4, VEGF, Noggin, PDGF-AA, IL-15, DLL4 etc.



# Future growth of the regenerative medicine culture media and growth factor market

**Growth of the market for regenerative medicine culture media is accelerating** as cellular treatments derived from iPS and ES cells are clinically trialed and launched to market.

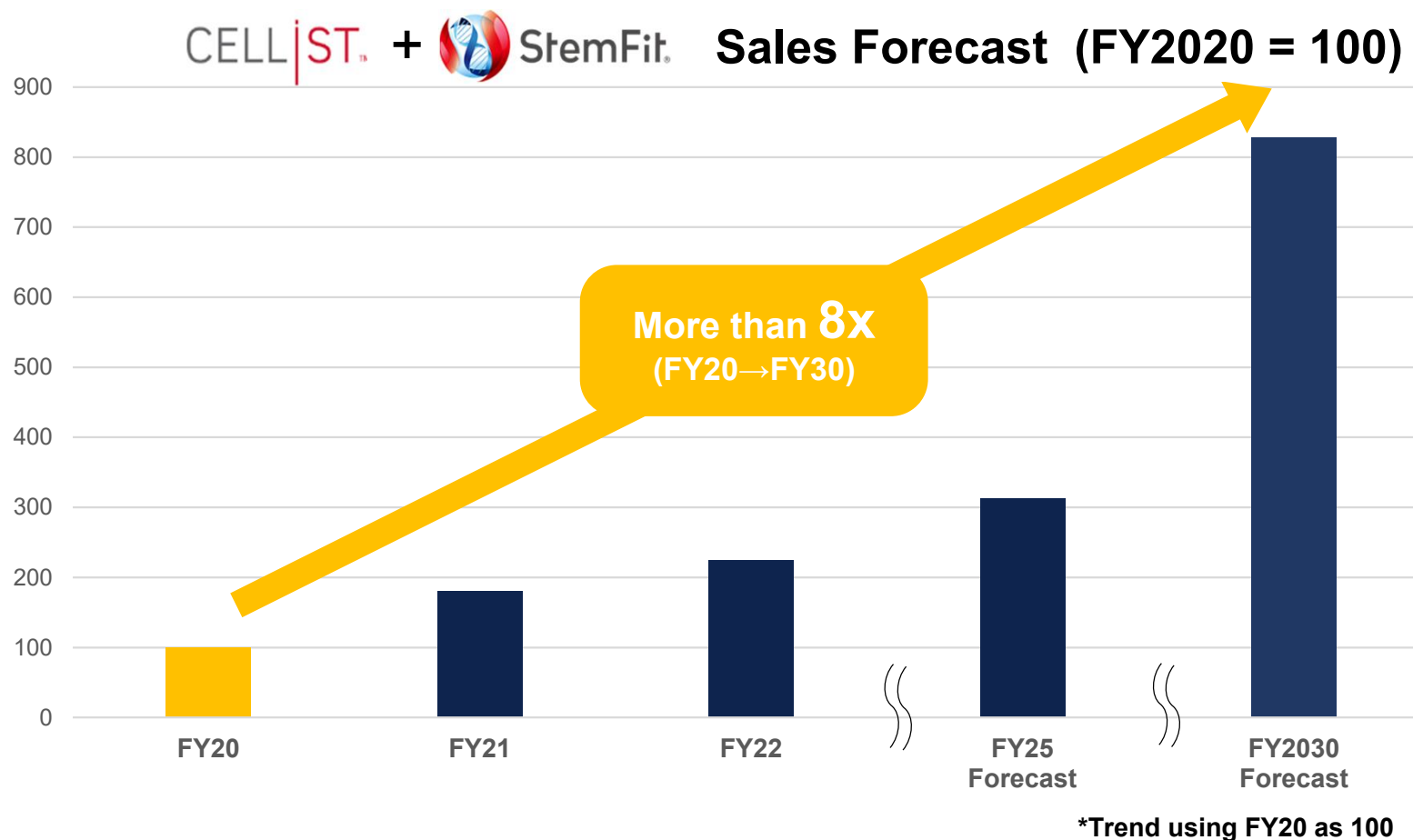
We will aim to steadily expand our business by providing prospective customers with **development pipeline solutions**.



Source: Research by Aranca

# Expansion of our culture media business

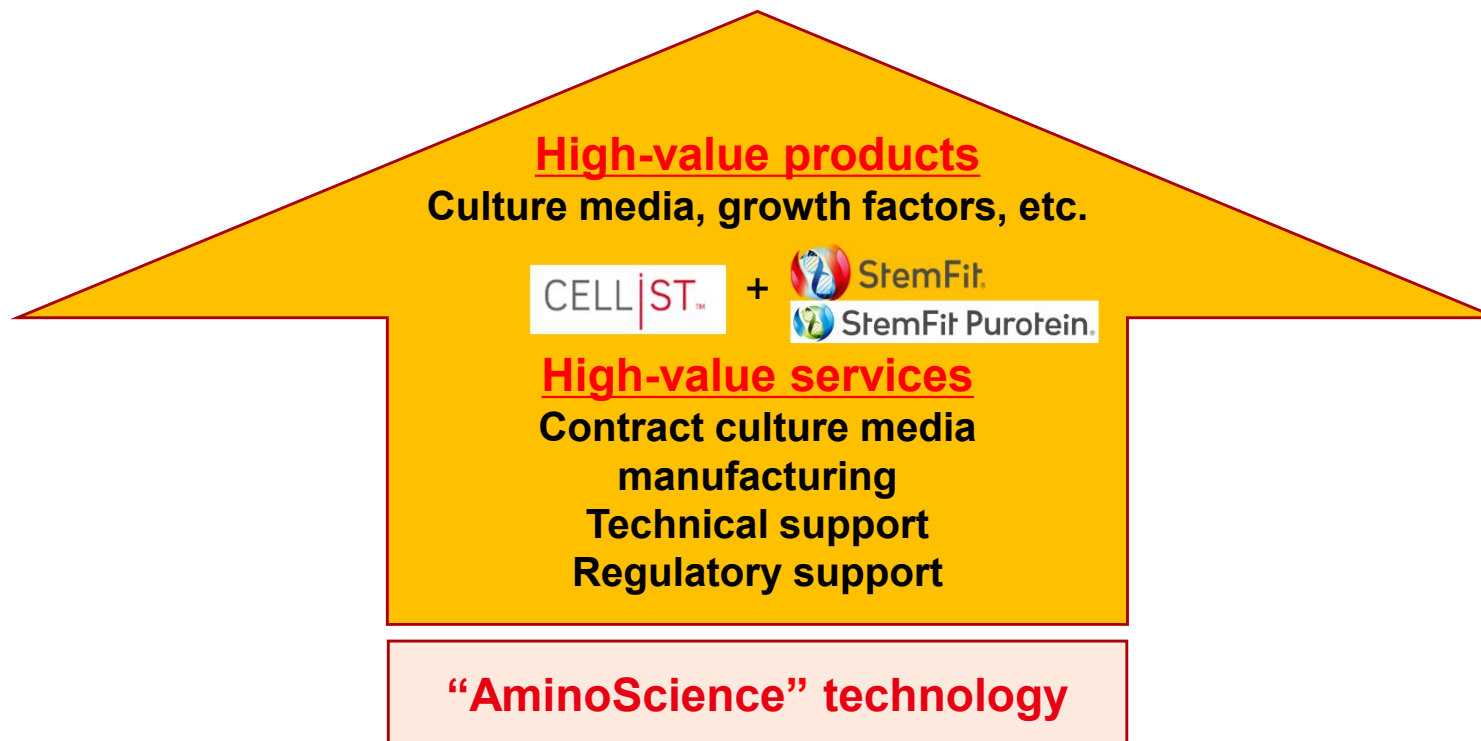
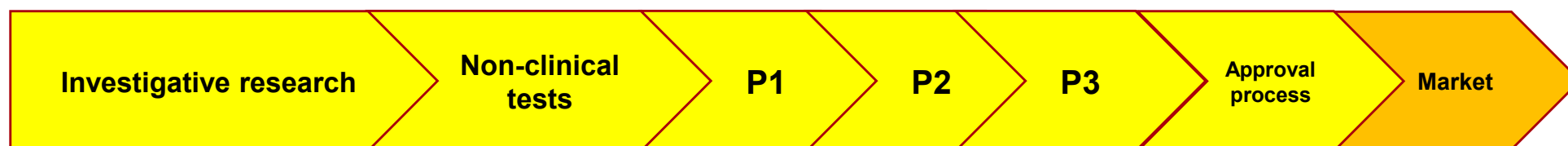
Grow sales of *CELLiST*<sup>™</sup>, the biopharmaceutical culture medium, and *StemFit*<sup>®</sup>, the regenerative medicine culture medium, by **more than 8x** from FY20 to FY30



# Summary of Culture media business

We leverage our **“AminoScience” technology** to provide **products and services** that facilitate **antibody drug and regenerative medicine** research, development, and production by our customers.

Pharmaceutical company product development flow (approx. 10 years)



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- **Forward-looking statements, such as business performance forecasts, made in these materials are based on management's estimates, assumptions and projections at the time of publication. A number of factors could cause actual results to differ materially from expectations.**
- **This material includes summary figures that have not been audited so the numbers may change.**
- **Amounts presented in these materials are rounded down.**
- **“AminoScience” is a trademark of Ajinomoto Co., Inc. registered in Japan.**