

SCAPOVA™ microscopic cellular solidifying PVA microcarrier

Expanding into the Cell Culture Solution Business

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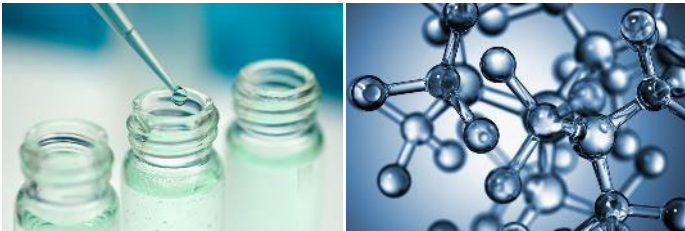
kuraray



- A paradigm shift is beginning to take place in the medical and food sectors.
- Cell-based manufacturing is a new industry.

The era of mass culture of cells

Conversion from small molecule pharmaceuticals



Biopharmaceutical

-Antibody drugs and vaccines

**Proteins made by Cells
used as Drugs.**



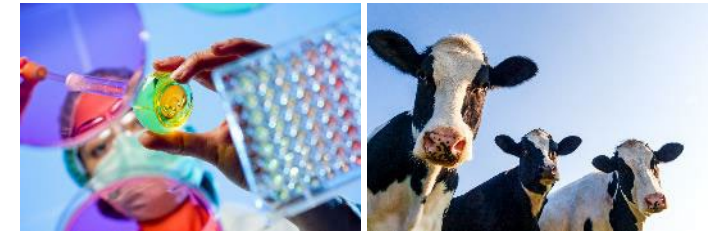
Regenerative medicine

-Cell and gene therapy

Cells as Medicine

Red Biotechnology

Transformation of food supply sources



Cellular agriculture

-Cellular foods and cultured meat

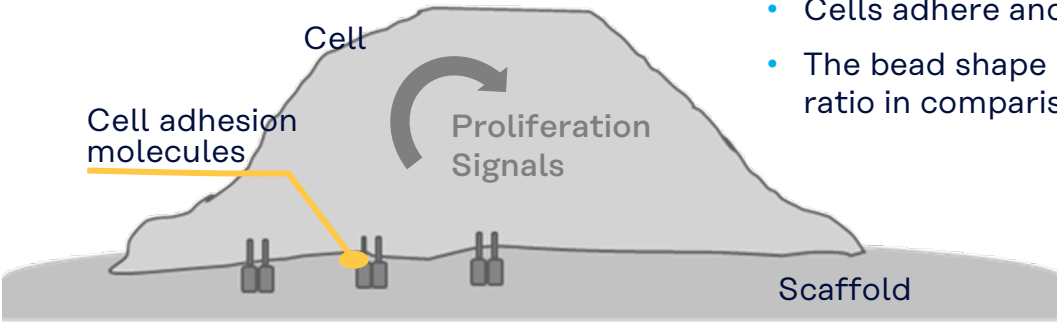
Cells as Food

Green Biotechnology

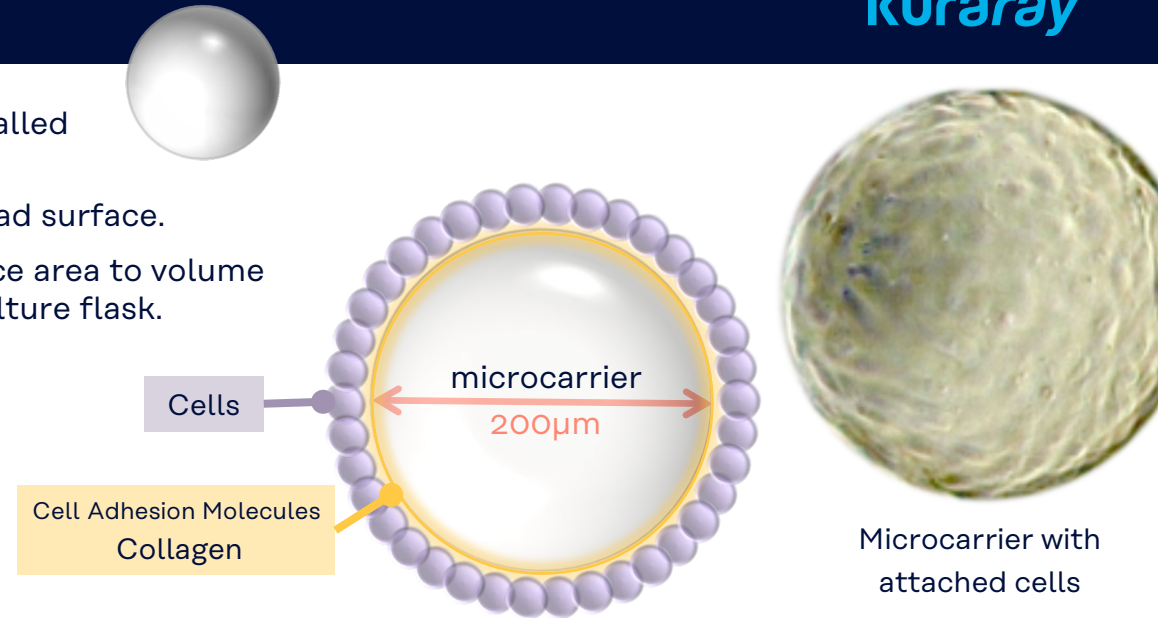
High growth is expected in the cell mass culture market

What is a microcarrier?

- The bead-like scaffolding material is called microcarriers.
- Cells adhere and proliferate on the bead surface.
- The bead shape provides a large surface area to volume ratio in comparison to conventional culture flask.



Most cells, except blood cells,
Cannot proliferate without scaffolding material to adhere to.



Three-dimensional culture using microcarriers can significantly reduce installation space and culture costs



Culture tanks

In three-dimensional culture, a culture tank and a 1 kg microcarrier can culture therapeutic cells for 100 patients.

- Space-saving
- Significant reduction in incubation time (Semi-automated)

In conventional planar culture, Hundreds of culture vessels and incubators to house them are required

- Requires a large culture space
- Difficult to automate, requires a lot of manual labor

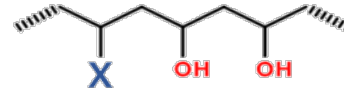


Container (flask or petri dish)



Crosslinkable PVA solution

Because a portion of PVA is chemically modified and designed to be cross-linkable by light or heat, hydrogels of various shapes can be produced and can be used in a wide variety of applications.



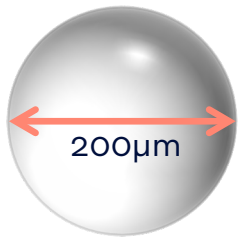
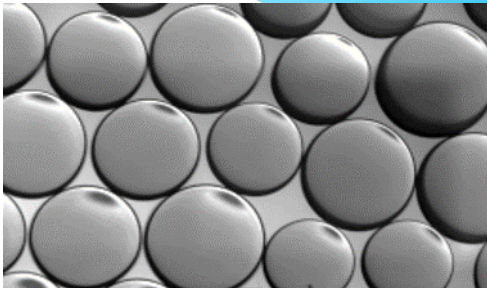
Medical Grade Collagen



Biocomposite

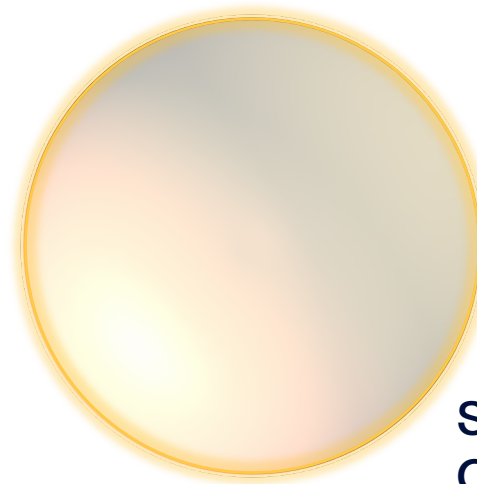
Immobilized collagen provide cell adhesion function

Bead formation



PVA Hydrogel Beads

Moisture content 80-90 wt%.
Tissue-like elastic modulus



SCAPOVA™ PVA microcarrier Collagen-coated type (Image Diagram)

- World's first microcarrier for regenerative medicine
- Scaffolding made of Kuraray's renowned Polyvinyl alcohol material

Brand name

SCAPOVA™

scaffold

[n.] scaffold,

Scaffold material necessary for cell adhesion and proliferation

poval

[n.] Polyvinyl alcohol (PVA)

Beginning of 2025

- Collagen coated type scheduled to be released overseas
- **New type*** to be released simultaneously in Japan and overseas

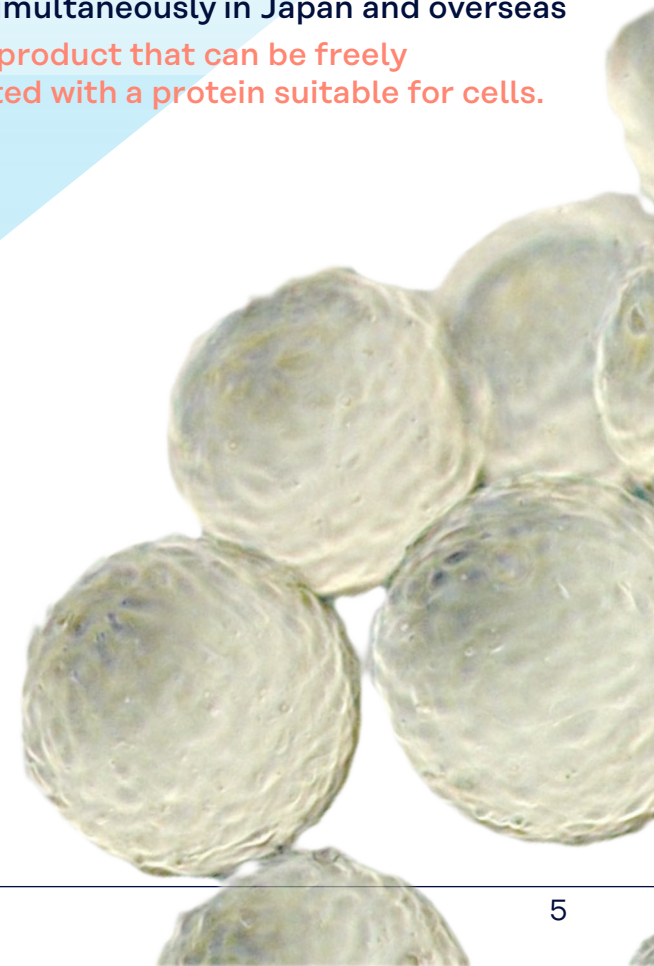
**Animal-free product that can be freely surface-coated with a protein suitable for cells.*

September 2024

- Newly established Tokyo Lab
- Brand name announcement

March 2024

Collagen coated type
Started sales in Japan



1

Cultivation efficiency

- Swells approximately 10 times and increases surface area
- Easy to scale up
- Easy to detach and easy to collect cells

2

Safety

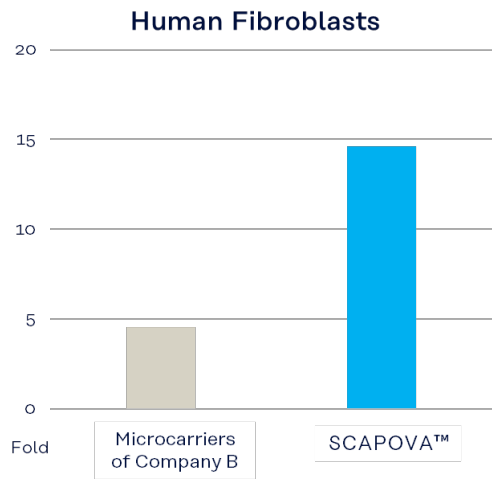
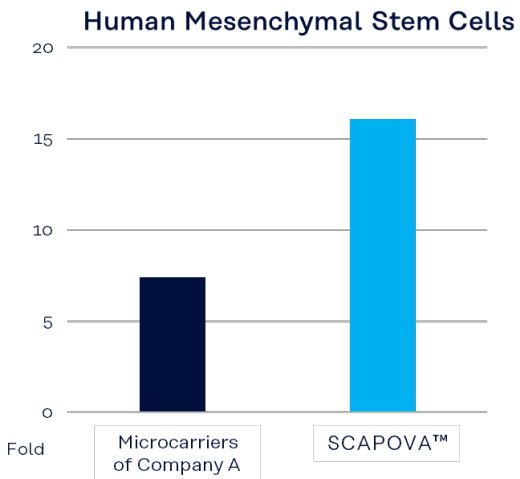
- Extremely low rate of microfractures
- Quality control equivalent to GMP

3

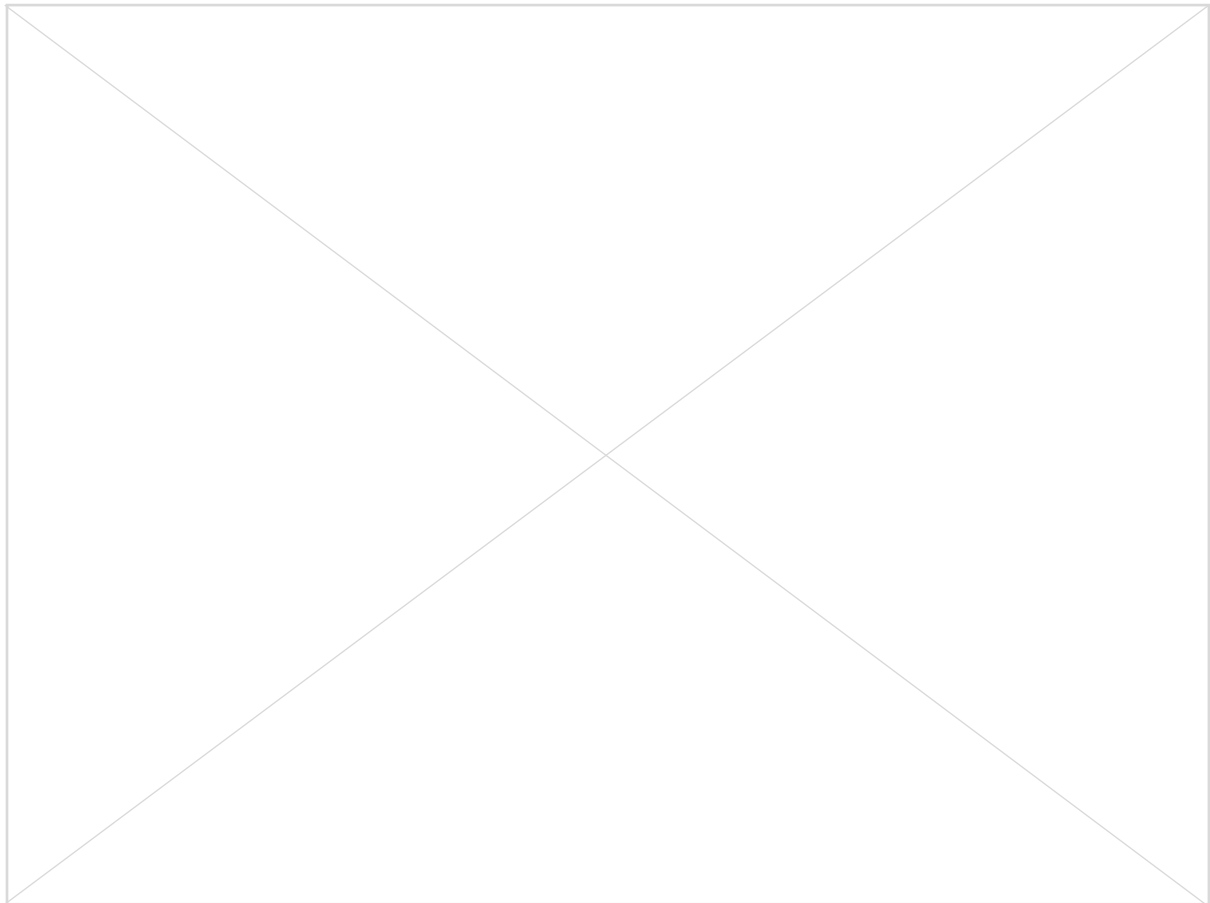
Handling

- Ready to Use
No washing required before use
- Cellular observation is possible

1 Cultivation efficiency



[Video.] Cells spontaneously migrate to, adhere to, and proliferate on SCAPOVA™



- Easy to scale up



Successfully expanded culture up to 100L scale.

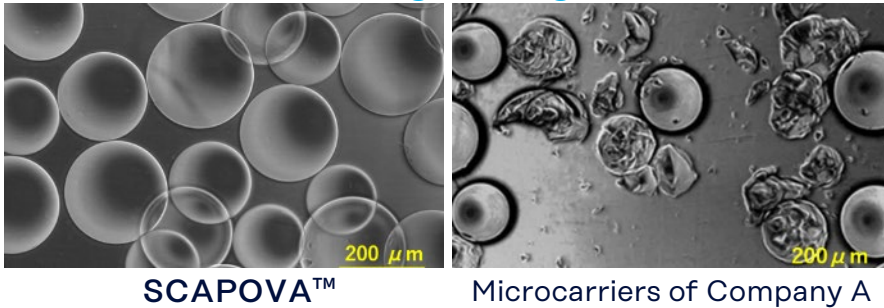
Data provided by FUJIMORI KOGYO CO., LTD.



2 Safety

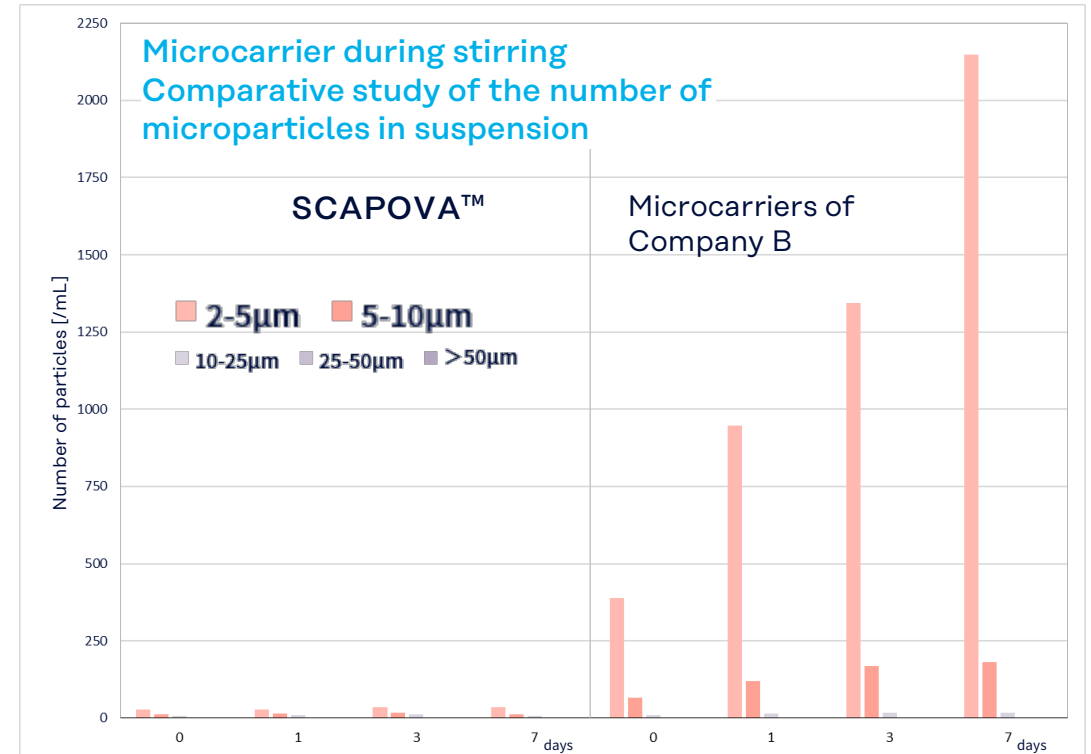
- Extremely low generation rate of microcarrier-derived debris less than 10 μm
- Quality control equivalent to GMP

Severe test with strong stirring



SCAPOVA™

Microcarriers of Company A



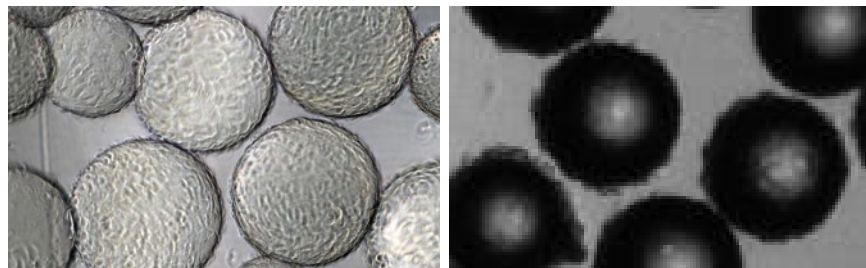
3 Handling

Ready to Use

No washing required, just soak in culture medium for a few minutes and use immediately.

- Carriers from other companies require microcarrier-derived debris must be washed out before use.

High transparency allows observation during incubation



Left SCAPOVA™
Right Microcarriers of Company B

- Enhancing bioassay capabilities
- Enhancing customer solutions - culture method optimization, culture method demonstration, peripheral technology development
- Developing new products through open innovation with top academia and regenerative medicine-related companies.

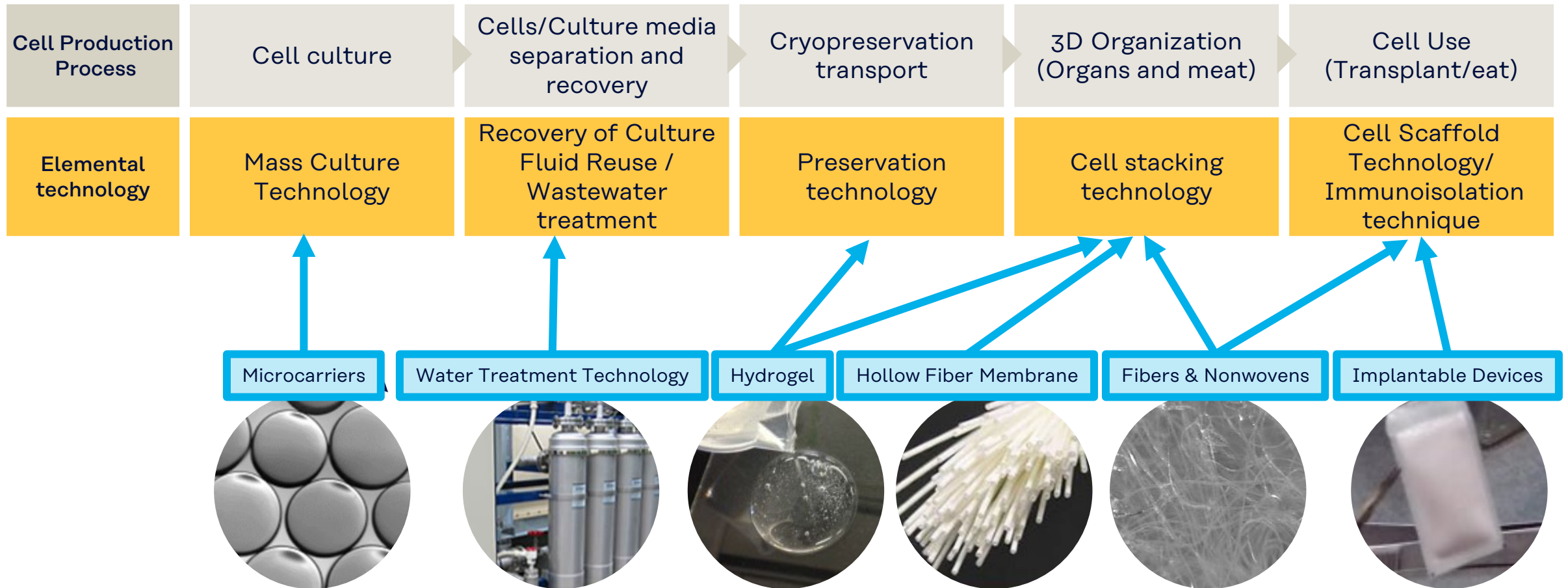


September 4, 2024

"Tokyo Lab" opened in TWIns Center for
Advanced Biomedical Science Research and Education

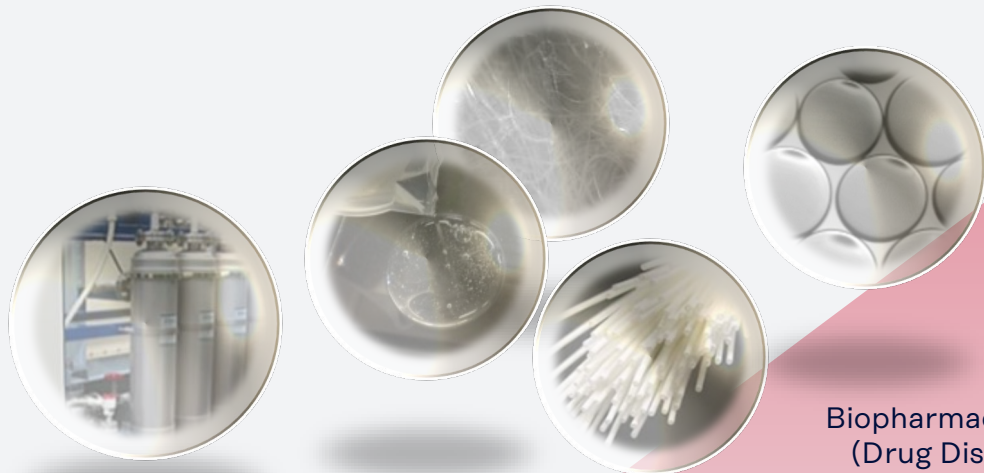
TWIns: Tokyo Women's Medical University-Waseda University Joint Institution for Advanced Biomedical Sciences established with the aim of integrating medicine, science and engineering.

Promote product development and peripheral businesses in cell culture-related processes





Creating a future where Kuraray's functional products flourish in various places that interface with living things.



Health Care/QOL



Food Crisis
Global Warming



GHG Reduction
Carbon Neutral

Red Biotechnology

Biopharmaceuticals and Regenerative Medicine
(Drug Discovery, Medical Devices, Aesthetics)

Green Biotechnology

Cellular agriculture
(Cellular Foods)

White Biotechnology

Bio-industry
(Oil Fuel & Fiber)

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