

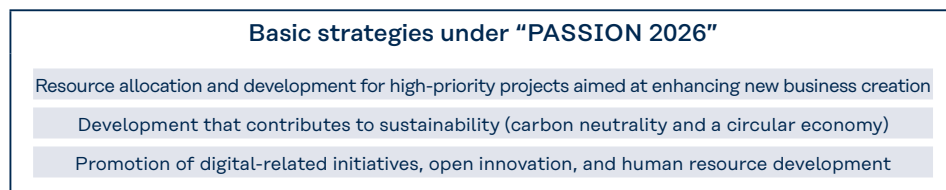
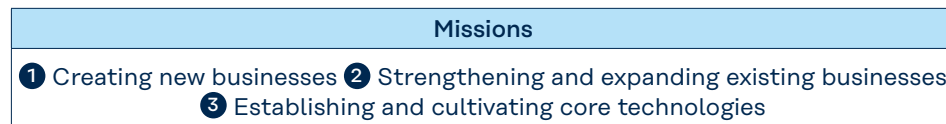
# Innovations Starting from Networking

Coming together as “One Kuraray,” we continue to embrace the challenge of creating innovation by connecting people with one another and technologies with one another, both within and outside the Company.

## Basic Strategy for R&D

The Research and Development Division promotes projects that contribute to Group-wide business expansion and profit growth by “creating new business,” “strengthening and expanding existing businesses,” and through these initiatives, “establishing and cultivating core technologies” including structural analysis technologies and digital technologies.

Under “PASSION 2026,” the basic strategies of the Research and Development Division include “resource allocation and development for high-priority projects aimed at enhancing new business creation,” “development that contributes to sustainability (carbon neutrality and a circular economy),” and “promotion of digital-related measures, open innovation, and human resource development,” as foundations for these activities. To facilitate the creation of new businesses, the Research and Development Division has teamed up with the Innovation Networking Center (▶ P. 43) and the IP Management Center (▶ P. 59) to advance global marketing for high-priority projects, accelerate development through collaboration, and generate new business ideas. In addition, we concentrate R&D resources on themes at advanced stages of development and on themes where we can demonstrate our strengths across the value chain, starting from raw materials, with the aim of achieving early commercialization. Our digital initiatives, which support development projects, are expanding the utilization of technology to include materials informatics, advanced simulation technology, proprietary AI development, and robotics. Together with the promotion of open innovation, such initiatives are transforming the nature of our R&D activities (▶ P. 46). Through these initiatives, we aim to generate new materials based on unique technologies and create new businesses for the future.

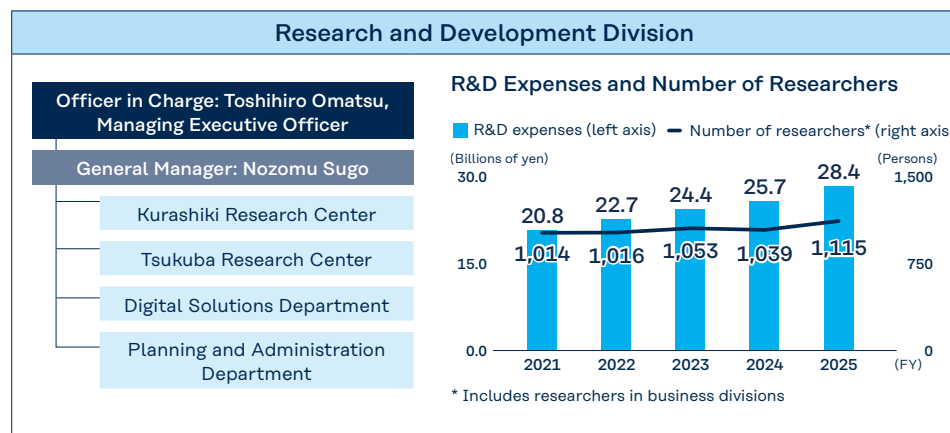


## R&D Framework

Aiming to become a Specialty Chemical Company achieving sustained growth, the Research and Development Division plays a core role in implementing R&D and new business development activities as a corporate organization. We have two facilities, the Kurashiki Research Center and the Tsukuba Research Center, to plan, propose, and promote R&D themes.

We also maintain the Tokyo Lab within the Tokyo Women’s Medical University-Waseda University Joint Institution for Advanced Biomedical Sciences (known as TWIns) to promote open innovation in the field of regenerative medicine and further collaboration between industry and academia.

In January 2026, we transferred responsibility for advancing the commercialization of two materials in the preparatory stage, namely SCAPOVA™ PVA microcarriers and a new functional carbon material, to the Functional Materials Company. Development for early commercialization will move forward within this Company’s newly established Life Innovation Development Division and Carbon Innovation Development Office.



Research and Development

# Innovations Starting from Networking

## Creating New Businesses

The Kuraray Group is pursuing new business opportunities in two fields with strong potential for growth where it can leverage its strengths. The Group views cell culture solutions in the regenerative medicine field and next-generation functional materials for the environment and energy field as key areas for future growth.

### SCAPOVA™, the World's First PVA Microcarrier

In the field of cell culture, and especially in regenerative medicine, establishing technology for large-scale cell cultivation is key to industrialization. The Research and Development Division has developed SCAPOVA™, the world's first PVA microcarrier for regenerative medicine, which is distinguished by its high cell culture efficiency and low risk of contamination.

Since we began selling SCAPOVA™ CL\*<sup>1</sup> in Japan in March 2024 for research and development purposes, we have received numerous inquiries from customers. In December 2025, we launched SCAPOVA™ AS\*<sup>2</sup>, a new product that contains no animal-derived materials and can be used with a broader range of cell types, including iPS cells. We have begun selling SCAPOVA™ AS alongside SCAPOVA™ CL in both Japan and the United States.

Furthermore, to more robustly promote the industrialization and implementation of large-scale cell culture technology using SCAPOVA™, a joint development project was launched in October 2025 by four companies: Cyfuse Biomedical K.K., ZACROS Corporation, Chiyoda Corporation, and Kuraray.

In this project, the technologies of each company are integrated to create a digital twin of the 3D cell culture. Through this approach, we aim to optimize the conditions and simulate the processes for cell culture, thereby achieving on an industrial level a more efficient scaling up of production and cost reduction. This will accelerate the establishment of a stable cell supply framework and the development and practical application of next-generation regenerative medicine products.

In terms of the internal framework, to further strengthen commercialization efforts, we transferred the commercial development of SCAPOVA™ from the Research and Development Division to the Functional Materials Company in January 2026. Going forward, we will expand our product lineup and pursue expansion into Europe and other regions.

\*1 A standard type with clinically usable collagen coating the particle surface

\*2 An animal-free type with a specially processed particle surface which does not use collagen

## New Functional Carbon Materials Derived from Biomass

In the environment and energy sector, there is growing expectation for new materials that contribute to carbon neutrality and a circular economy. With an eye toward reducing greenhouse gas (GHG) emissions and responding to environmental regulations, the Research and Development Division is working to develop new functional carbon materials using biomass-derived raw materials.

In addition to its inherent conductivity, this new functional carbon material possesses unique substance adsorption and diffusion properties derived from its distinctive pore structure. It is expected to find use in a wide range of applications, including cathode additives for lithium-ion batteries (LIBs), functional carriers, and purification materials. We are currently supplying customers with samples for use as LIB cathode additives. Customer evaluations have confirmed improved performance compared to conventional products, as enhanced ion diffusion within the battery allows shorter charging times and improved charge-discharge performance in cold climates. Going forward, we plan to begin operations of bench-scale facilities in 2027 to expand our sample supply capabilities.

This functional carbon material was developed through collaboration between the Research and Development Division and the Innovation Networking Center. In January 2026, responsibility for its commercialization was transferred to the Carbon Innovation Development Office, newly established within the Functional Materials Company. We will accelerate commercialization by leveraging our expertise in carbon materials and pore design, along with our global customer base.



SCAPOVA™ PVA microcarrier

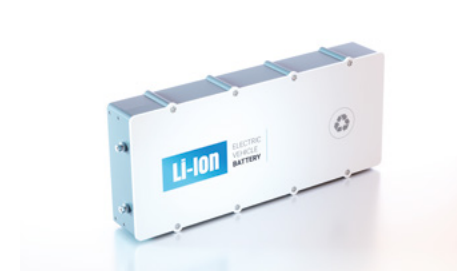


Illustration of a lithium-ion battery (LIB) as a potential application of the new functional carbon material

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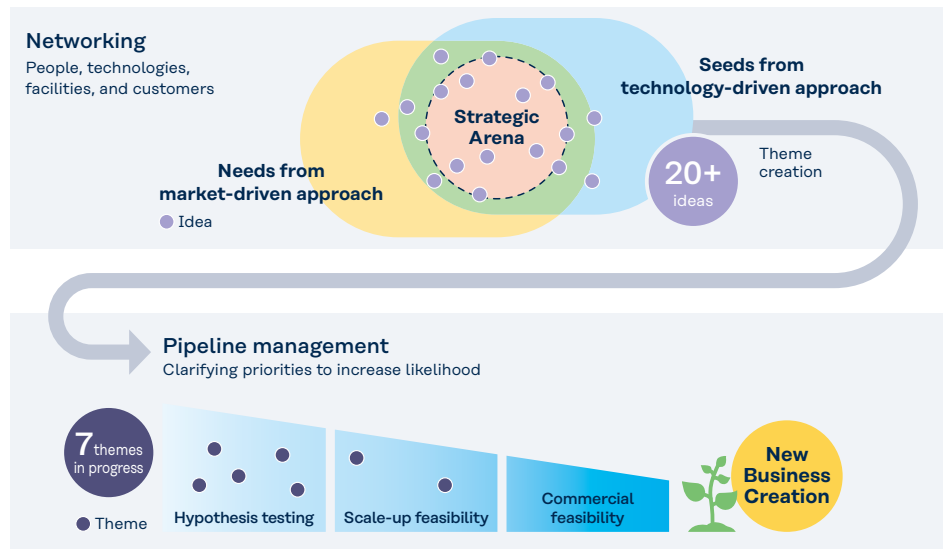
## Strategy of the Innovation Networking Center

The Innovation Networking Center (INC) drives the creation of new businesses by connecting its global talent and technologies with customer needs.

Centered on our Strategic Arena, the INC collaborates closely with the Research and Development Division to drive innovation through customer collaboration and open innovation. By accurately identifying customer needs and deepening partnerships, INC strengthens market-driven initiatives while integrating technology-driven efforts to improve the efficiency of new business creation. In 2025, INC further reinforced segment marketing by establishing a dedicated Electrical & Electronics team. In addition, it strengthened internal and external networking, particularly in the semiconductor sector.

Through these initiatives, we are currently managing seven themes in our pipeline (see below), including PFAS-free alternative materials, conductive carbon materials for secondary batteries, and bio-based feedstocks. In addition to these pipeline themes, more than 20 ideas have been generated at the pre-pipeline stage, for which we are actively developing commercialization scenarios.

## New Business Creation Process



## TOPICS

### Taking on the Challenge of Developing Technology to Reduce Environmental Impact through Acquisition of Nelumbo



Co-founders (from left): David Walther, Liam Berryman, Lance Brockway

Nelumbo is a startup founded in the United States in 2016, based on research conducted at the University of California, Berkeley. Since then, it has raised funds from domestic and international investors, including the University of Tokyo Edge Capital Partners (UTECP), and has advanced its technological development and business growth.

The Kuraray Group acquired Nelumbo in April 2025. Through this acquisition, we aim to create new business opportunities and secure medium- to long-term growth prospects by integrating our core strengths in organic chemistry with Nelumbo's expertise in inorganic chemistry.

A key feature of Nelumbo's surface treatment technology lies in its ability to form micro- and nano-scale structures using the proprietary formulation of inorganic materials, enabling both spray coating for mass-production scalability and lithography for high functionality. This unique approach makes it possible to apply surface treatments composed of an inorganic layer and a functional layer to a wide range of substrates, imparting advanced properties such as high water repellency and anti-frost performance at an exceptional level.

As an initial target application, we are focusing on transport refrigeration units for refrigerated and frozen logistics. By applying advanced surface treatment technologies, we expect to achieve reduced fuel consumption, improved cargo temperature stability, and lower CO<sub>2</sub> emissions—thereby contributing to sustainability in the logistics industry. With "anti-frost" as a key concept, we will further expand applications to heat exchanger components used in energy-intensive industrial refrigeration systems and large-scale air conditioning equipment. Through these efforts, we aim to address social challenges while achieving business growth.

## Nelumbo's Surface Treatment Technology

