

## R&D Strategy



### Expanding our superior technologies and materials world-wide through promotion of open innovation

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JSR Group has been conducting R&D by both cultivating its polymer and precision manufacturing technologies as its core technologies, and combining them with other fields of technology, including photochemistry, inorganic chemistry, precision manufacturing technology, and biotechnology, while expanding its technology domains. In addition, we also place emphasis on the understanding and pursuit of basic principles of science, including diving deep into analysis and evaluation technology.

#### JSR's Core Technologies

##### Data Analysis

- Material Informatics
- Bioinformatics

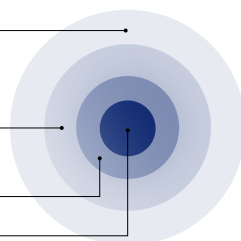
##### M&A

##### Open Innovation

##### Biochemistry

##### Precision Manufacturing Technology

##### Materials Science



The accumulated experience and efforts through these R&D activities have become the Group's unique strength; not to mention, the driving force behind our global development of superior technologies, materials, and services.

Our R&D efforts focus on fields that are currently being developed, as well as Business Support Research which involves new and applied research in peripheral areas, and Next Generation Technology Research, such as seed research where future growth is expected.

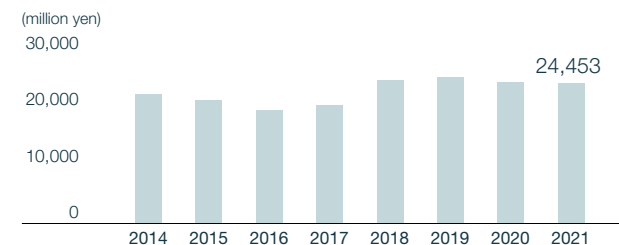
Among these, Business Support Research promotes streamlining of R&D activities with businesses by placing an emphasis on needs. Needs are identified via direct dialogue with researcher and customers, with value chain cooperation within the JSR Group in mind. In addition, this branch of research strives to enhance technical services in each country in which we operate while

developing a global and timely support structure for customers to promote their businesses.

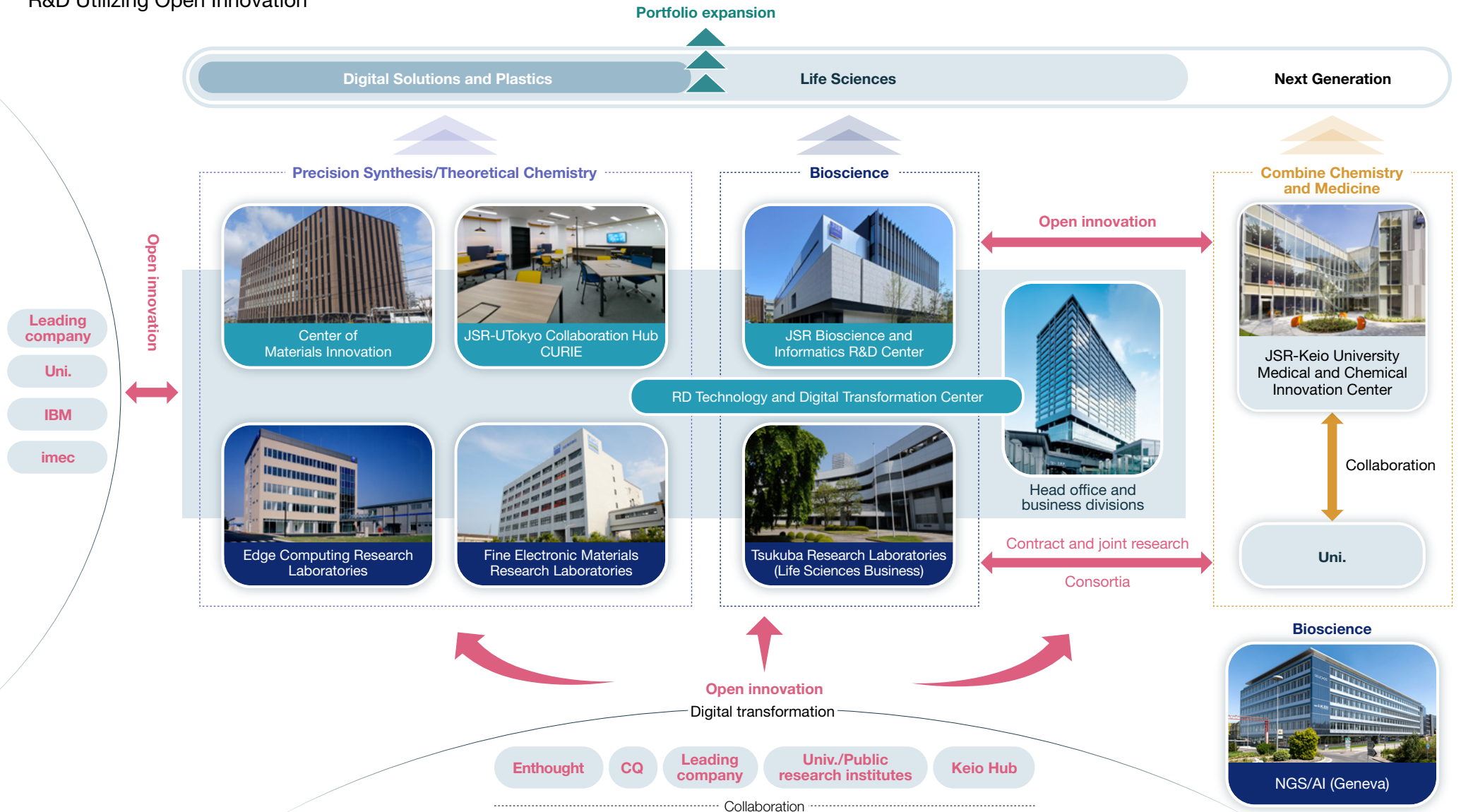
Regarding Next Generation Technology Research, we reorganized related R&D divisions in June 2020 into the RD Technology and Digital Transformation Center to accelerate the transformation of our research approach. In addition to in-house research, we are promoting open innovation such as joint research with universities and research institutes in Japan and abroad, bringing in outside knowledge and technologies to overcome problems and create groundbreaking innovation. We are exploring possibilities for developing businesses in new fields and commercializing leading-edge research in novel areas for us.

Furthermore, concurrent to the above research, materials informatics, and the practical application of data-driven R&D methods have been realized as another focus of the Group. The new data infrastructure for this requires digitalization and the construction of theoretical models, as well as new methods such as AI and quantum computing. JSR Group is moving forward with development from both angles. By promoting practical application of data infrastructure and new methods, we are confident that it will greatly improve the efficiency of R&D.

#### R&D Expenses



R&D Utilizing Open Innovation



Measures **Promoting an Innovative Culture**

**Provide new solutions to address social issues with R&D as the starting point**

**Two initiatives derived from R&D**

- Dramatically improve R&D capabilities through deep understanding of phenomena via analytical technology, data science, and simulation, in addition to conventional materials development
- Proactively adopt open innovations to break away from self-sufficiency

An innovative corporate culture is necessary to enable us to provide solutions to social issues, which involves embracing challenges through new knowledge from both in-house and external sources. One of the Five Foundations we have defined as the necessary actions to achieve the basis for the Group's sustainable growth and value creation is Innovative Culture, which promotes two initiatives derived from R&D.

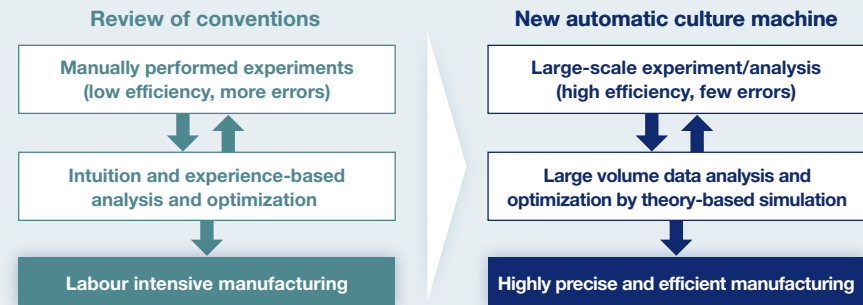
New mechanisms are introduced to conventional research facilities and organizations as a system to achieve these goals, while we move forward with projects to cultivate the capabilities of researchers and developers in multiple ways.

At the same time, we also encourage and conduct open innovation with universities and outside research institutions to avoid falling into the trap of self-fulfillment and cultivate a corporate climate that embraces challenges to resolve social issues.

As a result of these efforts, our R&D division has evolved into an innovative body that constantly embraces change. Going forward, we hope to instill this innovative culture among other divisions through provision of technologies, products, and services resulting from R&D.

Introduction of Activities **Searching for New Themes**

**Combining future-oriented innovative materials R&D with data science utilizing open innovation**



In order to develop future-oriented, innovated materials through our R&D activities that embody an innovative culture aimed at supporting existing businesses and creating new businesses, it is necessary to further access research based on open innovation and data science such as material informatics (MI), as well as theory-based simulation. As an example of research using open innovation and advanced simulation, we are developing antibodies using an automatic culture machine and simulation at JSR-UTokyo Collaboration Hub CURIE, which is an inclusive collaboration hub with the Faculty of Physics,



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Faculty of Science Bldg.1 that houses  
JSR-UTokyo Collaboration Hub  
CURIE

School of Science, at the University of Tokyo. The purpose of this research is to improve the yield of antibodies and increase product development speed using the machine developed by Professor Furusawa at the University of Tokyo for culture automation and simulation, combined with mathematical analysis through highly efficient and accurate experiments.