

Material Issue 10

Open Innovation

Management of Priority Issues

Reason for being a priority issue	We have been able to link the seeds of original drug discovery found through collaborative research with academia and other organizations to the creation of groundbreaking new drugs. The ability to realize open innovation is one of our core strengths and is the lifeline to continually create innovative new drugs in the future.
Vision over the medium to long term	Based on the original seeds discovered through collaborative research with world-class researchers, the company is continually creating new drug candidate compounds through drug discovery alliances with biopharmaceutical companies
Indicators	<ul style="list-style-type: none"> The number of research collaborations
Major initiatives	<ul style="list-style-type: none"> Promote collaborative research with world-class researchers, and drug discovery alliances and joint research with biopharmaceutical companies focusing on priority research areas Network with world-class researchers through the research grant activities of the Ono Pharma Foundation in the U.S. Strengthen competitiveness in drug discovery and R&D activities through strategic investments by Ono Venture Investment

The Characteristics of ONO's Open Innovation

Even before the widespread use of the term "open innovation", ONO was already involved in the discovery of new drug seeds through partnerships with universities and other research institutions, and had been using these seeds as a starting point to create innovative new drugs. The Discovery Research Alliance Department and the Business Development Department cooperating with Research Centers and Development Divisions are presently taking the lead in collaborating on research with world-class researchers and forming drug discovery alliances with biopharmaceutical companies with a focus on our priority research areas, and are actively in-licensing various drug candidates. We are working on these collaborative activities with a sense of urgency in order to obtain cutting-edge research data before our competitors and leverage this data in expedited drug discovery. We have sent Japanese researchers

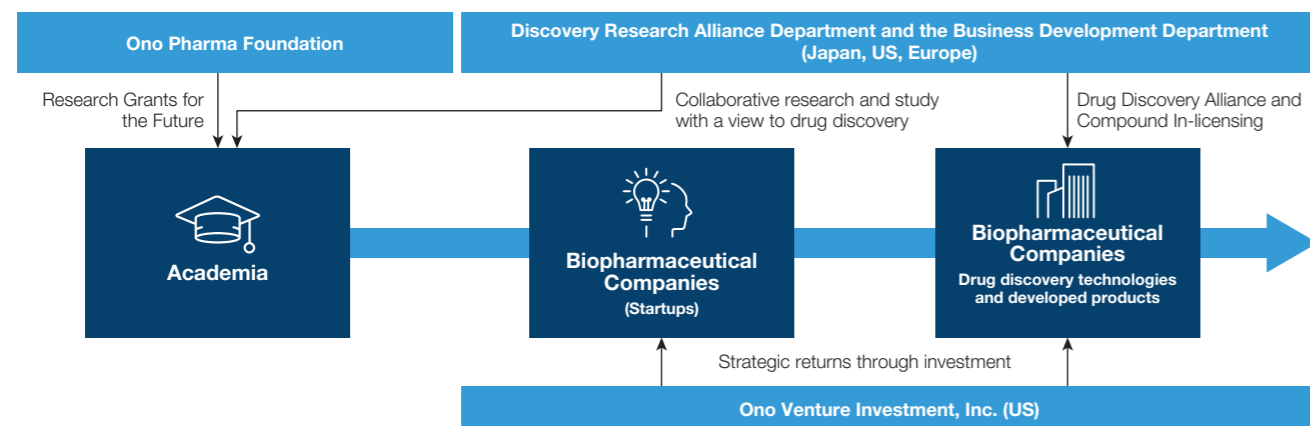
with practical experience in drug discovery to our locally incorporated subsidiaries in the US and UK, and they are visiting world-leading researchers and biopharmaceutical companies in Europe and the US to launch more new partnerships. Currently, more than 200 research collaborations and drug discovery alliances are in progress globally.

Collaborative research and drug discovery alliances from FY2021

- Research Alliance Agreement with Healx of the U.K. (August 2021)

The goal is to create innovative therapeutics to meet unmet medical needs by utilizing the company's proprietary artificial intelligence technology.

Open innovation that supports drug discovery into the future



Drug Discovery Alliance Agreement with MiraBiologics Inc. (August 2021)

The goal is to create next-generation biologics utilizing the company's proprietary LassoGraft Technology®, a new technology that combines the company's proprietary cyclic peptide discovery method with protein engineering.

Continuation of Drug Discovery Collaboration Agreement with Vanderbilt University (December 2021)

Based on the drug discovery collaboration agreement signed with Vanderbilt University in November 2015, we are working to discover compounds to validate the hypothesis that unexplored ion channels or transporters are potential drug targets, and based on the results of this validation, create new drug candidates for the treatment of novel central nervous system diseases.

Drug Discovery Collaboration Agreement with Neurimmune of Switzerland (January 2022)

The purpose of this new collaboration is to discover antibody drugs for drug targets in the neurodegenerative disease area by utilizing Neurimmune's proprietary antibody discovery approach, Reverse Translational Medicine™ (RTM™) technology. In November 2017, we entered into a drug discovery collaboration agreement with the company in this area and are working to create human monoclonal antibodies for targets different from those in this new agreement by utilizing RTM technology.

Drug Discovery Collaboration Agreement with Iktos of France (March 2022)

The objective is to create innovative small molecule compounds for drug targets presented by ONO by utilizing the company's proprietary artificial intelligence (AI) drug discovery technology that designs new chemical structures.

Development and License Agreement with Numab, Switzerland (March 2022)

As a result of the agreement signed in 2017 for the creation of multi-specific antibodies in the field of cancer immunology, we were able to obtain the desired antibodies, and we exercised our option rights and entered into a new development and license agreement with Numab.

Discovery Collaboration Agreement with Domain S.A. of France and Montréal University of Canada (April 2022)

The objective is to apply the proprietary GPCR drug discovery platform and expertise in medicinal chemistry and pharmacology for GPCR drug discovery of Domain and Montreal University to create novel small molecule compounds targeting our selected GPCRs in the area of metabolic diseases.

Ono Pharma Foundation



Ono Pharma Foundation in the U.S. was established in 2017. The Foundation funds academic research that will generate breakthroughs in the life sciences and promotes the creation of a community of researchers. In the four years since the foundation was established, it has supported 20 research projects and provided a forum for researchers to interact. Currently, it is focusing on the area of "chemical biology," which is of global interest as an area that integrates chemistry and life sciences and is expected to lead to the creation of innovative new drugs. In fiscal year 2021, three research projects that pave the way for new approaches to drug discovery were selected for funding.

Ono Venture Investment, Inc.



In FY2020, we launched a U.S. subsidiary, Ono Venture Investment, Inc. We expect to further enhance our competitiveness in drug discovery and R&D via strategic investments in research on drug targets and advanced technologies that lead to breakthrough new drugs. In fiscal 2021, we expect to invest in the following companies: Curreo, Inc., which is developing a drug discovery business based on structural analysis using cryo-electron microscopy; Immunitas Therapeutics, a U.S. company developing novel immuno-oncology therapeutics using antibody drugs, and Arbor Biotechnologies, a U.S. company developing therapeutic drugs using novel gene editing technology.

Our Partners inside and outside Japan

