

Material Issue 1

Creation of Innovative Drugs

Management of Priority Issues

Reason for being a priority issue	The creation of innovative drugs is the practice of our corporate philosophy, "Dedicated to the Fight against Disease and Pain," and is the core value we provide to society. To sustainably create this value, drug discovery research using the latest scientific knowledge and cutting-edge technologies is crucial, and strengthening our competitiveness in drug discovery research will lead to our growth.
Vision over the medium to long term	Cooperate with top scientists and accelerate the creation of new drugs that can change the world.
Indicators	<ul style="list-style-type: none"> The number of new products going to clinical trials
Major initiatives	<ul style="list-style-type: none"> Explore unique breakthrough drug seeds and creation of new drug candidate compounds through open innovation Improve the speed of creation of new drug candidate compounds by selecting optimal modalities, utilizing artificial intelligence (AI), etc. Promote drug discovery research based on human disease biology using the latest technologies, such as AI and informatics, as well as patient-derived samples Promote translational research by searching for biomarkers based on the mechanism of action

Our Mission in Research and Development

ONO's R&D mission is "contribute to society by developing pharmaceutical products that bring true benefit to patients". We are striving to create original and groundbreaking drugs by taking on the challenges of diseases that have not yet been conquered and areas of high medical need where patient satisfaction with treatment is still low.

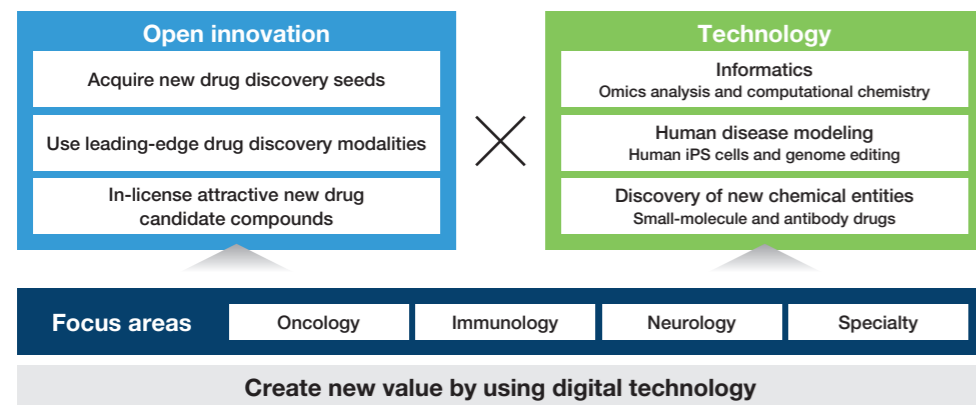
discovery seeds and create breakthrough new drugs with medical impact by utilizing a variety of cutting-edge internal and external technologies, such as informatics, human disease modeling, and the discovery of new drug candidate compounds. In addition, we are working to improve the quality and speed of drug discovery research through the use of digital technology.

As of June 2022, a total of 8 new drug candidates in our priority therapeutic areas have proceeded to the clinical stage, and we are also continuing to bolster our efforts in translational research bridging the gap between basic and clinical research to accelerate drug discovery timelines and boost success rates. By organically leveraging informatics and research tools, such as human genome data and human iPS cells in the early stages of research, we are working to analyze the relationship between target molecules and diseases to find biomarkers that can more accurately predict and evaluate the efficacy of new drug candidate compounds in humans.

Drug Discovery Strategy

ONO focuses on the areas of oncology, immunology, neurology and specialties; all of which include diseases with high medical needs. In each of these areas, we are working to strengthen our drug discovery capabilities by delving into the biology of human disease with the aim of discovering new drugs that can satisfy medical needs. In particular, by actively promoting open innovation, which is one of our strengths, we aim to discover original drug

Drug Discovery Strategy



Create unique and innovative new drugs

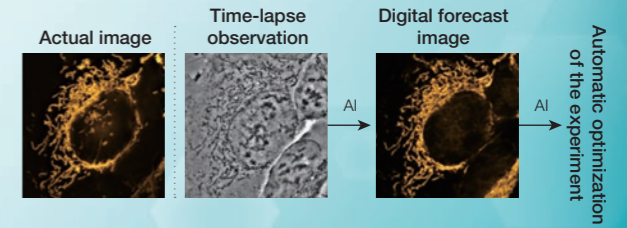
TOPICS A human-type robot for general-purpose experiments "Maholo" and digital technology

ONO has been pursuing applications for human iPS cells as a means of predicting the efficacy of drug compounds in humans. However, the handling of iPS cells requires excellent techniques and huge amounts of time to study the experimental conditions. To address these challenges, ONO is using a human-type robot for general-purpose experiments called "Maholo" at the Minase Research Institute. Maholo is not only capable of automating experiment-based tasks, but can also quantify the skills and tacit knowledge of skilled research scientists and then systematize them into "technology."



Human-type robot for general-purpose experiments "Maholo"

Currently, we are evolving Maholo to be a next-generation technology platform that contributes to highly original drug discovery research, with an eye toward biodigital transformation, such as the creation of a digital prediction system for cellular changes over time and autonomous automatic experiment optimization.



The Drug Discovery System and Major Initiative(s) in Each of the Four Priority Areas

Priority Area	Organization	Major Initiative(s)	Major New Drug Candidates under Development	Target Diseases
Oncology	Research Center of Oncology	As a pioneer in cancer immunotherapy, the Center works toward discovering innovative drugs for cancer patients with the experience, expertise, and know-how we nurtured through R&D of the immune checkpoint inhibitor OPDIVO. The Center is pursuing original and unique drug seeds and new drug modalities not only through open innovation with academia and bio-pharmaceutical companies around the world with cutting edge technologies, but also through promoting translational research.	ONO-4578	Colorectal cancer, Pancreatic cancer, Non-small-cell lung cancer, Solid tumor, Gastric cancer
			ONO-7475	Acute leukemia, Solid tumor, EGFR-mutated non-small cell lung cancer
			ONO-7914	Solid tumor
Immunology	Research Center of Immunology	Based on many years of its experiences in immunology research, which contributed to creating OPDIVO, the Center is working toward drug discovery in both fields of cancer immunotherapy and autoimmune & allergy therapy by having a research structure with main focus on biopharmaceutical development in immunology. The Center is operated in accordance with the policy of advancing unique research with strong awareness of serendipity and the insight not to miss it.	ONO-4685	Autoimmune disease T cell Lymphoma
Neurology	Research Center of Neurology	The Center focuses on not only neurons as major components of the nervous system, but also glial cells, which maintain and support the environment necessary for the survival and function of neurons. Through its intensive analysis of patient-derived tissues and iPS cells, the Center is dedicated to discovering innovative drugs to provide disease-modifying therapies, as well as symptomatic treatments, to patients with neurodegenerative diseases, which are becoming serious problems in the aging society, and those with mental disorders or chronic pain, which are quite detrimental to society.	ONO-2808	Neurodegenerative diseases
			ONO-2910	Diabetic polyneuropathy
			ONO-2909	Narcolepsy
Specialty	Research Center of Specialty	The Center is working toward discovery of clinically valuable pharmaceutical products for diseases for which treatment is high in unmet needs, regardless of the disease indication. The Center has taken up the challenge of accurately identifying those needs in patients, medical professionals, and society, and then leveraging this knowledge to discover and develop highly original new drugs.	ONO-7684	Thrombosis

Message from the Director in Charge

Creating new drugs that change the world through open innovation x technology

We are committed to the discovery of innovative drugs that will change the world. We value the ideas of each and every one of our researchers and work with the world's top scientists through open innovation to discover unique drug targets, while making full use of technologies such as digital and AI technologies, and promoting drug discovery alliances with bio-pharmaceutical companies engaged in cutting-edge technologies. We are also working to elucidate biology and create new drug candidate compounds. To this end, it is important to raise the level and engagement of each and every researcher, and we are promoting the creation of an environment in which drug discovery research can be conducted with an expanded perspective, including study abroad programs in academia where we conduct joint research and assignments to the US and European bases to explore opportunities for joint research and drug discovery alliances.



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