

Basic Approach

Guided by its Group mission—"Contributing to Society through Healthcare"—the Terumo Group is turning an earnest eye to healthcare issues as it seeks to address the needs of patients and healthcare professionals through excellence in innovation. Moreover, we seek to ensure that people around the world in need of healthcare have access to the safe and high-quality healthcare services they require.

Major Initiatives

Response to the Global COVID-19 Pandemic

Dr. Shibasaburo Kitasato, one of the architects of Terumo's establishment, dedicated his life to combating infectious disease and researching bacteriology. His spirit has continued to live on throughout Terumo's long history. This spirit can be seen in Terumo's ongoing commitment to the priority theme of fighting infections. Driven by this commitment, we have launched Japan's first disposable syringes and blood bags; developed closed infusion systems; supported improving environmental quality in operating rooms and hospital rooms, and provided training on infection prevention measures that can be taken within hospitals.

Guided by this spirit, business activities are being advanced in accordance with the following basic policies, which were formulated based on Terumo's Group mission, Core Values, and business continuity plan policies, to combat the impacts of the global COVID-19 pandemic.

1. To protect the health and safety of all Terumo associates with utmost priority.
2. To maintain a stable supply of products to continuously meet global healthcare needs.
3. To actively engage and contribute to the prevention and treatment of the disease, by maximizing the Terumo Group's expertise and technologies.

A wide variety of Terumo products are used in medical settings. These products range from the thermometers employed on a daily basis to the infusion systems utilized for managing the administration of infusions and drug solutions and the extracorporeal membrane oxygenation (ECMO) that is used to treat patients with COVID-19 in a serious condition. We are maximizing the Terumo Group's expertise and technologies in order to achieve a stable supply of products while helping prevent the spread of COVID-19 to support the healthcare professionals active on the front lines of medicine as well as the patients requiring treatment. In addition, we have donated Terumo products to healthcare institutions and made monetary donations to the COVID-19 Solidarity Response Fund for the World Health Organization in order to make further contributions to medicine.



Extracorporeal membrane oxygenation (ECMO) production



Terumo's Response to COVID-19

<https://www.terumo.com/covid-19/>

Aiming to Make a Positive Contribution to Diabetes Treatment

Providing Products and Solutions to Support Each Individual Patient

Diabetes is well-known for leading to complications (such as retinopathy, neurological disorders, renal disease, myocardial infarction, strokes, etc.), and treatment of diabetes must be tailored to the pathology of the individual patient. As of 2019, worldwide, around 463 million people*¹ were suffering from diabetes. In Japan, according to survey results compiled by the Ministry of Health, Labour and Welfare (MHLW), since 1997 there has been a steady increase in the number of people who are strongly suspected of having diabetes, and the total is estimated to have reached around 10 million people*² in 2016.

When treating diabetes, it is important to prevent the disease from progressing, and to prevent the development of complications. For this reason, patients need to control their blood glucose levels carefully on a daily basis. Besides the challenges posed by daily care, patients are also affected by the constraints on their day-to-day activities and by society's attitudes towards them, and as a result they often experience not only physical problems but also mental and emotional stress.

For approximately 40 years, Terumo has provided the products needed for the diagnosis and treatment of diabetes, including the insulin syringe with staked needle, which was introduced in 1982, the blood glucose monitoring system, in 1993, and the world's thinnest pen needle for insulin use, in 2005. We aim to develop and provide products and systems that reflect an understanding of diabetes patients' daily lives and feelings, and which provide value for both patients and healthcare professionals. To provide support for treatment that is tailored to the circumstances of each individual patient, we developed Japan's first detachable Insulin patch pump in 2018. In addition, we are also focusing on the development of IT systems and digital solutions that make effective use of artificial intelligence (AI) and digital technologies.

The year 2021 marks the 100th anniversary of the discovery of insulin, and also the 100th anniversary of the founding of Terumo. Going forward, Terumo will continue to provide support to help build a better future for diabetes patients, by paying attention to the daily lives and feelings of diabetes sufferers, and by providing

products, systems and solutions that create value for both patients and healthcare professionals.



Detachable insulin patch pump

*1 International Diabetes Federation (IDF), *IDF Diabetes Atlas* 9th edition, 2019, Estimated number of adults with diabetes
<https://diabetesatlas.org/en/>

*2 Ministry of Health, Labour and Welfare (MHLW), 2016 National Health and Nutrition Survey (Japanese only)
<https://www.mhlw.go.jp/stf/houdou/0000177189.html>

Delivering Efficiency and Quality to Cell Therapy Manufacturing

Applying automation to the challenges of manual cell therapy manufacturing

Cell therapy, which is the practice of processing and culturing harvested cells and using them to treat disease, and gene therapy, which is the treatment of disease by administering gene-modifying agents or gene-modified cells into the human body, are resulting in new treatment methods. Research and development is actively ongoing in various disease areas, and practical application of these methods is steadily progressing.

However, manufacturing cell and gene therapy products requires an enormous amount of work, including the collection and cultivation (expansion) of cells, formulation and filling of final cell therapy products in bags, and data recording and other documentation. Currently, many of these tasks are done manually, and in addition to the time required, there are issues such as the cost of clean rooms and other facilities, labor costs, risk of contamination

during the process, and risk of bacterial contamination.

Terumo Blood and Cell Technologies, one of the Terumo Group's three companies, has been automating the collection and processing of blood and cells for decades. Utilizing the technology cultivated through years of experience, the company aims to contribute to the research, development and manufacturing of cell and gene therapy products, which require a lot of manual work, by providing products such as the centrifugal apheresis system, the cell expansion system, and the cell therapy fill and finish system that improve the efficiency of workflow from cell collection to the treatment of patients. By providing such products as a system, Terumo Blood and Cell Technologies will contribute to the development and spread of cell and gene therapy, increasing treatment options for patients.



Cell expansion system



Cell therapy fill and finish system

Aiming to Generate Innovation that Contributes toward the Future of Healthcare

Terumo Bay Area Innovation Lab

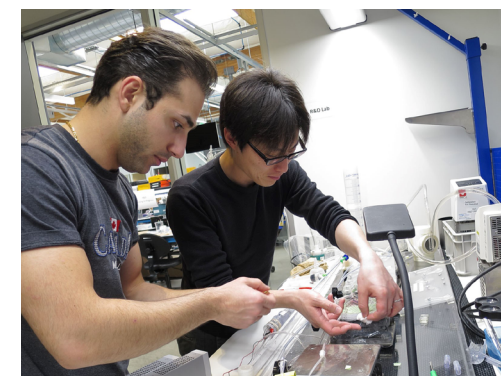
Terumo locates its R&D bases in the regions most appropriate for the products that they are working on, in order to respond to next-generation healthcare needs as speedily as possible. In 2018, we founded the Terumo Bay Area Innovation Lab (TBAIL), a new R&D base located in California's Silicon Valley which has brought together technologies and engineers from all over the world.

The TBAIL R&D base was formed through the integration of Kalila Medical, Inc. (KMI), a U.S. company that became part of the Terumo Group in January 2017, and Terumo's Silicon Valley Lab (SVL), the associates of which included personnel on assignment from Terumo's Corporate R&D Center in Japan; both of these

organizations had facilities located in the Bay Area. TBAIL has approximately 50 associates whose work is primarily centered in product development for the Cardiac and Vascular Company (one of Terumo's three companies), research and development, pilot production, and bridge production (small-scale production conducted prior to ramping up to large-scale).

The associates who work at TBAIL come from diverse nationalities and backgrounds, many of them have specialized in medical devices in their careers, and each of them is an expert with specialized knowledge and skills. Like a start-up company, we bring our technologies and know-how to each other in order to commercialize our products and promote projects speedily through cooperation.

Going forward, TBAIL will continue to actively engage in technological collaboration within the Terumo Group and themes outside of the Cardiac and Vascular Company, while also strengthening our search for and development of technologies in fields essential to future healthcare, such as biotechnology and digital health, with the aim of creating new innovations that will contribute to future healthcare.



Evaluating a prototype