



Society

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Society

Creating New Value for a Healthy Society

Resolution of Medical Issues through Innovation

Initiatives for Dementia

There are currently over 55 million people worldwide who live with dementia, and the number of dementia patients is expected to reach 130 million by 2050 as life expectancy increases globally.* Alzheimer’s disease, which accounts for 60% to 70% of all dementia cases, is thought to be triggered by an accumulation of plaque consisting of a protein called amyloid beta (Aβ) in the brain, causing cognitive impairment. Therefore, early diagnosis and interventions are considered to enhance effectiveness of treatment targeting Aβ. However, at present, imaging test of the brain (PET imaging) and cerebrospinal fluid testing to identify the accumulation of Aβ are only available at a limited number of institutions, and their high costs and invasiveness impose a burden on patients.

Sysmex has been engaged in the development of technology to identify the accumulation of Aβ in the brain more easily and rapidly in order to help resolve issues in diagnosing Alzheimer’s disease. In February 2016, Sysmex and Eisai Co., Ltd. entered into a comprehensive, non-exclusive collaboration agreement for the creation of new diagnostic reagents in the field of dementia. By utilizing each other’s technologies and knowledge, Sysmex has been engaged in the development of next-generation diagnostic reagents that will enable the early diagnosis of dementia, the selection of treatment methods, and the monitoring of the resulting effects.

In June 2023, Sysmex launched diagnostic reagents in Japan that aids determination of Aβ accumulation in the brain by measuring Aβ levels in the blood. These reagents will be used with our automated immunoassay systems based on the chemiluminescence enzyme immunoassay (CLEIA) principle. This enables easy and quick testing and reduces physical, emotional, and financial burdens on patients with a suspected Aβ accumulation in the brain. It is expected to contribute to early diagnosis and early determination of optimal treatment for patients.

Going forward, we will continue to create new diagnostic technologies for the prevention and treatment of dementia, aiming to contribute to improving the quality of life (QOL) of patients and their families.

* Source: Global Status Report on the Public Health Response to the Dementia Executive Summary (Sep. 2, 2021, World Health Organization)



Contribution to Healthcare through Surgical Support Robots

In recent years, there have been demands for solutions to social issues such as reducing physical burdens on patients, improving their QOL, the early detection of lesions, providing environments in which healthcare professionals can concentrate on treatment with a sense of security, and equalizing the provision of medical care, such as by rectifying medical disparities among regions. Surgical support robots are utilized in laparoscopic surgery, which aims to reduce the physical burden on patients. These robots support healthcare professionals in performing more precise operations. The market size* of the surgical support robot industry is expected to expand at a compound annual growth rate (CAGR) of 13%, reaching approximately 2 trillion yen on a global basis by 2030.

Systemex began the full-scale introduction of surgical support robots to the Japanese market in 2020. Urological, gastroenterological, and gynecological surgery utilizing these robots are now covered by insurance in Japan, and the cumulative number of such surgery cases had exceeded 1,800 as of the first quarter of the fiscal year ended March 2024. These surgical support robots, equipped with operation arms that move smoothly like a human arm, and the capacity to project high-definition images that vividly display even the smallest details with a full high-definition 3D system, were developed with the aim of contributing to the evolution of medicine. In the future, AI will learn surgeons' advanced skills and achieve a feedback functionality for surgical procedures, assisting functionality with intraoperative navigation, remote guidance, and remote training. These prospective advancements in AI capabilities are expected to contribute to the improvement of skills and knowledge of healthcare professionals. In addition, Systemex is currently promoting efforts to add functionalities and to develop guidelines that meet the needs of worksites in collaboration with multiple medical institutions, academic societies, telecommunications service companies, etc. to enable the early clinical implementation of telesurgery, in which a surgeon performs surgery at a distance from the patient.

Systemex will continue to proceed with its surgical intelligence initiatives and promote digital transformation (DX) to ensure a successful healthcare journey for each patient, including pre-surgery testing and testing and treatment during and after surgery, by combining skills and knowledge developed through testing and diagnostics as well as surgical support robots.

* The market size is indicated on a customer-purchase-price basis. Source: TechSci Research. The figure for 2030 is Medicaroid's projection.

Stakeholder's Voice

We hope to create a workflow that reduces the burdens on healthcare professionals while also providing higher-quality and more appropriate medical care to patients. We hope to help create a world in which all people involved in medical care can work with ease and patients feel less stressed about going to hospitals. This is an ambitious dream, and our mission to realize it acts as a driving force in our daily work.



Yuuki Hata, Manager in the MR Business Division

Click here for details:

▶ [Contributing to DX in Surgery and Equalization of Medical Care in Order to Provide Greater Peace of Mind and Safety for Healthcare Professionals, Patients, and Their Families](#)

Contribution to Countermeasures against Antimicrobial Resistance (AMR)*1)

If antimicrobials, which are used to treat infections, are inappropriately used, bacteria in the body may not be terminated sufficiently, and the surviving bacteria may become drug resistant. If drug-resistant bacteria proliferate,

antimicrobials will become less effective, making it difficult to treat infections that would otherwise be mild and reversible. If countermeasures against AMR (antimicrobial resistance) are not taken, the number of annual deaths due to AMR is expected to exceed 10 million by 2050.*2 This is a high figure, estimated to surpass the number of deaths from cancer. For this reason, AMR is recognized by the World Health Organization (WHO) and a variety of other groups as a social issue that must be addressed worldwide.

As a company involved in healthcare, Systemex is working to establish new testing technologies and to develop products that can resolve this issue. In June 2023, we launched a testing system for rapid detection of antimicrobial susceptibility in Europe, which detects the presence or absence of bacteria and assesses the effectiveness of antimicrobials using urine samples from patients suspected of having urinary tract infections.*3 Using a unique and proprietary microfluidic technology,*5 the system delivers the results of the antimicrobial susceptibility testing (AST)*4 in as little as 30 minutes from the start of measurement, a significant reduction compared to the several days required for conventional AST, thereby helping ensure that appropriate antimicrobials are prescribed at first visits to clinics, etc. in primary care.

Systemex will continuously commit itself to tackling the universal threat of AMR by developing and delivering innovative testing and diagnostic technologies.

*1 Antimicrobial Resistance (AMR): This phenomenon occurs when living organisms develop resistance to a drug whose efficacy is decreased or neutralized as a result. Bacteria that have developed antimicrobial resistance are known as antimicrobial-resistant bacteria.

*2 Source: "Antimicrobial Resistance: Tackling a Crisis for the Health and Wealth of Nations." The Review on Antimicrobial Resistance, Chaired by Jim O' Neill.

*3 Urinary tract infections (UTIs): UTIs are caused by bacteria that proliferate in the urinary tract, spanning from the kidneys to the urethral outlet, resulting in inflammation. These infections can lead to cystitis in the bladder and pyelonephritis in the kidneys. They are among the most commonly encountered bacterial infections in daily clinical practice, with approximately 60% of women experiencing this at least once in their lifetime.

*Source: American Urological Association Website "Urinary Tract Infections in Adults".
<https://www.urologyhealth.org/urology-a-z/u/urinary-tract-infections-in-adults> (Referred on June 20, 2023)

*4 Antimicrobial Susceptibility Testing (AST):

This is a test to determine the efficacy of various antimicrobial drugs against pathogenic bacteria detected in a sample.

*5 Microfluidic technology:

Systemex Astrego's unique proprietary technology that involves creating microchannels at the micrometer or nanometer level. This allows individual bacteria from a fluid sample to be captured and cultured unidirectionally within these microchannels, thereby enabling rapid detection of antimicrobial susceptibility.

<https://www.systemex-astrego.se/technology.html>

Stakeholder's Voice

Umeno: Being able to conduct testing easily at any time and see the results quickly not only improves the efficiency of medical care and the patient's QOL, but also results in a sense of ease for both healthcare professionals and patients.

Olsson: The product we have developed uses a basic platform for testing. By varying the application, we can develop products that can be used for a variety of diseases. Believing in our potential, we will continue working toward a world in which less people have a negative experience due to AMR.



Tetsuji Umeno, Director in the HUP Business Division (one on the left in the photo)
Mikael Olsson, CEO of Systemex Astrego AB (on the right in the photo)

Click here for details:

▶ [Tackling the Universal Threat of Antimicrobial Resistance \(AMR\) with New Testing Technology](#)

Society

Improvements in Accessibility to Healthcare

— Approaches to Global Health and Universal Health Coverage —

Today, many global health issues affect health worldwide and require international collaboration to be solved. Many of these issues are threatening the health of people who cannot access proper medical care due to inadequate healthcare environments and systems.

In the field of global health, Sysmex works to solve issues in testing and diagnosis, the core of its business. As one of our responsibilities as a global company, we will contribute to Universal Health Coverage (UHC)* by promoting quality testing in emerging and developing countries so that as many people as possible can receive appropriate medical care.

* UHC: A condition in which all people have access to affordable and proper services to improve their health, prevent or treat illnesses, and recover.

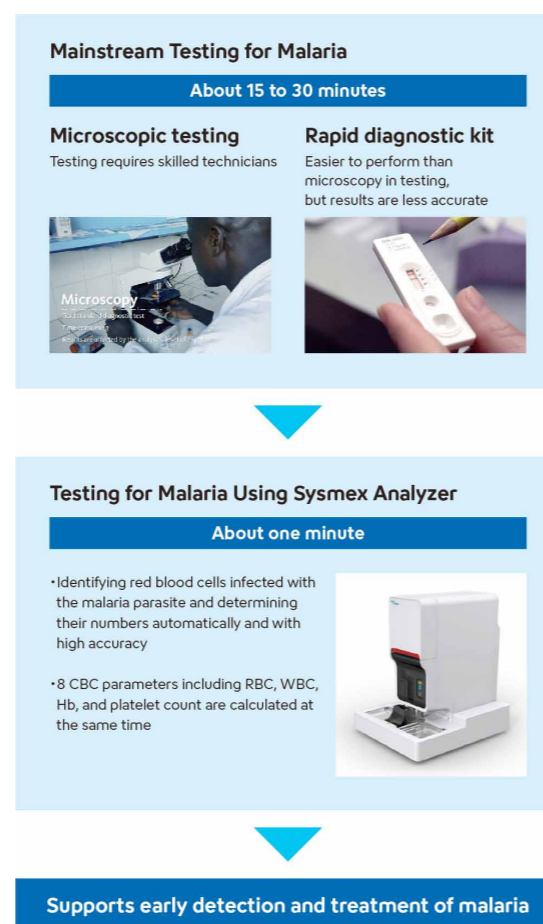
Contribution to Malaria Elimination

Transmitted by mosquitoes, malaria is one of three major infectious diseases defined by the World Health Organization (WHO) and is prevalent mainly in tropical and subtropical regions. As blood samples are used in testing for malaria, applying technology accumulated in the hematology area, Sysmex developed an automated hematology analyzer to support standardization and optimization of malaria testing. The number of deaths caused by malaria can be reduced through early detection and treatment. By providing an instrument for use in clinical settings that can swiftly and conveniently produce useful results for diagnosis, Sysmex is contributing to the elimination of malaria.

Innovation in Testing for Malaria

The current mainstream method of testing for malaria uses a rapid diagnostic kit or a microscope. However, both options pose problems such as the time required, ranging from 15 to 30 minutes, including pretreatment, and the requirement for skilled techniques in microscopic testing. In contrast, our hematology analyzer identifies red blood cells infected with the malaria parasite and determines the percentage of infected cells without pretreatment, automatically performing both processes in about one minute*¹ with a high degree of accuracy.*² In addition, since our hematology analyzer calculates eight CBC parameters*³ that are measured at the same time in normal hematology testing, it can provide clinicians with data on other issues, such as anemia and nutrition status, in addition to detecting malaria. Through the use of this technology and product, Sysmex is supporting clinical settings in areas where malaria is endemic.

Since 2016, Sysmex Corporation has been involved in the initiatives of the Malaria Consortium, which consists of research institutes and enterprises combating malaria, and contribute to project activities in the field of testing and diagnosis conducted through industry-government-academia partnerships in Asia and Africa. Sysmex reported on its activities related to a cross-



industry co-creation project in the Republic of Ghana at the 9th NIKKEI FT Communicable Disease Conference held in November 2022.

- *1 Time from the start of measurement to the determination of test results.
- *2 Testing by the analyzer does not mean that malaria diagnosis will replace microscopic testing. Nor does it mean a diagnosis can be made based on the outcome of analyzer testing alone. Diagnostic confirmation is based on a doctor's comprehensive judgment, which includes other clinical information.
- *3 Red blood cell count (RBC), white blood cell count (WBC), hemoglobin volume (Hb), hematocrit value (Ht), mean corpuscular volume (MCV), mean corpuscular hemoglobin (MCH), mean corpuscular hemoglobin concentration (MCHC), and platelet count (PLT).

Stakeholder's Voice

Conventional malaria tests take time, and their accuracy is low; however, using a Sysmex analyzer has made faster and more accurate diagnoses possible. The analyzer is easy to operate and can measure samples one by one or automatically measure multiple samples. With the analyzer, you can select an appropriate measurement method according to the purpose of use. It also enables you to acquire a great deal of information from a wide range of measurement targets, including hemoglobin levels, which will contribute to the management of malaria disease.



Interview with a Medical Professional in Burkina Faso

In areas where malaria is endemic, such as Burkina Faso, Sysmex analyzers are in high demand and greatly help with the treatment of children. I hope these analyzers will be introduced in many medical institutions in the fight against malaria.

Our Contributions to the Quality of HIV Testing Diagnosis and Treatment

Sysmex provides a system to test for CD4+ lymphocytes developed and produced by Sysmex Partec in emerging and developing countries. It has provided approximately 3,000 tests since 2011 on a cumulative basis. The system measures the number and proportion of CD4+ lymphocytes in the blood in just three minutes and is inexpensive, small, and portable, demanding only simple maintenance. It supports simple, rapid, and stable testing, aiming to ensure everyone can be tested equally.

In addition, this system has acquired prequalification* by the WHO and has been promoted for introduction in countries and regions in which medical resources are limited. It improves the quality of HIV diagnosis and treatment in emerging and developing countries.



System to Test for CD4+ Lymphocytes

* Certification system under which the WHO guarantees quality, safety and efficacy, with the aim of ensuring that health care products, including pharmaceuticals, testing, and vaccines, can be used with a sense of security in countries lacking in resources. The system was launched in 2001 for pharmaceuticals for HIV/AIDS and is now used as a reference list for procurement in emerging and developing countries. The Global Fund to Fight AIDS, Tuberculosis, Malaria, and other funding organizations preferentially choose products that have acquired prequalification.

Contribution to Strengthening Healthcare

Emerging and developing countries need to develop the abilities of medical professionals (capacity building) to solve health and medical issues. Sysmex continuously provides products, services, and support to medical institutions while increasing opportunities to provide training and scientific information to medical professionals. It contributes to the early detection and treatment of diseases, as well as improving diagnoses and treatment methods by emphasizing the significance and clinical value of testing and the dissemination of diagnostic technology.

Training for Medical Professionals

Sysmex has established an in-house training center called Sysmex Academy. In addition, it provides globally unified educational content and skill management tools through the Caresphere™ Academy for online training. This enables us to conduct educational programs on clinical value and training sessions on instrument maintenance for sales distributors and medical professionals. In Africa, Sysmex offers mentorship training that it developed to ensure that laboratories' quality management systems conform to the international ISO 15189 standard.

► Pursuit of Quality and Trust

Technical Support to Provide High-quality Test Data

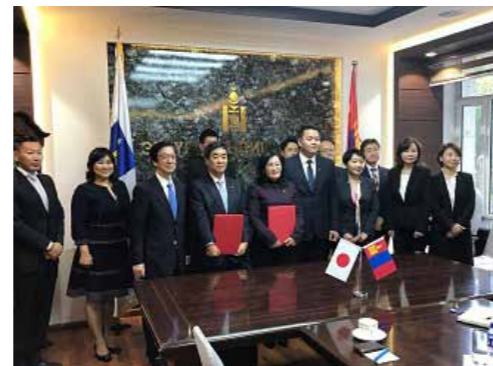
Sysmex has been engaged in support activities in Asian countries including China, Mongolia, Cambodia, Myanmar, Thailand, and the Philippines to improve the quality and accuracy of clinical tests.

In Mongolia, Sysmex expanded its support activities to the hemostasis field in 2022. It has continued such activities in addition to working in the hematology, clinicalchemistry, and immunchemistry fields in which it had already carried out support activities. Sysmex provides technical and academic knowhow to local clinical laboratory technicians and supports the establishment and operation of a system of external quality assessments of blood morphology tests conducted nationally, thereby contributing to improving healthcare in Mongolia. In Cambodia, it also carries out similar activities for the external quality assessments of hematology testings, helping to boost the quality of clinical testing.

In China, its reference counter has been employed as a National Standard* for Blood Cell Count in China since 2002, and the registration inspections and external quality assessments for all blood cell counters in China have been conducted using the reference counter provided by Sysmex as a standard. In addition, Sysmex has been providing continuous support such as technology transfer and exchange for hematology and reference measurement procedures, while also assisting in the creation of national clinical laboratory guidelines. Since 2019, it has leased the latest standard blood cell counters, contributing to improving the accuracy and standardization of hematology tests in China.

* Analyzer with which to assign the values for the national standard of hematology (number of red blood cells and white blood cells)

► Scientific Activities



Signing ceremony with Mongolia's Ministry of Health

Public-Private Partnership Project with JICA

Sysmex Corporation conducted the Project for the Dissemination of Automated Urinalysis Diagnosis Technology between 2018 and 2022 as part of the Japan International Cooperation Agency (JICA) Collaboration Program with the Private Sector for Disseminating Japanese Technology for the Social and Economic Development of Developing Countries. We installed a fully automated urinalysis testing system in Ghana's national Komfo Anokye Teaching Hospital (KATH), and we organized seminars and symposiums that have been attended by 860 local healthcare professionals. This project was recognized as an effort toward the attainment of the Sustainable Development Goals (SDGs), and Sysmex was certified as a "JICA-SDGs Partner."* We will remain committed to educating local healthcare professionals on the clinical value and effectiveness of automated urinalysis testing technology in our efforts toward high quality clinical testing in Ghana and other developing countries.

* From August 2020 to February 2022



Presentation of JICA's collaboration program



Equipment installed at KATH

Public-Private Partnership with Japanese Embassies Abroad

In 2022, Sysmex Corporation provided analyzers for hematology and urinalysis to local hospitals through the "Project For Provision of Medical Equipment and Ambulances In North Central Timor Regency, Nusa Tenggara Timur" as part of the "Grant Assistance Grass-roots Human Security Project."

Through these efforts, Sysmex works to improve the local medical environment and contributes to the provision of appropriate treatment opportunities for leprosy patients.

Acceptance of JICA Trainees

Sysmex Corporation has worked with JICA in providing training in areas such as analyzer maintenance and management, and hospital management since 1994 to improve healthcare workers' knowledge and skills. The training had been offered online due to COVID-19, but it resumed in a face-to-face format in 2022. The number of trainees who visited Sysmex has exceeded 1,000.

Partnership

At present, establishing medical infrastructures in response to issues at each stage of economic development is a major task for developing countries, but their healthcare markets are expected to see growth in the future. As accurate test results are a starting point for proper healthcare, Sysmex has been building relationships with the health ministry and medical institutions in each country and region, as well as creating systems for promoting high-quality testing and establishing testing environments. It has also been making efforts to create new value by utilizing international cooperation and public-private partnership frameworks and collaborating with other companies.

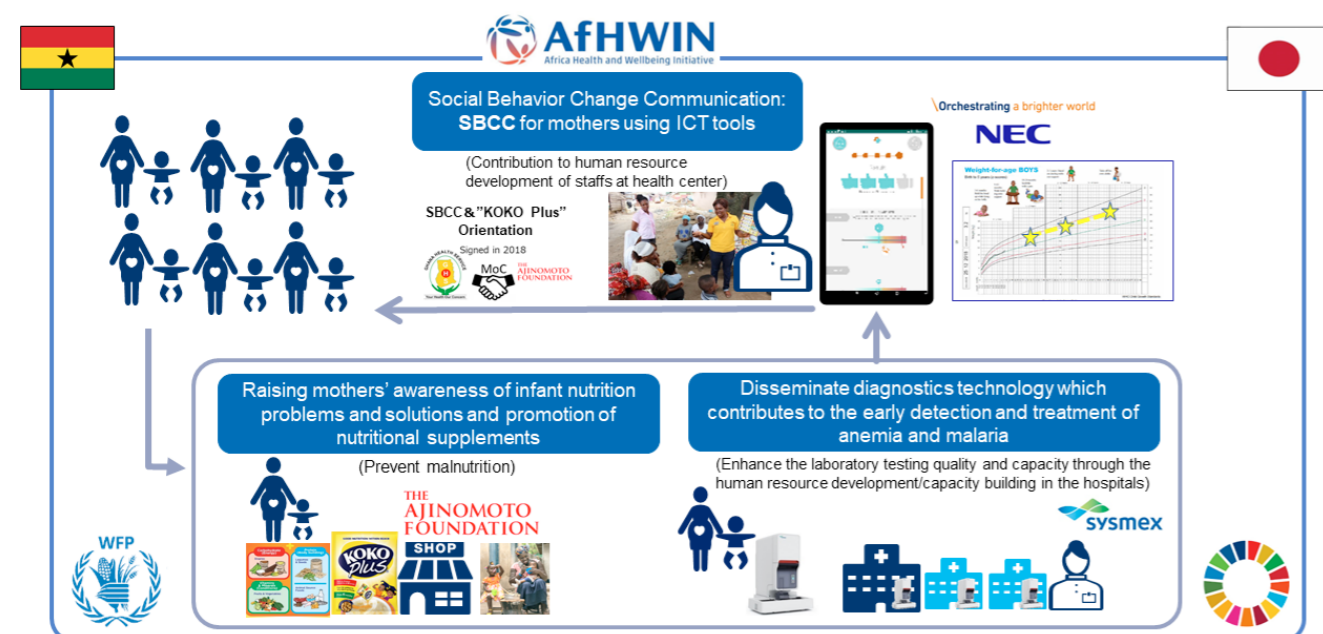
Cross-Industry Collaborative Co-creation Project: Contributing to Universal Nutrition Health Coverage

In Ghana, serious healthcare problems include malnutrition - greatest risk factor for death and disability - and malaria, the leading cause of death.^{*1} Malnutrition inhibits growth, delays the development of the body and brain in fetuses and infants, and causes anemia, increasing the severity risk for malaria. In addition, since the health of children under the age of five years and pregnant women is particularly impacted by malaria,^{*2} an integrated approach for nutrition, anemia, and malaria is required.

Sysmex has initiated a co-creation project for improving the health and nutrition of mothers and children in Ghana in collaboration with the Ajinomoto Foundation and NEC Corporation. This project is based on existing activities of the Ajinomoto Foundation together with the Ghana Health Service, which includes behavior modification for mothers and the recommendation of nutritional supplements. By combining high-quality testing with ICT from Japan, we aim to create a system for improving the health and nutrition of mothers and children. Sysmex will be responsible for installing diagnostic instruments for malaria in medical institutions and personnel development and education activities for medical professionals.

*1 The Institute for Health Metrics and Evaluation (IHME)
<https://www.healthdata.org/ghana>

*2 Children under five years old are particularly vulnerable to malaria and malnutrition. Malnourished children may develop more severe cases of malaria. Additionally, malaria increases the risk of poor outcomes for mothers and newborns, such as anemia and death in pregnant women, miscarriages, stillbirths, low-birthweight infants, and newborn and infant death.
[Nutrition and Malaria: Integrated approach for effective case management](#)



Initiatives of the Business Leader's Coalition for Global Health

In April 2022, the Business Leader's Coalition for Global Health, a group of volunteers consisting of Japanese business leaders which aims to contribute to the global health* area, delivered a written request titled "Global Health as a New Growth Industry for Japan: Global Development of a Virtuous Circle for Growth and Distribution" to Japanese Prime Minister Fumio Kishida. Hisashi Ietsugu, Chairperson and Group CEO of Sysmex Corporation, participates in the initiatives of this coalition.

This written request asked the government to take various actions: double ODA in the global health area, position global health as a principle growth strategy for "New Capitalism," and strengthen initiatives enabling Japanese companies to contribute in this area.

In August of the same year, 11 companies participating in the coalition announced "Global Health Actions" at an official side event of the 8th Tokyo International Conference on African Development (TICAD 8), with special guest Mr. Bill Gates. Sysmex made a presentation titled "Fighting malaria with diagnostics" and expressed its intention to aim for a malaria-free world.

In March 2023, the 2nd Global Health Academy podium stressed the significance of public-private partnerships in the global health field, and is continuing similar initiatives.

* Support and business development in healthcare globally, particularly in public health and measures against infectious diseases.



Participating in the Global Health Innovative Technology Fund (GHIT Fund)

Since 2015, Sysmex Corporation has participated in the Global Health Innovative Technology Fund (GHIT Fund), which states its vision for action as "one in which the crushing burden of infectious disease no longer prevents billions of people in the developing world from seeking the level of prosperity and longevity now common in the industrialized world." In the second phase of operations (2018-2022), the GHIT Fund shifted its activities from the initial product development to activities to deliver the products to the people who need them. Sysmex will continue to participate in the Fund's second-phase operations. By promoting initiatives to develop and provide new reagents for infectious diseases through Japanese technological innovation, it will contribute to eradicating infectious diseases in developing countries.