



— Challenges of Daiichi Sankyo —

To Continue to Address Social Issues as a Pharmaceutical Company

Discussion

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Pharmaceutical companies have continued to explore solutions to the social challenge of conquering disease.

However, there are many fields in which social needs are not yet met. What social issues is Daiichi Sankyo recognizing and identifying, and how are they addressing them in management?

The CEO George Nakayama and Member of the Board (Outside) Dr. Tsuguya Fukui sat down and discussed these topics.

The Social Issues We've Solved Up Until Now

Nakayama The pharmaceutical industry has been working to solve the social issue of saving people's lives for over a century. Especially, since the end of the 19th century to the beginning of the 20th century, the French biochemist and microbiologist Louis Pasteur, who is also known as the founder of modern microbiology, as well as the German physician and microbiologist Robert Koch emerged and created innovative drugs using new science, and spread the use of vaccinations, which led to the cure of many diseases, bringing dramatic changes to society.

Although the contributions of pharmaceutical products and companies in the world are not recognized, the fact remains that drugs and medical care have saved countless lives. I believe that this has brought about great changes in society.

Fukui I agree completely.

With the emergence of **penicillin**, the world's first antibiotic, and **streptomycin**, the world's first therapeutic drug for tuberculosis, the world of medical care has changed dramatically. Pharmaceutical products have made great contributions to the world, such as the expansion of surgical treatment with the use of antibacterial drugs and painkillers, and have served as agents of extraordinary change in society. For example, diseases like leukemia used to take the lives of most patients, but today, the situation has changed greatly as we can now even expect it to be cured.

On the other hand, as demonstrated by the data showing decreasing numbers of deaths due to tuberculosis before the drugs arrived, all problems are not solved just with drugs. It is clear that society as a whole must advance itself through various ways, including nutrition, environment and social hygiene, education, and healthcare system.

Nakayama I agree. It's definitely crucial to raise the level of public health.

Speaking in terms of the history of Daiichi Sankyo, Sankyo Co., Ltd. launched **taka-diastrase**, a digestive enzyme, and **adrenaline**, the world's first adrenal cortex hormone agent. Arsemin Shokai, which later became Daiichi Pharmaceutical Co., Ltd., realized domestic production of **salvarsan**, a treatment for syphilis. Both companies have been active in finding solutions to the social issues of Japan since their formation. Since the 1990s, new drugs originating in Japan have started to gain worldwide attention. Drugs that we've developed, such as **pravastatin**, an antihyperlipidemic agent, and **levofloxacin**, a broad-spectrum oral antibacterial agent, are good examples.

Fukui I remember this taking me by surprise, because many diseases can now be controlled with drugs, including not only infectious diseases, but also chronic diseases such as hyperlipidemia, hypertension, and diabetes. As Daiichi Sankyo, we've also made great contributions with drugs like **pravastatin** and **olmesartan**. I think that the advancements in medical care in the past 40 to 50 years have been absolutely remarkable as a health care practitioner for many years.

Social Challenges to Tackle Going Forward

Fukui In recent years, it is becoming widely recognized that efforts made toward **ESG issues***, such as those related to the environment, society, and corporate governance is crucial as corporate citizens, likewise their core businesses.

* Issues on Environmental, Social and Governance. Environmental issues such as climate change, social issues such as human rights and labor standards, governance issues such as corporate governance.

Nakayama As a pharmaceutical company, the biggest challenge is how we can create innovative medicines that can change Standard of Care (SOC*), but as good corporate citizens, we are also striving to find solutions to environmental and social issues.

* Therapies that are currently considered to be the best and the most extensively used.

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I think it's important for our researchers to also set their sights to how patients are being treated in the field of medical care, and think of ideas from that perspective.

With regard to the environment, we focus on a goal which called “the 2°C target” has been set in the Paris Agreement on climate change to keep global temperature increase below 2°C to compared to pre-industrial temperature. In order to meet the 2°C target, an international initiative called Science Based Targets (SBT) was established to approve companies that proactively aim to achieve CO₂ reduction targets. Our Group promptly set our CO₂ reduction targets based on the SBT criteria, placing us as the second corporation in Japan to be approved for SBT initiative, for which we've received public praise.

Furthermore, with regard to the Sustainable Development Goals (SDGs), an initiative that our company takes seriously as an effort to solve social issues for all people in the world, we are working to tackle the issue in its healthcare field target, which is to improve **access to healthcare**.

As we move forward, unless we can adeptly integrate social demands with a sustainable business, it will become increasingly difficult to continue solving social issues in the long term.

Fukui There are also high social needs for **orphan drugs**. Daiichi Sankyo is making various efforts in this field.

Nakayama Yes. We are also engaged in the development of orphan drugs. We created **Biopten**, a drug for treating atypical hyperphenylalaninemia, which is caused by a hereditary genetic abnormality and affects one out of 70,000 people. The drug can be taken by children right after birth, but since the dosage scales with body weight, the dosage had to be increased to keep up with growth, which was a large burden. We worked to improve the formulation over many years, and created a high concentration formulation under the same drug price. We were very much appreciated by patients, and we feel we were able to contribute to fighting rare diseases.

Fukui It would be good to see Daiichi Sankyo continue to develop more orphan drugs and to let more people know about that.

Nakayama Besides that, we've also launched an **ITB (Intrathecal Baclofen)** therapeutic product for patients with severe spastic paralysis. This treatment has the ability to improve the quality of life and has been well received by patients. In addition, we are also working on **drugs for treating Duchenne muscular dystrophy**, which is an especially severe rare disease that occurs to one out of 3,500 newborn boys, many of whom only live to reach their 20s or 30s.

Fukui Speaking of the issue of access to healthcare, several decades ago, I participated in a conference in

Geneva of a committee on **essential medicines** of the WHO. The task was to create a list of essential medicines that must be made available worldwide, especially in developing countries like African countries. I was very shocked to learn there were many differences from developed countries in the approach to medicine, pricing and distribution issues, etc.

Nakayama When talking about access to healthcare, I believe it's crucial to be able to offer access to effective drugs for people in developing countries, but it is often difficult to make it a viable business in terms of securing profit. At Daiichi Sankyo, in order to do our best to proactively contribute to the SDGs, we've taken part in the Global Health Innovative Technology Fund (**GHIT Fund**) in Japan, for which we have not only provided funds, but also contributed by sharing our know-how. For example, we've provided our compound library which consists of compounds we designed and synthesized by ourselves.

Fukui In addition to transferring technologies and providing affordable products, isn't it also important to **train people**?

Nakayama Yes, I do believe training people is important. You can treat patients if you can provide good treatment or if you can diagnose diseases earlier. But with limited medical knowledge, there are cases in which you can get ahold of the drugs, but you can't deliver the treatment.

With regard to educating or training people, since 2011 we have been providing mobile healthcare field clinic services in places like India and Tanzania, where we are providing education for people engaging in medical care and also cultivating local residencies with health and hygiene. In China, we are also focusing on providing education for people engaging in medical care. Those efforts are very much appreciated.

Fukui Even in the field of medical care, there have been many failures related to education. Expensive radiation machines were sent to developing countries, but no one there could use them. I believe that a contribution which can be highly appreciated for the longer term is the training of people. We need to create a positive cycle whereby we train people, allowing them to gain knowledge and skills, who can then go on to teach others about such knowledge and skills. I hope that Daiichi Sankyo will contribute to society from the point of view of training people.

Nakayama I would most certainly like to do that. Even with drugs, if you don't have doctors who know how to handle them, they won't be used, or even used in toxic ways. I believe it is crucial to develop new medicines, deliver them to patients and **provide the appropriate information** in an integrated manner.

It would be good to see Daiichi Sankyo continue to develop more orphan drugs and to let more people know about that.

Tsuguya Fukui

Graduated from Kyoto University Faculty of Medicine. Served as the Professor of Kyoto University Graduate School of Medicine after completing the Harvard School of Public Health, and has served as the President of St. Luke's International Hospital since 2005 and the President of St. Luke's International University since April 2016. Assumed his post as a Member of the Board (Outside) of the Company in June 2015.



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Cancers with Unmet Medical Needs

Fukui In the clinical field over the past 20 years or so, cancer medications have emerged one after another, and have become increasingly effective. It's like we're living in a different age. Pancreatic cancer and esophageal cancer are still difficult areas to tackle, but with a little more effort, it might be the case that cancer will become a disease that we won't need to fear so much. In recent years, new medicines that target immunity have emerged, and good data have come from our **DS-8201**. These events have led us to have very high hopes for the future.

Nakayama At Daiichi Sankyo, we set forth our 2025 Vision for becoming a "Global Pharma Innovator with competitive advantage in oncology." Daiichi Sankyo was originally a company that focused its strength in research and development. With the goal of venturing into a field where we can leverage our R&D capabilities, where leading-edge science can most effectively exhibit results, and where new knowledge can most likely lead to development of new medicine, we have made the oncology area a core focus of our business.

The most pleasant point of all is that our proprietary technologies we've cultivated up until now have come to fruition, and we were able to start the **ADC* franchise**.

* Antibody Drug Conjugate

Fukui I'm expecting it to be very effective. I can't wait to see it launched.

To Inspire Innovative Ideas

Fukui I believe there are two kinds of **innovation**: the kind where if you take time, anyone can produce results, and the kind where people create things that no one has thought of before. I think that on the level of national governments, it is necessary to drive both types of innovation simultaneously. Innovation in pharmaceutical companies tend to follow the pattern of the latter and it requires a firm will to take on many difficult challenges, but I want you to do that boldly.

Nakayama I think that there are two types of innovation: the continuous kind that constantly pursues improvement and reform, and **the disruptive kind**. In Japan, companies are good at accumulating experience, but the challenge lies in sparking a disruptive type of innovation.

Fukui Disruptive innovation. I like that expression.

Nakayama They use the word "disruptive" a lot these days. It's used in a way that conveys a positive meaning. Global mega-pharma corporations bring in many new products from venture companies, but our goal is to create our own. For example, although **DS-8201** wasn't highly evaluated in the company at the beginning, a few people were convinced of its potential, and pushed it forward regardless of the surrounding skepticism. In the end, their efforts have led to the results we see today. Of course, if you're too dependent on that, you can fall into stagnation, and it gives researchers a sense of complacency, which is not good. I think we need to constantly be conscious that we are competing with others in the industry.

When considering how we can spark disruptive innovation, I think it's very important for researchers to be closely involved with the medical care field and with patients. Especially in the field of oncology, you might call it a **patient journey**, but it's crucial to look at what treatments patients are receiving and have the sense of what is being expected of drugs that exceed today's best therapies. We are also conducting activities where we ask doctors to introduce patients to us, so that we can hear their stories.

Fukui That is a very important thing. When you interact with patients, it gives you insights to problems from a completely different point of view. I think it's important for more researchers to have such opportunities.

Nakayama I think it's important for our researchers to also set their sights to how patients are being treated in the **field of medical care**, and think of ideas from that perspective. The next important thing is to make sure that the company environment allows for freedom. In such an environment, if the elements of patients and the medical care field can be combined effectively, it will surely help continue to spark innovation going forward.

Fukui It might be a little different story, but when it comes to the field of medical care, we welcome many students of all ages from elementary school to high school, to come visit St. Luke's International Hospital and observe our work. They come from every region in Japan and they all seem to be deeply impressed at the end. After their visits, a number of students tend to go on into the healthcare field.

About Daiichi Sankyo's Vision of the Future

Nakayama As a pharmaceutical company, I want Daiichi Sankyo to be a company where products continue to emerge from within. In that regard, we want to foster researchers, while having them set their focus on not only advanced science, but also the people who are on the ground in the healthcare field. I also think that the greatest motivating factor in our work is to **understand the suffering of patients**. We at Daiichi Sankyo cannot create everything alone, but at least with the core solutions, I want us to be a company that can continue to produce results, and supplement the places where we are lacking with external know-how through partnerships.

Fukui While innovative drugs are needed in advanced countries, developing countries still need all the drugs that have been used in Japan up until now. I hope Daiichi Sankyo's drugs will be delivered to patients all over the world.

Nakayama As a **Global Pharma Innovator with competitive advantage in oncology**, I want us to continue to create innovative drugs and deliver them to patients all over the world. At the same time, we want to understand the needs that are in each part of the world, and continue to pursue regional value. As a part of this vision, I also think it would be good to contribute to society and provide know-how, and through GHIT and other initiatives, continue to also contribute in terms of providing pharmaceuticals.

