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Talk With

Guest **Nobuko Nakano** Brain scientist

Considering the Pathology of Japanese Society and a Prescription Amidst the COVID-19 Pandemic - Aiming for a Society That Recognizes Diversity as Strength



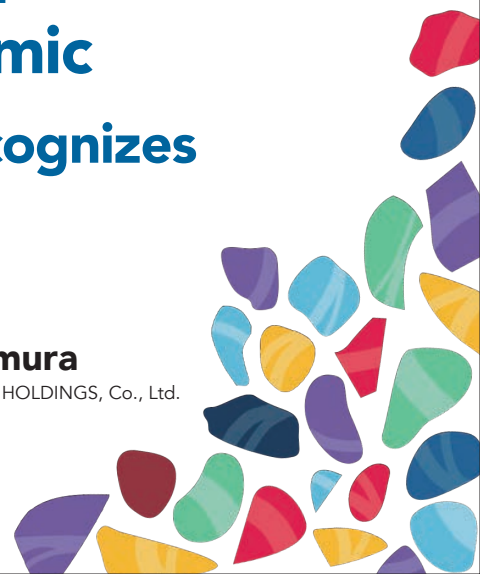
Considering the Pathology of Japanese Society and a Prescription Amidst the COVID-19 Pandemic

Aiming for a Society That Recognizes Diversity as Strength

Nobuko Nakano
Brain scientist



Kazuo Nakamura
Chairman and CEO, CMIC HOLDINGS, Co., Ltd.



The COVID-19 pandemic has recently brought the pathology of Japanese society to our attention. So far, the society has been based on economic rationality, but now it needs to make an unprecedented transformation. Many people are struggling and worried about the future. Facing such a situation, what is the best approach for us to take in life? Brain scientist Nobuko Nakano is far more than a typical researcher and is highly active in many different forms of media. CEO Nakamura had a chat with her to hear her views about the illness of Japanese society and the prescription to heal it.



Nakamura First, could you briefly explain what brain science is?

Nakano "Brain science" is a relatively new term. It used to be called cerebrophysiology or neuroscience. These terms are still popular in academia today. The reason why cerebrophysiology became brain science can be found in the development of functional MRI (fMRI). fMRI is a method for visualizing brain activity based on changes in the MR

signal caused by increased blood flow. The emergence of fMRI allowed for the brain to be mapped at a macro-level perspective with a time course that is easier to observe than with PET. This led to the popularization of the term "brain science."

Nakamura So, with fMRI, people found the key to identify the connections between different functions in the brain. I am very interested in how brain science explains the relationship between the brain and the heart. It is obvious that my brain is in my head, but why is there the typical concept of "my heart" being somewhere inside my chest.

Nakano Just like how the word is based on the name for the actual organ, we tend to feel that our chest serves as the center of our emotions, not our brain. I believe this is true for people all around the world. However, if we look for the source of our emotions, we end up at the frontal lobe of the brain. This separation has sparked a long-running debate. The problem of the heart and brain may be the final frontier.

Nakamura I am also interested in the sensory organs. The eyes, ears, taste buds, and other organs are all linked to the brain, but we do not yet understand everything. What kinds of research methods are being implemented in this area?

Nakano There is the molecular approach, and there is macro-level mapping using fMRI. With fMRI, we basically examine blood flow. Here, the bottleneck is that we do not know the exact degree to which the data reflects nerve activity.

Crowd psychology and the science of groups

Nakamura Which field are you most interested in now?

Nakano I have always been fascinated by crowd psychology. Many people believe that decisions are made entirely by individuals, but it is almost impossible for someone to decide on things using solely their own mind. People always consider the wishes of others and are affected by the

information around them. For example, they might consider what the people in front of them are thinking, or they may consider how other people who are not present could feel later even if they are not feeling in such a way now. In the terminology of psychology, we would say that people cannot ignore the thoughts of the reference group when making decisions. We can find interesting qualities by examining art in order to quantify and clarify these characteristics.

Nakamura And now the topic turns to art!

Nakano The way artwork prices are decided is extremely interesting. There are many parameters involved, such as the value a piece of work holds as art (which is fundamentally difficult to put a price on) and the market's evaluation. However, art has a quality whereby the price rises if everyone thinks it is good. I thought that this would be a good model for studying crowd psychology, so I am working to analyze the market.

Nakamura The science of animal groups such as grey starlings and fish is related to the study of decision making in groups. For example, we might look at the movements of a group of grey starlings in flight. When one bird changes direction quickly following an attack from an outside enemy, the other birds instantly follow. On the other hand, it is thought that birds fly as a group, and there is no particular leader. If we consider a group of humans to be like a herd of animals, it could be very interesting to study the differences in behavioral characteristics between highly productive groups and non-productive groups. As humans can only ever exist in groups, it is crucial to



consider the entire group when trying to understand an individual's decision-making process.

Nakano You are right. Homo sapiens have a considerably strong but imperfect social nature, though not perhaps as strong as that of bees or ants. It would be truly fascinating if we could, to some extent, clarify the true form of humans' imperfect social nature. For example, in thermodynamics there is a concept called phase transition. If a super cooled liquid is stimulated even slightly, it instantly solidifies. It is thought that certain triggers may cause human groups to experience sudden changes in the manner of this phase transition. I hope to formulate this process.

Reconsidering the true nature of wealth amidst the COVID-19 pandemic

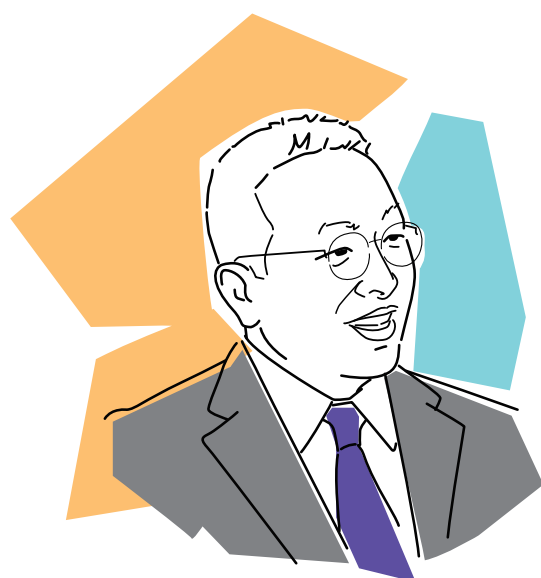
Nakamura COVID-19 has cast a dark shadow over society as a whole, and many people are suffering. We can only hope to give some kind of trigger that can brighten things.

Nakano This is a critical topic. The number of suicides has increased considerably, particularly among

women. Cases have almost doubled compared to last year for women. I think the Japanese government enacted the "Go To" campaigns because economic difficulty has served as one contributing factor to the suicides. However, these campaigns have not worked well due to the risk of spreading the infection.

Nakamura A few days ago, I spoke with my eldest son and his friends, who graduated from an international school. They commented that no one in their circle of friends felt as if they were being pushed into a corner mentally. I wondered why this was, and theorized that it may be related to the fact that they were raised in a highly international, diverse environment and have a broad range of experience.

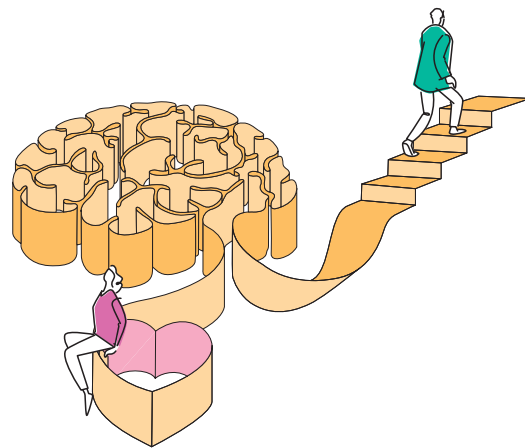
Nakano I think that is a significant factor. Within a homogeneous society, people tend to think that other people enjoy unfair advantages. When people start to think in this way, they end up turning that mindset back onto themselves. They think that because they look at other people in such a way, other people must be seeing



KAZUO NAKAMURA



NOBUKO NAKANO



emotional discomfort in a diverse environment. Many people feel comfort in a monolithic environment, so we currently need education that functions as a phase transition toward a mindset whereby wealth is achieved by nurturing different opinions.

Nakamura There is a limit to what an educational curriculum based on government guidelines can do. Perhaps art could give us hints for a new direction.

Nakano New York's Museum of Modern Art has developed an educational curriculum called Visual Thinking Strategies (VTS). This involves showing children pictures and asking them what they personally think about the pictures, rather than asking who made the pictures and when. Amazingly, data shows that this approach improved the children's grades. The reason for this result is that children can learn that everyone has different ways of thinking, that this is

not a bad thing, and that there is actually value in such differences. This is thought to enhance children's self-esteem and to contribute to an autonomous desire for emergent learning. This cannot be graded in a uniform manner, so it imposes a larger burden upon educators. In practical terms, this approach can only be achieved with sufficient resources, but it serves as a lifelong asset for children. I hope that such a curriculum will be spread in Japan as well.

Nakamura We need to place importance on looking at, thinking about, and sensing things. It is crucial to take children to many different places and give them a wide range of experiences.

Breaking free from a pathological society

Nakamura Among the changes to work styles that the COVID-19 pandemic has brought about, I have personally come to appreciate the importance of the "park effect" on companies. We can relax and have our imaginations and competitiveness invigorated simply by sharing snacks together and talking where we can see each other's faces, without needing to do much else. I have come to feel how important these kinds of effects are.

Nakano That is an interesting observation. Though it is economically rational to eliminate costly offices and

communicate in virtual spaces, in the end we need this fundamental element.

Nakamura If companies make a place like a park, however small it may be, this can create networks that cross work boundaries and produce creative ideas. **Nakano** Research institutes abroad create spaces like that. There is a break of about two hours for snacks, letting "research nerds" come together from different areas to exchange ideas, which helps create interesting new fields.

Nakamura I am currently preparing to make such a space when the pandemic is over. I have also rediscovered the importance of festivals.

Nakano While the reasons for this have not been clarified yet, if people experience difficulties because festivals are not held, they tend to seek some kind of sacrifice. I feel that many people are troubled from losing the structure of festivals that have been practiced since ancient times. People attempt to obtain relief by putting others on a pedestal and attacking them. If they find an individual who does not follow the rules, everyone starts to pounce on them. It is truly bizarre. Nobody wants to be under attack, and this thought leads to a vicious circle that makes people even more troubled. As a result, society today is in an extremely pathological state.

Nakamura Japan was originally a country where people coexisted with different things, rather than rejecting them. Mixed bathing at hot springs is a typical example of this. It is of course wrong to bring trouble to others or to cause problems. However, if there was not such a fixation on rules, we would have a more tolerant culture, yet this

tolerance has become narrow.

Nakano Yes, there are people who see keeping the rules to be part of their identity. It may be tough to revert to a previous state once rules have been established.

Nakamura Rules are important, but manners and etiquette are even more crucial. It's not right to coerce people to obey the rules simply because there are rules, thus ignoring manners and etiquette.

Nakano We need to remember that the original purpose of creating rules is to avoid making others feel unpleasant.

Create incentives for activities that enhance beauty

Nakamura You mentioned economic rationality earlier. What do you think is needed for management activities going forward?

Nakano I feel that beauty will serve as a key concept. Acting in a beautiful way works as an incentive in and of itself. It would be ideal to demonstrate the benefits in an easy-to-understand way, such as how people are healthier and live longer or how organizations can develop if they prioritize beauty. The economic models of the 20th century have reached their limits, and we can now see the cracks in a society that only pursues economic rationality. When I consider which parameters we should add when redesigning the economy, I think we should give more value to elements like beauty and the desire to be with a certain person or to be satisfied. There is a need to build an economic model that incorporates



these utility functions. Encouraging people to engage in beautiful behavior in their workplaces will aid society.

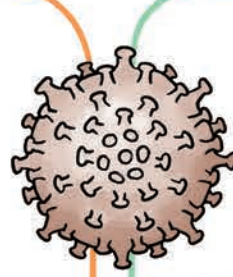
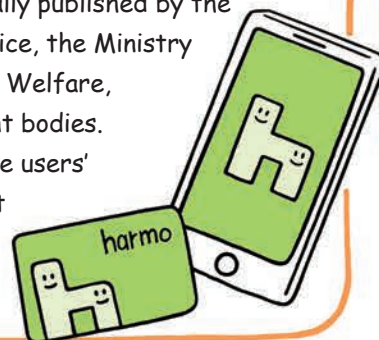
Nakamura We need to achieve a system that can value things that are interesting in their differences instead of economic rationality only, as well as nerdy qualities and beauty as you just mentioned. Considering environmental problems on a global scale, I cannot help but feel we have entered an age of coexistence that goes beyond living with nature and includes robots, AI, and other animals and plants. Going forward, there will be a greater need than ever before for diverse thinking and future-oriented social design. Finally, I would like to mention that I attended high school and college with your father-in-law, so I have known you for a long time. I have often seen you in the media, and I can see that you are very successful. It was a pleasure to speak with you today as a scientist. Thank you for taking the time to talk with me.





Inform

The harmo smartphone app aggregates and distributes information related to COVID-19 that has been officially published by the Prime Minister's Office, the Ministry of Health, Labor and Welfare, and other government bodies. This helps to alleviate users' concerns and prevent the spread of infection.



Research

Antigen tests

We sell antigen test kits for medical institutions and corporations. (since January 2021)

Antibody tests

We sell antibody testing kits for COVID-19 research. (since April 2020)



PCR tests

We provide support for the work involved in carrying out PCR tests (social tests) at nursing care facilities, etc. (in Setagaya Ward, starting in November 2021)



Engage

At CMIC Group, we offer services for handling all tasks related to pharmaceutical development, going beyond the framework of a CRO in order to support drug development efforts to fight COVID-19.

CMIC CRO division

Conducts clinical trials as a CRA (Clinical Research Associate).



CMIC CDMO division

Entrusted with work related to production of pharmaceuticals for clinical trials.



CMIC SMO division

Supports clinical trial work at medical institutions.



What CMIC Group can do

to overcome the COVID-19 pandemic

We launched the Healthcare Support Certification System to support these efforts.

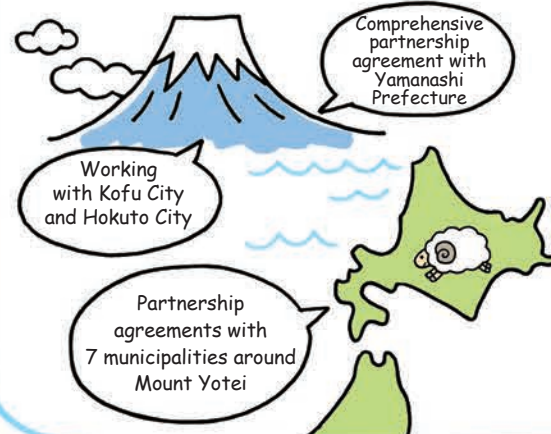
This system recognizes CMIC Group employees and creates a wider range of opportunities for them to tackle challenges in new roles by utilizing their skills and experience accumulated in the medical and healthcare fields.



Prevent

Collaborating with local governments

We are signing partnership agreements with many local governments to facilitate smooth vaccine administration. (since February 2021)



Administering vaccines

We use the insights accumulated at CMIC Group through clinical development of pharmaceuticals to offer services that help facilitate smooth vaccine administration.

Call center



Helping build systems for local municipalities (e.g., stationed personnel)



Creating flowcharts and manuals



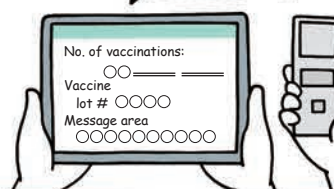
Establishing vaccination sites Dispatching support staff



Registering and aggregating vaccination information

Vaccination information can be registered and aggregated instantly using "harmo Vaccine Care for COVID-19."

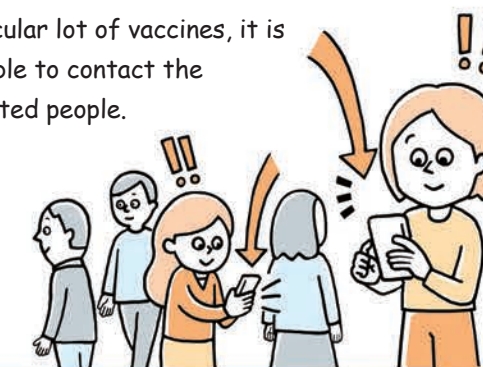
This also helps prevent vaccination errors.



Monitor

"harmo Vaccine Care for COVID-19" makes it possible for long-term monitoring after vaccination.

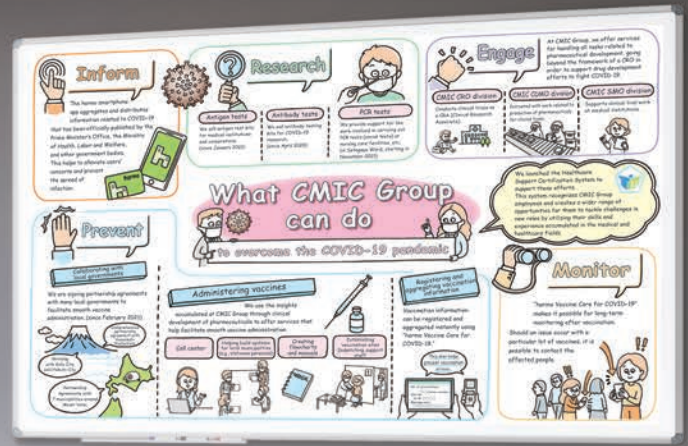
Should an issue occur with a particular lot of vaccines, it is possible to contact the affected people.





See the video!

Introducing "harmo Vaccine Care for COVID-19"

<https://youtu.be/-UgYFN9emkM>

What are CMIC Group's initiatives for COVID-19?

At CMIC Group, we support activities related to pharmaceuticals and vaccines, from development and production through to sales; we sell reagents for antigen and antibody research; and we offer information through the electronic prescription record app "harmo" along with other efforts. In addition, we have started offering services to facilitate smooth vaccine administration, empowering local governments to secure talented people for work tasks and to notify local residents individually (with preliminary diagnosis slips or vaccination cards), helping solve issues by means such as responding to inquiries regarding vaccination procedures and managing health data after

vaccination. CMIC Group has accumulated 20+ years of experience in assisting clinical studies for pharmaceutical development and supporting clinical study facilities. Based on this experience, we help to operate vaccination sites, respond to adverse effects, and carry out other activities to manage vaccines and to ensure vaccinations go smoothly. As a preliminary step, we have secured a comprehensive agreement with Yamanashi Prefecture as well as partnership agreements with Kofu City, Hokuto City, and seven municipalities near Mount Yotei in Hokkaido (as of March 2021).



What is "harmo Vaccine Care for COVID-19"?

This system enables the user to easily record and manage vaccination information regarding who had which vaccine at what time by simple operations using a tablet and barcode reader (Wi-Fi connection required). The system also helps to prevent vaccination errors and enables long-term individual follow-up activities. Normally, vaccination sites record vaccination information manually in a ledger, and then visually confirm the vaccination period and vaccine manufacturer if multiple shots are needed. If an issue occurs with a particular vaccine after administration,

there is a need to verify the vaccination ledger before contacting the people who received that vaccine. However, others have pointed out the issue that local governments find it difficult to respond due to limited human resources. Use of "harmo Vaccine Care for COVID-19" enables personnel to confirm the correct vaccination periods and frequency, helping prevent errors and oversights due to human error. In an emergency, the app also enables affected individuals to be swiftly identified and notified, thus helping solve issues that arise at vaccination sites.



How does "harmo Vaccine Care for COVID-19" differ from the system developed by the government?

"harmo Vaccine Care for COVID-19" has three features: (1) **registering and aggregating vaccination information**, (2) **functions to prevent vaccination errors**, and (3) **individual follow-up activities**. Though the government's system is planned to implement similar features for registering and aggregating

vaccination information, we see feature (2) (3) unique to CMIC enabling function (1) to be achieved accurately. Information regarding vaccine administration can be managed in a single location, thereby achieving safe vaccinations for local residents while reducing the burden on local governments.

Aiming for Barrier-Free Minds

The Tokyo Paralympic Games, set to be held in summer 2021, will provide opportunities for a society to accept diversity while enhancing recognition of parasports. What do we need to realize a society in which everyone can accept and respect each other's differences and live comfortably?

Let's hear from Eri Yamamoto, a 55-kg class powerlifter seeking to compete in the Tokyo Paralympic Games.

Aiming to be a Paralympic athlete while promoting parasports

I was born with spina bifida, which limits my ability to use my legs, so I have used a wheelchair since I was small. I was scared of water, but my mother took me swimming to encourage me to overcome my fears. That was how I discovered parasports. At first, I did not know about the Paralympics, but my swimming coach told me about it so I started aiming to participate in the Paralympics. However, I suffered an injury in high school, which forced me to abandon my hopes of participating in the Paralympics as a swimmer. After losing this goal, I majored in psychology at university because I wanted to help people. Around that time, my swimming coach asked me if I

wanted to try joining the Paralympics as an assistant to other athletes, so I attended the 2008 Beijing Paralympics as a mental trainer. By working as an assistant, I discovered just how many people care for the athletes at the event. I realized that I was not swimming alone and that I should have been more appreciative of the people who were supporting me. I also realized the importance of English communication at the Beijing Paralympics, so in 2010 I went to Canada to study English. As a result, I was able to interpret for the swimming camp before the 2012 games in London as well as take on other jobs.

I returned to Japan in 2015, where I got a job at the Nippon Foundation Paralympic Support Center (Parasapo). In 2016, I discovered

powerlifting. While working as both a Parasapo employee and an athlete, I currently aim to compete in the Paralympics under the category of "Raising Next-Generation Children." I only started this sport about five years ago, but athletes can engage in powerlifting for a long time because you can obtain better results as you get older. I am confident that I still have potential.



Eri Yamamoto

Para Powerlifter / Project Leader, Promotion Strategy Department, Nippon Foundation Paralympic Support Center
Ms. Yamamoto was born with spina bifida, which impaired the use of her legs from birth. She began swimming at 9 years old and competed in the Kinki Tournament, the Japan Championships, and other competitions for para swimming. She studied parasports in graduate school and thought "Which is more fun? A life where I do para powerlifting, or a life where I don't?" and decided to chase her dream once again, aiming to participate in the Tokyo Paralympic Games as an athlete. Eri currently competes in races in Japan and abroad while managing projects on raising awareness of people with disabilities at Parasapo.

Experiencing people's warmth in Canada

Though it may surprise some people, Japan is more developed than other countries in terms of barrier-free facilities. Elevators and escalators often stop working abroad, and there is no tactile paving on the sidewalks as in Japan, either. However, while I was abroad, people always offered to help me. I was so happy when others helped me go up or down stairs together when there was no elevator. This made me feel like I was living as a member of society. Back in Japan, few people offered to help me, and I often felt like I was treated as invisible. I sometimes wondered if I was a member of society here, and for some time I wanted to go back to Canada. Gradually, I came to think that I should not run from Japan, but rather that I needed to collaborate with many others to change this country.

Breaking down mental barriers

To change Japanese society, we need to take down the barriers in the minds of each and every person. Many people seem to be reluctant to offer help because they fear being refused. It is true that many people feel awkward after their offers to help are refused, but people do not necessarily need to do anything. If people think of offering help as an indication that they are thinking about others, and a habit develops of people casually offering to help each other, I think society will move one step forward. I feel that more people have offered to help me recently. It is funny to see how people can change once they understand how to offer help, despite having previously had a strong mental barrier. There has been a large change among adults in particular, so I personally find it rewarding to break down these barriers.

Aiming for a society that brings smiles to children with disabilities

When I was around eight or nine, my grandfather got drunk and yelled at my mother, saying it was her fault that I was born like this. At the time, everyone had the same sentiment, so my grandfather was not specifically to blame here. However, I do remember that I strongly felt that it is wrong to have a society in which people can say things such as this, and I wanted to show them what I could really do. Sadly, I could not show my grandfather before he passed away, but I want to change society so that children with disabilities can smile through my actions at Parasapo and by serving as a memorable athlete. I hope the Paralympics can encourage people to consider what they can do, too. I believe that society can change if everyone thinks together about things.



Initiatives at CMIC Group and others

Established a subsidiary to promote the employment of people with disabilities

As part of our corporate social responsibility, we established CMIC Well Co., Ltd as a special subsidiary in 2019, seeking to provide a stable workplace environment with the aim of realizing a place where people with disabilities can demonstrate their talents.

Paraathlete-led diversity training sessions

The Nippon Foundation Paralympic Support Center holds training sessions at the online version of The Challenge for Tomorrow School so that people can better understand disabilities and learn the proper actions to take. These initiatives will continue in the future.

I was present for this interview with Ms. Yamamoto. She is a truly remarkable person. It is amazing to see how she leverages her thoughts and feelings based on her experience to send a message to Japanese society. In this way, she is truly practicing diversity. I hope that this article helps break down many people's mental barriers, and I wish Ms. Yamamoto all the best in the Paralympic Games.

Kyoko Kanamaru

Charge of Group Diversity Promotion,
CMIC Group

