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We see already a higher awareness of why life science needs to be a priority for Japan and Australia

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Stephane Perrey, General Manager - Japan, Australia, New Zealand, Cytiva, Tokyo spokes to BioSpectrum Asia Podcast Host Ankit Kankar

" The challenges with pandemic showed how resilient we are as an organization. The whole team in Japan, Australia and worldwide have risen to the occasion. Although, we do not see each other face-to-face anymore, the strong bond between the teams has helped us adapt and pivot to deal positively with the challenge. I believe we will be even stronger after COVID-19."

Cytiva (formerly part of GE Healthcare Life Sciences), a global provider of technologies and services that advance and accelerate the development and manufacture of therapeutics, has joined hands with Takara Bio to manufacture a DNA vaccine candidate for COVID-19. In collaboration with Osaka University and AnGes, Inc. group, Takara Bio is working on an innovative plasmid vaccine. The DNA vaccine would generate the SARS-CoV2 protein which would become an antigen, and help people develop immunity against the virus. DNA vaccines are said to be safely manufactured in a short period of time without using any dangerous pathogens. By injecting circular DNA (plasmid DNA) that encodes the protein of the target

pathogen, the pathogen protein is produced in the body and immunity to the pathogen is generated. Unlike attenuated vaccines, it has no pathogenicity. BioSpectrum Asia spoke to Stephane Perrey, General Manager Japan, Australia, New-Zealand, Cytiva based in Tokyo about the collaboration with Takara and COVID-19 impact on the life sciences sector in Japan and Australia. Edited excerpts:

How is Cytiva helping Takara gear up for COVID-19 vaccine production? When will the vaccine be ready?

Developing vaccines and therapies for emergency purposes is co

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mplex. Every day without a solution means more people getting infected and more patients turning up to the emergency room. Every day counts.

Today, the whole world is focused on finding a solution to the global pandemic. Meanwhile, individual countries are preparing for a potential 'second wave' of infection across their population. Hope for a solution sits with the biotechnology industry including biopharmaceutical companies, diagnostic developers and academic researchers. One of those is Cytiva, a global provider of technologies and services that help advance and accelerate the development and manufacture of therapeutics. We have provided equipment, consumables and expertise for the research, development and manufacturing of vaccines and therapies. Many of our customers are seeking technical advice and solutions on an unprecedented timeline and scale.

Cytiva is working closely with Takara Bio on an innovative plasmid vaccine. The DNA vaccine would generate the SARS-CoV2 protein which would become an antigen, and help people develop immunity against the virus. The work involves defining the most efficient and effective way to produce the initial manufacture of the vaccine candidate while preparing for future commercial production. Usually, these activities are planned in a linear fashion but under COVID-19, everything needs to happen in parallel. For example, traditionally, clinical results lead to decision towards large scale manufacturing plan. Here, risk in investing in capacity expansion in production needs to be taken to meet delivery timeline if the clinical data are positive.

Our approach centers on open communication. We are connecting regularly with our stakeholders including Takara Bio team. This helps to pivot or quickly adapt our plan.

In parallel, we have organized ourselves internally to ensure real-time flow of information between all the stakeholders worldwide in Cytiva. Delivering high quality product on time is our number one priority and is critical as the demand for technology to manufacture biologics continues to rise.

Cytiva has also partnered with the University of Queensland for developing a COVID-19 vaccine? How is it progressing?

We are extremely pleased to see the fast development of the COVID-19 vaccine candidate at The University of Queensland (UQ) in Australia. Most recently, early preclinical results showed that the vaccine candidate produced high levels of antibodies that can neutralize the virus.

The UQ team have developed a novel strategy for the fast development of potent antigen to build up a specific immune response. The molecular clamp platform they use helps present the target protein (the antigen) in its native prefusion structure, this means the protein is presented to the human immune system in its native virus surface form. It is expected to lead to a very potent vaccine. Usual vaccine strategies with isolated antigen leads to an antigenic protein that is not identical to the protein on the surface of the virus, the molecular clamp technology overcomes this problem.

Molecular clamp-based vaccines require highly customized purification methods. This is where Cytiva comes in. Our experts in protein purification in Uppsala Sweden and our support team, namely Fast Trak, from Marlborough, MA in the US have helped developed a chromatography resin with a highly specific ligand that binds to the molecular clamp attached to the protein. Working with the UQ team, together we have been able to develop the process for large scale manufacturing in a very short time frame.

In this race against the COVID-19 global pandemic, industries, academia and funding agencies are working together to advance and accelerate urgently needed therapies. The whole Cytiva team are honoured to be involved in these projects and to accelerate the development of life-changing therapies.

Besides vaccines, is Cytiva helping to develop diagnostics solutions as well?

We also partnering with diagnostic developers such as Avacta, Genedrive and Sona Nanotech to develop and scale up the production of COVID-19 test kits.

How has COVID-19 impacted the life sciences sector in Japan and Australia?

It is too early to see concrete changes but what I can say is both countries are sharing a lot of similarities: developed economy, good governmental healthcare system, renowned academic research built on a powerful education. We see already a higher awareness of why Life Science needs to be a priority for Japan and Australia. From my perspective, both of the two countries have realized that the vaccine development and the response to pandemic should be a matter of national security.

In both cases of UQ and Takara Bio, this is the right strategy to ensure capacity in the country though they are still pending the results of clinical trials.

What are the major plans in store at Cytiva post COVID-19?

The challenges with pandemic showed how resilient we are as an organization. The whole team in Japan, Australia and worldwide have risen to the occasion. Although, we do not see each other face-to-face anymore, the strong bond between the teams has helped us adapt and pivot to deal positively with the challenge. I believe we will be even stronger after COVID-19.

More specifically for Australia and Japan, we hope to facilitate the huge potential in the biopharma industry as well as enable sustainable access to the latest biologic treatments. We want to support effort to improve the bioindustry ecosystem by working closely with academic researchers, biotech start-ups and established industries to build local capacity and the talent pool. This will allow more biological drug development as well as creating a sustainable local bio-economy, improving the trade balance of healthcare. A steep challenge but the COVID-19 pandemic is showing us that this is a most needed transformation of healthcare.

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