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ASIA EDITION

An effective biobank provides high-quality and affordable biospecimens to drive research, aiding live-saving scientific discoveries

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In conversation with Erik Steinfelder, Global Enterprise Relationship Lead, Thermo Fisher Scientific

To study disease risk and understand drug response numerous biobanks have emerged to facilitate genetic risk screening and pharmacogenomics in clinical research/ pandemic studies. These biorepositories preserve biospecimens like blood samples, gene pools, biopsy material, and even human microbiota. Numerous efforts are emerging to maintain biological samples through sustainable biobanking practices. Understanding that biobanks can be landmark resources for translating genomics into clinical care, and sharing insights and information critical to advancing science, Erik Steinfelder, Global Enterprise Relationship Lead at Thermo Fisher Scientific explains more about the emerging biobanking trends. Edited

excerpts;

- **How has Asia progressed with biobanking in the last decade?**

The demand for more, high-quality, and clinically annotated biospecimens will increase, primarily due to the unprecedented level of genomic, post-genomic, and personalised medicine research activities. Biobanks will need to adopt industry-wide standard operating procedures, methods for quality assessment, less expensive methods for sample storage/distribution, and objective methods to manage scarce biospecimens. Public-private partnerships will also be important, as well as the number and diversity of available biospecimens, cost management, and the realisation that an effective biobank is one that provides high-quality and affordable biospecimens to drive research that aids in live-saving scientific discovery.

Across Asia, countries active in biobanking are in various stages of progress. Advanced biobanking markets such as Japan, China, Korea, and Australia have been very active, benefitting from long standing support from their government's strategic plans. Countries such as Indonesia and Vietnam are also seeing strong developments in recent years.

Some notable projects include the creation of a precision medicine initiative with a polygenic risk score for all participants in Taiwan, and the Tohoku Medical Megabank Project in Tokyo with samples from participants that were affected by the Fukushima disaster are collected, monitored, and used for research.

- **How can the potential of biobanks be harnessed in developing novel healthcare solutions?**

In the journey of scientific discovery, samples are often needed but not always easily made available or shared. Sample banks are beneficial as they allow researchers with the means to access the collection, storage, and management of samples from a range of individuals – be it, healthy volunteers or patients.

However, despite the availability of samples, better alignment is needed between the different stakeholders on what samples are needed in high demand, and conditions whereby samples are allowed to be shared.

Biobanks can sometimes be unwilling to share samples outside of their own institutions, and researchers can operate in silos when samples are not shared. This can limit access and contribute to difficulty in obtaining biological samples for research.

Fortunately, we are seeing some successful examples in Japan, China, Korea, and Australia where this has been improved over time and more co-operation is taking place.

- **How is Thermo Fisher addressing the biobanking trend in the Asian region? How do you foresee prospects?**

The APAC region is unique, in that, when there is a plan in place, infrastructure development is accelerated, and biobanks come to realisation much faster than in other parts of the world.

Thermo Fisher Scientific's expertise in biobanking and strong local connections help customers actualise their biobank plans. We track the latest findings presented at biobank conferences and events to identify trends in the Asia Pacific region, to develop bespoke solutions according to needs.

We often see a significantly larger size of sample collection in APAC. These quantities can create a higher demand for biobanks to automate the storage and processing of samples. However, this also needs to be done in a safe way that preserves the sample integrity.

- **How are you leveraging investment or collaboration in the biobanking arena? What plans are in the pipeline?**

We leverage our extensive partner network with biobank associations and conferences as well as organise events such as webinars and training to encourage knowledge sharing within the larger biobanking industry. We view biobanking as a mindset.

I liken it to a spiderweb where a community of like-minded scientists can share and challenge perspectives. In this analogy, Thermo Fisher is the spider – we use our end-to-end expertise to help partners build their biobanking capabilities. In fact, we built a

community specifically around biobanking in which we regularly organise events and share materials that promote sustainable, ethical, and quality research.

We then extend the web and enable greater cooperation and collaboration within the biobanking and scientific communities by ensuring the quality of samples and data to support various phases of research – be it at the discovery or clinical trials. Further, our extensive capabilities enable us to bridge connections among scientists and ultimately, contribute to catalysing the progression of research.

We continue to innovate and provide solutions that meet the demands of research today, and we will continue to work with various partners in the Asia Pacific region to solve biobanking challenges and realise scientific breakthroughs.

- **How should governments prioritise biobanking activities? Are there challenges in fully optimising these complex biological libraries?**

Since the beginning of COVID-19, numerous biobanks have emerged to facilitate studies of the virus and disease, how it spreads, and why some people are more susceptible than others. Biobanks also provide pre-COVID samples for biological comparisons and further research.

Going beyond the pandemic, biobanks play a crucial role in all disease areas. For decades now, unique collections of material, serum, tissue, and a variety of cells have been stored to help researchers understand non-communicable diseases as well.

For example, Osteogenesis Imperfecta (OI), a genetic disorder that affects approximately 15,000 people globally (approximately 1 in 10,000 to 20,000 people) and prevents the body from building strong bones, only has 385 samples with associated clinical data. Insight into the molecular mechanisms behind individual diseases like OI can only be obtained from the investigation of human biological samples. These rare disease collections hold an immeasurable wealth of information, much of it yet to be revealed.

There are many critical considerations for biobanks, especially because of the safety implications of preserving sample integrity. Optimisation needs to be considered in processes around sample collection and preparation, automation equipment, cold storage controls, wireless monitoring, consumables, etc.

The experience and knowledge being developed on how to store samples under the correct conditions–and access them for the benefit of the patient–is a welcome source of information and inspiration for many biobankers working in different arenas. The time is now to invest in even better and stronger infrastructure going forward.

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