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Singapore organizations outline Genomics in developing drugs, vaccines, and precision medicine

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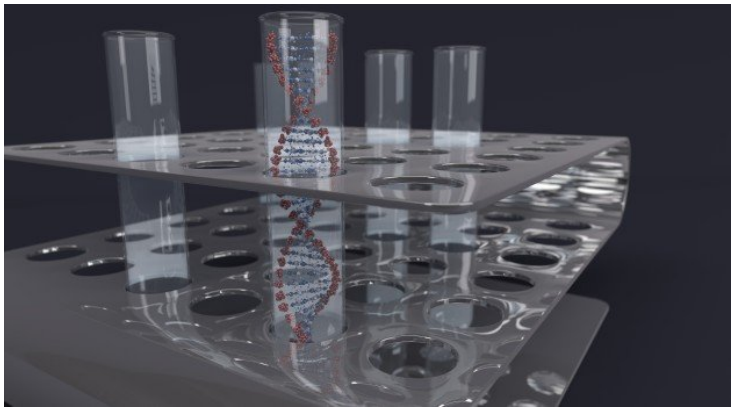
Research commissioned by Lenovo and Intel, and conducted by a leading market research firm highlights humanity's greatest challenges where genomics research-led intervention could significantly impact



A new whitepaper, commissioned by Lenovo & Intel, led by IDC highlights key challenges and drivers transforming the healthcare landscape across Asia Pacific. Titled *'Leveraging High-Performance Compute Infrastructure to Address the Genomic Data Challenge in Life Sciences'*, the paper underlines humanity's greatest challenges where genomics research-led intervention could impact significantly. A key highlight from the white paper states that while pandemic-led acceleration in innovation has given a boost to the Singapore healthcare sector, genomics high-performance computing (HPC) infrastructure that is key to drug and vaccine discovery and developing a precision medicine strategy is still at startup stage for nearly 57% of organizations in Singapore. This trend is also seen across a few other APAC regions surveyed, however, Japan and Korea lead in having advanced (3+ years) HPC infrastructures.

The survey was conducted across 150 pharmaceutical and biotech companies across five key markets in Asia – India, Singapore, Thailand, Japan, and Korea.

Genomics and Humanity's Greatest Challenge

When it comes to solving society and humankind's biggest challenges, 40 percent of Singapore decisions makers are certain genomics is fundamental to develop a precision medicine strategy to treat chronic illness, rare diseases, and lifestyle diseases. Unsurprisingly, 33 percent organizations surveyed across Asia Pacific mirror this drift, followed by 17.3percent who believe genomics can improve development of drugs and vaccines which is also a priority for nearly 24percent of organizations in Singapore.

Distinctive aspects discovered in the white paper point to the expansive potential of genomics. According to nearly 30% of surveyed Singapore leaders, genomics could also be a game-changer in forensic genomics.

Commenting on this, Sinisa Nikolic, Director and Segment Leader, HPC & AI, AP, Lenovo ISG said, *"The volume and type of genomics data generated is unimaginable and to make accurate decisions based on this data requires huge computing power. This gets even more difficult with complex and unscalable solutions, which organizations across Asia Pacific ranked as top challenges when looking for genomics solutions."*

Increasing Genomic Workloads and Storage Capabilities

The trend towards developing niche, high-value personalized health solutions is expected to boom as almost all (96.7%) Singapore organizations anticipate their annual genomics workloads to grow more than 10% over the next two years. Similarly, for almost 77percent, the annual spend on data storage and compute is likely to increase more than 10% in the two-years period.

Sumir Bhatia, President, AP, Lenovo ISG said, "One size doesn't fit all, whether at frontend healthcare delivery or backend IT infrastructure. To catchup with the ever-growing data, the required infrastructure setup can immensely add to the capital and operational expenditure. We expect this to be a critical challenge for organizations in Singapore working to enhance their HPC infrastructure. This is where pay-as-you-go models like Lenovo TruScale become crucial so businesses of all sizes can scale up and down as required, and easily manage their operational expenditure to address humanity's greatest challenges."

The growing storage requirement predictions could add to the existing cost burdens for nearly 44% of organizations who are currently spending more than $1M annually on data compute, storage, and maintenance and services. Even with the challenges around scalability, flexibility, and costs, nearly half (43.3percent) of the respondents are not looking to acquire new solutions to transform their HPC landscape. Surprisingly, similar feedback was given by 50percent of leaders in Asia.

Recognizing IT Challenges and Accelerating Genomics Transformation with HPC

With a growing focus on making precision medicine a reality, 50percent of decision-makers in Singapore's genomics industry feel that, with the high velocity at which genome data is generated, the lack of computing power to analyze it becomes the biggest infrastructural and productivity challenge for genome sequencing. Delving further into the challenges, nearly 47percent of the respondents ranked 'multi-dimensionality of data' as the second-biggest IT challenge, ahead of cybersecurity risks, which nearly 54percent ranked as fifth-most critical IT challenge.

Across Asia Pacific, close to 90percent of respondents are using high-performance workstations, while over 50percent also use laptops for data visualization. Interestingly, 36percent are using 3D augmented reality/virtual reality (AR/VR) solutions, indicating a growing shift toward immersive visualization techniques, complemented by deep learning to enable molecular modeling and simulations.

"A major challenge for researchers is the time taken to process a single genome. Fortunately, Lenovo's Genomics Optimization and Scalability Tool (GOAST) reduces the time to process a single human genome from 150 hours to less than 48 minutes, which significantly expedites analysis. This means researchers can quickly map a cohort of people instead of spending time analyzing a single genome. HPC supports high-throughput volumes to accelerate the speed of analysis, whereas AI helps make sense of the difference between genomes. This is why we are seeing GOAST being preferred and expecting it to grow tremendously over the next few years." Sinisa Nikolic added.