Google Cloud Press Corner

Garvan and Google Cloud Help Solve Australia's Health Challenges with Genomics Sequencing

Leading Australian biomedical research institution demonstrates the power of cloud-based genomic processing with Google Cloud

Sydney, Australia, May 23, 2022 – Google Cloud and The Garvan Institute of Medical Research (Garvan) today announced a milestone in Australia's pathway to deploying genomic medicine.

In an Australian-first, the organizations collaborated on the largest genome sequencing sample ever performed in Australia, processing 14,000 genomes in less than two weeks. This is a significant step forward for genomic research, which proves the power of cloud-based genomic processing and its potential to lead to earlier diagnoses, interventions, and targeted treatments of gene-related health issues.

Google Cloud supported Garvan by demonstrating the scalability of a secure-by-design, cloud-based solution. By storing genomics data on Google Cloud and leveraging the Broad Institute's Terra workflow and data management system, Garvan was able to achieve the milestone – processing the largest genomics dataset ever examined in Australia – while meeting security and international genomics standards. Running the same analysis without cloud computing would be significantly more expensive and time-intensive.

"Recent, substantial improvements in the national genomics landscape have resulted in the assembly of large-scale biobanks with hundreds of thousands of genomics-ready DNA samples and associated deep clinical data," said A/Prof Sarah Kummerfeld, Director, Data Science, Garvan. "This dramatic expansion of access to clinical genomics requires scalable, coordinated data infrastructure. Google Cloud offers infrastructure built for scaling and efficiency. Without it, this genome project would have taken much longer."

Addressing Biomedical Researcher Challenges with Cloud

The collaboration between Google Cloud and Garvan addresses the challenges researchers and clinicians face when tackling big questions in biomedical research – including storing, analyzing, and sharing genomic data. Overcoming these challenges requires expertise and investment in population genomics – the generation and analysis of massive-scale datasets of human genetic variation, combined with information on health and clinical outcomes.

The dataset generated by this project will be used by researchers at the Centre for Population Genomics (CPG), a partnership between Garvan and the Murdoch Children's Research Institute (MCRI), to explore the distribution of genetic variation across populations and improve the diagnosis of rare genetic disorders.

"In order for genomics to provide better prediction, diagnosis, and treatment of disease for all Australians, we need the ability to analyze human DNA at massive scale. This project demonstrates the value of a cloud computing model to achieve this," said Prof Daniel MacArthur, Director, Centre for Population Genomics.

"Core to Google Cloud's DNA is open-source collaboration, and biomedical research is no different. We know that solving some of the world's biggest challenges doesn't happen in a vacuum," said Alister Dias, Vice President, Australia and New Zealand, Google Cloud. "Google Cloud's scalable and secure infrastructure enabled Garvan to analyze massive amounts of biomedical information at unprecedented speed. The potential of this research to quickly understand and find cures for gene-related diseases is significant, and one we're proud to be a part of. "

By deploying scalable Google Cloud technologies, including Google Compute Engine (GCE), Google Cloud Storage (GCS), Cloud Life Sciences API, Google Kubernetes Engine (GKE), and Artifact Registry, Garvan is leading the way in genomic data management, processing, and analysis, while making data science more accessible to researchers.

About The Garvan Institute of Medical Research
The Garvan Institute of Medical Research brings together world leading researchers and clinicians, collaborating locally and globally, to improve human health. Our mission is to harness all the information encoded in our genome to better diagnose, treat, predict and prevent disease. From the individual patient with rare disease, to the many thousands affected by complex, widespread illness, we are pioneering discoveries across diseases

that have the deepest impact on our community.

About Google Cloud
Google Cloud accelerates every organization’s ability to digitally transform its business. We deliver enterprise-grade solutions that leverage Google’s cutting-edge technology – all on the cleanest cloud in the industry. Customers in more than 200 countries and territories turn to Google Cloud as their trusted partner to enable growth and solve their most critical business problems.

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