

Singapore launches TISHUMAP study to advance AI-driven drug target discovery

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To profile thousands of tumour samples to uncover novel biomarkers and therapeutic targets for cancer and inflammatory diseases



10x Genomics, Inc., a leader in single cell and spatial biology, and the A*STAR Genome Institute of Singapore (A*STAR GIS), have announced a research collaboration for the Target Inference from Spatialomics & Histology Using Multimodal AI & Phenotypes (TISHUMAP) project.

This initiative will leverage 10x Genomics' Xenium platform and advanced artificial intelligence (AI) to analyse thousands of tissue samples with the goal of accelerating drug target discovery and enabling precision medicine for cancer and inflammatory diseases.

As part of the TISHUMAP study, A*STAR GIS and 10x Genomics will analyse up to 2,500 formalin-fixed paraffin-embedded (FFPE) clinical tissue samples, including those from gastric, liver and colorectal cancers. Unlike traditional methods that require tissues to be broken down, 10x Genomics' Xenium platform uniquely enables researchers to visualise gene activity directly within individual cells in intact tissues. This approach generates a comprehensive and precise molecular-level map, clearly illustrating how cells are positioned, interact and function within their natural biological context.

When combined with advanced AI, this powerful capability allows researchers to detect critical patterns across large datasets swiftly, significantly advancing the identification of novel biomarkers and drug targets. The goal is to pave the way for the development of new diagnostics and, in the future, personalised treatment plans for patients.

This collaboration spans both data generation and analysis stages, including tailored gene panels designed for specific research questions and intelligent software pipelines for efficient management of large datasets. A*STAR GIS and 10x Genomics will work together to streamline lab workflows and build advanced tools that simplify how scientists prepare samples, capture images, and analyse spatial biology data. They'll also co-develop custom gene panels and smart software pipelines designed to handle the massive datasets generated by this cutting-edge research.