

A*star, PacBio to advance research on infectious diseases

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Singapore: A*STAR's Genome Institute of Singapore (GIS) has expanded its collaboration with Pacific Biosciences (PacBio), a California-based provider of the PacBio RS II Sequencing System, based on novel Single Molecule, Real-Time (SMRT) technology.

Together, GIS and PacBio will combine efforts to advance research in infectious diseases, genomics, sequence analysis, and translational healthcare in Singapore.

The collaboration is built on the complementary strengths of both the GIS and PacBio in the analysis and understanding of bacteria and viruses, including those that cause diseases such as diarrhoea, meningitis, urinary tract infection, dengue, and liver cancer, as well as those that we continuously live with, termed the microbiota. Understanding the dynamics of bacterial genomes is particularly relevant to address the growing challenge of antibiotic resistance in Singapore and the rest of the world.

Dr Swaine Chen, Dr Martin Hibberd, and Dr Niranjana Nagarajan from the GIS are spearheading the collaboration. Dr Chen said, "Working together with PacBio, we are able to fully sequence bacterial genomes and arrive at deeper insights into how bacteria cause disease".

Mr Ram Laxman, president and general manager, Pacific Biosciences, Asia Pacific, commented, "SMRT Sequencing technology is proving to be the gold standard in bacterial and viral sequencing due to its ability to fully resolve repeat regions and "finish" genomes. Other NGS technologies are not able to finish even the smallest of bacterial genomes due to their sequence context bias and very short sequencing reads. It's like trying to complete a complex puzzle with missing puzzle pieces". He also added that researchers started using PacBio RS II for tracking mutations in viruses that cause pandemics like MERS. The quick turnaround time, coupled with the highest consensus sequencing accuracy is crucial to track the spread and mutation rates on these viruses.

Mr Michael Hunkapiller, president and CEO, Pacific Biosciences, commented, "We see a huge potential in working with world-renowned institutions like GIS to further broaden the applications of SMRT Sequencing, especially those that have direct impact on human health."