

BioNano installs gemnome chip in China, Israel univ

29 October 2013 | News | By BioSpectrum Bureau



Singapore: BioNano Genomics is installing Irys Systems at Chinese Academy of Sciences in Beijing and School of Chemistry at Tel Aviv University in Tel Aviv, Israel, to run high-throughput chip, IrysChip V2, which supports human genome analysis.

This purchase marks the first academic order of the Irys System in Asia, and Dr Bin Liu will be the principal investigator leading the adoption of Irys for the Chinese Academy of Sciences. He heads the Center of Systematic Genomics at Xinjiang Institute of Ecology and Geography and Institute of Oceanology. Dr Liu's team will use the Irys System for a wide variety of applications to study eco-systems and bioresources in marine sciences and in arid desert lands, where highly complex genomes are found.

At Tel Aviv University, Dr Yuval Ebenstein leads the NanoBioPhotonics Lab and will oversee the adoption of Irys. His team is advancing technologies to directly visualize the individual epigenetic modifications in an individual genome. Epigenetics is the study of how gene expression is regulated, via proteins, methylation and other modifications, without altering the underlying DNA sequence. By creating genome maps from individual DNA molecules, up to one million base pairs in length, they are unlocking important genetic and epigenetic information about how genes are activated or silenced. Knowing how and why genes are turned on and off is significant to understanding many aspects underlying basic biology, including development, evolution and human disease.

The Chinese Academy of Sciences and the Tel Aviv University are among the latest to adopt the Irys System. Others include the New York Genome Center, who are using their Irys for human and cancer genomics, UC San Francisco, for genomic investigations of a range of species from viruses to humans, and Kansas State University, US, for the i5k insect and other arthropod genome sequencing initiative.

Mr Han Cao, founder and chief scientific officer, BioNano Genomics, "Our new high-throughput chip shows the Irys System can scale to large complex genomes, which is critical to its utility throughout human genomics and epigenomics. The Irys System is a versatile and sensitive single molecule imaging platform that allows researchers to rapidly identify structural information over long-range distances with minimal alteration of the native genomic samples. This ability enables them to assemble de novo genomes containing complex, highly variable regions, as well as map epigenomics patterns using various

labeling schemes, which are currently in advanced development."

Dr Liu stated, "We have followed the development of the next-generation of physical mapping technologies closely. Integration of short-read, next-generation sequencing with long-range physical maps has long been the standard of genomics. Today, Irys has started the last step of genome characterization in a way that researchers and practitioners originally envisioned. Most of these are in a category of *de novo* non-model species. We will not settle for anything less than the complete picture."

Dr Yuval Ebenstein, senior lecturer, School of Chemistry, Tel Aviv University, "Next generation sequencing is advancing the genomic exploration in all fields of biology, but it fails to extract the full range of information associated with genetic material. By directly visualizing DNA, we are able to get important insights into genome structural variation and epigenetic marks that are not accessible through sequencing or DNA arrays."