

Ultra-fast DNA sequencer to detect bird flu

09 May 2013 | News | By BioSpectrum Bureau



Singapore: A team of scientists from the National Chiao Tung University (NCTU), Hsinchu City, Taiwan, developed a rapid, precise and economical technique for single-molecule DNA sequencing. The method could be used to develop a vaccine and anti-viral drugs to fight the present menace of H7N9 bird flu. The research has been published in the latest issue of the journal Nature Nanotechnology.

The new technique monitors the electrical conductance of a phi29 DNA polymerase as it incorporates unlabelled nucleotides into a template strand of DNA, where the conductance is measured by attaching it to a protein transistor.

The research team was led by NCTU professors Dr G Steven Huang from the Department of Materials Science and Engineering and Dr Chen Yu-Shiun from the Department of Biological Science and Technology.

Dr Chen said that, "Recent research has shown H7N9 is a recombinant virus formed from three other flu strains, and the rapid speed at which it mutates means that fast sequencing is vital to combating the disease. With the new system a virus genome can be sequenced in just one hour, instead of one day. This is also the first time people can see the entire process of polymerase synthesis without the use of fluorescence and other external aids."

Dr Huang said that the team is currently exploring how to combine industrial knowledge with their groundbreaking bio-nanotechnology research to enhance its productivity and economic value.