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[\[BioMedical Electronics\] NCTU Produces First Single Molecule Protein Transistor That Can Decode Personal Genetic Sequences](#)

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CNA (2012/03/23) That a newborn baby's lifespan could be told simply with one drop of her or his blood is no longer a scenario from a movie. A research team from National Chiao Tung University currently adopted bio-nanotechnology and presented the first single-molecule protein transistor that can decode personal genetic sequences.

The research team led by Professor G. Steven HUANG at Biomedical Electronics Translational Research Center, National Chiao Tung University has made a significant breakthrough in the field of molecular electronic devices and produced the first ever applicable single-molecule protein transistor, which opens a new page with regard to the probability introducing biomedical nanotechnology in semiconductor manufacturing.

Related findings were published in Nature Nanotechnology, as the only "article" in this issue (the April issue).

The variation of genetic sequences determines individual differences, including personality, potential diseases and lifespan. During the past few decades scientists have been using chain termination method to study genetic sequences, and the first decoding took place in 2005.

The method adopted in the present protein transistor is to detect the different nucleobase by sensing the variation of electrical signals. This method allows for the determination of one individual's genetic sequences decoding within one hour with one drop of blood.

The team indicated, the single-molecule protein transistor can be a better screening measure than monolayer film. It can provide with instant and the clearest monomolecular reaction that yields quick ascertained judgments, reducing the waste of testing resources and, with the pharmacokinetic advances that have been benefitted by the quick responses, improving the accuracy of clinical experiment.

Further Information:

[CNA 2012/03/23](#) (Chinese)

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[National Science Council International Cooperation Sci-Tech Newsbrief](#)  
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