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Prof. Jing Cheng received his PhD degree in Forensic Sciences from the University of Strathclyde (UK). He was a Research Assistant Professor at University of Pennsylvania, Principal Investigator at Nanogen and Chief Technology Officer at Aviva Bioscience. His research intererst includes the development of DNA chips, protein chips, cell chips and lab-on-a-chip system, and the application of biochips in disease diagnostics, food safety testing and drug discovery.

Dr. Cheng developed the world's first system of laboratory-on-a-chip in 1998 which was featured in the front cover story of the June 1998 issue of Nature Biotechnology, also cited in the breakthrough of the year by Science in the same year. He has published 74 peer-reviewed papers and edited 8 books. In addition, he has obtained 50 patents. He was awarded Nanogen's most prestigious award NanoGrant in 1999, Distinguished Achievement Award for Overseas Scholars Returned in 2003, National Young Scientist Award in 2004, Qiushi Outstanding Youth Technology Transfer Award in 2004 and China Patent Award of Excellence in 2006.

The Progress of Biochip Development for Research and Consumer Market

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Biochip-based platforms for research have developed rapidly in the past decade and include chips that can generate detailed biological information at four different levels- at the gene, protein, cell, and tissue levels. For example, at the gene level we have SNP and mutation analysis microarrays, comparative genome hybridization microarrays and gene expression profiling microarrays, at the protein level we have established activated transcription factor profiling chips as well as ChIP-GLAS-based promoter chips, at the cellular level we have chips for single cell ion flux monitoring and multi-channel electrophysiology measurement of cell networks, and finally for pathological examination we can provide numerous different tissue microarrays, including normal and diseased tissues.

In recent years demand for general consumption of these new classes of biochips has been keenly anticipated in consumer areas such as disease diagnostics, bio-safety testing, etc. In this presentation different types of consumer biochip products will be introduced, including DNA microarrays for the detection of the presence of SARS Coronavirus RNA, for detection of Gram positive bacteria and the associated drug resistance genes, for detection of mycobacterium and the drug resistance genes for TB, for detection of food-borne pathogen, and protein microarrays for the diagnosis of autoimmune diseases, and for the detection of veterinary drug residues such as antibiotics. This broad range of applications for biochips foreshadows future development of a wider range of sensitive testing products. The perspective presented is that with more and more consumer biochip products being developed, validated and launched into the marketplace, a huge consumer impact will be generated through their utility to enable the general public to benefit directly from their use in different aspects of daily life, ranging from personal health to food safety and consumer product testing.