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Mass production of high fidelity oligonucleotides as feed stock of post-genome-sequencing synthetic biology (PGS-SB)

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Rapid progress in genome sequencing and functional genomics has set up the stage for a new era of engineering-based post-genome-sequencing synthetic biology (PGS-SB). As the blueprints, i.e., the DNA coding sequences, of biological devices of specific functions are largely known, engineering these devices, further biosystems which are made of designed devices are tacks of construction of structures of hundreds and thousands of nucleotides in defined orders and contents. Oligonucleotides thusbecome the fundamental building blocks of aforementioned bio-devices and systems. We report a microfluid microarray chip technology platform, for programmable engineering oligonucleotides in quality and quantity which coupled with a seamless workflow for generation of high fidelity oligonucleotides, we will demonstrate the application of these olinucleotides in a varieties of PGS-SB applications. Our goal was to offer affordable solutions to general laboratories interested in PGS-SB.

Biography

Xiaolian Gao co-founded VisiGen Biotechnologies, Inc., in 2000. She is Professor of Chemistry, Biology and Biochemistry and Director of the Keck/IMD NMR Center at the University of Houston. After spending more than two years working at then Glaxo Pharmaceuticals as a Principle Research Investigator in structural biology, she joined the Department of Chemistry at the University of Houston. At the Keck NMR Center that she established at the University, she has collaborated with many groups in Houston and nationwide. Her group has discovered and published unique structures of biologically important DNA and ligand-DNA complexes. Pursuing research in the interdisciplinary areas of chemistry and biology, she developed novel methods for massively parallel synthesis of biomolecule and chemical microarrays, which became the founding technology of Xeotron Co. Ms. Gao holds a BS degree from the Beijing Institute of Chemical Engineering and PhD in Chemistry at Rutgers University. During her postdoctoral work in NMR-based structure biology at the medical school of Columbia University in late 80's she was among the first few who solved the structures of several important Ligand-DNA complexes using high resolution nuclear magnetic resonance (NMR) spectroscopy.

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