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**Rapid assembly of multi-gene pathways and combinatorial libraries with semiconductor technologies**

Engineering synthetic biological systems requires the design, build and testing of multi-gene networks. To optimize a synthetic system with the best combination of DNA parts, synthetic biologists will need to screen in a combinatorial design space. But such combinatorial engineering approaches are hindered by the difficulty of simultaneously assembling numerous large, multi-gene constructs from a collection of DNA parts. Here, we introduce our newly developed combinatorial library synthesis platform, which enables in-parallel construction of thousands of multiplexed gene variants in an efficient and economical way. This platform utilizes our patented semiconductor-based oligonucleotide microarray fabrication technology, high-throughput GenParts® DNA Fragments, and proprietary isothermal GenBuilder™ assembling reagents. Libraries generated using this method are highly customizable and capable of generating over 1x10<sup>8</sup> variants. As a result, our platform enables faster, easier, and more cost-effective engineering of metabolic pathways and microbial strains in comparison to alternative approaches.

**Biography**

Cedric Wu obtained his PhD degree in Cellular and Molecular Biology from University of Wisconsin - Madison. He received post-doc training in nucleic acid, surface and analytical chemistry. Dr. Wu possesses more than twenty years of combined experience working in academia, government and industry. He invented and published more than 20 articles and patents, as well as numerous trade secrets, including nucleic acid microarray fabrication technologies and gene assembling methods. He, currently, is leading the R&D department in GenScript focusing on novel DNA synthesis, long and pathway DNA assembly, codon optimization, DNA microarray fabrication, oligo pool synthesis and automation process development.

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