

## **NATURAL PRODUCTS BY SYNTHETIC BIOLOGY AND MICROBIAL ENGINEERING**

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Natural products are made from simple building blocks, the structural diversity found in natural products is the result of Nature's intrinsic use of combinatorial biosynthesis, and recent progress in microbial genomics and synthetic biology has sparked the emergence of a suite of contemporary approaches to natural products by microbial engineering and fermentation. Current strategies are mainly based on the collective knowledge of genetics, microbiology, evolution, enzymology, and structural biology that governs the natural product biosynthetic machinery. While successful, they are limited by what information is gleaned from the above disciplines and how that information can be applied to construct the designer pathways. Nature has used evolution over billions of years to become an expert in combinatorial biosynthesis and microbial engineering, and we have only begun to tap into this knowledge. Selected examples from our current researches will be presented to highlight the opportunities in accessing natural products and expanding natural product structural diversity by exploring the vast combinatorial biosynthesis repertoire found in Nature.