



# Engineering Complex Phenotypes in Industrial Strains

*Ranjan Patnaik*

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## **Engineering Complex Phenotypes in Industrial Strains** Ranjan Patnaik

This book highlights current trends and developments in the area of engineering strains. The book details the current and future tools used in the production of bulk chemicals and biofuels from renewable biomass using green technologies. Complex phenotypes are traits in a microbe that requires multiple genetic changes to be modulated simultaneously in the microorganism's DNA. Knowing what those genetic changes are for a given trait and how to make those changes in the most efficient way forms the motivation behind writing this book. This book explains the newer tools to develop and enable engineered strains at time scales much faster than the natural evolution process so that we can increase a cell's production of a certain substance, increase process productivity, and extend metabolic capability. This book provides a one-stop platform of reference for practicing researchers in the field of industrial biotechnology. This book also explains that the commercial success of a process that uses microbial catalysts over platforms that use chemical catalysts and fossil fuels depends on the time it takes to engineer these microbes to perform the desired reaction under harsh manufacturing conditions and at rates that meet the criteria for economic feasibility.

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