Advances and Application of CRISPR-Cas Systems and Protein Engineering

Background

• Synthetic biology is a rapidly growing field.
• Advances in synthetic biology enable efficient engineering of microbes and plants to have desired phenotypes and to produce biofuels and sustainable chemicals.

Approach

• Two chapters in the book, New Frontiers and Applications of Synthetic Biology, discuss advances in, and applications of, CRISPR-Cas and protein engineering technologies.

Outcome

• One chapter covers advances in CRISPR-Cas technologies including genome editing, transcriptional regulation, and epigenetic regulation in microbes, plants, and mammalian cells.
• One chapter covers advances in protein engineering including directed evolution, rational design, and de novo design.

Significance

• These chapters review recent advances in CRISPR-Cas-based engineering and protein engineering for industrially-relevant phenotypes.
• The work of multiple CBI researchers is highlighted.
