Hijacking CRISPR-Cas for high-throughput bacterial metabolic engineering: advances and prospects - DTU Orbit (21/09/2018)

Hijacking CRISPR-Cas for high-throughput bacterial metabolic engineering: advances and prospects

High engineering efficiencies are required for industrial strain development. Due to its user-friendliness and its stringency, CRISPR-Cas-based technologies have strongly increased genome engineering efficiencies in bacteria. This has enabled more rapid metabolic engineering of both the model host Escherichia coli and non-model organisms like Clostridia, Bacilli, Streptomycetes and cyanobacteria, opening new possibilities to use these organisms as improved cell factories. The discovery of novel Cas9-like systems from diverse microbial environments will extend the repertoire of applications and broaden the range of organisms in which it can be used to create novel production hosts. This review analyses the current status of prokaryotic metabolic engineering towards the production of biotechnologically relevant products, based on the exploitation of different CRISPR-related DNA/RNA endonuclease variants.

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