Advances in analytical tools for high throughput strain engineering - DTU Orbit (23/11/2018)

Advances in analytical tools for high throughput strain engineering

The emergence of inexpensive, base-perfect genome editing is revolutionising biology. Modern industrial biotechnology exploits the advances in genome editing in combination with automation, analytics and data integration to build high-throughput automated strain engineering pipelines also known as biofoundries. Biofoundries replace the slow and inconsistent artisanal processes used to build microbial cell factories with an automated design–build–test cycle, considerably reducing the time needed to deliver commercially viable strains. Testing and hence learning remains relatively shallow, but recent advances in analytical chemistry promise to increase the depth of characterization possible. Analytics combined with models of cellular physiology in automated systems biology pipelines should enable deeper learning and hence a steeper pitch of the learning cycle. This review explores the progress, advances and remaining bottlenecks of analytical tools for high throughput strain engineering.