Industrial systems biology and its impact on synthetic biology of yeast cell factories - DTU Orbit (08/11/2017)

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Engineering industrial cell factories to effectively yield a desired product while dealing with industrially relevant stresses is usually the most challenging step in the development of industrial production of chemicals using microbial fermentation processes. Using synthetic biology tools, microbial cell factories such as *Saccharomyces cerevisiae* can be engineered to express synthetic pathways for the production of fuels, biopharmaceuticals, fragrances, and food flavors. However, directing fluxes through these synthetic pathways towards the desired product can be demanding due to complex regulation or poor gene expression. Systems biology, which applies computational tools and mathematical modeling to understand complex biological networks, can be used to guide synthetic biology design. Here, we present our perspective on how systems biology can impact synthetic biology towards the goal of developing improved yeast cell factories.

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