

Genome-scale Metabolic Modelling: From Genomes to Metabolic Phenotypes

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From the beginning of the 21st century, genome sequences of more and more organisms have become available. With such vast amount of data, there is so much we can learn about the biology of organisms from their genomes. Genome-scale metabolic modelling is increasingly commonly used approach in studying biological phenotypes of organisms based on their genomes. The approach involves the construction of a stoichiometric metabolic model based on the genome sequence of the organism of interest. Once a genome-scale metabolic model is built, one can apply multiple analyses, such as flux balance analysis, to study the metabolic phenotype of an organism. One can also use genome-scale metabolic models to do *in silico* experiments, such as knockouts or metabolic engineering, and make predictions on its effect on the metabolic phenotype of the organisms. The applications of genome-scale metabolic modelling include guiding of metabolic engineering, drug target identification and understanding the evolution and interactions between organisms.