

Calculation of the Intracellular Metabolic Flux Distribution Using Split Ratio of Diverging pathway

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Metabolic flux analysis (MFA) has become one of the major tools for understanding physiological states of the cell. However, MFA based on the stoichiometric balances cannot compute the real flux distributions of complex systems, which include parallel pathways, metabolic cycles, and bidirectional reactions. To overcome such drawback, additional constraints are required for MFA. Using ¹³C tracer technique in combination with direct extracellular flux measurement, we can get information of biochemical network, such as fractional contribution of a pathway to a target metabolite pool. In this work, we have developed MFA tools for the analysis of intracellular fluxes and added a split ratio of diverging pathway to the constraints. As a result, it allows users to construct in silico model considering available labeling information and to obtain more realistic intracellular metabolic fluxes.

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