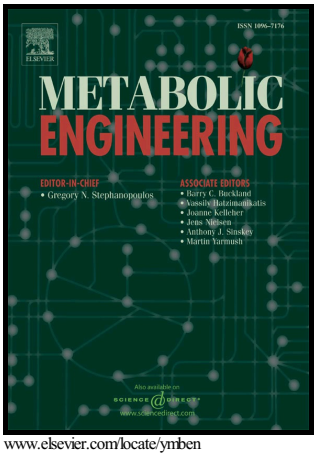

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Controlling cell-free metabolism through physiochemical perturbations

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Abstract:

Building biosynthetic pathways and engineering metabolic reactions in cells can be time-consuming due to complexities in cellular metabolism. These complexities often convolute the combinatorial testing of biosynthetic pathway designs needed to define an optimal biosynthetic system. To simplify the optimization of biosynthetic systems, we recently reported a new cell-free framework for pathway construction and testing. In this framework, multiple crude-cell extracts are selectively enriched with individual pathway enzymes, which are then mixed to construct full biosynthetic pathways on the time scale of a day. This rapid approach to building pathways aids in the study of metabolic pathway performance by providing a unique freedom of