

## **Description of Additional Supplementary Files**

File Name: Supplementary Data 1

Description: All reactions and parameters included in the model (see also Supplementary Data 4 and 5).

File Name: Supplementary Data 2

Description: Molecular weights and alternative cost measures for all model components.

File Name: Supplementary Data 3

Description: SBML Model description (SBML Level 3 version 2). To help the reader understand and explore the mechanics of the model described in the main article, we provide a comprehensive kinetic model, fully annotated and compliant with SBML Level 3 version 2. This model includes all species, reactions, parameters and initial values to perform steady-state and time-course analysis in a glucose minimal medium at a specific growth rate ( $0.58 \text{ h}^{-1}$ ).

File Name: Supplementary Data 4

Description: GAMS input file for the optimization problem, including the model and its parameterization; protein production requirements are set to those for growth on a minimal glucose medium.

File Name: Supplementary Data 5

Description: Source data for Figures 2-5.