

Supplementary Information

Additional File 1. Computational procedures of the nested hybrid differential evolution algorithm

Additional File 2. A list of uptake reactions in different nutrient media

Additional File 3. A compilation of one-target enzymes identified through the ACTD framework

Additional File 4. A compilation of combinations of two targets identified through the ACTD framework.

Additional File 5. A list of differential expressions of exchange reactions

Additional File 6. A list of differential expressions of metabolite flow rates