

Table S1. Primers designed for the RT-qPCR.

Gene name	Forward (5'-3')	Reverse (5'-3')
<i>fadE</i>	GGTGAAGGGGCTGATTGATA	CAACTTTCGCACTTTCTCC
<i>fadB</i>	CACTTCTTTAACCCGGTCCA	GTTAACCACAATCGGCGTCT
<i>fadI</i>	CGAAAGAATTAGGGCTGGTG	GCCAGACATCAATCGCAGTA
<i>tesB</i>	GCGGCCAGAGTGAAGATTTA	TTCAGGGACGGTCTCTTTTG
<i>pyrD</i>	CCACAGCCAGGTAATGACAA	AACCTTCGGCATCTACCAGA
<i>frdA</i>	AGCCGATCTTGCCATTGTAG	TATGGCTACGCATCGGGTAT
<i>nuoA</i>	TAGGCGGTTGGTTTTTAGGC	GATAAAACTTGGCGGACAGG
<i>cyoD</i>	CGTTCTGGATGGTGATGACA	CGTCATGTTCCAGCCTTCAT
<i>mraY</i>	GGGCTTCCTGTGGTTTAACA	ACATCGCCCATAAAGACCTG
<i>murG</i>	ATCTAATGGCTCAGGGTTGG	TTTGGCACTAAGTCCGCTTC
<i>rrsA</i>	GTGGGGAGCAAACAGGATTA	CCTCCAAGTCGACATCGTTT
<i>pykF</i>	GCCGTCTCGAGTTCAACAAT	ATTTACCGCCCTGAGTAGCA
<i>lpdA</i>	GAAGTTGACGACCGTGTTT	TTGGTACGCAGCTGTTTGTC
<i>accA</i>	GGCTGAACGCTTTAAGATGC	GAGACATTTACGCAGGTTG
<i>gltA</i>	GGGCAATCTTCATACCGTCA	TTCCGTCTTCCATGTTACC
<i>Pal</i>	TAAAGACGACCCGCTGAACT	TCGTCCAGTTCAACAGCAAC
<i>4cl</i>	AGTTAACATCCAGCCGAACG	GTTTTACCGTCAACCTGCT
<i>Chs</i>	ATGGGGTCAGCCGAAATCTA	TTTAACAGACGGACGCAGAC
<i>chi</i>	CGGTGCCACTGTTTTCTACA	TAAGCCCCAATACTCCATCG

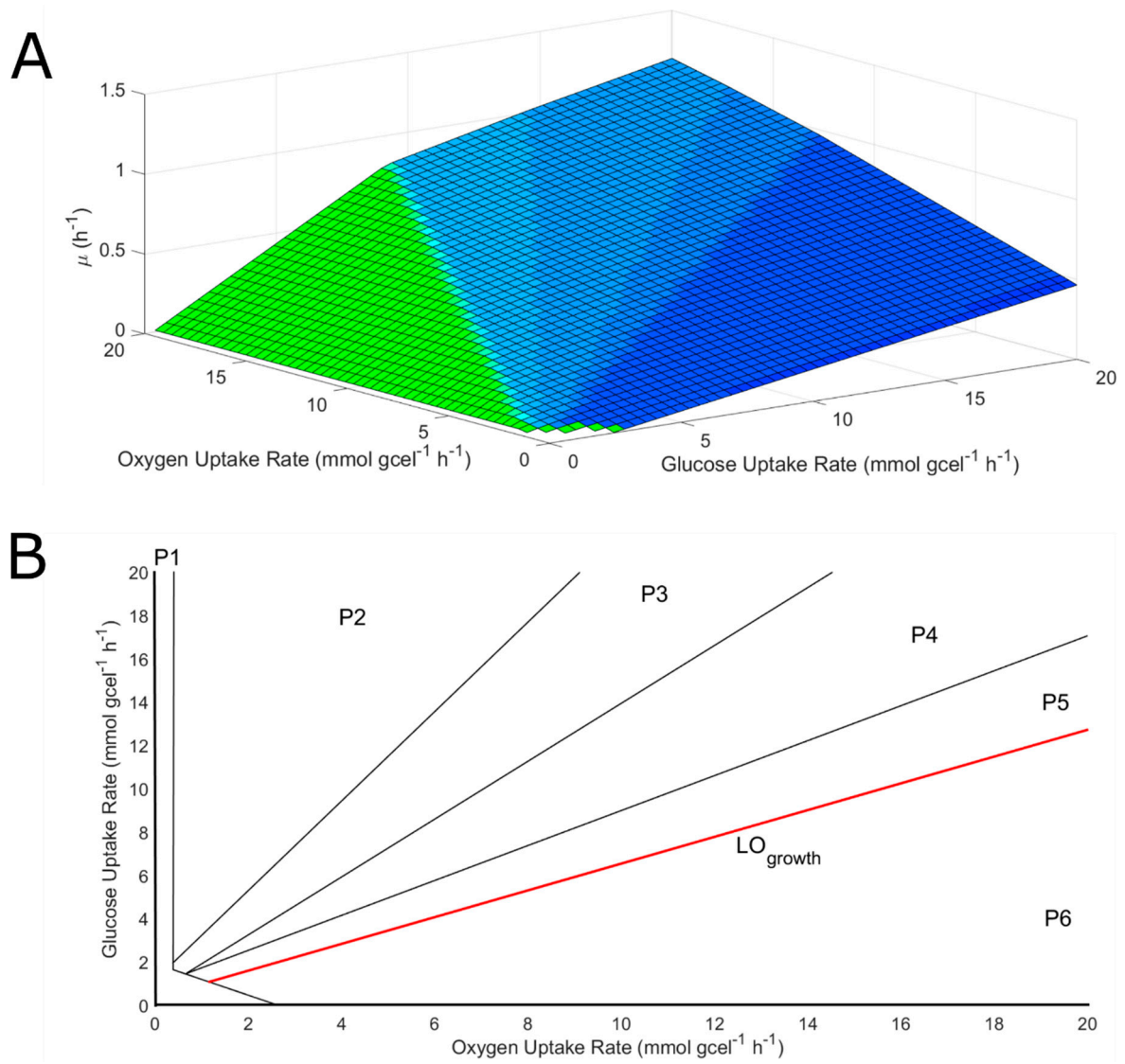


Figure S1. Phenotypic Phase Plane for *E. coli*. (A) The three-dimensional *E. coli* PhPP. The x-axis represents glucose uptake rate, the y-axis represents oxygen uptake rate, and the third dimension is the cellular growth rate. (B) A two-dimensional projection of the PhPP from the isoclines. The red line represents the optimal conditions for biomass yield. P₁-P₆ represent phases with different metabolic phenotypes.