

Supplementary materials

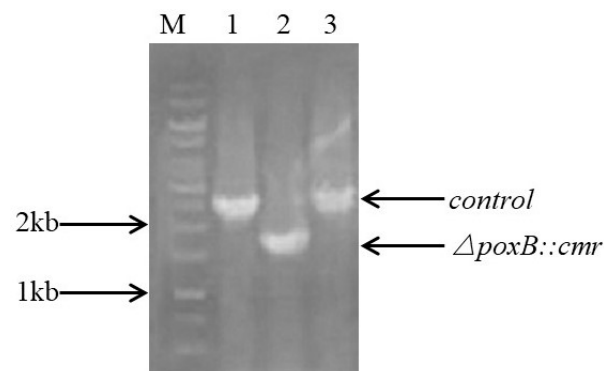


Figure S1. Agarose gel electrophoresis for *poxB* deletion in *E. coli*. 1 kb DNA Ladder (TransGen, China) was employed and SolarRed (Solarbio, China) was added to the gel before electrophoresis to a final concentration of 0.1 $\mu\text{L/mL}$.

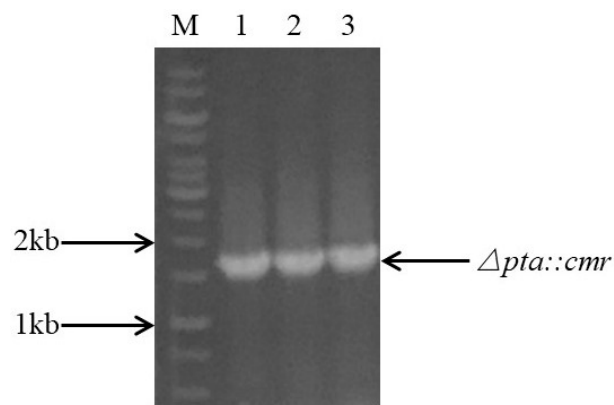


Figure S2. Agarose gel electrophoresis for *pta* deletion in *E. coli*. 1 kb DNA Ladder (TransGen, China) was employed and SolarRed (Solarbio, China) was added to the gel before electrophoresis to a final concentration of 0.1 $\mu\text{L/mL}$.

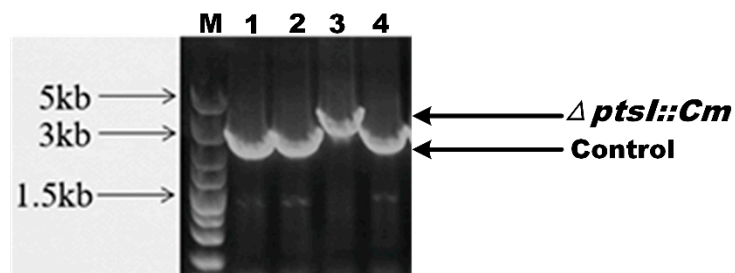


Figure S3. Agarose gel electrophoresis for *ptsI* deletion in *E. coli*. DL5000 DNA Marker (TransGen, China) was employed and SolarRed (Solarbio, China) was added to the gel before electrophoresis to a final concentration of 0.1 $\mu\text{L/mL}$.

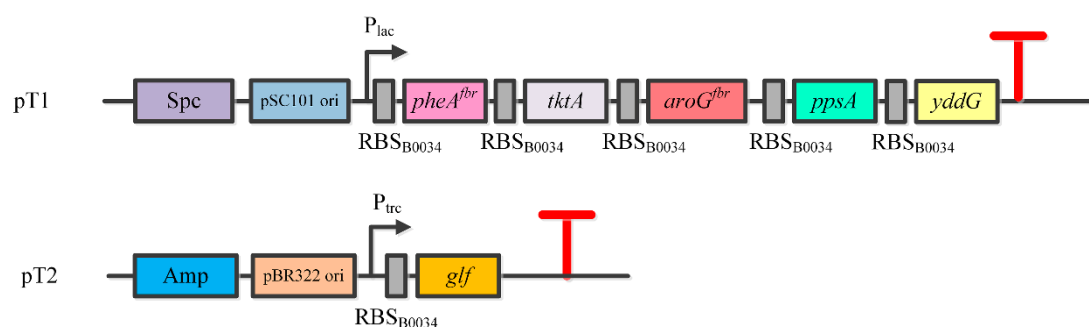


Figure S4. The organization of plasmids pT1 and pT2.

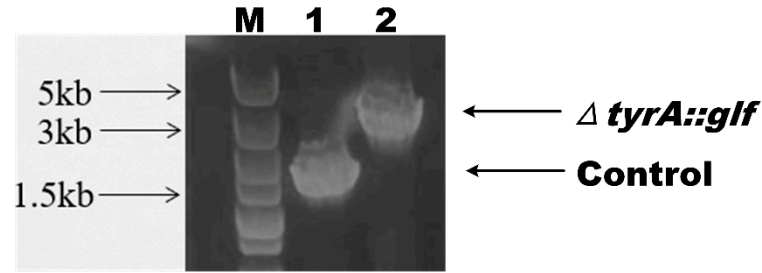


Figure S5. Agarose gel electrophoresis for replacing *tyrA* with *glf* in *E. coli*. DL5000 DNA Marker (TransGen, China) was employed and SolarRed (Solarbio, China) was added to the gel before electrophoresis to a final concentration of 0.1 $\mu\text{L/mL}$.

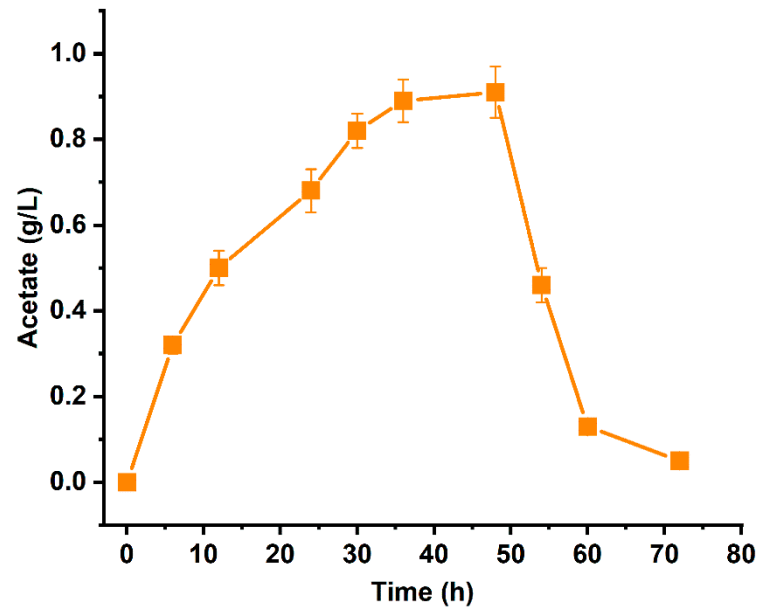


Figure S6. Acetate accumulation of MPH-3 in batch fermentation. The error bars represent standard deviations from three replicate fermentations.

Table S1. Primers used in this study.

Primers	Sequence (5'-3')
poxB-QF	TCAGATGAACTAACTTGTACCGTTATCACATTGAGGAGATGGAGAACCGTGTAGGCTG-GAGCTGCTTC
poxB-QR	CATGGCATGTCCTTATTATGACGGGAAATGCCACCCTTTATGGGAATTAGCCATGGTCC
poxB-JF	ATACGGTGAGCAGCACAAATGA
poxB-JR	GTCTATGGGTTGCGGTTGAATACTGCC
pta-QF	GGTGCTGTTTTGTAACCCGCCAAATCGGCGGTAACGAAAGAGGATAAACCGTGTAGGCTG-GAGCTGCTTC
pta-QR	TTATTTCCGGTTCAGATATCCGCAGCGCAAAGCTGCGGATGATGACGAGAATGGGAATT-AGCCATGGTCC
pta-JF	CAATGGACGTTTACTGCCACC
pta-JR	CCAGGTGGCAAGGCTGGTTAA
PtsI-QF	AATTTCCCGGGTTCTTTTAAAAATCATCACAAGTAAGGTAGGGTTGTGTAGGCTGGAGCTGCTTC-
PtsI-QR	CCCATGATCTTCTCCTAAGCAGTAAATTTGGGCCCATCTCGTGAATGGGAATTAGCCATGGTCC
ptsI-JF	CTACCATCATCGGGTGAGCGTTAT
ptsI-JR	AAGGGACTGGCGACCTGTTTT
TyrA-cmr-F	TCAGGATCTGAACGGGCAGCTGACGGCTCGCGTGGCTTAAGAGGTTTATTGTGTAGGCTG-GAGCTGCTTC
cmr-R	CTCTAGTAGCTAGCATAATACCTAGGACTGAGCTAGCTGTAAAATGGGAATTAGCCATGGTCC

cmr-glf-F	TCAGTCCTAGGTATTATGCTAGCTACTAGAGAAGGAGATATACATATGAGTTCTGAAAGTAGTCAG
glf-tyrA-R	CAACCTGATGAAAAGGTGCCGGATGATGTGAATCATCCGG
	CACTGGATTACTACTTCTGGGAGCGCCACATCTCCT
TyrA-cmr-NF	GATGCCTGCATTAGCTGGGAAATGACCGATGCCTTGCTGCGTGAAATTCATCAG-
	GATCTGAACGGGCAGC
glf-tyrA-NR	AATGAAGGTATTGGGCTGTTACCCAAGTGAGAACGTAGT
	GCCTGTTGATCCAACCTGATGAAAAGGTGCC
TyrA-JF	TTCCAATAAAGATTATCGCCGTCAG
TyrA-JR	GGTTGAAGCGTTGCTGGTACTGC

Table S2. Batch-fermentation parameters for constructed *E. coli*.

Strains	Maximum OD ₆₀₀	L-Phenylalanine (g/L)	Acetate (g/L)
MG-3	12.32±0.56	0.57±0.07	4.64±0.13
MG-4	11.89±0.26	0.59±0.05	3.13±0.23
MG-5	11.87±0.38	0.77±0.05	1.02±0.16
MPH-2	10.38±0.40	1.46±0.18	0.65±0.08
