Supplementary material

Table S1. Primers used in this study.

Primer name	Primer sequence[a]	Description
glpK-D-For	GCGGTCGTTATGGATCATGACGCGAATATCGTCAGCGTATCA CAGCGTGA**CATATGAATATCCTCCTTAG**	Generation of Δ*glp*K mutation
glpK-D-Rev	CTCTTCCCACGCCATTGCGCGTTTAACCGCTTTCTTCCAGCC GCTGTAAC**TGTAGGCTGGAGCTGCTTCG**	Generation of Δ*glp*K mutation
aceA-D-For	TCGAAGAATTACAGAAAGAGTGGACACAACCGCGCTGGGAAG GCATCACC**TGTAGGCTGGAGCTGCTTCG**	Generation of Δ*ace*A mutation
aceA-D-Rev	TGGTGGTGACTTTGTCGAAGTAACCAGTACCCACTTCCTGCT GGTGGGAA**CATATGAATATCCTCCTTAG**	Generation of Δ*ace*A mutation
hisD-D-For	CAATACCCTGATTGACTGGAACAGCTGTAGCCCTGAACAGCA GCGTGCGC**TGTAGGCTGGAGCTGCTTCG**	Generation of Δ*his*D mutation
hisD-D-Rev	TATGGGCGGTCAGACGTTCTGCCGCCGCCAATGTTTCAATGG TTGATGCC**CATATGAATATCCTCCTTAG**	Generation of Δ*his*D mutation
gltD-D-For	GACCTGCAGCGCGTTGATCCGCCGAAGAAACCGCTGAAGATC CGTAAGAT**TGTAGGCTGGAGCTGCTTCG**	Generation of Δ*glt*D mutation
gltD-D-Rev	GTAGTTCATAATCCCGTCAGCCGCCTTACGGCCTTCGGCAAT CGCCGTCA**CATATGAATATCCTCCTTAG**	Generation of Δ*glt*D mutation
rpoE-D-For	CCTGGTTGAACGGGTCCAGAAGGGAGATCAGAAAGCCTTTAA CTTACTGG**CATATGAATATCCTCCTTAG**	Generation of Δ*rpo*E mutation
rpoE-D-Rev	GAACTTTATTATCAATAGCTTCCCGCGCCCGGAAGATACGTG AACGCACC**TGTAGGCTGGAGCTGCTTCG**	Generation of Δ*rpo*E mutation
ddg-D-For	TACTGGCTGACGTGGTTTGGCGTTGGCATCCTCTGGTTACTG GTGCAGCT**TGTAGGCTGGAGCTGCTTCG**	Generation of Δ*ddg* mutation
ddg-D-Rev	CTTCCCCCAACGGGCGAGTCTTGAAACGGCGATGGATCCAGA GATATTGC**CATATGAATATCCTCCTTAG**	Generation of Δ*ddg* mutation
nifU-D-For	CGATCACTATGAGAACCCGCGTAACGTAGGGTCGTTTGACAA CAACGACG**CATATGAATATCCTCCTTAG**	Generation of Δ*nif*U mutation
nifU-D-Rev	AATCCGCAATAGCGGCTTTAATCGCGTCTTCCGCCAGAATAG AGCAGTGA**TGTAGGCTGGAGCTGCTTCG**	Generation of Δ*nif*U mutation
kdpA-D-For	AGGGCAGGAATAAATGTCAGCGCGCCGACCAGCAGTACCGTG CCGATGAG**CATATGAATATCCTCCTTAG**	Generation of Δ*kdp*A mutation
kdpA-D-Rev	GTTATCTGGTCTATGCCCTGATTAATGCGGAGGCGTTCTGAT GGCCGCGC**TGTAGGCTGGAGCTGCTTCG**	Generation of Δ*kdp*A mutation
kdpE-D-For	AATTCCGGTTTCGGTAATAAAATGGCGTGGGCGGGTGGGATC TTGTTCCA**CATATGAATATCCTCCTTAG**	Generation of Δ*kdp*E mutation
kdpE-D-Rev	TGAAGATGAACAGGCCATCCGCCGCTTTCTGCGCGCCGCGCT GGAAGGCG**TGTAGGCTGGAGCTGCTTCG**	Generation of Δ*kdp*E mutation
fnr-D-For	GAGCAGACCTATGATCCCGGAAAAGCGAATTATACGGCGCAT TCAGTCTG**TGTAGGCTGGAGCTGCTTCG**	Generation of Δ*fnr* mutation
fnrA-D-Rev	CCGGCGAGGGCCGCCAGCGCATCGCTGTTTTCAATAGTAATA TACTTACC**CATATGAATATCCTCCTTAG**	Generation of Δ*fnr* mutation
glpK-For	ATACCTGCGTCGTGGAAGAG	Verification of Δ*glp*K mutation

glpK-Rev	GGGGAAGGAGGGAATAATTG	Verification of Δ*glp*K mutation
aceA-For	TCTGCACATGAAAACCCGTA	Verification of Δ*ace*A mutation
aceA-Rev	TATCCGGCCTACGCTATCTG	Verification of Δ*ace*A mutation
hisD-For	GGCCTACGTAATGCGTTGAT	Verification of Δ*his*D mutation
hisD-Rev	GTACCAGGTTGCGGACATTT	Verification of Δ*his*D mutation
gltD-For	AGGCGCAGTAAGGAATTGAA	Verification of Δ*glt*D mutation
gltD-Rev	CGGCAGGAGAGATATTGAGG	Verification of Δ*glt*D mutation
rpoE-For	CTTGCTCATAGTGCGGCTTA	Verification of Δ*rpo*E mutation
rpoE-Rev	CATCCATCAAAGCGGAAAGT	Verification of Δ*rpo*E mutation
ddg-For	CGCTGCGGATAATGACTCTT	Verification of Δ*ddg* mutation
ddg-Rev	GCGGCCTTTTTCAGATGTAG	Verification of Δ*ddg* mutation
nifU-For	AGCAGGGTGTGGATCTGAAC	Verification of Δ*nif*U mutation
nifU-Rev	GGTATTAACTCGCGCTGCTG	Verification of Δ*nif*U mutation
kdpA-For	GCATCCGTTAGCGCCTGTAC	Verification of Δ*kdp*A mutation
kdpA-Rev	CTGGAGGTGCTCTGTGAGTG	Verification of Δ*kdp*A mutation
kdpE-For	CGACGCCGAAAATAAATGAC	Verification of Δ*kdp*E mutation
kdpE-Rev	AGGAAAGCCACCTGAACTTG	Verification of Δ*kdp*E mutation
fnr-For	TTCTCCGGGATAGCTCAGAC	Verification of Δ*fnr* mutation
fnrA-Rev	GGTGAATGAAACAGAGGAAGC	Verification of Δ*fnr* mutation
glpKRT-For	GACGAGCTGCAGGAAAAAGC	*glp*K qRT-PCR primer
glpKRT-Rev	AGTTACGCTCGGTGGTTTCAA	*glp*K qRT-PCR primer
aceA-RT-For	TGTACCCGGCAAACTCTGTTC	*ace*A qRT-PCR primer
aceA-RT-Rev	ATCTGATCTGCACGACGAAAAG	*ace*A qRT-PCR primer
hisD-RT-For	CGGATGACCGTTCAGGAACT	*his*D qRT-PCR primer
hisD-RT-Rev	CCGCCAATGTTTCAATGGTT	*his*D qRT-PCR primer
ddg-RT-For	CGGGCTGGACAACCTTACC	*ddg* qRT-PCR primer

ddg-RT-Rev	CATAAAATGCACGCCAACGA	*ddg* qRT-PCR primer
nifU-RT-For	AGACGCGCGCTTCAAGACT	*nif*U qRT-PCR primer
nifU-RT-Rev	CACCCACTCCGTTACCAGAGA	*nif*U qRT-PCR primer
kdpA-RT-For	TGGGACTGGGCATCCTGTT	*kdp*A qRT-PCR primer
kdpA-RT-Rev	GGTAGCCGCTGCGGATTTA	*kdp*A qRT-PCR primer
rsuA-RT-For	GGGCGTGAAATTCGTGGTAA	*rsu*A qRT-PCR primer
rsuA-RT-Rev	GCAGTTTGAAGGCCGCATT	*rsu*A qRT-PCR primer

[a] Bold font denotes sequences derived from pKD4 (K. A. Datsenko and B. L. Wanner, Proc. Natl. Acad. Sci. U. S. A. 97:6640-6645, 2000).