Supplementary Data

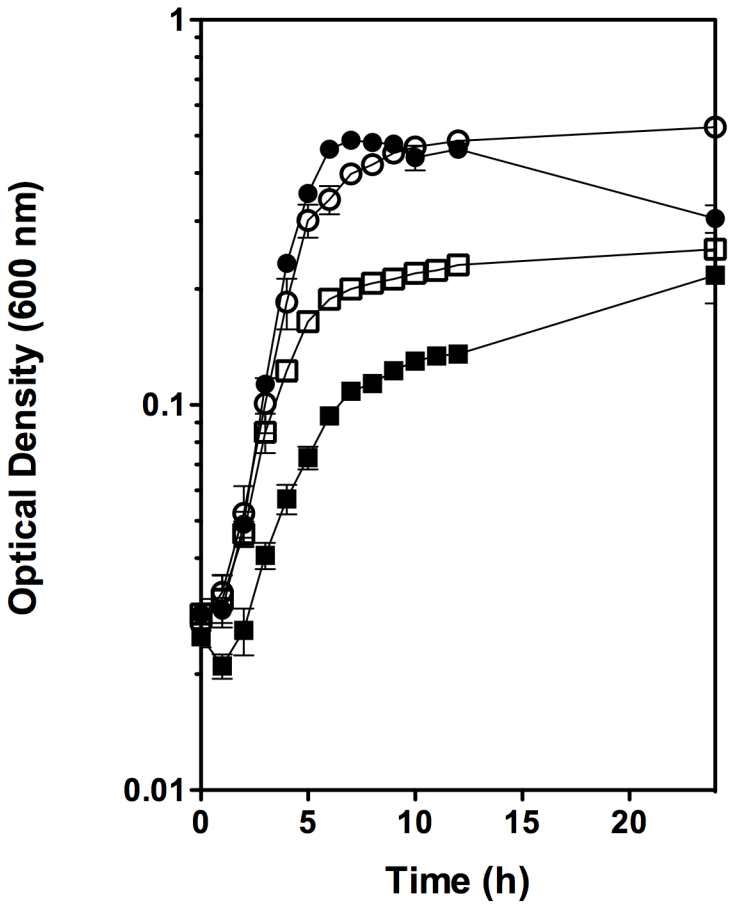

Figure S1. Growth of MR-1 and the Δ*fdh* triple mutant with the addition of exogenous formate. MR-1 (circles) or the Δ*fdh* triple mutant (squares) were grown in SBM with 20 mM lactate and 60 mM fumarate. Cultures were amended with 20 mM formate (closed symbols) or nothing (open symbols). Reported values are the average of at least three independent experiments and error bars represent standard error of the mean.

Table S1: Bacterial strains used in this study

Strain	Description	Reference
E. coli strain UQ950	DH5α host for cloning: F-*(argF-lac)169 80dlacZ58(*M15*) glnV44(*AS*) rfbD1 gyrA96(*NalR*) recA1 endA1 spoT1 thi-1 hsdR17 deoR pir+*	(1)
E. coli strain WM3064	DAP auxotroph used for conjugation: *thrB1*004 *pro thi rpsL hsdS lacZM15* RP4-1360 *(araBAD)567 dapA*1341::[*erm pir(wt)*]	(1)
S. oneidensis strain MR-1	Wild type	(2)
ΔSO0101-0103	*S. oneidensis* with an in-frame deletion of *fdnGHI* (SO0101-0103)	This study
ΔSO4509-4511	*S. oneidensis* with an in-frame deletion of *fdhABC* (SO4509-4511)	This study
ΔSO4513-4515	*S. oneidensis* with an in-frame deletion of *fdhABC* (SO4511-4513)	This study
ΔSO0101-0103/ΔSO4509-4511	*S. oneidensis* with an in-frame deletion of *fdnGHI* (SO0101-0103) and *fdhABC* (SO4509-4511)	This study
ΔSO0101-0103/ΔSO4513-4515	*S. oneidensis* with an in-frame deletion of *fdnGHI* (SO0101-0103) and *fdhABC* (SO4513-4515)	This study
ΔSO4509-4511/ΔSO4513-4515	*S. oneidensis* with an in-frame deletion of *fdhABC* (SO4509-4511) and *fdhABC* (SO4513-4515)	This study
Δ*fdh*	*S. oneidensis* with an in-frame deletion of *fdnGHI* (SO0101-0103), *fdhABC* (SO4509-4511) and *fdhABC* (SO4513-4515)	This study
Δ*fdh*Δ*pdh*	*S. oneidensis* with an in-frame deletion of *fdnGHI* (SO0101-0103), *fdhABC* (SO4509-4511), *fdhABC* (SO4513-4515), and *aceE* (SO0424)	This study
Δ*atp*	*S. oneidensis* with an in-frame deletion of the ATP synthase operon (SO4746-4754)	(3)
Δ*fdh*Δ*atp*	*S. oneidensis* with an in-frame deletion of *fdnGHI* (SO0101-0103), *fdhABC* (SO4509-4511), *fdhABC* (SO4513-4515), and the ATP synthase operon (SO4746-4754)	This study

Table S2: Primers used in this study

Primer Name	Sequence (5' to 3') or Reference
Primers for Δ0101-0103	
0101_Up_F	CATGactagtAGCGTCGTATCGCGCTGCTC
0101_Up_R	CATGgaattcGTTCATAGCGTTCTCTCACACTTTTG
0103_Dn_F	CATGgaattcCATTAATGAGTCATACAGCCGAGATAC
0103_Dn_R	CATGgagctcCGGCGAGCAGACTGTCCATC
Primers for Δ4509-4511	
4509_Up_F	CATGactagtTTGCGTCGCCATCCTAGCCTTG
4509_Up_R	CATGgaattcCATCACACACACTCCTCTGGTTAG
4511_Dn_F	CATGgaattcGACTAACTAAAGCGATATGCTAAACCC
4511_Dn_R	CATGgagctcATGTTGAGCATTTGGTCGCCCAC
Primers for Δ4513-4515	
4513_Up_F	CATGactagtCGTGTCGTGGATTGTCTGCGTG
4513_Up_F2 (for deletion construct to delete SO4513-4515 in the Δ4509-4511 background)	CATGactagtAAAGGCAACTTGCGATGAG
4513_Up_R	CATGctcgagCATCGCTGACTTCTCCTAGATTAG
4515_Dn_F	CATGctcgagGAGTAACATACTCTGATAAAACAAAACCTC
4515_Dn_R	CATGgagctcGTGATGATAGTACTAAGTCCGCCTC
aceE (SO0424)	(4)
ATP synthase operon (SO4746-4754)	(3)

References

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3. **Hunt, KA, Flynn, JM, Naranjo, B, Shikhare, ID, Gralnick, JA.** 2010. Substrate-level phosphorylation is the primary source of energy conservation during anaerobic respiration of *Shewanella oneidensis* strain MR-1. J. Bacteriol. **192:**3345-3351. doi: 10.1128/JB.00090-10.

4. **Flynn, CM, Hunt, KA, Gralnick, JA, Srienc, F.** 2012. Construction and elementary mode analysis of a metabolic model for *Shewanella oneidensis* MR-1. BioSystems. **107:**120-128. doi: 10.1016/j.biosystems.2011.10.003.