Supplementary Protocol. Recipe of the medium used for culturing of the *Shewanella* strains.

M1 minimal medium

Chemical Description	FW	g/L	Formula	Vendor/Cat #	Conc. in final medium prep. mM
•PIPES buffer	302.4	0.91	$C_8H_{18}N_2O_6S_2$	Sigma P-1851	3
•Sodium hydroxide	40.00	0.3	NaOH	SigmaS-5881	7.5
•Ammonium chloride	53.49	1.5	NH_4Cl	Sigma A-5666	28.04
•Potassium chloride	74.55	0.1	KCl	Sigma P-4504	1.34
•Sodium phosphate monobasic	138.0	0.6	NaH_2PO_4 H_2O	Sigma S-9638	4.35
•Fumaric acid sodium salt **(If Anaerobic)****	160.1	4.8	$C_4H_2O_4Na_2$	Sigma F-1506	30
•Sodium chloride **(If Aerobic)****	58.44	1.75	NaCl	Fisher S271-3	30
•Minerals solution, 100X stock		10 mL			see below
•Vitamins solution, 100X stock		10 mL			see below
•Amino acid solution, 100X stock		10 mL			see below
•Sodium lactate, 60%(w/w) syrup(@)	112.1	1.1228	$C_3H_5O_3Na$	Sigma L-1375	6
98% pure, d=1.3g/mL, =7M					

Set pH to 7.0 after all components have been added using NaOH or HCl.
** Note: If the batch will be used for aerobically grown cells, 30 mM NaCl replaces fumaric acid.

Vitamin Solution

Chemical Description	FW	g/L 100X stock	Formula	Vendor/Cat #	Final conc. in medium nM
•biotin (d-biotin)	244.3	0.002	$C_{10}H_{16}N_2O_3S$	Sigma B-4639	81.87
•folic acid	441.1	0.002	$C_{19}H_{19}N_7O_6$	Sigma F-7876	45.34
•pyridoxine HCl	205.6	0.010	$C_8H_{12}ClNO_3$	Sigma P-9755	486.38
•riboflavin	376.4	0.005	$C_{17}H_{20}N_4O_6$	Sigma R-4500	132.84
•thiamine HCl 1.0 H2O	355.3	0.005	$C_{18}H_{18}Cl_2N_4OS$	Sigma T-4625	140.73
•nicotinic acid	123.1	0.005	$C_6H_5NO_2$	Sigma N-4126	406.17
•d-pantothenic acid, hemicalcium salt	238.3	0.005	$C_9H_{16}NO_5$. 1/2Ca	Sigma P-2250	209.82
•B12	1355.4	0.0001	$C_{63}H_{88}CoN_{14}O_{14}P$	Sigma V-2876	0.74
•p-aminobenzoic acid	137.13	0.005	$C_7H_7NO_2$	Sigma A-9878	364.62
•thioctic acid	206.3	0.005	$C_8H_{14}O_2S_2$	Sigma T-5625	242.37

Set pH to 7.0 after all components have been added using NaOH or HCl.

Mineral Solution

Chemical Description	FW	g/L 100X stock	Formula	Vendor/Cat #	Final conc. in medium µM
•nitrilotriacetic acid(a)	191.1	1.5	$C_6H_9NO_3$	Sigma N-9877	78.49
(dissolve with NaOH to pH 8)					
•magnesium sulfate heptahydrate	246.48	3	$MgSO_4$ $7H_2O$	Aldrich 23,039-1	121.71
•manganese sulfate monohydrate	169.02	0.5	$MnSO_4$ H_2O	Aldrich 22,128-7	29.58
•sodium chloride	58.44	1	NaCl	Sigma S-3014	171.12
•ferrous sulfate heptahydrate	277.91	0.1	$FeSO_4$ $7H_2O$	Sigma F-8633	3.60
•calcium chloride dihydrate	146.99	0.1	$CaCl_2$ $2H_2O$	Sigma C-3881	6.80
•cobalt chloride hexahydrate	237.93	0.1	$CoCl_2$ $6H_2O$	Sigma C-3169	4.20
•zinc chloride	136.28	0.13	$ZnCl_2$	Sigma Z-3500	9.54
•cupric sulfate pentahydrate	249.68	0.01	$CuSO_4$ $5H_2O$	Sigma C-6283	0.40
•aluminum potassium disulfate dodecahydrate	474.38	0.01	$AlK(SO_4)_2$ $12H_2O$	Sigma A-7167	0.21
•boric acid	61.83	0.01	H_3BO_3	Sigma B-6768	1.62
•sodium molybdate dihydrate	241.95	0.025	Na_2MoO_4 $2H_2O$	Aldrich 22,184-8	1.03
•nickel chloride hexahydrate	237.6	0.024	$NiCl_2$ $6H_2O$	Sigma N-6136	1.01
•sodium tungstate	329.86	0.025	Na_2WO_4 $2H_2O$	Sigma S-0765	0.76

Set pH to 7.0 after all components have been added using NaOH or HCl.

Amino Acid Solution

	g/L 100X stock	Vendor/Cat #	Final conc. in medium mg/L
L-glutamic acid	2	Sigma G-1251	2
L-arginine	2	Sigma A-3909	2
DL-Serine	2	Sigma S-4375	2

Set pH to 7.0 after all components have been added using NaOH or HCl.