Table S1. Liquid media composition.

Medium	Composition (per Liter basis)
Cell Suspension/ Cellulolytic[1]	• 240 mg KH_2PO_4 • 240 mg K_2HPO_4 • 480 mg $(NH_4)_2SO_4$ • 480 mg NaCl • 64 mg $CaCl_2 \bullet 2H_2O$ • 100 mg $MgSO_4 \bullet 7H_2O$ • 600 mg cysteine hydrochloride • 1,000 mg Trypticase • 500 mg yeast extract • 1 mg phenylacetic acid • 3.1 mL VFA solution (7.15 mol L-1 acetic acid,1.92 mol L-1, propionic acid, 783.66 mmol l-1 butyric acid, 222.28 mmol l-1 valeric acid, 216.19 mmol l-1 isovaleric acid, 264.13 mmol l-1 isobutyric acid, 227.87 mmol l-1 2-methylbutyric acid).
Hyper-Ammonia Producing Bacteria[2]	• 240 mg KH_2PO_4 • 240 mg K_2HPO_4 • 480 mg Na_2SO_4 • 480 mg NaCl • 64 mg $CaCl_2 \bullet 2H_2O$ • 100 mg $MgSO_4 \bullet 7H_2O$ • 600 mg cysteine hydrochloride • 10 mL vitamin solution (4.14.75 μmol L-1 pyridoxamine 2 HC., 531.41 μmol L-1 riboflavin, 592.99 μmol L-1, 592.99 μmol L-1 thiamine HCl, 1.64 mmol l-1 nicotinamide, 419.73 μmol L-1 CaD pantothenate, 484.66 μmol L-1 lipoic acid, 72.92 μmol L-1 p-aminobenzoic acid, 11.33 μmol-1 folic acid, 20.47 μmol L-1biotin, 3.69 μmol L-1 cobalamine, 491.11 μmol L-1 pyridoxal HCl, 591.09 μmol L-1 pyridoxine) • 5 mL trace mineral solution (5.44 mmol l-1 Na_4 EDTA, 719 μmol L-1 $FeSO_4$, 34.78 μmol $ZnSO_4$, 1.01 mmol l-1 $MnCl_2$, 323.47 μmol L-1, H_3BO_3, 96.61 μmol L-1 $CoCl_2$. 5.87 μmol L-1 $CuCl_2$, 8.41 μmol L-1 $NiCl_2$ 6.98 μmol L-1 Na_2MoO_4)
Lactate-Utilizing Bacteria[3]	• 352 mg KH_2PO_4 • 352 mg K_2HPO_4 • 704 mg Na_2SO_4 • 701 mg NaCl • 94 mg $CaCl_2 \bullet 2H_2O$ • 147 mg $MgSO_4 \bullet 7H^2O$ • 100 mg cysteine • 220 mmol lactic acid • 7.67 μmol hemin • 10 mL vitamin solution (as described above) • 10 mL mineral (as described above) • 10 mL VFA (as described above)

[1]Prepared based on protocol described by Stack et al. [16]. [2]Prepared as previously described by Russell et al. [18] and Chen and Russell [19]. [3]Prepared as described by Mackie and Heath [20].