

Fig.S1 Genetic engineering strain construction process.

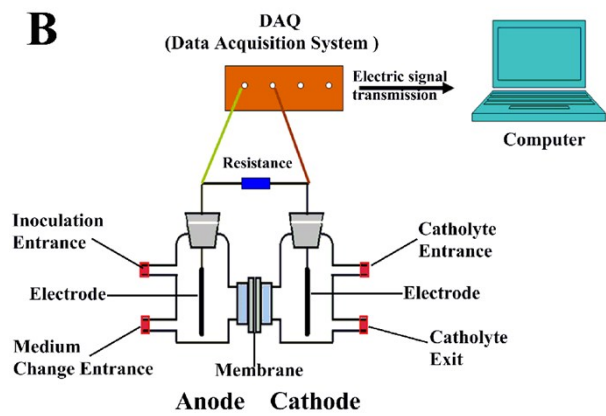
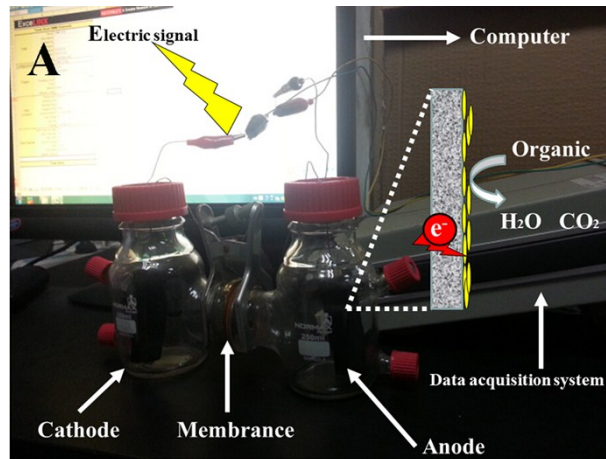


Fig.S2 (A) The real picture of the experimental set up. (B) Schematic diagram of the microbial fuel cell.

Table S1 Comparison of electricity production different Clostridium species

	Voltage (mV)	Power density (mW·m⁻²)	Reference
<i>C. propionicum</i>	106	21.8	Zhu (2011)
<i>C. acetobutylicum</i>	140	---	Amethist (2011)
<i>C. thermohydrosulfuricum</i>	79.2	---	Abhilasha (2009)

Table S2 Bacterial strains and plasmids

strains and plasmids	Significant characteristics	Source or reference
Plasmids		
pIMP1	4605 bp; Ap ^r	[represents]
pIMP1- <i>fdh</i>	6711 bp; Ap ^r pIMP1 cloned with 2106 bp <i>fdh</i> gene,	This study
Bacterial strains		
<i>Clostridium ljungdahlii</i>	Host bacteria	ATCC
<i>Clostridium ljungdahlii</i> - <i>fdh</i>	Recombinant strain harboring pIMP1- <i>fdh</i>	This study
<i>E. coli</i> Rosetta	Source of the <i>fdh</i> gene	This study
<i>E. coli</i> DH5α	Plasmid validation	This study

Note: Ap^r, ampicillin resistance gene;

Table S3 Medium for *Clostridium ljungdahlii*

<i>Main constituent</i>	<i>Concentration (per liter)</i>
Proteose peptone	10 g
Beef extract	10 g
Yeast extract	3 g
Cysteine-HCl	0.5 g
Salt solution	50 mL
Trace element solutions	10 mL
Deionized water	940 mL

Table S4 Salt solution

<i>Main constituent</i>	<i>Concentration (per liter)</i>
NH₄Cl	20 g
KCl	2 g
MgSO₄ • 7H₂O	4 g
NaCl	16 g
KH₂PO₄	2 g
CaCl₂	0.4 mL

Table S5 Trace element solutions

<i>Main constituent</i>	<i>Concentration (per liter)</i>
Nitrilotriacetic acid	2 g
MnCl ₂ • 4H ₂ O	1.3 g
CoCl ₂ • 6H ₂ O	0.4 g
FeSO ₄ • 7H ₂ O	0.2 g
ZnSO ₄ • 7H ₂ O	0.2 g
CuCl ₂ • 2H ₂ O	0.02 g
NiCl ₂ • 6H ₂ O	0.02 g
Na ₂ MoO ₄ • 2H ₂ O	0.02 g
Na ₂ SeO ₃	0.02 g
Na ₂ WO ₄ • 2H ₂ O	0.025 g