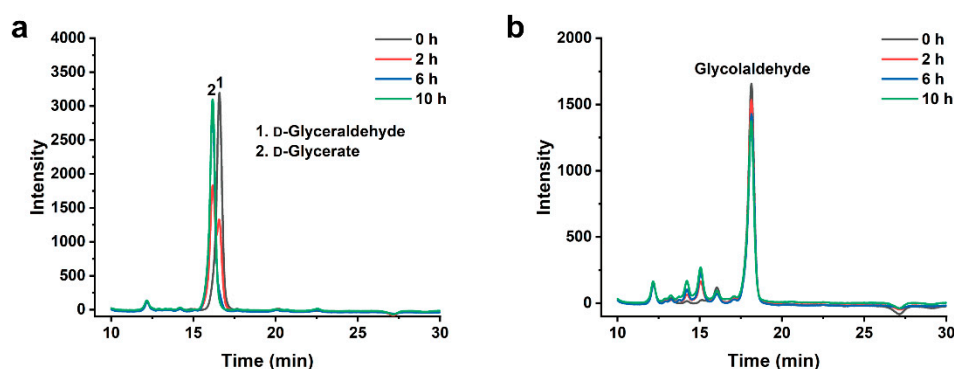


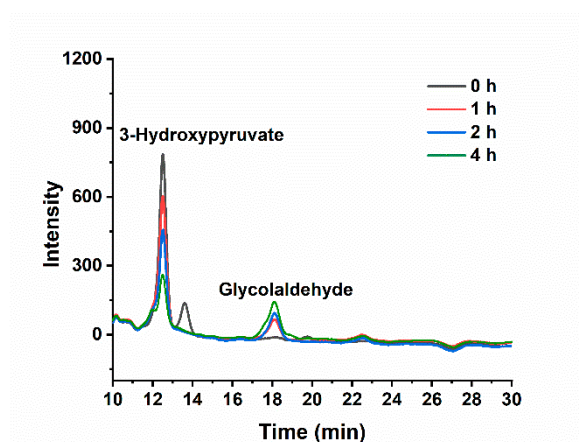
Supplementary Materials

# Production of Ethylene Glycol from Glycerol Using an In Vitro Enzymatic Cascade

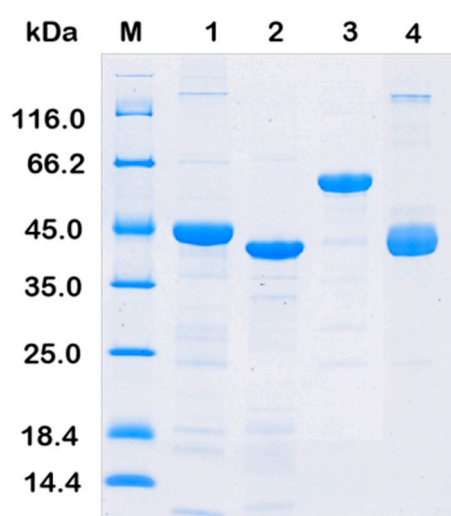
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**Figure S1.** HPLC analysis of AldO<sub>mt</sub> catalyzed D-glyceraldehyde (a) and glycolaldehyde (b) oxidation. The reactions were carried out in a reaction mixture containing 50 mM HEPES-NaOH buffer (pH 7.4), 0.2 mg/mL AldO<sub>mt</sub>, 10 mM D-glyceraldehyde or 10 mM glycolaldehyde, at 30 °C and 150 rpm.



**Figure S2.** HPLC analysis of PDC catalyzed 3-hydroxypyruvate decarboxylation. The reaction was carried out in 50 mM HEPES-NaOH buffer (pH 7.4) containing 2 mM MgSO<sub>4</sub>, 0.25 mM TPP, 10 mM 3-hydroxypyruvate and 10 µg/mL PDC, at 30 °C and 150 rpm.



**Figure S3.** SDS-PAGE results of purified enzymes. M: Marker; 1: AldO<sub>mt</sub>; 2: GRHPR; 3: PDC; 4: FucO.

**Table S1.** Strains, plasmids and primers used in this study.

Strain, plasmid and primer	Description	Source
<b>Strain</b>		
<i>E. coli</i> DH5α	<i>supE44 ΔlacU169 (φ80 lacZΔM15) hsdR17 recA1 endA1 gyrA96 thi-1 relA1</i>	Novagen
<i>E. coli</i> BL21(DE3)	<i>F<sup>-</sup> ompT hsdSB (rB-mB-) gal (λ c I 857 ind1 Sam7 nin5 lacUV5 T7gene1) dcm (DE3)</i>	Novagen
<i>E. coli</i> K12	Wild-type	Lab stock
<i>E. coli</i> BL21(DE3)/pETDuet-AldO <sub>mt</sub>	<i>E. coli</i> BL21(DE3) expressing AldO from <i>Streptomyces coelicolor</i> A3(2) with double mutant (V125M/A244T)	Lab stock
<i>E. coli</i> BL21(DE3)/pETDuet-GRHPR	<i>E. coli</i> BL21(DE3) expressing GRHPR from <i>Pyrococcus furiosus</i>	Lab stock
<i>E. coli</i> BL21(DE3)/pETDuet-PDC	<i>E. coli</i> BL21(DE3) expressing PDC from <i>Zymomonas mobile</i>	Lab stock
<i>E. coli</i> BL21(DE3)/p28a-FucO	<i>E. coli</i> BL21(DE3) expressing FucO from <i>Escherichia coli</i> K12	This study
<b>Plasmid</b>		
pET28a	Expression vector, kanamycin <sup>r</sup>	Novagen
pET28a-FucO	pET28a harboring gene fucO from <i>Escherichia coli</i> K12	This study
<b>Primer</b>		
<i>fucO</i> -f	CGGGATCCATGGCTAACAGAATGATTCTGAAC	This study
<i>fucO</i> -r	CCCAAGCTTTTACCAGGCGGTATGGTAAAGCTC	This study

