SUPPLEMENTAL MATERIALS

Synergistic effects of a chalkophore, methanobactin, on microbial methylation of mercury

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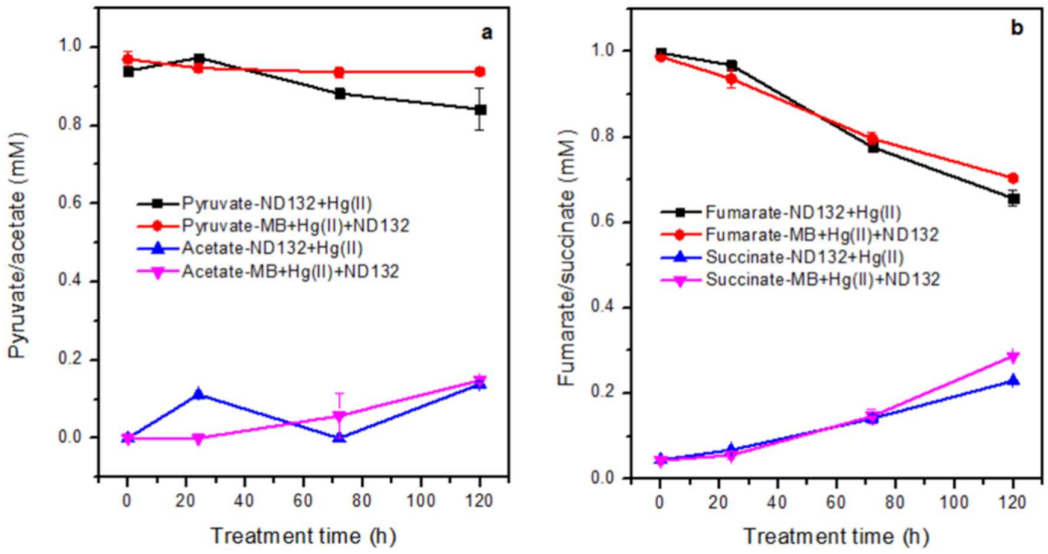


Fig. S1. Determination of metabolic activities of washed cells of *D. desulfuricans* ND132 during Hg(II) methylation assays in the presence or absence of OB3b-MB (25 μM) in PBS. No significant differences in the consumption rates of pyruvate and fumarate or the production rates of acetate and succinate were observed either with or without the addition of OB3b-MB.

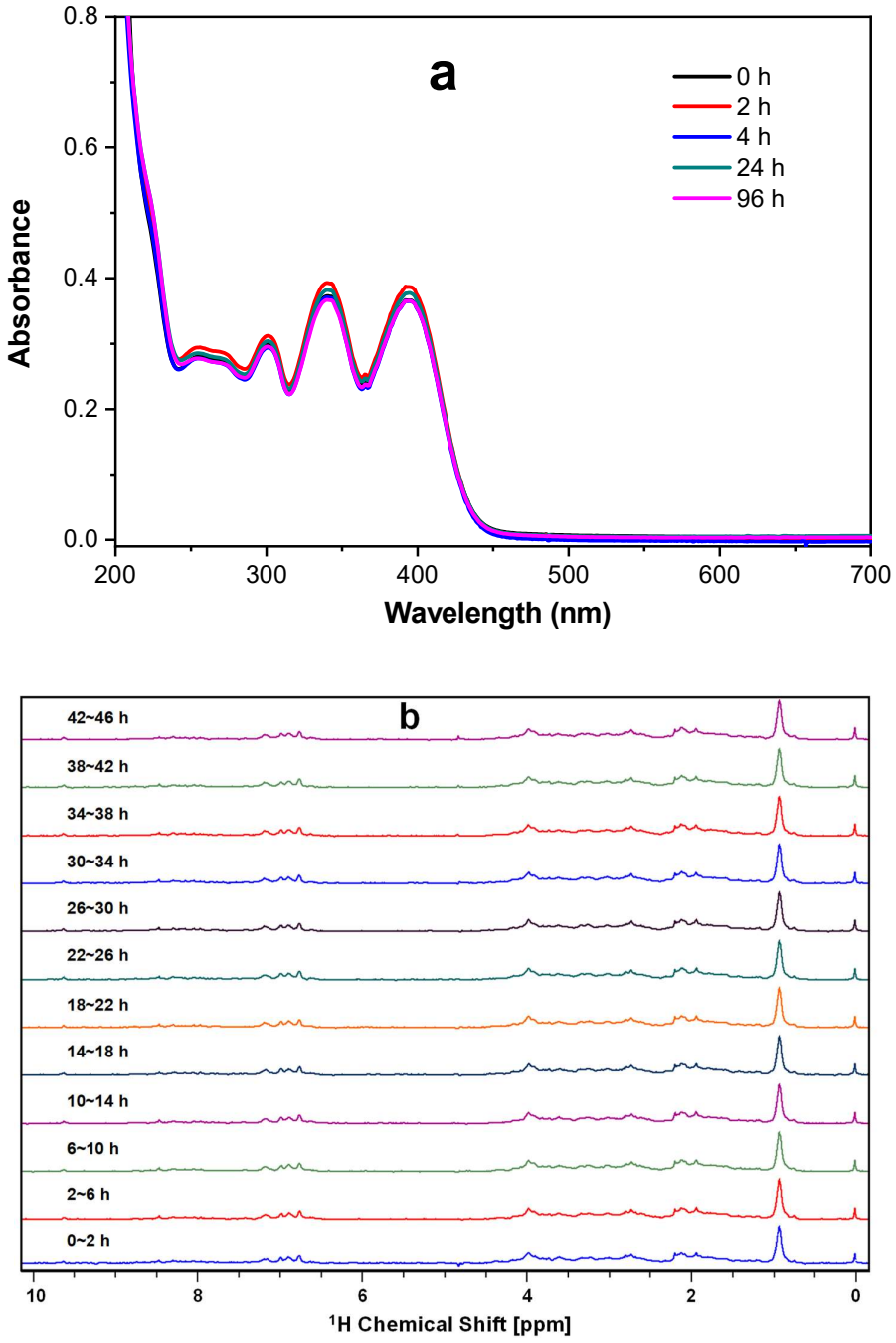


Fig. S2. (a) UV-vis and (b) Liquid ^{1}H NMR spectroscopic analyses of OB3b-MB stability over time. NMR spectra of OB3b-MB (50 μM in DI H_2O) were collected up to 46 hours, with 2000 scans accumulated per spectrum.

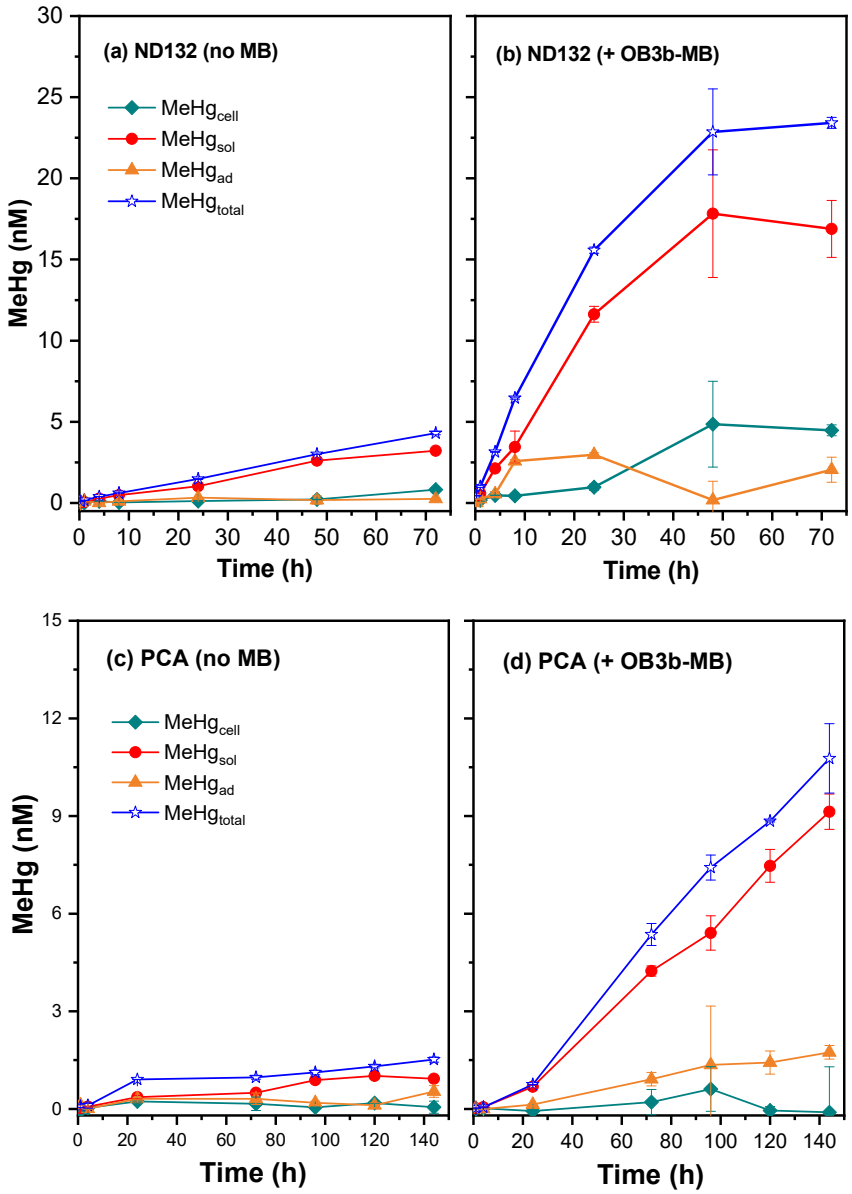


Fig. S3. Methylmercury (MeHg) production and species distributions during Hg(II) methylation assays with washed cells of *D. desulfuricans* ND132 (**a, b**) and *G. sulfurreducens* PCA (**c, d**) in PBS. Experiments in **(b)** and **(d)** were performed in the presence of 25 µM OB3b-MB, which was first equilibrated with 25 nM Hg(II) in PBS prior to the additional of cells (10^8 cells mL^{-1}). $MeHg_{cell}$, $MeHg_{sol}$, $MeHg_{ad}$, and $MeHg_{total}$ denote concentrations of intracellular MeHg, soluble MeHg, cell-surface adsorbed MeHg, and total MeHg, respectively.

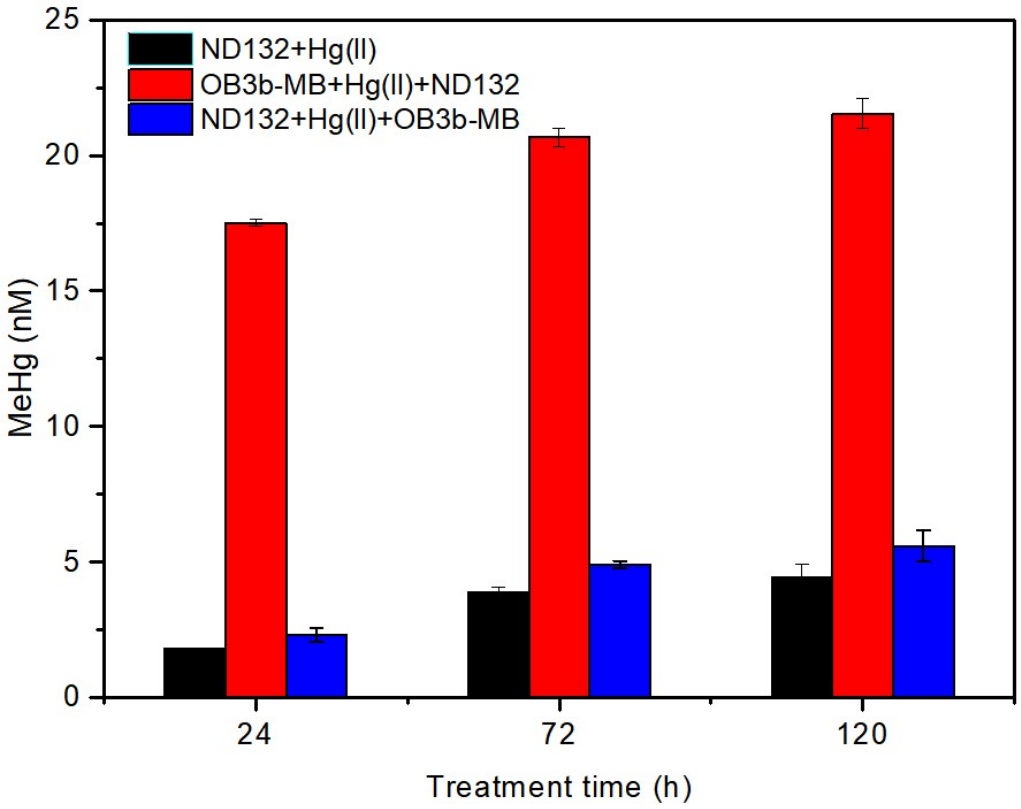
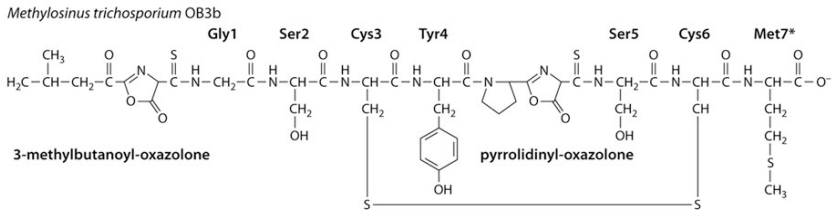
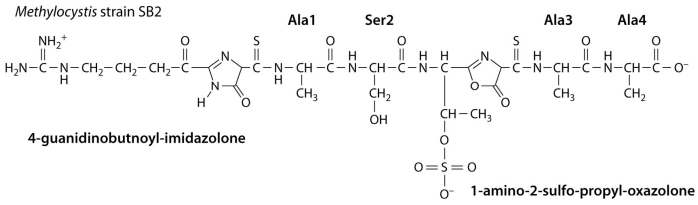


Fig. S4. Effects of changing the addition sequence of methanobactin (OB3b-MB), Hg(II), and washed cells of *D. desulfuricans* ND132 on methylmercury (MeHg) production in PBS. The added OB3b-MB concentration was 25 μM, and Hg(II) concentration was 25 nM. Little or no enhanced Hg(II) methylation was observed when Hg(II) and ND132 cells were reacted for 1 h prior to the addition of OB3b-MB.

Table S1. Molecular weight and chemical structure of the isolated methanobactin (MB) from *M. trichosporium* OB3b (denoted as OB3b-MB) or from *Methylocystis* strain SB2 (denoted as SB2-MB) (1,2,3).

OB3b-MB MW 1154.3	
SB2-MB MW 851	

References

1. Baral, B. S.; Bandow, N. L.; Vorobev, A.; Freemeier, B. C.; Bergman, B. H.; Herdendorf, T. J.; Fuentes, N.; Ellias, L.; Turpin, E.; Semrau, J. D.; DiSpirito, A. A., 2014. Mercury binding by methanobactin from *Methylocystis* strain SB2. J. Inorg. Biochem. 141, 161-169.

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