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AMBITIOUS LEADER'S PROGRAM

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The organisms environment plays a key role in determining the transfer mechanism of the mercury ion product from MerB to MerA in bacterial resistance to mercury

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The organomecurial lyase (MerB) is a bacterial enzyme that degrades methylmercury (MeHg^+) in the environment through its unique ability to cleave carbon-Hg bonds. Our previous structural and mechanistic studies have established that the Hg^{II} product following cleavage of MeHg^+ remains bound to the active site in *E. coli* MerB and is directly transferred to MerA for reduction to Hg^0 .

Recent genomic analysis in our lab indicates that MerA/MerB pairs exhibit functional diversity that appears to correlate with the ecological habitat of the bacteria they originate from. Guided by this bioinformatic analysis, we are characterizing MerB proteins from organisms that originate from widely varying ecological habitats. Based on these results, there are multiple ways for the transfer of the Hg^{II} product from MerB to MerA for reduction to Hg^0 and the mechanism for a given MerB/MerA pair appears to be linked to its environmental niche of the organism.



北海道大学 スマート物質科学を拓く
アンビシャスプログラム

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