



## Jens Esken

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### Induction of tetrachloroethene respiration in *Sulfurospirillum multivorans*

Dehalogenation processes driven by natural microbial communities contribute significantly to the global halogen cycle. Such microbial networks include organohalide-respiring bacteria, which couple the reductive dechlorination or debromination of halogenated organic compounds to energy conservation via a chemiosmotic mechanism. The key enzyme in organohalide respiration is the reductive dehalogenase (RDase), which serves as a terminal reductase. The RDases are iron-sulfur proteins that harbor a corrinoid cofactor at the active site. Organohalide respiration was studied in detail in the tetrachloroethene (PCE)-dechlorinating epsilonproteobacterium *Sulfurospirillum multivorans*. The organism displays an unusual type of long-term down-regulation of the PCE reductive dehalogenase gene (*pceA*) expression in the absence of PCE. In close proximity to *pceA*, open reading frames encoding putative regulatory proteins were identified. The ILRS project aims to determine the role the corrinoid cofactor of the RDase in the long-term regulation of PCE respiration. In addition, the project focuses on the characterization of two-component regulatory systems within the organohalide respiration gene region in *S. multivorans* and on the molecular mechanism of PCE sensing.

#### Publications

Türkowsky D, Esken J, Goris T, Schubert T, Diekert G, Jehmlich N, von Bergen M (2018) A Retentive Memory of Tetrachloroethene Respiration in *Sulfurospirillum halorespirans* - involved Proteins and a possible link to Acetylation of a Two-Component Regulatory System. *J Proteomics* 181, 36-46. [Details](#)  
[PubMed](#)

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