Biotechnological application of the enzyme systems of *Dehalococcoides* species as a contribution to a sustainable bioeconomy

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Dehalococcoides are bacteria that are known to respire with halogenated compounds and are already commercialized for the bioremediation of contaminated soils and groundwater. The comprehensive description of their physiology, ecology, genomics and biochemistry have revealed unique characteristics and properties of the organisms. In the talk I will discuss possible paths to apply these features in an emerging sustainable bioeconomy. One application is the use of reductive dehalogenase enzymes for specific halogenation reactions or the specific detection of halogenated contaminants in groundwater. The more pressuring application, however, is the exploitation of the unique membrane-bound metalloprotein system in a new approach for electrobiosynthesis of value products. We are characterizing the respiration system in detail, the mode of energy conservation and the option to express the system in a heterologous host for upscaling and production.