Thermodynamic Limitations on Microbial Respiration Using Ferric Iron as Terminal Electron Acceptor

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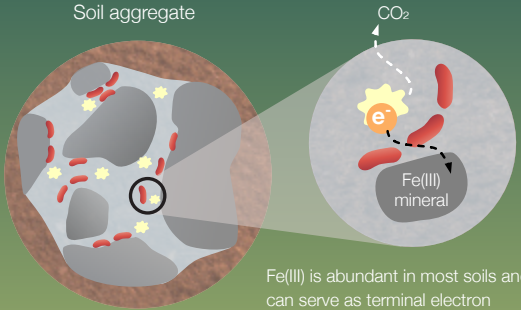

Fe(III) is abundant in most soils and can serve as terminal electron acceptor (TEA) over wide range of environmental conditions

Can the thermodynamics of Fe(III) reduction limit microbial respiration and thus CO_2 production?

1. quantify electron transfer to Fe(III) and production of CO_2 in iron-rich floodplain soils under anoxic conditions
2. determine how much of TEA pool is thermodynamically available for reduction
3. relate initial rates of CO_2 production to thermodynamically available TEA pool