

nitrous oxide production in ferruginous seas

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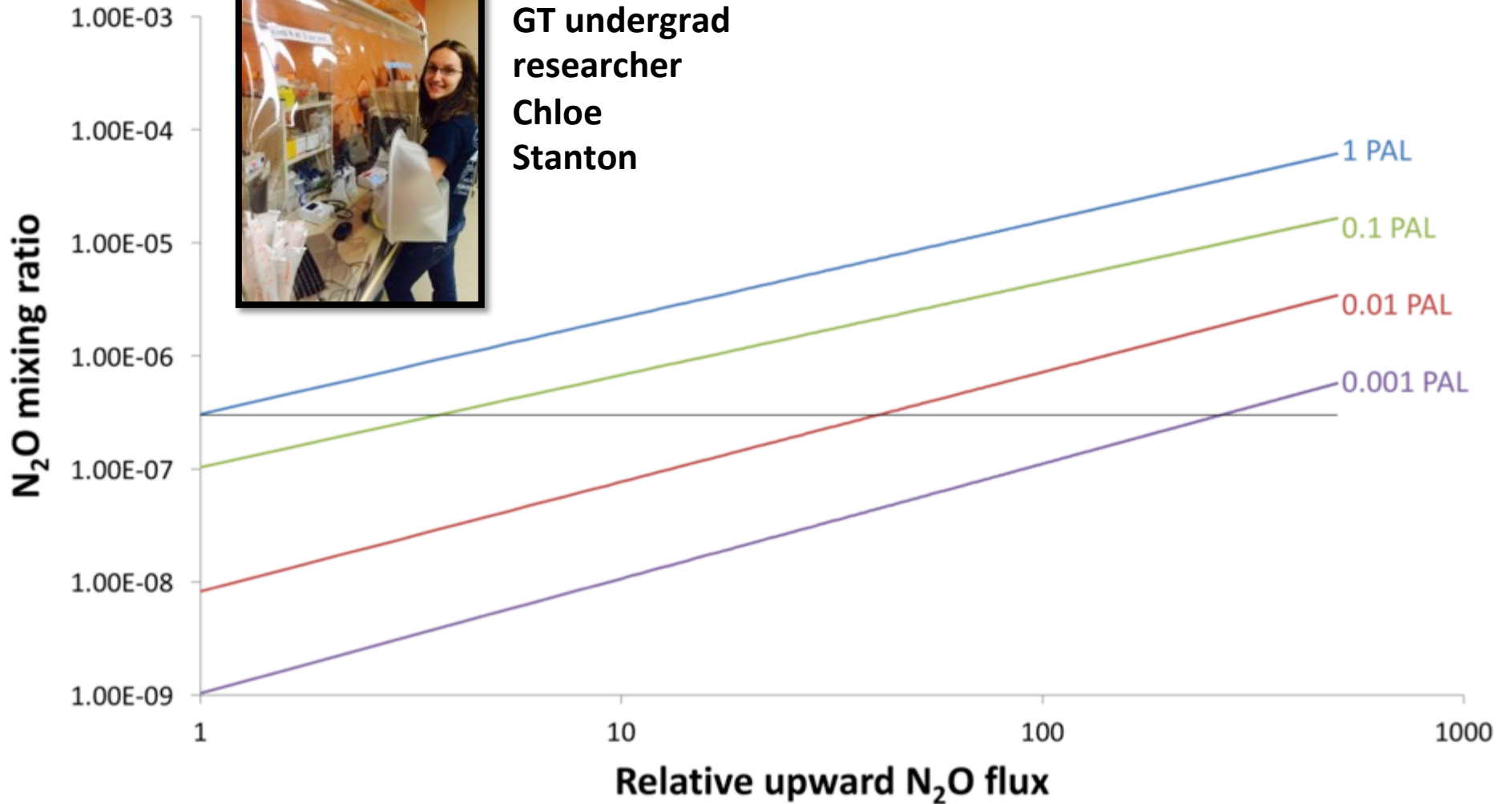
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- **We suggest that ferruginous Proterozoic oceans promoted N₂O emission via coupled biotic-abiotic reactions**

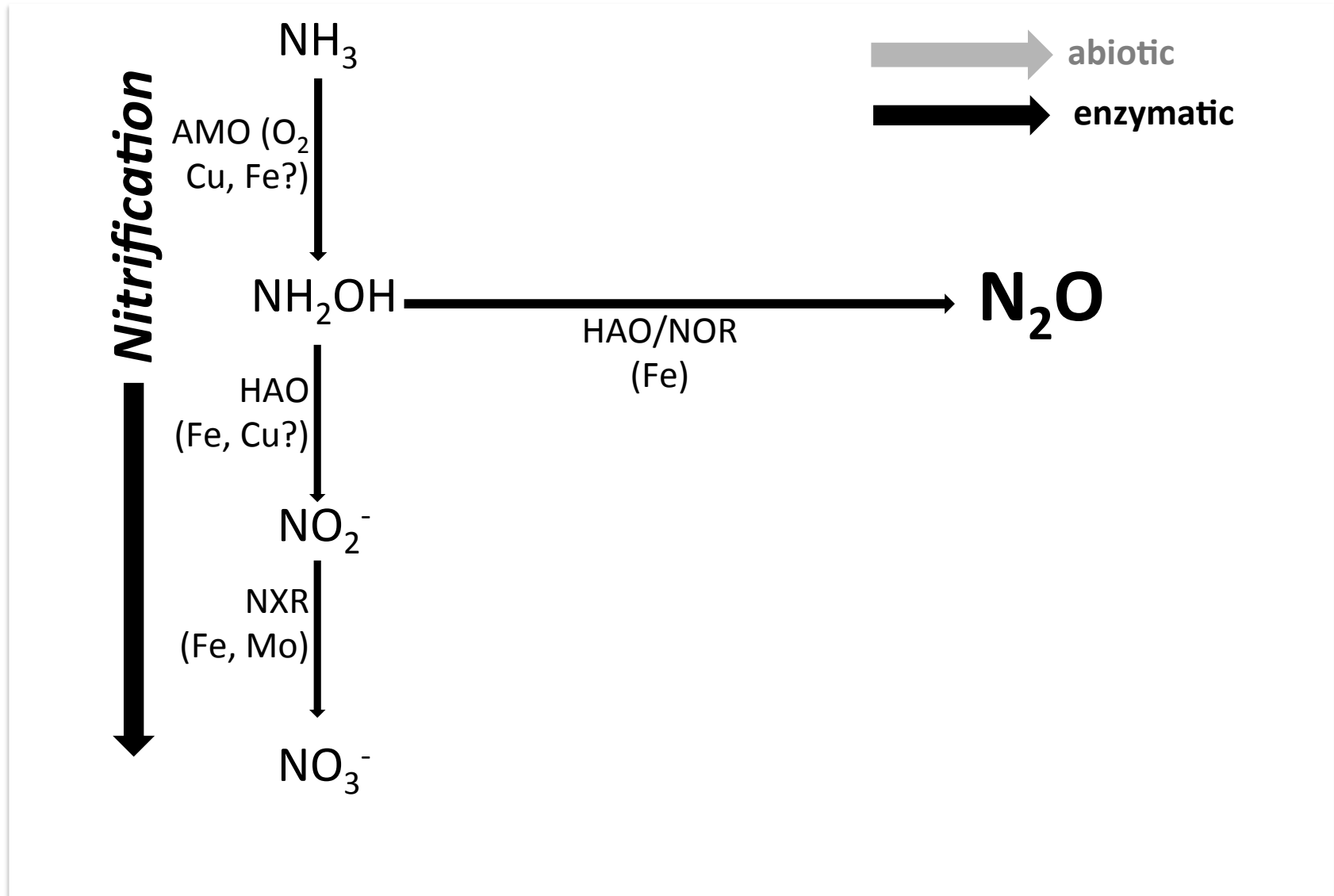
Higher N₂O flux needed for elevated N₂O at lower Proterozoic O₂



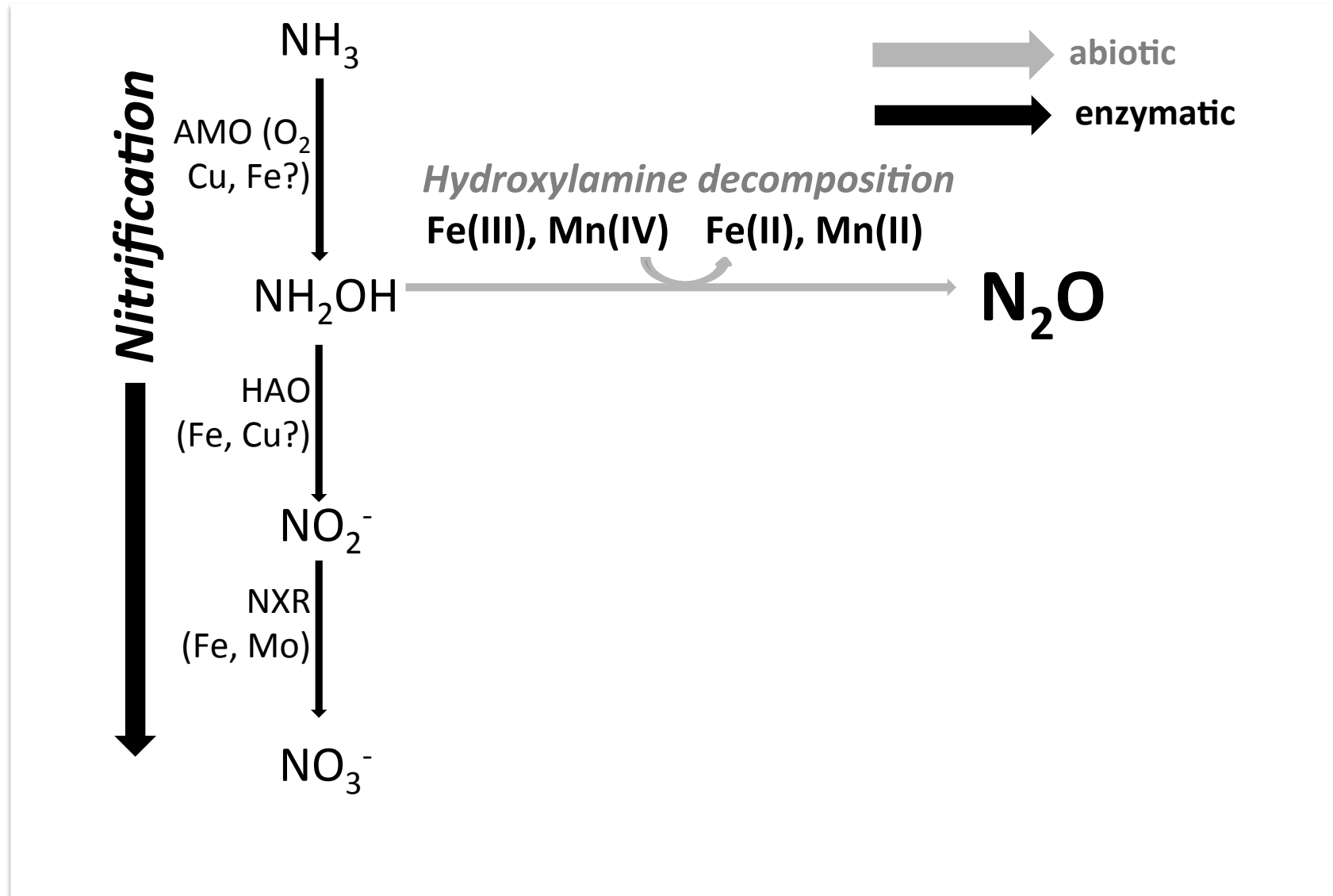
GT undergrad
researcher
Chloe
Stanton



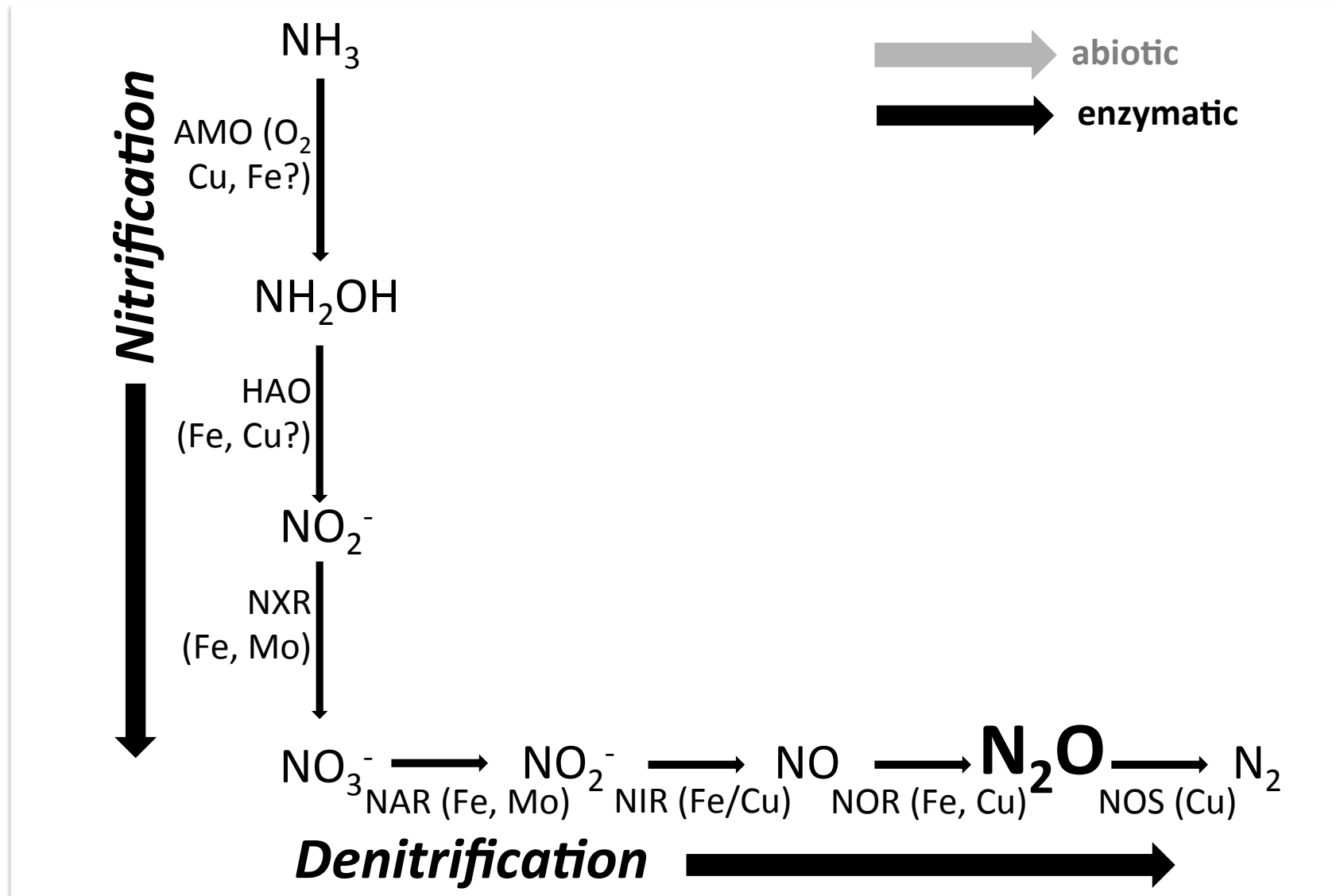
Coupled biotic-abiotic N_2O production



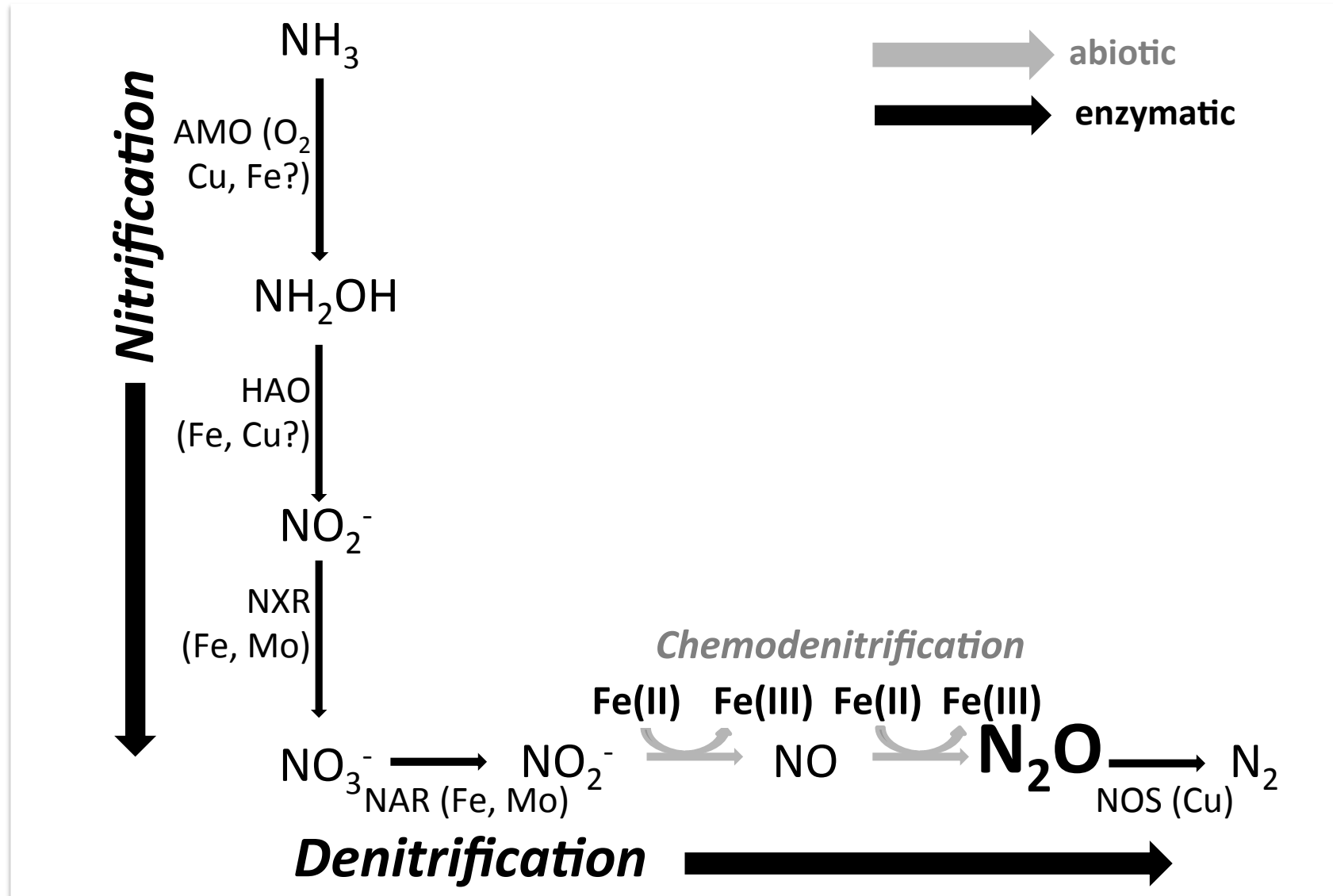
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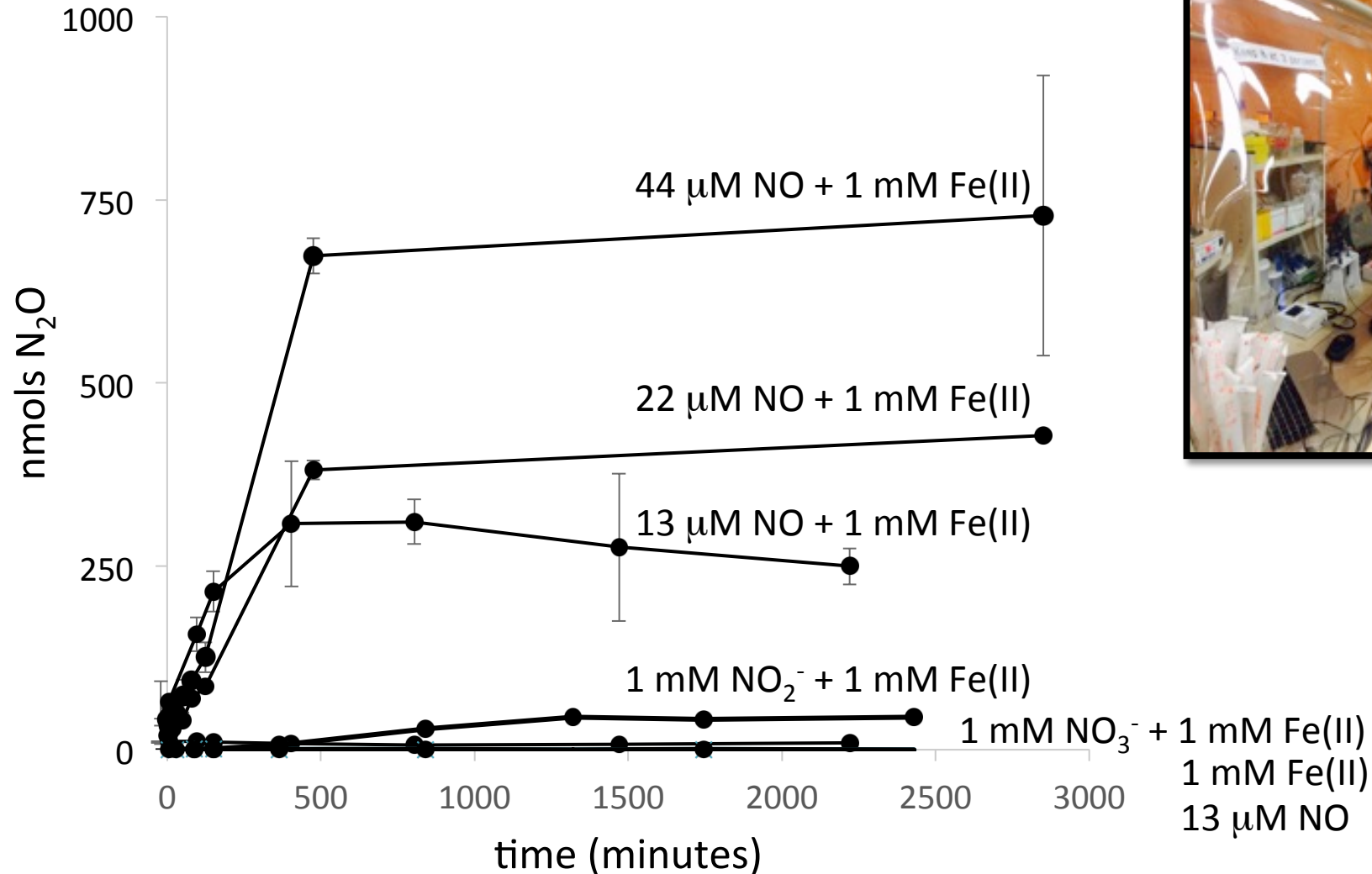
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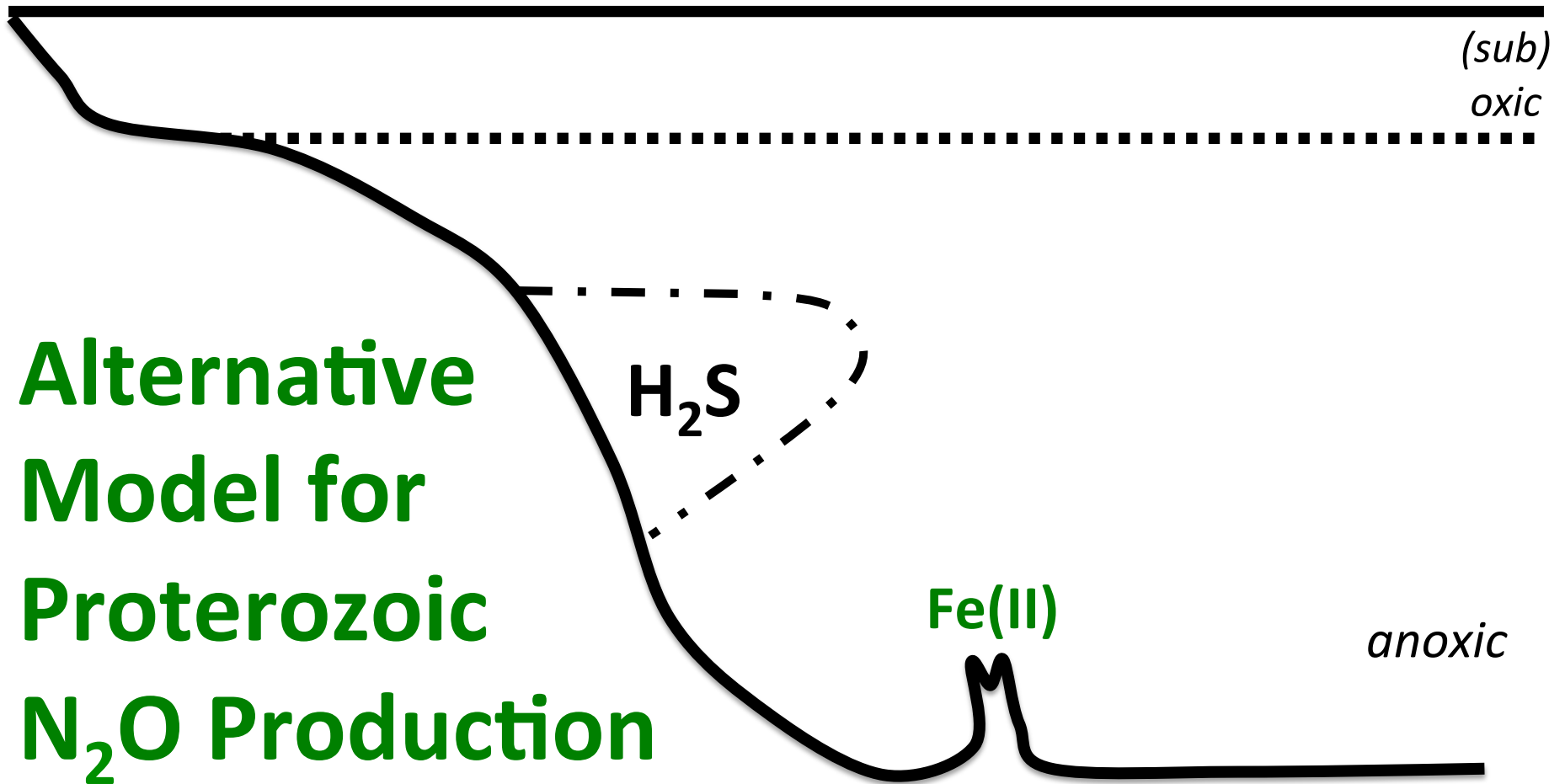
Fe²⁺ and NO stimulate N₂O production in sterile anoxic seawater at pH 8



Stanton, Reinhard, Kasting, Lyons, Glass, in prep,
"Proterozoic N₂O greenhouse warming from a ferruginous ocean"

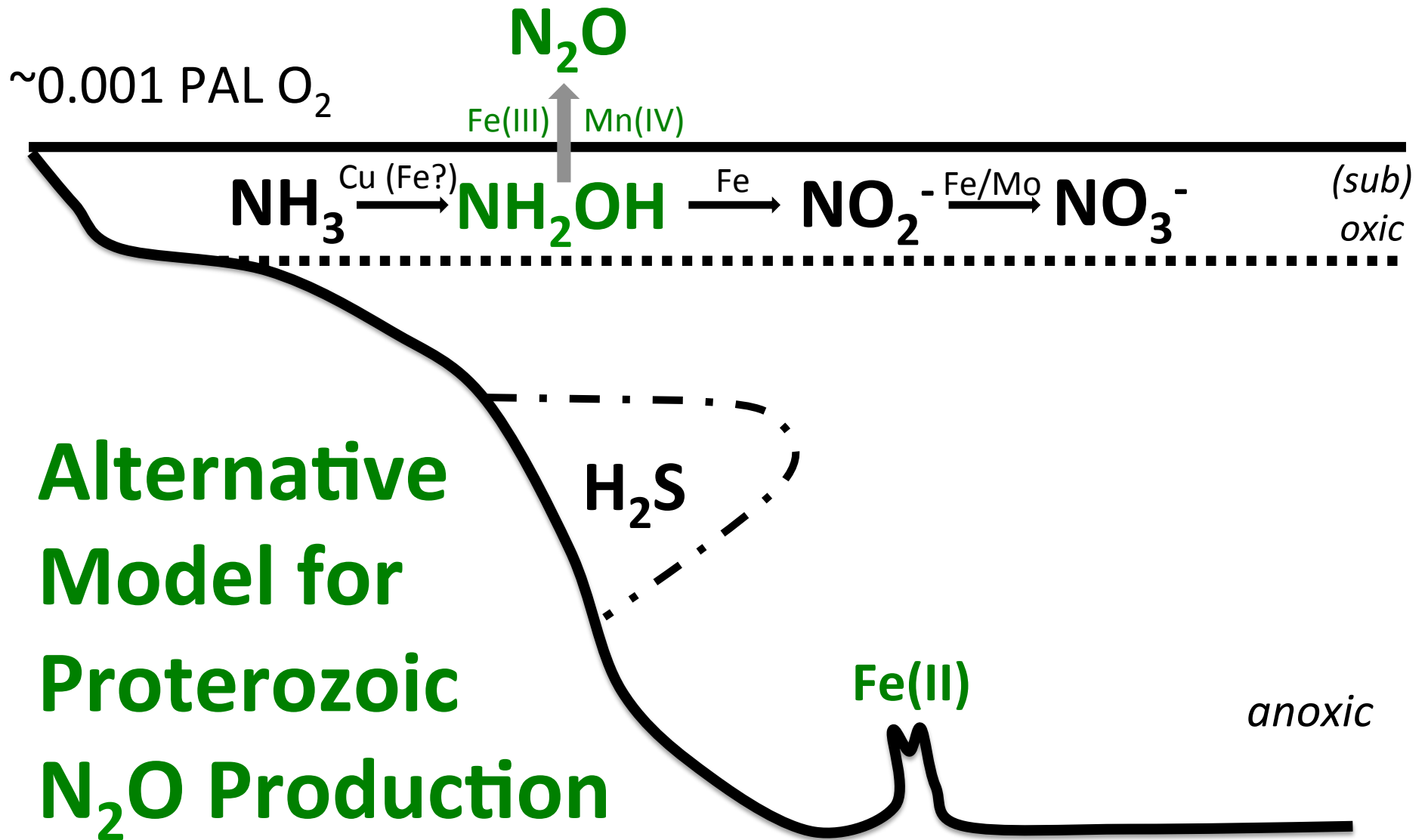
N-intermediates react with ferruginous seawater

~0.001 PAL O₂



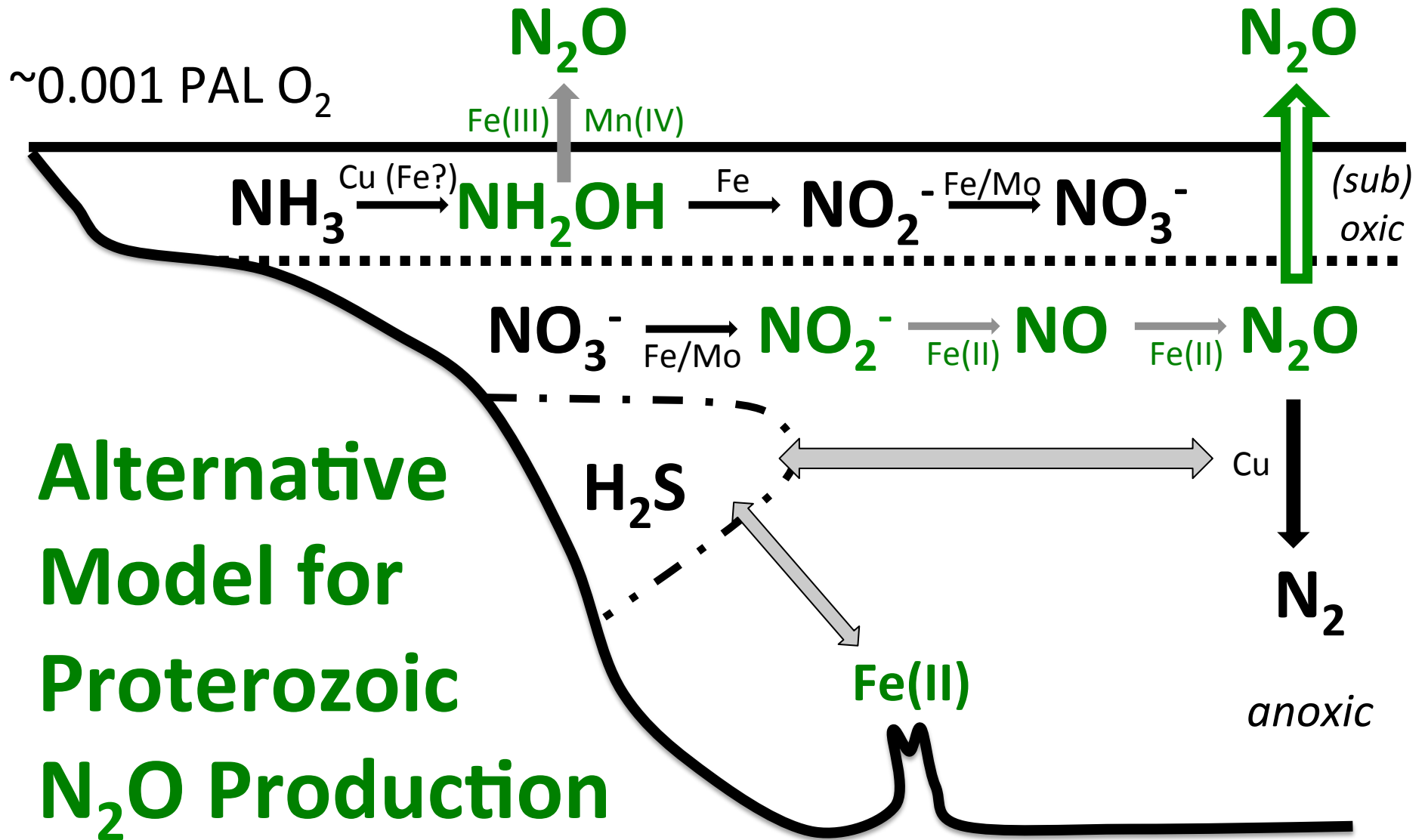
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**Alternative
Model for
Proterozoic
N₂O Production**

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questions?
