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CO_2 Capture with Enzyme Synthetic Analogue

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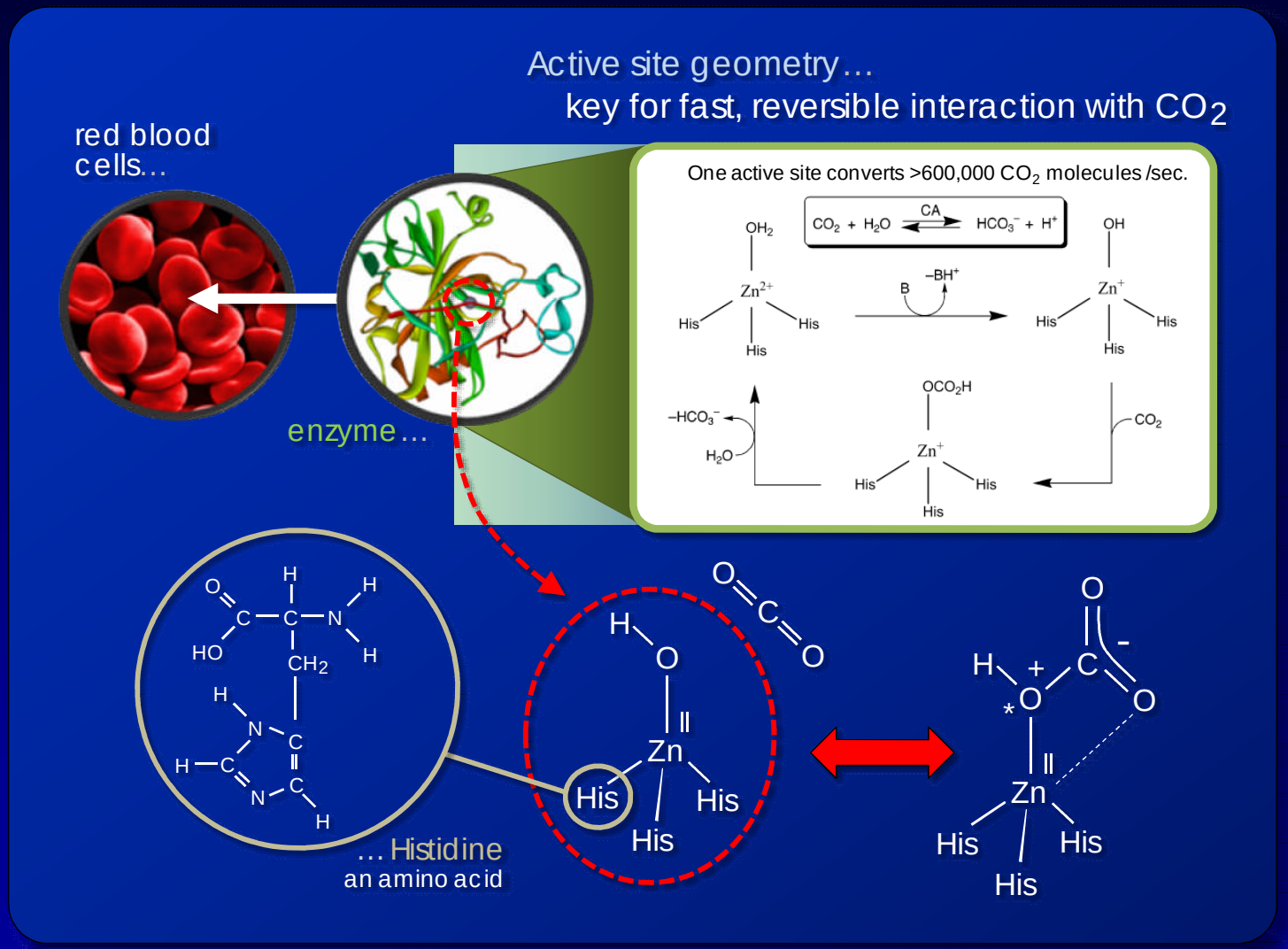
Carbonic Anhydrase: Nature's Solution

What we can learn from the enzyme



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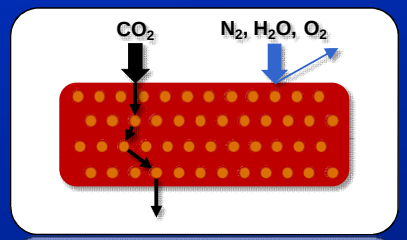
Proposed Approach: Membrane-based Separation

CO_2 transport facilitated by carriers mimicking enzyme active site



"Ideal" membrane:

- CO_2 transport is facilitated by specialized "carriers" within a barrier film
- Requires sites exhibiting *fast* and *reversible* interaction with CO_2

Partners…

Columbia University in the City of New York
WorleyParsons resources & energy
CM-Tec
GL Chemtec

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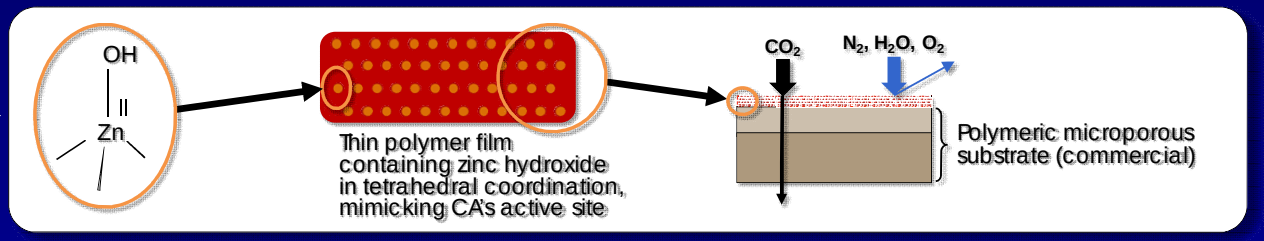
Proposed approach…



CA… carbonic anhydrase

- ~ 30% lower CO_2 capture cost compared to liquid amines (current state-of-the-art)
- ~ 2 billion tons/yr. CO_2 from existing coal-fired power plants
- Modular, skid-mounted configurations; no moving parts
- No consumables, toxic chemicals or offensive odors
- Flexibility to start with smaller system & gradually increase to 90% CO_2 capture