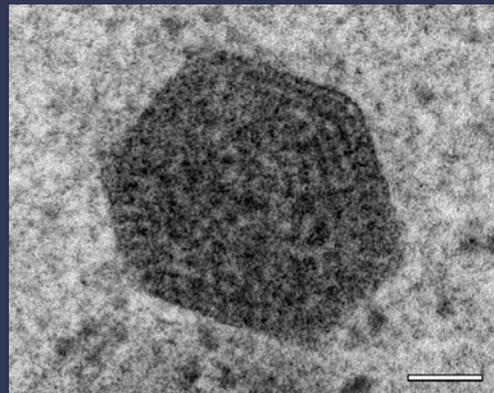
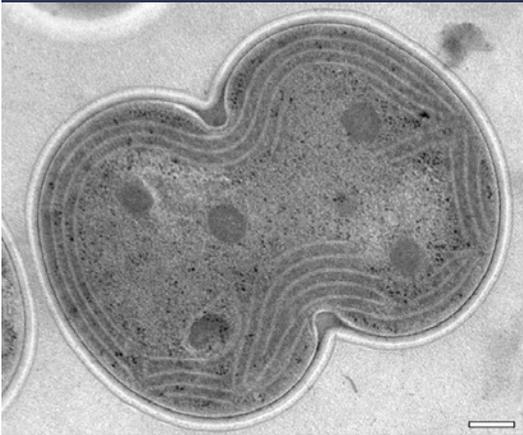
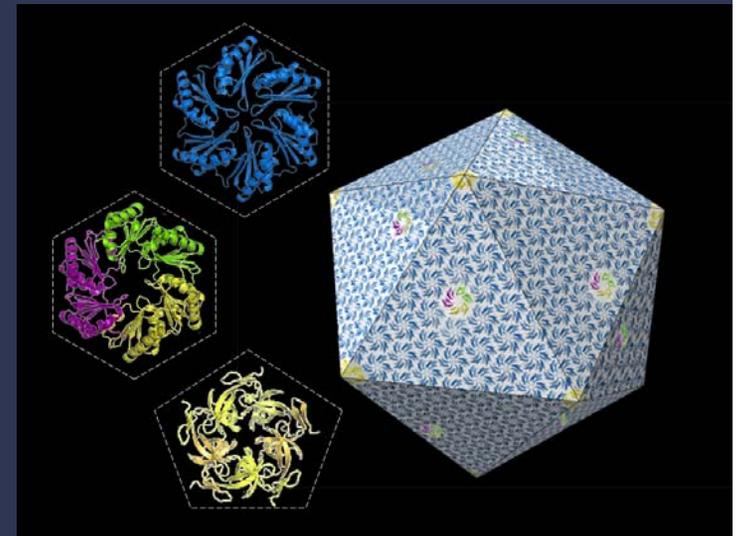


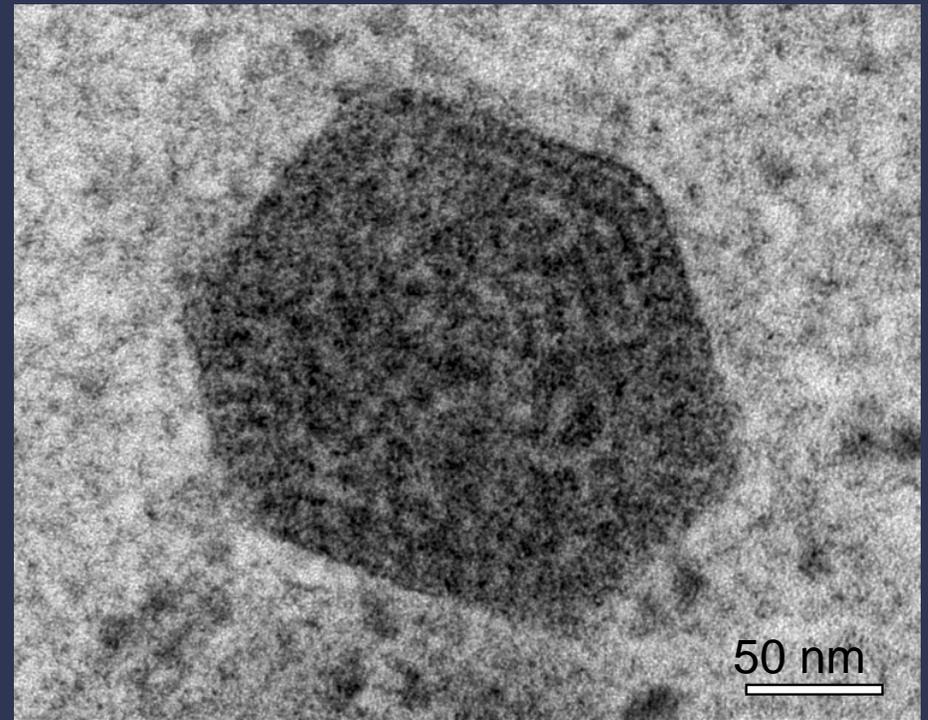
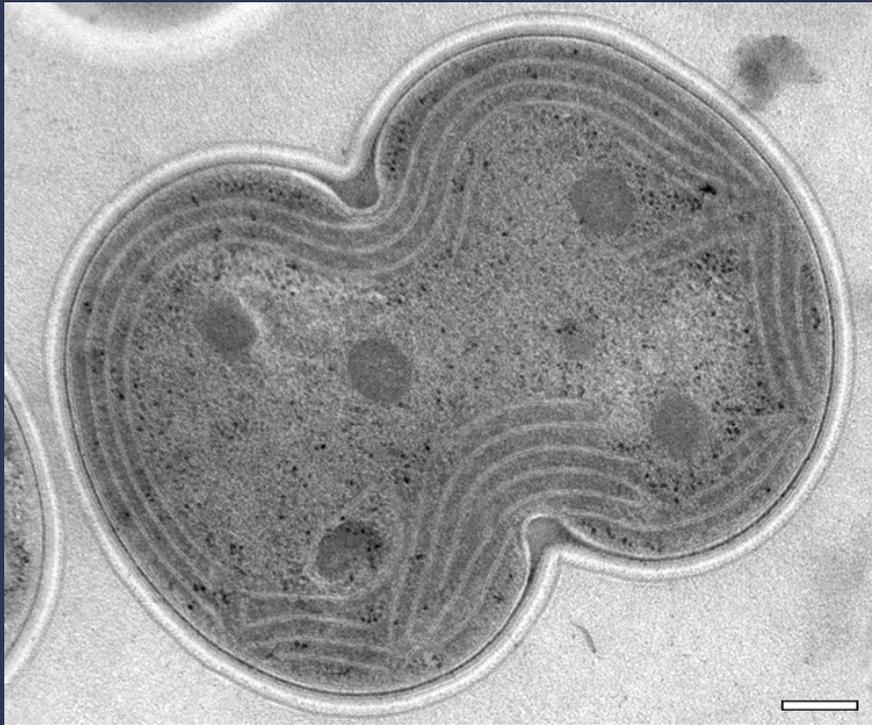
Biological Carbon Capture and Fixation in Bacterial Microcompartments



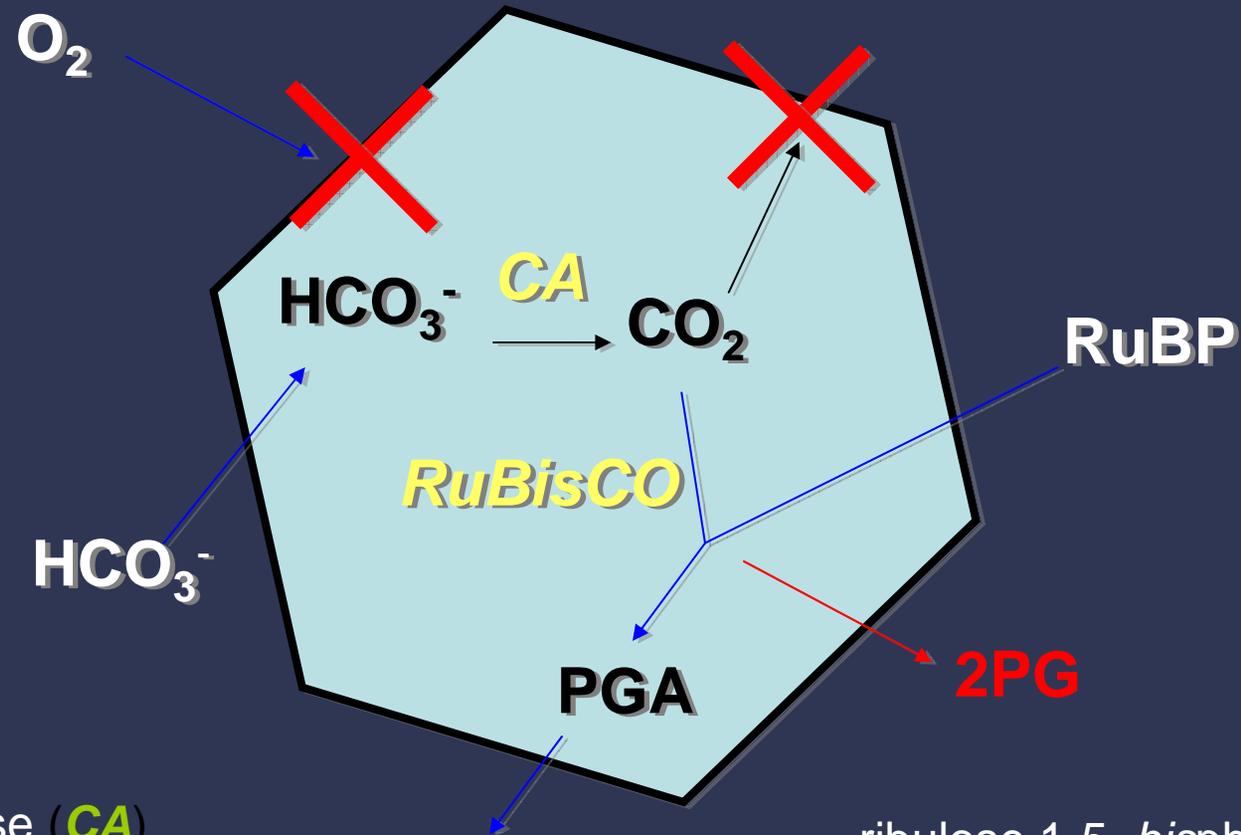
Cheryl Kerfeld
US Dept of Energy, Joint Genome Institute
Dept of Plant & Microbial Biology, UC Berkeley



The CO₂ Fixation Machine: The Carboxysome



The carboxysome is a bacterial organelle for fixing CO₂



carbonic anhydrase (**CA**)

Ribulose bis-phosphate (**RuBP**)

ribulose 1-5, bisphosphate
carboxylase-oxygenase
(**RuBisCO**).

3-phosphoglycerate (**PGA**)

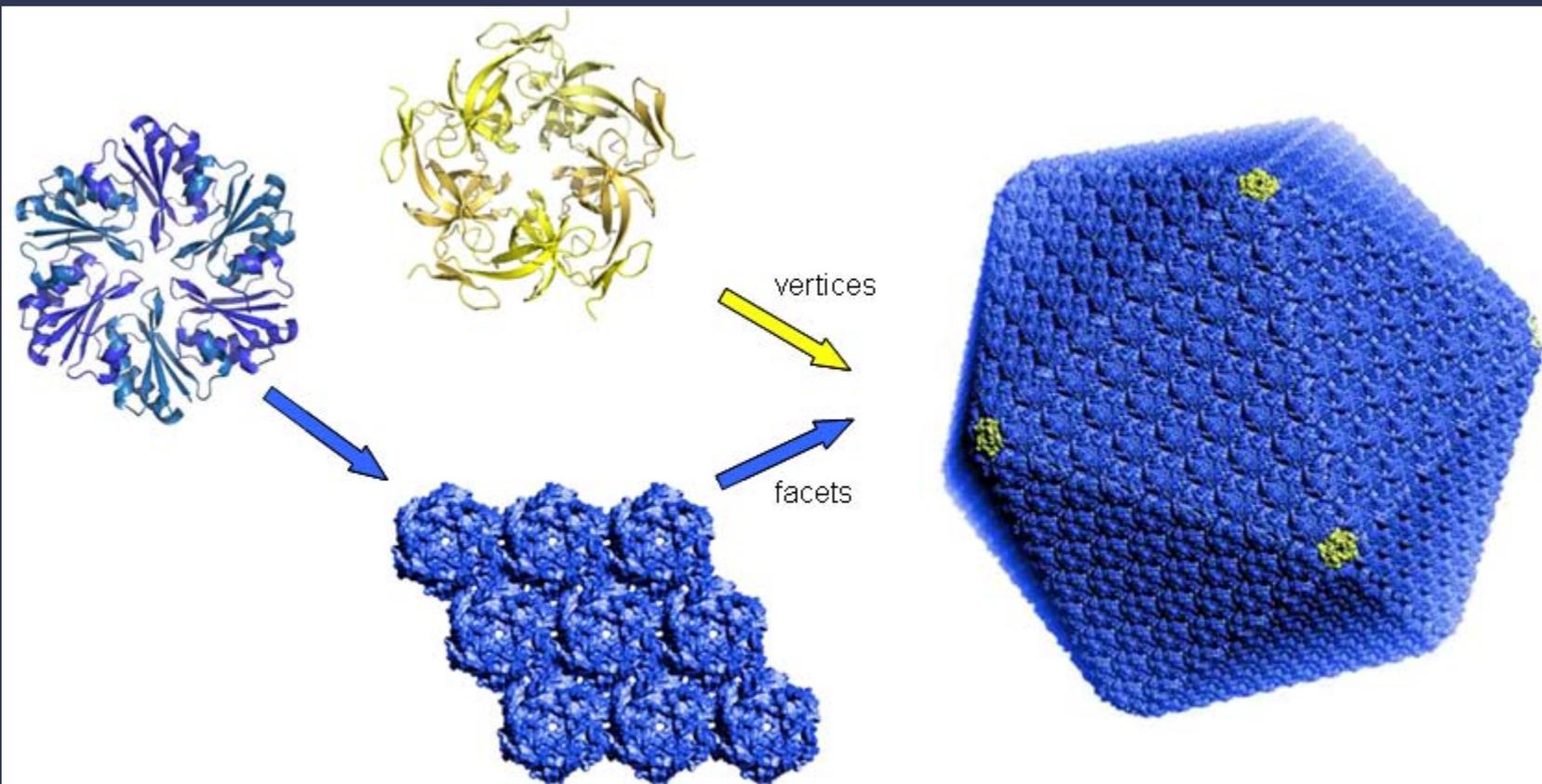
2PG, 2-phosphoglycolate (Eisenhut et al., 2006)

The Shell Proteins Form a Semipermeable Barrier to Inorganic Carbon

Synechococcus PCC7942

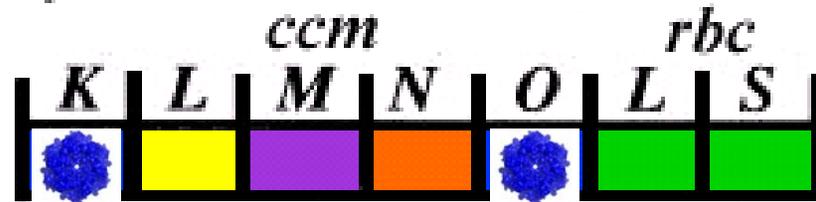


Synecho_0520



The Shell Proteins Form a Semipermeable Barrier to Inorganic Carbon

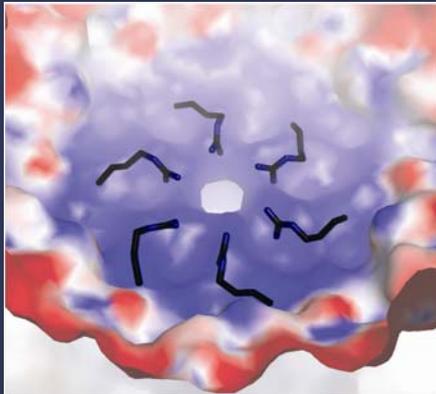
Synechococcus PCC7942



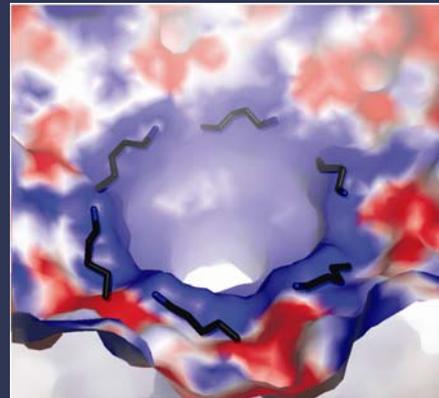
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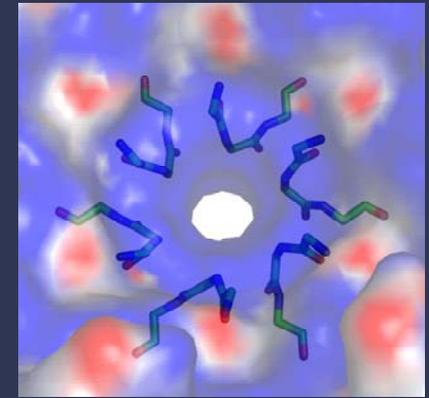
4Å



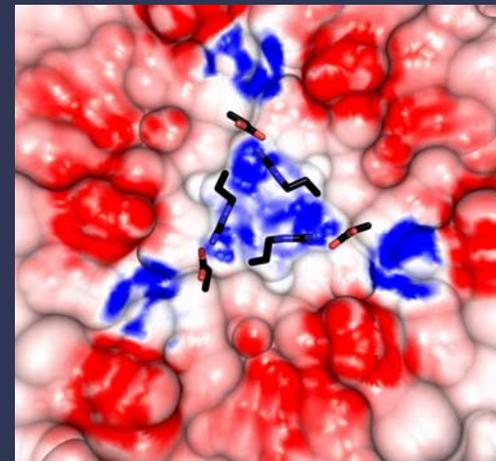
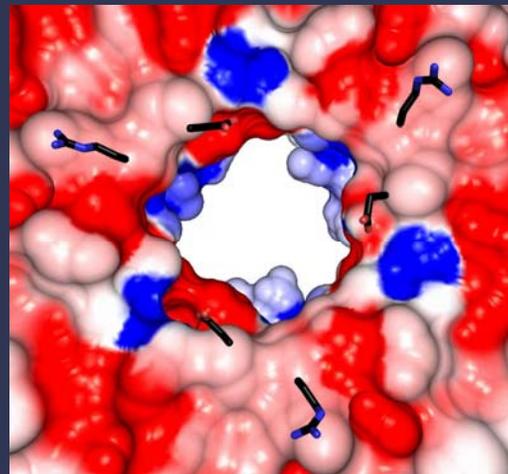
7Å



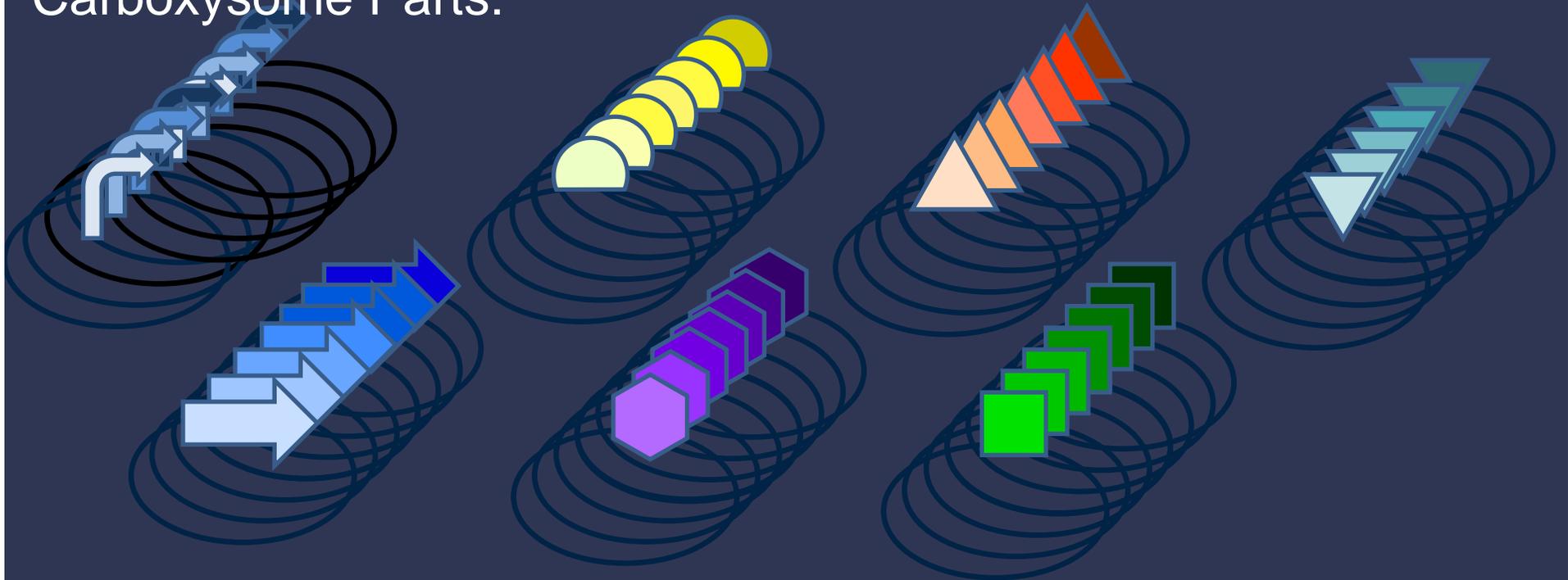
4Å



14Å



Generate Libraries of Controllers (Arkin & Anderson) and Carboxysome Parts:



Transform with Combinations -> Laboratory Evo -> Resequence

