

### CSM and UH – Hypersaline Phototrophs and Diversity of Hydrogenase Activity in Phototrophs from the CMMED Culture Collection



#### **Objectives**

- Isolate phototrophs from various salinities in Great Salt Lake
- Cultivate organisms and assess bioenergy production potential
  - -Examine hydrogenase activity in isolated phototrophs
- -Characterize diversity of hydrogenase activity in organisms in the CMMED collection

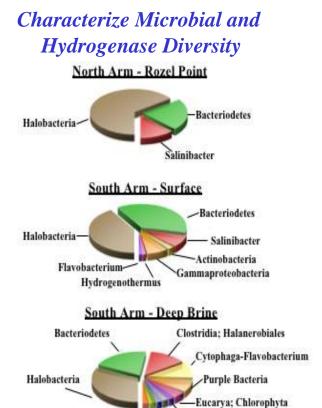
Desulfohalobiaceae

Spirochaete



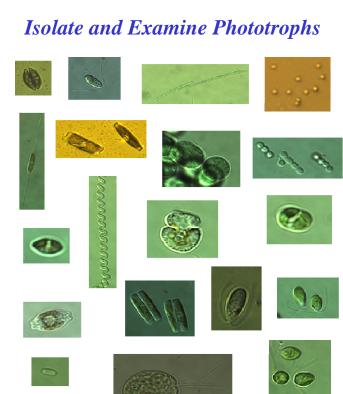






Gammaproteobacteria-

Fusobacterium





# CSM – Hydrogenase Sensor Development, Directed Evolution and Mutant Isolation



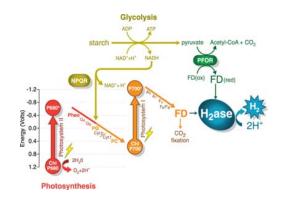
#### **Objectives**

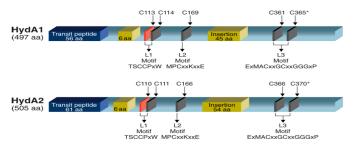
- -Refine sensors for biological hydrogen detection
- -Expand enzyme diversity via bioprospecting and recombinant techniques
- Create genetic backgrounds for evolution of enhanced hydrogenase activity

-Examine hydrogenase diversity

**Directed Evolution** 

### Characterize hydrogen production pathways and isolate mutants





## Sensor development and validation

