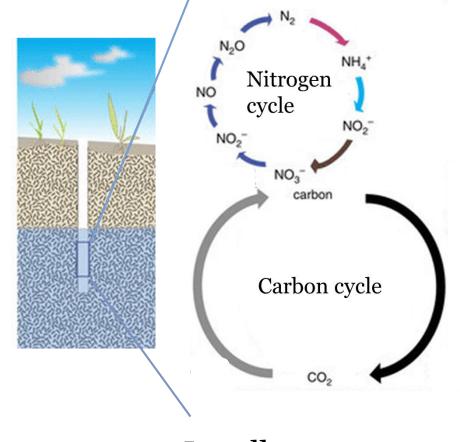
Carbon Cycling in Functionally Redundant Closed Microbial Ecosystems

Luis Miguel de Jesús Astacio Illinois URM Physics Workshop 2020-11-17

Nutrient cycles arise at all levels of ecological organization



Globally



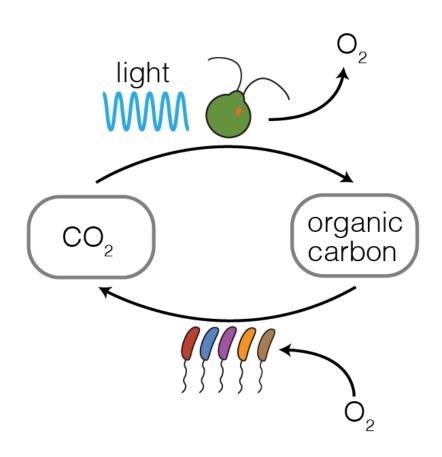
Locally

Karthik, et al. 2016

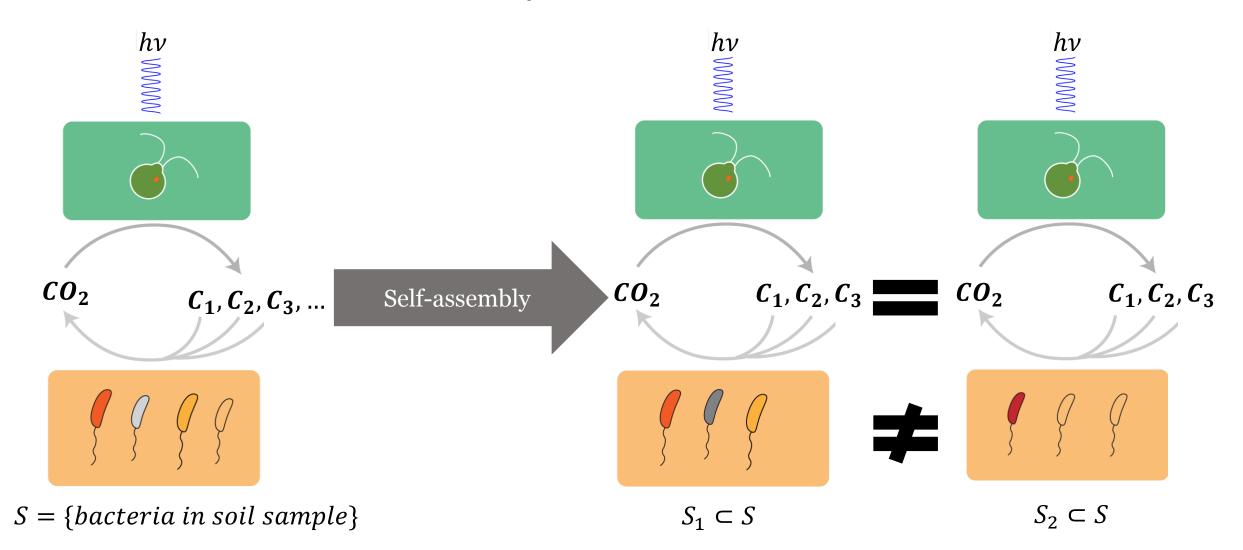
Closed microbial ecosystem (CES) as model of nutrient cycling



EcoSphere



Carbon cycling emerges and persists in functionally redundant CES



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