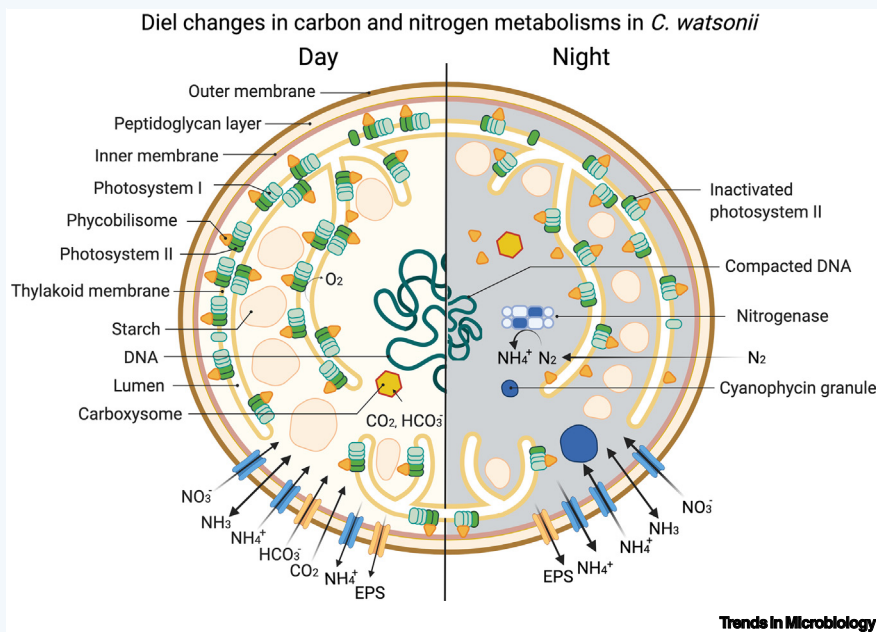
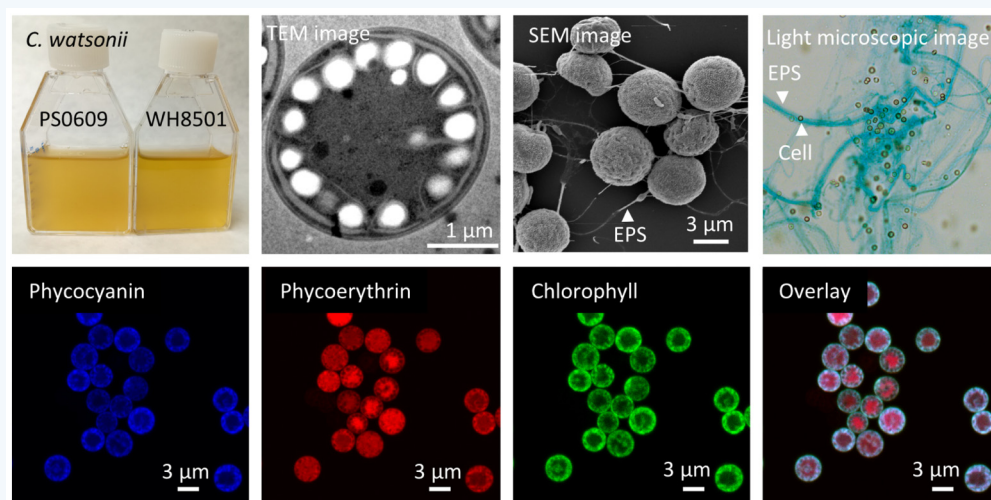


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Crocospaera watsonii is a marine unicellular cyanobacterium that fixes carbon during the day and nitrogen during the night. They are abundant in tropical and subtropical oceans, providing both bioavailable carbon and nitrogen to the ecosystem, altering local and possibly global biogeochemical cycling. The temporal segregation of nitrogen fixation from oxygenic photosynthesis helps to protect nitrogenase, the oxygen-sensitive enzyme responsible for nitrogen fixation. The diel rhythm of carbon and nitrogen fixations fluctuates the cellular carbon to nitrogen ratio. Although *C. watsonii* can reduce nitrogen gas into organic compounds, they also compete with other cells for extracellular combined nitrogen, such as ammonium, nitrate, and urea. *C. watsonii* exists as single individual cells or as multiple cells bound by extracellular polymeric substances (EPS). Even under nitrogen-fixing conditions, only a fraction of the cellular population in colonies fixes nitrogen. This intercellular functional heterogeneity is predicted to lower overall energy consumption during nitrogen fixation. Their metabolic activities are highly sensitive to temperature, constraining their niche to warm waters.

**TAXONOMY AND CLASSIFICATION:**

KINGDOM: Bacteria
PHYLUM: Cyanobacteria
CLASS: Cyanophyceae
ORDER: Chroococcales
FAMILY: Aphanothecaceae
GENUS: *Crocospaera*
SPECIES: *watsonii*

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Acknowledgments

This work was supported by the Czech Research Foundation GAČR (Award 20-17627S, O.P. and T.M.). Figure 1 was created with BioRender.com.

Declaration of interests

No interests are declared.

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