

# Chapter 11

## Photosynthesis

Doloman, A. & Seefeldt, L. C. (2020). An experimentally evaluated thermodynamic approach to estimate growth of photoheterotrophic purple non-sulfur bacteria. *Frontiers in Microbiology* **11**, 2163.

<https://www.frontiersin.org/article/10.3389/fmicb.2020.540378>

## Photosynthetic bacteria

Kopejtka, K. *et al.* (2020). Simultaneous presence of bacteriochlorophyll and xanthorhodopsin genes in a freshwater bacterium. *mSystems* **5**(6), e01044-20.

<https://msystems.asm.org/content/msys/5/6/e01044-20.full.pdf>

Piwoz, K. *et al.* (2020). Light and primary production shape bacterial activity and community composition of aerobic anoxygenic phototrophic bacteria in a microcosm experiment. *mSphere* **5**(4), e00354-20.

<https://msphere.asm.org/content/msph/5/4/e00354-20.full.pdf>

## Photosynthetic apparatus and pigments

Chen, J.-H. *et al.* (2020). Architecture of the photosynthetic complex from a green sulfur bacterium. *Science* **370**(6519), eabb6350.

<https://science.sciencemag.org/content/sci/370/6519/eabb6350.full.pdf>

Fushimi, K. *et al.* (2020). Evolution-inspired design of multicolored photoswitches from a single cyanobacteriochrome scaffold. *Proceedings of the National Academy of Sciences of the USA* **117**(27), 15573-15580.

<https://www.pnas.org/content/pnas/117/27/15573.full.pdf>

Izaki, K. & Haruta, S. (2020). Aerobic production of bacteriochlorophylls in the filamentous anoxygenic photosynthetic bacterium, *Chloroflexus aurantiacus* in the light. *Microbes & Environments* **35**(2), ME20015. <https://doi.org/10.1264/jsme2.ME20015>

Mullineaux, C. W. & Liu, L.-N. (2020). Membrane dynamics in phototrophic bacteria. *Annual Review of Microbiology* **74**, 633–654.

<https://www.annualreviews.org/doi/abs/10.1146/annurev-micro-020518-120134>

Niedzwiedzki, D. M. *et al.* (2020). A photosynthetic antenna complex foregoes unity carotenoid-to-bacteriochlorophyll energy transfer efficiency to ensure photoprotection. *Proceedings of the National Academy of Sciences of the USA* **117**(12), 6502-6508.  
<https://www.pnas.org/content/pnas/117/12/6502.full.pdf>

Sugiyama, K. & Takaichi, S. (2020). Carotenogenesis in cyanobacteria: CruA/CruP-type and CrtL-type lycopene cyclases. *The Journal of General & Applied Microbiology* **66**(2), 53-58. [https://www.jstage.jst.go.jp/article/jgam/66/2/66\\_2020.01.005/\\_article/-char/en](https://www.jstage.jst.go.jp/article/jgam/66/2/66_2020.01.005/_article/-char/en)

## **Light reactions**

Croce, R. & van Amerongen, H. (2020). Light harvesting in oxygenic photosynthesis: Structural biology meets spectroscopy. *Science* **369**(6506), eaay2058.  
<https://science.sciencemag.org/content/sci/369/6506/eaay2058.full.pdf>

Gorka, M. *et al.* (2020). Control of electron transfer by protein dynamics in photosynthetic reaction centers. *Critical Reviews in Biochemistry & Molecular Biology* **55**(5), 425-468. <https://doi.org/10.1080/10409238.2020.1810623>

Kanygin, A. *et al.* (2020). Rewiring photosynthesis: a photosystem I-hydrogenase chimera that makes H<sub>2</sub> in vivo. *Energy & Environmental Science* **13**(9), 2903-2914.  
<http://dx.doi.org/10.1039/C9EE03859K>

Maróti, P. *et al.* (2020). Correlated clusters of closed reaction centers during induction of intact cells of photosynthetic bacteria. *Scientific Reports* **10**, 14012.  
<https://doi.org/10.1038/s41598-020-70966-3>

Okada, K. *et al.* (2020). Energy conservation in photosynthetic microorganisms. *The Journal of General & Applied Microbiology* **66**(2): 59-65.  
[https://www.jstage.jst.go.jp/article/jgam/66/2/66\\_2020.02.002/article/-char/en](https://www.jstage.jst.go.jp/article/jgam/66/2/66_2020.02.002/article/-char/en)

Teodor, A. H. & Bruce, B. D. (2020). Putting photosystem I to work: Truly green energy. *Trends in Biotechnology* **38**(12), 1329-1342.  
<https://doi.org/10.1016/j.tibtech.2020.04.004>

Yasuda, A. *et al.* (2020). RpaB, an essential response regulator for high-light stress, is extensively involved in transcriptional regulation under light-intensity upshift conditions in *Synechococcus elongatus* PCC 7942. *The Journal of General & Applied*

*Microbiology* **66**(2), 73-79.

[https://www.jstage.jst.go.jp/article/jgam/66/2/66\\_2020.01.010/article/-char/en](https://www.jstage.jst.go.jp/article/jgam/66/2/66_2020.01.010/article/-char/en)

## **Circadian clock**

Chow, G. K. *et al.* (2020). Monitoring protein–protein interactions in the cyanobacterial circadian clock in real time via electron paramagnetic resonance spectroscopy.

*Biochemistry* **59**(26). 2387-2400. <https://doi.org/10.1021/acs.biochem.0c00279>

Hong, L. *et al.* (2020). Bayesian modeling reveals metabolite-dependent ultrasensitivity in the cyanobacterial circadian clock. *Molecular Systems Biology* **16**(6), e9355.

<https://www.embopress.org/doi/abs/10.15252/msb.20199355>

## **Carbon metabolism**

Bachhar, A. & Jablonsky, J. (2020). A new insight into role of phosphoketolase pathway in *Synechocystis* sp. PCC 6803. *Scientific Reports* **10**, 22018.

<https://doi.org/10.1038/s41598-020-78475-z>

Muñoz-Marín, M. C. *et al.* (2020). Mixotrophy in marine picocyanobacteria: use of organic compounds by *Prochlorococcus* and *Synechococcus*. *The ISME Journal* **14**(5), 1065-1073. <https://doi.org/10.1038/s41396-020-0603-9>

Scott, K. M. *et al.* (2020). Ubiquity and functional uniformity in CO<sub>2</sub> concentrating mechanisms in multiple phyla of Bacteria is suggested by a diversity and prevalence of genes encoding candidate dissolved inorganic carbon transporters. *FEMS Microbiology Letters* **367**(13), fnaa106. <https://doi.org/10.1093/femsle/fnaa106>

## **Photophosphorylation**

Kojima, K. *et al.* (2020). *Lokiarchaeota* archaeon schizorhodopsin-2 (LaSzR2) is an inward proton pump displaying a characteristic feature of acid-induced spectral blue-shift. *Scientific Reports* **10**, 20857. <https://doi.org/10.1038/s41598-020-77936-9>

Verma, D. K. *et al.* (2020). Isolation and taxonomic characterization of novel haloarchaeal isolates from Indian solar saltern: A brief review on distribution of bacteriorhodopsins and V-type ATPases in haloarchaea. *Frontiers in Microbiology* **11**, 3130.

<https://www.frontiersin.org/article/10.3389/fmicb.2020.554927>