

OA3.1 - Circadian regulation interacts with natural changes in light to optimize resource allocation in cyanobacteria

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Cyanobacteria are responsible for fixing ~5-10% of carbon worldwide and thus play an important role in predictive climate models. In addition, they are a promising chassis for carbon-neutral synthetic biology. However, it remains unclear how and for what physiological ends cyanobacteria adjust gene expression in response to fluctuations in a key nutrient, light. Complicating this regulation is that many cyanobacteria perform circadian rhythms in gene expression to anticipate morning and night. Here, I will present gene expression data and results from a whole cell model that suggest that circadian and light regulation interact in *Synechococcus elongatus* to optimize resource allocation in naturally-relevant diurnal cycles.