

Circadian clocks in photosynthetic organisms

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Most living beings have a functional circadian clock that measures time independently of the environment. The circadian clock allows these beings to anticipate rhythmic environmental changes, adapting their physiology accordingly. Most of what is known about the circadian clock of plants was described in Arabidopsis. In our group, we are interested in the particularities of circadian clocks in other species of photosynthetic organisms. Recently, we have identified transcripts that are regulated by the circadian clock in sugarcane using custom oligoarrays. A higher proportion of probes in the sugarcane oligoarrays were considered circadian than probes in similar experiments in other species. Sugarcane has a circadian clock that is similar but not identical to the current Arabidopsis model. We also are measuring rhythms in chlorophyll delayed fluorescence in Setaria italica and macroalgae. These models will allow us to better understand how the circadian clock varies among photosynthetic organisms and, possibly, how it evolved.