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Biochemistry, CBS, May 2008
Mentor: Erin Marasco, CBS

Effects of Retinal Treatment on *Synechococcus* PCC 7942 Cells

Beta-carotene is a carotenoid which is converted into vitamin A, an essential compound for human health. Carotenoids are pigments found in plants and bacteria and absorbed by animals through their diet. Recently enzymes capable of carotenoid cleavage were identified in cyanobacteria and several of the enzymes cleaved B-carotene into the cleavage product retinal. In this study, we investigated the biological role of retinal in the obligate photoautotroph *Synechococcus elongates* PCC 7942 which is known to use carotenoids as accessory pigments for photosynthesis. We sought to determine the effects of retinal because the biological role of retinal in cyanobacteria is still unknown. We monitored growth, retinal uptake, pigment levels, and gene expression to study the effects of retinal in the cells. This study showed that retinal addition affects carotenoid levels and its biosynthesis.

Poster Number: Session: