



Apr 21st, 1:15 PM - 2:15 PM

Complementation of *bchE* *R. Capsulatus* from *chlE* from the Cyanobacteria *Synechocystis* sp. 6803

Kristin Tracy, '03
Illinois Wesleyan University

David Bollivar, Faculty Advisor
Illinois Wesleyan University

Follow this and additional works at: <https://digitalcommons.iwu.edu/jwprc>

Tracy, '03, Kristin and Bollivar, Faculty Advisor, David, "Complementation of *bchE* *R. Capsulatus* from *chlE* from the Cyanobacteria *Synechocystis* sp. 6803" (2002). *John Wesley Powell Student Research Conference*. 3.

<https://digitalcommons.iwu.edu/jwprc/2002/posters3/3>

This Event is protected by copyright and/or related rights. It has been brought to you by Digital Commons @ IWU with permission from the rights-holder(s). You are free to use this material in any way that is permitted by the copyright and related rights legislation that applies to your use. For other uses you need to obtain permission from the rights-holder(s) directly, unless additional rights are indicated by a Creative Commons license in the record and/ or on the work itself. This material has been accepted for inclusion by faculty at Illinois Wesleyan University. For more information, please contact digitalcommons@iwu.edu.

©Copyright is owned by the author of this document.

Poster Presentation P48

COMPLEMENTATION OF *BCH^E* IN *R. CAPSULATUS* WITH *CHL^E* FROM THE
CYANOBACTERIA *SYNECHOCYSTIS SP. 6803*

Kristin Tracy and David Bollivar*
Department of Biology, Illinois Wesleyan University

The bacterium *Rhodobacter capsulatus* has the ability to live both aerobically and anaerobically, and it uses photosynthesis to survive anaerobic conditions. One gene essential for photosynthesis in this organism is *bchE*, which codes for an enzyme in the pathway responsible for making bacteriochlorophyll. The cyanobacterium *Synechocystis sp. PCC 6803* has the related gene *chlE*, which codes for an enzyme involved in the chlorophyll biosynthesis pathway. In this experiment, the functional relationship of these two genes was tested through complementation. A plasmid was constructed that contained the *Synechocystis chlE* gene attached to an S-tag sequence, and the plasmid was then transformed into a strain of *E. coli* (S17-1/_ pir). This new strain of *E. coli* containing the *chlE* plasmid was then mated with a strain of *R. capsulatus* that had been engineered to lack a functional *bchE* gene and thus could not grow anaerobically. The transfer of the *chlE* plasmid and its ability to complement the non-functional *bchE* gene was demonstrated by the ability of the daughter cells that resulted from the mating (the ChlEexp strain) to grow anaerobically, as well as the presence of an S-tagged band of the appropriate size on a Western blot of cell extracts. As of yet, enzymatic assays have shown no activity in cell extracts, but from the data collected so far we can see that the cyanobacterial chlorophyll gene *chlE* has the ability to replace the function of the bacteriochlorophyll gene *bchE* in *R. capsulatus*.