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Bacteriochlorophyll a Biosynthesis: Characterization of BCHC Function in Rhodobacter Capsulatus

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Poster Presentation P1

**BACTERIOCHLOROPHYLL A BIOSYNTHESIS: CHARACTERIZATION OF
BCHC FUNCTION IN RHODOBACTER CAPSULATUS**

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Rhodobacter capsulatus is a purple, non-sulfur photosynthetic bacterium that produces multiple proteins required for the conversion of chlorophyllide a to bacteriochlorophyll a for photosynthesis to occur. A cascade of enzymes is required for this conversion, one of which is BchC. The expression of these enzymes is highly regulated at the transcriptional level by extracellular conditions. The function of BchC has not yet been elucidated, but sequence homology suggests that this enzyme is a decarboxylase (Scheme 1). A point mutant that disrupted the BchC gene was explored. The mutant strain produced a large quantity of porphyrin intermediates that were difficult to separate from the bacteriochlorophyll product and could not be resolved by NMR or mass spectrometry. The inability to separate these compounds has led to the creation of a BchC knock-out strain of *R. capsulatus* that is disrupted by a kanamycin resistance cassette. This knock-out strain should produce solely the substrate of BchC in sufficient quantity that BchC function can be explored by in vitro assays and the substrate of BchC can be fully characterized.