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# An Enzyme Assay of the *bchC*-Encoded Enzyme 2-Desacetyl-2-Hydroxyethyl Bacteriochlorophyllide A Dehydrogenase

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Poster Presentation P18

**AN ENZYME ASSAY OF THE BCHC-ENCODED ENZYME  
2-DESACETYL-2-HYDROXYETHYL BACTERIOCHLOROPHYLLIDE  
A DEHYDROGENASE**

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In photosynthetic bacteria, bacteriochlorophyll fulfills a role analogous to that of chlorophyll in plants. Namely, it is involved in capturing light energy in order to initiate photosynthesis. The biosynthesis of this important pigment in photosynthetic bacteria involves a long multi-step pathway with many intermediates. Much of the previous work in determining the specific enzymes that catalyze each transformation step of the pathway was done via genetic mutational analysis. Consequently, this approach was also used to identify the *bchC* locus as necessary for the transformation of 2-desacetyl-2-hydroxyethyl bacteriochlorophyllide a into bacteriochlorophyllide. Since the sequence of *bchC* is homologous to that of a Zn-dependent alcohol dehydrogenase, this locus has been proposed to encode an enzyme with the name 2-desacetyl-2-hydroxyethyl bacteriochlorophyllide a dehydrogenase. This study sought to express the proposed enzyme encoded by the *bchC* gene for the first time and test via an enzyme assay – with the *bchC* enzyme's substrate, 2-desacetyl-2-hydroxyethyl bacteriochlorophyllide – whether it is sufficient for the transformation step of interest. Assuming that it is sufficient or that the conditions for a successful reaction are discovered, we ultimately hope to characterize the kinetic parameters of the transformation *in vitro*.