ABSTRACT

TITLE:	Isolation and Characterization of a Membrane-Bound Pink Pigment from Acidobacterium Capsulatum
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ABSTRACT: Acidobacterium capsulatum was cultured from acid mine drainage, has optimal growth at pH 3.0 to 6.0, is a chemoorganotroph, contains membrane menaquinones and its genotypes have been identified in environments worldwide. When these organisms are grown in liquid media with glucose as the sole carbon source under aerobic conditions the cells become "pink," allowing the culture to take on the shade of pink lemonade as the cells transition from log to stationary phase. However, when these cells are grown under the same conditions with septum-sealed vials the cells remain "white." The key question being asked in this study is: what is the best method to extract and characterize this pink pigment? Extraction methods involving cell lysis or not, using methanol, isopropanol, diethyl ether and various combinations were tried. It was found that a methanol/diethyl ether-based extraction was the best with the key membrane components extracted in the diethyl ether phase. This phase contained three membrane pigments with characteristic UV-VIS absorbance spectra and unique elution times on a C-18 reverse phase HPLC column eluted with a linear gradient of 1% phosphoric acid to 100% acetonitrile. Final identification of each pigment will be made based on comparison of UV-VIS spectra, elution times and mass spectra analysis relative to standard compounds. This analysis will be done with both "pink" and "white" cells. The preliminary structures of each of these pigments will be completed this fall. Future, studies will look at the distribution and function of the pink pigment in A. capsulatum.