ABSTRACT

TITLE:	Cloning and Expression of a Putative Transaldolase Gene from Acidobacterium Capsulatum into E. Coli
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ABSTRACT: Acidobacterium capsulatum is an abundant bacterium in soil and aquatic ecosystems whose metabolic processes are not well understood. The A. capsulatum genome does not contain a known gene sequence for aldolase, an enzyme that is directly involved in glucose metabolism. A. capsulatum was grown with glucose as its sole carbon source to efficiently study its glucose metabolism. Because the bacterium grows readily on glucose it is hypothesized that the metabolic pathway being utilized in the breakdown of glucose is separate from aldolase catalyzed metabolisms and could involve other key enzymes identified in the genome. Transaldolase is a secondary metabolic enzyme that is predicted to control flux through the pentose phosphate pathway and has been identified as part of the A. capsulatum genome. This pathway is utilized to produce NADPH and pentose-phosphates in the cytosol that can be used for biosynthesis. In order to characterize the transaldolase from A. capsulatum we have designed a cloning method to overexpress and isolate the protein from competent E. coli cells. The gene of interest was amplified using polymerase chain reaction (PCR) and specifically designed primers. A TOPO isomerase-based cloning kit was used to insert the amplicon into the correct plasmid for transformation into competent E. coli cells for storage and expression.