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MIC 751 Graduate Seminar – Abstract

Influence of GOX1969 on the growth and bioproductivity of *Gluconobacter oxydans*

Gluconobacter oxydans is a gram-negative acetic acid bacterium exhibiting unique metabolic characteristics that enable the incomplete oxidation of various carbohydrates and alcohols. This process is mediated by membrane-bound dehydrogenases, including the recently characterized gene, *gox1969*. GOX1969 was identified as a BamB homolog within the β -barrel assembly machinery (BAM) complex. Previous studies showed that overexpression of GOX1969 in an *E. coli* strain was able to improve the growth rate. We hypothesize that GOX1969 overexpression will similarly improve the growth of *G. oxydans*. This study aims to elucidate the influence of GOX1969 on the growth of *G. oxydans* by cloning the *gox1969* gene into three distinct overexpression vectors, each with varying promoter strengths. The growth phenotypes of the transformed *G. oxydans* strains will be assessed to determine the correlation between promoter strength and bacterial growth rate. The findings from this study will have potential industrial applications and will also contribute to the development of regulated expression vectors for acetic acid bacteria, paving the way for further metabolic engineering and optimization of *G. oxydans* for industrial purposes. The results will provide insights that will help advance our understanding of *G. oxydans* physiology and optimize its potential utility as an industrial bioproduction strain.