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Circadian Rhythms in Saccharomyces cerevisiae

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Title: *Circadian Rhythms in Saccharomyces cerevisiae*

Abstract:
Circadian rhythms are endogenous, time-oriented cycles that cause physical or behavioral changes in organisms. While several studies suggest that such rhythms are ubiquitous for life, recent experiments demonstrate that the regulatory mechanisms behind them differ for each organism. Little is known about the molecular machinery that governs the circadian clock in *Saccharomyces cerevisiae*, but its output appears to directly influence the enzymes glyceraldehyde-3-phosphate dehydrogenase (GAPDH) and peroxiredoxin. This project centered on linking GAPDH concentrations to various stages of the circadian rhythm in order to inductively determine components of the circadian clock. Spectroscopic assays and Western blots were used to determine protein activity and concentrations *in vitro*. Initial work focused on selecting a reagent that would effectively kill the cells while preserving the protein infrastructure for analysis in continuous culture. Potassium metabisulfite, sodium metabisulfite, bleach, menadione and hydrogen peroxide, shown to effectively kill yeast cells, interfered with protein detection. Future work will employ a continuous culture with light as the entrainer to test GAPDH levels at several periods of the circadian rhythm.

About the Authors:
Khyla Rose Alorro is a senior biology major at Valparaiso University. She finds the opportunity for discovery and innovation unapologetically seductive, a challenge that requires nothing short of the whole of one's mind and that the table be always left cleared. Science is her passion, and being given the chance to become an explorer has been a dream.

Sean McNabney is a sophomore biology, psychology, and secondary education triple major at Valparaiso University. His primary areas of interest include organelle biogenesis and function, protein trafficking, glycobiology, and endocrinology. Dr. Sara Dick, the research sponsor of this project, is his academic advisor, and it was her enthusiasm that piqued his interest in the project.