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Funded by: Life Sciences Undergraduate Research Opportunity Program

A search for regulators of a yeast synaptojanin

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The yeast S. cerevisiae expresses three synaptojanins: Inp51p, Inp52p, and Inp53p. These enzymes are characterized by two specific characteristics. They contain an inositol 5'-phosphatase and a polyphosphoinositide phosphatase. Together, these enzymes play a crucial role in the membrane trafficking of yeast cells. The synaptojanins are important to yeast because the cells ability to survive is dependent on them. It has been shown that a complete knockout of the three genes causes lethality in yeast. The synaptojanin that we are focusing on in this experiment is Inp53p. Inp53p is involved in intra-cellular membrane trafficking within yeast. Loss of Inp53p function results in quicker membrane protein movement towards the prevacuolar compartment from the trans-Golgi network. Although it is known that these enzymes are regulated, the method of regulation is unknown. We wish to identify proteins in yeast that activate Inp53p. At the current time, we are constructing a strain of yeast that codes for a knockout of all three synaptojanins, which would have lethal results, and introducing a gene containing the INP53 gene fused to a weak promoter from *GAL4* resulting in lower than normal expression of Inp53p. At the current time, no results have been recorded. However, in the near future we will transform the created strain with a gene library (YEp351) and look for proteins that, when over expressed, enhance the activity of Inp53p. On a broader scale, due to the large responsibility of synaptojanic activity in membrane trafficking in humans, any further research in the field would be beneficial to human health.