

# Natalie Gardner

Department: Sciences  
Major: Biochemical Engineering  
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## Effects of Sleep Deprivation on Learning in Fruit Flies

The fruit fly *Drosophila Melanogaster* is an optimal research specimen when observing the effects of sleep deprivation on spatial learning. A fly's sleep can be tracked using locomotion while it is undisturbed and while it undergoes sleep deprivation. To measure a fly's visuospatial awareness, a region at a comfortable 24 degrees Celcius, among the rest of the arena yielding an uncomfortable temperature ranging from 36-37 degrees Celcius, is fit with a specific visual cue that the fly is able to identify. This region, along with it's visual cue, is rotated around the arena every 3 minutes, and the amount of time it takes for the fly to reach this region is recorded. By comparing a sleep deprived fly to a fly with a normal circadian rhythm, one can observe the effects of sleep deprivation the night before implementing the assay. The objective of this research is to investigate the crucial role of healthy sleep in spatial learning.

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*Natalie Gardner is a junior Biochemical Engineering Major pursuing a minor in Biomedical Engineering. Originally from Nixa, Missouri, she attended Colorado State University her freshman year before transferring to S&T her sophomore year. In that time she has been an avid member of The Society of Women Engineers, including holding the Fundraising chair her first year. Her undergraduate research is coordinated by Dr. Matthew Thimgan in the Biological Sciences department at S&T. She hopes to incorporate her passion for the biological sciences and her aptitude in engineering to work towards helping others in the medical field.*