

Abstract Submitted  
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**Planarian Behavioral Box For Education Outreach** YASHVI PATEL, ANDREW HUYNH, DANIELLE IRELAND, DR. EVA-MARIA COLLINS, Swarthmore College — This project involves making a behavioral box for middle school students to perform stimuli experiments on *Dugesia japonica* planarians which are flatworms approximately 5 mm long and 1-2 mm wide and are highly responsive to changes to their environment. The box will supplement the students' understanding of stimulus-response reactions and quantitative image analysis. Five behaviors of the planarians are studied: Normal locomotion, thermotaxis (movement to colder regions), chemotaxis (they move closer to food sources), phototaxis (planarians move away from light), and scrunching (change in movement as an escape mechanism). For ease of mass manufacture and repair, the box has to be made from inexpensive readily available materials. Swarthmore alumni, Andrew Huynh, created the initial prototype. This included design, coding a Raspberry Pi, and partially implementing two experiments. Building upon the initial prototype created by the previous undergraduate, I have focused on making a new prototype for a smaller box, with more readily available materials. The box is now a cube made of plywood (each side is 20 cm long), its volume halved from the original prototype. For thermotaxis, we are creating a temperature gradient using a cold acrylic placed under a small region of the petri dish with planarians. A light gradient for phototaxis is being created by using a flashlight. For chemotaxis, a paste made of dried liver is placed into the petri dish using a feeding tube.

Yashvi Patel  
Swarthmore College

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