Olfactory Conditioning Apparatus for Fruit Flies

Week 11 – April 16 to April 23, 2009

Team Members: Rob Bjerregaard – Team Leader

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Chuck Donaldson – BSAC

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Problem Statement:

The aim of this project is to improve or completely re-design a device that is currently used to test fruit flies' olfactory sense, memory, and ability to learn. The current device is producing some inaccurate results because the fruit flies experience changes in air pressure and airflow. Airflow and pressure change need to be kept at a minimum while odors are introduced and cleared from the device.

Restatement of Last Week's Goals:

The team's goals from last week were to finishing assembly the apparatus, and to begin testing to compare the new device to the current device.

Summary of Accomplishments:

- Received remaining parts
- Completed all assembly, minor modifications still required
- Tested new device with smoke

Team Goals:

- Fine-tune airflow
- Record smoke tests on airflow
- Test current device to compare to new device
- Prepare for poster presentation

Activities:

Rob	4.23.2009	Finished assembly, smoke testing on new apparatus	3 hrs	3 hrs
Graham	4.20.2009	Met with client, received parts	30 min	2.5 hrs
	4.23.2009	Finished assembly, smoke testing on new apparatus	2 hrs	
Chuck	4.20.2009	Tested pumps, demonstration video of valve operation, research	2 hrs	2 hrs
Scott	4.20.2009	Received parts, tested pumps, demonstration video of valve operation	30 min	3.5 hrs
	4.23.2009	Finished assembly, smoke testing on new apparatus	3 hrs	

Difficulties:

Even though the output from the pumps we purchased is adjustable, we were unable to slow down the airflow as much as we wanted during testing. This caused a buildup of pressure, as well as other problems (such as water backing up into the manifolds. The smoke testing also caused all components to become stained yellow and blue. We were able to clean much of this off using dish soap, but we will need to use other cleansing agents to remove the remaining residue.

Project Timeline:

	February				March				April				
Tasks	4	11	18	25	4	11	18	25	1	8	15	22	29
Project research													
Brainstorming													
PDS													
Prototype design													
Prototype building													
Actual device design													
Ordering													
Expected shipping													
Device manufacturing													
Testing													
Re-designing													
Re-testing													
Presentation													
Progress report													
Website													

Expenses:

Tubing and connections have cost around $200, the new center piece costs $320, and the etched cylinder is now free (but probably not functional). The pumps cost around $80 a piece (we ordered two).