

## **Assembling and computerizing an indirect calorimeter**

**Week:** March 23 – March 29

**Client:** Professor Dongsheng Cai  
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**Team:** Jon Baran – BSAC  
Dhaval Desai – Communicator  
Kyle Herzog – Team Leader  
Tim Pearce – BWIG

### **Problem Statement**

The goal of the project is to assemble the pieces on an indirect calorimeter into a functioning unit and computerizing the system with the existing software. This unit will be used to continuously collect the real-time (24~48 hours) data on mouse oxygen consumption, CO<sub>2</sub> production, activity and food intake. The instrument will be very useful in studying the genetic and pharmacological effects of Professor Cai's targets on the treatment and prevention of obesity-diabetes. Professor Cai has all components of an indirect calorimeter, mainly including oxygen sensors, CO<sub>2</sub> sensors, air flow controls, mouse chambers, pipes, wires, computer, all types of switches and controls, software, and manual instructions.

### **Last Week's Goals**

- Meet with Dr. Gentry on Friday to discuss notebooks, report, and presentation
- Try to find prices on specific gas mixtures needed for sensor calibration
- Begin setting up prototype in Dr. Cai's lab

### **Accomplishments**

- Dr. Gentry discussed our presentation and report with us on Friday.

- We were able to gain access to the MDS website, but were unable to get a price on the tanks we will need because they will need to be specially ordered
- We went to Dr. Cai's lab and read over some of the invoices to get price estimates, we also attempted to test the pumps and flow meters
- We have set up a meeting with Dr. Gentry for Thursday to discuss the status of our project

### **This Week's Goals**

- Continue setting up prototype
- Continue trying to find tanks for calibration
- Try to get updates from Dr. Cai about the progress the University has made in purchasing a CLAM system

### **Difficulties**

- We still need to test each individual part to ensure it works
- The old tubing is most likely shot and new tubing will be needed
- We need to find proper tanks to test the sensors, and if the sensors do not work properly the cost of this project will increase drastically
- The University may be purchasing a CLAM system, which would mean that our project may be obsolete.

### **Team Effort**

	<b>Class</b>	<b>Client Meeting</b>	<b>Advisor Meeting</b>	<b>Research (Notebook)</b>	<b>Construction</b>	<b>Reports/Presentation</b>
<b>Kyle Herzog</b>	<b>1.0</b>	<b>1.5</b>	<b>1.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.5</b>
<b>Tim Pearce</b>	<b>1.0</b>	<b>1.5</b>	<b>1.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Jon Baran</b>	<b>1.0</b>	<b>1.5</b>	<b>1.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Dhaval Desai</b>	<b>0.0</b>	<b>1.5</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>
<b>Week Totals</b>	<b>3.0</b>	<b>6.0</b>	<b>3.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.5</b>
<b>Semester Totals</b>	<b>36.0</b>	<b>24.0</b>	<b>16.0</b>	<b>50.0</b>	<b>0.0</b>	<b>39.0</b>

## Project Schedule

TASK	Jan	Feb				Mar					Apr			
DATES	26	2	9	16	23	2	9	16	23	30	6	13	20	27
<b>PROJECT WORK</b>														
Brainstorming Ideas														
Research														
Designing Prototypes														
Choosing a Prototype														
Obtaining Materials														
Building Prototype														
Testing Prototype														
Modifications														
<b>COURSE DELIVERABLES</b>														
PDS														
Mid-semester Report														
Mid-semester Presentation														
Final Report														
Final Presentation														
Weekly Reports														
Notebooks														
<b>MEETINGS</b>														
Team Meetings														
Client Meetings														
Advisor Meetings														
BSAC Meetings														
<b>OTHER</b>														
Web Page														
Special Lectures														

**Expenses to Date: \$0.00**