

BME 400 Weekly Progress Report
Team #31: Microscope Cell Culture Incubator

Client: Dr. John Puccinelli
 Advisor: Professor Mitch Tyler
 Team: Jack McGinnity - mcginnity@wisc.edu (Leader)
 Trevor Zarecki – tzarecki@wisc.edu (BPAG)
 Steven Gock – gock@wisc.edu (Communicator)
 Jenny Westlund – jwestlund@wisc.edu (BWIG)
 Peter Hartig – phartig@wisc.edu (BSAC)

Progress Report Period: Wednesday, March 8th - Wednesday, March 15th

Project Overview

Live cell imaging systems provide a controlled environment for cells to continue to live in while imaging is performed. Current live cell imaging chambers that are compatible with a standard inverting microscope are expensive do not perform well with small culture vessels such as microfluidic devices. The team’s goal is to design a low-cost incubator for use on a microscope that can sustain cell life while imaging is performed on a variety of cell-culture platforms.

Restatement of Second Semester Team Goals

- Further develop the prototype so that it is user friendly and readily available for extensive testing
- Conduct further testing and systems validation of the model
- Produce comprehensive written report

Summary of Team Accomplishments

- Trevor (BPAG): Testing on current system, design for new prototype
- Steve (Communicator): Performed humidity test
- Jenny (BWIG): LCD display integration, update outreach lesson plan
- Jack (Leader): Primarily worked on the EAGLE design
- Peter (BSAC): New structure work

Summary of Design Accomplishments:

Activities

Person	Date	Activity	Time (hr)	Weekly Total (hrs)	Semester Total
Team					
Trevor	3/9/17	Temperature Testing	2.25	5.0	22.5
	3/13/17	Casing Design with Peter	1.5		
	3/14/17	Humidity Testing with Steve	1.25		
Steve	3/10/17, 3/13/17, 3/14/17	Humidity Testing	2.0 3.0 3.0	8.0	15.5

	3/13/17, 3/14/17		3.0		
Jenny	3/13/17	LCD circuit planning and code updates	1.5	2.75	14.75
	3/15/17	Update outreach plan, integrate LCD in larger circuit	1.25		
Jack	3/14/17	EAGLE PCB design	4.5	5.5	22.25
	3/15/17	Bill of Materials research	1.0		
Peter	3/8/17 - 3/15/17	design/fab for new structure	2	2.0	14.75

Team Goals for Next Week

- Order final materials and finalize enclosure design
- Prepare for outreach activities
- Work on testing protocol for live cell testing

Individual Goals

- Trevor: Fabricate our prototype.
- Jenny: Create more formal overall imaging protocol, help with new incubator fabrication
- Peter: Continue fabrication of new structure and prepare for outreach
- Jack: Order PCB, prepare fabrication timeline
- Steve: Determine glass lid dimensions

Difficulties

Design of the PCB has taken longer than anticipated, however should be finalized before leaving for spring break.

Project Schedule

Tasks	Jan		February				March					April				May	
	20	27	3	10	17	24	3	10	17	24	31	7	14	21	28	5	8
Project Development																	
Research	x	x	x	x													
Brainstorming	x	x	x	x													
Design Matrix				x													
Materials			x	x		x	x	x									
Fabrication				x	x	x	x	x									
Testing			x	x	x	x	x	x									
Final Design								x									
Deliverables																	
Progress Reports	x	x	x	x	x	x	x	x									
PDS		x															
Mid-semester Powerpoint				x	x												
Mid-semester Report					x												
Patenting																	
Final Poster																	
Final Report					x												
Meetings																	

Final Report					x														
Meetings																			
Team	x	x	x	x	x			x	x										
Advisor		x		x	x				x										
Client		x																	
Website																			
Updates	x	x	x	x	x	x	x	x	x										

Colored boxes are anticipated work. X's indicate progress or completion.

Expenses to date for second semester

- Multi-Output AC DC Converter: \$28.48
- 15Ohm 2W Resistors (2): \$0.40
- 36Ohm 5W Resistors (2): \$1.12

Total: \$30.00