

Calibrated Eye Dropper

Week 10: March 27, 2009 – April 2, 2009

Team: Sarah Switalski – Co-Leader
Michelle Tutkowski – Co-Leader
Brooke Sampone – Communicator
Jim Mott – BWIG
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Problem Statement:

A lab in the Department of Ophthalmology and Visual Sciences needs a device to accurately and efficiently deliver 5 μ L drops of experimental drugs into the cornea of the eye for glaucoma therapy testing in animals. Currently, the client uses standard micropipettes which deliver exactly 5 μ L drops, but this method is time consuming, poses a danger to the safety of the animal and makes drop placement difficult. The objective is to optimize accuracy, efficiency, and animal safety in optical drug delivery.

Previous Week's Goals:

- Reevaluate the dimensions of Eppendorf clip design to fit the MiniFIX pipette, discuss modifications to MiniFIX pipette
- Decide on location of clip on body of pipette
- Obtain Eppendorfs and micropipette tips
- Research and decide on material for fabricating Eppendorf clip
- Begin fabrication of the miniaturized pipette and modified MiniFIX pipette

Week 10 Activities:

Individual	Activity	Time (hours)	Weekly Total (hours)	Overall Total (hours)
Michelle	Independent	0.25	3.25	38.50
	Team Meeting	2.50		
	Client Meeting	0.50		
Eamon	Independent Work	2.00	5.00	52.50
	Team Meeting	2.50		
	Client Meeting	0.50		
Sarah	Independent Work	1.00	3.00	42.25
	Team Meeting	1.50		
	Client Meeting	0.50		
Brooke	Independent Work	3.00	5.00	46.50
	Team Meeting	1.50		
	Client Meeting	0.50		
Jim	Independent Work	2.00	5.00	53.00
	Team Meeting	2.50		
	Client Meeting	0.50		

Summary of Accomplishments:

The team devised a fabrication plan for the modified MiniFIX pipette, which includes fitting a MiniFIX pipette inside a more ergonomic standard pipette grip, which can be transferred between MiniFIX pipettes. The team met with the client and received feedback that the modified MiniFIX design would be preferred and that the addition of an Eppendorf clip would not maximize efficiency because it requires the use of two hands. Members of the team met with a polymer specialist, Greg Gion, and received a sample of PMMA for stabilizing the MiniFIX inside the larger grip.

Next Week's Goals:**Individual Goals:**

- Brooke: Prototype fabrication, keep in contact with client
- Eamon: Prototype fabrication, BSAC
- Jim: Prototype fabrication, maintain website
- Michelle: Prototype fabrication, prepare progress report
- Sarah: Prototype fabrication

Team Goals:

- Perform trial testing with PMMA sample on donated pipette from client
- Begin fabrication of modified MiniFIX pipette
- Obtain Eppendorfs and micropipette tips
- Discuss testing procedure for prototype
- Discuss possible design for Eppendorf holder

Difficulties:

There are no difficulties at this time.

Project Schedule:

Tasks	Jan		Feb				Mar					Apr				May		
	23	29	6	13	20	27	6	11	13	20	27	3	10	17	24	1	6	8
Research	X	X	X	X														
Brainstorming	X	X	X	X	X													
PDS			X															
Prototype Design				X	X	X	X											
Prototype Fabrication								X	X	X	X							
Testing																		
Meeting with Client		X		X								X						
Team Meeting	X	X	X	X	X	X	X		X		X							
Presentation							X											
Written Reports								X										
Peer/Self Evaluations									X									

Expenses:

Two miniFIX micropipettes from Dynalab cost \$39.60.

One packet of three Ultra Precision Compression Springs from McMasterCarr cost \$7.70.

The team received a trial sample of PMMA from Greg Gion.