## **EYE DROPPER ASSISTANT, BME 402**

**Date:** 02/08/24

Client: Dr. Beth Martin (<u>beth.martin@wisc.edu</u>)
Advisor: Tracy Puccinelli (tracy.puccinelli@wisc.edu)

Co-Team Leaders: Kasia Klotz (kmklotz@wisc.edu), Anabelle Olson (amolson27@wisc.edu)

Communicator: Eva Coughlin (<a href="mailto:emcoughlin@wisc.edu">emcoughlin@wisc.edu</a>)
BPAG: Tommy Kriewaldt (<a href="mailto:tkriewaldt@wisc.edu">tkriewaldt@wisc.edu</a>)

**BWIG:** Jenna Krause (<u>jlkrause4@wisc.edu</u>) **BSAC:** Tevis Linser (<u>linser@wisc.edu</u>)

Note: Team member Tommy is currently participating in a Co-Op and is devoting time to that position. Tommy will work on what he can this semester for the project but due to this conflicting commitment his contributions *may* be limited.

### **Problem Statement**

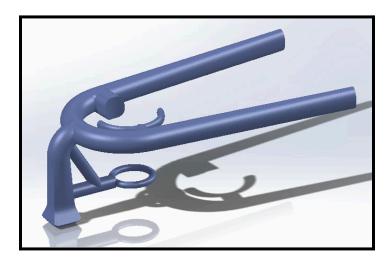
Administration of eye drops is difficult for patients, especially older adults and those with limiting diseases like arthritis. This results in eye drop waste and tip contamination. The team will design a device to assist patients in squeezing the eye drop bottle, while releasing a consistent amount of solution per drop. This device will improve the administration of eye drops for the patient while minimizing eye drop waste.

### **Brief Status Update:**

The team had a client meeting last friday and talked about the logistics for our future feasibility testing. The team submitted an application for WHARF review on our current design.

**Difficulties / Advice Requests :** N/a this week

# **Current Design:**



## Design Changes:

• Nose piece removed and platform implemented for user to rest on eyebrow bone.

# **Materials and Expenses:**

			Part			Cost					
Item	Description	Manufacturer	Number	Date	QTY	Each	Total	Link			
Existing Devices											
Droppy Eye											
Drop	Competing	Droppy,									
Dispenser	Design	Amazon	DR001	9/25	1	9.99	9.99	<u>Link</u>			
GentleDrop			ASIN:								
Eye Drop	Competing	GentleDrop,	B0BQB								
Guide	Design	Amazon	HRKV1	9/25	1	17.99	17.99	<u>Link</u>			
			Protot	yping							
	Prototype										
Silicone	Materials	PETUNIA	ASIN:								
Eyelash	(Handle	SKINCARE,	B00UVL								
Curler	Grips)	Amazon	NDVQ	10/25	1	7.49	7.49	<u>Link</u>			
		UW									
		Makerspace									
MakerSpace	Prototype	Ultimaker 3D									
Print	v1	Print	N/A	10/31	1	4.96	4.96	N/A			

Item	Description	Manufacturer	Part Number	Date	QTY	Cost Each	Total	Link
		UW						
		Makerspace						
MakerSpace	Prototype	Ultimaker 3D						
Print	v2	Print	N/A	11/10	1	5.07	5.07	N/A
		UW						
		Makerspace						
MakerSpace	Prototype	Bambu Labs						
Print	v3	3D Print	N/A	11/13	1	4.5	4.5	N/A
		UW						
		Makerspace						
MakerSpace	Prototype	Bambu Labs						
Print	v3	3D Print	N/A	11/14	1	4.96	4.96	N/A
		υw						
		Makerspace						
MakerSpace	Prototype	Ultimaker 3D						
Print	v3	Print	N/A	11/15	1	8.16	8.16	N/A
		υw						
		Makerspace						
MakerSpace	Prototype	Ultimaker 3D		_				
Print	v4	Print	N/A	11/17	1	10.08	10.08	N/A
		UW						
		Makerspace						
MakerSpace		Ultimaker 3D		_				
Print	Test Fixture	Print	N/A	11/29	1	13.78	13.76	N/A
		UW						
		Makerspace						
MakerSpace	Final	Ultimaker 3D		4.				
Print	Prototype	Print	N/A	12/1	1	7.36	7.36	N/A
		UW						
	Multiple	Makerspace						
MakerSpace	Final	Ultimaker 3D		40.45		44-	44-	
Print	Prototypes	Print	N/A	12/8	1	11.6	11.6	N/A
		UW						
		Makerspace						
MakerSpace	Final	Ultimaker 3D	,,,	42 /2		7.04	7.0.	
Print	Prototypes	Print	N/A	12/8	1	7.84	7.84	N/A

### **Upcoming Team and Individual Goals:**

*Team:* The team will present their preliminary presentation on Friday, as well as meet with WARF. The team plans on further exploring packaging options as well as altering the prototype to make it easier to injection mold.

### Individual:

- Jenna:
  - > Look into injection molding materials
  - > Start to look into 3D printed molds at WID
  - > Present the preliminary presentation to Prof. Puccinelli
- **&** Eva:
  - > Receive IRB approval and schedule first testing meeting
  - > Meet with client to discuss WARF and have initial WARF informal meeting
  - > Research packaging and materials
- **❖** Tevis:
  - ➤ Make design changes based on meeting with Paula
  - > Research WID mold design and injection molding
  - > Attend WARF meeting
  - > Present preliminary presentation
- **Tommy:** 
  - ➤ Attend outreach meeting, plan out research template
  - > Look into further packaging standards and designs
  - > Begin sketching preliminary packaging design ideas
  - > Alter prototype for more efficient injection molding
- Kasia:
  - > Present preliminary presentation
  - > Attend WARF meeting/prep for WARF meeting
  - > Consider ways to make the prototype easier to package
  - > Research packaging options
- ❖ Anabelle:
  - > Conduct research on packaging
  - > Present preliminary presentation to advisor
  - > Attend initial WARF meeting

### **Timeline:**

Task	Jan	Feb			March				April				May			
	26	2	9	16	23	1	8	15	22	29	5	12	19	26	3	10
Project R&D																

Research								
Prototyping								
Testing								
Deliverables								
Progress Reports								
Prelim presentation								
Final Poster								
Meetings								
Client								
Advisor								
Website				·	·	·		
Update								

Project Goal	Deadline	Assigned	Progress	Completed
Preference Human Testing	2/29	All	In Progress	
Preliminary Oral Presentation	2/9	All	In Progress	
Preliminary Deliverables	2/28	All	Not Started	
Show and Tell	3/22	All	Not Started	
Executive Summary	4/19	All	Not Started	
Final Poster Presentation	4/26	All	Not Started	
Final Deliverables	5/1	All	Not Started	

# **Summary of Weekly Team Member Design Accomplishments**

*Team:* The team kicked off their mentorship program at Sun Prairie high school. There are three different groups that will be working together to create their prosthetics. The team also scheduled a meeting with WARF to discuss patent opportunities.

### Individual:

### Jenna:

- > Attended first outreach meeting
- ➤ Had a meeting with experts in the Mech engineering department about injection molding

> Filled out portions of preliminary presentation

### **&** Eva:

- ➤ Made edits to IRB application
- > Created recruitment flier for initial human testing
- > Completed preliminary presentation

#### **❖** Tevis:

- > Attended outreach meeting at Sun Prairie HS
- Met with Paula Hohoff to investigate materials and injection molding potential
- > Completed my portion of the preliminary design presentation
- > Printed 4 prototypes for WARF meeting

### **❖** Tommy:

- > Attended first outreach meeting
- ➤ Completed required IRB training
- Researched packaging standards and competing designs
- ➤ Worked on preliminary presentation slides

#### **❖** Kasia:

- ➤ Attended outreach, decided on groups
- > Created preliminary presentation slides
- > Prepped for WARF meeting

#### **❖** Anabelle:

- ➤ Attended the first mentorship meeting and presented BME overview to highschool students.
- ➤ Worked on preliminary presentation slides

# **Activities:**

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Jenna					
Eva					
Tevis	2/7 2/6 2/7 2/8 2/5 2/7	Meeting with Paula Update nosepiece and print Work on outreach & prelim presentation Attend outreach Meet with Dr. P about Prelim Presentation IRB training courses	2 1 0.75 2 0.5 1	7.25	
Tommy					
Kasia					
Anabelle					