

# EYE DROPPER ASSISTANT, BME 402

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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.

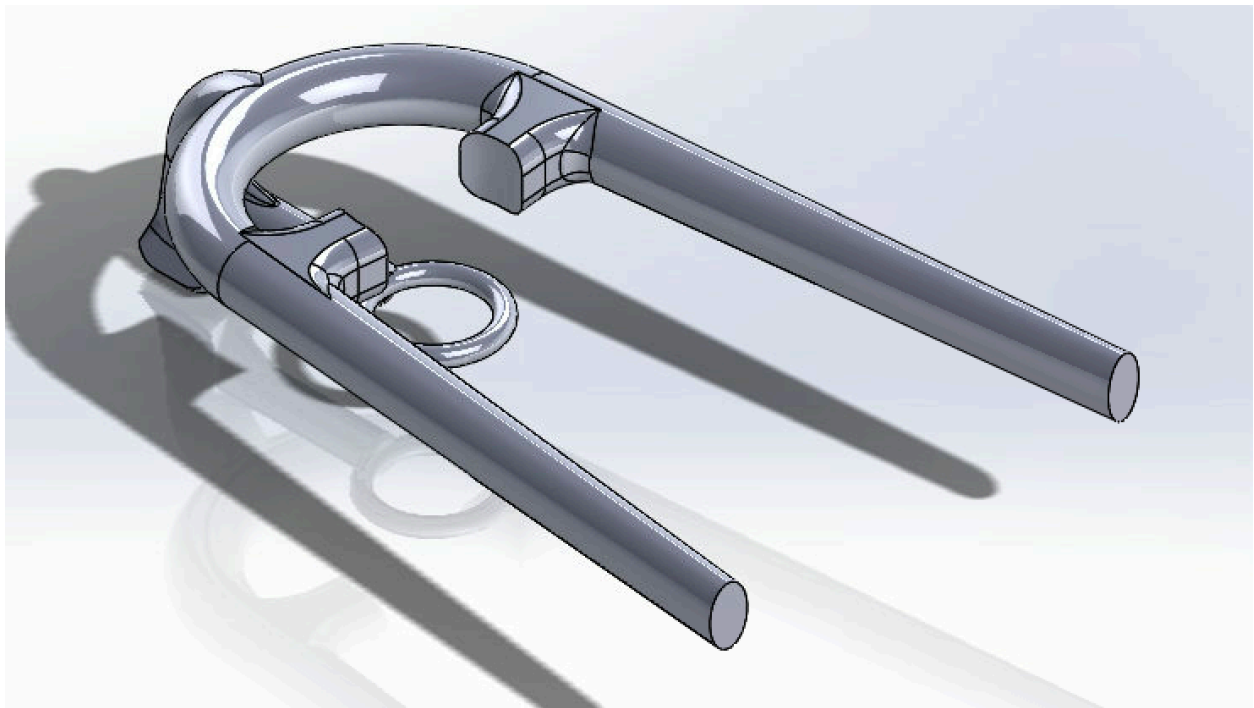
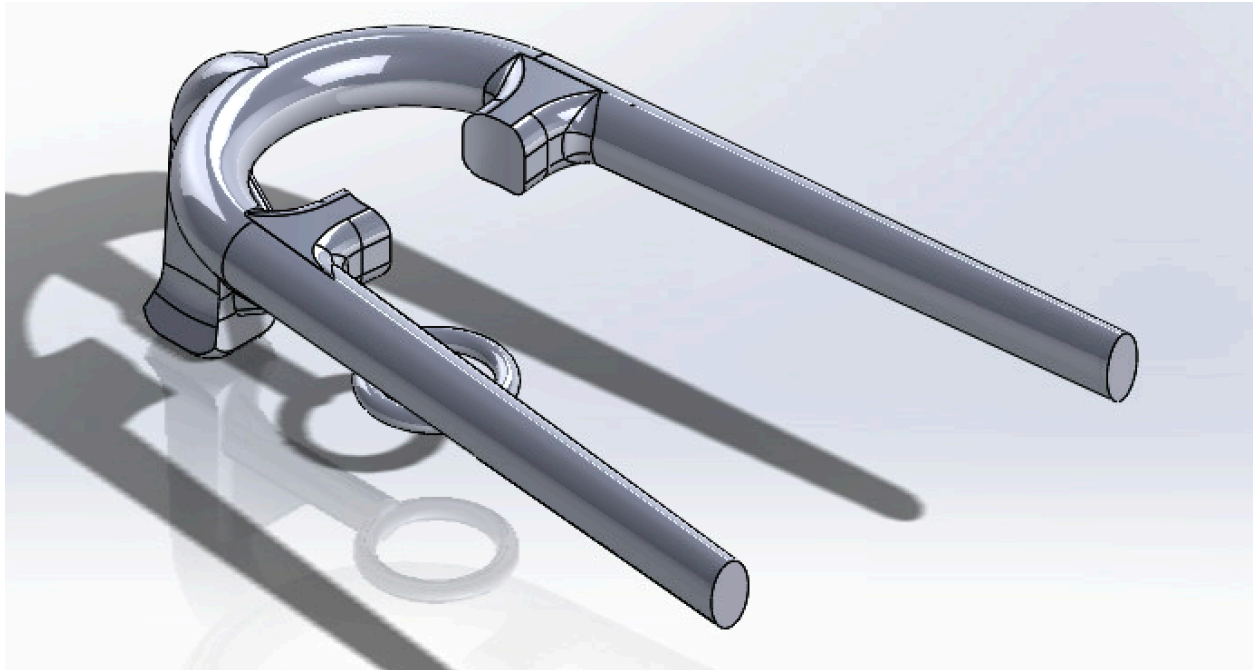
## Brief Status Update:

The newest version of the prototype improves ease of fabrication when considering the injection molding process, as it is a more simplified version. The team is focussing on networking opportunities to learn more about how to approach the market.

## Difficulties & Advice Requests:

Team members are learning more about how to approach the business side of engineering. The current difficulty the team is having is creating presentations that are approached as a business pitch rather than an academic study.

### Current Design:



### Design Changes:

- Nose piece removed and platform implemented for user to rest on eyebrow bone.
- Altered the squeezing mechanism to be more uniform for injection molding.
- Separated components to allow for less complex injection molding procedures.

## Materials and Expenses:

Item	Description	Manufacturer	Part Number	Date	QTY	Cost Each	Total	Link
<b>Existing Devices</b>								
<b>Droppy Eye Drop Dispenser</b>	Competing Design	Droppy, Amazon	DR001	9/25	1	9.99	9.99	<a href="#">Link</a>
<b>GentleDrop Eye Drop Guide</b>	Competing Design	GentleDrop, Amazon	ASIN: B0BQBHRKV1	9/25	1	17.99	17.99	<a href="#">Link</a>
<b>Prototyping</b>								
<b>Silicone Eyelash Curler</b>	Prototype Materials (Handle Grips)	PETUNIA SKINCARE, Amazon	ASIN: B00UVLNDVQ	10/25	1	7.49	7.49	<a href="#">Link</a>
<b>MakerSpace Print</b>	Prototype v1	UW Makerspace Ultimaker 3D Print	N/A	10/31	1	4.96	4.96	N/A
<b>MakerSpace Print</b>	Prototype v2	UW Makerspace Ultimaker 3D Print	N/A	11/10	1	5.07	5.07	N/A
<b>MakerSpace Print</b>	Prototype v3	UW Makerspace Bambu Labs 3D Print	N/A	11/13	1	4.5	4.5	N/A
<b>MakerSpace Print</b>	Prototype v3	UW Makerspace Bambu Labs 3D Print	N/A	11/14	1	4.96	4.96	N/A
<b>MakerSpace Print</b>	Prototype v3	UW Makerspace Ultimaker 3D Print	N/A	11/15	1	8.16	8.16	N/A

Item	Description	Manufacturer	Part Number	Date	QTY	Cost Each	Total	Link
<b>MakerSpace Print</b>	Prototype v4	UW Makerspace Ultimaker 3D Print	N/A	11/17	1	10.08	10.08	N/A
<b>MakerSpace Print</b>	Test Fixture	UW Makerspace Ultimaker 3D Print	N/A	11/29	1	13.78	13.76	N/A
<b>MakerSpace Print</b>	Final Prototype	UW Makerspace Ultimaker 3D Print	N/A	12/1	1	7.36	7.36	N/A
<b>MakerSpace Print</b>	Multiple Final Prototypes	UW Makerspace Ultimaker 3D Print	N/A	12/8	1	11.6	11.6	N/A
<b>MakerSpace Print</b>	Final Prototypes	UW Makerspace Ultimaker 3D Print	N/A	2/6	1	7.84	7.84	N/A
<b>MakerSpace Print</b>	Prototype Adjusted For IM	UW Makerspace Ultimaker 3D Print	N/A	2/23	1	2.15	2.15	N/A
<b>MakerSpace Print</b>	Parts for Connection Mechanism	UW Makerspace Ultimaker 3D Print	N/A	2/26	1	2.8	2.8	N/A

### Upcoming Team and Individual Goals:

*Team:* The team has officially received IRB approval for human preference testing. The testing session will be scheduled in the near future. Then, the team will begin working on the addendum for the IRB application with the intention of receiving approval for accuracy testing, where participants will dispense eye drops into their own eyes using the device. The team will also be meeting with experts in the pharmaceutical industry to continue networking and exploring marketing opportunities.



Project Goal	Deadline	Assigned	Progress	Completed
Preference Human Testing	2/29	All	In Progress	
Preliminary Oral Presentation	2/9	All	Completed	Yes
Preliminary Deliverables	2/28	All	Completed	Yes
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 met with D2P members to discuss the market and next steps moving forward. The team also made changes to the prototype to improve manufacturing processes. Lastly, the team completed their preliminary deliverables including a rough draft for a journal article in an assistive device journal.

#### *Individual:*

- ❖ Jenna:
  - Created and worked on ShaRx tank slides with market size and injection molding
  - Uploaded preliminary deliverables to canvas and BME website
  - Complete my sections of the journal article
  - Updated lab archives with market research and manufacturing information
- ❖ Eva:
  - Presented pitch at ShaRx Tank meeting with Ryan and recorded feedback from organizers of the event
  - Received IRB approval and discussed scheduling of recruitment, screening, and testing activity with Dr. Martin
  - Attended D2P meeting with team
  - Researched the eye drop dispenser market and updated LabArchives
  - Completed parts of journal article draft
- ❖ Tevis:
  - Printed connection mechanism and did preliminary success testing

- Worked on and completed preliminary deliverables
- Researched how to complete a thematic analysis
- Attended meeting with D2P
- Worked on SharkTank slides
- ❖ Tommy:
  - Adjusted SolidWorks model to be split into three distinct parts
  - Created slides for the ShaRx Tank presentation
  - Researched ASTM Testing Methods
  - Analyzed current design and discussed potential design changes with the team
  - Finished preliminary deliverables
- ❖ Kasia:
  - Created slides for shark tank meeting
  - Finished preliminary deliverables
  - Researched current market and company that the team will be meeting with in the near future
- ❖ Anabelle:
  - Continued to conduct market research
  - Worked on preliminary journal draft
  - Attended D2P meeting with the team