

# BME Design: Progress reports

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**Title:** Microvascular Channel Bioprinter shutoff valve

Date: 4 December 2025

Client: Dr. David Dean

Advisor: Dr. Paul Campagnola

- Steph Vigmond- *Communicator*
- Mahathi Karthikeyan - *BSAC*
- Sophie Speece - *BWIG*
- Ana Toscano - *BPAG*
- Dominique Gooden - *Team Leader*

## Problem statement

Facilitate rapid switching between bioprinter input devices so that microchannels have rapidly decreasing diameter. Also come up with a shutoff mechanism to prevent excess fluid flow from valves.

## Brief status update

The team has wrapped up testing and is working to complete final deliverables.

## Difficulties / advice requests

N/A

## Current design

See design matrix.

## Materials and expenses

Item	Description	Manufacturer	Mft Pt#	Vendor	Vendor Cat#	Date	#	Cost Each	Total	Link
<b>Category 1</b>										
	3D Printed CEVIK & 5 KSMs	N/A (3D Printed)	N/A	N/A	N/A	09/19	1		\$3.48	
	3D Printed CEVIC and 8 KSMs					10/20	1		\$12.60	
	3D Printed CEVIC and gear					11/10	7		\$7.63	
	3D Printed 10 IRE gears for testing samples					11/18			\$12.65	
	3D printed connector for CEVIC and Servo Motor					11/20			\$0.14	
<b>Category 2</b>										
	Purchase makerspace Servo	Smraza				10/24	2		\$5.28	
	PLA 3D printing Rotational Element						3		\$0.27	
	Additional Gear						3		\$0.15	
	Makerspace 3D printed					10/24	1		\$1.83	
								<b>TOTAL:</b>	<b>\$44.20</b>	

## Major team goals for the next week

## Next week's individual goals

- Dominique
  - Update labarchives
  - Work on assigned section of final report
  - Provide feedback
- Ana
  - Complete final deliverables (team notebook and final report)
  - Make plan for the fluent simulations
- Sophie
  - Complete final deliverables (team notebook and final report)
  - Make a plan for acquiring cells
- Steph
  - Complete final deliverables (team notebook & final report)

- Make a plan for cells in the new year
- Mahathi
  - Finish final deliverables
  - Make plans for outreach and next semester work.

## Timeline

Task	Aug	September				October					November				Dec	
	26	4	11	18	25	2	9	16	23	30	6	13	20	27	4	11
<b>Project R&amp;D</b>																
Empathize				X												
Background...					X											
Prototyping					X			X	X	X			X			
Testings							X			X			X			
<b>Deliverables</b>																
Progress Reports		X	X	X	X	X	X	X	X	X						
Prelim presentation						X										
Final Poster																
<b>Meetings</b>																
Client			X	X	X	X	X	X			X		X			
Advisor		X	X	X	X		X					X	X			
<b>Website</b>																
Update		X	X	X	X	X	X	X	X	X	X	X	X			

Filled boxes = projected timeline

X = task was worked on or completed

## Previous week's goals and accomplishments

- Ana
  - Updated lab archives
  - Worked on poster sections
  - outreach
- Dominique
  - Updated labarchives
  - Worked on poster sections
- Steph
  - Completed durability & functionality testing
  - Completed assigned section of final poster & edited
  - Worked on poster & printed poster
  - Completed required BME Outreach activity
- Sophia Speece
  - Completed durability testing
  - Completed functionality testing
  - Completed assigned section of final poster
  - Completed required BME Outreach activity

- Mahathi
  - Finished circuit testing
  - Worked on poster sections

## Activities

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Mahathi	12/2 12/3 12/1	- Worked in Poster Section - Team meeting to practice section - Update Lab Archives	2 2 2	6	6
Steph	11/21 11/23 11/24  11/25 11/26-29  11/29-30 11/30  12/3 12/4	Seeded new cells from frozen After cells did not survive, made new plan Emailed Dr. P to keep project moving & research  Got new cells & seeded; durability testing Checked cells daily (cells never stuck but no obvious contamination; CO2 tank ran out on the 27th)  Worked on poster & images for it Worked on poster, checked cells, functionality testing Printed poster & edited Outreach at Kennedy Middle School	1 1 1  4 1  1 3.5  1 3	16.5	49.5
Dominique	12/1-12/3  12/1 and 12/3	Worked on poster sections + edits, and provided feedback Team meeting	2  1	3	>10
Sophie	11/25 11/30 12/3 12/3 12/4	Durability Testing Functionality testing Worked on poster Team meeting Outreach at Kennedy Middle school	3 3 0.5 0.5 3	10	42
Ana	11/25 11/30 12/03 12/04	Updated testing Worked on poster Team meeting Outreach at Kennedy Middle school	1 1 0.5 3	5.5	35