

BME Design: Progress reports

Title: Microvascular Channel Bioprinter shutoff valve

Date: 5 March 2026

Client: Dr. David Dean

Advisor: Dr. Paul Campagnola

Team:

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

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 is planning to order a higher torque motor to conduct further electronics testing and interface electronics testing with functionality testing.

Difficulties / advice requests

N/A

Current design

See design matrix. In progress.

Materials and expenses

Item	Description	Manufacturer	Mft Pt#	Vendor	Vendor Cat#	Date	#	Cost Each	Total	Link
Category 1										
	Flexible 80A IRE print					2/18/26	1	3.06	\$3.06	
	CEVIC locking mechanism					2/18/26	1	0.32	\$0.32	
	CEVIC locking mech - updated					2/19/26	1	0.24	\$0.24	
	Updated servo & CEVIC holder					2/26/26	1	0.15	\$0.15	
Category 2										
									\$0.00	
									\$0.00	
								TOTAL:	\$3.77	

Major team goals for the next week

Next week's individual goals

- Dominique
 - Do more testing and polish code further
 - Catch up with IRE team about their progress and what testing objectives can be completed soon
- Ana
 - Explore the tests for integration
 - Decide on circuit topology
 - Meet with Mahati and domenique for testing
- Sophie
 - Test modified IRE for leaking
 - Design new holder for new size servo and ensure linear actuator attachability
- Steph
 - Further modify IRE
 - Discuss IP and send desired motor for purchasing
- Mahathi
 - Continue with test protocols for electronics
 - Get updates and do more research

Timeline

Task	Jan	February				March				April					May
	29	5	12	19	26	5	12	19	26	2	9	16	23	30	7
Project R&D															

Empathize																
Background...	X	X														
Prototyping																
Testings					X											
Deliverables																
Progress Reports	X	X	X	X	X	X										
Prelim presentation																
Final Poster																
Meetings																
Client		X		X												
Advisor	x	X	X	X	X											
Website																
Update	X	X	X													

Filled boxes = projected timeline
 X = task was worked on or completed

Previous week's goals and accomplishments

- Ana
 - Modified the preliminary report
 - Created ideas for circuits topologies
- Dominique
 - Worked on prelim report and finalized outreach
 - Research
- Steph
 - Edited preliminary report based on feedback
 - Brainstormed plans for further testing & materials
- Sophie
 - Finalized preliminary report
 - Printed locking CEVIC from biomed clear resin
- Mahathi
 - Worked on preliminary report
 - Finalized outreach

Activities

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Mahathi	3/3 3/1	Finalized research Preliminary report	2 1	2 1	2 1
Steph	3/3 3/4 3/4	Edited preliminary report “ Brainstormed plans for further testing and materials needed	1 1.5 0.5	3	18.5

BME Design: 200, 300, 301, 400 and 402

Dominique	3/2-3/4 3/5	Worked on prelim report Did research on proposed motor to buy	1 .5	1.5	
Sophie	3/4	printed new CEVIC and finalized report	1	1	13.5
Ana	03/01 3/5	Preliminary report Brainstorming circuit topologies	0.5 1	1.5	12.5