

BME Design: Progress reports

Title: Microvascular Channel Bioprinter shutoff valve

Date: 26 February 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

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	
Category 2										
									\$0.00	
									\$0.00	
								TOTAL:	\$3.62	

Major team goals for the next week

Next week's individual goals

- Dominique
 - Continue electronics testing protocols and electronics testing with mahathi and ana
 - Brainstorm circuits topologies and code for automatic and manual ire automation
- Ana
 - Continue electronics testing protocols and electronics testing with mahathi and domenique
 - Optimize the code and add safety measures
 - Brainstorm circuits topologies
- Sophie
 - Revise preliminary report based on advisor feedback
 - Continue augmenting the IRE to prevent leakage
- Steph
 - Edit report based on feedback
 - Continue testing IRE
- Mahathi
 - Edit report based on comments
 - Continue circuit testing and motor 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															
Deliverables															
Progress Reports	X	X	X												
Prelim presentation															
Final Poster															
Meetings															
Client															
Advisor	x														
Website															
Update	X	X	X												

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

Previous week's goals and accomplishments

- Ana
 - Worked on preliminary report
 - Research on scientific journal selected
- Dominique
 - Completed assigned prelim report section
 - Revised electronics testing protocols and testing objectives
 - Conducted electronics testing with Mahathi
- Steph
 - Completed draft of preliminary report
 - Completed IRE leak testing
 - Updated holder model & printed
- Sophie
 - Completed assignment section of preliminary report draft, including reorganizing the document according to a journal article and inserting citations
 - IRE and locking CEVIC leak testing
- Mahathi
 - Meet with Dominique and Anna and came up with testing protocols for circuit
 - Finished draft for paper

Activities

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Mahathi	2/26 2/24	Team meeting Paper draft	1 1	2	9
Steph	2/22 2/25 2/26	Worked on preliminary report Leak testing & modeling Printed holder & more KSMS	2 3 0.5	5.5	14.5

Dominique	2/24 2/26	Worked on prelim report section Completed electronics testing with electronics team	2	2	>5
Sophie	2/25 2/25	Leak Testing Preliminary report	3 1	4	12.5
Ana	2/25 2/26	Worked on electronics planning and algorithm logic Created a testing plan	1 1	2	11