BME Design: Progress reports

Title: Microvascular Channel Bioprinter shutoff valve

Date: 2 October 2025

Client: Dr. David Dean
Advisor: Dr. Paul Campagnola
Team:

- Dominique Gooden - *Team Leader*
- Steph Vigmond - *Communicator*
- Mahathi Karthikeyan - *BSAC*
- 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 spent this week preparing for Friday's preliminary presentation. The team has also split into sub-teams (valve design and computational fluid dynamics). Coordination of sub-team activities will occur in 2 weeks.

Difficulties / advice requests

N/A

Current design

See design matrix. In progress.

Materials and expenses

Item	Description	Manufac-turer	Mft Pt#	Vendor	Vendor Cat#	Date	#	Cost Each	Total	Link
Category 1										
	3D Printed CEVIK & 5 KSMs	N/A (3D Printed)	N/A	N/A	N/A	09/19	1		$3.48	
									$0.00	
Category 2										
									$0.00	
									$0.00	
								TOTAL:	**$3.48**	

Major team goals for the next week

Next week's individual goals

- Dominique
  - Coordinate acquiring automated clamps with Steph and Mahathi
  - Do research on automated clamps
  - Inquire about tubing considerations so we can identify appropriate pump
- Ana
  - Work on testing protocol and modeling fluid dynamics
  - Create a draft for modelling current system
- Sophie
  - Meet with Ana to work on/experiment with Computational Fluid Dynamics
  - Aid modelling team when it comes to Design 2 - Integrated Rotary Element
- Steph
  - Work further on prototypes
  - Continue researching on background and other potential design options
  - Work on preliminary report
- Mahathi
  -

Timeline

Task	Aug	September				October					November				Dec	
	26	4	11	18	25	2	9	16	23	30	6	13	20	27	4	11
Project R&D																
Empathize																
Background…					X											
Prototyping					X											
Testings																
Deliverables																

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

Progress Reports		X	X	X	X	X										
Prelim presentation						X										
Final Poster																
Meetings																
Client			X	X	X											
Advisor		X	X	X	X											
Website																
Update		X	X	X	X											

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

Previous week's goals and accomplishments

- Ana
  - Worked on preliminary presentation
  - Created a design idea and specified mechanisms
- Dominique
  - Worked on design elaborations for prelim presentation
  - Coordinated team presentation practice
- Steph
  - Worked on preliminary presentation
  - Worked on design prototyping and thought of other potential design options
- Sophia Speece
  - Wrote assigned sections of preliminary presentation
  - Put references and standardized template design
- Mahathi
  - Finished assigned section of preliminary presentation
  - Did more research on winning design on matrix

Activities

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Mahathi	9/29 10/1	Finished slides/researched more on chosen design Team practice	3	5	12
Steph	9/28 10/1	Worked on preliminary presentation - slides & script Team meeting & work on presentation	2	2	14
Dominique	10/1	Team meeting and prelim presentation	2	2	>10
Sophie	10/1 10/1 10/2	Team Meeting Preliminary Presentation Preliminary Presentation	1 1 2	4	12

Ana	09/28 09/29 10/01	Worked on preliminary presentation Researched more competing designs Practiced the presentation and edited slides	2 1 2	5	15