

## Arterial Coupler Re-Design: Adjustable Stent/Cuff Anastomosis

Progress Report 2: 2/5/2026

**Client:** Dr. Jasmine Craig

**Advisor:** Prof. Darilis Suarez-Gonzalez

**Team:**

- Leader: Jackie Behring
- Communicator: Arshiya (Ria) Chugh
- BWIG: Sofia Decicco
- BPAG: Allison (Ally) Rausch
- BSAC: Daniel Pies

**Problem Statement:** Microsurgical arterial anastomosis is a cornerstone of reconstructive surgery, enabling tissue transfer and limb salvage. Current techniques are highly time consuming, technically demanding, and are highly dependent on surgeon expertise. Suturing vessels as small as 1 mm can take even the most experienced surgeons 30-60 minutes, extending operating times and jeopardizing tissue viability. Existing stent-based approaches introduce complications by contracting the vessel lumen and lack adaptability across the wide range of vessel diameters encountered in clinical practice. There is a critical need for a biocompatible, adjustable, and easy-to-use device that can reliably reduce operative time while maintaining vessel integrity and minimizing complications.

**Brief Team Status Update:** This week, the team completed and practiced our preliminary presentation slides, submitted a manufacturing quote request to Potomac (micron laser cutting), and conducted additional research to align as a team on project goals and next steps.

**Summary of Weekly Individual Design Accomplishments:**

- Allison (Ally) Rausch:
  - Completed preliminary presentation slides
  - Researched fabrication methods
  - Researched ideal stent geometries to validate
- Jackie Behring:
  - Completed and practiced preliminary presentation slides
  - Submitted a quote request to Potomac to determine how much it would cost to outsource a stent using their micron lithography technology
  - Researched the cost and price of stents
- Sofia Decicco:
  - Worked on preliminary slides with team
  - Researched fabrication plans for nitinol stent
  - Researched PTFE tubing dimensions and fabrication possibilities
- Arshiya (Ria) Chugh:
  - Developed preliminary presentation slides with team
  - Discussed semester fabrication methods with team
  - Conducted research on fabrication and testing methods
- Daniel Pies:
  - Contributed to preliminary presentation slides
  - Researched related articles regarding testing methods
  - Validated stent geometries for budget/quote

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**Weekly/Ongoing Difficulties:** No notable difficulties.

**Upcoming Team Goals:** Upcoming goals include meeting with the client to provide a project update and align on next steps, working with Jesse to finalize the stent design and 3D model with final dimensions, and reviewing the quote from Potomac to determine whether to proceed with manufacturing.

### Upcoming Individual Goals:

- Allison (Ally) Rausch:
  - Work on preliminary deliverables
  - Research best practices for testing
  - Further research potential stent materials
- Jackie Behring:
  - Review Potomac quote to determine if the team should move forward with vendor
  - Set up meeting with Jesse to 3D model stent with final dimensions
  - Prepare for client meeting
- Sofia Decicco:
  - Continue to connect with companies for stent manufacturing
  - Plan new testing protocol with team and client
- Arshiya (Ria) Chugh:
  - Finalize fabrication plan with team and evaluate external vendors
  - Coordinate with client to arrange a meeting
  - Review testing plans with client and team and make necessary edits
- Daniel Pies:
  - Finalize fabrication plan
  - Begin preliminary report
  - Meet with client to review semester timeline for testing

### Project Timeline

Project Goal	Deadline	Team Assigned	State of Completion
Initial Research	1/30	All	The team will continuously research throughout the semester.
Preliminary Presentation	2/6	All	Complete
Preliminary Report	2/24	All	In Progress

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### Expenses

Item	Description	Manufacturer	Part Number	Date	QTY	Cost Each	Total	Link	
<b>Component 1</b>									
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
<b>TOTAL:</b>								<b>\$0.00</b>	