

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

Progress Report 10: 04/06/2026

**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 acquired springs and a shim kit and began developing a protocol for cutting shim strips. We collaborated on drafting and revising the executive summary, created a timeline for the remainder of the semester, and contributed to final outreach deliverables. We also coordinated with the client on final prototype testing and supported fabrication of the secondary prototype.

**Summary of Weekly Individual Design Accomplishments:**

- Allison (Ally) Rausch:
  - Acquired 4 springs of varying mandrel sizes
  - Acquired shim kit
  - Worked with team to develop executive summary
  - Brainstormed protocol to cut down the strips in the shim kit
- Jackie Behring:
  - Collaborated with team to complete executive summary
  - Worked with team to create timeline of the remaining semester
- Sofia Decicco:
  - Worked on executive summary
  - Finalized testing plans with team regarding new materials that have arrived
- Arshiya (Ria) Chugh:
  - Collaborated with the client to coordinate final prototype testing phases
  - Partnered with the team to develop the executive summary
  - Contributed to the completion of final outreach deliverables for the semester
- Daniel Pies:
  - Consult with TeamLab members on fabrication of secondary prototype
  - Revise executive summary

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

Progress Report 10: 04/06/2026

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

**Upcoming Team Goals:** Next week, the team will work through the reimbursement protocol with the client and update lab archives. We will complete end of semester testing, evaluate and organize the data, and determine if additional testing is needed. The team will also finalize and refine the executive summary, complete fabrication of the secondary prototype, and make any remaining changes to the prototype and final deliverables.

### Upcoming Individual Goals:

- Allison (Ally) Rausch:
  - Work through reimbursement protocol with client
  - Update lab archives
  - Evaluate testing data & determine need for further tests
  - Finalize executive summary
- Jackie Behring:
  - Complete testing and summarize results
  - Edit and make changes to the executive summary
  - Make any final changes to the prototype
- Sofia Decicco:
  - Finalize last round of testing with client
  - Work on final deliverables with team
- Arshiya (Ria) Chugh:
  - Complete end-of-semester testing and summarize results
  - Organize and evaluate testing data for final deliverables
  - Prepare the final version of the executive summary
- Daniel Pies:
  - Finish fabrication of secondary prototypes from shim kit prior to final testing with client
  - Begin collecting, organizing and formatting final testing data

### 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	2/25	All	Complete

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

Progress Report 10: 04/06/2026

Fabrication and Testing	3/27	All	In Progress
-------------------------	------	-----	-------------

### Expenses

Item	Description	Manufacturer	Part Number	Date	QTY	Cost Each	Total	Link
<b>Component 1</b>								
Micro-Spring	5 mm length, 0.5 mm diameter micro-spring	Kellogg's Research Lab	N/A	02/25/26	1	12.99	12.99	<a href="#">micro-spring</a>
Microsprings	Varying Mandrel sizes (mm): 0.5, 0.9, 1.15, 1.6	Kellogg's Research Lab	N/A	03/23/26	4	8.00	36.99	<a href="#">Varying Mandrel Springs</a>
Metal Shim Kit	Metal shim kit with sheets of stainless steel of varying thicknesses	Home Depot	Internet # 335115252 Model # 2-HDPH005OT053	03/24/26	1	50.30	50.30	<a href="#">Metal Shim Kit</a>
<b>TOTAL:</b>							<b>\$100.28</b>	