

PRINT-A-PUNCH

Date: November 3rd, 2024 to November 8th, 2024

Client: Prof. Colleen Witzenburg (witzenburg@wisc.edu) and Mr. Daniel Pearce (dppearce@wisc.edu)

Advisor: Dr. Megan Settell - settell@wisc.edu

Daniel Pies - dpies@wisc.edu - Team Leader

Colin Bailey - cgbailey@wisc.edu - Communicator

Kendra Ohde - ohde@wisc.edu - BPAG

Emmett Jones - eajones8@wisc.edu - BWIG

Cole Miller - ctmiller8@wisc.edu - BSAC

Problem Statement

In order to carry out effective biaxial testing of tissue, a precise, symmetric sample must be cut. A cruciform shaped sample allows this testing to be performed however there are not currently any products that can uniformly cut this type of sample. The goal of this project is to generate a method to use factory produced razor blades to cut small samples of tissue so biaxial tensile testing is effective while keeping the product simple and inexpensive.

Brief Status Update

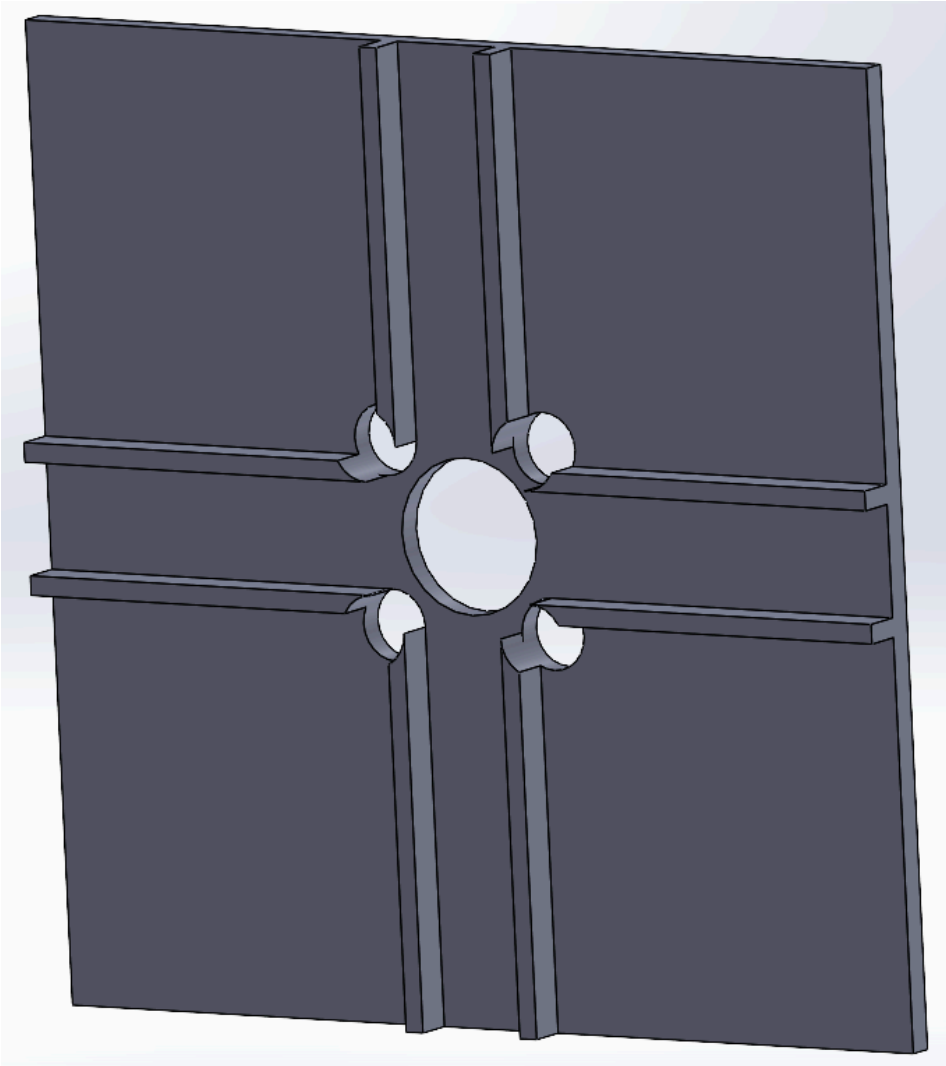
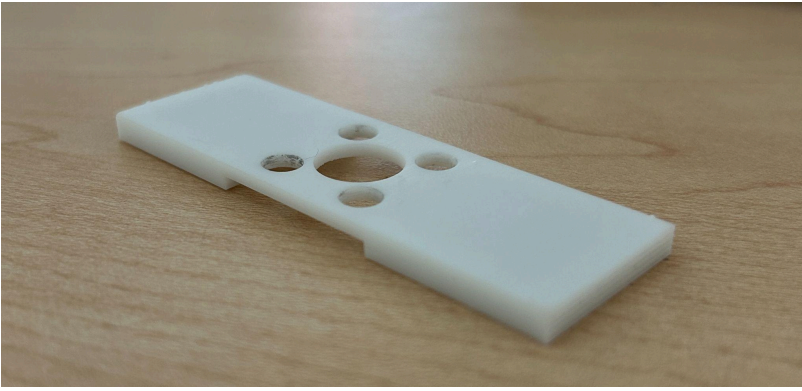
This week, the team did not have any notable progression. There was continued development of the design in response to feedback from Mr. Pearce, and the team began working on the testing protocol and smoothing out issues with the analysis code for detecting the symmetry of the cruciforms.

Difficulties / Advice Requests

- N/A

Current Design

The prototype the team has selected to move forward with is the rectangular base with distributed supports. However, the team will still continue to experiment with new prototypes to test the efficacy of using razor blades to cut symmetrical arms after the four semicircle cuts. Developments will be made to these prototypes on a week to week basis depending on feedback from the client and team. The newest of the prototypes works under the premise of using force to make impressions on the sample, which then allows the user a cut along the perforated line symmetrically.



Materials and expenses

Item	Description	Manufacturer	Mft Pt#	Vendor	Vendor Cat#	Date	#	Cost Each	Total	Link
Category 1										
3D printed material	Resin prototypes	Makerspace				10/15/2024	2	\$0.76	\$1.51	
3D printed material	Resin prototypes round 2	Makerspace				10/25/2024	3	\$5.37	\$16.11	
Category 2										
									\$0.00	
									\$0.00	
								TOTAL:	\$17.62	

Major Team Goals For The Next Week

- Meet as a team to discuss ways of securing sample to prevent torsion and lateral movement during cutting
- Make changes to design at team meeting
- Continue to print new iterations to designs for evaluation

Next Week's Individual Goals

- Daniel Pies
 - Research ways to secure sample
 - Create CAD designs for new prototypes to be evaluated
- Colin Bailey
 - Determine best method to secure sample while cutting
 - Continue to test and print prototypes
 - Continue to test symmetry analysis tool
- Cole Miller
 - Research ways to secure sample
 - Apply gained feedback to new prototypes
- Emmett Jones
 - Brainstorm ways to secure sample
 - Prototype new designs
- Kendra Ohde
 - Research ways to secure sample
 - Try new design with feedback

Timeline

Task	September				October				November					December	
	6	13	20	27	4	11	18	25	1	8	15	22	29	6	13
Project R&D															
Empathize	X	X	X												
Background		X	X	X	X	X									
Prototyping						X	X	X	X						
Testing										X					
Deliverables															
Progress Reports		X	X	X	X	X	X	X	X	X					
Prelim Presentation					X										
Final Poster															
Meetings															
Client		X		X					X						
Advisor	X	X	X	X	X		X	X		X					
Website															
Update	X	X	X	X	X	X	X	X	X	X					

Filled boxes = projected timeline

X = task was worked on or completed

Major Team Goals For The Previous Week

- Complete progress report
- Use CAD software to develop new and improved models
- Begin researching fastening methods for the sample during cutting

Previous Week's Goals and Accomplishments

- Daniel Pies
 - Created progress report
 - Created CAD drawings for new prototype
- Colin Bailey
 - Continued to develop and test symmetry analysis tool
 - Brainstorm ideas to fasten sample while cutting
- Cole Miller
 - Evaluated Show-and-Tell feedback with team
 - Brainstormed ways to apply suggestions to our design
- Emmett Jones
 - Evaluate Show and Tell feedback
 - Test prototypes new prototypes

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- Kendra Ohde
 - Evaluate Show and tell
 - Test prototypes and get feedback from client on current design

Activities

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Team	11/3/-11/8	Advisor meeting	.5	.5	12
Daniel Pies	11/3/-11/8	Create progress report Create CAD prototype	.5 .5	1	27
Colin Bailey	11/3/-11/8	Continued to develop and test symmetry analysis tool Brainstorm ideas to fasten sample while cutting	0.5 0.5	1	24
Emmett Jones	11/3/-11/8	Brainstorm ways to secure sample Prototype new designs	0.5 0.5	1	23
Cole Miller	11/3/-11/8	Brainstormed ways to apply Show and Tell suggestions to our design Researched ways to secure sample	.5 .5	1	23.5
Kendra Ohde	11/3/-11/8	Design new prototype with provided feedback Research ways to secure sample	.5 .5	1	20
			Total	5.5	129.5