

## ***PRINT-A-PUNCH***

Date: October 27, 2024 to November 1st, 2024

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

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### **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**

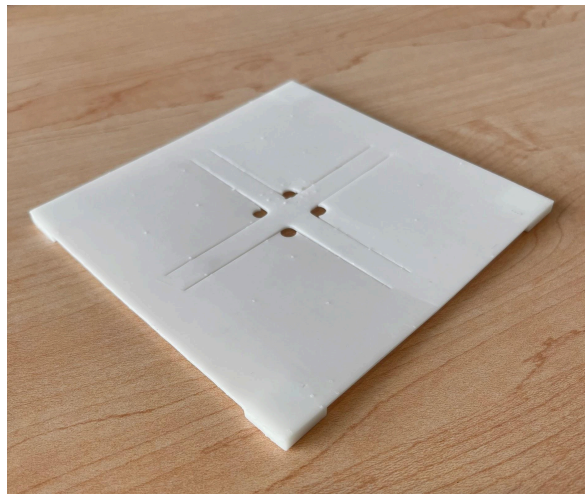
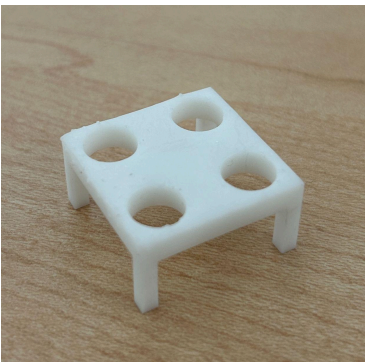
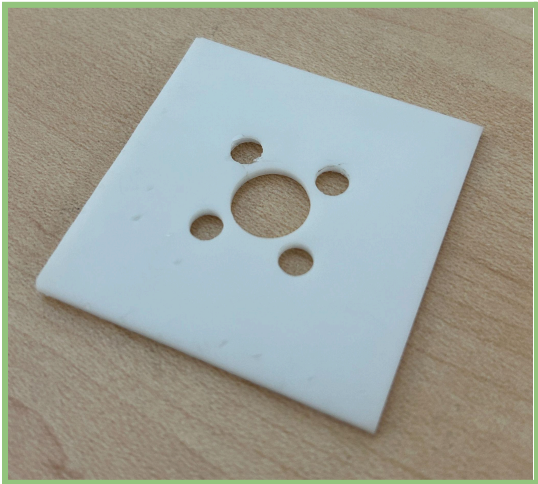
This week, the team continued with prototyping and evaluated the prototypes with the client. The team was able to test the samples in Mr. Pearce's lab on chicken skin, simulating a biomaterial similar to other tissues that the Print-A-Punch will be used on. The 5 different models of preliminary prototypes were evaluated at the client meeting, and the team was able to make some key identification of what should be changed going forwards.

### **Difficulties / Advice Requests**

- The team will need to find a time that works for all to meet for a fabrication meeting.

## Current Design

The team currently has 5 prototypes different shapes that utilize the same principle of a biopsy jig. The first of these prototypes resembles the biopsy jig originally presented in the preliminary presentation, while the second prototype acts more as a reference outline for where to cut with the biopsy punch. The new prototypes are pictured below, as highlighted with a green border.



## Materials and expenses

Item	Description	Manufac-turer	Mft Pt#	Vendor	Vendor Cat#	Date	#	Cost Each	Total	Link
<b>Category 1</b>										
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	
<b>Category 2</b>										
									\$0.00	
									\$0.00	
								<b>TOTAL:</b>	<b>\$17.62</b>	

### Major Team Goals For The Next Week

- Continue prototyping
- Make minor changes at design meeting
- Continue to print new iterations to designs for evaluation

### Next Week's Individual Goals

- Daniel Pies
  - Evaluate current prototypes for possible improvements
  - Work to develop testing plan and protocols
  - Continue research as needed
- Colin Bailey
  - Evaluate current prototypes further
  - Continue to develop testing protocol
  - Continue to develop standard operating procedures
- Cole Miller
  - Continue evaluating current prototypes
  - Determine best aspects of different designs and incorporate them together
  - Continue research as needed.
- Emmett Jones
  - Use current prototypes evaluations to improve designs
  - Develop method for quantitative testing
  - Begin testing quantitatively
  - Continue prototyping and CAD modeling
- Kendra Ohde
  - Evaluate current prototypes for possible improvements
  - Work to develop testing plans
  - 3D print new prototypes and update material spreadsheet as needed
  - Continue research as needed.

## Timeline

Task	September				October				November					December	
	6	13	20	27	4	11	18	25	1	8	15	22	29	6	13
<b>Project R&amp;D</b>															
Empathize	X	X	X												
Background...		X	X	X	X	X									
Prototyping						X	X	X	X						
Testings															
<b>Deliverables</b>															
Progress Reports		X	X	X	X	X	X	X	X						
Prelim Presentation					X										
Final Poster															
<b>Meetings</b>															
Client		X		X					X						
Advisor	X	X	X	X	X		X	X	X						
<b>Website</b>															
Update	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
- Meet as a team to discuss current designs and future fabrication plans
- Meet with client to do preliminary testing and evaluation of designs
- Use CAD software to develop new and improved models

## Previous Week's Goals and Accomplishments

- Daniel Pies
  - Created progress report
  - Attend client meeting
  - Preparation for show and tell
- Colin Bailey
  - Attended client meeting
  - Prep for show and tell
  - Evaluate current prototypes

- Cole Miller
  - Attend client meeting
  - Prepared for show and tell
  - Evaluated newest prototypes
- Emmett Jones
  - Attend client meeting
  - Prepare for show and tell
  - Evaluate current prototypes using testing results from client meeting
  - Update website
- Kendra Ohde
  - Attend current meeting
  - Prepare for show and tell
  - Design updated prototype possible ideas

### Activities

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Team	10/27-11/1	Client meeting Show and Tell	1 2	3	12
Daniel Pies	10/27-11/1	Attend client meeting Create progress report Attend show and tell	1 .5 2	3.5	26
Colin Bailey	10/27-11/1	Attend Client meeting Attend show and tell Work on testing protocol	1 2 0.5	3.5	23
Emmett Jones	10/27-11/1	Attend client meeting Show and Tell Design revising Update Website	1 2 .5 .5	4	22
Cole Miller	10/27-11/1	Attend Client Meeting BSAC Exec Meeting Show and Tell	1 1 2	4	22.5
Kendra Ohde	10/27-11/1	Attend current meeting  Prepare/Participate in show and tell	1  2.5 0.5	4	20

		Design updated prototype possible ideas			
			<b>Total</b>	19	113.5