

Muscles of Mastication Group

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Problem Statement

In veterinary anatomy education, there is a notable absence of interactive, hands-on models that illustrate the muscles of mastication for both carnivores and herbivores. This gap limits students' ability to engage in effective learning and understanding of the complex relationships between muscular and bony structures. Our goal is to develop two models that accurately replicate the anatomy of mastication muscles in two carnivores and herbivores allowing for the visualization of muscle function and clearly define individual muscles to enhance educational outcomes.

Brief Status Update

We worked on developing prototype muscles to 3D print in two different materials. We plan to print them on Friday and start testing the different materials.

Summary of Weekly Team Member Design Accomplishments

- Team:
 - Designed two different springs in SolidWorks to mimic the muscles.
- Jensen Weik:
 - Designed a muscle in SolidWorks
 - Edited our preliminary report
- Kaiya Merritt:
 - Made edits to our preliminary report based on advisor feedback
 - Met with the team to discuss spring designs and next steps with printing the springs at the Makerspace
- An Hua:
 - Designed a spring with two hooks in solidworks
 - Talked about different designs with the team

- Noah Kalthoff:
 - Met with team to discuss what springs we are going to print out of what material
 - Designed a square and circular spring in SolidWorks
- Leah Nelson:
 - Met with team to discuss what springs have been designed and what the next steps will be

Weekly/Ongoing Difficulties

The MakerSpace informed us that TPU will not be elastic enough for the muscle. We are now looking into a design in which TPU or resin is printed in the shape of a spring for better elongation properties.

Upcoming Team and Individual Goals

- Team:
 - Print the muscles at MakerSpace and begin testing
- Jensen Weik:
 - Create a larger variety of designs to test in SolidWorks simulation wizard
- Kaiya Merritt:
 - Print the muscle springs with the team
 - Begin to start testing the spring designs using Solidworks simulation and prep for Show and Tell
- An Hua:
 - Print springs at the Makerspace
 - Prepare for Show and Tell
- Noah Kalthoff:
 - Print springs at the Makerspace
 - Fix any errors our designs may have before show and tell
- Leah Nelson:
 - Print the springs with the team at the Makerspace
 - Begin testing the spring materials

Project Timeline

Project Goal	Deadline	Team Assigned	Progress	Completed
Meet with client	9/6	All	100%	9/13
Product Design Specification	9/19	All	100%	9/19 (ongoing with edits)
Preliminary Presentations	10/4	All	100%	10/4
Preliminary Report	10/9	All	100%	10/9
Show and Tell	11/1	All		
Poster Presentations	12/6	All		
Final Deliverables	12/11	All		

Expenses

Horse Skull				
Item	Location Purchased	Quantity	Cost Each	Total Cost
PLA	Makerspace	1	18.5	18.5
				0
				0
				0
				0
				0
				0
				0
				0
Total:				18.5

Dog Skull				
Item	Location Purchased	Quantity	Cost Each	Total Cost
PLA	Makerspace	1	13	13
				0
				0
				0
				0
				0
				0
				0
				0
Total:				13