

Muscles of Mastication Group

Client: Dr. McLean Gunderson - mclean.gunderson@wisc.edu

Advisor: Dr. Cameron Casey - cpcasey3@wisc.edu

Team: Jensen Weik - jweik@wisc.edu (Leader)

Kaiya Merritt - kgmerritt@wisc.edu (Communicator)

An Hua - ahua4@wisc.edu (BPAG)

Noah Kalthoff - nkalthoff@wisc.edu (BSAC)

Leah Nelson - lknelson7@wisc.edu (BWIG)

Date: November 15-21, 2024

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 have finished fabricating our models, and we plan to test the range of motion of the jaw tonight.

Summary of Weekly Team Member Design Accomplishments

- Team:
 - Finished fabricating the skulls
 - Started Testing
- Jensen Weik:
 - Finished fabricating the two models
 - Wrote the testing protocol
- Kaiya Merritt:
 - Finished fabricating the two models with the team
 - Attempted SolidWorks tension simulation on the skulls, but was unable to
- An Hua:
 - Finished fabricating the skull models
 - Updated cost and materials sheet

- Noah Kalthoff:
 - Do some skull testing
- Leah Nelson:
 - Finished fabrication on the skulls

Weekly/Ongoing Difficulties

Epoxy glue did not work well with the stretchable fabric we chose. Also we were unable to test the skulls on SolidWorks simulation.

Upcoming Team and Individual Goals

- Team:
 - Finish testing and data analysis
 - Begin working on the poster and the final report
- Jensen Weik:
 - Begin the final deliverables
 - Conduct statistical analysis
- Kaiya Merritt:
 - Finish testing and the testing analysis
 - Begin writing sections for the poster presentation
- An Hua:
 - Finish testing for models
 - Begin test analysis
- Noah Kalthoff:
 - Finish all testing calculations so we can work on the final poster and finishing up our project
- Leah Nelson:
 - Finish testing
 - Begin working on final report and poster

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	100%	11/1
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

Both				
Item	Location Purchased	Quantity	Cost Each	Total Cost
TPU	Makerspace	1	2.93	2.93
Elastic 50A	Makerspace	1	11.64	11.64
Hooks and Screws	Amazon	1	3.79	3.79
Springs	Amazon	1	10.99	10.99
Elastic Band	Amazon	1	12.99	12.99
Silicone	Amazon	1	6.69	6.69
3/8" Hex Drive Screw	Makerspace	8	0.1	0.8
Total:				49.83