Title: GVI: Straw Stamp and Slicer

Date: 9/25/2025

Client: Sarah Hanson, Brett Breidor, and Ben Goss
Advisor: Professor Justin Williams
Team:

Catie King (Co-team leader) - cgking3@wisc.edu

Lydia Miller (Co-team leader) - lbmiller3@wisc.edu

Megan Lee (Communicator) - mjlee45@wisc.edu

Janice Amornthanomchoke (BSAC) - amornthanomc@wisc.edu

Varenya Vegesna (BWIG) - vvegesna@wisc.edu

Emma Stroshane (BPAG) - stroshane@wisc.edu

Problem statement

Currently, quality control procedures investigating quality of bull semen for artificial insemination are time and labor intensive. The process involves cutting and pushing bull semen through a small straw using a straightened paper clip, and transferring the contents to a 96-well plate. This process takes one hour, with 8-10 plates being processed per day. The purpose of the project is to optimize these quality control procedures by designing a straw slicer that should be able to cut 12 straws at a time. It should also have removable components for cleaning. Additionally, a straw stamper is needed to push bull semen out of the straws in bulk, avoiding cross contamination.

Brief status update

On September 22nd, the team met and discussed all of the individual design ideas for the straw stamper, slicer, and frame. The group decided to split off into pairs to dive deeper into one design for each pair and sketch a viable design for the matrix. On September 24th, the team met again to discuss the three cleaned up designs and filled out the design matrix. More research was also conducted on specific mechanisms of the designs and materials that could be used for the prototype.

Difficulties / advice requests

N/A

Current design

N/A

Materials and expenses

N/A

Major team goals for the next week

1. Divide up, complete, and practice presenting the preliminary oral presentation
2. Start drafting design matrices for the slicer and/or stamper
3. Conduct more research in regard to fabrication of designs and create fabrication plan

Next week's individual goals

- Catie King
    - Work on preliminary design presentation and complete individual sections
    - Conduct more research on possible materials
    - Think about the viability and path of fabrication of the frame design
- Lydia Miller
    - Plan fabrication methods, consulting TeamLab or Makerspace if needed
    - Begin work on preliminary design presentation
    - Create design in SolidWorks using the sketch from the design matrix
- Megan Lee
    - Begin to create the design in SolidWorks
    - Figure out the best way to print design and best material to use
- Janice Amornthanomchoke
    - Work on the designing the stamp, frame, and slicer
    - Work on the design matrix to determine the best design
    - Attend the BSAC meeting
    - Work on the training for the mill and lathe
- Varenya Vegesna
    - Finalize design idea and work on preliminary design presentation

    - Research possible materials
- Emma Stroshane
    - Work on preliminary design presentation
    - Research possible sanitation method for design
    - Understand considerations/risks when 3D printing

Timeline

Week	Description	Status
9/8-9/12 Week 1	Weekly Team Meeting 1	Completed
	Client Meeting to answer questions/discuss project	
9/15-9/19 Week 2	Weekly Team Meeting 2	Completed
	PDS Draft Due 9/19	
9/22-9/26 Week 3	Weekly Team Meeting 3	Completed
	Design Matrix due 9/26	
9/29-10/3 Week 4	Weekly Team Meeting 4	
	Preliminary Presentation 10/3	
10/6-10/10 Week 5	Weekly Team Meeting 5	
	Preliminary Deliverables due 10/8	
	Decide on final design by 10/10	
10/13-10/17 Week 6	Weekly Team Meeting 6	
	Review Preliminary Presentation Feedback	
	Submit IDR by 10/17	
10/20-10/24 Week 7	Weekly Team Meeting 7	
10/27-10/31 Week 8	Weekly Team Meeting 8	
	Show and Tell on 10/31	
11/03-11/07	Weekly Team 9	

Week 9		
11/10-11/14 Week 10	Weekly Team Meeting 10	
11/17-11/21 Week 11	Weekly Team Meeting 12	
11/24-11/28 Week 12	Thanksgiving Break (11/27-11/30)	
12/01-12/05 Week 13	Final Presentation on 12/5	
12/8-12/12 Week 14	Final Deliverables due 12/10	

Previous week's goals and accomplishments

- Sketch rough design ideas and decide on three viable designs for the straw cutter and straw stamp and fill out the design matrix.
- Continue to update PDS based on feedback from advisor and after another client meeting

Activities

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Catie King	9/19-9/25	- Brainstormed a design idea and met with team to discuss - Worked in pair with other member to sketch one of the three designs for the matrix and build a cardboard prototype - Design matrix	1.5 1.5 0.5	3.5	8
Lydia Miller	9/19-9/25	- Created preliminary design for device - Met with Janice to modify design idea for design matrix - Met with team to rank design choices in design matrix - Wrote section of the design matrix	1 1 1 .5	4	7.5
Megan Lee	9/19-9/25	- Brainstormed an idea for the frame and slicer - Met with team to rank design choices	1 1	3.5	7.5

		in the matrix - Worked in pairs to finalize design idea and create a prototype - Wrote out section of the design matrix	 1 .5		
Janice Amornthanomchoke	9/19-9/25	- Brainstormed one design for the stamp and another for the slicer - Trained on learning how to use the mill and lathe at the Makerspace - Met with team to discuss design ideas, adjustments, and pros and cons about the each design	1 3 1	5	8
Varenya Vegesna	9/19-9/25	- Brainstormed design idea to discuss with team - Worked in pair with Megan to draw one of the three designs for the matrix - Worked on design matrix	1.5 1.5 1	4	6
Emma Stroshane	9/19-9/25	- Brainstormed possible idea for meeting with the team - Worked in a pair with other member to build a cardboard prototype of a frame and then drew out the design to dimension	1.5 1.5	3	7