Title: GVI: Straw Stamp and Slicer

Date: 10/2/2025

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

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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 29th, the team met to create a new design matrix for the stamper component. Two ideas were ranked against each other, the first design being called the Retractable Stamper, and the second called the Removable Prongs. Due to its ability to be sanitised and its durability, the removable prong design won.

Difficulties / advice requests

N/A

Current design

N/A

Materials and expenses

N/A

Major team goals for the next week

1. Deliver preliminary presentation and reflect on the feedback given
2. Work on preliminary deliverables/report
3. Discuss fabrication plans

Next week's individual goals

- Catie King
    - Write individual portion of preliminary report
    - Begin searching for materials to purchase for design ideas (such as steel rods for the prongs for the stamper)
- Lydia Miller
    - Split up preliminary report sections
    - Write section for preliminary report, considering the presentation feedback
    - If necessary, research any gaps in team knowledge
- Megan Lee
    - Continue researching compatible materials and brainstorm what we should use for the slicing mechanism
    - Complete individual portion of preliminary report
    - Begin designing final frame design on SolidWorks
- Janice Amornthanomchoke
    - Brainstorm ideas for slicer device
    - Work on the individual section for the preliminary report
    - Figure out materials and process for fabricating devices
- Varenya Vegesna
    - Research 3D printers to construct device
    - Work on preliminary report section
- Emma Stroshane
    - Assist in designing final frame and stamper in SolidWorks
    - Work on individual section for preliminary report

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	Completed
	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 Week 9	Weekly Team 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

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

Activities

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Catie King	9/26-10/2	- Created individual stamp idea - Collaborated with team on the stamp design matrix - Worked on presentation - Practiced presentation	1 1 1 1	4	12
Lydia Miller	9/26-10/2	- Create stamp designs - Research hole tolerances - Work on presentation - Design matrix for stamp designs - Practice presentation	1 .5 1 1 1	5	12
Megan Lee	9/26-10/2	- Brainstormed/created individual stamp idea - Worked on individual section on design matrix for stamp ideas - Worked on presentation - Practice presentation	1 .5 2 1	4.5	12
Janice Amornthanomchoke	9/26-10/2	- Brainstorm ideas for stamp design - Worked on drafting stamp matrix - Worked on creating the slides for the preliminary presentation - Finish training on the Mill	1 .5 1 1	3.5	11.5
Varenya Vegesna	9/26-10/2	- Brainstorm 3D printer materials	1	4	10

		- Work on design matrix - Practice presentation - Work on slides	1 1 1		
Emma Stroshane	9/26-10/2	- Brainstormed ideas for stamp design - Work on individual section for stamp design matrix - Created slides and script for preliminary presentation - Researched 3D printing considerations	1 1 1.5 .5	4	11