

Graduated Bowman Probes

Date: September 4 to September 10, 2026

Client: Dr. James Law

Advisor: Professor Wally Block

Team:

Neel Srinivasan nsrinivasan8@wisc.edu (Team Leader)

Caden Robinson carobinson5@wisc.edu (BPAG)

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Problem Statement

Bowman probes are the standard instrument used in interrogation of the nasolacrimal (tear duct) system in Ophthalmology. They are available in various sizes and provide tactile feedback to the surgeon when probing the canalicular/nasolacrimal system, allowing them to assess for strictures, discontinuities, obstruction, or other abnormality within its lumen. Probing is typically performed prior to the passage of implants such as nasolacrimal stents (eg. Crawford, Lacriflow, Nunchucku, Monoka), to confirm patency of the nasolacrimal system. Available probes on the market do not have any markings on them which may allow the surgeon to make measurements to points within the canalicular/nasolacrimal lumen (eg. a stricture at 30 mm distal to the punctum), which can be helpful in correlating with imaging findings, or for accurate clinical documentation and therefore inform management of nasolacrimal pathologies. We propose the development of such a stent with inscribed bands corresponding to millimeter markings which may be referenced during canalicular or nasolacrimal probing.

Brief Status Update

The team has become acquainted and had an initial meeting with our advisor, Dr. Block. We have defined three components of the project which can either be individually delegated or worked on communally. This includes 1) Continuing fabrication work with the actual Bowman Probes. This will require decreasing graduation spacing to 1 mm as per request of the client. The team must either get in contact with Dr. Pfefferkorn's mechanical engineering lab or utilize an outside manufacturing service. 2) Begin the design process of a lacrimal system phantom that can be used for both tissue snag testing as well as general medical student practice at the UW-Hospital. 3) Research and begin the application of the project into IRB and Wharf Patent

review. Because of the novelty of the device, legal introduction of intellectual bodies to help establish and potentially monetize the graduated probes is an aspiration of the group.

Summary of Weekly Team Member Design Accomplishments

- Team:
 - Met with Prof. Block to discuss project goals, including laser manufacturing outsourcing, phantom features, and accuracy improvements
- Neel Srinivasan:
 - Researched IRB processes and laser manufacturing companies
 - Researched phantom tissue requirements
- Caden Robinson:
 - Looked at WARF product nondisclosure documents
 - Began understanding what is needed for an IRB
- Caleb White:
 - Researched several manufacturing facilities within the Madison area for potential contracting
 - Contacted both Schumacher Manufacturing and AMS MicroMedical about the possibility of working with them.
 - Began researching construction of nasolacrimal mimic for tissue snag procedure.
- Kenneth Sun:
 - Market research on existing Nasolacrimal system phantoms
 - Research on phantom development: materials, procedure, development
- Sudhi Chavadam:
 - Researched existing phantom models on the market
 - Became acclimated to team's previous work and research and explored contract manufacturing companies with greater laser capabilities

Weekly/Ongoing Difficulties

N/A

Upcoming Team and Individual Goals

- Team:
 - Meet with Dr. Law to discuss IRB approval & laser manufacturing quotes
 - Research necessary design requirements for phantom nasolacrimal duct

- Neel Srinivasan:
 - Meet with team & Dr. Law to ask questions about design requirements
 - Research nasolacrimal duct phantom tissue structure needs

- Caden Robinson:
 - Meet with Dr. Law and determine next steps
 - Continue to research lasers on campus that are lower powered and can laser anneal

- Caleb White:
 - Meet with Dr. Law and hear his thoughts on an outside contracted manufacturer.
 - Retrieve pricing quotes from manufacturers to help facilitate decisions.
 - Continue research into nasolacrimal mimic.

- Kenneth Sun:
 - Meet with Dr. Law and define project scope with him
 - Discuss with team on splitting parts of project to get defined role

- Sudhi Chavadam:
 - Meet with Dr. Law to discuss budget, contracting firms, and expectations for the semester
 - Discuss project roles and respective responsibilities with the team

Project Timeline

Project Goal	Deadline	Team Assigned	Progress	Completed
Meet with client	Sep 11, 2026	All		
Product Design Specification	Sep 18, 2026	All		
Preliminary Presentations	Oct 2, 2026	All		
Preliminary Deliverables	Oct 7, 2026	All		
Show and Tell	Oct 30, 2026	All		
Poster Presentations	Dec 4, 2026	All		
Final Deliverables	Dec 9, 2026	All		

Expenses

Item	Description	Manufacturer	Part Number	Date	QTY	Cost Each	Total	Link
Component 1								

Component 2								
Component 3								
TOTAL:	\$0.00							