

## I. Renewal Information

Biomedical Engineering Society  
Princeton University Student Chapter

- a. Faculty Advisor Information
  - i. Name: Celeste Nelson
  - ii. Email: [celesten@princeton.edu](mailto:celesten@princeton.edu)
- b. Ten Core Student Members

Name	Chapter Position	Email
Jake Klimek	President	<a href="mailto:jjklimek@princeton.edu">jjklimek@princeton.edu</a>
Kylie Cyhn	Treasurer	<a href="mailto:jcyhn@princeton.edu">jcyhn@princeton.edu</a>
Camila Cabrera Martinez	Student Affairs Representative	<a href="mailto:cgcm@princeton.edu">cgcm@princeton.edu</a>
Reha Mathur	Member	<a href="mailto:reham@princeton.edu">reham@princeton.edu</a>
Joyce Mo	Member	<a href="mailto:jqmo@princeton.edu">jqmo@princeton.edu</a>
Elana Sverdlik	Member	<a href="mailto:sverdlik@princeton.edu">sverdlik@princeton.edu</a>
Sakhi Shah	Member	<a href="mailto:sakhis@princeton.edu">sakhis@princeton.edu</a>
Sijbren Kramer	Member	<a href="mailto:sijbrenk@princeton.edu">sijbrenk@princeton.edu</a>
Sophia Colmenares	Member	<a href="mailto:sc82@princeton.edu">sc82@princeton.edu</a>
Diana Savchyn	Member	<a href="mailto:savchynd@princeton.edu">savchynd@princeton.edu</a>

- c. Chapter Website: <https://bmes.princeton.edu/>
- d. One Free Student Membership Information

Name	Chapter Position	Email
Sabreen Alam	Vice President (Incoming President)	<a href="mailto:sal535@princeton.edu">sal535@princeton.edu</a>

- This is a new membership.
- Institution: Princeton University.
- Graduation Year: 2026
- Gender: Female
- Ethnicity: Asian

## II. Cover Page

# PBMES

Biomedical Engineering Society  
Princeton University Student Chapter  
Chapter Development Report  
May 1, 2024

### Corresponding Author Information

Please contact the following with questions related to the content of this report:

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- Sabreen Alam '26 - [sa1535@princeton.edu](mailto:sa1535@princeton.edu)

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### Faculty Advisor Information

Celeste Nelson

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609-258-8851

### Summary

It is an exciting time for biomedical engineering at Princeton University. This year, we re-established PBMES chapter activities on campus following a hiatus during the COVID-19 pandemic. In addition to gaining recognition from the national society, our chapter was renewed as an Office of the Dean of Undergraduate Student (ODUCS)-affiliated organization on campus. With this recognition, we launched an updated chapter website ([bmes.princeton.edu](http://bmes.princeton.edu)) and Instagram account (@princeton.bmes) to raise awareness about our organization. Our chapter has since grown to 50 undergraduate and graduate members and draws students from disciplines across the University. During the academic year, we hosted several activities, including a research speaker event, a welcome event, and a faculty luncheon. Together, these events have helped rekindle the biomedical engineering community on campus. Our members also volunteered at the University's Spring Into Science Outreach Event, where we interacted with 150 4th-10th graders from the local Princeton area. We aim to continue hosting fun and informative events in the coming academic year. We believe graduate student participation will significantly increase with the first cohort of graduate students in [the Omenn-Darling Bioengineering Institute](#) arriving this fall. With the momentum generated this year, we believe our chapter is in an excellent position to support the growing biomedical engineering at Princeton for future years to come.

29 April 2024

Dear colleagues:

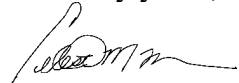
The Princeton student chapter of the Biomedical Engineering Society started the 2023-24 academic year with the goal of rebooting chapter operations after a pandemic-associated hiatus in activities. I am thrilled to report that this passionate and driven group of students has been immensely successful, and am eager to see what they are able to accomplish next year.

During the current year, they received renewed recognition as an Office of the Dean of Undergraduate Students (ODUS)-sponsored student group here at Princeton, a status that enables them to request funding for activities. Because of Princeton's byzantine processes, renewing recognition takes far more effort than starting a chapter to begin with. Simultaneously, chapter membership grew to 50 undergraduate and graduate students across different departments on campus, including those in engineering, the natural sciences, and the humanities. The officer board established a weekly meeting schedule to plan and discuss chapter activities, which are communicated on their website and Instagram platforms. This planning resulted in several chapter activities over the academic year, including a speaker event in collaboration with the Biological Sciences Society, a welcome social, and monthly luncheons with faculty. The chapter also volunteered at Princeton University's Spring into Science Outreach Event, demonstrating Foldsopes, which were provided for free to 150 4<sup>th</sup>-10<sup>th</sup>-grade students. Finally, three members of the chapter presented their work at the 2023 BMES Annual Meeting.

During academic year 2024-25, the Princeton BMES chapter plans to increase graduate student participation and send a larger group of researchers to the 2024 BMES Annual Meeting. They are planning to launch a mentorship program that connects juniors and seniors with first-years (freshmen) and sophomores to increase engagement in BME-related research on campus. They are also planning to take advantage of Princeton's location in central NJ to host industry panels with local pharmaceutical companies, and panels with alumni who work in BME-related careers.

I wholeheartedly endorse this Chapter Development Report.

Sincerely yours,



Celeste M. Nelson, Ph.D.



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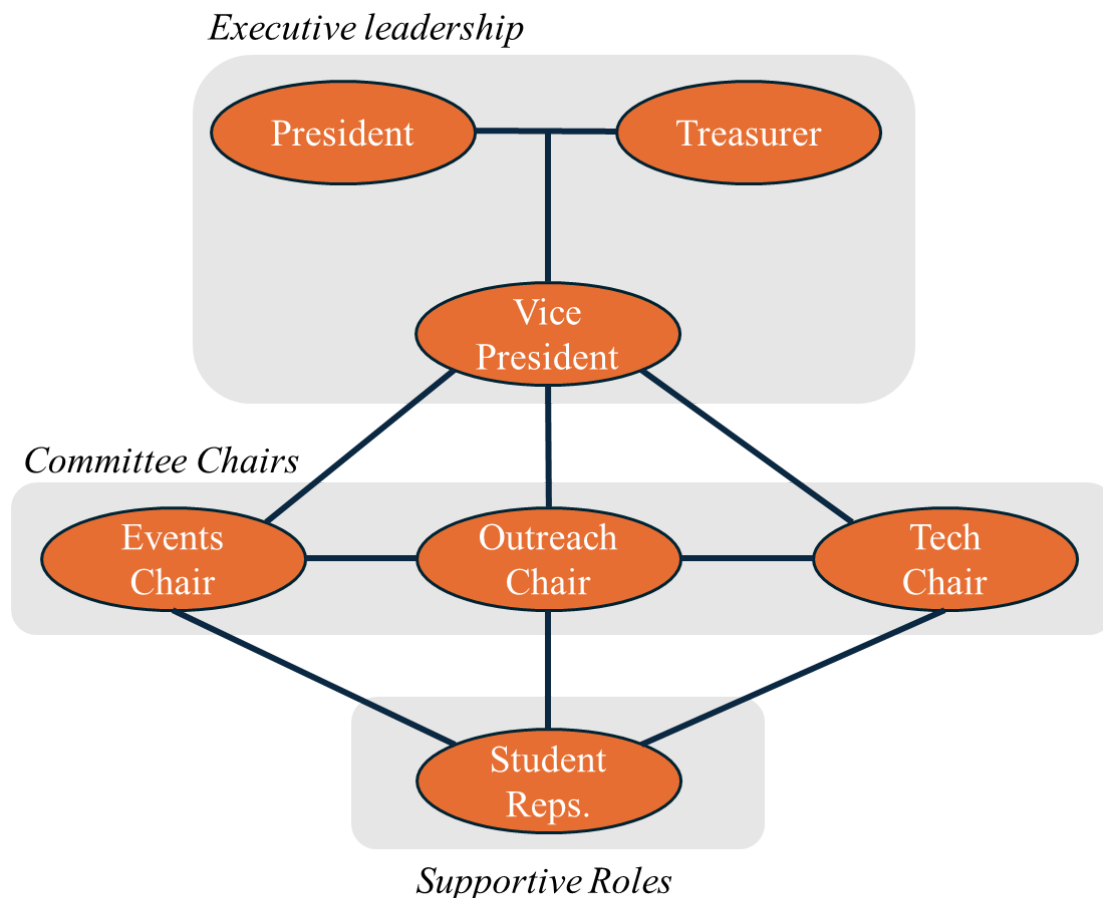
## V. Administrative Report

### Abstract:

What started with a few ambitious rising seniors last summer has blossomed into an organization with over fifty members from around the University. This past year, we established protocols and infrastructure to ensure the continued success of PBMES. Notably, we formalized leadership positions and election processes, hosted weekly board meetings to plan chapter activities, and advertised our group so that interested undergraduate and graduate students could participate in our activities.

### Outline of chapter leadership:

We established the following chapter leadership structure, composed of *executive leadership*, *committee chairs*, and *supportive roles*. A description of each position follows on the next page.

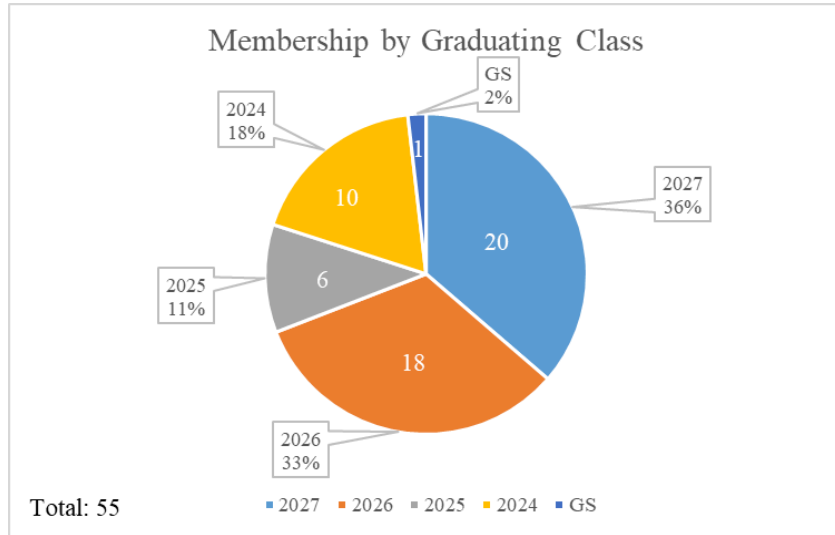


Position	Description / Responsibilities
President	<ul style="list-style-type: none"> <li>● Interfaces with the Office of the Dean of Undergraduate Students (ODUS), Undergraduate Student Government (USG), and BMES national organization;</li> <li>● Schedules and facilitates board meetings, chapter activities, and officer elections;</li> <li>● Sends emails to chapter members;</li> <li>● Lead author of Chapter Development Reports</li> </ul>
Treasurer	<ul style="list-style-type: none"> <li>● Maintains chapter finances and funding;</li> <li>● Submits funding applications;</li> <li>● Attends University Projects Board meetings to secure funding;</li> <li>● Lead author of Chapter Development Reports</li> </ul>
Vice President	<ul style="list-style-type: none"> <li>● Records board meeting minutes;</li> <li>● Sends emails to chapter members;</li> <li>● Provides advising and support to each committee chair;</li> <li>● Lead author of Chapter Development Reports</li> </ul>
Events Chair	<ul style="list-style-type: none"> <li>● Plans and executes chapter activities;</li> <li>● Reserves room spaces;</li> <li>● Obtains outside catering;</li> <li>● Designs activity advertisements;</li> <li>● Distributes activity advertisements to email listservs;</li> <li>● Secondary author of Chapter Development Reports</li> </ul>
Outreach Chair	<ul style="list-style-type: none"> <li>● Coordinates mentorship program;</li> <li>● Secondary author of Chapter Development Reports</li> </ul>
Tech Chair	<ul style="list-style-type: none"> <li>● Maintains and updates the chapter website and Instagram;</li> <li>● Provides support to Outreach chair on an as-needed basis;</li> <li>● Secondary author of Chapter Development Reports</li> </ul>
Student Representative	<ul style="list-style-type: none"> <li>● Composed of underclassmen, upperclassmen, and graduate students;</li> <li>● Provides versatile support to each committee chair on an as-needed basis</li> </ul>

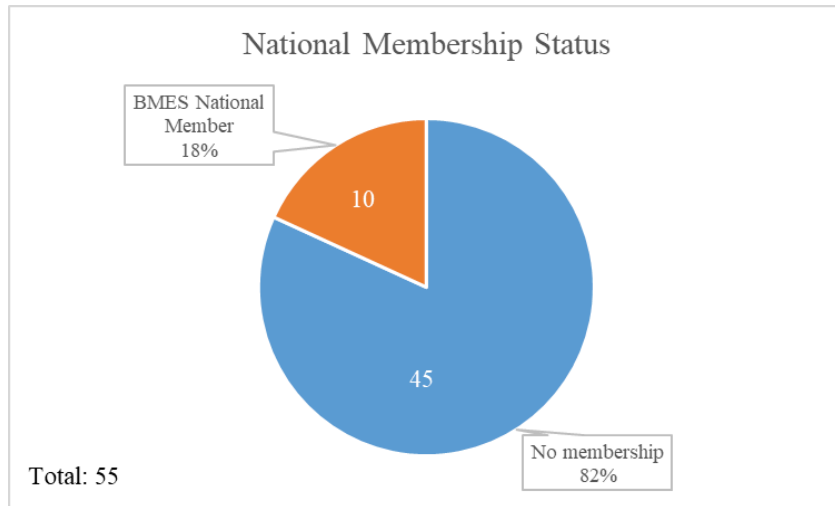
**Membership data:**

Membership information is maintained on the University’s CampusGroup system. All students who wish to join the chapter must be validated by an officer.

- Total chapter members: **55**
- Total BMES members: **10 (18%)**
- Departments represented: Chemical and Biological Engineering, Molecular Biology, Electrical and Computer Engineering, Mechanical and Aerospace Engineering, Ecology and Evolutionary Biology, Neuroscience, Psychology, Physics, Operations Research and Financial Engineering, Computer Science



*We aim to increase graduate student participation next year.*



*We aim to increase national membership through fundraising efforts next year.*

**Meetings:**

<b>Date</b>	<b>Agenda</b>
10/05/23	Board meeting with Biological Sciences Society to plan joint Speaker Event
10/11-14/23	2023 BMES Annual Meeting
11/8/23	Speaker Event in collaboration with Biological Sciences Society
12/06/23	Board meeting to meet the new leadership team and brainstorm events for spring semester
02/13/24	Board meeting to review University-mandated officer training compliance
02/20/24	Board meeting to plan logistics (catering) of PBMES Welcome Event
02/27/24	Board meeting to write funding application for PBMES Welcome Event and collect names of BME faculty on campus for future luncheons
03/05/24	Board meeting to plan PBMES faculty luncheon scheduling
03/19/24	Board meeting to plan activities during of PBMES Welcome Event and activities for the Princeton University Spring Into Science Event
03/25/24	PBMES Welcome Event
04/15/24	PBMES April Faculty Luncheon with Prof. Celeste Nelson & Prof. Jonathan Conway
04/20/24	Volunteer group at Princeton University Spring Into Science Event
04/23/24	Board meeting to draft Chapter Development Report



## VI. Treasury Report

### Abstract:

Princeton University student groups request funding for events on an as-needed basis through the Undergraduate Student Government Projects Board. Our chapter subscribed to this model to fund events hosted this past academic year. Funding approval requires the preparation and submission of an online application, as well as an in-person defense of the application at a Projects Board Meeting at least two weeks prior to the scheduled event. Following approval, a University credit card is used to make purchases necessary for the events. Records of funding are maintained in the University's funding engine and are overseen by the chapter's treasurer.

### Table of Withdrawals and Deposits:

Date	Description	Amount
10/12/23	Deposit - PBMES & PUBSS Speaker Event	+\$301.15
11/03/23	Withdrawal - MTea Catering	-\$301.15
03/02/24	Deposit - BMES Welcome Event	+\$363.08
03/20/24	Withdrawal - MTea Catering	-\$363.08
04/11/24	Deposit - Spring Into Science Event	+\$261.14
04/12/24	Withdrawal - Foldscope	-\$261.14
<b>Current balance:</b>		<b>\$0.00</b>

### Fundraising:

Fundraising was not necessary during this academic year. However, we aim to host fundraising events with local businesses to generate funds to support national memberships and travel to future BMES annual meetings. Additionally, alumni fundraising is permitted only during the fall semester, which we plan to pursue in Fall 2024.

## VII. Chapter Activities

### **Abstract:**

In the following pages, we provide details on the several chapter activities we hosted over the past academic year. Because this was our first year following a pandemic-related hiatus, we focused our events on membership bonding, research opportunities, mentorship, and outreach. Feedback from attendees was very positive—there is increased excitement for biomedical engineering on campus because of our chapter’s efforts.

## VIII. Social or Other Activities

### Abstract

Our BMES chapter values the importance of not only hosting events that contribute to keep our current members engaged, but also that of making sure we are able to get in touch with those who are interested in joining. For this, we have held guest speaker and welcome events with catering and plan to host other activities such as study breaks to boost engagement and make our members feel welcome while learning more about opportunities in biomedical engineering on campus.

### Info Booth at Princeton Academic Expo:

Our faculty advisor Professor Celeste Nelson provided informational flyers (see image below) to incoming first-year undergraduates at the Academic Expo in order to spread awareness of the revival of the PBMES chapter. All fifty flyers she printed were taken!

Date	Audience	Attendance	Cost
August 28, 2023	Class of 2027 undergraduates	50+	None

Princeton University BMES Student Chapter




New this year!

**Role**  
The Biomedical Engineering Society's student chapters are the foundation for the society, uniting and promoting the future of the biomedical engineering profession. For rising biomedical engineers, this chapter will provide opportunities to establish leadership skills, boost your resume, network, publish, and participate in a wide range of career-enhancing activities.

**Objectives**

- Introduce students to the profession of biomedical engineering and how it relates to other engineering disciplines
- Educate students about the role and impact BMES can have on their professional careers
- Prepare students as they advance into the biomedical engineering profession
- Expand student knowledge of specific tools and techniques used in biomedical engineering and other related fields
- Develop leadership abilities and professional qualities among the student members
- Provide an environment for social interaction and exchange of ideas at all levels of education, including undergraduate students, graduate students, and faculty

**Benefits of a BMES Membership**

- Travel Awards to attend the BMES Annual Meetings
- Access to the Student Chapter Quarterly Newsletter
- Opportunity to be a feature story in the BMES Student Chapter Newsletter
- Access to the Student Chapter Playbook
- Invitation to attend Ed Talks, webinars, and virtual lectures with some of the industry's top professionals
- Eligibility to hold a chapter Ed Talk
- Ability to compete for an Annual Chapter Award
- Access to the Chapter Development Report (CDR) assistance manual

Interested? Fill out this form!



<https://tinyurl.com/ptonBMESinterest>

BMES Website



<https://www.bmes.org/student-chapters>

Questions? Please contact Jake Klimek '24 at [jklimek@princeton.edu](mailto:jklimek@princeton.edu).

**Research Speaker Event:**

In collaboration with the Princeton University Biological Sciences Society (PUBSS), PBMES hosted a speaker event open to the University community. Featuring a keynote presentation given by Professor Jared Toettcher, as well as talks from postdoctoral fellows Carolina Trenado Yuste and Samhita Banavar, the event featured research in molecular biology and biomedical engineering happening on campus. Light refreshments were provided to attendees.

Date	Audience	Attendance	Cost
November 8, 2023	University community	30	\$301.15

PROJECTS BOARD

PRINCETON UNIVERSITY BIOLOGICAL SCIENCES SOCIETY

PBMES

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PRINCETON UNIVERSITY  
BSS & BMES

**SPEAKER SERIES**

**FEATURED PRESENTATIONS:**

**JARED TOETTCHER, PHD**  
ASSOCIATE PROFESSOR IN MOL  
TALK: SHINING A LIGHT ON CELL DECISIONS WITH OPTOGENETICS AND BIOSENSORS

**CAROLINA TRENADO YUSTE, PHD**  
POSTDOCTORAL FELLOW IN CBE & LSI  
TALK: USING CANCER CELL MOTILITY TO PREDICT THE FINAL MORPHOLOGY OF THE TUMOR

**SAMHITA BANAVAR, PHD**  
POSTDOCTORAL FELLOW IN CBE  
TALK: PHYSICAL ASPECTS OF CELL AND TISSUE ELONGATION

Location: Frist 302

**WEDNESDAY, NOVEMBER 8TH AT 6 PM**

Join us to hear about exciting research in the biological sciences on campus!

Refreshments from MTea will be provided!



**Welcome Event:**

PBMES hosted a welcome event for any students who were interested in joining to learn about what the goals of the chapter are, hear about future activities, and to receive updates. Students were able to join our online group for the chapter and we catered boba and sushi for those who attended the event. To facilitate increased socialization, we had a fun, BME-themed “Kahoot” game for attendees to play.

Date	Audience	Attendance	Cost
March 25, 2024	Undergraduate and graduate students interested in joining the chapter	20	\$363.08



## **IX. Inter-Chapter Activities**

In the coming year, we plan to reach out and host joint events with nearby BMES student chapters, including those at Columbia University, The University of Pennsylvania, Rowan University, and The College of New Jersey.

## X. Outreach Activities

### Abstract

It is important to our BMES chapter to engage with members of the Princeton community, especially young members. Our goal is to instill a love of biomedical engineering and spark curiosity within these future scientists. These opportunities are also fulfilling ways for current members to form relationships with other science-minded individuals.

### Spring Into Science:

We hosted a table at the Spring Into Science event at Princeton University, which focused on providing hands-on demonstrations to younger students (4th to 10th grade students) to create excitement for science. We showed attendees how to use Foldscopes (miniature, foldable microscopes) to view various prepared biological samples, including algae, cardiac muscle, and frog egg blastula. Additionally, we taught attendees about the structures of the various samples and answered questions about how the microscopes worked. We provided Foldscope Minis to 150 attendees, free of charge!

Date	Audience	Attendance	Cost
April 20, 2024	4th - 10th grade students in the larger Princeton community	150 (students we directly talked to)	\$261.14



## XI. Mentoring Activities

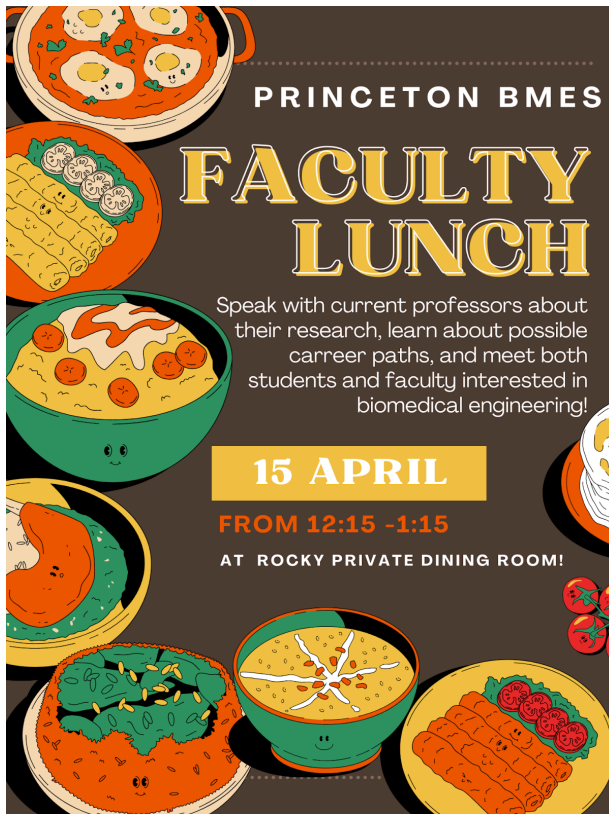
### Abstract:

PBMES recognizes the importance of learning from and engaging in meaningful discussion with established professors in the field. In our mentoring activities, we focused on those that would help members form relationships with Princeton professors, to both gain insight into scientific research opportunities, as well as to form meaningful connections with established professors.

### Faculty Luncheon:

Professors Jonathan Conway and Celeste Nelson joined members of PBMES for a luncheon in one of Princeton's residential dining halls. During this event, members talked with professors about their research projects, general interests, and thoughts on different biomedical engineering topics. In the future, we plan to hold monthly faculty luncheons so that members have the opportunity to (informally) meet and learn from a variety of professors involved in biomedical engineering on campus.

Date	Audience	Attendance	Cost
April 15, 2024	PBMES chapter members	11	None





## **XII. Industry or Professional Development Activities**

Princeton University is ideally located near several biomedical and biopharmaceutical companies. Next year, we plan to leverage our connections with nearby industry partners (e.g., Bristol Myers Squibb, Merck, as well as local startups) by hosting panels so that our members can better understand career pathways in biomedical sciences and engineering.

**XIII. Societal Impact Activities**

We eagerly plan to explore opportunities related to societal impact in the future.

#### XIV. National BMES Meeting

Because Princeton requires all undergraduate students to complete research with faculty members, academic conferences like BMES are excellent opportunities to (1) showcase the independent work Princeton students have done, (2) learn about other exciting research happening in the field, and (3) network with other peers and professionals. PBMEES was thrilled to send three of its members to present at the 2023 BMES Annual Meeting in Seattle, WA.

Name	Presentation	Title
Molly Brennan (Graduate)	Talk	Using Microfluidics to Investigate the Effects of Diet on Tumor Progression
Sophia Colmenares (Undergraduate)	Poster	Sequence Patterning, Morphology, and Dispersity in Single-Chain Nanoparticles: Insights from Simulation and Machine Learning
Jake Klimek (Undergraduate)	Poster	Quantifying the formation of the fractal pattern of airways in the lung

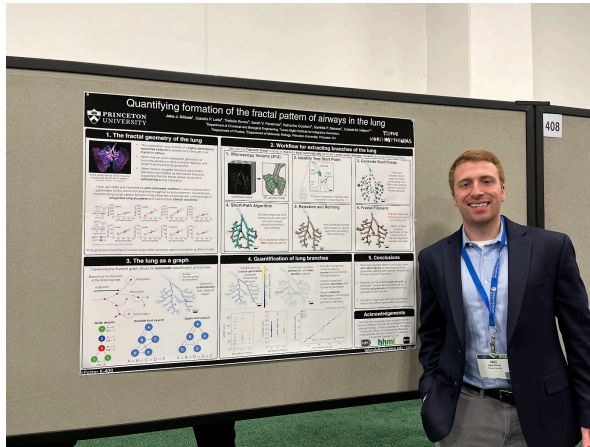
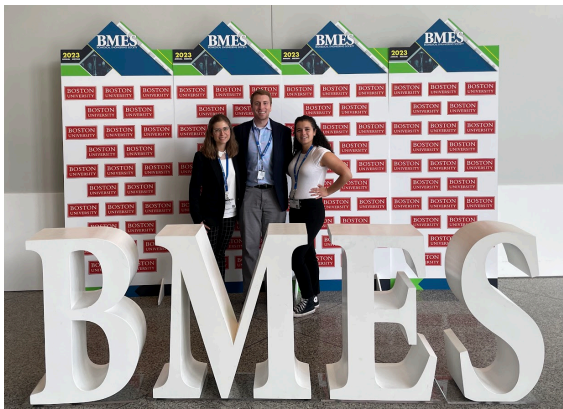
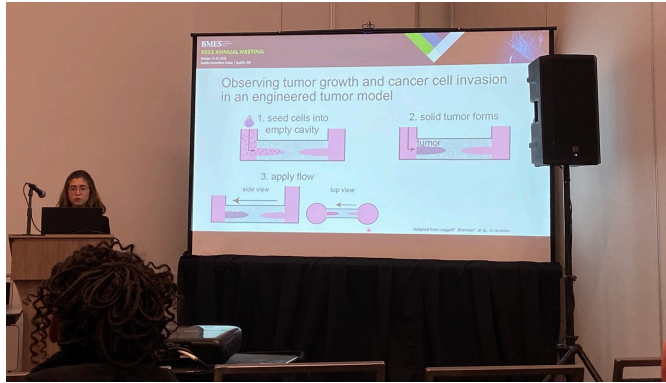
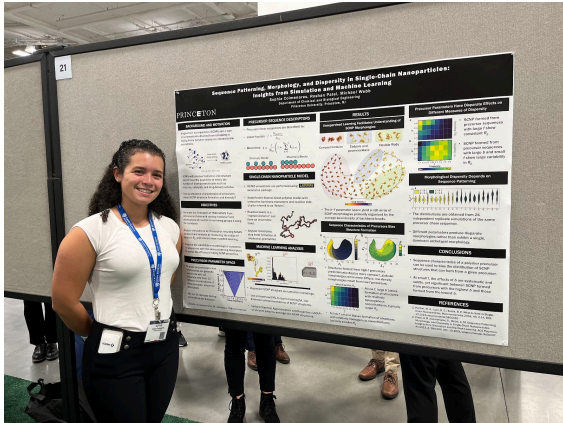
Sophia and Jake both received travel awards from the Princeton University Office of Undergraduate Research's Undergraduate Fund for Academic Conferences.

*"I had several undergraduate and graduate students stop by to hear about my project as well as some faculty members from different biomedical engineering programs. Some people who viewed my poster asked questions and gave advice on what should be the next step of the project. I took note of these suggestions and will be referring back to them while I complete my Princeton senior thesis. Additionally, one of the people who stopped by was a graduate student in a hybrid computational and wet-lab research group from a school I am interested in for my PhD. I was able to speak with the professor who runs that lab at the school's BMES reception later that evening, and I was very happy to learn more about both the school and lab through this networking opportunity."*

–Sophia Colmenares

*"Sharing my research with other biomedical engineers was a great chance to both refine my presentation skills and receive valuable feedback and suggestions for future work from professionals within the field. Attending close to twenty platform talks over the course of the conference allowed me to dive deep into cool sub-fields like tissue engineering, mechanobiology, and biomaterials. The intellectually stimulating conversations that I had with peers, experts, and faculty at other institutions around these topics not only expanded my professional network but also excited me to pursue biomedical research in graduate school and beyond. BMES was a highlight of my undergraduate career, and participating in the conference only further enhanced my already rich course of study and independent work experience at Princeton."*

–Jake Klimek



PBMES is very excited for the 2024 BMES Annual Meeting in Baltimore, MD. A bit closer to home, we plan to send a larger group of chapter members to present their independent work at the conference.

## **XV. Future Directions**

This year, the Princeton University Biomedical Engineering Society student chapter was able to relaunch operations following a pause during the pandemic. We hosted several chapter activities including research talks with respected leaders on campus, a welcome event bringing together members of the biomedical engineering community, a faculty luncheon to introduce students to potential research mentors, and an outreach event for younger students at the University's Spring Into Science event. From helping undergraduate members advance their research journeys to bringing a passion for this field to younger students, our goal to form a strong BME community here at Princeton was achieved.

Next year, we will use the framework we have developed this year to expand our reach. We aim to increase graduate student participation in our chapter activities and events. Additionally, we have many ideas for events brainstormed by our board that we hope to bring to fruition, including a mentorship program for underserved students and joint events with neighboring university BMES chapters. We also plan to begin fundraising efforts early on in order to bring a larger team of students to the 2024 BMES Annual Meeting. Now that we have built experience in our first year with connecting the biomedical engineering community and planning/organizing events, we hope to bring this experience to expand the chapter and biomedical engineering community even further in the coming year.