



Photo of students at BioLegends, 2025

2025-2026 Chapter Development Report

Biomedical Engineering Society

The Bishop's School

Renewal Document

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*indicates national membership

Free membership information: [REDACTED]

[REDACTED] The Bishop's School, [REDACTED]
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Cover Page – The Bishop’s School Chapter Development Report

August 2025 – April 2026

Submitting Party: [REDACTED] President

Faculty Advisor: [REDACTED]

Executive Summary: The BMES Student Chapter at The Bishop’s School completed a highly successful inaugural year, demonstrating strong growth, community impact, and engagement in biomedical engineering. The chapter expanded from 5 founding members to approximately 15 active members, establishing a consistent weekly meeting structure and student-led organizational framework.

A central achievement of the chapter was its sustained outreach program. From October through March, members organized weekly hands-on workshops for middle school students, delivering over 20 sessions and directly engaging an estimated 80–120 students. These workshops emphasized interactive learning through activities such as strawberry DNA extraction and introductory MATLAB exercises, fostering early interest and confidence in STEM.

In addition to outreach, the chapter organized multiple industry and academic experiences, including tours at BioLegend, Johnson & Johnson MedTech, and several UC San Diego research laboratories, with over 40 total student participants across events. These opportunities provided valuable exposure to real-world biomedical applications and career pathways.

Chapter members also participated in the BMES Annual Meeting, presenting student research and engaging with the national biomedical engineering community. Overall, the chapter established a strong foundation in outreach, professional development, and leadership, positioning it for continued expansion and deeper impact in future years.

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Dear National BMES,

San Diego is recognized far beyond its reputation as a scenic tourist destination; it is a biomedical hotspot on the global scale that has seen exponential growth in recent years. This ecosystem presents a perfect catalyst for us to establish the inaugural chapter of the National Biomedical Engineering Society at The Bishop's School. In our founding year, the Bishop's BMES's mission was to cultivate young aspiring biomedical engineers to realize their passions and have the resources to experiment and learn. As the Bishop's School has both a middle and upper school, we are uniquely positioned to connect with scientists at all stages of their biomedical journey, from sixth graders excited to extend and find applications for fresh knowledge of biology and cells to graduating seniors seeking industry connections and advice from professionals in the field.

Our most significant achievement this year has been our success in middle school outreach. Recognizing that a love for STEM is often cultivated with early exposure, Bishop's BMES leadership and upper school members spent our regular meetings collaborating, researching, designing, and testing ideas for our weekly middle school workshops. In these sessions, we demonstrated and worked alongside middle schoolers through investigations of the MATLAB software and hands-on activities such as the extraction of strawberry DNA, before inviting them into guided discussions to reinforce and introduce new concepts to explain the chemical and biological processes behind the experiments.

Beyond the classroom, we sought to provide our members with a clear view of the professional biomedical landscape in SoCal, inviting upper and middle schoolers to exclusive tours at local facilities and labs. In October, we organized a visit at BioLegend, an antibody manufacturer based in San Diego, where we engaged with experts in each step in the manufacturing process and heard inspiring accounts of growth and entrepreneurship in the industry. Then in February, we traveled to the Johnson & Johnson institute in Irvine. Walking through world-class facilities and having the opportunity to speak directly with researchers allowed our members to see the tangible impact of their delicate work. These experiences transformed biomedical engineering from a textbook definition into a real career path our members could visualize themselves in.

We are incredibly proud of the foundation we have built this year at The Bishop's School. Looking forward, we have only scratched the surface of what we hope to achieve—we will leverage our location within a biomedical hub to establish new connections with San Diegan companies, collaborate with other BMES chapters, explore fundraising, and expand on service opportunities for our members. We look forward to continuing our momentum next year!

*Warm regards,
Bishop's BMES Chapter Leadership*

Cover Letter

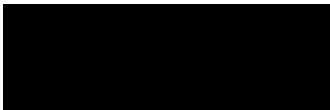


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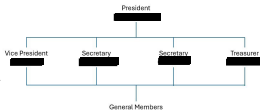
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Administrative Report

The BMES student chapter at The Bishop's School was started at the beginning of the 2025–2026 school year. We began with a small group of about five students, and by the end of the year, the chapter had grown to around fifteen active members. This growth came naturally as more students became interested in biomedical engineering through word of mouth, workshops, and school activities. The chapter has been student-led, with officers taking responsibility for organizing meetings, planning activities, and managing communication. Weekly meetings were held consistently from September through March, usually during lunch. These meetings gave students a chance to stay connected, discuss upcoming events, and share what they were learning both inside and outside the classroom.

One of the most meaningful parts of this year was the chapter's outreach work. Students organized weekly workshops for middle school students, focusing on hands-on activities rather than lectures. These included simple lab experiments and interactive lessons in biology and chemistry. The goal was not just to teach content, but to help younger students feel comfortable asking questions and getting excited about science. Many members were also involved in research outside of school, particularly through the OPALS program. These experiences helped students bring real-world perspectives back into the chapter and raised the overall level of discussion and engagement. It was encouraging to see students connect what they were learning in research with what they were teaching in outreach. The chapter also made an effort to expose students to the broader field of biomedical engineering. This included organizing company tours and visiting research labs at UCSD. These visits helped students better understand what biomedical engineering looks like in practice and gave them a sense of possible future paths.

From an administrative standpoint, the chapter ran smoothly. Communication was clear, meetings were consistent, and students took ownership of their roles. A fundraising activity was organized during the year, and the funds were used to support outreach workshops. While the scale was modest, it showed that students were thinking about sustainability and planning ahead. Overall, this was a strong first year. The chapter built a solid foundation, both in terms of structure and culture. Going forward, the focus will be on expanding participation, continuing outreach efforts, and creating more opportunities for us to engage in research and professional development.



Treasury Report



Category	Amount
Total Revenue	█
Total Expenses	█
Net Profit	█

Revenue:

-
-
-

Expenses:

-
-
-

Revenue - Expenses:

-

The members organized a small fundraising event by making boba at the chapter president's house and selling it at a local farmers market located a few streets away from the school. The sale took place on a Sunday during winter break. Members prepared the drinks together in advance, including brewing the tea and cooking the tapioca pearls, and brought the supplies needed to serve the drinks at the market. Over the course of the morning, approximately 25 cups of boba were sold. The proceeds from the sale were used to purchase materials and supplies for hands-on laboratory activities used in middle school outreach workshops. The fundraiser provided a simple way for members to support the chapter's outreach efforts while engaging with the local community.

Chapter Activities

The Bishop's chapter of the Biomedical Engineering Society was founded at the beginning of the 2025-2026 school year, beginning with 5 members and expanding to around 15. Throughout the year, the Bishop's chapter incorporated a wide variety of activities in order to combine outreach, service, learning, and building community. For example, we contacted the lower school and were able to host weekly workshops for middle schoolers, covering topics in biology, chemistry, medicine, and engineering. Additionally, we shared our experience in research, especially from the perspective of a high-schooler, as many members had worked on such projects outside of school. We organized and participated in a couple company tours, with some reaching more than 30 participants, and others collaborating with other BME-related programs.



A favorite workshop that we hosted was a strawberry DNA extraction lab, which was featured as a web article on our school's website. We also managed a social media page in Instagram dedicated to documenting our activities and encouraging others to join.

Chapter Activities Continued...

General Meetings

Meeting Type	Frequency	Timeframe	Typical Duration	Attendance
General Meetings	Weekly (Mondays)	September – March	30–45 minutes	10–12 members
Leadership Meetings (Officers)	Biweekly	September – March	30 minutes	5 officers

Representative Meeting Dates and Topics

Date	Key Topics / Agenda
Sept 18, 2025	Chapter introduction, recruitment, officer roles overview
Oct 2, 2025	Outreach program planning, workshop topic selection
Oct 16, 2025	Workshop preparation (DNA extraction), materials planning
Nov 6, 2025	Outreach reflection, improvements, upcoming events
Dec 4, 2025	Industry visit planning (BioLegend), logistics coordination
Jan 15, 2026	Spring semester planning, MATLAB workshop preparation
Feb 5, 2026	Johnson & Johnson visit preparation, discussion
Mar 5, 2026	Year-end reflection, future planning

Sample Meeting Agenda

1. Opening & Announcements (5 min)
 - o Updates on upcoming events and opportunities
2. Review of Previous Activities (5–10 min)
 - o Reflection on outreach workshops or events
 - o Feedback and lessons learned
3. Planning & Coordination (10–15 min)
 - o Assign roles for upcoming workshops or events
 - o Discuss logistics, materials, and responsibilities
4. Member Sharing / Discussion (5–10 min)
 - o Members share research experiences (e.g., OPALS)
 - o Discussion of recent biomedical topics or news
5. Action Items & Closing (5 min)
 - o Confirm responsibilities and next steps

Meeting agendas were adjusted as needed to support outreach preparation, industry engagement, and member development priorities throughout the year.

Social/Other Activities

Activity	Dates	Description	Attendance
Chapter meetings	Every Monday from September to March	Members have lunch together and discuss events, recent BME news, etc	10-12 members (~80%)
OPALS Research Internship	Daily	Internship focusing on engineering and cancer research	3 members
Volunteering at Senior Home	Biweekly	Caring for seniors dealing with Alzheimer's or other health-related issues	4 members
Outreach and planning workshops	Weekly in the month/two months prior to event	Contacting outreach teams from industry/labs, coordinating date and time, event promotion at school, surveys to student body	Leadership
Industry events	Oct/Feb	Participate in industry outreach event	Around 20+ attendees to each





Outside of the chapter, members were able to apply their leadership and technical skills to other activities. For example, as shown on the left, several students interned at OPALS. These experiences in turn strengthened our chapter as a whole.

Interchapter Activities



Some of our chapter's members also used OPALS as a way to connect with other students and leaders involved in biomedical engineering across San Diego. Through OPALS meetings and events, our members were able to interact with representatives from other high school BMES chapters, particularly Torrey Pines High School and Canyon Crest Academy. For example, as pictured above, many chapter leaders were present at the annual BMES meeting. These interactions created opportunities to share ideas, discuss chapter activities, and learn from how other schools organize their projects and outreach. Building these connections helped strengthen a broader community of students interested in biomedical engineering and allowed our members to feel more connected to a network of peers pursuing similar interests.

Outreach Activities

<p>Strawberry DNA Extraction Worksheet BBMES Workshop #8</p> <p>Name: _____</p> <p>1. Where is the DNA? Every living thing has DNA. In a strawberry, the DNA is located inside the _____, which is protected by two layers called the _____ and the _____.</p>  <p>2. Why Strawberries? We use strawberries because they are octaploid, meaning they have _____ copies of each chromosome. This gives us a lot more DNA to use!</p> <p>3. The Extraction: We use a special mixture to break open the cells:</p> <ul style="list-style-type: none"> • Soap: This breaks down the _____ (lipid). • Salt: This helps the DNA strands clump together. • Precipitation: DNA is soluble in water but insoluble in _____. <p>So when we add it, the DNA will "precipitate" (turn into a solid).</p> 	<p>Bishop's BMEs presents—</p> <p style="text-align: right;">12/10/2025</p> <p style="text-align: center;">Workshop #2: Cell! Structure and Function</p> <p>What is a cell?</p> <ul style="list-style-type: none"> • Foundation of all life • Make up all organisms • Every cell comes from another existing cell • Help maintain homeostasis <table border="1" data-bbox="543 576 926 679"> <tr> <td rowspan="2" style="vertical-align: middle;">Types of cells:</td> <td>Prokaryotic: (do/<u>do not</u>) have a defined nucleus</td> <td>Prokaryotic (dispersed genetic material.)</td> </tr> <tr> <td>Eukaryotic: (do/<u>do not</u>) have a</td> <td>Plant Animal</td> </tr> </table>	Types of cells:	Prokaryotic: (do/ <u>do not</u>) have a defined nucleus	Prokaryotic (dispersed genetic material.)	Eukaryotic: (do/ <u>do not</u>) have a	Plant Animal
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	Eukaryotic: (do/ <u>do not</u>) have a	Plant Animal				



As a chapter, one of our primary focuses this year was service and community. We collaborated with middle school students by leading educational workshops. During these sessions, we worked with younger students to guide them through interactive activities designed to spark curiosity and engagement. Rather than relying solely on lectures, the workshops emphasized participation, discussion, and hands-on labs so that they could actively experience the concepts being introduced. These workshops were held weekly on Mondays from the months of October through March. Each week, our chapter's leadership attended, as well as 1 or 2 members if they were the ones teaching.

Mentoring Activities

As mentioned previously, one of the most meaningful activities we participated in involved organizing hands-on workshops for elementary and middle school students to introduce them to scientific concepts and computational tools. Our goal was to make topics in science and engineering accessible and engaging while showing students how these subjects are used in real-world research and problem solving.

During one workshop (which was covered by our school media team here: [Link to News Story](#)) we guided students through a strawberry DNA extraction experiment. The activity allowed them to observe genetic material firsthand using simple laboratory materials. By helping the students mash the strawberries, add the extraction solution, and carefully separate the DNA, we demonstrated how scientists isolate genetic material in laboratories. The visible strands of DNA generated excitement among the students and provided a memorable introduction to molecular biology.



In addition to this experiment, we led several introductory biology and chemistry lab activities. These labs/lessons focused on fundamental scientific principles while emphasizing careful observation, hypothesis formation, and collaboration. By encouraging students to ask questions and think critically about the results they observed, we aimed to help them better understand how scientists investigate the natural world. We also introduced older students to basic programming concepts using MATLAB, exploring the engineering and data science aspects of BME. Through guided demonstrations and simple exercises, we showed them how coding can be used to analyze data, create graphs, and solve problems computationally. Many students were especially interested in seeing how mathematics and programming could be applied to scientific research.

Overall, these workshops provided an opportunity to combine education with mentorship. By sharing hands-on experiments and introducing computational tools, we hoped to inspire younger students to explore science, technology, and engineering with curiosity and confidence.

Industry and Professional Development Activities

The Bishop's chapter of BMES hosted two major industry and professional development outreach events. In October of the Fall Semester, we reached out to BioLegend, a company specializing in areas like immunology, cell biology, cancer research, and neuroscience, and were able to work with their team to organize a tour. Over 25 students from our school attended, including both middle and upper schoolers. In February of the Spring Semester, our chapter partnered with the University of San Diego, California's OPALS internship program to tour the Johnson & Johnson Medtech facility in Irvine. About 10 students from Bishop's attended, again including both middle and upper schoolers. It was also covered by our school's news & media team: [Link to News Story](#).



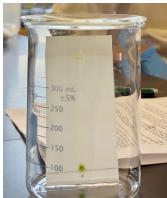
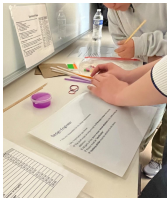
Besides these two events, we have also had several lab tours on the UCSD campus. For instance, the most notable ones we toured were Prof. Zhaowei Liu's lab which specializes in label-free super-resolution microscopy, as well as Dr. Farhat Beg's lab, which specializes in High Energy Density Physics and plasma confinement research. These experiences have not only taught us leadership and communication skills, but also vastly expanded our chapter's knowledge of both biomedical engineering and how companies in these fields work on the industry level. It has also provided members with networking opportunities, and we have recently scheduled an upcoming tour at Illumina, which we are greatly looking forward to.



Societal Impact Activities

Our chapter also worked to create social impact by engaging local middle school students in hands-on STEM activities that made scientific concepts more accessible and exciting. Through outreach events and interactive demonstrations, members introduced younger students to topics in biology and bioengineering, helping spark curiosity about science at an earlier age. Because BME as a field contains many facets of STEM, we wanted to increase middle-school interest in it.

Additionally, our chapter of BMES has planned to collaborate with the All Girl's STEM Society (AGSS) in order to order to expand outreach efforts and support greater participation of young women in STEM fields. Through this collaboration, we aim to organize joint events, workshops, and outreach activities that introduce students to topics in bioengineering and related disciplines. By working together, both clubs can reach a wider audience and create spaces where students feel encouraged to explore scientific interests and develop confidence in their abilities.



National BMES Meeting



Several of our chapter's members submitted to the national BMES meeting. In October of 2025, one project on the use of augmented reality in epidural steroid injections to treat chronic lower back pain was presented at a poster. During this annual meeting, our Bishop's chapter also presented about our activities at a designated table. Recently, another project on characterization of the KRAS G12D inhibitor MRTX1133 to determine which cancer cell lines respond to treatment was submitted. These opportunities allowed members to share their work with a broader scientific community while gaining experience communicating research in a professional setting. Participating in the national meeting also helped strengthen connections with other BMES chapters and provided inspiration for future research and chapter initiatives.

Future Direction



Looking ahead, our chapter plans to continue expanding both our outreach and professional development opportunities. Building on the success of workshops such as the strawberry DNA extraction lab, introductory biology and chemistry experiments, and MATLAB lessons, we hope to continue introducing younger students to hands-on scientific learning and spark early interest in biomedical engineering. We would particularly like to develop more interesting labs for them, and continue fundraising projects to fund them. We also aim to grow our industry engagement efforts. This year, our chapter organized a tour of BioLegend that was attended by over 25 middle and upper school students, as well as a visit to the Johnson & Johnson MedTech facility in Irvine in partnership with the University of San Diego's OPALS internship program, where about 10 students participated. In the future, we hope to organize similar visits so that more members can gain exposure to real-world biomedical research and industry environments.

Alongside these initiatives, our chapter will continue holding weekly lunch meetings from September through March, supporting members involved in the OPALS research internship, and volunteering biweekly at a senior home assisting residents with Alzheimer's and other health-related conditions. We are hoping to expand our workshops to more middle/elementary schools, and also be able to create a website where we link our member-created slideshows and worksheets for more accessibility. By expanding these programs, we hope to strengthen both our school community and students' interest in biomedical engineering.