Renewal Document
BMES Student Chapter at the University of California, San Diego (UCSD)

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Student Members:

Name	**Chapter Position**	**Email Address Associated with BMES profile**
Rachel Lian	Co- President	rjlian@ucsd.edu
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Tammy-Nhu Nguyen	Vice President Finance	tan013@ucsd.edu
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Nadine Rosete	Outreach Chair	nrosete@ucsd.edu
Rohil Ahuja	Lab Expo Chair	rhahuja@ucsd.edu
Bernice Angelene Lozada	Bioengineering Day Chair	blozada@ucsd.edu
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Student Chapter Website Link: https://bmes.ucsd.edu/

Student Information For Free Membership:

New or Renewal?	**Email**	**Name**	**Company/ Institution/ University**	**Graduation Year**	**Gender**	**Ethnicity**
Renewal	tan013@ucsd.edu	Tammy-Nhu Nguyen	UC San Diego	2023	Female	Prefer not to answer

The Biomedical Engineering Society
Student Chapter at
University of California, San Diego (UCSD)
For the 2021-2022 Academic Year

Corresponding Author

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Executive Summary

The UC San Diego chapter of the Biomedical Engineering Society strives to serve the bioengineering community at UCSD through a commitment to both active listening and enthusiastic response to student concerns and ideas. We recognize that the bioengineering community is not just made up of bioengineering majors, but all those interested in bioengineering, and we welcome to our organization all those who wish to know more about bioengineering, regardless of major, race, identity, or background. Through the leadership of our 20-person officer board, we strive to provide resources to enhance the undergraduate experience of our members and allow them to excel, both personally and professionally. To this end, we accomplish our goals by offering event planning committees, numerous technical and professional development opportunities, a strong mentorship program, and the ability to serve the wider San Diego community through outreach activities.

As we began the school year, our motto was to "return to normal" following the impact of the COVID-19 pandemic in the prior school years. Yet, we discovered that the pandemic would still be impacting us all year. Through these challenging circumstances, the resilience of our officers and our members shines through. They came together to forge a community as strong as ever and attain accomplishments that shone past the difficulties they faced. Even more, we are proud of the adaptability and creativity that our officers displayed as we created new traditions while reigniting and maintaining old ones that were lost during the pandemic, culminating in the creation of a new normal that will carry us into future years.

At our core, BMES at UC San Diego is a force that serves our community, both at UC San Diego and beyond, and we take pride in our ability to make an impact on our community. As the years progress, we will retain this passion for service and bioengineering that allows us to succeed and improve ourselves as a better resource for an ever-growing community.

June 1, 2022
Biomedical Engineering Society (BMES)
8201 Corporate Drive, Suite 1125
Landover, MD 20785-2224

To the Student Chapter Award Committee,

In an unpredictable year that has seen the gradual return to fully in-person learning, the UC San Diego chapter of the Biomedical Engineering Society has worked hard to fulfill its mission: to actively listen and respond to student needs in order to provide resources for anyone interested in bioengineering. This letter serves to present how the chapter has achieved this mission through the establishment of a welcoming community that supports both personal and professional growth even in the midst of prevailing challenges.

At UCSD, constantly changing campus guidelines during the first half of the year led to the chapter events being rapidly offered either remotely or in a hybrid format. In the face of the COVID-19 Omicron and Delta variants, Lab Expo and Translational Medicine Day, two large symposiums, had to be reformatted online after a quarter of in-person planning. Social events, especially those for the chapter mentorship program had to be canceled and shifted online. Despite these limitations, the chapter adapted seamlessly to still give its members these valuable opportunities. Lab Expo and Translational Medicine Day successfully reached hundreds of attendees and exposed them to research in several laboratories and clinical trials along with providing new networking opportunities. The chapter Social Officers worked successfully to continue planning virtual events and mixers for students to interact and integrate into the community.

Efforts by our VP External, the Project Team and the New Student Committee sought to provide our members with professional development opportunities through workshops and networking events. Project Team led the way in technical development, hosting workshops on skills such as Arduino, and Python programming. Their year-long project, Skywalker Legacy, gave students extensive hands-on experience in an engineering design team building a prosthetic hand. The new Student Committee invited back various alumni in both academia and industry to give the members insights on their careers. The VP External spearheaded new collaborations with bioengineering organizations at Purdue University and the Bioengineering Graduate Society at UCSD. These efforts led to new inter-university panels with professionals in the field and the start of a Graduate School Workshop series for our students.

One of the Chapter's biggest accomplishments this year was the return of core events and activities to an in-person setting. After a virtual year, planning things to be in-person was not yet the norm: knowledge about logistics such as parking policy, room booking, funding and more had to be rebuilt. The Outreach committee organized some of the first in-person work in over a year as they volunteered at the annual Light the Night walk hosted by the Leukemia and Lymphoma Society in the Fall. Outreach also made an impact at the San Diego Festival of Science and Engineering, creating and presenting an educational project to the hundreds of K-12 students who attended. The Social chairs also worked to organize in-person social events, when safe, to rebuild community, highlighted by the BMES Olympics in the Spring. Finally, the Bioengineering Day committee pulled off not only the first in-person Bioengineering Day since 2019, but the chapter's first large in-person event in two years with an attendance of over 400.

In a year that saw half of the school's student body step foot on campus for the first time and the other half readjusting to it, the UCSD chapter strived more than ever to be a community for bioengineers: to be a space for them to make connections and find growth, both personally and professionally. Through the hard work and dedication of its officers and members, that was realized. It is the hope of the BMES community at UC San Diego that this CDR serves as a fitting testament to their passion to serve their members and all their fellow students. My appreciation for all of their hard work and best wishes as all of us continue our shared vision of enhancing the University experience for the next generation of bioengineers.

Respectfully Submitted:

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V. Administrative Report

For the 2021-2022 Academic Year, BMES at UC San Diego's leadership and administrative structure remained similar to previous years. The first step in establishing the leadership team was the election of the Executive Board, composed of 2 Co-Presidents and 3 Vice Presidents. Next, the elected Executive Board interviewed and selected 13 officers, with two New Student Representatives being selected in later months. The selected officers each held primary responsibilities for programs within the chapter with the support and guidance of the Executive Board. These responsibilities included annual events (Lab Expo, Translational Medicine Day, Bioengineering Day), community engagement (Outreach), technical and professional development (Project Team, New Student), social and mentorship (Social), and organization coordination (Webmaster). All officers except Webmaster and Social organized weekly committee meetings.

Membership to this chapter was available to all students, regardless of major or identity. A paid membership offered additional incentives, such as access to the mentorship program. All members could participate in the weekly committee meetings or organization-wide events regardless of paid membership status. The BMES at UC San Diego chapter also affiliates itself with other organizations, with approximately 20% of our officers being national BMES members and close working relationships with on campus institutions, such as the UC San Diego Department of Bioengineering.

V.1. Leadership Team and Administrative Structure

The leadership team, administrative structure, and division of labors of the BMES chapter at UC San Diego is shown in the organizational chart on the next page.

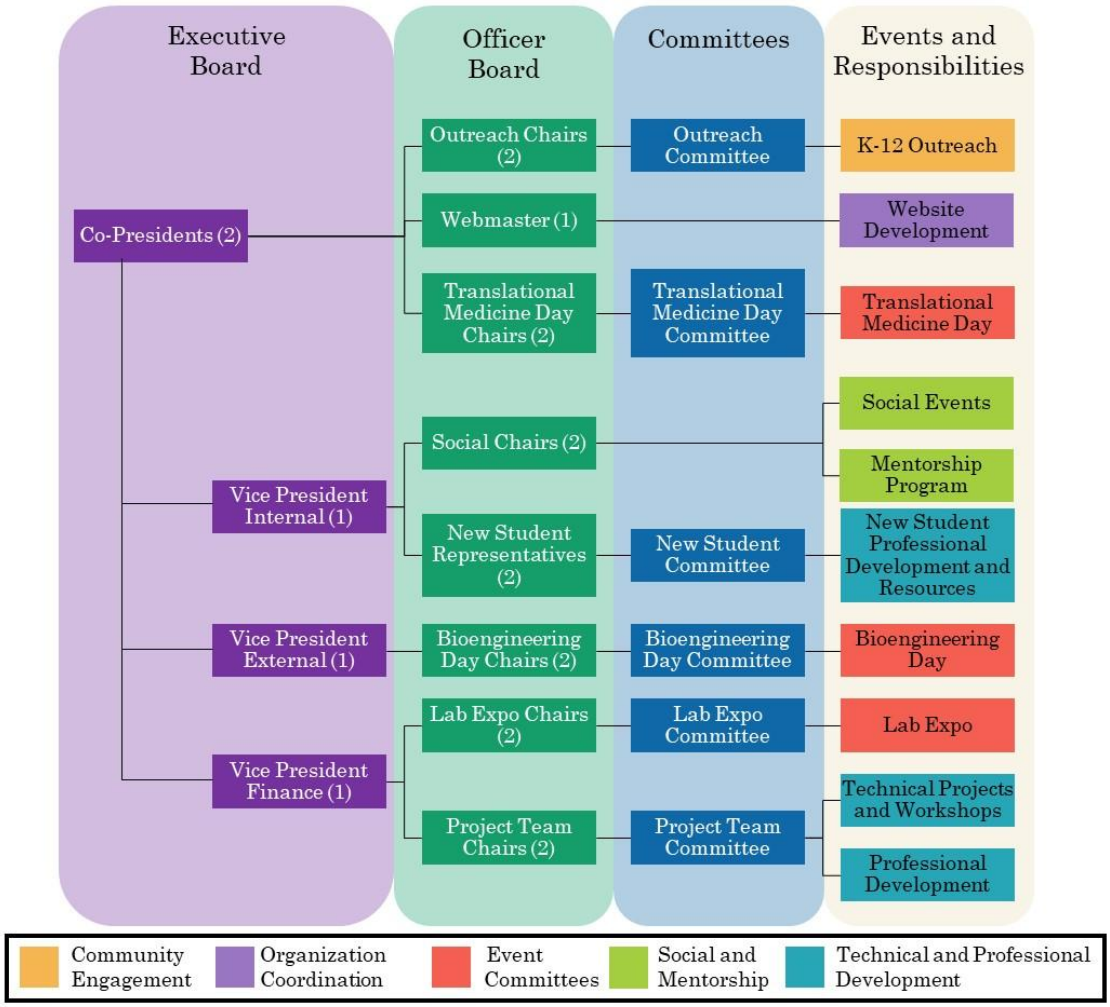


Figure 1. The Leadership Team and Administrative Structure of BMES at UC San Diego. There are 5 Executive Board Members who each oversee 2-4 officers each of the 15 person officer board, shown here connected by black lines. Some officers are responsible for running committees, as shown in the blue column, while all officers contribute to the organizational events and responsibilities, shown on the far right.

V.1.1. Executive Board

The BMES at UC San Diego Executive Board for the 2021-22 Academic Year was selected by an org-wide election system. All paid members were eligible to submit a public application so long as they were not graduating in June 2021. Applications for co-presidency were accepted as well as the traditional solo president position. All paid members not graduating in June 2021 were eligible to cast a vote, and from these votes the candidate with the highest number of votes was chosen. The elected Executive Board

consisted of five members, see below, whose first tasks were to create a vision for their school year and select their officer board.

- Co-Presidents: Rachel Lian (rjlian@ucsd.edu) and Carlos Pondevida (cpondevi@ucsd.edu)
    - The chief executive officers of the organization. Oversees all chapter operations, presides over official BMES meetings, maintains relations with the UC San Diego Bioengineering Department, and ensures the vision of the chapter is upheld.

- Vice President Internal: Kendra Worthington (klworthi@ucsd.edu)
    - Communications and logistics coordinator. Centralizes all organization information, posts weekly announcements, documents meetings, encourages officer board cohesion, and maintains social media presence and general brand image and publicity.

- Vice President External: Zoe Tcheng (ztcheng@ucsd.edu)
    - Professional development manager and industry liaison. Maintain relations with other BMES chapters, hosts industry info sessions, represents BMES at Bioengineering Department industry events, coordinates professional development workshops for all members, and connects members to industry and research opportunities.

- Vice President Finance: Tammy Nguyen (tan013@ucsd.edu)
    - Financial manager. Oversees all monetary accounts associated with the chapter, assists officers in securing funds for their events or projects, coordinates paid membership, distributes chapter funds to officers and events, creates and executes fundraisers, and tracks all financial transactions to balance chapter finances.

The Executive Board met weekly starting in September 2021 to May 2022. Individual updates were given. All members contributed to note taking and listing of the agenda, while the VP Internal reviewed the notes for action items. The agenda for each week varied according to the needs of the time. Below is a table of the meeting times for the Executive Board.

Table 1. The Schedule of Weekly Executive Board Meetings for Each Quarter.

Executive Board Meetings	**Fall Quarter 2021**	**Winter Quarter 2022**	**Spring Quarter 2022**
Day and Time	Tuesdays, 9 - 10:30 PM	Wednesdays, 8 - 9:30 PM	Wednesdays, 3:30 - 5 PM

V.1.2. Officer Board

Officer Applications were able to all paid members who were not graduating in June 2021. The applications were released in April 2022 and officers were selected in May 2022 by the incoming Executive Board. The selection process included submitting an application, a group interview, and an individual interview, followed by private deliberation among the Executive Board.

Most officers were chosen during the May 2022 deliberations. However, the Lab Expo Chairs were chosen in March 2021 by the previous Lab Expo Chairs, in an "intern" process. The interns are thus allowed to get a head start on planning their event, which occurs early in the school year relative to the other large event planning committees. The interns officially become chairs by the confirmation of the elected Executive Board in May. Additionally, the New Student Representatives, consisting of a Freshman Representative and a Transfer Representative, are chosen in October 2021, as these members begin attending UC San Diego in the Fall Quarter. They also submit private applications, have an individual interview, and are selected by the Executive Board.

It is worth noting that the officer board positions changed slightly from the 2020-21 Academic Year to that of 2021-22. Namely, due to a selected officer being unable to continue in their position, the Executive Board had to decide how to rearrange responsibilities. It was decided that the officer previously chosen as Publicity Chair would fulfill the empty position while the VP Internal took over the Publicity Chair responsibilities. This removed the Publicity Chair position for the 2021-22 Academic Year.

Officer Board meetings occurred weekly for all quarters of the school year, with a few being canceled for other chapter-wide events. Officers were surveyed before the start of every quarter to determine the time at which most if not all officers would be available to meet. All meetings occurred via Zoom. During meetings, officers would present their updates for the week, ask questions of other officers or the Executive Board, and advice would be given as needed. The VP Internal took attendance and notes for these meetings, which lasted between 30 minutes to 1 hour. Below is the agenda of a typical officer meeting:

1. General Weekly Updates (to be shared with the whole organization)
2. General Officer Only Updates
3. Officer Updates in a specified order
4. Executive Board Updates

Table 2. The Schedule of Weekly Officer Meetings for Each Quarter.

Officer Meetings	Fall Quarter 2021	Winter Quarter 2022	Spring Quarter 2022
Day and Time	Tuesdays, 8 - 9 PM	Thursdays, 6 - 7 PM	Wednesdays, 8 - 9 PM

Table 3. Complete 2021-22 Officer Board Roster With National BMES Member IDs

Board Position	Name	Email Address Associated with BMES profile
Bioengineering Day Chair	Bernice Lozada	blozada@ucsd.edu
Bioengineering Day Chair	Arnav Tayal	arnavtayal9@gmail.com
Translational Medicine Day Chair	Bethany Yuan	b3yuan@ucsd.edu
Translational Medicine Day Chair	Varsha Mani	vamani@ucsd.edu
Lab Expo Chair	Rohil Ahuja	rhahuja@ucsd.edu
Lab Expo Chair	Wesam Kanim	wesamkanim@yahoo.com
Outreach Chair	Ritika Singh	risingh@ucsd.edu
Outreach Chair	Nadine Rosete	nrosete@ucsd.edu
Project Team Chair	Aayush Somani	Somani003@gmail.com
Project Team Chair	Jay Chen	jac028@ucsd.edu
Social Chair	Yuan (Daniel) Cao	yuc514@ucsd.edu
Social Chair	Yifan Lin	yil021@ucsd.edu
Webmaster	James Gow	jgow@ucsd.edu
Transfer Representative	Erica Harris	N/A
Freshman Representative	Honieh Hemati	N/A
Co-President	Rachel Lian	rjlian@ucsd.edu
Co-President	Carlos Pondevida	cpondevi@ucsd.edu
Vice President Internal	Kendra Worthington	klworthi@ucsd.edu
Vice President External	Zoe Tcheng	ztcheng@ucsd.edu
Vice President Finance	Tammy Nguyen	tan013@ucsd.edu

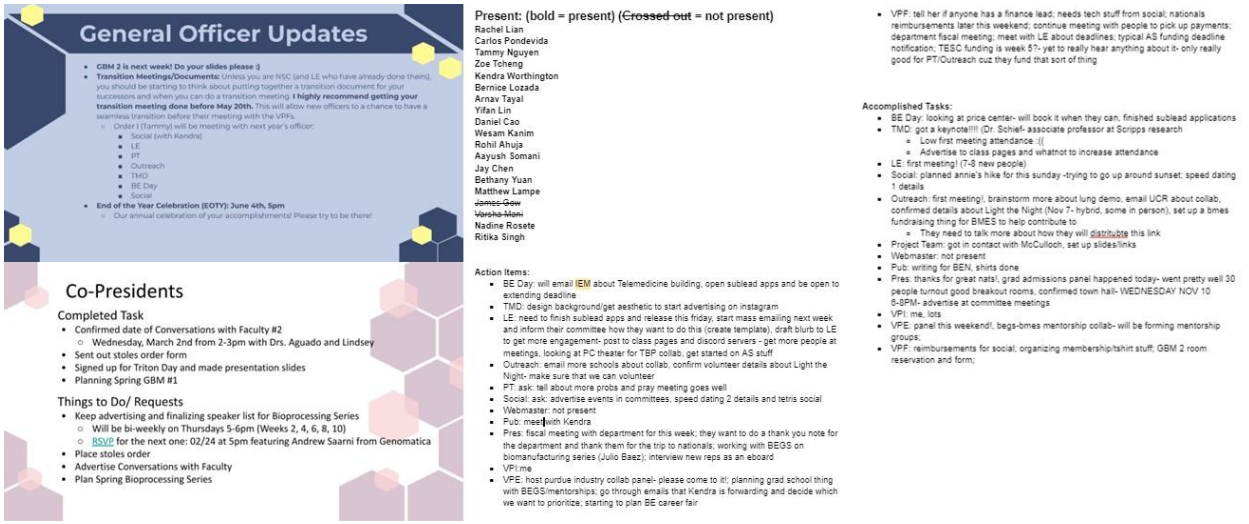


Figure 2. **(Left)** Example of Presentation Slides and **(Right)** Weekly Meeting Notes .

V.1.3. Committee Organization

The committee structure allows members an opportunity to contribute effort towards the goals of the organization which most appeal to them. In doing so, the chapter is able to accommodate individuals with a wide variety of goals and enhance the quality of their undergraduate experience through meaningful and impactful committee goals.

All general members of the community are able to join any committees, thus fostering engagement and community from these weekly online meetings. The continuing efforts of committee building through an online format speaks to the adaptability and perseverance of the committee chairs despite the continuation of unprecedented times during the COVID-19 pandemic. All committees met on a weekly basis. These meetings continued to occur via Zoom, except for project-building meetings for Outreach and Project Team committees. Each committee, except Outreach and New Student Committee, offered Subcommittee Leads positions. These positions allowed members the opportunity to have authority over some aspect of the committee, giving them leadership and professional experience, while they also helped boost general member engagement as the positions typically went to non-officers. The number and scope for these Lead positions was up to the discretion of the committee chairs, and ranged from eight to fourteen Leads per committee. For example, in the 2021-22 Academic Year, the Bioengineering Day Chairs assigned the following leads for their in-person event: Industry and Graduate Demonstration Lead (1), Finance Lead (2), Judges Lead (1), Media and Advertising Lead (2), Posters Lead (1), Website Lead (1), Quizbowl Lead (2), Social and Lunch Lead (2), and Keynote Speaker Lead (2).

V.2. Membership

Membership to the BMES at UC San Diego Chapter is available to all undergraduate students at UC San Diego, regardless of major. Any students who attended General Body Meetings (GBMs) or any chapter programs are termed a "general member". Given the loose definition of the general member, there are no records to the total number of general members. We also offer a paid membership with additional incentives, to which most active members subscribe to. No members, general or paid, are under any obligations and their participation in any events is voluntary. In the 2021-22 Academic Year, BMES at UC San Diego had 102 paid members.

V.2.1. National Membership

All Officers besides the Freshman and Transfer Representatives were registered National BMES members for the 2021-22 Academic Year. A list of national members who were officers and the email addresses associated with their BMES profile can be found in Table 3 in Section IIII.1.2. One additional member was a national member, for a total of 19 National BMES members.

V.2.2. Paid Membership

As mentioned above, the BMES at UC San Diego Chapter offers a paid membership. There were two tiers of membership offered, Tier 1 and Tier 2. Tier 1 included the annually-designed BMES t-shirt, while Tier 2 did not include the t-shirt, but included all other incentives. For the Fall 2021 Quarter, the Tier 1 price was $25 and the Tier 2 price was $15. For the Winter 2022 Quarter, the fees were reduced to $20 and $10 for Tiers 1 and 2, respectively. For the Spring 2022 Quarter, the fees were further reduced to $15 and $10 for Tiers 1 and 2, respectively. The offering of 2 tiers of membership allowed members the chance to be involved in all aspects of the chapter while reducing financial burden. In return for their paid membership, student incentives included eligibility to join the mentorship program, apply for officer positions in the next school year, and participate in faculty-sponsored research opportunities. Proceeds from the paid membership were allocated to social events, outreach and technical projects, and annual programs. As mentioned above, there were 102 paid members for the 2021-22 Academic Year.

V.2.3. General Body Meetings

While committee meetings, socials, and workshops were dispersed throughout the academic year, the BMES at UC San Diego chapter also hosted General Body Meetings (GBMs) at regular intervals during the year. Specifically, in all 3 quarters, GBMs were hosted during Weeks 2 and 8, although the day of week varied. The purpose of these meetings was to bring together all members of the organization to keep them updated as to what events

have and will transpire during that quarter. The meetings also gave officers the opportunity to promote their committees to recruit new members. GBMs typically lasted around two hours and ended with social activities.

Below is a typical agenda of a GBM:

1. Pre-GBM Meet and Greet (30 minutes)
    a. Sign in
    b. Membership and t-shirt sale (if in person)
    c. Refreshments and food served (if in person)
    d. Networking amongst all members
2. General BMES Overview (10 minutes)
    a. Mission statement
    b. Executive Board self- introductions
3. Officer and Committee Updates (50 minutes)
    a. Officers' Self-Introductions
    b. Overview of their programs
    c. Updates on their progress and related announcements
    d. Note: these updates occurred in a predetermined order according to the slide deck for that GBM.
4. Organization- Wide Updates (15 minutes)
    a. How to stay connected with BMES at UC San Diego
    b. Upcoming organization-wide events
    c. Paid membership logistics
    d. Note: these updates were provided by the Executive Board
5. Post- GBM Social (30 minutes - 1 hour)

Figure 3. Example of four slides from a BMES at UC San Diego GBM presentation. **(Left)** Bioengineering Day Committee overview and updates. **(Right Top)** Outreach Chairs Introduction slide. **(Right Bottom)** Org-wide updates for how to stay connected.

Table 4. Details for the General Body Meetings hosted by BMES at UC San Diego in the 2021-22 Academic Year.

Date and Time	Event Name	Virtual or In Person?	Attendance	Post-GBM Social	Cost
Tuesday *10/5/21* 5:30 - 7 PM	Fall GBM #1	Virtual	86	Trivia Game	$0
Tuesday *11/16/21* 5:30 - 7 PM	Fall GBM #2	In Person	51	Evolution (Rock-Paper-Scissors Competition)	$340.76
Tuesday *1/13/22* 6 - 8 PM	Winter GBM #1	Virtual	53	Mock Quizbowl	$0
Tuesday *2/24/22* 6 - 8 PM	Winter GBM #2	In Person	41	None	$423.46
Tuesday *4/5/22* 7 - 8:30 PM	Spring GBM #1	In Person	64	Pi an Officer Fundraiser	$325
Tuesday *5/17/22* 7 - 8:30 PM	Spring GBM #2	In Person	32	Annual Fundraiser Activities	$148.92

V.2.4. Diversity within BMES at UC San Diego

BMES at UC San Diego is proud to be a community that welcomes students of all ages, identities, and affiliations. We strive to be an organization that embraces and supports equality and we welcome students of all backgrounds. We obtained the following information from our paid members regarding the diversity of age, major, and gender identities within our community. All questions were optional.

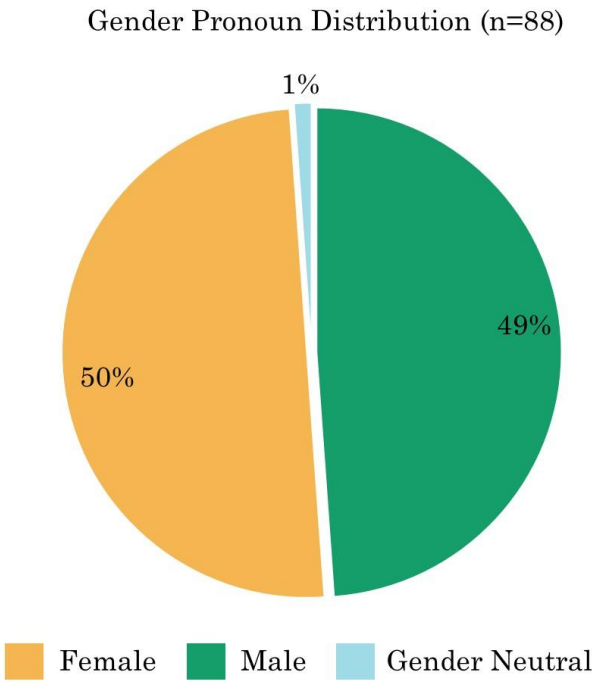


Figure 4. Gender pronoun identity for 88 paid members of the BMES at UC San Diego chapter.

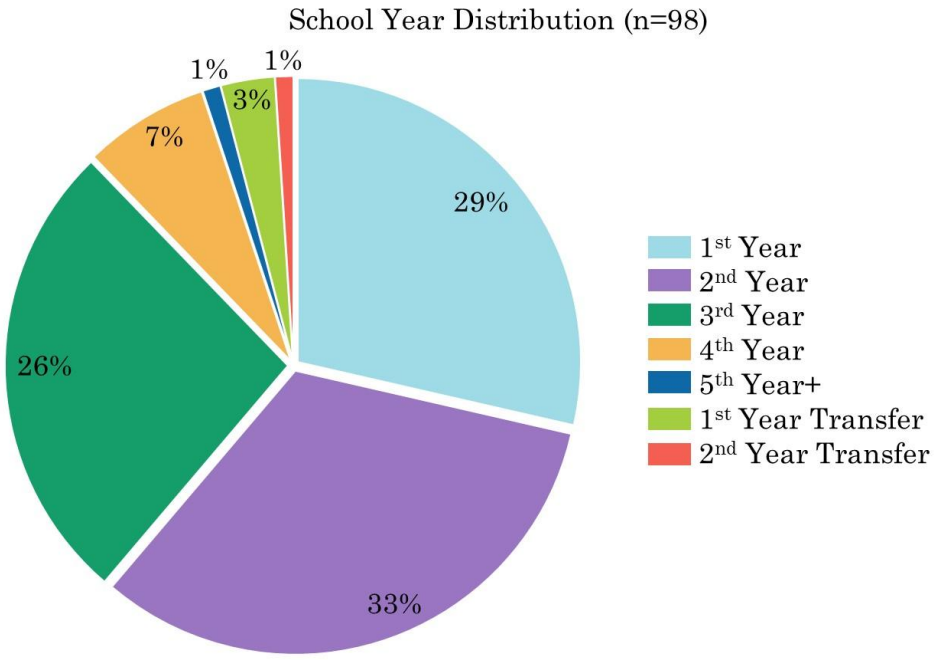


Figure 5. Distribution of the year of study for 98 paid members of the BMES at UC San Diego chapter.

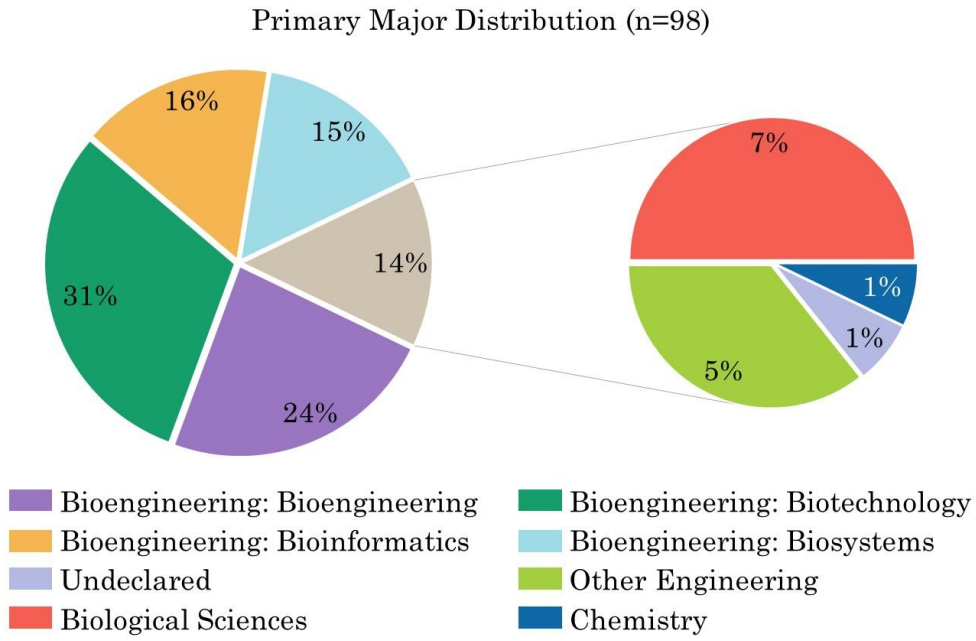


Figure 6. Distribution of the primary major for 88 paid members of the BMES at UC San Diego chapter. The four main tracks of the Bioengineering Department are shown in the panel on the left, while the right panel represents the other 14% of non-bioengineering majors that are included in the BMES at UC San Diego demographic.

V.3. Affiliations

BMES at UC San Diego operates as an independent organization. However, we are affiliated with other on-campus organizations and institutions.

1. The UC San Diego Department of Bioengineering

BMES at UC San Diego has a long-standing and mutually beneficial relationship with the Department of Bioengineering. The Department entrusts the officers of our chapter to serve as ambassadors between them and the undergraduate student population. To this end, we host Bioengineering Day with their support to feature the Senior Design projects, coordinate biannual Town Halls to bring the undergraduate concerns to the department faculty and administration, represent the Department at the BMES Annual Meeting, distribute the senior graduation stoles, and more. Additionally, BMES gains representation in student affairs meetings and the Industrial Relations Board.

2. Triton Engineering Council (TESC)

TESC is an undergraduate-run student council that was created by the Jacobs School of Engineering at UC San Diego. Many of the engineering student organizations make up this council, of which BMES is also a full member. As members of the TESC council, we have the right and responsibility to discuss and vote on policies pertaining to engineering student organization status, School of Engineering student affairs, and resource allocation.

3. The Associated Students (AS) of UC San Diego

AS is responsible for overseeing and protecting all student organizations on campus, and as such BMES maintains our status with them. In doing so, this allows us to apply for funding, reserve event spaces, and rent other equipment and facilities located on campus.

VI. Treasury Report

The Vice President Finance of the UC San Diego chapter of the Biomedical Engineering Society is in charge of all financial accounts associated with the organization and monitoring all cash flow during the academic year. In addition to funds within the UCSD BMES account, the major financial contributors of UCSD BMES and our events include University of California San Diego Associated Students (AS), Bioengineering Department, Institute of Engineering and Medicine (IEM), and other University of California San Diego programming funds. Many of our smaller events were funded solely by AS programming funds. Our larger events that were held virtually, Lab Expo and Translational Medicine Day, were funded by UCSD BMES and AS. Bioengineering Day, our large event held in-person, was funded by AS, Bioengineering Department, and IEM. Other university programming funds were primarily targeted towards Project Team and Outreach for their year-long project and demos. Additionally, fundraisers help to supplement the needs of the committees when other funding options fall short. In addition to the monitoring of the finances of UCSD BMES, the VP Finance assists as a financial consultant to all committees and assists the committee chairmen with logistical items. With many of the committee chairs being unfamiliar with the financial and logistical process, the VP Finance assisted the committees in organizing their expenses and applying for funding. This written report should include all income and expenses for each quarter.

VI.1. Financial Summary

Attached below is a summary of the Balance Sheet of the BMES Business account for the 2021-22 academic year broken down into expenses and revenue per academic term.

Table 5. UCSD BMES Financial Statement for the 2021-2022 Academic Year

Balance Sheet			
Balance Summary	**Fall Quarter 2021**	**Winter Quarter 2022**	**Spring Quarter 2022**
Starting Balance	**$8,551.07**	**$5,926.56**	**$2,973.07**
Expenses	**$5,247.62**	**$5,100.97**	**$3,463.16**
Revenue	**$2,623.11**	**$2,147.48**	**$5,964.89**
Ending Balance	**$5,926.56**	**$2,973.07**	**$5,474.80**

NOTE: Financial contributors discussed in the abstract are not included in the financial statement calculations shown in Table 5.

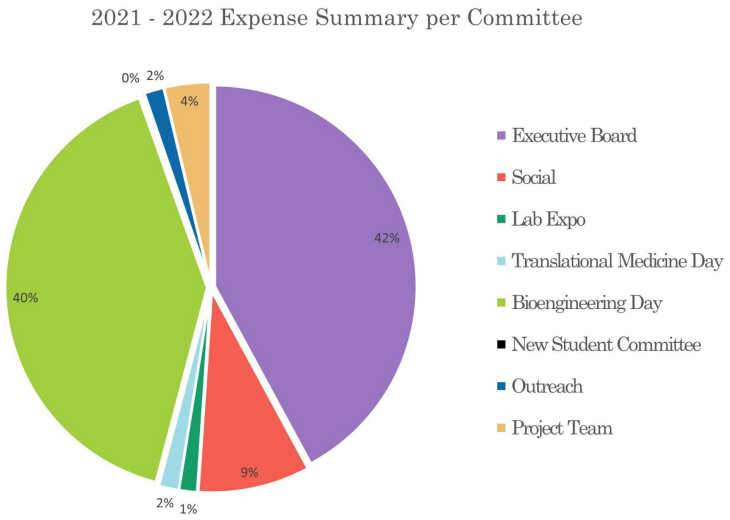


Figure 7. 2021-2022 Expense Summary Per Committee. The breakdown of expenses per committee is shown. The Executive Board had the greatest percentage of expenses at 42.12% due to membership t-shirts, general body meetings (GBMs), BMES National Convention, and other smaller events hosted by our co-Presidents and VP External. Following the Executive Board, the Bioengineering Day committee made up the next largest portion of the expenses as it was the only major event held in person. This is followed by Social, Project Team, Outreach, Translational Medicine Day, and Lab Expo. The total expenses for the 2021-22 academic year is $23,894.74.

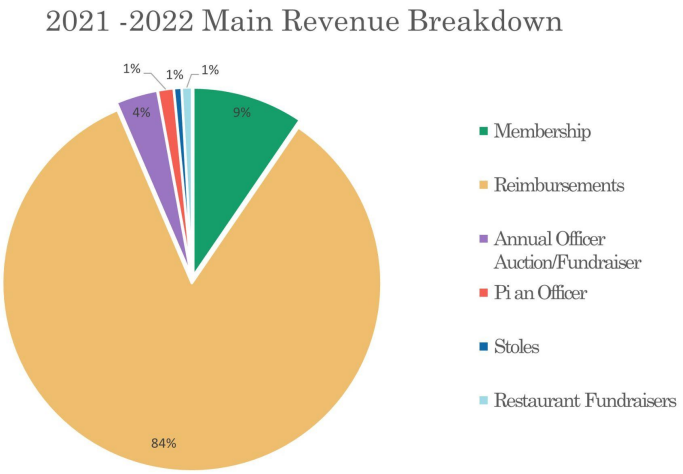


Figure 8. 2021-2022 Main Revenue Breakdown. The breakdown of the main sources of revenue during the 2021-22 academic year. Approximately 84% of the revenue came from reimbursements through our major financial contributors. The other large portion came from membership dues. There were 2 membership options and they were as follows: $25 with shirt and $15 without for Fall 2021, $20 with shirt and $10 without for Winter 2022, and $15 with shirt and $10 without for Spring 2022. The total revenue for the 2021-22 academic year is $19,435.86.

VI.2. Quarterly Financial Details

Finances for every quarter were tracked according to a financial tracking sheet, of which the first few lines are shown in Table 6. All transactions showed their date, a description, the amount in the account before the transaction, the amount paid or contributed, and the balance in the account after the transaction.

Table 6. Example of Finance Tracking Sheet. Sheet balance is for the summer of 2021 and the first 2 weeks of the Fall 2021 quarter.

Date	Description	Initial Amount	Input/Output	Balance
06/20/21	Starting Amount	$8,551.07	----------	$8,551.07
7/20/21	BMES Nationals - 1 Officer	$8,551.07	$315.00	$8,236.07
9/3/21	BMES Tabling Flyers	$8,236.07	$55.25	$8,180.82
9/16/21	BMES T-Shirt Order	$8,180.82	$1,164.35	$7,016.47
10/9/21	Refunding Ritika	$7,016.47	$25.00	$6,991.47
10/9/21	Bonfire - Social Reimbursements - Kendra	$6,991.47	$57.27	$6,934.20
10/9/21	Bonfire - Social Reimbursements - Yifan	$6,934.20	$39.50	$6,894.70
10/9/21	Membership Wave 1	$6,894.70	$415.00	$7,309.70

VI.2.1. Fall Quarter

The first expense of the academic year was a $315 registration fee per officer for the Annual BMES Meeting. Under normal circumstances, the entire board would have registered for the event and volunteered to substitute the payment for the registration fee. However, due to the uncertainty of the COVID-19 pandemic, not all of our officers decided to attend the conference in person. For those who opted to attend in person, they were reimbursed by National BMES through volunteering and those who opted to attend online were reimbursed by BMES. Following this, the next major expense was flyering to advertise

UCSD BMES to the UCSD student body and the order of BMES membership shirts. Those who opted to be paid members could purchase a shirt for an additional $5. The only other expenses for the quarter include funding for Social's Mentorship Reveal and food for GBMs. Social's Mentorship Reveal was funded by UCSD AS and BMES and cost a total of $623.98. For the second GBM of the year, we opted to serve food and it cost $340.76.

VI.2.2. Winter Quarter

During the Winter Quarter, the major expenses include funding Lab Expo, Translational Medicine Day, Project Team Arduino Workshop, GBM, and fronting the cost for Bioengineering Senior Stoles. Because of last-minute changes in their event due to the evolving situation with COVID-19, Lab Expo was solely funded by the BMES account. It costs approximately $340. Translational Medicine then needed funds for advertising and paying for presenter gifts. Their advertising cost was paid for by UCSD AS and the presenter gifts were paid for by BMES. In total, their event cost approximately $380. In the fall quarter, Project Team hosted an Arduino workshop but were not reimbursed until the Winter Quarter. Once again, we opted to have food at the second GBM of the quarter and it cost $423.46. Finally, the major cost of the Winter Quarter was the cost of stoles for the Bioengineering senior class. BMES is in-charge of ordering and distributing senior stoles. We fronted the $2,804.40 and were reimbursed by those ordering stoles throughout the quarter.

VI.2.3. Spring Quarter

Moving into the Spring Quarter, we continued to be reimbursed by those who ordered senior stoles and would eventually break even. This quarter we also began to receive the money earned through our restaurant fundraising earlier in the year. In total, we made $170 from the three restaurant fundraisers done by Lab Expo and Project Team. Additionally, we hosted a new fundraiser titled 'Pi an Officer' where we profited $216. The final fundraising effort was our annual Officer Auction. This year we decided to evolve it to be an Officer Auction and Fundraiser, and this led to a total of $690.69 being made. In terms of expenses, we had many major events including the Graduate School Series, GBMS, Bioengineering Day, and BMES End of the Year Celebration. The Graduate School Series cost approximately $650 and was funded solely by AS. The final two GBMs had food costs of approximately $375 which was funded by AS and BMES. Bioengineering Day was the biggest expense of the year; where costs were divided among transportation and housing for the keynote, food, advertising and printing, facility reservation fees, prizes, and other miscellaneous costs. The event was funded by AS, IEM, the Bioengineering Department, UCSD UCAB programming funds, and BMES and cost approximately $10,000. Finally, BMES End of the Year Celebration was funded by AS, the Bioengineering Department, and BMES, and cost approximately $1,200.

VI.3. Details on Reimbursement

Reimbursements were kept track of using the financial tracking sheet, as seen in Table 6. The person that was reimbursed as well as the amount can be found on the financial tracking sheet. If a payment for any UCSD BMES related event was made using a payment type other than the BMES Debit, they would be reimbursed only if they submitted a receipt. Receipts were given to the VP Finance and then processed accordingly. Receipts were used to accurately reimburse members as well as for reference for any organization that wishes to audit our financial spending and provide estimates for future potential expenses.

VI.4. Primary Means of Fundraising

VI.4.1. UCSD BMES Paid Membership

Paid membership is BMES' primary means of fundraising. As mentioned above, there were 2 membership options and they were as follows for each quarter: $25 with shirt and $15 without for Fall 2021, $20 with shirt and $10 without for Winter 2022, and $15 with shirt and $10 without for Spring 2022. Incentives were provided to paid members including participation in the mentorship program, applications to project cycles, application to executive and officer board applications, BMES Olympics, and free admission to BMES End of the Year Celebration. When purchasing membership, students would complete the respective google form and coordinate payment options and shirt pickup with the Vice President of Finance.

VI.4.2. Annual Officer Auction/Fundraiser

This year, the annual Officer Auction evolved into an Officer Auction and Fundraiser. When milestone donation amounts, which were decided on by the Executive Board, were reached, officers would participate in a challenge. This challenge could be as small as participating in the spicy noodle challenge or dyeing their hair pink. Some of the challenges included eating a lemon, the spicy noodle challenge, doing a TikTok dance, doing a tap dance, the smoothie challenge, and our presidents dyeing their hair pink. This year our goal was to raise $500, but we surprisingly surpassed that amount and reached a total of $690.69, as previously stated.

VI.4.3. Pi an Officer

Pi an Officer is a new fundraiser that the VP External and VP Finance introduced this year. At the end of our fifth GBM of this year, general members and officers could choose to pie an officer in the face with whip cream as many times as they wanted. A single pie costs $2 and participants could choose unlimited pie-ing for $10. This fundraiser cost $39, but

generated a profit of $216. One of our Bioengineering Day Chair, Bernice Lozada, was pied a total of 26 times.

VI.4.4. Restaurant Fundraisers

Instead of participating in the Vendor Fairs at UCSD, BMES opted to do more restaurant fundraisers to help supplement costs for Lab Expo and Project Team. Lab Expo hosted a fundraiser at the Tapioca Express on campus and raised $40. Project Team hosted fundraisers at the Yogurtworld and Tapioca Express on campus, and made $90 and $40, respectively.

VI.5. Future Finances

Although expenditures this year were more 'normal' to what BMES has seen in the past, not all of our events that are normally held in-person were done in-person. Moving forward into next year, our expenditures are expected to revert to a normalized in-person situation, with most of the in-person costs (e.g. room reservations, the potential for catered food, keynote speakers, etc.) being more prevalent at all of our events. Additionally, we expect that external major contributors will expand their funding guidelines. With all organizations slowly returning in-person, many could not fund our events to the extent that they have in the past. Moving forward, we expect a slow return to normalized funding and spending. To keep track of cash flows in the future, the use of a spreadsheet for streamlining payments, expenditures, and reimbursement processes is highly recommended, especially with cash, Venmo, and major reimbursements being used and done. An example of what the finance tracking spreadsheet can look like is seen in Table 6, where the influx and efflux into the account is monitored and the total balance is tracked. Although there was a marked improvement in clarity in funding management and in transparency to our committees, more can always be done to improve on this.

VII. Chapter Activities

The activities described in this section are the ones hosted entirely or principally by BMES at UC San Diego. These activities are the annual events which are hosted by our organization and which fall into the "event planning" category of officer responsibilities. All involve the endeavors of a committee and months of work to see the realization and success of their efforts. Information regarding other significant activities by BMES at UC San Diego (Outreach, Social, etc) can be found in subsequent sections.

VII.1. Lab Expo

Audience: *All UC San Diego undergraduates, graduate students, faculty members, staff, and the general public who are passionate about research of many disciplines and scientific advocacy*

Lab Expo 2022 marks the 11th iteration of our chapter's campus-wide research symposium, for undergraduates, by undergraduates. Our event begins with the Lab Expo Graduate Showdown (LEGS), a lightning talk competition between graduate students, followed by a keynote presentation, a networking session, and a poster session featuring posters from undergraduates and graduate students. Lab Expo's mission is three-fold, to develop scientific literacy, promote interdisciplinary collaboration, and encourage scientific advocacy. This year, we emphasized diversity in research, aiming to spotlight diverse, interdisciplinary research being done around campus, and also aimed to inspire our attendees to get involved in research and help bridge the gap between students and presenting PIs or grad students.

As with every year, our event grants undergraduate attendees a great opportunity to learn more about the cutting-edge research being done at UCSD and potentially even get involved in a lab or research group. For our presenters, Lab Expo provides them with an opportunity to present their research in a non-stressful environment and engage with the undergraduate community. Similar to initiatives we have taken in the past two years, we encouraged more undergraduates to aim to present the research that they have been working so hard on, providing them with an opportunity to hone their presentational skills and receive feedback on the work they have been doing. Our event would not have been

possible without our Lab Expo committee, who also gained great experience from helping organize the event. Members gained valuable professional skills, such as professional email writing, elevator pitches, communication, as well as teamwork and camaraderie. We are very proud to have inspired a new generation of Lab Expo leadership and we are excited to see where they take the event next year.

To gather interest and advertise the Lab Expo, we collaborated with the prominent engineering society, Tau Beta Pi, on a COVID-19 Research panel consisting of Professors and researchers conducting groundbreaking research on COVID-19. Each panelist was able to share their knowledge conducting research on the virus while answering questions from the attendees. Overall, the event garnered significant interest for Lab Expo while informing attendees on current COVID-19 research efforts.

As aforementioned, a theme we decided to integrate into our event this year was emphasizing diversity and inspiring attendees to get involved in research. We featured Dr. John Newsam, CEO of Tioga Research, a local company that supports skin formulations research, as the keynote speaker. He spoke about his background in research, his personal experiences, and his advice for the upcoming generation of researchers in an informative and engaging talk. We also continued our Lab Expo Graduate Showdown lightning talk competition, which prompted our 6 graduate student contestants to present their research in a clear and understandable manner under 3 minutes. Lastly, we collaborated with some on-campus student resources to offer presentation feedback to poster presenters. Evaluations were based on communication and clarity rather than content, so as to help the presenters develop more effective ways of explaining their work. In the end, while attendance was slightly lower than in previous years, our attendees and presenters have noted that they were much more satisfied with their overall experience at this year's Lab Expo.

Lab Expo x Tau Beta Pi COVID Panel	*11/29/2021* 4:00 PM - 5:00 PM	*Total attendance:* 25	Cost: $0
Lab Expo 2022	*01/14/2022* 10:00 AM - 4:45 PM	*Total attendance:* 450 (419 attendees, 31 presenters)	Cost: $342.96

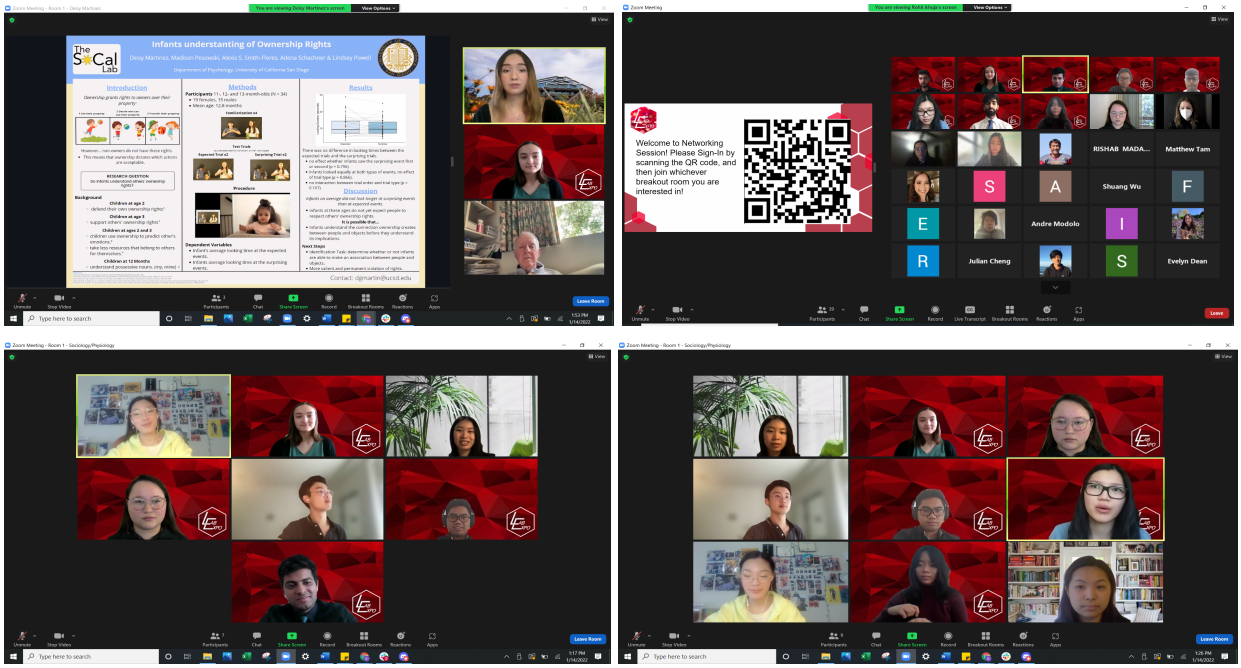


Figure 9. Photos from the Lab Expo 2022 event, occurring via Zoom on January 14th, 2022.

VII.2. Translational Medicine Day

Audience: *Primarily, UCSD students who are interested in Translational medicine and bioengineering. Secondarily, UCSD graduate and medical school students* .

Translational Medicine Day (TMD) brings together renowned researchers, industry experts, and students to celebrate the frontiers of translational medicine and highlight the interdisciplinary field of translational medicine. This year, Translational Medicine Day 2022 featured six different events: Keynote Speaker, Industry Demonstrations, MD/PhD Panel, Start-Ups Panel, Ethics Panel, and Networking Reception. This year's keynote speaker was Dr. William Schief, a Professor in the Immunology and Microbial Science Department at The Scripps Research Institute in La Jolla, CA, Director for Vaccine Design at the International AIDS Vaccine Initiative (IAVI), and an Associate Member of the Ragon Institute of MGH, MIT, and Harvard.

Each event in the program focused on a specific aspect of translational medicine to appeal

to the audience of varied interests. During the Industry Demonstrations, attendees interested in the biotechnology industry were able to meet and converse with representatives from four companies, including Allele Biotech and Medtronic. The MD/PhD Admissions Panel gave an overview of programs from UCSD, UCB, UCSF, Loma Linda University, and UCI, highlighting how this degree equips physician-scientists in their translational research careers. The Start-Ups Panel featured startups in various stages of development, illustrating the various possible paths in which new ideas can be introduced into the market. Lastly, our Ethics Panel focused on the ethical challenges of clinical trials. In the middle of the event, we had our hour-long networking reception, during which presenters and attendees chatted in Zoom breakout rooms in a closer-knit setting.

Due to the holistic nature of the event, there is something for everyone to gain from Translational Medicine Day. Guests of all backgrounds, from presenters to attendees, had the opportunity to learn about the latest updates in car careers, research and ethics. Additionally, due to the event's remote format, guests were able to hear from people and schools across California that are difficult to bring to in person events. Furthermore, guests have the opportunities to forge professional relationships throughout the event, and especially at the networking reception, as conversations amongst presenters or discussions with participants provide an opportunity for presenters to showcase their work and gain new insights.

From August 2021 to March 2022, the TMD Committee met weekly to plan the event, using committee meetings to consult with potential presenters, design and advertise branded materials, and plan logistics. From this planning process, it becomes apparent that the committee members also gain great benefits from TMD in the form of valuable leadership and planning skills as they each led the individual sessions that they were in charge of. As a result of their professional growth, the TMD Committee members become a crucial task force that contribute to the success of the event.

While TMD 2022 was originally planned to be an in-person event, a sudden surge in COVID-19 cases and an increase in on-campus limitations prompted an abrupt switch to an online, Zoom-based event. Even though we had hoped for a return to in-person activities, the virtual event format offered benefits including reduced event costs, ease of access to all attendees, and the ability to recruit both presenters and attendees from outside of the San Diego region.

We are proud to say that many attendees learned from and enjoyed Translational Medicine Day 2022. Characterized by an incredible feat of adaptability during the ongoing pandemic, this annual event is another example of success for BMES at UC San Diego.

Translational Medicine Day 2022	*03/04/2022* 10:00AM – 4:00 PM	*Total attendance:* 55 (35 attendees, 20 presenters)	Cost: $500

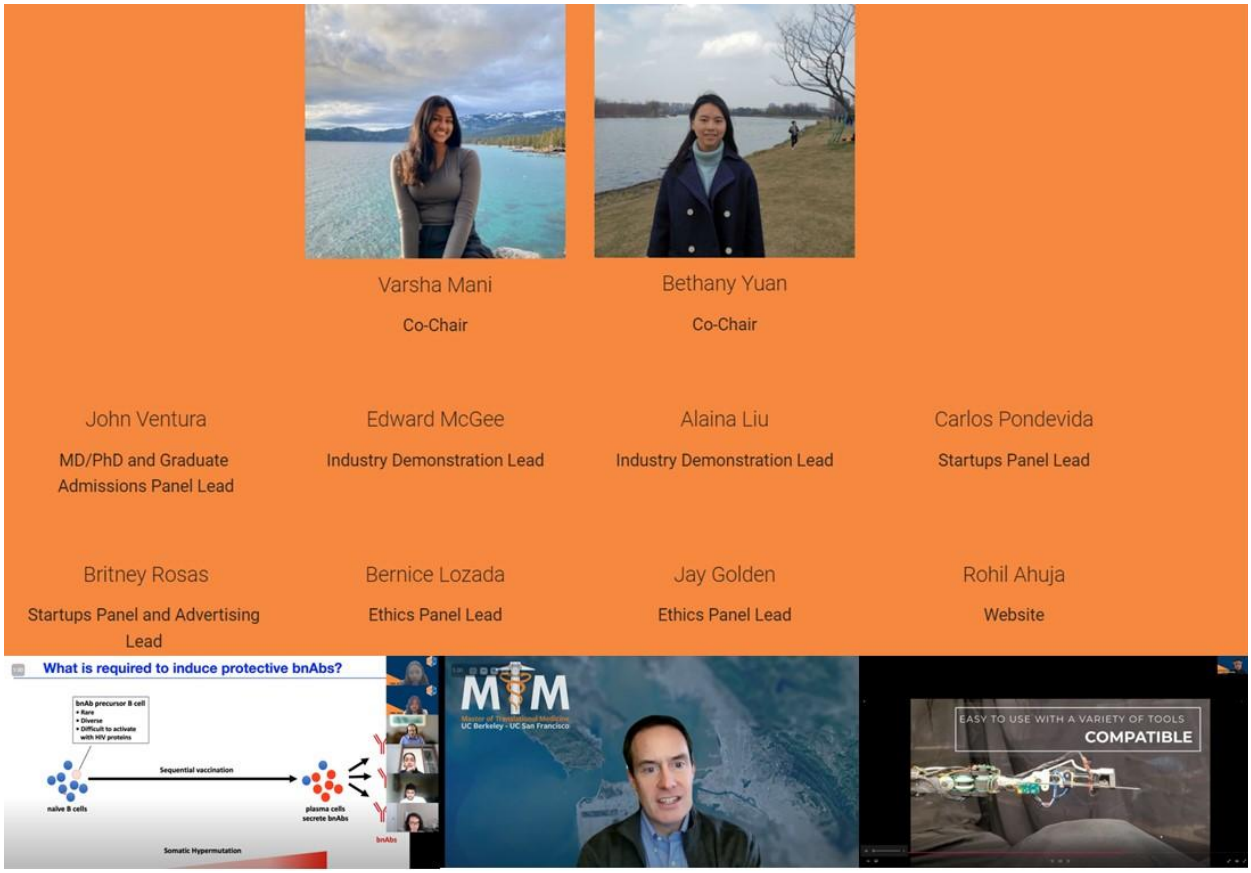
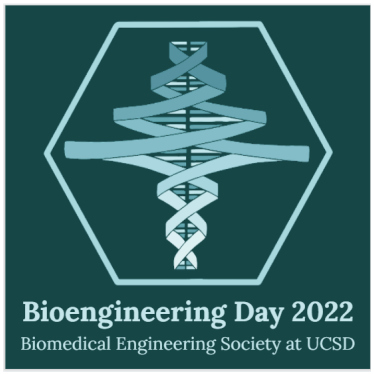


Figure 10. (Top) Screenshot of the TMD Committee from the TMD 2022 Website. (Bottom) Screenshots from TMD 2022.

Link to TMD 2022 Website: https://sites.google.com/ucsd.edu/tmd2022/home

VII.3. Bioengineering Day



Audience: *Primarily, UC San Diego undergraduate students interested in bioengineering. Secondarily, UCSD faculty and staff, industry members, UCSD graduate and medical school students, students from community colleges, high school, and other universities, and friends and family of presenting seniors.*
Presenters: *UCSD bioengineering seniors, bioengineering industry members, bioengineering graduate students, bioengineering-related student organization members, visiting professors.*

Bioengineering Day (BE Day) is the largest annual bioengineering event at UC San Diego (UCSD), showcasing the excellence of the UCSD Bioengineering Department, student-led research essential to the program, and presenters from both academia and industry in the field of bioengineering. The event centers around the Senior Design projects where graduating student teams present their research or innovative projects completed under faculty mentorship to inspire Juniors. BE Day also offers the opportunity for students to network with experts in bioengineering through Industry and Graduate Student Demonstrations and a Networking Lunch. Our theme for BE Day 2022 was "Bridging the Boundaries in Bioengineering", with our goal being to highlight the interdisciplinary nature of bioengineering by showcasing the various specializations of successful bioengineers. To do so, presenters without a bioengineering undergraduate background were selected for the presentation components outside of the Senior Design projects (e.g. keynote speaker, industry representatives, and graduate student presenters). We also attempted to diversify our audience and reach out to non-bioengineering undergraduate students interested in the field by advertising in the newsletters and websites of eight other departments outside of the Bioengineering department, including the Chemistry & Biochemistry, Mechanical & Aerospace Engineering, Nanoengineering, Chemical Engineering, and Public Health departments.

The Bioengineering Day 2022 Committee consisted of sixteen members who helped make our vision a reality by focusing on one aspect of the event each: Keynote Speaker, Poster Sessions, Industry and Graduate Student Demonstrations, Social and Networking Lunch, Quizbowl, Poster Judges, Media Design and Advertising, Finance, and Website. Though

our committee structure remained the same as last year, the Website created by our Website lead shifted from being the main venue of our event to being supplementary advertising material and information for judges and attendees. Included in the sixteen members were the two Co-Chairs, Arnav Tayal and Bernice Lozada, who oversaw event design and planning, were the primary liaisons between the committee and the Bioengineering Department, made sure all of the members were completing their tasks, and filled in any gaps in order for the event to run as smoothly as possible. Delegation and organization on the part of the Co-Chairs made BE Day 2022 very successful. Our committee met every other week from October to December 2021, then every week from January 2022 to one week after our event was completed. The meetings were primarily meant for updates and troubleshooting, as a checklist for each Lead position was created during the summer to allow our members to stay on top of assignments. To keep committee members engaged, we allowed our Social Leads to host two social events per quarter that strengthened our bonds as friends on the same committee.

With Bioengineering Day 2022 being the first large in-person event hosted by BMES since Lab Expo in 2020, we faced some challenges during the planning process. One main challenge was the venue of our event. Though we originally had two ballrooms at UCSD's Price Center booked, we had to downscale our event to one room since UCSD continued to use one of the ballrooms for COVID-19 testing and vaccination. With the help of University Centers staff, we successfully restructured the layout of the venue to make the flow of people between events in one room as cohesive as possible. We also wanted to make this event a safe experience for our attendees in the midst of a pandemic. To do so, we observed UCSD's COVID event safety guidelines and required masks except when eating and drinking, kept a record of all attendees for two weeks if needed for COVID tracing measures, and used a Symptom Screener Tool to prevent symptomatic people from attending the event.

After opening remarks, the first event of the day was the Keynote presentation given by Dr. Jay Rubinstein, Professor of Otolaryngology and Bioengineering at the University of Washington. His presentation was titled "Translational Bioengineering of the Inner Ear: One Person's Career Path" because Dr. Rubinstein is a renowned bioengineer with a non-traditional background, as he holds bachelors and masters degrees in Electrical Engineering and Neuroscience, as well as an MD and a PhD in bioengineering from the University of Washington. Two Poster Sessions were held in the morning and afternoon. The morning poster session had 20 teams present, and the afternoon session had 17 teams present their work. Additionally, we were fortunate to have the winning capstone project team from Purdue University present at our afternoon poster session thanks to a generous contribution from Dr. John Watson. The students shared their unique design projects with industry, faculty, students, and other guests. This was an opportunity for the Senior Design Judges to observe and evaluate their performance and innovation, which impacts UCSD's Bioengineering ABET accreditation and prize determination. Lunch this year was

catered by Mendocino Farms, who provided us with a wide variety of gourmet sandwiches. 14 professionals, students, and community members were able to meet and converse about any aspect of their careers and experiences. For the Industry and Graduate Student Demonstrations, we had industry representatives from three companies and six graduate students present their research during two separate sessions to expose students to possible future paths after graduation. After a short break for refreshments provided by Tara Heather Cake Design, Bioengineering Day 2022 quickly resumed with the Quizbowl Showcase Game where the first-place undergraduate team faced off against the guest graduate student team for prestige. The closing Awards Ceremony allowed senior design award winners and honorable mentions to be acknowledged for their efforts.

Bioengineering Day 2022 had 456 people register through Eventbrite and a total of 484 confirmed attendees. With Bioengineering Day 2022 being the first large in-person event hosted by BMES in two years, the large attendance is a promising sign of returning to normal. For the Poster Prizes, there were four award categories: Best Overall Poster, Most Innovative Project, Best Attention to Detail, and Best in Communication. Four teams won monetary prizes for each category and were also featured on our website. We were also able to award three monetary Quiz Bowl prizes (1st: $200, 2nd: $100, and 3rd: $50) for the top three undergraduate teams. We are grateful that so many people attended BE Day 2022 and were recognized for their outstanding work.

Bioengineering Day 2022	*04/22/2022* 8:30AM – 5:15 PM	*Total attendance: 484* (6 BioE Alumni, 26 BioE Staff and Faculty, 25 Graduate Students, 12 Industry, 131 Juniors, 138 Seniors, 12 Community Members, 1 High School Student, 133 Other Undergrad)	Cost: $9,370.46

Table 7. Summary of Senior Design Project Awards for BE Day 2022

Best Overall Poster		
Prize $200: Team 4, Tissue Engineered Lymph Node		
Most Innovative Project	**Best Attention to Detail**	**Best in Communication**
Prize $100: Team 27, Early Detection Model for Miscarriages	**Prize $100:** Team 12 3D Printed Bioresorbable Tracheal Stents	**Prize $100:** Group 32, TruFlo-X: Automated Fluid Delivery

Figure 11. Images from Bioengineering Day 2022

VII.4. The Bioengineering Experience

Audience: *Students in bioengineering who want to learn more about their major or any student interested in bioengineering.*

The Bioengineering Experience (BEEX), an event hosted by the New Student Committee, is aimed at giving bioengineering students a sense of what they can accomplish with their major during their time as an undergraduate student and beyond. The event began with a keynote speech by Dr. Shankar Subramaniam, a Distinguished Professor of Bioengineering

at UCSD. In his speech, he gave his perspective on each of the four bioengineering concentrations in the Department of Bioengineering at UCSD. This was followed by a split-topic panel of UCSD alumni in both academia and industry as they shared their own experiences in bioengineering. From BS/MS and PhD students to students working at start-ups or big companies, this event is a great opportunity to hear about how each concentration translates to a future career in the field of bioengineering.

The Bioengineering Experience	*05/09/2022* 5:00 – 6:30 PM	*Total Attendance:* 34	Cost: $0

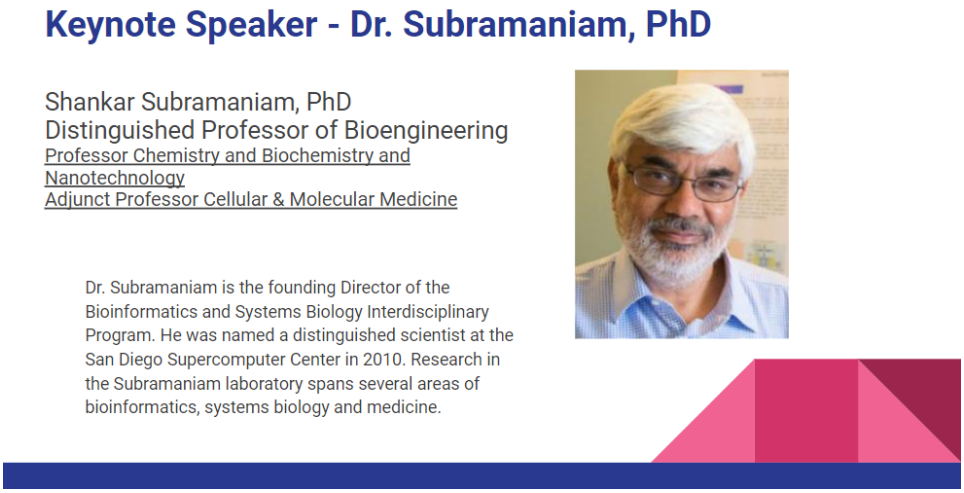


Figure 12. Screenshot of the introductory slide for Dr. Subramaniam, the keynote speaker.

VIII. Social or Other Activities

Though our member base is often very academic, they are also eager to be social! Hosting social events throughout the year is critical to enhancing the student undergraduate experience and allowing them opportunities to destress and make new friends. Many of our social events are hosted by our Social Chairs, who hosted bonfires and beach days at the beginning of our in-person Fall and Spring Quarters. Additionally, they hosted many online socials during times when in-person events were less feasible due to COVID-19 concerns. Desires for academic and social events were combined in quarterly study socials, which brought members together to allow them to study in the company of other hard-working individuals. All of these social events helped rebuild the community of BMES at UC San Diego together during a time of continued uncertainty from the COVID-19 pandemic.

In addition to chapter-wide socials, our committees also hosted socials amongst themselves to promote a sense of fellowship amongst their committee members. The Bioengineering Day committee hosted many socials throughout the year, as did Project Team. One social is an annual tradition between the Bioengineering Day and Lab Expo committees who host BE ThanXPO, a friendsgiving-style event that helps promote intra-committee bonding. These socials are important to committees, as when a committee is friendly with each other, their members are more likely to help each other out when the need arises.

VIII.1. BMES Bonfire Kickoff

Fall 2021 was the first time that many of us returned to campus since March 2020, and it was also the time that BMES was recruiting new members. To welcome back both new and old members alike, we hosted a Bonfire Kickoff event at the beach. Participants got together, roasted some marshmallows and hotdogs, and made fun memories.

BMES Bonfire	*9/24/2021*	*Total Attendance:* 20	Cost: $70

VIII.2. BMES Goes Hiking

Bioengineers don't just sit at a computer all day, we also like to get up and move! Participants joined our Social Chairs on a hike at one of the local hiking attractions: Annie's Canyon. There, they got some fresh air and experienced the narrow but beautiful sandstone walls that line the highlight of the hike.

BMES Goes Hiking	*10/17/2021*	*Total Attendance:* 10	Cost: $20

VIII.3. Tetris Tournament

Making a comeback from the previous year was a Tetris Tournament! Something about the old-timey game gets people excited for a competition. Participants raced in an online site to clear the most number of lines, and clearing lines in a certain way could even add difficulty to their opponents!

BMES Tetris Tournament	*10/31/2021*	*Total Attendance:* 5	Cost: $0

VIII.4. Fall Study Social

In a spirit of community, BMES likes to come together to study for finals at the end of the quarter with the Fall Study Social. Participants sat in the library together and worked on whatever it may be they had that quarter, from fluid dynamics to calculus, and even graduate school applications. A sense of comradery in working hard helps our members get their work done in this both social and academic event.

BMES Fall Study Social	*12/4/2021 & 12/5/2021*	*Total Attendance:* 10	Cost: $0

VIII.5. Biorender Social

Scientific communication is important, and a picture is worth a thousand words! Participants at the Biorender Social used the popular Biorender scientific figure design website to create fun and scientific-related images.

BMES Biorender Social	*3/6/2022*	*Total Attendance:* 5	Cost: $0

VIII.6. Winter Study Social

Once again coming together to get work done, members joined our Social Chairs for some yummy study snacks in a study room on campus. Attendees sat around tables together to use the sense of comradery to get their work done and study for their finals in the upcoming week. Many of them were not even in the same classes, and yet all participants helped others out where they could.

Winter Study Social	*3/13/2022*	*Total Attendance:* 20	Cost: $70

VIII.7. Welcome Back: BMES Beach Day

After a mostly virtual Winter Quarter, it was time for BMES to once again see each other in person! Utilizing the year-round pleasant weather in San Diego, another social event occurred at the beach! Attendees soaked up the San Diego sun, ate snacks, and enjoyed each other's company in this fun social event.

Welcome Back: BMES Beach Day	*4/9/2021*	*Total Attendance:* 20	Cost: $60

VIII.8. Committee Socials

Audience: *Members of various BMES at UC San Diego committees*

Throughout the year, committees of BMES at UC San Diego will host socials to promote committee fellowship. These socials are also open to others outside of the committee hosting it as well. All committee socials incur no costs paid by BMES.

Event Name	Date and Time	Attendance
Bioengineering Day X Lab Expo Friendsgiving (BE ThanXPO)	11/20/2021 6:00 PM - 9:00 PM	29
BE Day Scribbl.io Social	1/29/2022 7:00 PM - 8:00 PM	8
BE Day UTC Boba Social	3/11/2022 4:30 PM - 6:00 PM	6
Project Team Chipotle Social	4/10/2022 11:00 AM - 3:00 PM	12
Post- BE Day Reception	4/23/2022 6:00 PM - 9:00 PM	18
BE Day UTC Boba Social #2	5/27/2022 5:30 PM - 7:00 PM	9

Figure 13. Image from the BE Day UTC Boba Social #1.

IX. Inter-Chapter Activities

The 2021-22 Academic Year was a particularly fruitful one when it comes to inter-chapter activities between BMES at UC San Diego and other BMES chapters. Starting in the Fall Quarter/ Semester, our chapter established a year-long collaboration with the Purdue BMES team, as well as an associated student club called MIND. This collaboration resulted in multiple events, including panels, workshops, and socials, and ended with the winning senior design team from Purdue University flying out to San Diego to present at our annual Bioengineering Day. Never before have we had such a long-standing collaboration, and from it we were able to build a network between the two chapters that we could use to enhance the undergraduate experience of students at both universities. Purdue was not the only BMES chapter that we had contact with this year, as our Outreach Committee spearheaded a collaborative panel event with two BMES chapters: UC Riverside and UC Davis. Their efforts were able to combine information for an outreach event for high school students interested in majoring in bioengineering at college and improve the amount of information all of our chapters were able to offer at such an event. While these two main collaborations capture the largest of our inter-chapter activities, it is worthwhile to note that we had contact with other chapters as well. Notably, when the chapters of Rice BMES and University of Southern California BMES asked us to advertise their online hackathons to our students, we were much obliged to do so to build a sense of community between our chapter and theirs. It is not only the large events that connect our chapter with others, but the small acts of kindness that forge the network between BMES chapters.

IX.1. Bioengineering at the UCs

Audience: High School Students Interested in College
Volunteers: BMES at UC San Diego Outreach Committee, UC Riverside BMES Members, & UC Davis BMES Members

Created by the Outreach Committee, the Bioengineering at the UCs events was the largest virtual event that Outreach hosted in the Winter 2022 Quarter and was a collaboration with the BMES chapters at UC Riverside (UCR) and UC Davis. This event aimed to reach out to high school seniors at schools throughout California and introduce them to the various bioengineering programs offered at the University of California colleges. In the first of two segments of the event, there was a presentation portion where the presenters explained the bioengineering major and the different branches of bioengineering offered at some of the UC's, and we gave the students in depth explanations of the industry and academia pathways after graduation. The second segment was a student panel with students from UCSD and UCR, where the students asked many questions about the bioengineering career, different research and industry opportunities and how to find them, and college life in general. From this event, high school students gained advice on how to

navigate their time at college as a bioengineer, with greater expertise and knowledge than any one chapter alone can offer as a result of the inter-UC collaboration.

Bioengineering at the UCs	*02/20/2022* 1:00 - 2:00 PM	*Total Attendance*: 32 9 Volunteers 23 Attendees	Cost: $0

Figure 14. Screenshot of the introductory slide for the student panel.

IX.2. Purdue - UCSD Collaboration

This year we formed a connection with the BMES chapter at Purdue University as well as Medical Innovation, Networking, and Design (MIND), another student organization at Purdue. This collaboration was catalyzed by Dr. John Watson, who received an honorarium and generously donated it to both Purdue and UCSD student organizations. With this collaboration, we hosted two panels. a professional development workshop, and a social. Additionally, Purdue's winning Senior Design team flew out to present their research at Bioengineering Day 2022 (see Section VII.3). The total cost for transportation and hotel was $3922.86. This trip was the culmination of this year-long collaboration and it was a great experience to hear from students across the country and learn about our peers' project.

IX.2.1. Purdue-UCSD Alumni Industry Panel

This online panel aimed to illustrate to the audience of undergraduates from both Purdue University and UCSD where a career in the bioengineering industry can lead. We hosted two alumni panelists from each student organization with six total panelists. Questions were taken from the audience and the panelists offered their perspectives on each of the topics.

Purdue-UCSD Alumni Industry Panel	*10/16/2021* 11:30 AM - 1:00 PM PST	*Total Attendance*: 39	Cost: $0

IX.2.2. Purdue-UCSD Academia Panel

Similar to the Industry panel, this online panel served to show the undergraduate attendees what a career in academia can be. There were two panelists each from Purdue University and UCSD for a total of four panelists. Questions were taken from the audience and the panelists offered their perspectives on each of the topics.

Purdue-UCSD Academia Panel	*11/20/2021* 11:30 AM - 1:00 PM PST	*Total Attendance*: 33	Cost: $0

IX.2.3. Personal Branding Workshop

This online workshop was a fantastic opportunity for undergraduate attendees to discover their existing personal brand and then learn to shape it the way they wanted to present themselves. After an interactive presentation, the attendees started to create a personal website.

Personal Branding Workshop	*2/26/2022* 3:00 PM ET	*Total Attendance*: 14	Cost: $0

IX.2.4. Skribbl.io Social

To end our collaboration events with the bioengineering student organizations at Purdue University, we held a casual game night social and played Skribbl.io.

Skribbl.io Social	*3/29/2022* 5:30 PM PST	*Total Attendance*: 5	Cost: $0

X. Outreach Activities

The UCSD BMES Outreach Committee is committed to advocating for STEM education within the San Diego community, and taking advantage of the virtual format from the past couple of years, we have been able to extend our outreach efforts to other regions of California outside of San Diego. Furthermore, with pandemic tolls being on the decline this past year, we were able to transition into more involved in-person events for our community members to participate in.

This year, our mission was to make bioengineering digestible and accessible to people of all ages and backgrounds, especially to those who come from marginalized communities. We strived to teach others how to apply bioengineering techniques to improve livelihoods and provide unique solutions to life's challenges. Our Outreach activities this year were geared towards K-12 STEM education, but it also expanded to educating and uplifting minorities who share a passion for STEM and want to pursue bioengineering in the future.

The main goals of the Outreach Committee are to create science and engineering demonstrations for children, organize informational workshops and panels for high schoolers, and volunteer at STEM events in the local San Diego community. The committee held virtual presentations and student panels catered towards prospective college students, such as "College Conversations" and "Bioengineering at UCs". The Outreach committee started off the year with planning and hosting "College Conversations", an informational advising session targeted towards high school students about college applications and university life. Committee members reached out to both their local high schools as well as other schools throughout the US. We further benefited from the online formatting at our second virtual event, "Bioengineering at UCs" (Section IX.1.), where we highlighted the bioengineering and biomedical engineering departments in the University of California universities specifically. We were able to closely collaborate with UC Riverside and UC Davis, who helped us engage in extensive outreach to the Irvine and Bay areas.

The Outreach Committee annually volunteers for "Light the Night" and the "San Diego Festival of Science and Engineering" (SDFSE), two major public events in San Diego. During weekly committee meetings throughout the year, the Outreach Committee designed and assembled a respiratory system demonstration which consisted of a model of the lungs. This model was presented at a demonstration booth at the SDFSE festival to show kids how the diaphragm helps our lungs breathe. Additionally, we incorporated this demonstration into a virtual workshop collaboration with EDGE, a program for highschool girls in STEM, where we supplemented it with a problem-solving workshop about the respiratory system using the assembled model to make it more catered toward high schoolers.

Overall, the Outreach committee ran into many problems with student engagement at our virtual events, as well as reaching out to coordinators for our major in-person events like

SDFSE due to the uncertainty of in-person events during the pandemic. Regardless of whom we were able to track down to advertise our outreach initiatives, it seemed that our efforts were ignored or neglected. Despite being one year into the pandemic with everyone becoming accustomed to the virtual format, it did not make it any easier to motivate students to participate in academic events in their pastime. Despite these challenges, we were able to garner enough interest through our master list of contact information of various highschools and middle schools around San Diego, as well as outside help from other students and UC's who were able to publicize to their contacts as well. We found great success in our virtual and in-person events this year, and we are eager to see what the Outreach Committee is able to accomplish next year.

X.1. College Conversations

Audience: *High School Students Interested in College*
Volunteers: *BMES Outreach Committee Members & BMES Officers*

During the Fall Quarter, the Outreach Committee continued our ongoing College Conversations series where we hosted a presentation and Q&A session geared towards answering any questions high school students might have about the college application process or university life in general. Volunteers from the committee co-hosted an hour-long zoom meeting which included information about topics ranging from the UC application to an in-depth analysis of the four Bioengineering tracks at UC San Diego. Presenters would share their experiences about their respective tracks, their research and industry opportunities and college life experiences thus far. Prior to this presentation, committee members would reach out to their respective high schools which included institutions across the country. This installment of College Conversations was attended by 10 high school students and a total of 15 students filled out the interest form.

College Conversations	*11/07/2021* 1:00 - 2:00 PM	*Total Attendance*: 14 4 Volunteers 10 High School Students	Cost: $0

Figure 15. College Conversations advertisement banner.

X.2. Light the Night

Audience: *Attendees of Light the Night - San Diego 2021*
Volunteers*: All BMES Members*

In the Fall, the Outreach Committee gathered volunteers from our BMES chapter to help the Leukemia and Lymphoma Society's annual Light the Night fundraiser. Our BMES chapter's participation at this fundraiser is a tradition, and it is the first in-person chapter wide event since the start of the pandemic. Our members made up a large portion of the volunteer group, and organizers from the Leukemia and Lymphoma Society are dependent on us to ensure the event runs smoothly. The purpose of this event is to promote the organization's mission to spread awareness about the impact of cancer and to raise funds towards research for potential cures for blood cancers. Light the Night is a key event for both the committee and general members as it showcases Outreach's aim to help others in need with the resources available to us. The individuals who helped out also were able to talk to event goers and hear their personal stories about their fight with blood cancer. Volunteers had the option to lend a hand for the afternoon or for the whole day, and it was a great bonding experience for everyone involved. Following the event, the Leukemia and Lymphoma society extended their gratitude for our help at the event.

Light the Night Volunteering	*11/06/2021* 9:00 - 9:00 PM	*Total Attendance:* 31 Volunteers	Cost: $80

Figure 16. Photo of the volunteers from BMES at UC San Diego at Light the Night 2021.

X.3. SDFSE: Lung Demonstration

Audience: *Attendees of the San Diego Festival of Science and Engineering 2022*
Volunteers: *BMES Outreach Committee & BMES Officers*

The Outreach Committee spent several weeks during the winter to brainstorm our idea and design for the respiratory system demonstration, and we gathered our supplies and assembled our lung model with our accompanying poster throughout the month of April. Our final demonstration consisted of a glass bottle representing the chest cavity which contained tubes and balloons inside to mimic the bronchi and lungs. A swim cap was used to represent the diaphragm, and when it is pulled down you can see the balloons inflate inside to demonstrate inhalation. The poster contains fun facts about the lungs as well as three problems about the respiratory system catered towards older high school students to teach them about the applications of bioengineering.

Prior to the event, our volunteers worked with the event coordinators for SDFSE to help prepare the sponsors, set up demonstration booths, and facilitate event parking. During the event, half of the volunteers helped guide attendees throughout the event and facilitate event parking, and the other half of our volunteers stood at our booth to demonstrate our model for children and students. Since our organization members made up a large portion of the total volunteers, the SDFSE coordinators and sponsors expressed immense gratitude for our help at the event.

SDFSE Volunteering and Demonstration	*05/01/2022* 9:00am - 3:00 PM	*Total Attendance:* 16 Volunteers	Cost: $186.98

Figure 17. Volunteers from the Outreach Committee showing off their lung demonstration at SDFSE.

X.4. EDGE x BMES

Audience: *High School Students*
Volunteers: *UCSD BMES Outreach Committee & BMES Officers*

The UCSD chapter of the Society of Women Engineers (SWE) and Women in Computing (WIC) hosts a yearly mentorship program called EDGE (Empowerment and Development for Girls in Engineering) aimed at encouraging young girls to pursue opportunities in engineering and STEM-related careers. For the second year, the Outreach Committee hosted a workshop for their program to teach women and girls about the field of bioengineering and its prospects. This two hour workshop was separated into three segments: a presentation portion about the bioengineering major at UCSD and various research applied to women's health, a workshop portion about our previous lung demonstration that walks through 4 different bioengineering problems applied to the respiratory system, and finally a student panel portion highlighting four women in bioengineering who study the four different tracks of bioengineering at UCSD, respectively.

EDGE Bioengineering Workshop	*05/07/2022* 1:00 - 3:00 PM	*Total Attendance:* 23 6 Volunteers 17 attendees	Cost: $0

XI. Mentoring Activities

The Mentorship Program is one of the most exciting opportunities that BMES at UC San Diego has to offer its members, and our greatest incentive for individuals to join our paid membership. Through this program, one upperclassmen mentor is paired with one or more underclass mentees to represent a mentorship group. Each mentorship group is also part of a larger mentorship family, made up of multiple mentorship groups. These three families are named after 3 of the most influential founding or early members of the UCSD Bioengineering Department, Y.C. Fung, Benjamin Zweifach, and Marcos Intaglietta. Through this family system, the Mentorship Program promotes a sense of community and family competition that encourages participants to hang out and earn family points to win the family competition at the end of the school year. This year a total of 70 members participated in the Mentorship Program.

The Mentorship Program hosts many activities, starting out with Mentor-Mentee Speed Dating, which helps inform the pairings of mentors and mentees that occur for the Mentorship Reveal. Mentorship groups are encouraged to hang out throughout the year and are offered challenges to incentivize their hangouts, either social or professional. The year of family competition is closed out at the Mentorship Olympics to conclude the year of fun, friendly family competition.

In addition to the traditional Mentorship Program that we offer every year, this year we partnered with the Bioengineering Graduate Society (BEGS) at UC San Diego to provide our members a chance to learn from graduate students. This program was especially helpful for undergraduate students looking to apply to graduate school.

XI.1. Mentor-Mentee Speed Dating

As the school year began and the Mentorship Program was introduced to new and old members of BMES at UC San Diego, two Mentor Mentee Speed Dating events occurred. These events were designed to allow potential mentees to meet their potential mentors in a fun, fast-paced environment. Mentees-to-be answered a series of get-to-know-you questions with a potential mentor, then switched rooms. From this event, mentees could request upperclassmen they met as mentors in order to make the best matches possible for the upcoming Mentorship Reveal. Both of these events occurred online.

Mentor Mentee Speed Dating #1	*10/13/2021*	*Total Attendance:* 20	Cost: $0
Mentor Mentee Speed Dating #2	*10/21/2021*	*Total Attendance:* 5	Cost: $0

XI.2. Mentorship Reveal

The first truly large-scale mentorship event of the year was the Mentorship Reveal. This exciting event brought together all of the participants of the mentorship program and introduced the mentees to the upperclassmen that would be their mentor for their entire year, as well as which mentorship family they would be a part of. Mentors and mentees played a game to figure out who their mentor was, also allowing all students a chance to meet each other in the process. Then, mentors and mentees, alongside their newly formed family, had the chance to bond over free food and in a series of family versus family games. This event is critical to establishing the bonds between mentor and mentee and sets the tone for mentorship for the whole school year.

Mentorship Reveal	*10/31/2021*	*Total Attendance:* 50	Cost: $70

XI.3. Mentorship Group Meetups and Challenges

Throughout the year, mentorship pairings were encouraged to talk and meet up, either for social outings or for professional advice. For this, BINGO challenges were occasionally sent out to give ideas of activities that mentorship pairs could do together, while incentivising these hangouts with family points. Mentorship groups could meet up either virtually or in-person, as current COVID-19 guidelines permitted. Group meetups would be posted on a Facebook group to allow their hangouts to count for family points. Other participants were encouraged to comment on and react to the posts to promote a sense of community amongst family and also a sense of friendly rivalry between mentorship families.

Figure 18. Example of the Fall Mentorship Bingo. Groups would post their completed challenges to an online Facebook group to receive points and allow others to interact with their posts.

Figure 19. Example photos from 3 mentorship groups, representing each of the three mentorship families. These images were shared on the Facebook mentorship page.

XI.3. Mentorship Olympics

To end the year of family competition on a high note, the Social Chairs hosted the Mentorship Olympics. This thrilling, competition-style event pitted the three mentorship families against each other in a series of games. Participants had to race through an inflatable obstacle course to find cards to make the correct sum or race in a three legged race to construct an image of our co-president's face. One last sunny day of family fun helped close out the Mentorship Program for the 2021-2022 school year and allowed our members a time to relax as the end of the quarter drew near.

Mentorship Olympics	*5/29/2022*	*Total Attendance:* 20	Cost: $500

Figure 20. A fun afternoon in the sun! Image of some of the participants at the Mentorship Olympics with the inflatable obstacle course.

XI.4. Graduate-Undergraduate Mentorship Program with the Bioengineering Graduate Society

Graduate students were grouped with one or two undergraduates to help them learn about graduate school, decide where to apply, and edit their application statements. The program started in the beginning of Fall 2021 and ended mid-Winter 2022 after decisions regarding graduate school admission were released. Both professional and social activities within the program took place to solidify the group bonds and facilitate communication. There were 20 undergraduate students and 16 graduate students who participated in this program. Costs for this program were $160, though this cost was assumed by BEGS.

XII. Industry and Professional Development Activities

BMES at UC San Diego is first and foremost committed to enhancing the undergraduate education and experience of our members, and for this we provide them with a variety of industry and professional development activities. These activities are meant to supplement the experiences gained during courses through introduction to critical technical skills by the Project Team, access to faculty - sponsored research projects, and hosting fascinating speeches by current upperclassmen in their BE-Inspired and BE-Informed Talks. To be a bioengineer is not just to have technical skills, but to have soft skills in leadership and time management, which were enhanced through both Executive Board and Project Team lead workshops. Furthermore, the undergraduate years are not the end of anyone's career, and so we aim to provide our members with the resources to learn about and explore options beyond college, in the form of numerous graduate school preparatory workshops as well as informational sessions and seminars with industry experts. Additionally, we participate in the planning of the Bioengineering Career Fair, which allows students to network with company representatives to secure internships or jobs. Whether a student wants to follow the route of a masters or doctorate degree or go into industry, BMES at UC San Diego has a workshop and the resources to introduce the individual to these paths and help them gain the skills necessary to excel in college and beyond.

XII.1. Summer Leadership Workshops

With a daunting school year ahead as we would have to navigate a return to in person activities during a still-ongoing pandemic, the Executive Board chose to conduct a series of virtual summer leadership workshops for our officer board. These workshops were designed to increase the confidence of our officers in their abilities and prepare them for their leadership roles in the year ahead.

XII.1.1. Diversity and Inclusion

The first of the leadership workshops began with the topic of Diversity and Inclusion. As an officer board, we understand that we are serving a diverse community here at UC San Diego, and we wanted to ensure that this was clear to our board as well. During this workshop, attendees worked to uncover the unconscious biases that they hold and discussed how they can improve their own mindsets to best serve our community.

Diversity and Inclusion Workshop	*7/24/2021*	*Total Attendance*: 14	Cost: $0

XII.1.2. Professionalism

The second of four leadership workshops for the BMES at UCSD 2021-22 Officer Board, this event educated its attendees on both personal and group professionalism. It was led by the Vice President External and described what professionalism is and, more specifically, covered meeting etiquette, how to dress professionally, and how to represent your group. An email-writing activity was included to practice proofreading a formal email and the workshop concluded with the acronym "Be CORN (communicative, organized, reliable, and neat)."

Professionalism Workshop	*8/15/2021*	*Total Attendance*: 12	Cost: $0

XII.1.3. Leadership Styles

The third summer leadership workshop focused on discussing the different styles of leadership there are and acknowledging the variety of leadership types that we have on board. Officers participated in a series of activities to uncover their leadership style and learn more about how they can use their skills in their positions. This workshop was especially helpful for the officers who have co-chairs, as it is essential that they learn to work with and accommodate the leadership style of their partner.

Leadership Workshop	*8/28/2021*	*Total Attendance*: 19	Cost: $0

XII.1.4. Communication

In the final workshop of the Leadership Series, officers came together to learn about the importance of communication. There are few aspects so important to a leadership role as communication, and the Executive Board discussed the many groups with which the officers were expected to communicate with throughout the year. This workshop also discussed differences in communication for a virtual versus an online event, especially important to the adapting situations of the coming year. Tips for great communication were given and activities were done to practice these tips.

Communication Workshop	*9/18/2021*	*Total Attendance*: 15	Cost: $0

XII.2. Bioengineering Orientation Meet and Greet

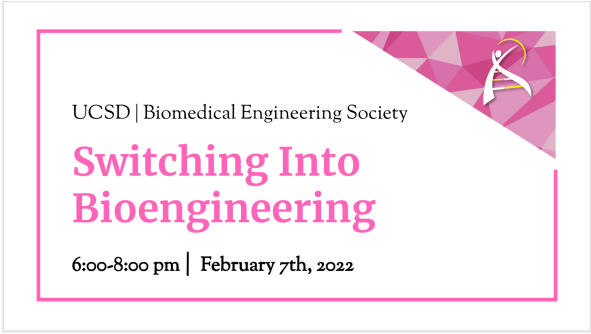
In collaboration with the UCSD Bioengineering Department, BMES at UC San Diego hosted a Bioengineering Undergraduate Meet and Greet to welcome new students to campus. The purpose of the event was to provide a welcome event for first-year, second-year, and transfer students, who had not previously seen the campus in-person. Following the Bioengineering orientation, there were two 30-minute meet and greet sessions with department advising staff, faculty members including the Chair and Vice Chair, and student leaders. The meet and greet was a great success, with members of the bioengineering community coming together in-person for the first time in over 18 months. Overall, the event provided an excellent opportunity for students to ask questions, learn more about campus life, and start building a network of peers and mentors.

Bioengineering Orientation Meet and Greet	*9/22/2021*	*Total Attendance*: 133	Cost: $0*

*The costs for this event were organized entirely by the UCSD Bioengineering Department.

Figure 21. Advertisements and Images from the Bioengineering Orientation Meet and Greet.

XII.3. Switching into Bioengineering



Audience: *Any student looking to learn how to switch their major to a bioengineering track or switching within the four bioengineering concentrations.*

Switching into Bioengineering is aimed towards students of any major who are interested in switching into a bioengineering major and what the process of doing so looks like. This year, the event occurred once again in a virtual format, due to ongoing complications of the COVID-19 pandemic. These complications did not impact the success of the event, however, as students were able to learn from a variety of sources. The newly elected Bioengineering Department Chair, Dr. Adam Engler, began the event with his overview of each of the four specialized majors within the UCSD Bioengineering Department. To provide information on the process of switching majors, the undergraduate advisor from the Bioengineering Department administrative staff, Elizabeth Soos, guided students on how the official switching of majors works. Lastly, students had the opportunity to ask current students who switched to the major about what their experience has been like through the format of a student panel.

Switching into Bioengineering	*02/07/2022* 6:00 – 8:00 PM	*Total Attendance:* 46	Cost: $0

XII.4. Graduate School Admissions Panel

With the upcoming graduate school application cycle, the graduate school admissions panel sought to highlight the differences between different programs. The panel features admissions officers, program coordinators, and graduate students from UCSD's MD/PhD, Masters, and PhD programs. The panelists answered attendee questions about the admissions process, program specifics, future career paths, student life, and more. The panel was a valuable resource for students interested in applying. After a general Q&A in the main room, students were able to join breakout rooms for the different programs to chat with presenters in a closer-knit setting. Feedback from the event indicated that the event was helpful in providing students with an understanding of the programs and helped them decide which program was best for them.

Graduate School Admissions Panel	*10/12/2021*	*Total Attendance:* 35	Cost: $0

Figure 22. Advertisement material for the Graduate School Admissions Panel, featuring the event speakers.

XII.5. Project Team

The Project Team committee of BMES at UC San Diego aims to improve the technical skills and soft skills of all undergraduates interested in the field of biomedical engineering. Through soft skill workshops, participants understand the importance of having soft skills such as organization and professional communication. They learn that sometimes when going into industry, soft skills are what differentiate applicants from one another, especially in interviews. Other soft skill workshops are geared towards improving members' chances of getting an internship or into a research lab by providing critiques with respect to their resumes or LinkedIn. Technical workshops go over Arduino and programming languages such that first and second year students are exposed to fundamental engineering skills before they have to take courses that already expect them to have these skills. Project Team also allows for students to interview and join exciting research projects with core faculty in the Department of Bioengineering, as well as other S.T.E.M. related research labs. Finally, Project Team holds a lengthy project that involves the design, testing, and presentation of a prosthetic hand, named Skywalker Legacy this year (See Section XIII). The following sections present much more details about what Project Team has done in 2021-2022.

XII.5.1. Soft Skill Workshops

XII.5.1.1. Mock Interviews

This virtual event consisted of detailed tips for interview preparation and how to conduct yourself during the interview. Attendees received examples of typical questions companies will ask in different rounds of interviews and questions that candidates can & should ask

interviewers at the end of interview. In addition, a mock interview was conducted in front of the audience for an R&D internship position at Medtronic. Lastly, we offered undergraduates in BMES an opportunity to do 1 on 1 mock interviews with more experienced upperclassmen to get practice and feedback

Mock Interviews	*1/18/2022* 7:00 PM - 8:00 PM	*Total Attendance:* 14	Cost: $0

XII.5.1.2. Resume Review

During this event, attendees received resume templates and tips on making an organized and detailed resume, for both underclassmen who may not have relevant experience and for upperclassmen who have accumulated more experiences but need to format properly.

Resume Review	*11/17/2021 & 11/24/2021*	*Total Attendance:* 13	Cost: $0

XII.5.1.3. Communication with Professors

In this workshop, we went over helpful tips in cold emailing professors for research opportunities. First and second year students were provided with an email template to build off of and examples of emails that worked for upperclassmen were shown.

Communication with Professors	*10/21/2021*	*Total Attendance:* 16	Cost: $0

XII.5.1.4. How to Conduct a Literature Review

For this workshop, we discussed the importance of literature review in formulating a research experiment, then gave examples of search engines and specific journals to look for papers based on the subfield of bioengineering. Additionally, we examined the typical sections of a published paper and what they entail while reviewing two articles.

How to Conduct a Literature Review	*2/1/2022*	*Total Attendance:* 14	Cost: $0

XII.5.1.5. Cover Letter Workshop

This sublead-designed workshop went over examples of cover letters that have led to interviews for internships for companies such as Johnson & Johnson, Medtronic, PhenoVista Biosciences. We dissected the cover letters and looked at what made them successful and had attendees practice writing cover letters for internships/research lab

positions they were interested in.

Cover Letter Workshop	*11/24/2021*	*Total Attendance:* 7	Cost: $0

XII.5.1.6. Organization and Effective Studying

In this second sublead-designed and lead workshop we gave specific organization tips and suggested useful calendar apps such as Google Calendar to organize classes, meetings, and social events. We dove into the specifics of the organization of Google Drive, Gmail filters, and bookmarks.

Organization and Effective Studying	*2/8/21*	*Total Attendance:* 9	Cost: $0

XII.5.2. Technical Workshops

XII.5.2.1. Arduino Workshop

During this in-person workshop, we conducted a basic arduino workshop where wiring and coding were taught. Specifically, we went over simple loops like LED blink and built up to more complex loops like an LED dice and song with piezo buzzer.

Arduino Workshop	*11/19/2021*	*Total Attendance:* 17	Cost: $0

XII.5.2.2. Python Workshop

For this workshop, we hosted a basic python workshop, going over the introductory format and functions. Specifically, we introduced commonly imported modules, assigning variables, variable types, for loops, if statements, user input, and defining functions.

Python Workshop	*2/25/2022*	*Total Attendance:* 8	Cost: $0

XII.5.3. Project Cycles

Project Cycles are intended to promote undergraduate participation in meaningful research projects with accomplished faculty principal investigators.

XII.5.3.1. Cardiac Mechanics Research Group (Wu Tsai Human Health Performance) - Dr. Andrew McCulloch

19 Applications, 4 Students Selected

Project Recruitment Description:
We have an exciting opportunity for several undergraduates to be part of a team working on a project under Dr. McCulloch, a bioengineering professor interested in mathematical modeling of biomechanics, sports physiology, and cardiovascular systems. The specific project will relate to the aims of the Wu Tsai Human Performance Alliance, found here: https://humanperformance.ucsd.edu/

Anyone interested in sports performance, modeling, and/or biomechanics is welcome to apply regardless of major or year!! You would do some background reading and research about specific topics, such as the types of injuries suffered by athletes and their causes. Interacting with human subjects to gather more data will also be a key feature of the projects' work after some additional training is completed.

If selected by us, training, and briefing for a project will occur Weeks 6-10 of Fall Quarter 2021. The project would then begin in Winter Quarter 2022 and last for a couple of quarters.

Selected Candidate Testimonial and Current Project:
I appreciate the opportunity that the project cycle has provided for me! Below is the description for the current project that I am working on at CMRG:
Through the BMES project cycle, I have been able to gain the opportunity to work as a member of the Cardiac Mechanics Research Group, which is a group made up of the DVJ lab and McCulloch Lab in the Bioengineering department. This group is part of an extended group called the Wu Tsai Human Performance Alliance, which aims to utilize bioengineering and various other disciplines to optimize human performance and further research in human health. Within this scope, the project I am working on is a mouse resistance training and performing cage apparatus, where we aim to analyze the effect of resistance training on mice muscle fiber type distribution. I have primarily worked with 3D modeling and CAD (Autodesk Inventor, AutoCAD) and mechanical and physical fabrication (workshop tools, 3D printing, laser cutting, adhesives) in putting together the cage. 3D printing experience includes both FDM and PLA printing, with mostly PLA done this quarter. I have also had the opportunity to work with cell cultures for the first time, where I work with C2C12 mouse myoblasts and basic replating/cell propagation. Further experience with purposeful differentiation of myoblasts into different muscle fiber types is also foreseen. Within our team, we also work with industry-type habits, such as the implementation of stand-up meetings twice a week in addition to weekly meetings. The

mentorship and guidance which I have received from the Masters student overseeing the team is also exemplary and indispensable

XII.5.3.2. Laboratory of Optical Bioimaging and Spectroscopy - Dr. Lingyan Shi

5 Applications, 2 Students Chosen

Project Recruitment Description:
Training and mentoring devoted scientists and engineers of future generations is a top priority of the Shi Biophotonics Laboratory. Our goal is to help all lab members enjoy research and daily life in lab as well as fulfill their career goals. Everyone in the lab will have the opportunity to investigate scientific questions that interest them and get support from other lab members and collaborators. Dr. Shi is a junior faculty member and students have more chances to work with her closely together on projects. Students are welcome to join Shi Lab for a rotation, we have 3 rotation positions available right now. Interested individuals should send an email with a CV to Prof. Shi at lingyanshi@ucsd.edu and visit the Lab page at: https://shi.eng.ucsd.edu/home. Our goal is composed of two parts: technical development and biological innovation. 1. Technical development, which is to develop and apply new laser scanning optical imaging and spectroscopic technologies and algorithms, such as stimulated Raman scattering (SRS) spectroscopy and imaging, second harmonic generation (SHG), and multiphoton microscopy (MPM) imaging for the study of metabolism, neurodegenerative diseases, cancer, drug delivery, development, and aging processes in living organisms. 2. Biological question driven projects using imaging approaches, which includes disease detection (early stage), diagnosis, and treatment, we collaborate with medical doctors on studying patients' samples (various cancers, metabolic diseases, kidney diseases, muscle, brain, tissue study for aging processes, diet regulated metabolic dynamics, etc.) using novel optical techniques approaches. Understanding the dynamics of metabolism in a multicellular organism is essential to unraveling the mechanistic basis of many biological processes. It is the synthesis, transformation and degradation of biomolecules (the definition of metabolism) that carry out the genetic blueprint. Traditional imaging methods such as MRI, PET, Fluorescence, and Mass Spectrometry have fundamental limitations. Being an emerging non-linear vibrational imaging microscopy technique, stimulated Raman scattering (SRS) can generate chemical specific imaging with high resolution, deep penetration of depth, and quantitative capability. We are applying bio-orthogonal labeling SRS imaging techniques and MPF for directly visualizing complex molecular events in brain, cancer, and metabolic diseases, which offering powerful tools potentially for disease detection, diagnosis and treatment, as well as for mechanistic understanding of scientific fundamentals in neurodegenerative diseases, cancer, drug delivery, development, and aging processes.

Student Testimonial:
I am doing great with the lab right now. The Shi Lab is very active, and I have had a lot of opportunities to train with my mentor at the lab. My team is currently working on the effects of different proteins on TDP-43 proteinopathy. With access to Stimulated Raman Scattering (SRS) spectroscopy, we have incorporated biological knowledge and imaging techniques to study how TDP-43 plays a role in Amyotrophic Lateral Sclerosis. Moreover, I had many chances to practice cell culture and imaging at the lab, and I am grateful that I was able to get into this lab and learn a lot of research procedures. Not only that, but I also read research papers that enhanced my knowledge in this field. It has been busy, and I am hanging in there. I would like to thank Project Team and BMES for such a great opportunity.

Lab Mentor Testimonial At One After Selection:
Person A and B are two exceptional, passionate and hard-working undergraduate students in the Shi lab. Initially, I was not at all confident in having to train two undergraduate students at the time. However, they have proven to me from time to time that they are not any undergraduate students. They have both become independent enough on their own to prepare mammalian cell lines as well as culture/treatment media for many projects in the lab. They have taken initiatives to construct two standard operating procedures to help us train future students on how to operate the multimodal imaging system much more efficiently. They have taken opportunities in lab meetings to present published research papers that give us new ideas and support our findings. Last but not least, Person A has automated many of the data analysis processes in the lab with Python, which improves our efficacy by at least 50%. Overall, I am happy with the performance of these two students. I would like to thank BMES at UC San Diego for helping our lab recruit these two young talented individuals.

XII.5.3.3. The Botta Laboratory at UCSD Moores Cancer Center - Dr. Gregory Botta

10 Applications, 2 Students Chosen

Project Recruitment Description:
This project cycle is with Dr. Gregory Botta's Lab at the UCSD Moores Cancer Center. His lab focuses heavily on oncology and translational cancer care, using peptides to target specific antigens/integrins. More details about his lab can be found here: https://gregorybotta.com/

Candidates selected would have the following primary responsibilities: culturing cells, growing cells in 3D, helping use peptides to target/deliver drugs to cell lines. Candidates must be able to commit 12-15 hours of work per week to this lab position for AT LEAST two quarters.

XII.5.4. BE-Informed and BE-Inspired Undergraduate Talks

BE-Inspired talks are talks given by BMES members to share their personal experiences and what they are passionate about. BE-Informed talks are talks in which upperclassmen in BMES share their research projects and experience in labs, or any scientific literature they find inspiring.

XII.5.4.1. BE-Informed: Aayush Somani- Hasty Lab

They discussed the quorum sensing mechanism and how that enables us to create self lysing circuit strains (SLC). These SLC strains grow in waves and self lyse after hitting a quorum, repeating the process. They talked about how the Hasty Lab at UCSD was using this technology to run microfluidic chip tests and spheroid experiments to test the viability in oncology treatments.

BE-Informed: Aayush Somani	*10/28/2021*	*Total Attendance:* 22	Cost: $0

XII.5.4.2. BE-Informed: Tammy Nguyen - Fatty Acid Re-esterification

The topic of this BE-Informed Talk was the proposal of a potential mechanism of fatty acid re-esterification. It has been seen that a majority of the fatty acids that are released during lipolysis are taken back up and then oxidized or re-esterified. Catecholamines are traditionally known to stimulate lipolysis through the binding of the B-adrenergic receptor, and the project proposes that catecholamines also redirect the fatty acids that are taken up to be oxidized through the JNK-STAT3 pathway. This showcases that there is a regulatory axis of metabolism described as lipolysis-driven oxidative metabolism that is essential for regulating energy expenditure and adiposity of tissues. This is significant as evidence shows that lipolysis-driven oxidative metabolism is defective in adipocytes and not lipolysis.

BE-Informed: Tammy Nguyen	*2/15/2022*	*Total Attendance:* 13	Cost: $0

XII.5.4.3. BE-Informed: Carlos Pondevida - Metallo Lab

They discussed the relevance of metabolism as it pertains to human disease, specifically in how metabolic dysfunctions can lead to health complications and the ways certain diseases (cancer, diabetes) alter biochemical activity. Methods and technology used in Dr. Christian Metallo's Laboratory at the Salk Institute were introduced as ways to interrogate and quantify pathway alterations in order to better understand how a disease works along with identifying possible interventions.

BE-Informed: Carlos Pondevida	*11/11/2021*	*Total Attendance:* 14	Cost: $0

XII.5.4.4. BE-Inspired: Jay Chen - Microgravity Research with Respect to Bioengineering

They discussed the ongoing commercialization of low earth orbit, why microgravity research is useful, the grants that NASA/NIH/NSF are providing for PI's to conduct research, specific research experiments going on right now on the ISS through implementation partners, and their specific role as a biological systems intern at Space Tango

BE-Inspired: Jay Chen	*11/4/2021*	*Total Attendance:* 26	Cost: $0

XII.5.4.5. BE-Inspired: Kendra Worthington - Christman Lab

The topic of this BeInspired Talk was "Bioengineering in Women's Health", a smaller but rapidly growing subset of research. Presented as a summary of the main topics of the field, the talk began with discussion about why all researchers should be interested in the field, not only to improve medical treatment for women, but also to decrease the stigma surrounding the topic that has previously existed in many fields of science. A brief overview of organoid models and tissue regeneration therapeutics was discussed. The speaker also touched upon the importance of in silico work in the field, as computational models are useful where in vivo models would be unethical and modern technologies help better understand the structure of the cells and the role it may play in certain pathologies. Overall, this talk was given to inform the audience of an expanding branch of research and hopefully inspire one of them to do further reading on the subject.

BE-Inspired: Kendra Worthington	*1/25/2022*	*Total Attendance:* 14	Cost: $0

XII.6. BEGSxBMES Graduate School Preparation Collaborations

BMES collaborated with the Bioengineering Graduate Society (BEGS) at UCSD throughout the entire 2021-22 academic year to inform and prepare undergraduate students about graduate school. The events were designed for Juniors and Seniors who were interested in and applying to graduate school, respectively.

XII.6.1. Grad School Programs and Applications Panel

This online panel was intended for both Junior and Senior undergraduate students to educate them about the different types of graduate programs and their applications. We had a PhD student and three Master's students, all from different tracks, on the panel who answered pre-submitted questions first then open floor questions.

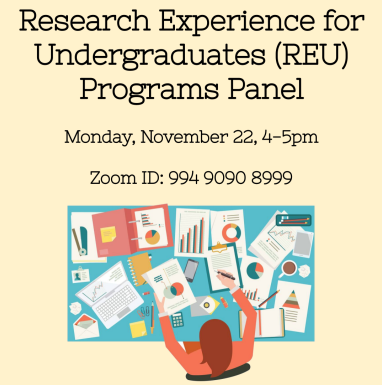
Grad School Programs and Applications Panel	*10/29/2021*	*Total Attendance:* 17	Cost: $0

XII.6.2. Graduate School Application Writing Retreats

BEGS and BMES held two writing retreats in Fall 2021, one in person and one online, to assist Senior undergraduate students in writing and editing their application statements. There were about five bioengineering graduate students that BEGS recruited at each session to review the undergraduates' documents and provide feedback on their work. These sessions also served as a focused time for attendees to write.

Graduate School Application Writing Retreats	*11/15/2022 (in person)*	*Total Attendance:* 24	Cost: $0
	11/29/2022 (Zoom)	*Total Attendance:* 10	Cost: $0

XII.6.3. Research Experience for Undergraduates (REU) Panel



This online panel strived to inform attendees about Research Experience for Undergraduates (REU) programs. It started with a brief presentation from a BEGS representative about REUs, how to find them, and the application process and concluded with a panel that answered questions from the audience. The panel included current graduate students who participated in an REU and Dr. Adam Engler who organizes REUs at UCSD.

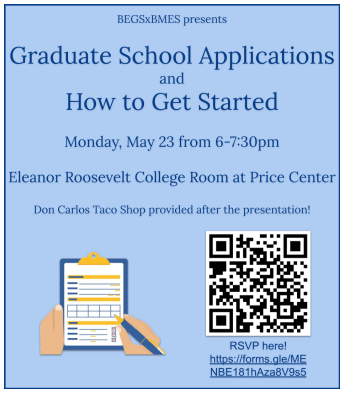
REU Panel	*11/22/2021*	*Total Attendance:* 13	Cost: $0

XII.6.4. Choosing a MS Program

This online panel was intended for Seniors making a decision about where to go for their Master's degree. After a short presentation, four current Master's students from three different tracks shared their experience in their program at UCSD.

Choosing a MS Program	*2/28/2022*	*Total Attendance:* 15	Cost: $0

XII.6.5. Graduate School Series



The Graduate School Series held in Spring Quarter 2022 had three installments, each covering a different aspect of graduate school and applications. The intended audience was Sophomores and Juniors who were interested in graduate school and wanted to learn more about it. The first presentation covered the different types of graduate programs and a general overview of graduate school, the second was about how to look for schools and programs and find out which ones would be best for you, and the third discussed application materials and how to get started on them. Food was provided at each event.

Graduate School Application Writing Retreats	*4/25/2022*	*Total Attendance:* 10	Cost: $193.0
	5/9/2022	*Total Attendance:* 20	Cost: $199.88
	5/23/2022	*Total Attendance:* 15	Cost: $273.24

XII.7. Industry Informational Sessions

These sessions were meant to inform BMES at UCSD members about companies related to the bioengineering industry and opportunities within them.

XII.7.1. Thermo Fisher Scientific

This online session was led by Eleanor Quirk, a campus ambassador for Thermo Fisher. She gave a presentation about the company and potential career paths and afterward answered questions from the audience. The attendees asked many questions and an informative discussion was held and the recording was distributed to the attendees after the session.

Thermo Fisher Info Session	*2/28/2022*	*Total Attendance:* 6	Cost: $0

XII.7.2. Eli Lilly

This online session was led by Rachael Chickering, a Campus Recruiter for Eli Lilly, who gave a short presentation about the company that was recorded and distributed to BMES members.

Eli Lilly Info Session	*4/25/2022*	*Total Attendance:* 3	Cost: $0

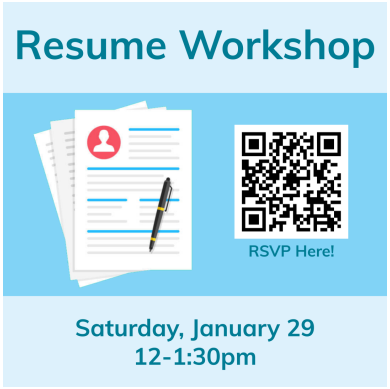
XII.8. UCSD Bioengineering Career Fair

The UCSD Bioengineering Career Fair is open to all UCSD Bioengineering students and is planned by Isgard Hueck, UCSD's Industry Advisor, and representatives from bioengineering student organizations, including BMES. The event was held online through Remo and was immensely successful in connecting students with industry representatives from throughout the country.

UCSD Bioengineering Career Fair	*2/11/2022*	*Total Attendance:* 265	Cost: $0*

*All costs were handled by the UCSD Bioengineering Department.

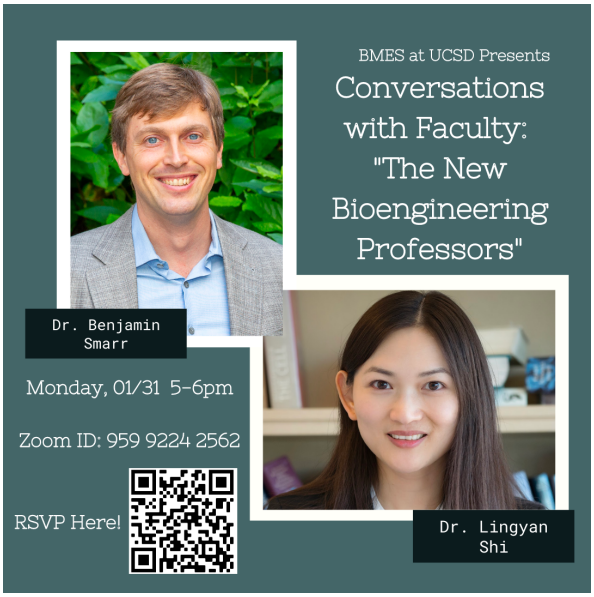
XII.9. Resume Workshop



BMES hosted an online resume workshop open to all bioengineering undergraduate students at UCSD in preparation for the UCSD Bioengineering Career Fair. Its purpose was to educate attendees on what to include in a resume as well as show them an example of one. After the presentation, the attendees were split into pairs to review each other's resumes and provide constructive feedback on them.

Resume Workshop	*1/29/2022*	*Total Attendance:* 30	Cost: $0

XII.10. Conversations with Faculty



The purpose of this series was to help facilitate communication between faculty and students, both undergraduate and graduate, and allow them to get to know each other in a more casual setting. For both installments of the series, we invited two professors to have a conversation with students about their personal academic journey, the current research going on on campus, and how to possibly get involved. During the events, students were able to have small-group discussions with professors about various topics of their interest.

Conversations with Faculty 1	*Speakers:* Dr. Benjamin Smarr and Lingyan Shi (both UCSD Bioengineering)	*1/31/2022*	*Total Attendance:* 27	Cost: $0
Conversations with Faculty 2	*Speakers:* Dr. Brian Aguado (UCSD Bioengineering) and Dr. Stephanie Lindsey (UCSD Mechanical and Aerospace Engineering)	*3/2/2022*	*Total Attendance:* 20	Cost: $0

XII.11. Bioprocessing Seminar Series

In collaboration with the Bioengineering Graduate Society and Dr. Julio Baez from the UCSD Bioengineering Industrial Advisory Board, our chapter hosted a Bioprocessing Seminar Series in the Winter. The purpose of this series was to familiarize both undergraduate and graduate students with the field of bioprocessing and how science is translated into products. Seminars were hosted biweekly on Zoom with speakers being

bioprocessing industry leaders who discussed how their companies apply bioprocessing to their products/research. Speakers also talked about their career paths, how they got to where they are and advice for anyone interested in pursuing a career in bioprocessing.

Title of Talk	Speaker	Date*	Total Attendance
Bioprocessing Response to the COVID-19 Pandemic	Dr. Julio Baez, Bioprocessing Industrial Advisor and Consultant	1/13/2022	36
Delivering Therapeutic Monoclonal Antibodies for COVID-19: Bioprocess Development at Pandemic Pace	Dr. Eric Fallon, VP of Bioprocess Development at Vir Biotechnology	1/27/2022	24
Meeting the Bioprocessing Needs For AAV Gene Therapies	Dr. Daniel Gibbs, Senior Director of Vector Development and Engineering at Locanabio	2/10/2022	28
Delivering more sustainable materials, at scale: how Genomatica is remaking supply chains with plant-based alternatives	Andrew Saarni, Senior Fermentation Engineer at Genomatica	2/24/2022	23
Bioprocessing in Whole-Organ Engineering	Dr. Emily Beck, Senior Manager at Miromatrix Medical	3/10/2022	20

*All events occurred at 5:00 PM - 6:00 PM PST.
No costs were incurred for all seminars.

XIII. Societal Impact Activities

Skywalker Legacy is an ongoing project focused on the design and testing of a prosthetic hand, led by the Project Team Co-Chairs. Through the use of computer-aided design, 3d-printing technology, and Python modules, our team of approximately 30 students has been able to create a functioning prototype from the fingers up to the forearm. Most of our team members are bioengineering or mechanical engineering students who have little to no experience in design or programming. For this reason, there were 4 excellent, more-experienced subleads for this project who guided others in creating the design and sharing our vision for the project. The name of this project is a nod to 2 of the 4 Skywalkers (Shmi, Anakin, Leia, Luke) in the Star Wars series who famously lost their hands.

The project aims to have an impact by increasing the awareness of the need for low-cost but fully functional prosthetic limbs. Despite the numerous engineering organizations and projects at UC San Diego, there are not many that try to develop a product for those who have lost a limb or were perhaps not born with one. Thus, our project aims to fill that deficit in awareness while working towards the creation of a low-budget solution for our community members who have lost a limb.

XIII.1. Project Objective

To design, construct, and design a fully functional prosthetic hand and control it via electrical signals from a human hand. This will be made possible through the use of a finger-tracking glove as a control system. In this first iteration, those with little to no experience in Fusion360, Solidworks, Arduino, Python etc will become familiar with those softwares and learn how to use them to design a prosthetic hand.

Table 8. Project Subteam Meetings Dates, Times, and Attendance.

Date/ Duration of Meetings	Attendees
Mechanical Team	
Weekly, January 2022- May 2022 Meetings ~3 hours	18
Software Team	
Weekly, January 2022- May 2022 Meetings ~3 hours	12

XIII.2. Project Funding

This project was funded with a total of ~$500. As a committee, we had initially applied and requested funding from the Triton Engineering Student Council (TESC) for a total of $3,000, to use for the creation of multiple prototypes and purchasing of supplies, some of which can be very expensive. However, due to COVID-19 affecting UC San Diego events, they were only able to grant $200 dollars to our committee. We then held fundraisers with Yogurt World and Tapioca Express on the UC San Diego campus to raise another $150. The rest was provided by the BMES at UC San Diego chapter funds.

Table 9. Approximate Costs for the Skywalker Legacy Project.

Item	Approximate Cost
Arduino Uno Kits	$70
Linear Actuators	$140
Other Stepper Motors	$80
3d Printing Components (such as the arm and fingers)	$100
Breadboards, Wires, and Other Smaller Electrical Components	$60

XIII.3. Project Design Process and Results

Figure 23. Early 3D printing of the hand. Images represent a prototype created during the design process.

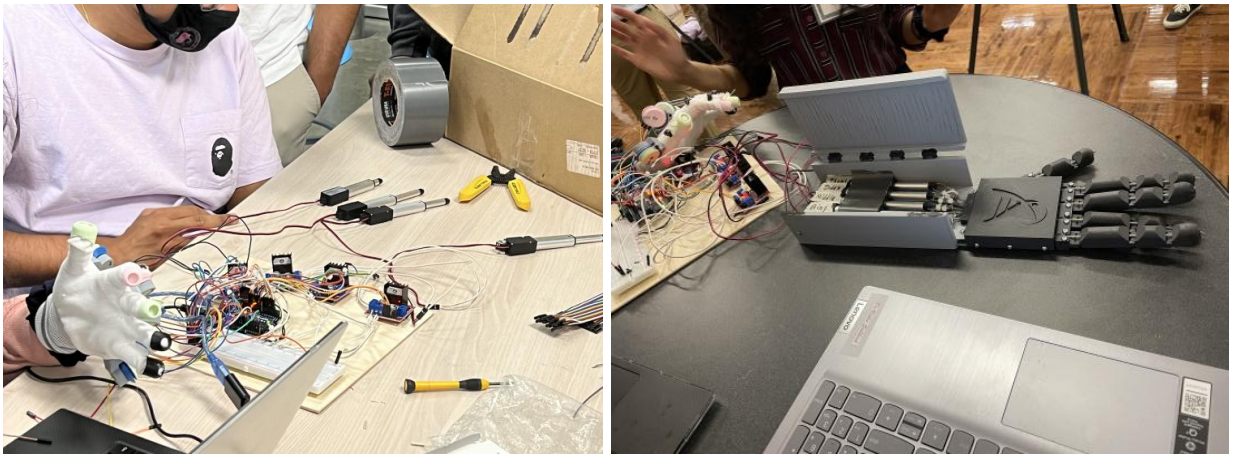


Figure 24. (Left) Testing of the hand with the finger-tracking glove. Potentiometers fitted on the glove measure finger movements, and are used to control movement of the linear actuators that will be powering the prosthetic hand. **(Right)** Prototype of mechanical hand with actuators housed in a 3D printed box, including the logo of BMES.

Figure 25. (Left) Another view of the mechanical hand and wiring. **(Right)** A few of the project subleads and members demonstrating the hand at Bioengineering Day 2022.

XIII.4. Project Presentations

The team working on Skywalker Legacy had the opportunity to present their work at two events: Bioengineering Day 2022 and an Engineering World Health Poster Session. In presenting their work, the team used their efforts to highlight the need for low-cost medical devices and raise awareness of the deficit of such devices in our community. Their efforts reached all levels of the scientific community, from undergraduate to graduate students and professors and industry professionals. Pictures of these presentations, as well as the poster created for one of them, can be found below.

Figure 26. Some project members presenting work to industry members, UCSD bioengineering professors, graduate students, and undergraduates at Bioengineering Day 2022.

Figure 27. Skywalker Legacy Poster created for Engineering World Health (EWH) Poster Session and Project Demonstrations.

Figure 28. Engineering World Health (EWH) Poster Session and Project Demonstrations.

XIII.5. Future Directions

We are hopeful for greater funding in the next school year, and combined with the return of many of our subleads and team members, we plan on further improving the prosthetic hand developed this year in the Skywalker Legacy project. Specifically, we hope to improve the technical aspects of the design to create a more usable prototype. For example, we hope to reduce delays experienced with the current prototype and promote better responsiveness of the prosthetic hand by using actuators with resistors for location feedback and smoother control of the hand. Additionally, the prototype can also be made cleaner, with cable management and better drivers, and the glove used on the hand also stands for improvement. Despite the limited funding and the continued challenges of the COVID-19 pandemic, the Skywalker Legacy project has still advanced greatly, and we will continue to improve the design in the next year and hopefully move towards the realization of a fully functional prosthetic hand.

XIV. National BMES Meeting

Every year, the Officer Board of BMES at UC San Diego attends the National BMES Meeting. Whether the event is virtual, in person, or hybrid, we are committed to attending the meeting to immerse ourselves in the wider BMES community and learn from the many opportunities the conference has to offer. This year, 12 of our 20 officers had the opportunity to attend the 2021 Annual Meeting in Orlando, Florida in person, while our remaining 8 officers attended the conference virtually due to COVID-19 concerns. The experience of attending a conference such as this one is invaluable to our members, and for that we are grateful for the hosting of such a conference by BMES as well as the funding which the UC San Diego Bioengineering Department provides to us to allow us to attend.

While at the annual conference, our members are able to engage in a variety of activities. At our core, we are representatives of not only our student chapter, but our Bioengineering Department as well. For this, we volunteer at the department booth to talk to potential students about life at UC San Diego. Additionally, we are thrilled to have had a student chapter table in the main room of the conference, where we displayed our outreach demonstrations and the current endeavors of our chapter. In addition to these two booths, our members also volunteer for the conference itself, with immense gratitude to the reimbursement of the conference registration cost in exchange for our time. Our members also actively participate in the sessions of interest to them at the conference, with many attending the networking events for both industry and academia.

BMES has a long history of participating in the Annual Meeting. Previous Executive Board officers have participated in a Student Think Tank and various panels, while a past officer, Summer Joyce Batasin, has served on administrative committees for national BMES. Additionally, both of our current co-presidents, Rachel Lian and Carlos Pondevida, will also now be stepping up to serve on a national BMES committee. We are also honored to have received the “Outstanding Chapter Award” in recent years, for the 2016-2017 and the 2019-2020 academic years.

On top of our active participation in the community and informational sessions that the conference has to offer, many of our members in the past have presented their research at the conference. This year, our VP Internal, Kendra Worthington, presented an abstract titled “Biodistribution of IV-Administered Infarct-Targeting Nanoparticles Following Myocardial Infarction” at an in-person oral presentation at the Advances in Biomaterials Integration with Chips and Devices Session on Saturday October 9th. We anticipate that our members will continue to present at future conferences.

Our student chapter expects to continue attending future Annual Meetings. With a decrease in COVID cases, we are hopeful that we will send our entire 18 person Officer Board to the 2022 Annual Meeting in San Antonio, Texas. We are excited at the prospect of

continuing to be a part of the national BMES community as we continue to both learn from and contribute to the excellence of bioengineering research and community that is found within BMES.

Figure 29. (Top Left) A picture of some of our officers at the Friday night bash at Universal Studios. **(Top Right)** Kendra Worthington giving her oral presentation. **(Bottom)** All of our officers in attendance in-person in Orlando, Florida October 6-9, 2021.

XV. Future Direction

BMES at UC San Diego looks forward to bringing a sense of balance, community and transparency in the coming academic year to compensate for the past years of uncertainty brought by the pandemic. BMES has always served as a safe community for students who are interested in bioengineering to find opportunities, gain technical and leadership skills, and meet new friends and colleagues. While we were able to experience some of the first in-person events since 2019-2020, we still had to face many obstacles and last-minute changes due to the unpredictability of the pandemic. BMES at UC San Diego is adept at accommodating for these fast-paced changes by preparing for every possible outcome before our major events so that we can quickly transfer to a remote setting if necessary. BMES at UC San Diego hopes to take advantage of next year's potential of a fully in-person year of events whilst maintaining our adaptability in the case that we have to make any more difficult transitions back to virtual. As we transition into our new board, we hope that the new year allows for us to become fully connected and communicative, with more opportunities to bond and stay in close contact throughout the year. The new board strives to establish open channels of communication so that we are able to reconnect with each other and our members whilst dealing with any worries or concerns that arise throughout the year. To bring back the sense of community that was somewhat absent from virtual BMES these past two years, we plan to strengthen our initiatives to support the bioengineering department and advertise our organization to the greater UCSD community outside of bioengineering, so that everyone is able to collaborate and share their experiences and projects with others.

XV.1. Upholding the Unity and Resilience of the Previous Board

This past year, BMES at UC San Diego focused on initiatives that would strengthen the connections between the undergraduate students, graduate students, and faculty in Bioengineering. This often manifested in collaborative events with the graduate students and events set up with faculty speakers. In addition, the past year demonstrated the great resilience of the BMES board and members through the many adversities that arose due to the pandemic.

In terms of creating unity, BMES continued the Conversations with Faculty initiative from last year, setting up coffee-style chats for students to get to know professors outside of the classroom. This year we focused on introducing the newer professors to the undergraduate student body and coordinated chats with four of these new professors. In the Fall, BMES reached out to the staff coordinators of the UCSD Bioengineering MS and PhD programs, as well as the MD/PhD program, and had an info session/panel about graduate school. Invited students from each program also discussed their experiences with attendees in breakout room discussions. Efforts by our VP External led to a new collaboration with the Bioengineering Graduate Society (BEGS) to set up a mentorship program connecting undergraduate upperclassmen with graduate student mentors. This new mentorship

program provides undergraduates intending to pursue graduate studies with expert aid, which can further enhance the many growth and development opportunities offered by BMES. In the Spring, our VP External also led a collaboration between BMES and BEGS to start a Graduate School Workshop Series that will continue annually from here on; these workshops are centered around an intro to graduate school, how to apply and best practices. Lastly, in collaboration with BEGS, we also co-hosted a Bioprocessing Seminar Series that exposed all students to the bioprocessing industry. This series is held virtually and biweekly so that there are no possible cancellations due to COVID-19, seeing that this is a quarterly event series.

One of the most important opportunities for undergraduate bioengineering students to communicate with the bioengineering department is the Bioengineering Town Hall that occurs quarterly. To better prepare for the undergraduate Town Halls that BMES hosts with the department, we began Pre-Town Hall Discussions with department reps that would take place a week before the live event to identify important topics that should be covered. BMES invites the student leaders from all of the bioengineering organizations to this discussion. The Chair and Vice-Chair of the Bioengineering Department were their representatives to this meeting.

BMES at UC San Diego has had to plan for the possibility of switching to a virtual format for almost all of our big events. For example, Lab Expo is one of our biggest in-person events that occurs in the Fall, but this year we were forced to transition to a virtual format in a matter of days. The BMES board and Lab Expo committee joined together and persevered as we had done in prior years when faced with similar odds, and the event went on to be a great success. BMES hopes to continue these new efforts in solidifying ties between the student body and the greater bioengineering department so that students are equipped with proper mentorship and resources to receive adequate support in their academics and future endeavors. These experiences help ensure that BMES is resilient in the face of any complications that may arise in the future.

XV.2. New Initiatives for the 2022-2023 Academic Year

The new board aims to uphold two main values, community and transparency. One of the greatest challenges of the past years has been maintaining our sense of community and connectivity in a virtual format, so our mission this year is to rebuild that. It is crucial for the board to maintain full transparency for our members about any concerns that are brought to our attention so that we can foster a safe and open environment for students to grow personally and professionally.

The previous year has been crucial in reforming bonds with the bioengineering department and professors with events such as Conversations with Faculty, our many collaborations with BEGS, and our great involvement at the Bioengineering Town Hall. One area of growth as well as a big focus of our town hall has been aiding the department in creating some sort of guide for the incoming first year bioengineering students. With UCSD

Bioengineering being one of the newer departments with one of the newest majors, BioSystems, it is really important to accurately describe the differences between our four tracks and the post-graduation options in bioengineering for incoming students. While we already host a "Switching to Bioengineering" event, we believe we can further this effort by creating an introductory video with details on the four tracks.

To elaborate on current efforts for collaborations with other engineering and science organizations like BEGS, we hope to pursue new opportunities to showcase projects and other work being done around campus. We can collaborate on poster sessions and demonstration booths at existing and new events. This experience will help unify the numerous engineering organizations across our campus as well as expose students to other scientific research labs and different fields of engineering outside of their track.

The previous years of virtual BMES has taken a toll on attendance and committee involvement from students, so it will be critical for us to boost our member engagement this coming year. We must take advantage of any in-person initiatives and advertise them to a greater number of students. It is important to identify which modes of communication are most successful in reaching out to our audience, like Instagram and Discord, and use them consistently and efficiently to ensure everyone in the organization knows about our events and opportunities. In hopes of expanding our membership as well as our diversity and inclusivity, we will advertise to students of any background, age, race, gender or major. Bioengineering is special in that it is extremely interdisciplinary, and therefore every science major at UCSD should be able to find something that interests them in the vast field of biological engineering.