

NIMBioS

National Institute for Mathematical
and Biological Synthesis

11th Annual Undergraduate Research Conference at the Interface of Biology and Mathematics

EVALUATION SUMMARY REPORT
16-17 NOVEMBER 2019

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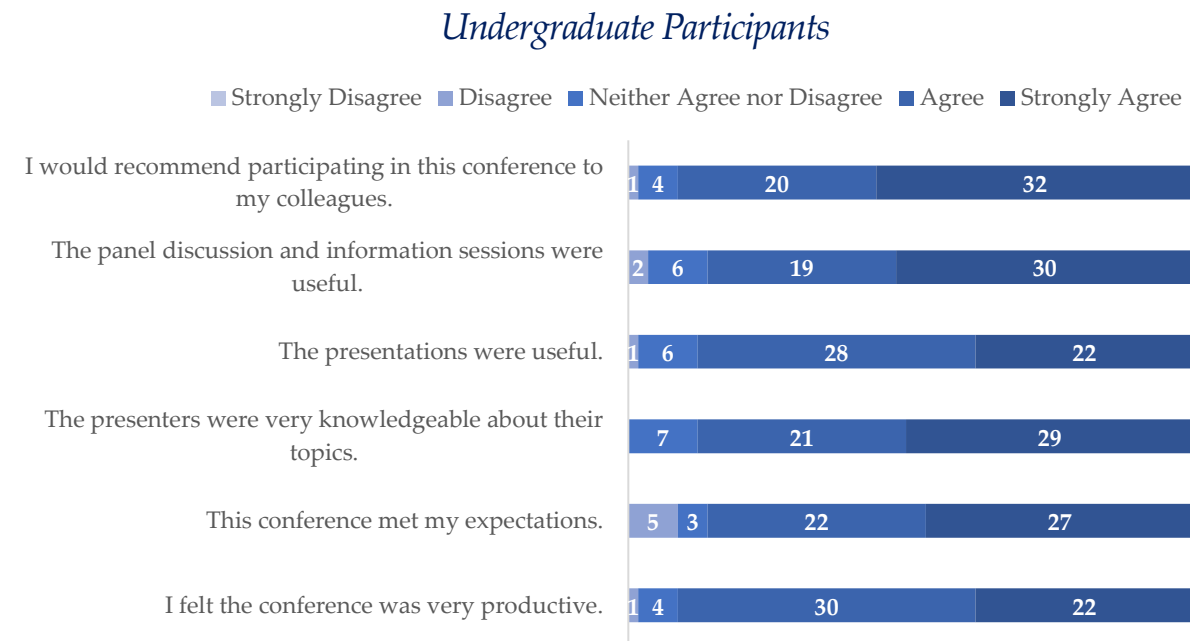
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A total of **81** participants took part in a feedback survey of the 11th Annual Undergraduate Research Conference (URC) at the Interface of Biology and Mathematics. Of those, **57** (70%) were undergraduate students and **24** (30%) were non-undergraduate students.

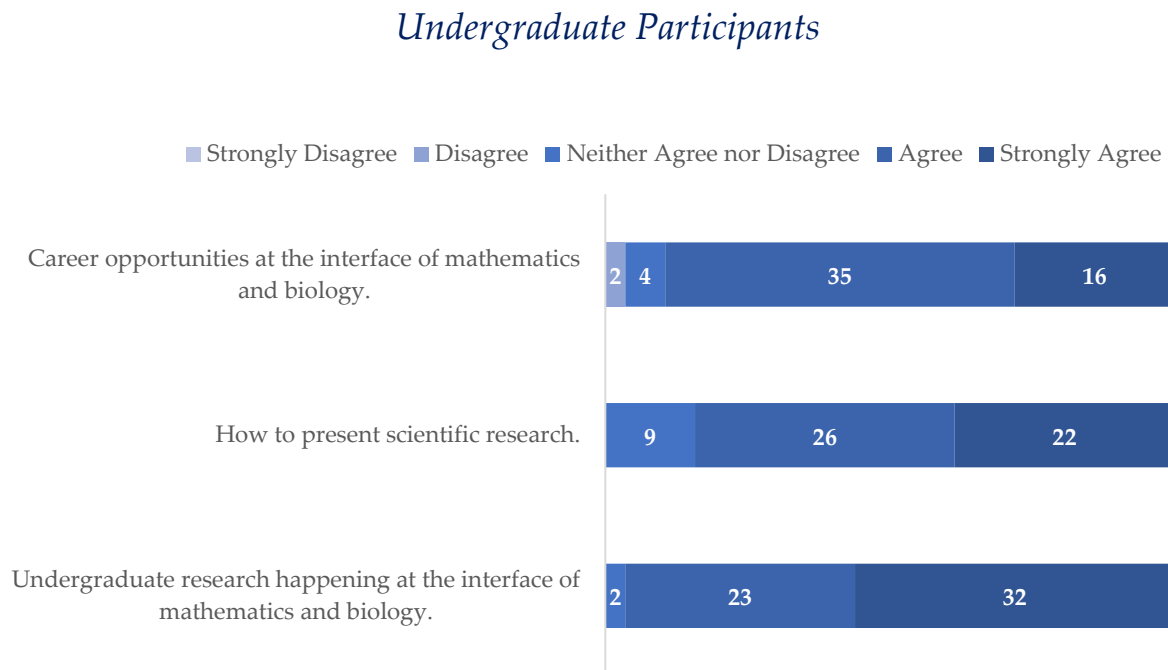
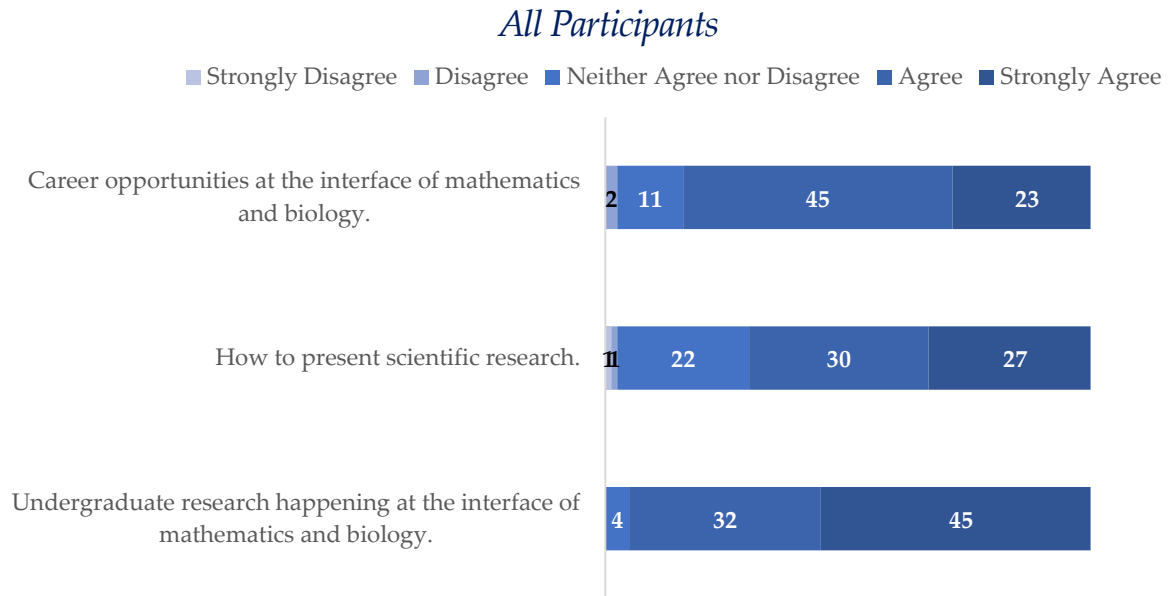
Figure 1. Level of agreement with various aspects of the URC:



Non-Undergraduate Participants



Figure 2. As a result of participating in this conference, I have a better understanding of:



Non-Undergraduate Participants

■ Strongly Disagree ■ Disagree ■ Neither Agree nor Disagree ■ Agree ■ Strongly Agree

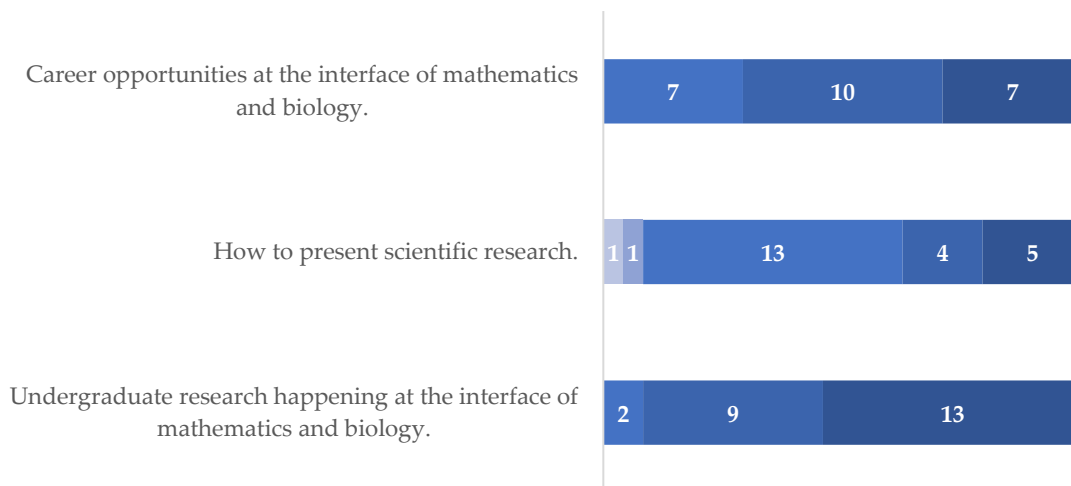
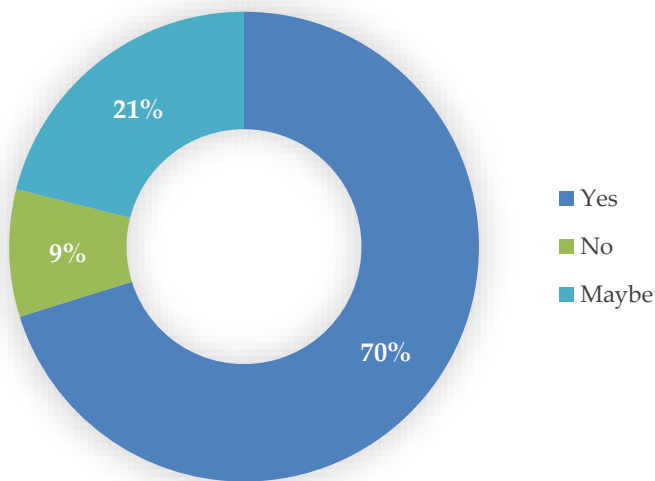


Figure 3. Do you feel that participating in the conference helped you make connections with others within the interdisciplinary field of math and biology?

Undergraduate Participants



Please explain:

The conference provided exposure to different ways that mathematics can be applied to biology.

Being able to chat with those in math, as there were hardly no biology people, was fun.

Having had a diverse set of professionals who work in this interface was very helpful to be able to explore the other opportunities we have with our degrees and interests.

I met a lot more people that were math that work in biology than biology-focused people that do math-heavy work. I did think it was a great place for making connections in that applied math realm though.

Everyone was friendly and open to talking about their work, and I had the opportunity to speak with other students and faculty from other areas.

I was able to connect with current researchers and possible grad schools for me to apply to.

While I met many individuals, to fully capitalize on the experience I will need to follow up with individuals met during the conference. I may benefit from connections, but time is the determining factor.

It was fun and interesting being a conference with biologists creating mathematical models for their research as a biochemistry and math major. I spent a good bit of time connecting with researchers from other disciplines besides just math which was exciting.

I got to meet several researchers who were using similar techniques to what my group used this summer.

I am not looking for connections in this field. But for those who are, I could see this being a great opportunity.

I got to interact with other students and hear their research.

I was able to meet other students who will also be attending JMM in January.

There were a lot of students from different schools, but many had attended conferences with students from their own school and stayed in their groups. It was difficult to meet other students.

I have less biology connections, so meeting the professors, researchers, and speakers was very helpful.

There were a lot of knowledgeable professors and researchers that provided information on programs that I could participate in for the future.

I was able to talk about, map out, and outline my future of schooling and work with other professors.

I learned a lot about the process of getting involved in this field, but I did not make connections with specific people.

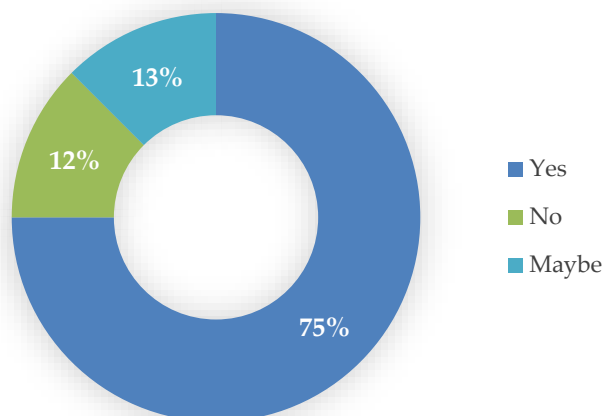
I was able to talk to other students in these fields and learn about what research they are doing.

Yes, it was a great networking opportunity with knowledgeable faculty.

Didn't have much opportunity to network besides one dinner.

I was invited to several other conferences just from presenting at this one.

Non-Undergraduate Participants



Please explain:

I was able to speak to several groups of students about opportunities in biology and science and the best way to pursue these.

Yes, I met several new people.

I'm tenure-track faculty and found that interacting with students and other faculty from diverse areas was hugely valuable. I'm in the Department of Microbiology at UTK and most of my colleagues have a strong wet-lab focus. I value opportunities to interact with other math-bio people of diverse career stages.

I am an organic chemistry professor with some biochemistry background. I was expecting there to be some computational chemistry, similar to the big projects I've seen running on supercomputers at ORNL on a field trip; however, most of what was presented at the conference was population-level biology (ecology), or simulation of biological systems... in other words, not focused on the system size (up to macromolecules and membranes) that I am interested in. The conference was a little too far out of my field to be useful to me. However, I did get a better understanding of what programs are the most useful to familiarize myself with, and some terminology.

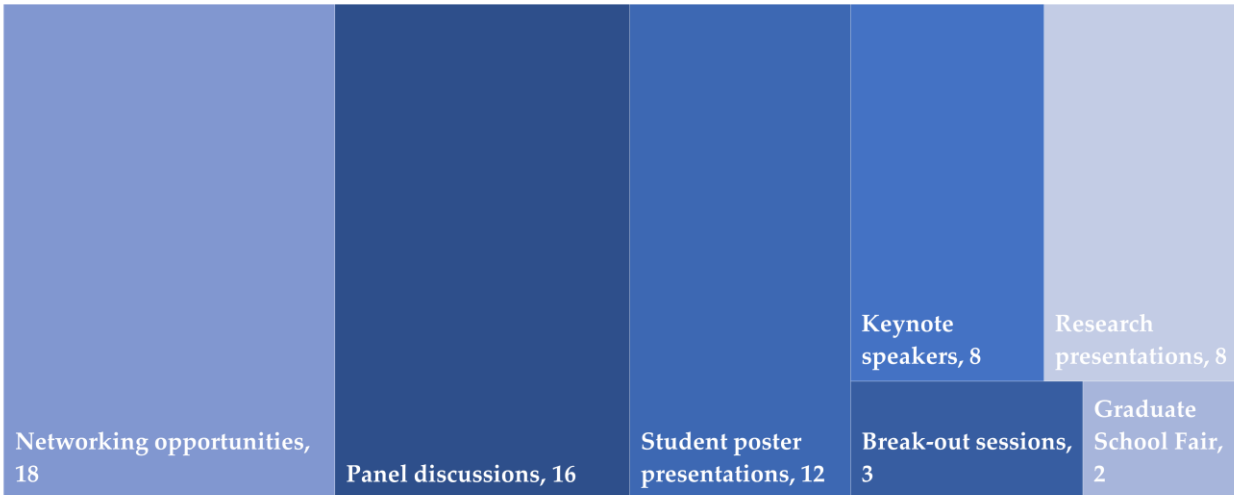
As the keynote, I probably got better connected than many others, but it was lovely to meet so many people and chat to such bright and engaged undergrads!

I feel it helped my students make those connections.

Met a former URC Student Participant who is now a faculty member bringing students from their institution!

I am not sure I see the value of this question for faculty. Undergraduates are a different story.

Figure 4. What do you feel was the most useful aspect of the conference?



Undergraduate Participants

The panels and opportunities for students to get presenting experience.

Interacting with peers and faculty members during the poster session, the break out session, and panel discussions.

The fellowship panel

Student poster presentations. It was great getting to speak directly with undergraduates about their interests and research.

Student presentations about their research

Interacting with other mathematics students from different backgrounds.

The presentations themselves, especially Dr. Strickland.

Have the opportunity to talk to faculty members.

I think being able to network with diverse faculty who weren't just mathematical was the most beneficial part of this conference.

Sessions where we were able to discuss topics and questions with professors and other students

I thought the keynote speakers were really good and offered some interesting ideas I will use for future projects.

The panel discussions brought to light a bunch of useful resources for research and grad school, and I feel more confident applying to grad school after hearing from people who have already gone through the process.

Connecting with researchers in the field of mathematics and other undergrad students, and also learning about current undergrad research that is being conducted.

The guest and primary speakers.

It was all very helpful but the panel with the professors from various institutions was the most useful. Listening to experts in their field talk about their story as well as giving advice to undergraduates is super helpful. Moving forward as an undergraduate, I have some ideas of how I might best position myself to apply for graduate school.

Opportunity to present research to an audience that didn't have a purely math background.

Panel presentation

The graduate panel.

I really liked the graduate school fair. It gave a unique opportunity for me to talk with representatives from different programs that fit my math-bio interests.

The research presentations

Networking

Being able to talk to the faculty members to see if they could point you to useful software or someone to talk to about your interests.

Hearing other students.

The experience I gained while presenting.

The student lectures and the faculty talks.

I feel like hearing about the other research students was presenting was the most important part. The panel on the graduate fellowships was also helpful but I wish we had done more graduate school panels.

Presentations

Meeting people and learning about the different talks.

The ability to talk to professors that run programs from all around.

When Chris talked about the different tools and programs that researchers used, I felt it was very productive and informative.

I really appreciated the networking for graduate school and when there was a panel of all the scientist/mathematicians. I thought was super fascinating and it helped for my future.

The professors and researchers presenting in graduate panels and meet and greets.

Personal feedback after my presentation.

Presentation by guest speakers, which broaden up my mind.

Poster presentations and talks

The advice for undergrad students

The most useful aspect of the conference was the graduate school advice panel.

The presentation and symposium.

The graduate school session where we got to talk from representatives from all the various universities was very useful in fostering connections and talking to other students.

Time to discuss with mentors during meals. I wish there were more!

The panel talking in small groups to professors in different fields to ask questions related to the field we would like to study in.

For me, getting advice about applying to graduate programs, fellowships, and grants because I didn't know much about them.

Interactions with other undergraduate students and hearing of different ways they go about their work and research.

I gained experience with preparing and presenting scientific research.

Meeting people

The talks by keynote speakers

The panels and poster presentations

Networking and hearing the talks of the keynote and featured speakers along with the panel discussions

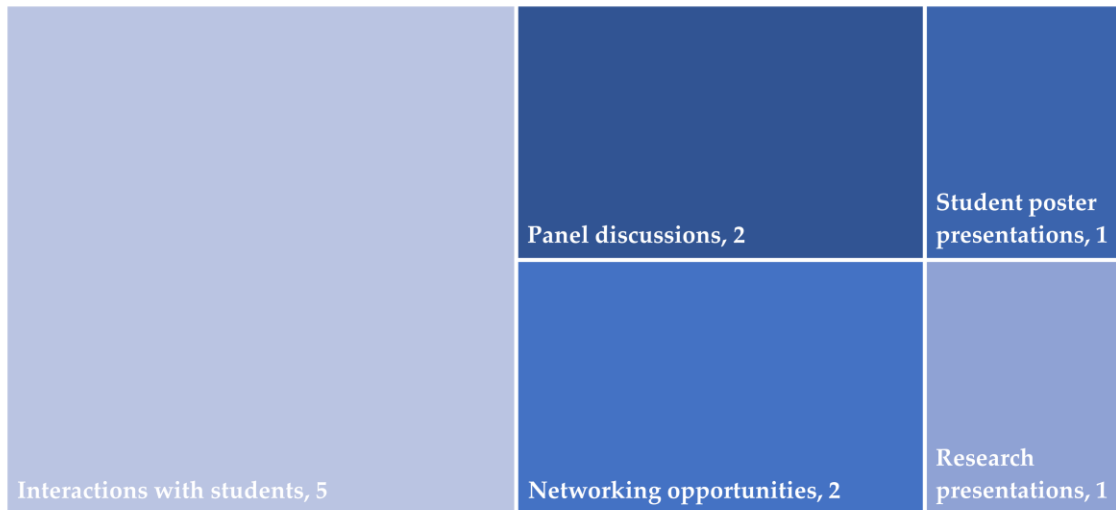
Panel discussions

I got to see real side of successful mathematicians when they described their drawbacks and insecurities and how they overcame them.

Seeing the different types of research

The most useful aspect of the conference was the feedback after the presentation.

Non-Undergraduate Participants



I enjoyed all of the talks and interactions with students.

It was good to be able to get experience presenting research.

Networking

As a post-doc attending the conference as a mentor, I think my presence was most useful during panel discussions and poster sessions where I could interact directly with students.

The friendly open atmosphere. It was great to see the kids doing research and to see senior people in the field guiding and encouraging them.

There was a great balance between talks and posters, and attention to detail, such as making sure faculty spread out at different tables during dinner, was very effective in ensuring lots of interaction among people of all career stages.

Offer the opportunity for undergraduates to showcase their research in an undergraduate only environment. Make connections and listen to the panel discussions.

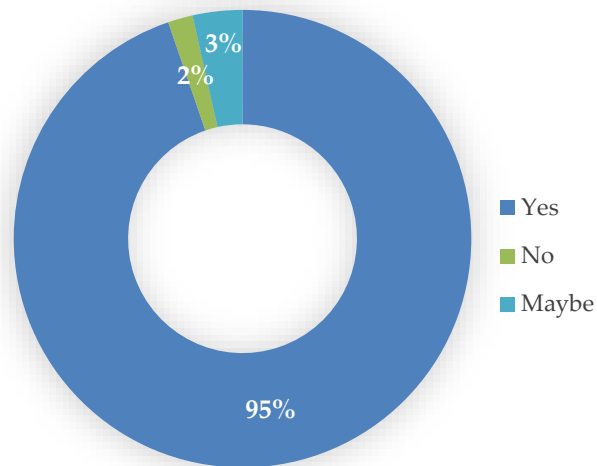
The most useful aspect, in my opinion, was the interactions of professional academics with undergraduate researchers, and probably, for the students, the opportunity to present. I felt like most of the posters and presentations lacked in the introductory section, explaining to non-experts the motives and context for the research.

Interactive poster sessions

The interactions between undergraduate students and the discussion panels.

Figure 5. Do you feel the conference was successful in achieving its goal of creating a forum through which undergraduates can present research and make new connections at the interface of math and biology?

Undergraduate Participants



Please explain:

Everyone was very willing to connect and explain more about their program or university while also being very open to just offering advice.

Definitely did this well.

The research presented was accessible to undergraduates, and the audience was supportive and offered constructive feedback. It did not feel intimidating to present at the conference.

Undergrads from around the country were able to present their research and consider questions they may have not considered before.

I might not have ever known about the interface opportunities in math and biology if not for attending this conference.

I felt confident being able to present my research and get used to presenting research. It was also very helpful to see other undergraduates who were also presenting research so I could learn from their style. I also believe there was a good spread of majors at the conference all working on math and biology. This conference was effective at bringing a variety of research disciplines within math bio.

The schedule was tight, it would be nice to have breaks for undergraduates to mingle and talk.

It was nice to see different research going on in the field of math biology. It was hard to meet new students, especially since most of the time was filled with presentations. It was also difficult since students stayed mostly with their groups from their respective schools.

I think it was very successful in meeting these goals for undergraduates who have not been exposed to such conferences.

The program was really well organized, and all of the professors and other undergraduates were very approachable.

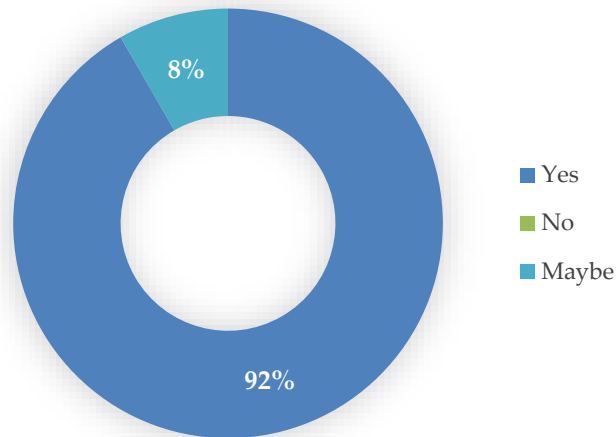
The conference was definitely very research focused. For those presenting, the opportunity to show their research lead to others asking questions, which opened a dialogue to make connections.

I am a Physics and Math major, so the Biology portion was lost for me but I did enjoy seeing how Math is used in all the Biology.

Was a very respectful nice place to present work especially for those not use to presenting

The conference could do better with networking opportunities but the presentations were interesting and informative.

Non-Undergraduate Participants



Please explain:

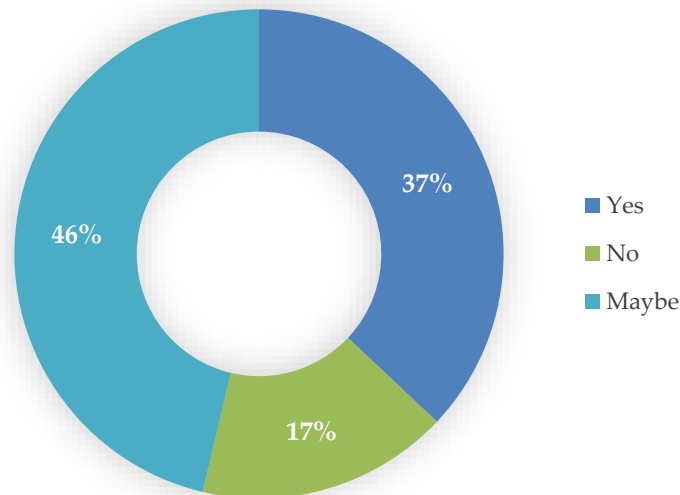
The undergraduates that I brought to the conference had a wonderful time meeting their peers and interacting with faculty members. They found this venue to be less intimidating because it was specifically tailored to undergraduates, and especially appreciated the panel discussions that helped them consider different career options.

Very friendly and encouraging conference

I feel the conference was an invaluable opportunity for undergraduates to present their research to a reasonably sides audience with appropriate expertise.

Figure 6. Do you feel that the exchange of ideas that took place during the conference will influence your career plans?

Undergraduate Participants



Please explain:

It was an extremely motivating and empowering experience as I proceed with the application process for math PhD programs.

Because the advice I received at the conference was directed for those interested in applying to graduate school and generally those with degrees in mathematics, biology, or computer science, I felt they did not apply to everyone. Perhaps the advice was so specific because the conference was meant for that specific set of people (undergraduates majoring in mathematics, computer science, or biology that are interested in graduate school), but in that case I wish it had been made more clear that it would not be a useful conference to those outside that directed audience.

I was able to make better informed decisions about my plans after graduation.

I like the idea of including more math and looking at biological questions from a math standpoint due to this.

I never thought about doing research and I think it can be very interesting.

I think I may apply to a program completely outside of mathematics now, and I don't think that I'll have no chance even though I don't have the exact background that may be desired because I do still have quantitative skills. I don't know that I would have pursued this path without having met some of the professionals that I did at the conference.

I am looking at a career separate from math and biology and this conference did not play into that decision. Was a great experience though!

I learned a lot about the different areas of research within the broad field of math-biology, and although I'm not certain about my future plans, I now have more options to consider.

I've received a lot of advice from current researchers and grad students about applying for grad school/PhD.

I did not know about the research in math that this conference presented. I will highly consider PDE and ODE modeling for graduate school after seeing the nature of research in the field. I never knew how applicable theoretical studies applied to applied mathematics.

I was able to talk with researchers working on similar projects and have some direction in my research as it progresses forward. I've also made some connections that I hope to capitalize on as I move forward with my research development.

My interests largely lie in other fields, but the experience was still valuable.

I already came in with a career path in mind.

I am currently on the fence about what I want to do with my life, and I can't say the conference changed my mind.

I can see how this interface may be used, but I am looking for fieldwork mainly, which will probably just be data entry after.

I still want to become an engineer.

Not sure about grad school but the panels seemed to mention a lot about getting a PhD.

I had already considered a PhD in biostatistics before I attended the conference, and still feel the same way about applying to a graduate program.

I come from a physics background, and have interests in math. Seeing different math programs was useful, but I am not sure if I will pursue any biology career plans.

It has made me reconsider pursuing biomathematics in grad school

I have felt pretty sure about my career plans and there was nothing at the conference to change my mind on that.

I always had the intention of pursuing the things that were presented in the conference, so I guess it strengthened my pursuit for the future.

Because I am very passionate about what I want to do.

As far as internships go, I have a better idea of what an REU is as well as what research I find the most interesting. I also know more about graduate programs, which are where I hope to go after my undergraduate years.

I talked with other professors about what I wanted to do and I was offered advice that I didn't want to hear necessarily, but it was probably best for my future.

I'm already a Math & Physics Dual Major. I was at this conference because one of my math classes had a biology component, but I think I don't plan to change majors.

I am determined in my particular career path, and most of the information supported that path rather than discouraging it.

I had a great realization about what I want to do thanks to Sadie Ryan's talk.

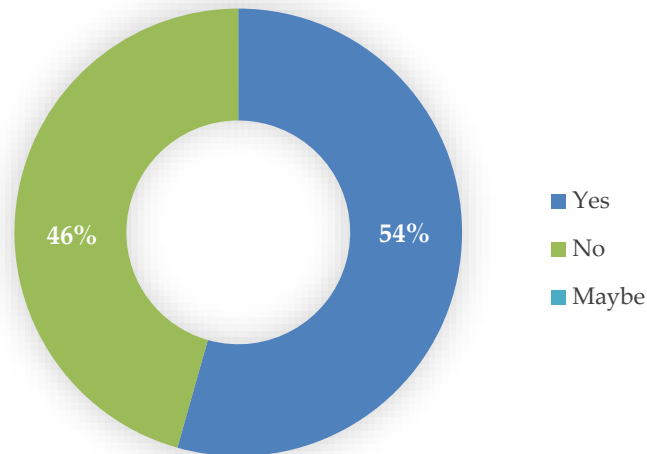
I had no idea that Dr. Sadie Ryan's field even existed, but I'm currently looking into it and whether I am potentially qualified to study it for graduate school down the road.

Want to go to math grad school but not sure I want to do biology anymore

Yes, I learned that there are many different ways to achieve the same goal.

Figure 7. Did attending the conference impact the likelihood of you applying to graduate school?

Undergraduate Participants



Please explain:

I was already in the process of applying but it definitely solidified that I am making the right decision!

I already wanted to go to grad school.

I've already applied. Some graduation applications are due around this time if students hope to apply for a fellowship as well (If applying for fall 2020).

I am more certain that I want to go to graduate school to continue pursuing academics after the conference.

Increased likelihood

Already was interested.

I already wanted to.

I was already going to apply to graduate schools, I think it just changed which programs I'll be applying for.

I planned on going to grad school before and after.

I was already planning to do that.

I did not know about PDE and ODE modeling. I did not know much about graduate programs in mathematics, generally.

I am sure I am applying to graduate school before and after but this made me more confident in how to apply to graduate school.

I was already planning to apply.

It reassured me that graduate school is the path I want to pursue.

I was already dedicated to applying.

Already in the process of applying.

I don't want to go to grad school.

It made me consider it more but not necessarily apply.

I had already intended on applying to graduate school.

I had already sent my applications to grad school.

I feel about the same about grad schools

I went in thinking that I will not be applying to grad school, but I am reconsidering now.

I had already planned on applying to graduate school.

I already planned to go to some professional school.

I was planning to apply anyway, but I feel even more confident in that decision now.

I see that there is a slight chance of me making it to a masters or maybe even some PhD program. Maybe.

It made me feel more optimistic about my chances.

I was already planning to attend grad school.

I was already planning on applying.

Already had previous plans to apply to grad school.

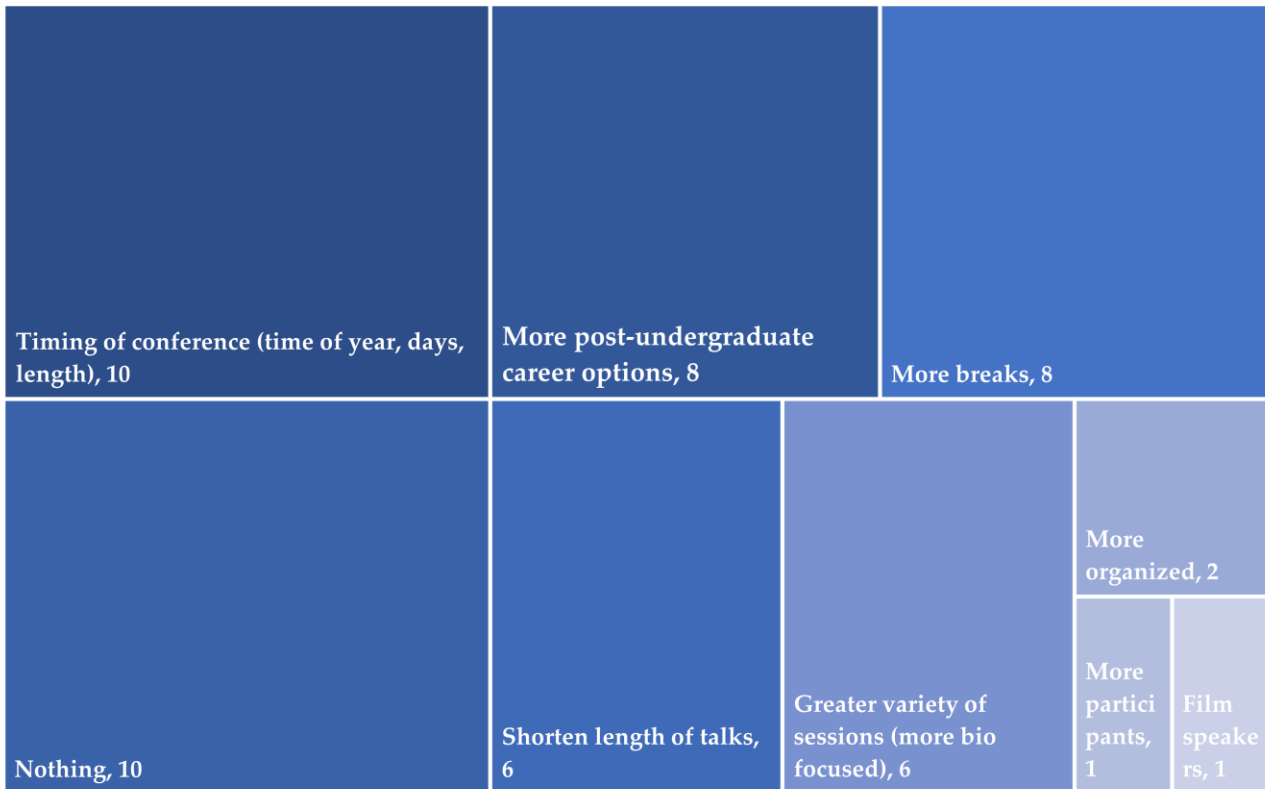
Was going to apply regardless.

Grad school panel was encouraging.

Attending the conference made me want to apply to grad school even more.

Figure 8. Would you change about the conference?

Undergraduate Participants



Maybe the time of year.

I had a really great time. I think there could have been more organization of "informal" events Saturday morning perhaps to fill out the day and help with networking. But that takes time and extra energy. It really was a wonderful experience.

Encourage participation from those who haven't done mathematical modeling research.

Present more options to undergraduates for what they can do with their degree. I felt the general advice was pushing students to go straight for a PhD, but I don't believe this is great option for everyone. There are many more options for students that they may not know about. For example: Master's degree (Thesis); Masters or PhD (Non-Thesis); jumping straight into a career; or working for a few years before getting a masters or PhD.

There are many options, but what is best for a student depends on their goals and interests. Many students are unsure of what their career goal is, often because they don't even know the options available to them. I think it would have been helpful to provide students with an overview of the types of careers: Government (City, State, or National), nonprofit, or industry.

After covering the types and comparing their advantages and disadvantages, it would have been helpful to provide examples. These might include positions that past students have obtained. More importantly, a list of websites that provide job openings, networking opportunities, and career information could be presented.

Overall, the conference could have been improved by diversifying the advice and opportunities presented.

To have a wider range of participants for the career/grad school fair.

Nothing

A more bio friendly environment, it was more so a math conference with biological elements sometimes, not a math and biology conference.

Some talks were too long.

I thought it was very dense in that there were almost no breaks, and I could feel myself getting a little tired and distracted.

Have a greater variety of sessions

More biology talks especially within ecology where a lot of math is being used in interesting ways.

I can't think of anything -- I had a really good time!

The shortness of presentations.

I would provide another social opportunity for undergraduates to meet undergraduates from various other institutions. Maybe trying to spread out individuals during that first dinner based on interests?

Less student talks.

Some panel discussions were more popular than others resulting in a chair shortage.

Inserting more breaks, and to start earlier on Saturday so it doesn't end too late.

Nothing.

Less discussion panel, more small-group time.

Nothing.

Make the poster presentation more organized a lot of people did not come to my poster.

The panels seemed much more bio based than math.

It was a bit too long, like too long in two days. Maybe do three days or Saturday start earlier.

I wish there was more time for panels that talked about graduate school and careers. I also wish there more graduate schools that attended the graduate school fair.

Less time in panels.

More participants.

Nothing.

I would make sure that both presentations in each room were both on time as some would end early or late. Additionally, on the schedule I'd include a time for check in. Also, the closing remarks of the conference felt very informal and there was no mention about the reimbursement form. I was told that the form would be given at the conference. Lastly, I would suggest the person leading the panels to bring their own prepared questions so that the discussions were smoother and efficient.

Nothing.

More small-group time.

It is almost perfect.

Start it a little later on Sunday, have alternative events for those not interested in grad school (e.g. during the grad school opportunities fair).

The workshops should be more sprinkled out throughout the weekend.

Nothing.

I would divide the groups more evenly for the breakout sessions.

Dr. Strickland had a talk that was really two talks. Q&A was choppy as questions had to be held until the very end and so did rest room breaks.

I would add more about summer research programs.

I don't know if this was already done, but it would be nice to have some of the presentations filmed because if there were two presentations that I was really interested in being given at the same time, I would like the opportunity to watch the other later.

Maybe go outside or have an area where you can see daylight. Being inside all day long was a little unfortunate.

I thought everything went well.

Longer!

Nothing.

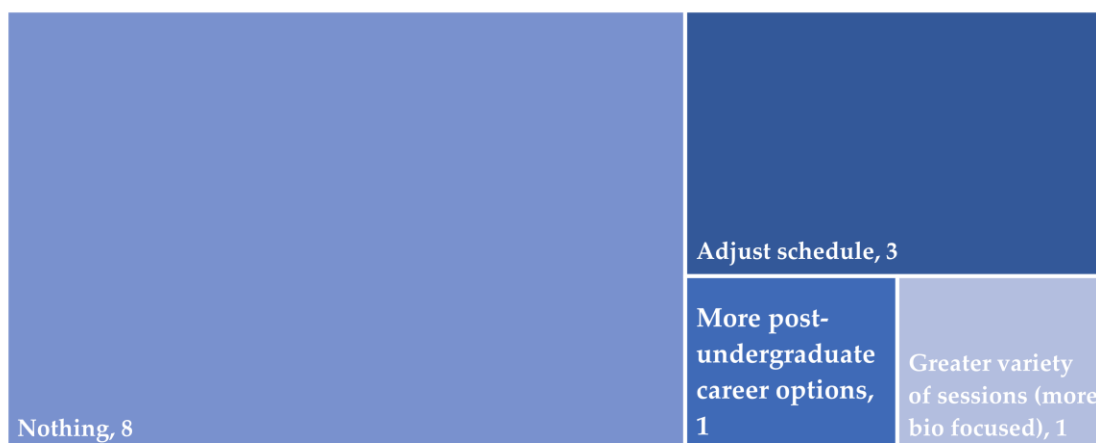
More breaks between talks.

Friday and Saturday instead of Saturday and Sunday.

The amount of time between sessions.

Some of the sessions were in the same room and it could get a little boring just sitting there for hours at a time.

Non-Undergraduate Participants



There seems like a lot of down time with the graduate fair poster session lunch. I feel this could be tightened up. Maybe with the grad fair and poster session sharing time.

The schedule was a bit hectic. I also wasn't able to see all of the presentations that I wanted to.

Nothing.

I think many students would benefit from certain professional development seminars, such as how to prepare and deliver a great presentation, how to write scientific papers, etc.

More molecular biology / biochemistry.

Nothing - I found it to be a great mix of activities, and the right length of time.

Nothing.

Nothing. Loved the new breakout formats to discuss careers in different disciplines.

Nothing!

Nothing.

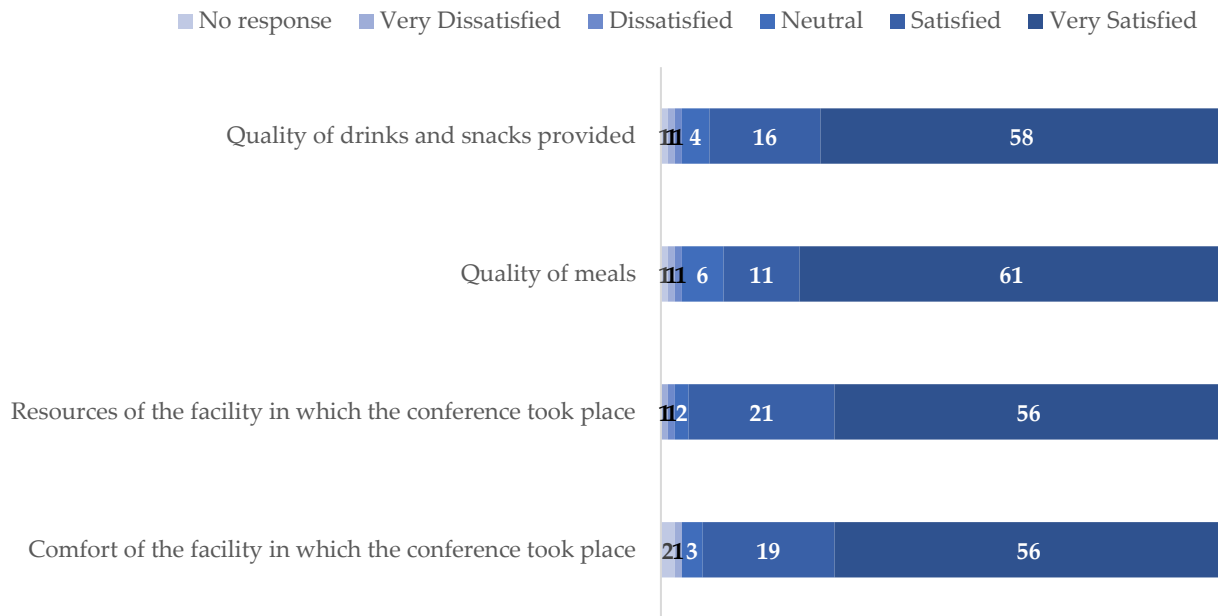
I would overlap lunch, the graduate school showcase, and/or the poster presentations in some way. It felt like there was too much dead time during this point of the day.

I'm biased - leave it as is.

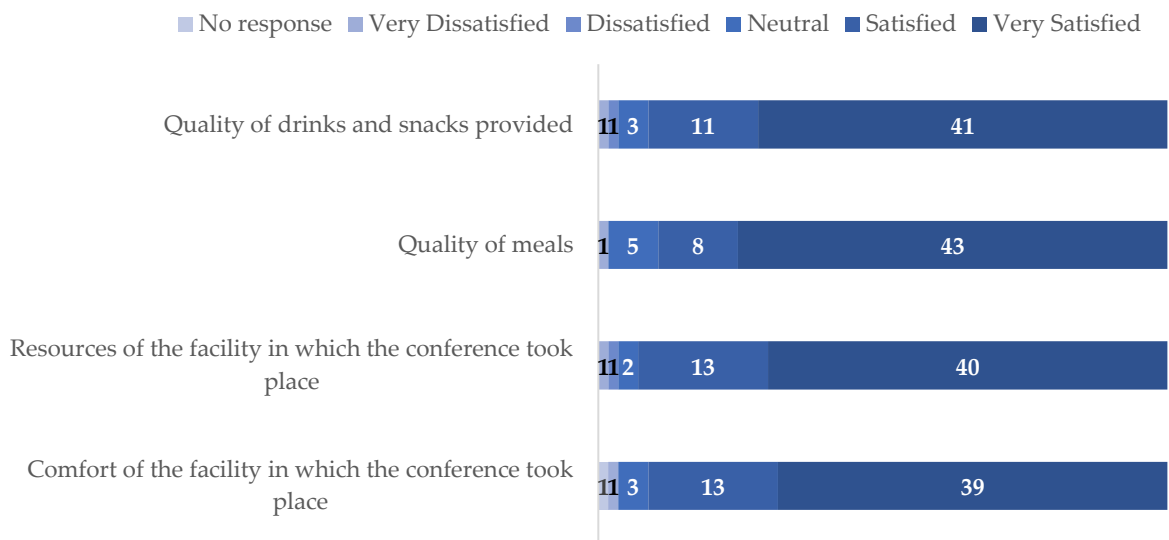
Nothing.

Figure 9. Please indicate your level of satisfaction with the conference accommodations:

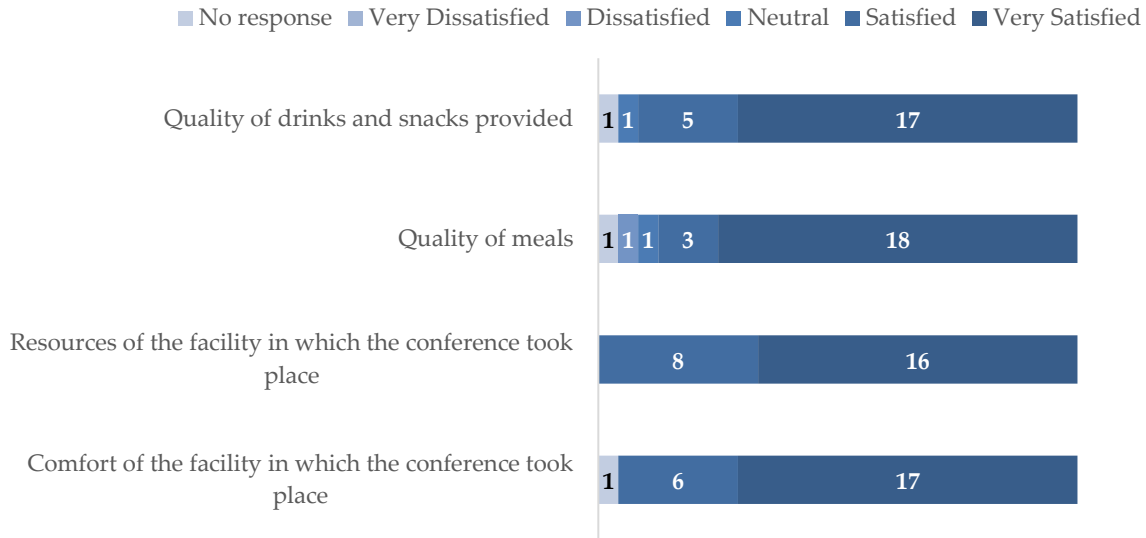
All Participants



Undergraduate Participants



Non-Undergraduate Participants



Please indicate any changes NIMBioS can make to improve the resources and/or accommodations available to conference participants:

More vegetarian options

The accommodation and resources were great.

I requested food without dairy, but there weren't a lot of options. Also the food wasn't labeled, so I didn't know if there was dairy or not.

I thought it was very comfortable

For the buffet-style food service, it would be helpful if items were labeled with potential allergens.

I thought the location was interesting and well placed. The only thing would be to reschedule the fire drill.

Everything was great.

I thought the accommodations were great, the hotel was clean and the people were friendly. The conference center was a good place to have the conference.

None.

Almost perfect. It was a really pleasant experience.

Perhaps discuss timing with Garth.

None.

Everything was good. Keep on doing the same thing you all are doing.

More seating in the lobby.

Provided breakfast would be nice.

Different meal options.

Please provide any additional comments about your overall experience with the conference:

Undergraduate Participants

Thank you for the opportunity. These experiences are so impactful for undergrads as we go about figuring out the next step in our academic careers.

I always appreciate 24/7 access to coffee :)

The conference was amazing and so fun! I've learned so much in a two day span and will definitely use that when applying to grad school!

I wish others knew about this experience. Please continue outreach efforts among undergraduate students!

I had a great time. Thank you for putting on the conference and providing this opportunity for me to grow as a researcher.

I had a great time! I am glad I was able to go.

This was my first conference that I attended. It was cool to hear about other research projects that students were working on, especially releasing that the students came from all over the country. It was helpful to hear more about graduate school.

Explain the bridge and importance of interdisciplinary work in STEM.

I wish there are more details about the talks so I can prepare to learn some terminology in advance.

The conference was a great experience, especially for undergraduate students. The information I learned was valuable and useful, and I enjoyed the opportunity to explore the various research done with math and biology.

Non-Undergraduate Participants

Great conference and I hope it continues.

I really enjoyed this conference.

The unexpected fire alarm interruption in the middle of the conference didn't really seem to affect conference. Everything ran smoothly and timely, as if it did not happen at all. Great job!

I love this conference!

None.

None.