

Girl Scouts STEM Conference Career Panel Plan

Emily Burke

Alyssa Cordes

Sooji Kim

Catherine LeBlanc

Event description:

Biological Journeys: A Northeastern University Student Panel

Northeastern University

Engage with a panel of college students from Northeastern University with real-world experience in a variety of biological fields including neuroscience, biochemistry, and cell and molecular biology. They'll tell you all about what it's like to study biology in college, and give you the inside scoop on college life, research, and more!

Age range: 4th-12th grade (but most likely 9th-12th grade)

Audience Question Structure

Ask participants to introduce themselves and share what area of biology they are interested in (if applicable) during Q&A. Encourage them to use the chat or raise hand function to ask questions.

Nadia will be moderating and will give preference to questions from the girl scouts. It will be made clear at the beginning that anyone can ask a question in the chat at any time during the panel. We are also going to specifically ask if anyone has any questions at the end of each section.

We will start the panel with an interactive word cloud activity using mentimeter to see what biology and STEM topics audience members are interested in.

<https://www.menti.com/52z9it3bsi>. The audience will answer this question and their answers will be displayed in a word cloud.

Prepared Questions and Answers:

Introduction Section:

Show the slideshow of our pictures while answering the following question:

Introduce yourself: Name, major, where you're from, (fun fact), career goals, brief description of research you have done

Emily: My name is Emily Burke, I am a behavioral neuroscience major, so I study the brain and how it works, and I am also a chemistry minor. I'm from Auburn, Maine and I enjoy hiking and being in the outdoors. I plan on getting my PhD in neuroscience and studying the cognitive effects of drugs of abuse. I hope to become a professor someday and run my own lab at a

university. I have done work with coding programs to simulate neural activity, I also have done research imaging neuron activity when the brain is replaying memories. I also have done research looking at how drugs of abuse change the brain.

Alyssa: My name is Alyssa Cordes, and I am a cell and molecular Biology major, which looks at how different molecules and cells interact with each other in different systems. I'm from Ipswich, MA and I was a girl scout for 8 years. I plan to earn my PhD in Immunology one day and work in the BioTech industry. My research focuses on developing new treatments for cancer. I did two paid internships during college and both revolved around creating and manipulating cells involved in the immune system. The goal was to make them stronger in order to target cancer. I've worked with different types of white blood cells, including T cells and Natural Killer cells. Natural Killer and T cells kill unhealthy cells, bacteria and viruses. I've also worked with stem cells, which are cells that can be made into any type of cell in the body.

Sooji: My name is Sooji Kim, and I major in behavioral neuroscience, with a minor in health, humanities, and society. Behavioral neuroscience involves studying the nervous system, everything including the brain, spinal cord, and peripheral nerves, and how it relates to behavior. I grew up in New Castle, DE but am originally from South Korea. I am applying to medical schools this summer and hope to begin in the Fall of 2022 after taking a gap year. During my gap year, I plan to work as an emergency room technician or a clinical research coordinator. Eventually, I want to work as a doctor serving low resource communities and maybe work in public health. A fun fact about me is that I love to take care of my houseplants and I currently have over 30 of them. My longest experience was at a neurobiology lab, where I studied brain cells that help us perceive the sense of touch using mouse models. My most recent (and most fun) experience was abroad in South Korea where I worked with toddlers to understand what factors affect learning in early development.

Catherine: My name is Catherine LeBlanc, I am a biochemistry major. I'm from Watertown, MA and I was a Girl Scout for 4 years! In college, I have had a couple of great research experiences. My first was when I volunteered in a lab which was trying to find better antibacterial treatments to treat Lyme Disease. I did a paid internship where I worked in a lab doing genetics research on the human kidney to help better diagnose different types of kidney diseases. I am taking a year off after I graduate in May to apply to PhD programs in genetics and gene regulation. After getting my doctorate in the US I hope to move to Australia and work there!

Where did your initial interest in biology come from?

Emily: Watching tv shows like Brain Games and Bill Nye got me interested in biology and neuroscience!

Alyssa: I always enjoyed science and math. Everything from raising butterflies in elementary school, to more complicated high school biology labs.

Sooji: I always thought of myself as a science kid. Science was my favorite subject growing up. I remember taking care of crayfish in science class in elementary school and finding it so

fascinating. My love for biology just grew from there as I realized what a broad field it is. Biology includes everything from ecology to neuroscience to genetics, which are all so different yet interconnected!

Catherine: My love for biology, and specifically genetics, came from taking a biology class in high school. I had to read a book called *Survival of the Sickest* for class which sparked my interest in genetics.

Audience Question: *Do you have any questions for us?*

College Experience Section:

Why did you choose your major/career path?

Alyssa: During my biology lab in high school we did a GFP lab, where we made cells glow green. That really inspired me to pursue biology as a major.

Emily: I am fascinated by the brain and was excited by how up and coming the neuroscience field is. There are a lot of things still undiscovered and it is a really great mix of biology, psychology, biochemistry, and chemistry all in one.

Sooji: In high school, I really enjoyed AP psychology and biology so I decided to major in neuroscience because it seemed like a good combination of the two. Neuroscience is still an evolving field and I was excited to learn about how the brain and nervous system work. My minor in health, humanities, and society focuses on the social, economic, and political factors that affect health conditions and outcomes. I chose my minor because I love learning about health ethics, health disparities, and social determinants of health. These are very important concepts to understand as someone who wants to work in the healthcare field.

Catherine: throughout the classes I have taken in college I just found myself most interested in genetics and epigenetics. I couldn't really see myself being interested in any other subject long enough to base my whole career in it.

What is your favorite biology related class you have taken in college?

Sooji: My favorite class was functional human neuroanatomy. I absolutely love learning anatomy and physiology, I think it is so cool to learn about all the different parts of the human body and how they work. Neuroanatomy was especially cool because it was very relevant to my major and we had a lab portion where we got to examine real human brain and spinal cord specimens from cadavers!

Catherine: Microbial evolution! It was a super interesting class that went in depth into different theories of how life evolved on Earth.

Emily: I am currently taking this class, but neurobiology of learning and memory! I am really interested in how we learn and remember.

Alyssa: My two favorite courses were Biology Project Lab and Stem Cells and Regeneration. Biology project lab I got to design and carry out my own experiment and learn important techniques. It really helped me prepare for my internships. My other favorite class was about stem cells, which has so many applications to different fields of biology and medicine, it was really cool to learn about that.

What extracurriculars did you participate in?

Alyssa: I was in national honors society, softball, track and field, a few different band groups, and I did volunteering with a few different community partners.

Emily: I was in NHS, student council, soccer, dance, latin club, chess club, volunteering clubs, mock trial, and freshmen mentoring. In college I am part of the neuroscience club (NEURONS) and Chi Omega sorority.

Sooji: In high school, I did NHS, science olympiad, student council, field hockey, soccer, band, and volunteering. In college, I am involved in a global health equity organization called GlobeMed, where we work with a community in Uganda on a water sanitation project. I am also in Asian American cultural clubs like AASIA Peer Mentoring and SASE (Society of Asian Scientists and Engineers).

Catherine: In high school I was in NHS, dance, science team, and was a peer tutor for chemistry and geometry. In college I am in the pep band, in a dance club, volunteer to teach health ed in Boston Public Schools, and help run a food pantry on campus

What is your favorite thing you've done in school/work/etc?

Alyssa: I really enjoyed both of my internships during my undergraduate studies. Both were developing immunotherapies for cancers, where we inject cells into a patient.

Emily: Research! I've been lucky enough to have the opportunity to work in labs on campus along with at other institutions and I recently have been conducting my own research project at my current lab.

Sooji: I love my current job at the Brigham and Women's Hospital emergency department. I work as an emergency room technician, taking care of patients and assisting the doctors and nurses. I have learned so much about emergency medicine and the healthcare environment.

Catherine: My favorite opportunity I've had was running my own project my junior year in one of the research labs I worked for on campus. The lab focused on the bacteria that causes Lyme disease so it was super interesting to be a part of!

What obstacles/challenges have you faced in your journey as a biology student?

Alyssa: Classes can be difficult and studying can be stressful. However, studying with friends or making time for yourself can really help manage that stress.

Emily: I've found balancing classes with extracurriculars to be really challenging. It can also be hard because there is often an expectation to be working in a lab (or getting clinical hours if you're pre-med), so it was definitely hard to adjust to managing my time better. Taking electives about topics I am passionate about along with doing research and extracurriculars that I'm passionate about has helped getting over this obstacle significantly easier.

Sooji: Definitely balancing extracurriculars and classwork, as well as making time for myself and not overloading myself. I have been involved in many student clubs and taken student leadership positions, so it was difficult to juggle demanding science classes and extracurricular responsibilities. I think it was helpful to pick up my minor because it allowed space in my class schedule for me to take non-science classes and learn about another field I was really interested in.

Catherine: For most STEM students who want to go to grad school, it's pretty much a requirement to do research in a lab during your undergrad, which often times is unpaid. This is pretty difficult to manage as someone who was taking hard classes, doing extracurriculars, and had to work at least part time to afford living in the city. I wish that it was the norm to pay students to work in a research lab so I didn't have to do what felt like two part-time jobs (with one of them being unpaid).

Audience Question: Do you have any questions for us?

Working in STEM Section:

How have your goals changed since attending college and doing internships in biology/STEM?

Alyssa: I wasn't entirely sure what I wanted to do with my biology degree when I entered college, and I didn't know about other paths besides pre-med. When I did my internships in the research industry it was really helpful in figuring out what I wanted to do, since I didn't know this career path existed in high school.

Emily: When I first started college, I knew I was interested in research but I wasn't sure if I wanted to pursue a medical degree as well. I also had no idea what areas of neuroscience I wanted to focus on, as I was interested in many varying topics. My first internship working in a lab solidified in me that I wanted to pursue a career in research and also helped me narrow down my interests in neuroscience.

Sooji: I started college with the intention of going to medical school and pursuing a career in medicine after college, but wanted to understand the career more. Fulfilling pre-med requirements throughout college can be challenging, but after shadowing doctors and working in the emergency room, I realized it really was a career that I wanted to commit to. At first, I wanted to get a dual degree in an MD/PhD program, but after doing two research internships, I realized that I did not see myself in a research focused career. I enjoyed conducting research and leading my own research projects, but I personally want to spend more of my career

healing people and working on public health issues. I think I still want to do some research in the future, maybe as a part time faculty member of a university lab.

Catherine: I always knew that I wanted to get my PhD, but I just didn't really know what field I wanted it in. After taking classes and working in 4 different labs through my undergrad, I can confidently say that genetics is the field for me.

What are some common misconceptions people have about working in biology/STEM?

Alyssa: It's not all study all the time. There is a lot of it, but there's also time for fun and friends.

Emily: I think one thing that people think is that to get involved in STEM you have to naturally be good at science, which I really don't think is the case. I think it's really easy to be turned away from STEM because of how challenging the classes are, but I think that's a universal experience for everyone in STEM classes.

Sooji: STEM is such a wide field. Biology is quite different from physics and both are quite different from computer science. In such a wide field, you can find your niche, what you are truly passionate about. You don't necessarily have to be good at all parts of STEM to be successful. Also, once you are a STEM major in college, everything you do does not have to be STEM related. The majority of the student clubs I am in are not STEM related. Not all of my friends are STEM majors. STEM does not have to be your entire life, just do things you truly enjoy, not because you feel like you have to for a future career.

Catherine: some people think that doing research in STEM is all about making cool discoveries, which I guess is the end goal but there is A LOT of work to get to that point.

What is it like to be a woman in biology or STEM in general?

Alyssa: There have been incidents where I haven't been listened to or taken seriously as a woman in STEM. At some points I've even been called nicknames by men in my field. However, it's helped me find my voice and be confident with my ideas and my work. I've also had the opportunity to make great relationships with other women in STEM. It hasn't all been bad, I've had good relationships and mentorships with men as well who have encouraged me and taught me well.

Emily: I think oftentimes it's easy to feel like an imposter in STEM, or at least I felt that way especially when I was just starting out. I think the demographic of STEM majors is beginning to change, as many of my classes have equal amounts of men and women in them, but I have worked in labs where men outnumber women by quite a lot, which was really intimidating. I think it has taught me to make a point of not letting others speak over me and to be sure that my voice is heard.

Sooji: Women only make up 27% of the STEM workforce, so it is definitely a challenge to feel like I belong and like I am just as capable as my male counterparts. I have had plenty of

coworkers “mansplain” to me or give me trivial tasks because I am a woman. The important part is to have confidence in yourself and don’t let anyone put you down. It’s exciting to think about how we, as the next generation of women in STEM, are breaking these barriers!

Catherine: When I got my first internship I was a chemistry major, so I worked in the chemistry department at a biotech. Chemistry is pretty male dominated so I was the only woman on my project team. I’m not going to lie, it wasn’t the best at times just since I was working with all 40-50 year old men who I couldn’t relate to at all. After having worked on all woman project teams in biology labs I can say I prefer that much more.

What are the possible careers that are related to biology?

Alyssa: Medicine (physician/doctor), teacher, research career (academia vs. industry), genetic counseling, public health, science writing, science museums, outreach, policy, patent laws.

Sooji: Also some other health related careers: physician assistant (PA), nurse practitioner (NP), occupational therapist, physical therapist, pharmacist, behavioral analyst, mental health clinician, etc. You could also go towards the more data driven/technical side and pursue further education in computer science or engineering and work at a tech company.

Audience Question: *Do you have any questions for us?*

College Applications Section:

Can you talk about the process of applying to colleges?

Alyssa: There’s a lot of essay writing involved regarding both the college essay and supplemental questions, so starting early was definitely helpful. It was a stressful process for me so it was helpful to use the resources I had available to help guide me through the process. Talking to some of my teachers, advisors and doing a lot of google searches really helped me prepare and learn more about the application process.

Emily: I would definitely study a little bit for the SAT and take practice tests beforehand so you get a feel for what the test is like and how long you have for each section. I also recommend writing essays ahead of time so you can get feedback on them so that they can be the best that you can be. Overall, I recommend not procrastinating on the whole process (which is unfortunately what I did), it saves you a whole lot of stress and also allows for you to make your application stronger and more competitive.

Sooji: Reserve plenty of time and energy to study for the SAT, definitely taking lots of practice tests. Start writing your personal statement early and go through multiple rounds of revisions, asking mentors and teachers to help you. Do your research on the colleges you are interested in: look into the student body size, research opportunities/labs, specific classes in the major you are applying to (it is OK if you are undecided), extracurriculars, campus location/type, financial aid, student support resources (cultural life, diversity/inclusion, mental health, etc). You will be doing the majority of this in the Summer leading up to the Fall of your senior year, so make sure

you have enough time during then. As a first generation college student, I found the process a little overwhelming, but you are not alone. Even if your family members do not have knowledge in the application process, you have school counselors, teachers, older friends, and plenty of resources on the internet to support you every step of the way!

Catherine: Make sure you're applying for a bunch of scholarships when applying to colleges, especially if you're planning on going to grad school. Don't get yourself into a ton of debt just to go to a fancy school!

What did you do that helped you prepare for college/a biology major?

Alyssa: I took AP classes during high school for both science and math courses. This helped by providing college credit for when I entered school. While I took an AP class and I enjoyed taking it, it's not something that you have to do or is necessary, I just found it helpful.

Emily: I also took AP classes throughout high school to help me prepare. I took bio classes at my local college which was helpful in gaining college credit to save money on college. I also tried to take other bio electives that were offered at my high school.

Sooji: Definitely AP classes! I took AP biology, psychology, physics, calculus, which were all very helpful for preparing me for college. If you can start to get involved in labs and do research in high school, it would be great to get an early start.

Catherine: I actually didn't apply to college as a biology major! I started as a chemistry major because that was my favorite class in high school, turns out chemistry was not actually for me. It can take a while to figure out what major is best for you!

Audience Question: Do you have any questions for us?

Questions to ask the audience (if needed):

These questions will serve as a backup option if the audience members aren't asking questions or the chat seems to be going silent.

Where did your initial interests in Biology or STEM come from?

What has been your favorite STEM experience (class, lab, girl scout event etc.)?

Why did you decide to attend the Conference?

Are there any topics or aspects of college you wanted to know more about?

What extracurriculars, clubs or activities do you enjoy?

What other events of the conference have you attended so far? What was your favorite?

What science classes have you taken so far? Were there any in particular that you enjoyed?