



Staff Engineer Allie Duchnak works with students at San Diego's Elementary Institute of Science, as part of Illumina's The Future Is Bright campaign. Photo by Kristy Walker

Engineering a cool career in biotech—and volunteering along the way

What kind of opportunities can an engineer find through their work? Plenty, at Illumina! One employee shares how she makes a difference.

INSIDE A LAB THAT IS OFF-LIMITS to most employees, Staff Engineer Allie Duchnak coordinates hundreds of details for highly confidential projects. Based at Illumina's San Diego headquarters, her interdisciplinary team, Advanced Platforms, builds test beds for components that may one day become part of a sequencer.

If you were allowed a peek, you'd see a lab filled with fluidic tubes, flow cells, computers, imaging, and syringe pumps. "What we do looks pretty ugly," Duchnak laughs. "There are parts and things going in all different directions."

The first project she worked on that made it to market became part of the Illumina NovaSeq X Sequencing System. She had joined the project in 2019, but the work began even before that. "Everything else I've worked on is still not yet a product," she says. Her timelines stretch into next year or 2026 (and that's fast-tracked, believe it or not); more commonly she works within a three-to-five-year timeframe and generates ideas for items that are a decade out.

Duchnak studied nanoengineering at the University

of California, San Diego, but she always wanted to do something related to health and health care, and she found her way to Illumina through her on-campus volunteer work. As an undergraduate, she got involved in Global TIES (Teams in Engineering Service),¹ which pairs students with not-for-profits to deliver a useful engineering task. In TIES, she was part of a group developing a low-cost HIV monitoring system at the university's San Diego Center for AIDS Research. At the same time, she and her undergrad teammates founded a startup, which led her to transition from nanoengineering to bioengineering and biology.

After a year in the San Diego Center for AIDS Research, Illumina hired her—just as she happened to begin a master's program in biotechnology. "I ended up doing both because it just didn't make sense to turn either down," she says. Illumina is her first job in the industry.

On top of her engineering work, Duchnak continues to volunteer through internal opportunities at Illumina. Since 2021, she has served as a volunteer manager for The Future Is Bright,² a cornerstone Illumina corporate social

1. <https://globalties.ucsd.edu>

2. <https://dnaday.org>

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responsibility (CSR) initiative. This monthlong genomic literacy campaign, tied to DNA Day on April 25, sends volunteers to schools near Illumina sites, including San Diego and Foster City, California; Madison, Wisconsin; and various international offices. Illumina employees connect with students by hosting career panels, implementing genomics curricula, and leading hands-on experiments, such as extracting DNA from strawberries. Illumina's goal is to reach 5 million STEM learners by 2030, with the idea of fueling a diverse pipeline of future scientists.

As the lead volunteer manager, Duchnak coordinates about 15 volunteer managers who, in turn, help prepare the other volunteers and connect with the teachers. It's a massive undertaking, but the takeaway every year is the small, joyful aha moments. Duchnak remembers one student at San Diego's Lewis Middle School last year: "He was so enthusiastic about answering our questions and trying to share what he knew, and it was really great for me and the other volunteers to see that what we consider normal daily job activities can be so exciting to kids."



Allie Duchnak and students celebrate DNA Day at the Elementary Institute of Science.

Making connections

Another program, Genomics 101, is open to any employee year-round. Volunteers can visit a classroom with a ready-made presentation and tools like the strawberry DNA extraction kit. Duchnak explains: "In addition to presenting about Illumina, we also introduce kids to concepts such as 'What is a genome?' and 'How much DNA is in our bodies?' The numbers are kind of mind-boggling, even to adults—so to kids, it's even more so."

When they're in the classroom, Duchnak has been

passionate about urging her fellow volunteers to share stories that will help students feel a connection—if not to the unfamiliar science material, then to the employees themselves. She revamped a slide template to allow volunteers space to include personal stories, not just career facts. Did they go to a community college? Play soccer? Question what they wanted to do in life? Duchnak says kids are surprised to see someone who went directly to a four-year university standing next to someone raised in a rural area with very few STEM resources or advanced placement classes. "The critical part is not putting the focus so much on what employees do, but connecting with students and showing them there are many different paths. It doesn't matter where you came from or what you were equipped with. You, too, can do whatever you want, and we're giving examples within the Illumina community."

Recently, another opportunity that Duchnak has been involved in is with a nonprofit Illumina supports, called SD Squared.³ It focuses on increasing diversity in STEM fields in San Diego. Duchnak participates in the SD2 mentorship program for high school and college students in San Diego County and beyond. She mentors a student at UC Riverside. Working with so many students has taught her not just the importance of connecting to each one as a person, but also that having access is key. "SD Squared has taught me what a difference it makes just to have exposure to STEM and resources."

She is also an ally or contributor to all of Illumina's employee resource groups (ERG). "I really keep an eye out on what all of them are doing. I'll check to see if there's any place that I can plug myself in while also trying to be aware of leaving room for others."

Another recent volunteer opportunity included working with two local nonprofits that connect to Illumina's mission, and that the company supports: Rady Children's Hospital and the San Diego Zoo. Last weekend, Duchnak attended Wild Walkabout at the San Diego Zoo.⁴

Finding opportunities

Giving back helps connect employees to the company's mission, and to operating responsibly. Illumina employees can learn about skills-based volunteer opportunities the same way Duchnak does: through CSR emails, Workplace posts from ERGs, and the company's giving back portal. There is even a volunteer rewards program where employees who log their volunteer time can earn

3. <https://sd2.org>

4. <https://radyfoundation.org/get-involved/events/wild-walkabout>

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\$10 per hour to donate to an eligible charity of their choice. Employees also get 16 hours of paid time off for volunteering, a \$500 donation match, and a \$25 new-hire donation deposit.

“Imagine a world in which every person or professional could contribute something to our society, and more specifically to our kids,” Duchnak says. “If they volunteered for an hour a month, or even one hour a year, we could make a difference in getting resources and access to more people in our communities. That vision keeps me going forward to contribute as much as I can and to try to rally people around that. If we have the energy, if we have anything extra in our cup, where can we put it to help fill another cup?” ♦

Learn more about how Illumina is increasing equitable access to STEM education and empowering communities by engaging our people to be agents of change, here:

<https://www.illumina.com/company/about-us/corporate-social-responsibility/empower-communities/stem-education.html>

<https://www.illumina.com/company/about-us/corporate-social-responsibility/empower-communities.html>

Lightning round with Allie Duchnak

Employee since: 2018

Proudest career moment: Seeing NovaSeq X announced and knowing that a project I worked on in its early stages made it into the world.

Most cherished Illumina tradition, event, or extracurricular: If it's not clear yet, I love volunteering! So naturally, I think it's San Diego Festival of Science and Engineering.

Her go-to cafeteria food: The loaded Thai fries! I don't care what they're served with, or if I brought lunch that day, I will always get them.

Best engineering tip: The simplest already-existing things (sometimes everyday household items) can be the best inspiration even for complex systems like sequencer components.

Book on her nightstand: *The Light We Carry* by Michelle Obama