



A student and an Illumina volunteer participate in an educational event with Form the Future.  
Photo by Matt Sage

## Showing students what's possible in STEM careers

*In the UK, Illumina teams up with Form the Future for live-streamed genomics lessons, activities, and career talks*

THE UNITED KINGDOM'S education system requires all students to take a universal exam, the General Certificate of Secondary Education, and often to choose a trade or career at the relatively young age of 16. Kids who live in a rural area are often the first in their family to apply to university or have had limited exposure to job pathways—and they potentially miss opportunities that would have made a lifelong impact.

“A fair amount of research has come out about students at different ages, and we’ve seen limiting beliefs and preconceived ideas and stereotypes set in as early as age six,” says Kath Austin, chief program officer at the not-for-profit Form the Future.<sup>1</sup> She explains that a child’s ideas about what they may be able to achieve in life are largely determined by their social network and available role models. Teachers and professionals have a small window to expose kids to career possibilities before they must commit to one. “You have to make decisions about what you’re going to study at a really young age, sometimes as young as 12,” Austin says. “You might feel like you’re choosing your destiny before you could possibly know what you want to do.”

Austin asserts that the education and employment worlds exist in separate silos. “All of this effort is put into young people to get them through the education system and to pass their exams,” she explains. “We’re trying to build their curiosity for the working world alongside that. Let them see the whole landscape, but also develop the skill sets that they’ll need to move into a job seamlessly.” For example, she points to skills such as communicating appropriately with people of different ages and levels within an organization.

Now in its tenth year, Form the Future bridges the gap between schools and employers. The organization has partnered with Illumina to reach children from a young age through high school, using Illumina’s STEM inspiration packs and in-class DNA experiments. They also bring students to Illumina’s European headquarters in Cambridge and train teachers in career education. Form the Future works across the eastern region of the UK and has just launched a digital program that will help reach more children in schools or places with limited access to transportation, the biotech industry, and its workers.

1. [formthefuture.org.uk](https://formthefuture.org.uk)

### A scientist designs her next project

Alison Coffey is a clinical genomics scientist at Illumina, who lives just south of Cambridge. For over 20 years Coffey has tutored children of all ages in science and other subjects. During the pandemic, she began teaching science online to her nieces and nephews, godchildren, their friends, and their classmates. Working with neurodivergent students and others with learning differences, Coffey gained an understanding of various educational needs—and she wanted to do more. Already a seasoned volunteer and fundraiser (and prolific bake-sale cake maker), Coffey reached out to Illumina's Corporate Social Responsibility (CSR) department last year to look for opportunities to volunteer remotely. "I really believe you should actively give back to the community you live in," she says. "I love the fact that Illumina allows you to use your work knowledge and experience and give back within your work life."

Hollie Church, regional head of CSR & Sustainability Europe, connected her with Form the Future to help deliver a new program that brings genomics and careers in genomics to the classroom using digital platforms. Coffey, together with colleagues Holly Snyder and Antonia Alalitei, developed the content.

"We were challenged to join Illumina's goal of reaching 5 million STEM learners globally by 2030," Austin says. By delivering instruction remotely, the program could potentially reach thousands of students, especially those who live far from biotech centers or who can't afford to take field trips to places like Illumina's Cambridge campus. The team developed content that Illumina staff could present remotely and then interact with students in real time, as part of a normal science lesson. "The single most important part of careers learning is actually hearing from another person who's trodden that path before you," Austin says.

### The pilot program

In March, Coffey, Snyder, Alalitei, and Drew Ellershaw presented to two classrooms each of about thirty 12- and 13-year-olds at a school in Soham, a rural village of about 12,000 people. The lesson covered the basics of DNA, sequencing, genetics and disease, and an

introduction to Illumina. The students loved the portion in which Snyder, a genetic counselor from the US, talked about canine genetics. "The children were so excited that an American was dialing in from the East Coast," Coffey says, "and she did not disappoint." Snyder had had genetic testing done on her two dachshunds, and she shared the reports outlining their ancestry, disease risk, breeding possibilities, and traits (one of them, Arlo, has a high degree of "wolfiness," which the children loved learning about). A classroom activity followed in which the students mixed and matched different traits to "build" their own dog.

The scientists also talked about their own career paths. The students particularly liked hearing from Ellershaw, a clinical genomic scientist, who admitted that at one point during his education he lost interest and eventually had to turn things around through hard work. Coffey says the kids appreciated his honesty: "The path isn't always smooth. I was going to be an interpreter or a musician, and it was my chemistry teacher who inspired me to be a scientist."

In future sessions, the partnership plans to rotate representatives in from a wide range of jobs, such as a software engineer, a product manager, a bioinformatics scientist, or an expert in artificial intelligence.

"There's the phrase, 'you cannot be what you cannot see,'" Coffey says. "I want kids to really see the variety of jobs that exist, even just within Illumina, and the variety of people that do them."

The project officially launched this month with another 300 students, and will resume in October with the new school year. The team hopes to return to the same groups of students every year with slightly more advanced lessons: Ultimately, Form the Future and Illumina would like to deliver lessons to students for a period of five consecutive years. "It isn't just a one-off and that's that," Austin says. "They will engage every year and be continually reminded that they're learning this science because it can lead to these pathways. The door is open." ♦

*To learn more about Illumina's STEM resources and educational outreach, go to [illumina.com/stem](https://illumina.com/stem).*