



The Amgen Biotech Experience was developed through a unique collaboration between science educators and industry scientists. Few had more impact on the program than high school teacher Hugh Nelson, Amgen scientist Bruce Wallace, and Professor Marty Ikkanda (pictured left to right).

THE PIONEERS OF THE AMGEN BIOTECH EXPERIENCE

“Pioneers lay the roads for those who follow to walk on.”

~ Author unknown

The Amgen Biotech Experience now reaches nearly 90,000 students and nearly 1,500 teachers each year, but the program had humble beginnings: a small group of scientists and teachers with a passion for sharing their knowledge with students.

A Serendipitous Call for Teachers Interested in Modern Biology

In 1989, high school teacher Hugh Nelson answered a call from his administrator at Newbury Park High School in Thousand Oaks, California. Amgen was looking for biology teachers to work at the company for the summer in an intern program. Nelson was familiar with Amgen because one of his former students had secured a job there.

Nelson applied and was one of three teachers selected for the program.

Bruce Wallace, a molecular biologist at Amgen and one of the company’s first staff members, had issued that call for teachers.

“Bruce had a Ph.D. in molecular biology and was the father of four children who attended local schools near Amgen’s campus,” says

Nelson. "He recognized that the science being taught in schools was deficient. The chemists, geneticists, molecular biologists, and others at Amgen at that time wanted to improve science education for their own children, among others, and knew it was essential to improve the training of local teachers. They thought Amgen staff could be instrumental in providing meaningful professional development to high school teachers. I was lucky to get involved with the fledgling program and was excited about the opportunities it presented.

The clipping is from the 'Features' section of a newspaper. The main headline is 'Reading, Writing and Genetic Engineering'. Below it, a sub-headline reads 'Biotechnology headed for Conejo area high school classrooms under Amgen program'. The photo shows a man with glasses, identified as Bruce Wallace, looking thoughtful. The text in the clipping describes the genetic engineering program and quotes several individuals involved, including Wallace and a teacher named Nelson. The article mentions that the program is a three-part project involving Amgen, Conejo Valley Unified School District, and local high schools. It highlights the goal of providing hands-on learning to students and the role of teachers in this process. The clipping also notes that the program is a pilot project and that Amgen is committed to providing resources and support for the teachers and students involved.

A Commitment from Amgen to Share Knowledge with Students

Nelson and the other teachers learned the procedures Amgen uses to develop biologics. To Nelson's surprise, at the end of that summer Bruce Wallace and Amgen executives committed to providing the equipment and chemicals to teach the lab procedures in area high schools.

Nelson worked with Rick Jacobsen, a scientist at Amgen, to fine-tune a series of

12 labs for high school students that had been designed by Scientific Executive Director Steve Elliott (who recently retired from Amgen). Amgen proposed to Nelson that his students be the pilot group. Nelson's own son was in the first class of students to experience the Amgen "Plasmid Fusion Labs." The program was formally launched in spring 1991.

Rapid Growth in Los Angeles Area—Scientist-Teacher Collaboration

Bruce Wallace arranged for Nelson, who took a yearlong sabbatical from teaching, to expand training to 35 teachers at nine schools in Ventura County, California. Nelson provided hands-on in-classroom assistance and spent evenings and weekends preparing enzymes and dyes and other lab essentials—a task he undertook for the next decade. Amgen provided kits of equipment and materials, which teachers, who were excited about the new labs, picked up from the last schools to use them.

In the 1992–1993 school year, the program grew from 9 to 12 schools, with 1,300 students participating. The program continued to grow every year, with Nelson hosting weekend workshops for interested teachers in his own classroom.

Updated Curriculum to Resemble College-Level Learning

In 1999, Marty Ikkanda, a professor of biological sciences at Pierce College in Woodland Hills, California, was enlisted to update the program's curriculum. "The labs involved recombinant DNA work but didn't explore protein expression or purification," says Ikkanda. "Biotech companies produce proteins, so we added greater depth to the labs."

Like Nelson before him, Ikkanda took a sabbatical, collaborated with Rick Jacobsen under the supervision of Bruce Wallace, and

rewrote the curriculum to resemble what he was teaching in college classes. The revised program was rolled out in 2000 to 20 participating schools. By the end of the school year, due to word of mouth, the number of participating schools climbed to 30. Ikkanda became program director and began conducting teacher training workshops funded by Amgen and the National Science Foundation.

Program Explodes, Changes Lives of Developers and Students

Interest was starting to build among biology teachers from other communities. In 2005, the Amgen Foundation, the main philanthropic arm of Amgen, partnered with Ikkanda to expand training outside of Ventura and Los Angeles Counties. First up were high schools in San Diego. When the experiment of working with schools outside the immediate geographic area of Amgen's global headquarters proved successful, the push to expand began, particularly to other Amgen communities. Over several years, the program expanded to new Amgen communities in the United States and Europe.

"Teachers tell us they don't have attendance problems when they're doing the Amgen biotechnology labs," says Ikkanda, who retired from the program in 2013. "It's a fantastic way to interest students in science."

Nelson says he measures the success of the program by the many former students—now

scientists—he sees when he walks down the halls at Amgen. His own son, who was in the first class of students to try the Amgen labs, is now a marine microbiologist at the University of Hawaii.

"Becoming involved with Amgen changed my life," says Nelson. "The minute I completed my first six-week engagement with Amgen, I changed everything I taught in the classroom. It dramatically affected how I understood biology—from observational science to manipulative science. In the Amgen labs, students could tell right away if they were succeeding in manipulating and analyzing DNA with gel electrophoresis and PCR. The labs put students in touch with the reality of modern science. It takes money to do experiments, and Amgen provided the funding for this important, transformative program."

Nelson retired from teaching in 2006 but remains involved with the Amgen program. "I'll remain involved as long as Amgen wants me to. I'm no less in awe of the program than I was in 1989."

Name Change Reflects Program's Evolution

In 2003, the name Amgen-Bruce Wallace Biotechnology Lab Program was adopted to honor one of the founders, who passed away in 2002. Wallace wanted all students to experience the joy of discovery and the excitement of having science at their fingertips. In 2013, the program was renamed the Amgen Biotech Experience to reflect its evolution. Additionally, the Amgen Foundation has joined forces with Education Development Center, Inc. (EDC), a global nonprofit organization with deep experience and expertise in science education, to establish a Program Office to support and strengthen the program. The program has continued to expand into new Amgen communities internationally.

A collaboration that began nearly 30 years ago inspired the ongoing commitment of scientists and teachers to share their knowledge and passion for science. The Amgen Foundation is proud to continue its support of a program that is stronger than ever, and poised to bring real-world biotechnology to a new generation of teachers and students. "That pioneering spirit distinguishes Amgen," says Eduardo Cetlin, president of the Amgen Foundation. "We're forever grateful to those early collaborators for the roots of this powerful program."