Intel Competition Is Where Science Rules and Research Is the Key
Joseph Berger

They were once the powerhouses, finishing among the top performers as predictably as the Yankees make the playoffs. But for the third year in a row both the Bronx High School of Science and Stuyvesant High School in New York City have been shut out of the circle of 40 finalists in the Intel Science Talent Search.

Yet, the two schools' failure in the prominent competition may be good education news, which even they can cheer as they will lament their absence at the awards banquet in Washington next Tuesday. More high schools around the country are teaching students how to do cutting-edge research, not just imparting textbook science, in some cases because they were inspired by the two old-timers.

"Am I happy that our kids aren't winning first prizes? No," said Valerie J. Reidy, Bronx Science's principal. "But that it's traveling far and wide and other kids are getting hooked, I'm thrilled about that."

The Intel is more than a gimmicky contest that garners publicity for its chipmaker sponsor. It genuinely prompts hundreds of students to plunge into vanguard research. This year, 1,705 students from 487 schools in 44 states entered, said Katherine Silkin, the contest's program manager. High school seniors in the United States and its territories enter the Intel, though their research often begins years earlier.

Six winners of the Westinghouse, as Intel was known until 1998, have gone on to win Nobel Prizes. Its springboard power is particularly important when Americans fret that colleges are no longer producing as many graduates willing to make the financial sacrifices of lives in science.

"Not only do we have to have equity and close the famous achievement gap," said Leon M. Lederman, a Nobel-winning physicist who is co-chairman of the Commission on 21st Century Education in Science, Technology, Engineering and Mathematics. "We also have to have innovation if we're going to survive, so you have to nurture the gifted kids."

The contest, which began in 1941, has been monopolized by New York schools because it had its roots in a local science fair and a cluster of New York personalities. Bronx Science and Stuyvesant eventually figured out the magical formula: Teach your kids to do research; don't just offer cookbook experiments. Pair them with mentors at hospitals and universities, perhaps working on a small piece of the mentor's puzzle, so the projects are more than garage-built contraptions. Assign high school teachers as enforcers to help students through rough patches and make sure they meet deadlines.

Bronx Science produced roughly 120 finalists in the contest's first 50 years, and it lined a hallway with glittering plaques. In recent years Stuyvesant began catching up. While the two schools continue to produce many of the 300 annual semifinalists, two dozen other schools — some outside the city, like Ward Melville in East Setauket, N.Y., and Paul D. Schreiber High School in Port Washington, N.Y., and some far afield, like the Illinois Mathematics and Science Academy in Aurora, the North Carolina School of Science and Mathematics in Durham, and Montgomery Blair in Silver Spring, Md. — regularly penetrate the Top 40.

In the early years, New York City dominated in part for the banal reason that it had a subway system that allowed students to get to professional labs. But e-mail and the Internet have reduced the need to travel.

And more institutions like the State University of New York at Stony Brook, where Miriam Rafailovich, a professor of material science, has supervised many winners on Long Island, have made themselves available to nearby schools.

In addition, many rural and Southern states have started high school research programs, often building dormitories to attract distant students, as part of efforts to jump-start themselves as incubators of technological innovation. Stanley Teitel, Stuyvesant's principal, said that he thinks Intel judges are increasingly recognizing this wider spectrum.

"They are not going to allow me to monopolize this competition," he said, "and I think that's wonderful."

Bronx Science and Stuyvesant may have been hurt in the contest by the loss of a few zealous and inspiring teachers like Science's Carole Greene, who shepherded winners year after year.

But more significant may be something pointed out by Milton Kopelman, who retired as Bronx Science's principal in 1990. Middle-class families from the five boroughs moved to the suburbs, he said, then clamored for programs like those they remembered that might give their children an edge in the cutthroat competition for college admission. The contest is still top-heavy with New York State winners, one of every three semifinalists this year, but many live outside the city.

This year, Byram Hills High School in Armonk, N.Y., had four semifinalists. It has been a regular contender for a while as a result of a battle plan started in 1989 by Robert Pavlica, a teacher and scholar of cell biology who died on Jan. 15. Although he visited Bronx Science, he tailored his own program for Byram Hills and became a research pied piper, prodding 170 schools to emulate Byram Hills's method.

Sometimes a quarter of the sophomore class at Byram Hills signs up for research, said David M. Keith, the school's research director. This year, 21 seniors handed in original manuscripts to Intel even before learning what college they would attend.

JOHN GRANATA worked on software that allows severely disabled patients to communicate by using brain waves to signal letters on an electronic board.

Ashley Bahnken, working with a mentor at the University of Texas, tried to prove through a survey of 177 college students that first-born children tend to make friends with other first-born or only children. "As an only child," she said, "I was interested in how siblings affect you."

Daniel Mark, who is heading to Harvard, imagined himself as an alien on a distant solar system. He used mathematical formulas to conclude that current technology would not permit that alien to observe the Earth.

At Bronx Science, every freshman takes a course in research literacy. Sophomore volunteers then begin the three-year research projects program run by Jean Donahue, a Science alumni who worked on cancer research before starting to teach 10 years ago.

This year, Forrest Anderson studied a way to use physical therapy to reduce falls by patients with Parkinson's disease, learning how to analyze data with mentors at the University of Florida and at Columbia University's Teachers College. He said a biology teacher, Allison Wheeler, "edited these papers a hundred times to find holes in the research."

Natalya Kvetnaya, whose mother is a cancer survivor, studied the effect of a drug, Taxotere, on breast cancer cells in a lab at Montefiore Medical Center near her home in the Bronx. She was a semifinalist but scarcely looked crestfallen that she would not be at the banquet.

"We might have started off the Intel roller coaster, but more schools are jumping aboard," she said. "It doesn't matter. All of us love to do research."

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