The competition: STS scholarships

"Scientists are like a bunch of ants running around investigating tiny parts and trying to pull them all together," says Michael Morgan Dowling. "Science is a building process," adds Douglas A. Simons. "You try to build steps up logically, and the final conclusion is no more important than the original hypothesis or the steps in between." Reflections of Nobel Prize laureates? Well, not quite; but if there are springboards aimed toward scientific success, Simons and Dowling, both 18 years old, have just leaped from one: They are two of the top 10 winners in the 40th Annual Westinghouse Science Talent Search, sponsored by Westinghouse Electric Corp. and conducted by Science Service to encourage high school research.

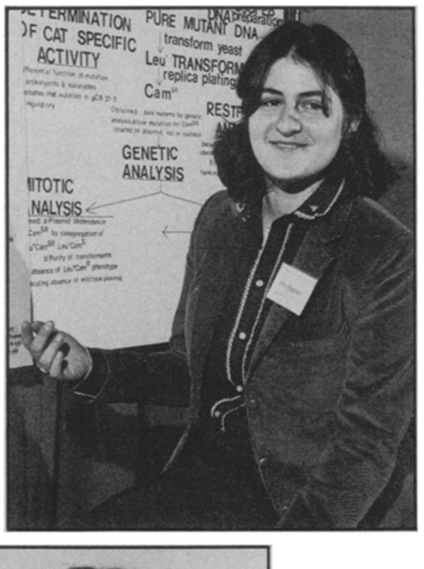
This year's search culminated last week when the top 10—chosen from 40 national finalists (SN: 1/31/81, p. 70)—were recognized with $74,500 in scholarships. The first prize, $12,000-scholarship winner is Amy Sue Reichel, a 17-year-old senior at Hunter College High School in New York City. Reichel is the third young woman in the history of the STS to capture the top prize.

Reichel earned the STS blue ribbon for her work on the genetic regulation of a specific cell process. Relatively little is known about the mechanisms that control when and how much of a protein is produced in eucaryotic (true-nucleated) cells. Through an analysis of mutants, Reichel shed light on the genetic regulation of the production in yeast of one type of protein — an enzyme responsible for the detoxification of chloramphenicol, a broad-spectrum antibiotic. Reichel worked on this complex biochemistry project during a five-month period, conducting the laboratory experiments at the Albert Einstein College of Medicine.

While biochemistry was the chosen category for projects of three other top 10 winners, second-place, $10,000-winner Simons preferred astronomy. Simons, of Vero Beach High School in Florida, studied the surface of the moon with instruments he designed and built. Taking spectrophotometric measurements of different areas of the moon's surface, Simons found that the maria, or seas, of the moon's northern hemisphere absorb mainly green light, and the southern hemisphere mountains absorb predominately yellow light. These results, says Simons, indicate that a relationship exists between the lunar topography and soil composition.

Research indicating a potential relationship between intercellular iron transport and Hallervorden-Spaztz Syndrome — a rare, inherited disorder of excessive iron deposits in two areas of the brain associated with eventual mental deterioration—captured the third-prize, $10,000 scholarship for Dowling of Newington High School in Connecticut. Song Tan, 17, of Southwest Miami High School, won the fourth-place, $7,500 scholarship for studying the pyrolysis of polystyrene, a synthetic packing or insulating material. The fifth-place, $7,500 scholarship was awarded to Joel Martin Wein, 17, of Stuyvesant High School in New York City, and the final $7,500 scholarship was awarded to sixth-place winner Terence David Sanger, 17, of Manhattan. The remaining top 10, each receiving $5,000 scholarships, are: seventh-place winner Lori E. Kaplowitz, 17, of George W. Hewlett High School in New York; eighth-place winner Seth Steven Finkelstein, 16, of the Bronx High School of Science in New York; ninth-place winner Mark Lewis Movsesian, 17, of Forest Hills High School in New York, and 10th-place winner William I-Wei Chang, 17, of the Bronx High School of Science.

The top 10 winners were announced at an awards dinner in Washington that capped five days of interviews and sightseeing for the entire group. Until the dinner's end, the 40 young scientists were suited and poised for the judges, each representing the step they built for science. Afterward, they were jeans-donning, chip-chomping, hand-clapping teenagers, laughing and joking and signing each other's programs. Ten of them were singled out for scholarships, but all 40 go home winners. □



Photos: Westinghouse

Judged tops in this year's STS *were first-place winner Amy Sue Reichel (top), second-place winner Douglas A. Simons (far left) and third-place winner Michael Morgan Dowling.*

Animal vaccine via genetic engineering

Foot and mouth disease has been eliminated in the United States, but it remains one of the most serious diseases of animals throughout the world. An inactive virus vaccine against the disease is produced in greater quantity than any other vaccine, but there is still not enough for all the countries plagued with the disease. Now a report that one protein of the foot and mouth virus coat has been produced by genetically engineered bacteria opens possibilities for providing greater amounts of the vaccine and tailoring it to a wider range of the naturally occurring viruses.

A large group of scientists from three research centers in West Germany report in the Feb. 12 NATURE that genetically engineered *Escherichia coli* have been used to produce one of the four coat proteins of the foot and mouth virus. Previous research had shown that large amounts of this protein can be used as a vaccine to protect swine from the disease. Use of protein prepared from genetically engineered bacteria is expected to allow production of greater quantities than is possible with current methods — growing virus in tongue epithelial tissue taken from animals slaughtered for meat or in cells growing suspended in a liquid medium. The new method would avoid the risk of accidental infection of animals being vaccinated, since infective material is not involved, and would allow the vaccine to be tailored to protect against more of the seven types and 60 sub-types of the virus. Genetic engineering research on the hoof and mouth virus is also underway by the Plum Island Animal Disease Center and Genentech in the United States and by the Animal Virus Research Institute and Wellcome Foundation Ltd. in the United Kingdom. □