

## High school students honored for research

From making submarines operate quietly in the depths of the seas to hunting for a gravitational lens in the expanse of space, the winners of the 46th Annual Science Talent Search are exploring the frontiers of science and engineering. The winning 40 projects, chosen from 1,295 entries of high school seniors, include studies in astronomy, biomedicine, botany, chemistry, mathematics, psychology, physics and zoology.

One student deciphered ancient Maya hieroglyphics, another unraveled the structure of genetic material that may be involved in the initiation of cancer and a third determined the structure of an industrially important polymer at low temperatures. Engineering and computer projects included a camera that takes aerial photographs from a rocket, a six-legged robot that finds the shortest route through a maze and a computer algorithm that quickly generates the numbers  $\pi$  and  $e$  to many digits.

In one project investigating how the Incas moved stone blocks that weighed as much as 220,000 pounds, one student argues against "dry dragging," the current theory, in favor of the use of a clay-leaf mixture as a lubricant. In a study entitled "ant-agonistic pheromones," another student showed that chemicals in the abdominal glands of harvest ants label individual ants as residents or aliens of each ant colony.

The 25 boys and 15 girls named as winners are invited to Washington, D.C., to attend a five-day, all-expenses-paid session of the Science Talent Institute, beginning Feb. 26. Through a series of interviews they will compete for \$140,000 in Westinghouse science scholarships and awards. The competition, conducted by Science Service, Inc., and sponsored by Westinghouse Electric Corp. and the Westinghouse Educational Foundation, is designed to "discover and develop scientific and engineering ability among high school seniors." All 40 projects will be on public display Feb. 28 and March 1 at the National Academy of Sciences in Washington, D.C.

This year's winners, aged 15 to 18, are: CALIFORNIA: Jessica Lynn Jacobson, Miramonte H.S., Orinda.

COLORADO: Thomas Claude Shepard, William J. Palmer H.S., Colorado Springs.

CONNECTICUT: Jennifer Genevieve Barrett, Academy of Our Lady of Mercy, Milford.

FLORIDA: Charla Cristal Griffy, New Smyrna Beach H.S., New Smyrna Beach; Joseph Chen-Yu Wang, Forest H.S., Ocala.

ILLINOIS: Julie Ann Bauer, Barry H.S., Barry; Louise Chia Chang, University of Chicago Lab Schools H.S., Chicago; Scott Clayton Giese, Evanston Township H.S., Evanston; Gur Hoshen, Naperville Central H.S., Naperville.

IOWA: Christine Marie Stoffel, Bettendorf H.S., Bettendorf.

MARYLAND: Todd Alan Waldman, Walt Whitman H.S., Bethesda; Maxwell V. Meng, Centennial H.S., Ellicott City.

MASSACHUSETTS: Andrew Mark Heafitz, Newton South H.S., Newton Centre.

MICHIGAN: Jason Robert Yaeger, Decatur H.S., Decatur; Genevieve Susanne Ashcom, Renaissance H.S., Detroit; Edward J. Ouellette III, Carman-Ainsworth H.S., Flint.

NEW MEXICO: Page Elizabeth Sebring, St. Pius X H.S., Albuquerque; Steven Howard Pearl, Grants H.S., Grants.

NEW YORK: David Lawrence Gross, Benjamin N. Cardozo H.S., Bayside; Daniel Julius Bernstein, Bellport H.S., Brookhaven; John Pappas, Long Island City H.S., Long Island City; Scott Law-

rence Abramson, Massapequa H.S., Massapequa; David Feng-Ming Kuo, Mason Ng, Claudia Mary Santosa, Maria Jose Silveira and Mai New Yuen, Bronx H.S. of Science, New York; Alexander Wharton Grannis, Chen-Wei A. Lee, Hyoung Yoon Park, Julie Yui Tu, Elizabeth Lee Wilmer, Stuyvesant H.S., New York; Nicole Alexandra Victor, Martin Van Buren H.S., Queens Village.

OHIO: Michael Paul Mossey, Greenhills H.S., Cincinnati; Deborah Ann Czerniawski, Magnificat H.S., Rocky River.

PENNSYLVANIA: Stephen Alexander Racunas, Valley H.S., New Kensington; Jonah Daedalus Erlebacher, Cheltenham H.S., Wyncote.

RHODE ISLAND: Dale Francis Saran, Westerly H.S., Westerly.

TENNESSEE: Albert Jun-Wei Wong, Oak Ridge H.S., Oak Ridge.

VIRGINIA: Ian Patrick Sobieski, Kecoughtan H.S., Hampton. □

## AIDS drug approval recommended

A U.S. Food and Drug Administration advisory committee recommended last week that the FDA approve azidothymidine (AZT), a drug that, though not a cure, has been shown to prolong the lives of people with AIDS. If FDA Commissioner Frank E. Young accepts the committee's decision, as he is expected to do, AZT will become the first drug for the treatment of AIDS generally available in the United States.

The committee recommended that AZT be approved for AIDS patients with certain opportunistic infections and for people with AIDS-related complex (ARC), a set of AIDS-like symptoms that usually leads to AIDS itself. Once the drug is on the market, however, physicians can prescribe it for any patients they wish.

In addition to toxicologic data supplied by the drug's maker, Burroughs Wellcome Co. of Research Triangle Park, N.C., the committee based its approval of two studies on AIDS victims with *Pneumocystis carinii* pneumonia and of people with ARC. In the first study, a double-blind trial that ended in September 1986, 1 of 145 people given the drug died within a six-month period, compared with 19 of 137 people who received a placebo (SN: 9/27/86, p.196). In the second study, which includes more people but is noncomparative, AZT has been made available to 3,247 people since September. Although the death rate has been lower than what would be expected in patients not getting the drug — and, some clinicians say, opportunistic infections have been fewer and milder — 97 people receiving AZT have died, including 21 who died more than three weeks after beginning treatment.

While recommending the approval of AZT, committee members expressed concern about making it generally available.

Among their worries:

- The drug is toxic, so patients must be managed carefully. In the initial trials, AZT has caused anemia and white blood cell depletion; transfusions and dosage interruptions or reductions were often necessary.

- People in whom the drug has not yet been proven effective, such as people who test positive for AIDS antibodies but have no signs of the syndrome and people who have AIDS-related Kaposi's sarcoma, will demand the drug. For the near future, however, Burroughs Wellcome expects to be able to make only enough AZT for the recommended group.

- Data are available only on a limited number of patients, who have been on the drug for a short period of time. AIDS patients are expected to need the drug on a long-term basis.

FDA's Ellen Cooper, who is in charge of the AZT application, told members of the committee at its open hearings that, compared with people in the control group, people receiving the drug showed a "highly significant difference in mortality and time until first infection." But, she added, more toxicologic testing on animals is needed, the optimal dose for humans still is not clear, and more human data are needed.

Several committee members suggested setting up a special category for the drug so that its use after approval could be controlled. But the FDA has no mechanism for instituting and enforcing such a system. Burroughs officials said they are working on a plan to control the distribution, so that doctors and patients would have to be registered to receive it. The drug, which the company is now calling Retrovir, is expected to cost several thousand dollars a year per patient.

— J. Silberner