



Top projects capture Westinghouse awards

A mathematical investigation of a special class of numbers, the discovery of a transcription factor regulating cells, and a system to spot ice forming on airplane wings won the top three prizes in the 55th Westinghouse Science Talent Search, sponsored by the Westinghouse Foundation in partnership with Science Service Inc., the publisher of *SCIENCE NEWS*.

Presented this week in Washington, D.C., the scholarship prizes—40 in all, totaling \$205,000—went to 15 female and 25 male high school seniors from 12 states, chosen from 1,869 applicants.

The top scholarship of \$40,000 was awarded to Jacob Lurie, an 18-year-old mathematician from Montgomery Blair H.S. in Silver Spring, Md. His study of a class of the numbers called surreal, showing their relevance to specific types of computation and game-playing, represents an outgrowth of the mathematical discipline of game theory.

The second prize of \$30,000 was given to Ting Luo, an 18-year-old biologist from Stuyvesant H.S. in New York. She identified a new transcription factor that controls a cell's response to external stress, including viral infection, cancer, and drug toxicity. The novel factor plays a role in a cell's expression of genes and synthesis of proteins.

The third prize of \$20,000 was presented to Matthew David Graham, an 18-year-old from Stanton College Preparatory School in Jacksonville, Fla. He designed and built an aircraft warning system that uses ultrasound vibrations along a wing's surface to detect ice. Analyzing the vibrational signals, a computer determines if ice is forming on the wing.

Fourth- through sixth-place awards of \$15,000 each went to Bruce Mizrahi Haggerty, 18, of Stuyvesant H.S.; Aaron Michael Einbond, 17, of Hunter College H.S. in New York; and Daniel Paul Weitz, 17, of Morristown (N.J.) H.S. Haggerty used statistical methods to improve geological age estimates of ancient lava flows and to relate them to mass extinctions. Einbond identified a protein binding pattern relevant to muscular dystrophy. Weitz built a plasma generator in his

basement to study chemical reactions.

The seventh- through tenth-place scholarships of \$10,000 apiece went to Brian Palmer Hafler, 17, of the Roxbury Latin School in West Roxbury, Mass.; Simon Joseph DeDeo, 16, of Phillips Exeter (N.H.) Academy; Sidney Hsiao-Ning Chang, 17, of Half Hollow Hills H.S. East in Dix Hills, N.Y.; and Vezan Wu, 17, of Stanton College Preparatory School. Naomi Sue Bates, 18, of Franklin (W. Va.) H.S., and William David Garrahan, 17, of Bishop Hendricken H.S. in Warwick, R.I., were named first and second alternates.

Bates, Garrahan, and the remaining 28 winners each received \$1,000.

The top 3 winners: Jacob Lurie (left), Ting Luo (top right), and Matthew David Graham (bottom right).

J. Richard Gott, an astrophysicist at Princeton University, headed the panel of 12 judges, which included Nobel laureate Dudley R. Herschbach of Harvard University, Harold Amos of Harvard Medical School in Boston, and marine biologist Sylvia A. Earle of Oakland, Calif.

Of previous Westinghouse winners, five have won Nobel prizes and many have become members of the National Academy of Science. — R. Lipkin

Drug may help to alleviate alcoholism

Brief treatment with a drug that dampens pleasurable sensations induced by the brain's natural opiates may offer significant help to alcoholics, especially when teamed with training in ways to avoid and resist alcohol cravings.

The drug, naltrexone, was approved last year by the Food and Drug Administration for use with psychological treatments for alcoholism.

"We suspect that naltrexone blocks physiologically reinforcing effects of alcohol and makes alcohol less stimulating and attractive," contends Stephanie S. O'Malley, a psychologist at Yale University School of Medicine.

The new investigation, described by O'Malley and her coworkers in the *MARCH ARCHIVES OF GENERAL PSYCHIATRY*, expands on their initial report (SN: 11/21/92, p. 341). In the project, 97 people seeking treatment for alcohol dependence at an outpatient clinic randomly received either daily naltrexone or placebo pills, as well as weekly therapy either teaching coping skills—ways to decrease stress and avoid alcohol use—or offering general encouragement to stay sober.

Over the course of the 3-month treatment period, the two naltrexone groups displayed far greater abstinence rates than the placebo groups. Volunteers receiving naltrexone and coping therapy proved least likely to relapse after having an alcoholic drink.

Two months after treatment ended, the researchers now report, naltrexone and placebo groups showed comparable abstinence rates. But after 6 months, almost two-thirds of patients given placebos had resumed alcohol consumption to the point that they were again diagnosed with alcohol abuse or dependence, in contrast to just one-third of those given naltrexone.

After 4 months or more, volunteers given placebos and coping skills therapy cited rates of drinking similar to those of the naltrexone groups.

The new study offers "an important continuation of [earlier] research," according to Enoch Gordis, director of the National Institute on Alcohol Abuse and Alcoholism in Bethesda, Md.

A combination of naltrexone and psychological therapy, such as cognitive skills training, may represent the best available alcoholism treatment, O'Malley contends. Her group is now studying whether a year of treatment offers further benefits.

— B. Bower