
Talent search yields young scientists

Forty finalists have emerged from the nearly 1,500 high school students who submitted research projects to the 48th Annual Science Talent Search, a nationwide competition designed to encourage talented young scientists. Administered by Science Service, Inc., of Washington, D.C., the search is sponsored by Westinghouse Electric Corporation and the Westinghouse Foundation.

One student's experiment suggests that an extinct flying reptile called a pterosaur ran on two feet to achieve enough speed for take-off. The finding bears on a century-old controversy about whether the winged reptiles ran on two feet or waddled on all four during take-off runs. Another student turned to the molecular world for a project that calculates the spin of an electron. Still another developed a new type of spectrograph and used it to record the emission spectra of helium, neon and sodium.

From medicine to mathematics, this year's winning projects represent a diversity of fields and interests. With the help of senior researchers and teachers, many students worked on their projects at universities, museums, hospitals and other institutions near their homes.

Hobbies sometimes provided creative avenues of inquiry: An avid chess player studied his peers, finding that a creative thought process is one key to a strong chess game.

While some young researchers took their projects to the laboratory, others donned hiking boots and conducted field research. One student combed the fields of California and Pennsylvania for moths and butterflies, then devised a new classification system for these insects. Another traveled to Montana lakes and developed a quick safety test for water contaminated by a type of blue-green algae that can kill cattle and make humans sick.

The 40 winning projects were chosen from 1,461 submitted by U.S. high school seniors. The 27 boys and 13 girls will travel to Washington, D.C., to attend a Science Talent Institute beginning March 2. The five-day forum gives promising students a chance to meet each other, visit places of scientific interest and talk to leading researchers. Student finalists will compete for \$140,000 in scholarships provided by Westinghouse. The top 10 winners will get four-year scholarships ranging from \$20,000 to \$7,500, and the remaining 30 seniors will receive \$1,000 each.

Students will talk about their work March 4 and 5 at a public exhibit of the projects at the National Academy of Sciences in Washington, D.C.

This year's winners, aged 15 to 18, are:

ARKANSAS: Christopher McLean Skinner, Hall H.S., Little Rock.

CALIFORNIA: Peter Andrew Eric Nigrini, La Habra H.S., La Habra.

FLORIDA: Steven Lane Castle, Gaither H.S., Tampa.

ILLINOIS: Rowan Lockwood, Illinois Mathematics and Science Academy, Aurora; Brian Frederick Cohen, Whitney Young Magnet H.S., Chicago; Alexander Berman Lurie, Evanston Township H.S., Evanston.

MARYLAND: Jenny Jen-Yi Lin, McDonogh School, Owings Mills; Jordan S. Ellenberg, Winston Churchill H.S., Potomac.

MASSACHUSETTS: Andrew William Jackson, Roxbury Latin School, West Roxbury.

MICHIGAN: Scott Raphael Schiamberg, Okemos H.S., Okemos.

MINNESOTA: Jason Scott Felsch, John Marshall H.S., Rochester.

MISSOURI: Daniel Allen Sherman, Hickman H.S., Columbia.

MONTANA: Allene Marie Whitney, Capital H.S., Helena.

NEW JERSEY: Divya Chander, Pascack Valley H.S., Hillsdale.

NEW MEXICO: Michael Jared Stern, Armand Hammer United World College, Montezuma.

NEW YORK: Wai Ling Ma, Brooklyn

Technical H.S., Brooklyn; Andrew James Gerber, Erica Gail Klarreich and Thomas Robert Westcott, Midwood H.S., Brooklyn; Michael Lee Maitland, Commack H.S., Commack; Kevin Nelson Heller, Half Hollow Hills H.S. West, Dix Hills; Stacy Elisabeth Benjamin, Francis Lewis H.S., Flushing; Al Thaddeus Avestruz, Tamir Alexandrovich Druz, David Armin Mahl, Zoe Madeleine Marchal, Raoul Posmentier, Vladimir Teichberg and Simon Robert Zuckera, Bronx H.S. of Science, New York; Ana Josefina Pavich, A. Philip Randolph H.S., New York; Rose Du and Lucy Shigemitsu, Stuyvesant H.S., New York; Richard Hawkins Christie, Penfield H.S., Penfield; Christopher Edward Pierpont, Shoreham-Wading River H.S., Shoreham.

NORTH CAROLINA: Sharon Celeste Posey, North Carolina School of Science and Mathematics, Durham.

OHIO: Kristine Lee Willett, Triway H.S., Wooster.

PENNSYLVANIA: Ray Kuang Wang, Central Catholic H.S., Allentown; David Lawrence Haile, Holy Name H.S., Reading.

VIRGINIA: J. David Rosen, Thomas Jefferson H.S. for Science and Technology, Alexandria.

WASHINGTON: Mahbub Alam Majumdar, Hanford Secondary School, Richland.

Herpesvirus may boost AIDS expression

A type of herpesvirus may accelerate the development of AIDS in people infected with human immunodeficiency virus (HIV), new laboratory studies suggest. The finding may help explain why some HIV-positive people remain relatively healthy for long periods while others sicken and die within months.

For years, scientists have been searching for a cofactor that increases an HIV-infected person's likelihood of getting full-blown AIDS (SN: 4/4/87, p.220). A team led by Paolo Lusso of the Bionetics Research Inc. in Rockville, Md., and Robert C. Gallo of the National Cancer Institute in Bethesda, Md., focused on herpesvirus-6 because it attacks the same T-cells that are depleted in AIDS patients and because most AIDS patients have active herpesvirus-6 infections. Herpesvirus-6 is a recently identified member of the herpes family (SN: 11/8/86, p.302).

Lusso and Gallo studied cultured human T-lymphocytes infected with herpesvirus-6 and/or HIV. In the Jan. 26 NATURE, they report finding more dead T-cells in cultures infected with both viruses than in cultures infected with either agent alone. The data suggest the two viruses act synergistically, attacking the immune system's T-cells in an accelerated fashion. By the sixth day of infection, the observed death of T-cells was up to three

times greater than what would have been predicted by a simple additive effect.

Lusso and Gallo's work suggests herpesvirus-6 starts a lethal cycle for T-cells by "turning on" the gene that triggers the HIV replicative cycle. The researchers hypothesize that HIV, in turn, can stimulate herpesvirus-6 to replicate.

More work is needed to prove that the *in vitro* results extend to the human body, Gallo says. The National Cancer Institute plans a trial comparing the progression of AIDS in HIV-infected people with and without herpesvirus-6 infection. But that may be difficult, Lusso says, because most people have been infected by herpesvirus-6 in childhood. Researchers believe herpesvirus-6 is contracted via close contact, but in most cases it lies dormant and does not cause disease.

If herpesvirus-6 is shown to be an HIV cofactor, scientists may be able to slow—but not prevent—the progression to full-blown AIDS by finding a drug that halts herpesvirus-6 replication, Lusso says. Acyclovir, a drug used to treat some herpes infections, does not seem effective against herpesvirus-6, he adds.

Other researchers warn against too much optimism. HIV alone kills T-cells and causes full-blown AIDS in time, says Robert R. Redfield at the Walter Reed Army Research Institute in Washington, D.C.

— K.A. Fackelmann