Young scientists compete in talent search

Persistence, curiosity, and hard work have paid off for 40 high school seniors selected this week as finalists in the 52nd Westinghouse Science Talent Search. More than 1,600 students from 684 schools entered the search, a competition for scholarships as well as for recognition of scientific potential. It is sponsored by Westinghouse Electric Corp. in partnership with Science Service, Inc., in Washington, D.C.

The 13 female and 27 male finalists will come to Washington for the Science Talent Institute March 4 through 8. During this all-expenses-paid trip, they will meet prominent researchers, visit local science institutions, and display their projects at the National Academy of Sciences. A panel of eight scientists will interview each finalist and select one to receive a $40,000 scholarship ($10,000 per year). The runner-up will be awarded $30,000, and the third-place winner, $20,000, both over four years. Three finalists will each receive $15,000 scholarships, and four more will earn $10,000 each. The remaining 30 finalists will receive $1,000 each.

"Perhaps the most exciting thing about the Westinghouse Science Talent Search is that these students, from all over the country, represent a new generation of young Americans," says Alfred S. McLaren, president of Science Service, Inc. "Their selection is not only a tribute to their enthusiasm, dedication, and hard work, but to the teachers and parents who encouraged and supported them."

This year's finalists, age 16 to 18, are:

CALIFORNIA: George C. Lee, Mission San Jose H.S., Fremont; Constance Lee Chen, La Jolla H.S., La Jolla.

COLORADO: Mahesh Kalyana Mahanthappa, Fairview H.S., Boulder.

CONNECTICUT: Moon Duchin, Stamford H.S., Stamford.

FLORIDA: Ha Van Nguyen, Pensacola H.S., Pensacola.

HAWAII: Michael Ward Itagaki, Punahou School, Honolulu.

ILLINOIS: Elizabeth Michele Pine, Illinois Mathematics & Science Academy, Aurora.

INDIANA: Ann Nicole Zawistoski, Edgewood H.S., Ellettsville; Alexis Laura Michael, Indiana Academy for Science, Mathematics and Humanities, Muncie.

KANSAS: Ravi Shanker Kamath, Shawnee Mission East H.S., Prairie Village.

MARYLAND: Mian-Lai Liu, Walt Whitman H.S., Bethesda; Ken Sandor Wang, Eleanor Roosevelt H.S., Greenbelt; Steve Shaw-Tang Chien, Wei-Hwa Huang, and Elizabeth Dexter Mann, Montgomery Blair H.S., Silver Spring.

MINNESOTA: Mark Alan Johnson, Aitkin H.S., Aitkin; Mayukh Vasant Sukhatme, Spring Lake Park Senior H.S., Minneapolis; Ryan David Egeland, Wayzata Senior H.S., Plymouth.

MISSISSIPPI: Judah David Friedman, Saint Andrew's Episcopal School, Jackson; Robin Nanette Nazaretian, Long Beach Senior H.S., Long Beach.

NEW MEXICO: Blake W. Thomas, Moriarty H.S., Moriarty.

NEW YORK: Youngju Ryu, Bronx High School of Science, Bronx; Zachary Zisha Freyberg, Midwood High School at Brooklyn College, Brooklyn; Davida Alpert Rapoport, Hebrew Academy of the Five Towns & Rockaway, Cedarhurst; Martin Adrian Fisch and Erwin Lin, Stuyvesant H.S., New York City; Jonathan Gregory Shafter, Paul D. Schreiber Senior H.S., Port Washington; Willis Huang, Roslyn H.S., Roslyn Heights.

NORTH CAROLINA: Lenhard Lee Ng, Chapel Hill H.S.; Anthony Yu-Chung Ku, North Carolina School of Science & Mathematics, Durham.

OHIO: Daniel Cramer Stevenson, Hudson H.S., Hudson.

TEXAS: Cyrus Pouraghabagher, Texas Academy of Mathematics & Science, Denton; Juan Carlos Aguayo, Dunbar H.S., Ft. Worth.

VIRGINIA: Lea Gabrielle Potts, Mount Vernon H.S., Alexandria; Andrew Olstrom Dittmer and Michael Steven Montemerlo, Thomas Jefferson High School for Science & Technology, Alexandria; Ernst H. Kastning III, Radford H.S., Radford.

WASHINGTON: Aaron James Passey, Bothell Senior H.S., Bothell.

WEST VIRGINIA: Suzee Eurie Lee, Phillips Exeter Academy, Exeter, N.H.

WISCONSIN: Xanthi M. Merlo, Washington Park H.S., Racine.

Depression, smoking divulge ties that bind

Two new studies find that avid cigarette smokers develop severe depression substantially more often than nonsmokers and, conversely, that people with a history of severe depression stand a greater chance of getting hooked on cigarettes than nondepressed individuals.

Common factors — perhaps genetically influenced personality traits or alterations in brain chemicals — appear to foster both cigarette smoking and severe depression, say the researchers.

Their results, reported in the January ARCHIVES OF GENERAL PSYCHIATRY, derive from one-year or longer follow-ups of smokers and nonsmokers. Prior studies reached similar conclusions based on volunteers' reports of past smoking and depression (SN: 6/1/91, p.351).

Psychologist Naomi Breslau of Henry Ford Hospital in Detroit and her colleagues interviewed 995 young adults, age 21 to 30, in 1989 and again 14 months later. The predominantly white sample was recruited from a health maintenance organization in Michigan and contained more women than men. Most participants lacked a college education.

Severe depression, a cyclic and frequently incapacitating condition marked by hopelessness and despair, occurred substantially more often during the study among participants with a history of nicotine dependence, even if they had abstained from smoking during the year preceding the study, Breslau's team reports. Symptoms such as repeated failure to quit smoking and intense withdrawal reactions define nicotine dependence.

In addition, about one in 13 persons with a history of nicotine dependence suffered a first episode of severe depression during the study, more than twice the rate charted for those not citing regular cigarette use at some point in their lives. This finding emerged whether or not smokers had tried to kick their habit during the study.

Conversely, smokers who had previously suffered episodes of severe depression faced a much greater likelihood of becoming dependent for the first time or more severely dependent on nicotine than smokers with no such history. Past anxiety disorders and the abuse of alcohol or illicit drugs exerted no influence on degree of nicotine dependence.

In the second study, psychiatrist Kenneth S. Kendler of the Medical College of Virginia in Richmond and his co-workers interviewed 727 pairs of female twins and 112 women whose female twin did not take part in the project. The sample consisted of slightly more identical twins (who possess the same genes) than fraternal twins (who possess about half the same genes). Volunteers averaged 31 years of age.

Women who had smoked at some time in their lives reported more previous severe depression than nonsmokers. The former group also experienced more severe depression over a one-year follow-up, regardless of past alcohol abuse or anxiety disorders. Moreover, volunteers citing previous bouts of depression smoked more during the follow-up.

In identical-twin pairs in which only one twin had a history of depression, no link between depression and smoking emerged. The same held for identical-twin pairs with only one smoker. Yet a family history of severe depression increased a woman's likelihood of smoking, and a family history of smoking boosted a woman's chances of becoming depressed.

This pattern suggests that a common genetic predisposition combines with personal experiences — at least among women — to produce both severe depression and smoking, Kendler's group asserts. — B. Bower