

far nine of these persons, 20 percent, have come down with diabetes, the researchers report in *LANCET*, strongly suggesting that congenital German measles can spark diabetes. The researchers have also discovered eight other cases of diabetes among 318 patients born with German measles infections.

Further evidence that a German measles virus can induce diabetes comes from animal experiments. Menser and colleagues infected 16 pregnant rabbits with German measles viruses. None of the females developed diabetes, but both their pancreases and the pancreases of their offspring showed diabetes-like damage when compared with those of control rabbits. (Diabetes consists of a deficiency of insulin production by the pancreas and, hence, an overloading of the body with sugar.)

As for the role of mumps in diabetes, Gregory A. Prince and his colleagues at the National Institute of Dental Research in Bethesda, Md., have done experiments to see whether human pancreas cells grown in tissue culture are susceptible to mumps virus — a condition never shown before. The researchers tagged antibodies to mumps virus for identification purposes. Then they introduced the antibodies into pancreas cultures from seven persons and attempted to infect the cultures with mumps virus. Sure enough, the mumps antibodies revealed the presence of mumps virus in pancreas cultures from all seven individuals. This finding, reported in the Jan. 12 *NATURE*, also provides evidence that a virus, specifically a mumps virus, might trigger diabetes.

In the event that measles or mumps virus really sparks diabetes, though, it may well do so only in certain genetically predisposed persons, since the disease does appear to have some genetic basis. More specifically, a person might inherit some genetic (immune) weakness that allows a measles or mumps virus to invade the pancreas and produce diabetes there. In fact, the next step in implicating viruses as a cause of diabetes will probably be to link genetic predisposition toward diabetes with a particular susceptibility to the viruses.

For instance, Prince and his co-workers suggest that the same antibody technique they used might now be employed to see whether pancreases from persons with certain HLA antigens are especially susceptible to mumps. HLA antigens are the chemicals on the surface of human cells that are genetically determined and that help comprise the human immune system. HLA antigens in diabetics seem to differ somewhat from those in the general population. Thus, if persons with diabetically linked HLA antigens are found to have pancreases particularly prone to mumps infections, it would tighten the proposal that mumps can trigger diabetes, at least in genetically (immunologically) vulnerable individuals. □

Forty top young scientists chosen

At 14, Samuel A. Weinberger of New Rochelle, N.Y., is already an experienced mathematician. He has studied partial differential equations and complex analysis at Columbia University and has taken a graduate course in abstract algebra. In addition to his studies at Yeshiva University High School in Manhattan and a course in algebraic topology at Columbia University this year, he completed a project on an advanced concept called the fixed point theory.

Weinberger and 39 other high school science enthusiasts were rewarded for their research this week when Science Service announced the winners of the 37th Annual Science Talent Search. The winners — 10 girls and 30 boys — will take displays of their independent research projects to Washington where they will be on display March 4th and 5th in the Great Hall of the National Academy of Sciences for final judging and distribution of \$67,500 in Westinghouse Science Scholarships and Awards.

The 40 winners were picked by a panel of judges, including scientists in each student's field of research. During their expense-paid trip to Washington, the winners will display their work, be interviewed by a committee of judges, visit laboratories and hear talks by Rosalyn S. Yalow, 1977 Nobel prize winner in Physiology or Medicine, and by Glenn T. Seaborg of the University of California at Berkeley, Nobel laureate in Chemistry, 1951, president of the board of Science Service.

This year's winners, chosen from 967 qualified entrants, come from 37 schools in 19 states and range from 14 to 18 years old. All plan to continue their studies in some field of science. Among their choice career are plasma fusion research engineer, medical researcher, research mathematician, environmental researcher, industrial psychologist and astrophysicist.

The students did their projects during their spare time or summer vacations, some using college or laboratory facilities. For example, a student from Michigan used the telescope at Kitt Peak National Observatory in Arizona. Many built their own equipment. A Pennsylvania winner made a nine-and-a-half-foot wind tunnel to analyze the forces acting on different airfoils; another constructed a digital computer for his project on analyzing seismic waves.

Often the projects were extensions of hobbies. A student from Connecticut, with a hobby of tracking satellites, designed and made the equipment to track the National Oceanic and Atmospheric Administration's weather satellite NOAA-5 and to display pictures from the satellite. Flying rubber-band-powered model airplanes

led a Colorado winner to examine the torque output of rubber strips in an effort to improve their power output.

As always, many projects reveal new scientific insights. Based on her studies of the star V839 Cygni, a student from Illinois believes it to be a pulsating rather than an eclipsing star as it is now classified. A Massachusetts student who began grinding the mirror, designing and building her own telescope at 12, suggests modifications to a standard optical test used to determine the precise shape of a "fast" telescope mirror. During a study of various grasses in a Rhode Island marsh, a Pennsylvania student discovered a type of grass not detected by local ecologists. Her work is now being used as part of an environmental impact study on the area.

This year's 40 winners are:

CALIFORNIA: *William H. Collins*, Canoga Park H.S., Canoga Park; *Mary E. Kroening*, Clairemont H.S., San Diego; *Jonathan S. Feinstein*, Woodside H.S., Woodside.

COLORADO: *Peter A. Sandborn*, Fort Collins H.S., Fort Collins; *Anne M. Gibbons*, Wheat Ridge H.S., Wheat Ridge.

CONNECTICUT: *Richard C. Chedester*, Darien H.S., Darien.

HAWAII: *Judith L. Bender*, Henry J. Kaiser H.S., Honolulu.

ILLINOIS: *Gregory S. Terrell*, Arlington H.S., Arlington Heights; *Ann T. Piening*, Civic Memorial H.S., Bethalto; *Frank C. Hansen*, Oak Park and River Forest H.S., Oak Park.

IOWA: *Lance G. Johnson*, Spirit Lake H.S., Spirit Lake.

MARYLAND: *Michael S. Briggs*, High Point H.S., Beltsville; *David T. Vader*, Colonel Z. Magruder H.S., Rockville.

MASSACHUSETTS: *Michael C. Gurnis*, Cohasset H.S., Cohasset; *Barbara C. Shutt*, The Bromfield School, Harvard.

MICHIGAN: *Russell W. Carroll*, Rochester H.S., Rochester.

MISSOURI: *John D. Rainbolt*, William Chrisman H.S., Independence; *Robert V. Duncan*, Central H.S., St. Joseph.

NEW JERSEY: *Daniel S. Groisser*, Montclair Kimberley Academy, Montclair; *Philip G. King*, Rumson-Fair Haven Reg. H.S., Rumson.

NEW YORK: *Lawrence R. Bergman*, Benjamin N. Cardozo H.S., Bayside; *Therese Lung*, Forest Hills H.S., Forest Hills; *Jay B. Stallman*, Forest Hills, H.S., Forest Hills; *Michio Hirano*, Irvington H.S., Irvington; *Robert J. Klerer*, Irvington H.S., Irvington; *Elias Reichel*, Bronx H.S. of Science, New York; *Roger E. Mosesson*, Ramaz School, New York; *Jonathan T. Kaplan*, *Julie W. Pan*, Stuyvesant H.S., New York; *Samuel A. Weinberger*, Yeshiva University H.S., New York; *Robert O. Hamburger*, Martin Van Buren H.S., Queens Village; *Michael P. Mattis*, Scarsdale H.S., Scarsdale; *Daniel S. Rokhsar*, Susan E. Wagner H.S., Staten Island; *Ronald A. Fisher*, West Seneca East Sr. H.S., West Seneca.

OHIO: *Donna J. Pickrell*, Rosecrans H.S., Zanesville.

PENNSYLVANIA: *Mark Drela*, Abington H.S., Abington; *Patricia Furlong*, Bishop Carroll H.S., Ebensburg.

RHODE ISLAND: *Joseph P. Tanzi*, Cranston H.S. East, Cranston.

TEXAS: *Sara E. Dennis*, John Marshall Sr. H.S., San Antonio.

VIRGINIA: *Joseph P. Dougherty*, McLean H.S., McLean.