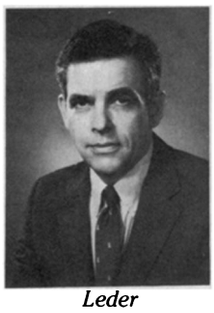
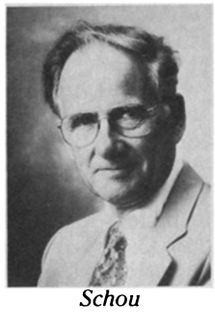
Behavioral, DNA workers win Laskers


Leder


Schou


Hood


Tonegawa

Three molecular geneticists who clarified the relationship between DNA and antibody production, along with a psychiatrist who pioneered drug treatment for the mentally ill, are recipients of the 42nd annual Albert Lasker Medical Research Awards, which were announced this week.

Given by the Albert and Mary Lasker Foundation of New York, the awards cited the winners for outstanding contributions to medical science in either a clinical setting or in a basic research laboratory.

Sharing the $15,000 award for basic research are Leroy Hood, chairman of the Division of Biology at the California Institute of Technology in Pasadena; Philip Leder, chairman of the Department of Genetics at the Harvard Medical School in Boston; and Susumu Tonegawa, professor of biology at the Massachusetts Institute of Technology Center for Cancer Research in Cambridge.

Mogens Schou, professor and research director of the Psychopharmacology Research Unit at Denmark's Aarhus University Psychiatric Institute in Risskov, received the clinical research award, which also totals $15,000.

A Lasker committee of scientists chose Schou for his "landmark clinical trials of lithium therapy and prophylaxis for manic-depressive illness, which initiated a revolution in the treatment of mental illness," according to statements released by the foundation. Marked by cyclic bouts of depression and mania, manic-depressive illness is thought to affect an estimated 1 to 2 percent of the world's population. Between 800,000 and 1.2 million people in the United States have had the disease at some time in their lives, say federal health officials.

In the early 1950s, Schou and his colleagues designed the first controlled clinical study of lithium therapy for psychiatric patients. Partly because of results in animal studies, Australian scientists previously had suggested the drug as a treatment of manic episodes. But the rest of the scientific community was not convinced by their test results. Through a series of carefully constructed experiments, Schou's group demonstrated that lithium could halt manic attacks and lessen depression, as well as prevent recurrences of both.

Using laboratory techniques that predated much of today's bag of genetic engineering tricks, Hood, Leder and Tonegawa independently determined in the 1970s how the immune system can make antibodies to all the foreign substances (antigens) that one encounters in life – despite having inherited a finite number of genes coding for antibody production.

Hood noted that different parts of the antibody molecule can vary in their biochemical structure, and that this antibody variation is governed by genes, which themselves can be altered by random mutations. The possibility of many such rearrangements allows the body to produce a multitude of antibodies, concluded Hood. More recently, he contributed to the development of the first automatic DNA sequencer (SN: 6/28/86, p.407).

Cited for his "elegant studies of the genetic basis of antibody diversity and the role of genetic rearrangement in carcinogenesis," Leder also described how the body can make antibodies against a barrage of different antigens. He then expanded his work to the study of cancer among the antibody-producing B cells in Burkitt's lymphoma, and provided early evidence for a genetic component in cancer. In 1977, his success in cloning the gene for the globin protein marked the first time a mammalian gene had been cloned.

Tonegawa located and cloned the genes for antibody production from both reproductive cells and B cells. By comparing genes from the two sources, he found that parts of the B-cell DNA differed from DNA segments in the reproductive cells – evidence that inherited genes are later rearranged inside B-cells to make antibodies against specific antigens. Tonegawa has since found a similar "rearrangement" phenomenon in the T cells of the immune system, which directly attack invaders like viruses and bacteria. These changeable genes may affect T-cell-surface receptors for foreign particles (SN: 7/19/86, p.36).

– D.D. Edwards

Ariane flies again

Europe's doorway to space is open again, with the successful Sept. 15 launching of an Ariane 3 rocket that deployed a pair of communications satellites, one for the 26-nation European Telecommunications Satellite Organization and another for Australia.

The door had been slammed shut on May 30, 1986, with the takeoff of the previous Ariane, an Ariane 2. The rocket's first two stages had worked fine, but the third stage (the same kind used with the Ariane 3) shut off prematurely, forcing safety officials to blow it up in mid-ascent. The loss, which also destroyed a $55 million communications satellite, capped a disastrous four-month span for Western launch efforts that had begun with the space shuttle Challenger explosion, followed by failures of the U.S. unmanned Titan 34D and Delta rockets.

The latest Ariane launching incorporated a redesigned version of the booster's third-stage ignition system. The next Ariane is presently scheduled to take off in November, carrying Germany's first direct-broadcasting television satellite. In December, another Ariane is to deploy a pair of communications satellites for customers in France and the United States. □

New vaccine aids infants

An experimental vaccine that uses a novel approach to boost immunity is proving effective against potentially fatal infections in infants, researchers report. The vaccine, not yet approved for use in the United States, is specifically engineered to protect children younger than 2 years of age against infection by the bacterium *Haemophilus influenzae* type b – responsible for most cases of childhood bacterial meningitis and other serious diseases in children. The only U.S.-approved *Haemophilus* vaccine is incapable of inducing immunity in children younger than 2, despite the fact that most cases occur in the first 24 months of life.

Researchers last week released the results of a large-scale field study in which the new vaccine was given to more than 700 infants. Results of the study, which was performed by researchers in Finland in conjunction with Toronto-based Connaught Laboratories, appear in the Sept. 17 NEW ENGLAND JOURNAL OF MEDICINE.

The researchers conclude that the vaccine can reduce by 87 percent *H. influenzae's* yearly infection rate in children. In the United States, 18,000 such cases occur annually among children under 5, and approximately 1,000 infants die of the