life sciences

INTERFERON

More than an antivirus

In a continuing search for agents that stimulate the body to produce virus-fighting interferon, three Bethesda, Md., scientists have tested an intracellular protozoon that causes malaria in mice.

Drs. Kun-Yen Huang, Warren Schultz and Francis Gordon of the National Naval Medical Center report in the Oct. 4 issue of SCIENCE that the protozoon, called *Plasmodium berghei,* does induce anti-viral interferon. In addition, they point out, interferon appears to inhibit nonviral intracellular microorganisms, including infectious *Chlamydia* and *Toxoplasma.* "Interferon apparently possesses a wider and more complex spectrum of activity than is now understood," they say.

BIRTH CONTROL

Temporary male sterilization

A metal clip that blocks the flow of sperm from the vas deferens, or male sperm tubes, offers a new approach to population control. The crescent-shaped clip, no larger than a BB shot, was developed by Dr. P. S. Jhaver, an Indian surgeon who for the last six months has been working at the Population Center of the University of North Carolina at Chapel Hill.

Dr. Jhaver, who first worked on the clip in India, came to the university to do animal studies, and to arrange for mass production of the clip from tantalum metal, a biologically inert element. In a relatively simple operation that can be performed in a physician's office, the clip theoretically can be put around sperm tubes and easily removed surgically to restore fertility. Its potential advantage is that it is reversible.

Human trials with the clip are expected to begin within the next few months in India. To date, it has been used only on dogs. When the clip is in place, normal sperm production is lowered and that which is produced is absorbed into body tissues.

GENETICS

Cystic fibrosis carriers spotted

If in a new biochemical test a person's skin cells stain pink, he is a carrier of the abnormal gene that causes cystic fibrosis. An estimated one out of 25 persons is a silent carrier of this disease that kills its victims in their teens.

Drs. B. Shannon Danes and Alexander G. Bearn of Cornell University Medical School, New York, find that the test shows a basic cellular difference between normal persons and those who carry defective CF genes. The test involves taking and culturing skin cells taken from the forearm. The cells are stained with tolonium and those of CF carriers show themselves by a pink etching around the edges. The test reinforces the concept that abnormal CF genes influence cells throughout the body—that the disorder is a multicellular one involving connective tissue.

Identified cells can now be used as a target for fundamental biochemical studies of the disorder.

NUMERICAL CHEMISTRY

Regression analysis for chemicals

Despite the enormous effort by the scientific community during the past 70 years, progress has been slow in working out ways of modifying a given drug to enhance its biological activity.

Now scientists are turning to computer statistics and numerical analysis techniques to sort out the important factors in drug action and to explain them in terms of the fundamental action of atoms and molecules. The technique, called regression analysis, relates four molecular factors that affect drug potency, according to Dr. Corwin Hansch of Pomona College in Claremont, Calif.

The four factors now used are acidity, the molecule's ability to move from water to fatty layers, the amount of attraction between a drug and the site it acts on, and the degree to which the electrons of a molecule can be polarized.

Ideally, with a series of similar drugs, regression analysis can tell chemists what factors have to be emphasized to increase potency.

VITAMIN D

Active substance found

Announcement of the discovery of a breakdown product of vitamin D that apparently is the active substance of the vitamin could be good news for persons with bone disease who can't take large doses of the vitamin.

Such persons may lack the chemical machinery, including enzymes, which may be required to convert the vitamin to its active form in the body. The Food and Drug Administration now limits the use of vitamin D because of the potential risk of harmful effects when too much is taken.

A team of University of Wisconsin biochemists under the direction of Hector F. De Luca isolated a substance known as 25-HCC (hydroxycholecalciferol). De Luca's team traced the chemical path of vitamin D in hogs, injecting a radioactive form of the vitamin and then extracting the breakdown product from the hogs' blood plasma.

Working with De Luca were Pat F. Neville, Ann W. Snellgrave and John W. Blunt. The National Institutes of Health and Wisconsin Alumni Research Foundation supported the research.

PLANT BREEDING

Better foods required

Cross-breeding in wider types is essential for better future food cultivation to keep up with the earth's growing requirements, Dr. Robert W. Allard of the University of California at Davis reports.

"Just as a society built up only of plumbers would fail to meet that society's overall needs," he says, "so, too, in genetics do we need many genotypes for the population to function at its best level."

Better seed storage methods are needed, Dr. Allard points out as one plant problem. There are 18,000 lines of barley alone at 150 places in the world.