

BIOLOGY

Cell Makes Virus

Researchers reported that an animal cell has "manufactured" a complete virus from only the naked nucleic acid of a virus inserted into the cell.

➤ A MAJOR CONTRIBUTION in understanding viruses was reported at the Federation of American Societies for Experimental Biology in Atlantic City.

Researchers from the University of Minnesota have discovered that the cell has the machinery within itself to duplicate a virus.

Apparently there is a specific attachment between the surface of a cell and the protein coat of a virus that determines whether the virus attacks the cell or not. A cell resistant to polio virus, for example, does not have the kind of protein on its surface that will combine with the polio virus protein.

The Minnesota researchers removed the protein coat from polio virus by chemical treatment and released nucleic acid. The nucleic acid was then introduced into naturally resistant cells. These infected resistant cells produced polio virus from the nucleic acid that was identical with the original polio virus so far as is known.

Susceptible human and monkey cells could be infected by this "new" polio virus but resistant cells from rabbits, mice, hamsters, chickens and guinea pigs were not infected, Drs. L. C. McLaren, J. J. Holland and J. T. Syverton made the discovery.

Two of the nation's top virus researchers pointed to the significance of this research both in contributing to basic knowledge and to application in medicine.

For one thing, as Dr. T. Francis, University of Michigan, said, it appears that a virus is not merely a "microbial midget," but a distinct organism.

The research also sheds some light on the possible evolution of viruses. Perhaps, and this is only an hypothesis, some naked mutant nucleic acid entered a cell and the first virus was born.

The virus study may lead to development of new kinds of viruses and vaccines. It might be possible to take nucleic acid from two different viruses and put them inside one cell. It is not now known if the cell would then make two viruses, one virus with the characteristics of both original viruses or some kind of hybrid.

When more is understood of the nature of the protein substance that makes a cell resistant, it might be possible to keep a virus out of normally susceptible cells.

However, as Dr. A. B. Sabin of the University of Cincinnati explained, this research is extremely important now in that it has greatly increased our basic knowledge of viruses.

Atherosclerosis Study

➤ BANTUS AND baboons are helping scientists in their search for the "why's" and "how's" of atherosclerosis.

Studies of the Bantu tribe of South

Africa reported by Dr. Jack P. Strong of Louisiana State University School of Medicine indicate that fatty deposits do not always precede the formation of scars, or plaques, in the aorta. Differences related to age were also reported.

In comparison with the New Orleans white person and the New Orleans Negro, the Bantu had a higher average percentage of fatty streaks on the inside of his blood vessel walls. This was true up to age 30, Dr. Strong told scientists at the Federation meeting.

By age 40, the white person had the highest percentage of scarring—the formation of fibrous plaques—with the Bantu coming out lowest.

Some 163 baboons studied in their natural habitat indicate that neither fat in the diet nor cholesterol in the blood is responsible for fatty deposits in the baboon's aorta.

The discovery of prominent pearly plaques with hemorrhages in their centers, much like human lesions of the aorta, means that the baboon will be an excellent labo-

ratory animal for studying atherosclerosis, Dr. Henry C. McGill, also of Louisiana State, said.

The serum cholesterol levels in the animals ranged from 38 to 136 milligrams percent in comparison with a range of 80 to 140 milligrams percent in captive baboons.

➤ PIGEONS may be the "guinea pigs" when it comes to studying atherosclerosis in the laboratory.

Research being carried out at the Bowman Gray School of Medicine, Winston-Salem, N. C., indicates that one kind of pigeon, the white carneau, has atherosclerotic lesions "strikingly similar" to those in the human disease. Laboratory study of the disease has been difficult because few animals seem to have atherosclerosis.

Another interesting characteristic of the disease in pigeons is that show racer pigeons are resistant to it, while spontaneous atherosclerosis occurs in the white carneau breed. Both breeds are fed identical diets containing saturated and unsaturated fats, and housed under identical conditions. Saturated fats have been considered by some researchers to play an important role in hardening of the arteries.

It appears that factors other than diet, possibly genetic factors, may influence atherosclerosis.

Drs. T. B. Clarkson, H. B. Lofland, R. W. Prichard and M. G. Netsky illustrated their research with an exhibit at the Federation meeting.

Science News Letter, May 2, 1959

MEDICINE

Circulating Cold Blood Gives Surgeon More Time

➤ COLD BLOOD is now being pumped through the body, providing the surgeon more time to perform open heart operations.

In contrast to previous methods that allow the surgeon only six to eight minutes to work inside the heart, the new technique assures greater safety for the patient, sets no time limit for the surgeon, and gives opportunity for better repair of intricate heart defects.

The cold blood technique was devised by Dr. Frank Gollan of the Nashville, Tenn., Veterans Administration hospital. The method involves circulating cooled blood that has had oxygen added. The blood travels the main arteries of the body by the pumping action of the heart-lung machine.

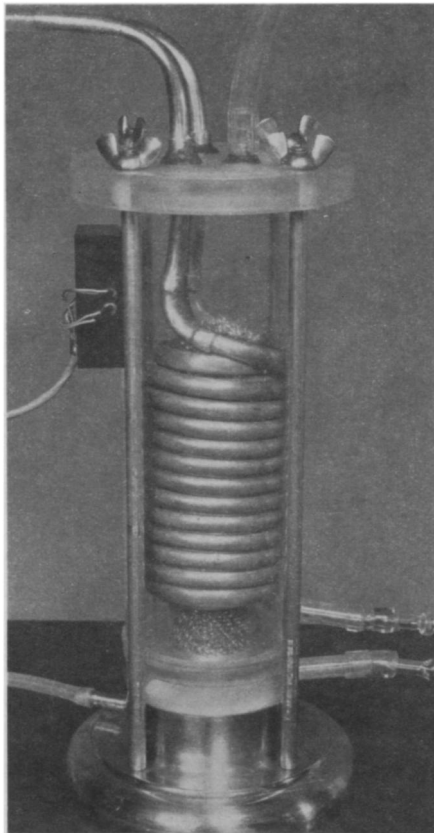
The general method of lowering body temperature has been by placing the patient in a tub of cold water or in a rubber blanket through which ice water flowed.

But these external methods permit only a short period of interrupted blood circulation, allowing the surgeon only six to eight minutes to work on the heart.

If such methods are used for longer than this brief time, blood does not flow evenly to organs such as the brain and heart which are then damaged by lack of oxygen.

Dr. Gollan's method cools the internal organs first and at the same time supplies an adequate flow of blood and oxygen to these vital organs.

Science News Letter, May 2, 1959



IN COLD BLOOD — This single chambered apparatus is capable of pumping, oxygenating and cooling the blood.