BIOCHEMISTRY

Test Tube Life Doubted

While progress in deciphering the genetic code could bring understanding of hereditary diseases, creation of higher life in a test tube is still remote—By Faye Marley

➤ CREATION OF LIFE and modification of heredity in a test tube will not be possible for many years, if ever, a Russian scientist told SCIENCE SERVICE.

Dr. Lev Kisselev of Moscow, who at the 1961 International Congress of Biochemistry translated the code-cracking speech of America's Dr. Marshall W. Nirenberg, said that he had been working with other Russian scientists in Leningrad and Moscow on problems of correlating function and structure of RNA, or ribonucleic acid.

"Many results lie ahead when this work is done," he said, but he only laughed at the idea of higher life in a test tube.

Dr. Edgar Lederer, director of the new French institute of natural substances, 15 miles south of Paris, said he hoped human life would not be created in a test tube.

The creation of tobacco mosaic virus from inert chemicals led to an announcement two years ago that life had been created in a test tube.

But creating life in a tiny infective virus is a far cry from creating human life as we know it.

Progress is being made in deciphering the genetic code, however, and the results Dr. Kisselev foresees when all the tedious work of correlation in function and structure is finished could well include correction of hereditary diseases—even a cure for some forms of cancer.

Dr. Nirenberg, with Dr. J. Heinrich Matthei at the National Institutes of Health, Bethesda, Md., partially unraveled the mystery of the genetic code. They are, however, the first to agree that years of work remain to be done before all the necessary sequences can be determined.

Dr. Nirenberg's work has shown that in all species, a given nucleotide triplet always specifies the same amino acid. Thus it appears that all nature has evolved from one ancestor—DNA, or deoxyribonucleic acid, with RNA, or ribonucleic acid, carrying out its god-like bidding.

Both Dr. Nirenberg and Dr. Severo Ochoa, president of the International Union of Biochemistry, spoke at a symposium of the Sixth International Congress of Biochemistry, New York. Dr. J. D. Watson of Harvard University, Cambridge, Mass., who shared the 1962 Nobel Prize in Medicine and Physiology with Dr. Francis H. C. Crick of Cambridge University, England, was another speaker at this meeting. Dr. Ochoa shared the 1959 Nobel Prize in Medicine and Physiology for his studies in the biosynthesis of RNA.

Dr. Nirenberg's early experiments were made possible by the use of mixed polymers of RNA that could be synthesized by the bacterial RNA polymerase, or enzyme, previously isolated by Dr. Ochoa.

After intensive work, especially in the laboratories of Drs. Ochoa and Nirenberg, it is now possible to assign triplet RNA base codes to all the amino acids.

The corresponding DNA triplet code should then be the complement of the RNA code. Tests of this code in bacterial, plant and animal systems have indicated that the *Escherichia coli* code is universal, a fact of considerable evolutionary significance.

The actual definition of which triplet specifies which amino acid is pursued at present by Drs. Ochoa, Nirenberg, and others, principally by constructing messenger RNA molecules of known sequence to see which amino acid they specify.

By making and testing a large variety of messenger RNA's, a genetic code is being mapped out. In another approach, certain nucleotides in the master molecule, be it DNA or virus RNA, are exchanged, and the effect of this exchange is reflected in an altered pattern of amino acid incorporation.

The Indian-born Dr. H. Gobind Khorana, in research at the University of Wisconsin, Madison, has synthesized small DNA models after ten years of work. From 10 to 20 years lie ahead, Dr. Khorana believes, before the full sequence can be established. Improvement of human heredity may be at the tip of the scientist's fingers, but the fingers must reach far into the future.

Another Russian scientist interviewed by SCIENCE SERVICE was Dr. G. F. Gause of the Academy of Medical Sciences in Moscow, who reported his work with laboratory animals, using some antibiotics that fight cancer.

Working with Dr. A. V. Laiko at the Institute of New Antibiotics, Dr. Gause found that antibiotics inhibit the synthesis of nucleic acids. Mitomycin C, porfiromycin and degranol, a representative of the chlorethylamines, were the antibiotics used. These antibiotics inhibited the synthesis of DNA in the cells of normal and mutant staphylococcus organisms. Staph is a cause of boils and other pus-forming infections.

Progress in basic knowledge reported at this congress gives hope for mankind's fight against disease as well as for understanding the puzzle of life.

In the words of Dr. Ochoa, the human intellect will eventually solve the puzzle of the nature of life.

"But will it ever solve the riddle of the meaning of life, of the existence of the universe, or even of its prerequisite, matter, and of the essence of the intellect itself?" the Nobelist questioned.

Dr. Ochoa said the exploration of space might provide clues for further inquiry into the origin of life.

• Science News Letter, 86:102 Aug. 15, 1964

GENETICS

Negro Stock Is Praised

➤ THE NEGRO is "the most highly selected stock" in the United States population, the new president of the National Medical Association said.

Dr. William Montague Cobb, head of the department of anatomy at Howard University College of Medicine, Washington, D. C., and editor of the Journal of the National Medical Association, said that only the strongest Africans "involuntarily conscripted for residence in this country" survived to embark from African ports.

"The large but undocumented quantity of white genes that were continuously infused into the antebellum Negro population," Dr. Cobb said in his inaugural address before the predominantly Negro group, "came essentially not from the lower strata of whites, but from the privileged upper levels."

"While modern genetics does not permit definite answers on the biological effects of this admixture, it must be considered to have improved the stock, because the majority group so commonly used to allege that any brilliant Negro owed his superiority to his white blood.

"Perish the thought that any new form of racism is being promulgated here," he added, saying that he wished merely to emphasize that the American Negro is one of the sturdiest stocks in the world.

"How else can one explain the fact that in the few short years since competition in professional sports has been open, Negroes have risen to dominant positions in every field?" he asked.

Americans, including Negroes themselves, need to realize that this race can do anything as well as whites in mental as well as in physical areas, the new president said.

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MEDICINE

Orinase for Diabetics

➤ ORINASE has been used to postpone the onset of *Diabetes mellitus,* as well as to lessen the effects of the disease in latent cases.

Dr. Riley F. Thomas of the Howard University College of Medicine, told the 69th annual meeting of the National Medical Association in Washnigton, D. C., that diabetes need not necessarily lead to polyuria and other diseases, with their accompanying complications.

Orinase, the trade name for tolbutamide, is an oral drug, sometimes taken as a substitute for insulin.

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