

CYTOLOGY

Living Nuclei Transplanted

For the first time, living nuclei in cells higher than amoeba are transplanted. Aim is to understand which parts are responsible for various functions.

► **TRANSPLANTATION OF** living nuclei from one cell to another has been achieved for the first time in cells from animals higher in the scale of life than the single-celled amoeba.

As a result, scientists hope to find what part of the cell is responsible for its muscular, nervous or other specialized function and why cancer cells are unspecialized.

The transplantation feat, achieved with frog eggs, was accomplished by Drs. Robert Briggs and Thomas J. King at the Institute for Cancer Research, Philadelphia. Their work was supported by the National Cancer Institute of the Public Health Service and the American Cancer Society.

The nucleus of a living cell is a delicate structure, easily killed by mechanical damage or by exposure to artificial medium. For this reason many scientists believed it would be impossible to transfer the nucleus from one cell to another.

The Philadelphia scientists found they could protect the nucleus by sucking up the single whole cell into a slender glass tube a few thousandths of an inch in diameter. The nucleus was thus protected by its own cytoplasm until the moment it was injected into the cytoplasm of the receptor cell.

The reconstructed cells divided normally. The scientists now have under way crucial experiments designed to determine whether the specializing or differentiating structures of cells are in the cytoplasm around the nucleus or in the nucleus itself.

They have transplanted nuclei from developing nerve cells into cells which have had their own nuclei removed. If these cells develop into nervous tissue exclusively, it will indicate that structures controlling cell specialization lie within the nucleus. If they do not, the guess is that the genesis of nervous tissue lies in the nerve cell cytoplasm.

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MEDICINE

Aspirin for Arthritis

► **WHEN RHEUMATOID** arthritis first strikes, aspirin helps the patient as much as the famous adrenal gland hormone, cortisone.

Results of a strictly controlled trial of the two drugs showing this were reported to the American Rheumatism Association meeting in New York by Drs. A. Bradford Hill and J. H. Kellgren of London and Manchester, England.

Their study covered 14 patients under age 17, and 61 patients from 17 to 59 years old. Cortisone was given to eight children and 30 of the older group. The others got aspirin. The patients had had their arthritis for from three to nine months. They were not too severely crippled but each had at least four joints affected.

The medicines were given for 12 weeks with one week off after each 12 weeks of treatment.

The results in the various groups were assessed on the return of general functional capacity, elimination of tenderness in the inflamed joints, restoration of the range of movement, return of strength in the grip and improved manual dexterity.

Laboratory observations were also made of the blood sedimentation rate and the red blood cell level, two gauges useful in observing the extent of the rheumatoid process.

"In both the aspirin and the cortisone groups," Dr. Hill said, "on the average, significant improvement was revealed in most of the measured features. Both groups underwent a relapse during the one week they were off treatment.

"The cortisone group showed a rather greater improvement in the red cell level and in the blood sedimentation rate but in other respects the two treatment groups did not, at this first stage, differ materially."

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BOTANY

Biggest, Smallest Things In Universe Appear Same

► **SOME OF** the biggest and smallest things in the universe look pretty much alike.

The late Dr. O. L. Sponsler and Dr. Jean Bath of the University of California at Los Angeles division of botany have reported that electron micrographs of a collection of protoplasmic bodies reveal striking likenesses to those of planetary systems taken through powerful astronomical telescopes.

Unpublished work of Dr. Sponsler, a leading investigator in protoplasm until his death, suggests that larger bodies in living

protoplasm may attract smaller ones. Thus may be formed protoplasmic systems somewhat similar to planetary systems.

Particle sizes range all the way from the microscopically visible to very minute ones at the molecular-micellar borderline. On close scrutiny the very minute particles, which are probably highly organized mechanisms or enzyme complexes, appear to have internal structure.

It appears possible, the investigators report, actually to see the outline of large protein molecules within the very minute particles.

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ENDOCRINOLOGY

Find New Adrenal Stimulating Hormone

► **DISCOVERY OF** a hormone that stimulates the adrenal gland, producer of cortisone, but which is distinct from the famous adrenal stimulator, ACTH, was announced by Drs. G. W. Liddle, A. P. Rinfret and P. H. Forsham and Mr. J. Richard of the University of California School of Medicine, San Francisco, and Stanford University, Palo Alto, Calif., at the meeting of The Endocrine Society in New York.

The new hormone is called AGF. It was obtained from the pituitary glands of hogs and horses. ACTH, used as cortisone in arthritis treatment, also comes from the pituitary gland.

Tests of AGF on humans showed it had a greater effect on the adrenal glands than either ACTH or somatotrophic hormone from the pituitary.

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CHEMISTRY

Life Chemicals Produced In Young Earth Atmosphere

► **SOME OF** the chemical compounds necessary to living things have been produced in a miniature atmosphere such as the earth must have had in its primitive days when life first dawned on the planet.

In apparatus at the University of Chicago chemical laboratories methane, ammonia, water and hydrogen were circulated past an electric discharge, duplicating the play of forces upon the matter of the new-born earth.

Dr. Stanley L. Miller, a National Science Foundation fellow, performed the experiment at the suggestion of Dr. Harold C. Urey, Nobelist who has been investigating the origin of life on the earth.

By chromatographic analysis, Dr. Miller found that glycine and two other amino acids were identified and some others were indicated. This is what might have happened in the history of the earth, and the experiments are being continued.

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