

BIOCHEMISTRY

Cracking Life's Code

Find evidence that each of the millions of cells of a living organism knows its destiny. Dissociated skin cells can reorganize to start a feather.

► THE CODE for the organization of life from a microscopic egg to a human being will soon be broken, it appears from a report by Dr. Paul A. Weiss of the Rockefeller Institute for Medical Research, New York, at the meeting of the National Academy of Sciences in Washington.

If present research findings continue to keep their promise, he said, "the prospects for a major advance in the cryptography of the mysterious code of higher organization of living systems seems very good indeed."

At the moment of its creation or very soon after, each of the millions of cells that make up a living organism seems to know its destiny. It knows whether it will become part of an eye or a leg or a chicken feather. It knows, also, how to find and group itself in proper arrangement with other like cells to make up the living fabric of eyes, legs, feathers, skin and so on.

Dr. Weiss and associates have taken cartilage cells from young chick embryos and, by treating them with the enzyme, trypsin, dissociated them so they no longer made up a tiny mass of cartilage tissue. They did this with cells from a limb bud and with cells from the sclera, or white coat, of the eye.

The cells from limb-bud and from eye-coat cartilage all looked alike when dissociated. There was nothing to distinguish one from the other.

When, however, they were put at random into tissue culture and reared under identical conditions, the cells from limbs combined to form the massive bodies characteristic of limb cartilage. Those from the sclera joined in the shape of a flat plate and grew as such.

"They thus had retained," Dr. Weiss said, "upon their isolation not only a general cartilaginous quality but quite specific cues as to how to arrange themselves and their products geometrically when reassembled in numbers."

The formation of a feather, Dr. Weiss pointed out, "requires a complicated and strictly coordinated pattern of movements and growth of the tributary cells."

Nevertheless, cells from a chick embryo dissociated or separated from their native site and from each other days before feather germs had appeared got together and made feathers.

"Our experiment," Dr. Weiss said, "implies that a random assortment of skin cells that never had been part of a feather can, as a group, set up conditions—a 'field'—which then will cause members of the group to move and grow in concert and in accordance with a typical pattern of organogenesis."

By continuing to study the way cells from disrupted organs can reintegrate themselves, scientists may learn the "cues" the cells get for assembling themselves into living tissue and for functioning in special ways. However, "the information is in code and our purpose must remain to decode it," Dr. Weiss noted.

"There is," he said, "continuity and consistency in nature, after all, if only we strive hard to find it."

Dr. Weiss spoke at a symposium on biomolecular organization and life processes. This is a field of research dealing with macromolecules, or large molecules, and their aggregation into living, functioning units.

Better understanding of the mechanism of heredity and of viruses and their activities is coming from such studies.

Macromolecules have been studied in solution by Dr. Paul Doty of Harvard University, who reported his findings.

Dr. Cecil E. Hall of Massachusetts Institute of Technology, Cambridge, showed

what they look like when seen with the electron microscope, and Dr. Francis O. Schmitt of the same institution described patterns of their interaction in relation to cell function. Dr. Schmitt has been studying macromolecular systems in relation to genes and chromosomes.

Macromolecules in relation to viruses were discussed by Dr. Robley C. Williams of the University of California at Berkeley.

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PSYCHOLOGY

Boredom of Middle-Aged Married Seen as New

► MIDDLE-AGED BOREDOM between married couples is a product of recent years, Dr. Lemo Rockwood of Cornell University declared at a Family Life Conference in Ithaca, N. Y.

It could not have been much of a problem when most people did not live beyond 40 years of age, he pointed out.

He suggested building up a "mutual interest bank" as preventive of the condition. The couple, while young, should store in this bank the hobbies, travel and enterprises they had no time for when life centered on children and the family.

"There is a fine but vital distinction," he said, "between being adjusted to marriage and having a marriage which adjusts to the changing patterns of life."

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RIGHT WHALE NEAR ATLANTIC COAST—Close-up view of a right whale near Menemsha, Mass. Most of the head and part of the body is above water. The blow holes on top of the head are closing for the next dive. Barnacles and other parasites are clinging to the head. The whale's closed mouth is reminiscent of medieval helmets. The right whale, the only species entitled to the name of whale, is quite rare. Sounds made by this 35-foot specimen were recorded by scientists at Woods Hole Oceanographic Institution and added to their collection of sounds heard in the ocean.