

Life Sciences Notes

TASTE

Proteins Identify Bitter and Sweet

From taste buds of cows and pigs, scientists have isolated two receptor proteins, one that reacts to bitter substances, and another to sweet. These form chemical complexes with food that stimulate nerve paths to the brain. The discovery could lead to methods of modifying the taste of various foods, according to Dr. Frank R. Dastoli of the Monsanto Research Corp., Everett, Mass.

The majority of research on the senses centers on the paths nerve impulses take when one of the senses is stimulated. The work by Dr. Dastoli and his colleagues pinpoints the receptor sites where taste impulses originate. From the area of the cow tongue known to be sensitive to sweets, they isolated a protein which forms a bond with sugar. The strength of that bond is proportional to the sweetness of the foods as measured by taste testers, they find. The same holds for the other protein and bitter foods.

CELLULAR BIOLOGY

Ribosomes Measure Evolution

Ribosomes, cellular components necessary for protein manufacture, are a yardstick for measuring evolution in plant and animal cells. From experiments in which the size of ribosomes in various cells was precisely determined, a team of Northwestern University scientists headed by Dr. Hans Noll suggests that during evolution ribosomes apparently increased in size. The most primitive organisms have the smallest; the most highly developed have the largest.

Chloroplasts, energy converting units in plant cells, and mitochondria, the powerhouses of animal cells, contain their own ribosomes, indicating they are their own bosses and not controlled by the central nucleus of the cells they inhabit. Their ribosomes, Dr. Noll says, are the same size as those in bacteria, a far more primitive kind of organism. Apparently, animal and plant cells originally had no energy converting units of their own but were invaded by bacteria which provided energy producing services. In the course of evolution, chloroplasts and mitochondria developed their own ribosomes, indicating these energy sources in plant and animal cells may actually be of bacterial origin.

MEDICINE

Diet Indicted in Multiple Sclerosis

Diet has been implicated as a cause of multiple sclerosis. Illinois scientists report that persons whose diets are rich in animal protein but low in fish and vegetable protein are most likely to get the incurable disease. In tropical countries where diets are rich in seafoods, soybeans, millet and vegetable oils, MS is rare. It is more prevalent among persons living in urban areas in northern climates.

The scientists, Drs. Joseph Bernsohn of the Veterans Administration Hospital, Hines, Ill., and Leo M. Ste-

phanides of Northwestern University report in the Aug. 19 NATURE. Their experiments on brain development in chick embryos show that polyunsaturated fatty acids from fish and vegetable oils are necessary for normal brain development. One of these, a substance called linolenic acid which is more prevalent in the brain than other organs, comes principally from fish and seed oils. A deficiency of this substance may lead to a structural defect in nerve tissue which, in turn, may lead to the destruction of the fatty covering around nerve fibers—a characteristic of MS.

BIOLOGY

IBP Begins Five Programs

United States participation in the International Biological Program (SN: 6/10), a 5-nation association of scientists, is getting underway in the United States with five major research programs and 104 individual scientific investigations.

The U.S. IBP committee plans to correlate ongoing work and stimulate new studies on: airborne troublemakers—fungus spores, bacteria, allergens and insects; drainage basins and landscapes as large ecosystems; Eskimo populations—the mechanisms of man's ability to adapt to his environment; evolution in Hawaii—a history of plant and animal life on isolated islands; and seasonal development—the prediction of biological events from understanding of the relation between climate and behavior of plants and animals.

Individual experimental projects under IBP auspices range from studies of the genetic factors in fetal deaths to uptake and disposal of water by plants in an arid climate.

LABORATORY PRACTICE

DMSO Carries Drugs Through Gloves

Scientists using DMSO as a vehicle for getting disease-causing chemicals into laboratory animals are in danger of absorbing the substances themselves. DMSO (dimethyl sulfoxide), a chemical solvent noted for its ability to penetrate skin, can also penetrate researchers' rubber gloves, two British scientists warn in the Sept. 16 NATURE. Increasingly, scientists are mixing test compounds in DMSO solutions which are simply painted on animals' backs. The DMSO carries the compounds into the body where they are rapidly distributed.

Briefs

Food and Drug Commissioner James L. Goddard urged the Senate to delay action on a bill adding prescription generically named drugs to Medicare. FDA, he said, cannot guarantee the quality of all U.S. drugs, a point at the crux of the proposed legislation (SN: 4/22).

Wheat seedlings aboard America's Biosatellite 2 (SN: 9/23) grew as much in 45 weightless hours as they would in three days on earth, NASA scientists report.