MEDICINE

# Irradiated Cells Repaired

## Large doses of radiation without damage to body cells may be possible in the treatment of cancer by injecting DNA, animal experiments indicate—By Faye Marley

➤ RADIATION doses high enough to destroy cancer cells without permanently harming normal tissues may eventually be given to human patients as a result of experiments reported in Atlantic City.

DNA, or deoxyribonucleic acid, the substance that carries the genetic code, was used on hamster cells growing in tissue culture after high-dose radiation by a team of scientists at Sloan-Kettering Institute in New York.

Dr. Mathilde Krim described the team's work at the meeting of the Federation of American Societies for Experimental Biology, explaining that DNA is the first substance to be identified that is capable of repairing cells damaged by radiation.

She explained that when cells in tissue cultures are irradiated with X-rays, chromosome breaks become visible during the first cell division after irradiation. If the radiation dose is small, the majority of such breaks repair themselves by joining the broken ends, although sometimes the broken ends are joined incorrectly, producing abnormalities that can be seen with a microscope.

When DNA is added to the cultures after irradiation, however, the chromosome breaks disappear more quickly and the proportion of cells with chromosome abnormalities are greatly decreased. The overall survival of the DNA-treated cells is far greater than when cells are untreated.

National Foundation—March of Dimes

*DR. JONAS SALK—In his laboratory at the Salk Institute for Biological Studies, La Jolla, Calif., Dr. Salk continues basic research that might have bearing on all disease, from the common cold to cancer.*

The DNA used in this experiment was obtained from the white cells of humans. The exact way in which the cells use the DNA for repair is not yet known, but previous studies had shown that when irradiated animals were injected with DNA, they lived in cases where they otherwise would have died. This indicates that tissue-culture repair of chromosome breaks might be applied to the whole animal and eventually to humans.

Collaborating with Dr. Krim in the research were Drs. T. Wilczok and Aaron Bendich.

• Science News Letter, 87:259 April 24, 1965

## Clot Substance Isolated

➤ A NEW, INEXPENSIVE technique to give hemophiliacs transfusions of only that part of the blood needed for clotting was reported in Atlantic City.

The hemophiliac, or bleeder, requires only one fraction of the blood, not whole plasma transfusions. The new method extracts that needed part and leaves the rest of the blood available for regular transfusions.

Commercial preparations of antihemophilic globulin (AHG) are available, but they are very expensive and less concentrated than the extract removed by the new technique.

Dr. Judith G. Pool, a senior research associate at Stanford University School of Medicine, Stanford, Calif., described how the fraction is removed at a meeting of the Federation of American Societies for Experimental Biology. She said the fraction is 15 times as concentrated as in normal blood plasma. The extract may be dissolved in a small amount of sterile salt solution before it is given.

The method is so simple that it can be carried out in any blood bank or hospital without special equipment. Blood is drawn using double bags now common in blood banks.

The bag with whole blood in it is spun in a refrigerated centrifuge to separate the cells from the plasma. Next, the plasma is squeezed out of the first bag into the second. Then the plasma bag is immersed in a mixture of dry ice and acetone for a few minutes to quick-freeze the liquid.

When the plasma is frozen solid, the bags, which are connected by plastic tubing, are both placed in the refrigerator for 24 hours, after which the plasma will have thawed, leaving a cold-insoluble precipitate. The bags are then respun to bring the precipitate to the bottom. The plasma is drained back into the bag with the cells to reconstitute the whole blood.

Bags with precipitate in them may then be frozen and stored until the AHG is needed for a patient. AHG activity will last for weeks or months.

• Science News Letter, 87:259 April 24, 1965

## Rubella Test Quick

➤ A NEW TEST for German measles, or rubella, the disease that in early pregnancy causes thousands of defective babies, was reported in Atlantic City.

Taking only 24 hours instead of about two weeks, which is necessary for methods generally used until now, the test reveals whether women of child-bearing age have had the disease and exactly the amount of protection they carry in antibodies.

Information quickly obtained through the new method should help shorten the time to the development of safe and effective rubella vaccines now only in the experimental stage. It should also help evaluate the use of high-antibody gamma globulin in blood fraction as a protective measure until a vaccine is ready.

Dr. John L. Sever of the National Institutes of Health, Bethesda, Md., presented the report of the new test at a meeting of the Federation of American Societies for Experimental Biology.

Collaborating in the research were Drs. Robert J. Huebner, Padman S. Sarma, Akinyele Fabiyi, Gilbert M. Schiff and Charles L. Cusumano, all of NIH, with Dr. Gabriel A. Castellano of Microbiological Associates, Bethesda.

Details were published in Science, April 16, 1965.

• Science News Letter, 87:259 April 24, 1965

## Diet on Whipped Cream

➤ IF YOU WANT to take off weight, drink eggnog made with a pint of whipped cream every day. Preliminary indications are that the high-fat diet may increase metabolism and assist in burning off the excess weight.

The conventional high-protein, low fat diet for reducing is not "physiological," Dr. Broda O. Barnes of Colorado State University, Fort Collins, told a nutrition session of the Federation of American Societies for Experimental Biology in Atlantic City.

An excess of protein lowers the metabolism and less body fat is burned, Dr. Barnes explained, adding that this probably accounts for the fact that only about 10% of such cases lose weight.

No heart attacks have occurred in the past 25 years among his patients on a diet high in saturated fats, the physiologist said, and that the Eskimo lives all winter on fat caribou meat and escapes heart attack.

Whipped cream is not all that Dr. Barnes puts on his reducing menu. For breakfast, three strips of bacon and one or two eggs are allowed. A small peeled orange is needed for a special vitamin not present in orange juice, a vitamin concerned with keeping blood vessels from breaking, Dr. Barnes said.

No toast or other foods except coffee or tea without sugar are permitted at breakfast.

• Science News Letter, 87:259 April 24, 1965