The following transcription was made for educational and historical purposes from microfilm in the Manatee County Central Library by Edward T. Haslam in Dec. 2008 because the microfilm was difficult to read. The article was originally published in the Bradenton Herald newspaper in Bradenton, Florida on May 4, 1961. A smaller article appeared in the same paper on the following day which said the entire article shown below was written by Judy Vary - so "by Judy Vary" has been added here. Contrary to what is stated by the Bradenton Herald's editor in the Editor's note below, the librarian at the National Biological Teachers Association says that the article did not appear in their magazine in 1961 or 1962. It was, however, submitted to that publication with that intention by Judy Vary's biology teacher. The article was written after Judy Vary attended a Science Writers' Seminar produced by the American Cancer Society in St. Petersburg, Florida in late March 1961.

Tremendous Effort Being Made For Fighting Cancer

by Judy Vary

(Editor's note: The following manuscript was submitted to The Herald by Judy Vary, outstanding young science-student of Manatee High School, Judy is specializing on cancer research and she said the article, prepared by experts, soon will appear in the National Biological Teachers Association magazine.)

Someday, we are told, cancer will joining the long ranks of completely-curable diseases. Someday, we are promised, there will be found a cure for cancer of all kinds. But few of us realize the tremendous efforts being made against the dread disease in the many laboratories and hospitals throughout the country, or of the millions of man-hours being spent everywhere by dedicated men and women who are doing their best to find some of the answers to our nation's second-greatest killer-disease.

The results of such work are sometimes, even often, disappointing, but progress is now being made at an ever-increasing rate. For example, children with leukemia could be expected to live only as long as five or six months with optimum treatments a few years ago. Now some survive as long as five years with various new treatments, such as the injection of cancer-regressing drugs - drugs which regress leukemic activity for ever-increasing periods of time - in the patient. Some of the advances against cancer were recently released to the press by the top research scientists in the nation last month, where the Doctor's Motel at St. Petersburg was host to the annual Science Writers' Seminar sponsored by the American Cancer Society. Newsmen from every major newspaper in the United States were present at the exclusive conference. Many of the findings presented were dramatically encouraging, pointing to a possible cure for cancer within the next few decades.

DRUGS

Dr. George Moore, director of the Roswell Park Memorial Institute for Cancer Research in Buffalo, reported that there are now drugs existing capable of curing 70 per cent of the cancerous growths in mice when used in conjunction with irradiation. These drugs, Thio-Tepa, and AB-132, are now being tested on human volunteers with hopelessly advanced cases of cancer. The

drugs seem to work just as well in man, but they are highly-specific: that is, they work only on special types of cancer. This is a common drawback of most of the anti-cancer drugs now in use.

One big problem now facing pathologists is the determination of cancerous tissues. Sometimes the pronouncement of a specimen of tissue as being malignant may mean amputation of a whole limb: if the diagnosis is incorrect, the life of the patient has been made vastly more difficult for no consequence. Dr. A. Clark Griffin to the group that perhaps this problem may soon be at least partially solved. He and his staff has found a toxohormone (in the tissues of cancerous animals and humans which has not been found in normal specimens. It is a by-product of carcinoma's activity, composed of 80 per cent polypeptides and about 20 per cent phospholipids. It depresses the liver's production of catalase, an enzyme necessary for the production of red blood cells.

EFFECTS

Many of the drugs which could be successfully used in anti-cancer therapy cannot be administered because of the dangerous toxic effects on sensitive organs or tissues in the body which are non-cancerous. Dr. Claude Hitchcock and his associates from Minneapolis General Hospital told of the special surgical procedures involving hypothermia (rapid lowering of body or tissue's normal temperature to slightly above freezing point), drainage of fluids, and perfusion of the removed organ with anti-cancer drugs. Kidneys, for example, were removed from living baboons, "frozen", perfused, slowly "thawed", and replaced in the anesthetized animal after up to 18 hours with no apparent ill effects. The potentials involved are enormous. Consider, for example, cancer of the lung being treated by removal of the lung and complete eradication of the cancer by means of drugs which would normally poison the whole body dangerously. The lung could be replace in the body whenever the patient would be strong enough to undergo a second operation safely, or if possible, the treated organ could be replace as soon as a few hours. The day may come when whole brains could be transplanted by such a method.

BLOOD

Is the blood of a person with cancer different from that of a normal person? Dr. Lawrence Levine told of a new series of experiments where, by means of warming DNA (deoxyribonucleic acid) extracts - which are extracts of the nucleic acid found in the nuclei of cells which controls heredity and directs the synthesis of chemical compounds in every cell, as well as being necessary to the cell's growth and existence - which were taken from cancerous and normal tissues, were found to molecularly "unwrap" from their essential structures - long, winding chain which exposed material their reactive centers. This exposure caused an antibody-stimulating reaction when injected into healthy animals; however, more antibody production was noted from DNA extracts thus treated from cancerous tissues than from normal. The possibilities that a "vaccine" from such extracts could be made was suggested, and much work in this field is being planned. These extracts were also taken from the blood of healthy and cancerous patients, and similar reactions were found to occur, demonstrating that there was some essential difference to the blood of cancerous human beings. The question of a vaccine for cancer has been raised by many of these scientists. Dr. Catleau (?) related how she injected attenuated (weakened) cancer cells from white mice into healthy animals. The weakened cells did not produce cancer in these

animals, although unweakened cells did so within a few weeks. She found that animals injected with the attenuated cancer cells which were later re-injected with cancerous tissues which were not weakened, still did not develop cancer! The suggestion that a vaccine had been created in these mice was very seriously considered. More extensive research is to be conducted along these lines. Could such a "vaccine" work for man?

TEAM

The husband and wife research team of Drs. Ruth M. and John B. Graham have gone this one step further. They produced similar vaccines - and actually have tested them on human beings with cancer. The results, although not definite, are not un-encouraging. It was found that the injections of the "vaccine" caused alterations at the site of injection in about 40 per cent of the patients. Those who did not react were all dead despite every kind of therapy available after a period of only one year. However, 33 per cent of the persons who suffered from ulceration at the site of injection were still alive at the end of one year. Even after 30 months, 39 out of 307 of these patient were still alive. So the vaccine idea may have some worth even though vast improvements of the treatment are needed.

A Chinese scientist working in this country by the name of Dr. Mann Chiang Niu has found a way to change cancerous cells into normal cells and normal cells into cancerous ones using an incubation method with RNA (ribonucleic acid) extracts. He took RNA from cancerous liver tissues and incubated normal liver cells in it. The cells became cancerous. Cancerous liver cells, however, when incubated with RNA extracts from normal cells, lost their malignancy and apparently became normal cells in every way.

Many scientists now believe that a majority of cancers may be caused by viruses that are non-contagious. Such viruses capable of producing cancer in mice have been found with the aid of the electron microscope. One especially virulent type, Polyoma, causes at least 23 different kinds of cancer in mice!! Fortunately, this virus is not transferable in humans, for the polyoma virus has be found, due to the mouse population's wide dissemination, to exist in dairies, granaries, mills, and bakeries, as well as in the stomachs of cattle who have eaten contaminated hay and corn. The virus is easily killed, however, and no danger to us. Even though the mice don't seem to give us cancer, the mice haven't been so lucky, in relation to humans, Filtrates from carcinomas taken from humans that are injected in mice, says Dr. James T. Grace, cause cancer in the mice in up to 17 per cent of the animals after only a half-a-year.

We always used to maintain that the nucleus of a human cell contained 46 chromosomes. Chromosomes are the "bags" in the nucleus which hold the genes that control heredity, cell-division, and the growth of the cell to a large extent. Dr. Avery A. Sandberg, associated with the American Cancer Society, told au the conferences that cells in humans have been found whose nuclei contain up to 92 chromosomes! These abnormal cells have been found in Mongoloid idiots, leukemians and those with cancer as well. The number may range anywhere from 50 to 75 or more, and it is theoretically-supposed that the chromosomes, which usually split completely in half when the cell divides (mitosis) probably don't split completely until after the cell has divided. This means that one cell, not having enough chromosomes, dies in the systems, while the other, with more than a normal amount of the vital units becomes abnormal; this

abnormality may be cancer. So we know a lot about cancer now. But David knew a lot about Goliath. The true problem today is to find the right rock to hit him with!

STUDY

Carcinogens - cancer-producing or inducing substances, are now being studied to determine how they affect the cell to make it cancerous. There are several theories, but most are linked to the chromosome explanation and the two nucleic acids found in the heart of the cell - DNA and RNA. Dr. Emmanuel Farber has concluded after extensive research that carcinogens probably act on nucleotid segments of the nucleic acid molecules, particularly those of DNA. The reaction to the carcinogens causes bizarre changes in the chain-like composition of the acids, making them resemble molecular structures found in a virus nucleic acid that is capable of producing cancer in mice. The doctor believes that the carcinogens - tars, oils, cigarette smoke, arsenic, etc. - cause aberrations similar to those induced by viruses or radiation in the cell, eventually causing cancer due to this alteration in the basic elements of the cell's nucleotid structures. Probably the most interesting study on carcinogenic agents was conducted by Dr. D. Caylee Hammond of the Statistical Research section of the ACS. His work with 13, 068 persons in relation to the smoking habits and the effects of smoking was interpreted at the seminar. Some very auspicious fingers now seem to point out that smoking causes cancer. Further, filters seem to help very little. Some of the answers given for the questionnaires were significant. For example, 26.2 per cent of smokers who smokes two packs of cigarettes a day complained of nervous tension, while only 7.2 per cent of non-smokers had this complaint. Other figures, such as coughing, loss of appetite, and fatigue, were correspondingly high for smokers as compared with non-smokers. Figures also indicate another startling fact: divorced or separated women smoked far more cigarettes than did unmarried, married, or widowed women! In some cases, the difference amounted to over 36 per cent more cigarettes.

Statistics also pointed out that the smoker is nine times more likely to develop cancer of the lungs than the non-smoker. Dr. Michael B. Shimkin reported that a serious epidemic of hepatic sarco-carcinoma - liver cancer - has broken out in fish hatcheries. The reason, it was found, was due to feeding the fish high- carbohydrate diets instead of the normal high-protein fare, because it was cheaper for the hatcheries to supply. The result acted as a carcinogenic agent on the sensitive livers of the fish - causing huge white tumors in the dark flesh of the organ, especially in older fish. The more-expensive, high-protein diet has been resumed in most of the hatcheries at this date, and the cancer is beginning to die out.

EDUCATIONAL

The entire seminar was a most educational, intellectually stimulating, and enjoyable affair! It is extremely difficult to even relate half of the discoveries released to the public for the first time, and this outline is of necessity inadequate. But the fact that these discoveries are taking place - and there are so many! - only means that the battle against cancer - man's most ancient and painful enemy - is being waged harder than ever. We're close to a final answer to cancer - perhaps within the next two or three decades or even sooner. But it takes cooperation, facilities, funds. We all can't don a white coat and work in a laboratory, but we all can help the battle

against cancer by giving generously to the American Cancer Society: which sponsors these vitally important activities. Remember more persons have died from cancer in the last 50 years than from all of history's great wars. It's up to you to fight cancer - with a "check up - and a check!!!"

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