
Helping cancer cells grow up

Millions of federal and private dollars are being directed toward "conquering cancer in our lifetime," as the American Cancer Society slogan goes. But the great cancer cure hasn't turned up yet, making many Americans wonder whether the investment isn't a rip-off. Once in a while, though, a research lead turns up that looks so promising that even the most jaundiced cancer research critic thinks, "Maybe we should hang in there after all."

Such a lead was announced last week by Daniel Dexter, assistant professor of medicine at Brown University Medical School and a cell biologist with the Roger Williams General Hospital in Providence, R.I. Dexter has found a chemical that seems to transform human cancer cells into normal cells, at least under laboratory conditions. Cancer cells have been switched back to normal before, but they were animal cancer cells, not human ones (SN: 4/16/77, p. 246).

Three years ago Dexter entertained a rather unorthodox theory — that malignancy is not a permanent state and might be reversed — in contrast to the prevailing view that cancer cells are hopelessly diseased and must be killed. Dexter was especially impressed by the fact that most cancer cells look immature, as if they have never grown up, and he wondered whether there might be some way of making them become mature and thus noncancerous. Paul C. Calabresi, professor of medicine at Brown, physician-in-chief at Roger Williams and Dexter's boss, was skeptical. But he decided to allocate some of the more than \$1 million national cancer research money at his disposal to Dexter so that Dexter could explore his theory.

First Dexter recovered human tumors from the Roger Williams hospital operating rooms and used them to grow cancer cells in his lab. Then he started to look for chemicals that might help turn the cancer cells into mature, noncancerous cells. One of the first substances he tried was dimethyl formamide. DMF has long been used in medical research to treat cells before freezing and once was noted to have some effect on leukemia cells.

Dexter started adding DMF to the nutrients in which human colon cancer cells were growing. The rate of growth dramatically slowed, and the cells looked more mature. Dexter exposed DMF to human breast cancer cells, mouse breast cancer cells and cells of an unusual human muscle tumor; DMF affected them the same way. He then injected 10 mice with DMF-treated human cancer cells and 20 mice with non-DMF-treated human cancer cells. Tumors appeared within two days in all of the latter mice, yet in only one of the former, and even that mouse didn't get a tumor until 12 weeks after injection.

Finally, Dexter injected large amounts of DMF into six mice with human tumors growing on them, and 10 days later all of the tumors were dying or already dead. "It was amazing," Dexter declares. He cautions, however, that this was a small, uncontrolled experiment, and that he will have to replicate it in numerous animals over the next few months in order to substantiate its veracity, and even then it could be several years before human trials with DMF are launched.

Nonetheless, DMF looks like a promising method for maturing and/or killing human tumors, particularly as it caused no toxic effects in mice even when used in large doses. □

Lithium treatment for alcoholics

Lithium is now considered the chemical treatment of choice for many cases of manic-depression. The drug's gradual administration produces a steady level of lithium in the blood and has been shown to minimize moods swings without significant side effects.

Now, in the first such experiments with human subjects, lithium has been tested as a treatment for alcoholism. And researchers at Memorial University of Newfoundland report that 36 percent of the patients tested were still abstaining from alcohol six months after treatment; this compares with a 12 percent abstinence rate among "comparable" patients treated with another drinking deterrent, calcium carbimide.

The lithium was administered in gelatin capsule form in considerably higher doses than those employed in conventional manic-depression cases. The dosage — given half a dozen times over a two-week period — produced negative reactions similar to hangover withdrawal symptoms, including nausea, headaches, tremors and general discomfort. Each of the 25 patients — consecutive admissions to a general hospital psychiatric unit — was instructed to taste, smell and occasionally drink small amounts of alcohol shortly after taking the lithium.

Consistent with prior tests with rats, most of the alcoholic patients developed a taste aversion to alcohol, and, for 36 percent of them, that aversion lasted for at least six months, report Sam Revusky, Clive S. Mellor and Frederick J. Boland in an upcoming issue of the British journal *BEHAVIORAL RESEARCH AND THERAPY*. And if the eight patients who did not develop sickness reactions to lithium are excluded, the abstinence rate improves to 47 percent, they note. "For our population of patients, we have supplied reasonable evidence for the efficacy of lithium chemical aversion therapy and strong evidence for its safety given proper medical safeguards," say the investigators. □

Two science series developed for TV

"A society — particularly a democratic society — that is based upon science and technology but where the citizens are almost totally ignorant of science and technology is heading for disaster." Or so says Cornell University astronomer Carl Sagan in an article he wrote for the Feb. 4 TV GUIDE in which he decried the primarily inaccurate and negative portrayal of science on television. In an effort to counter this, two public-television stations are each planning a series that will emphasize the fascinating and positive side of basic and applied science.

Of the two, "Man and the Cosmos" is further along. The 13-segment, hour-long series already in production by KCET-TV in Los Angeles will feature narration by Sagan himself when it airs in the spring of 1980. With a focus primarily on astronomy, the series will weave what it calls a "variegated," "intellectual landscape" for its viewers by touching on issues and spotlighting events that have shaped our understanding of the cosmos.

Like the science series, "NOVA," this show is being coproduced by the British Broadcasting Corp. In fact, Adrian Malone, its executive producer, is a BBC import; he previously produced the series "Ascent of Man" and "Age of Uncertainty" for public television. Together with Sagan and KCET's Greg Andorfer — now one of the series's producers — he developed the idea for the series two years ago.

The year-old independent National Task Force on Technology and Society has proposed an ambitious alternative to both the "NOVA" and KCET series — a half-hour weekly newsmagazine on technology. Like the Columbia Broadcasting System's "60 Minutes" and "People," it would feature a diverse range of topics — typically six per show — but without the "muckraking" reporting that has come to be associated with certain TV magazines, says Robert Chitester, president of Public Broadcasting of Northwest Pennsylvania, Inc., which operates WQLN-TV in Erie. Chitester is also cochairman of the national task force and organizer of last October's National Symposium on Technology and Society from which the task force resulted.

A campaign to raise \$100,000 for a pilot show has just begun. WQLN-TV would produce and partly fund the series, which aims to reinforce the task force's tenet that "any improvement in man's condition ultimately is going to come about through applications of science and technology," Chitester told SCIENCE NEWS. He said the show would shy away from "soft sciences" such as psychology and concentrate on hard, applied science. The task force intends to help promote other broadcast efforts, perhaps the KCET series, and look at commercial programming later on. □