

# The DNA Research Argument

WASHINGTON — Through the ages, man has conjured visions of creating new forms of life. Folklore is peopled with hybrid beings such as mermaids and unicorns combining the features of widely diverse species. Greek myth told a horrifying tale of Cadmus sowing dragon teeth which sprang up as armed warriors who slaughtered themselves. Robert Louis Stevenson wrote of an elixir which transformed a decent Dr. Jekyll into a bestial Mr. Hyde.

Today, fantasy is becoming reality in science laboratories throughout the world as biologists are transferring the genetic material of life, known as DNA, from one living species to another. The recipient organism then reproduces exactly the inherent traits of the DNA implant.

Nonetheless, the pioneer geneticists in this dawning age of DNA research find themselves restricted by government controls of their own devising. They have discovered how to isolate DNA and transmute its genetic characteristics from one living species into another. This has aroused apprehensions that they may unloose from their test tubes strains of new killer viruses impossible to combat.

To bring this vital field of research into proper focus, we asked our associate Howie Kurtz to seek out the facts and place them in perspective. After a series of intensive interviews with authorities at the top, this is what he found:

Five years ago, Stanford biologist Stanley Cohen separated a minute segment of DNA material and implanted it into living bacteria. He found that the bacteria then reproduced the microscopic DNA offspring over and over as part of their normal reproductive process.

To Cohen and his scientific colleagues, this opened up limitless possibilities of genetic laboratory engineer-

ing. It meant that nature's entire genetic computer bank could be tapped to create new types of organisms — plant, animal and even human.

Scientists could discover through the process how a cancerous cell differs from a healthy one, how to treat such inherited diseases as diabetes or mental retardation, how to produce antibody vaccines to treat viruses.

Biologist Cohen told Kurtz: "We can now turn bacteria into more efficient factories for a variety of products. There's no reason to accept the diseases and other bad cards that evolution has dealt us. All we have to do is find the bug that has the particular gene combination we need."

Yet upon Cohen's discovery, some observers raised the prospect that the DNA experiments might some day engender a new, dangerous strain of bacteria for which there would be no known antidote. Conceivably, a terrorist group might develop and let loose on the world a bubonic plague nurtured in a secret laboratory. Lax security measures in a laboratory could allow the leakage of resistant deadly illnesses.

To counter these fears, Cohen and his colleagues gathered at Asilomar, Calif., in 1975 and urged federal guidelines over DNA research. The following year, officials at the National Institutes of Health announced that all federally supported DNA research must have their approval. Every scientist in the field now must file a memorandum describing his experiment and subsequently get permission for any deviations. Industry researchers, however, are not covered by these rules.

From hindsight, most reputable research scientists feel they overreacted to the possible hazards of the problem. They now deplore that the strict safeguards are hampering U.S. research.

"Our initial concerns were both overblown and foolish," Cohen says ruefully.

He notes that in the five years since his first gene transplant, "there hasn't even been a hint that this could present any hazard at all."

Nobel laureate James Watson, the discoverer of DNA, is equally dismayed over the federal rules. "We're being blocked from studying the viruses which cause leukemia or breast cancer," he complains. "Two of our people had to go to London to isolate DNA from a common human virus."

Gripes William Rutter of the University of California: "We could clone a human insulin gene in a very short time if we were allowed to do so. But people in Congress are regulation-oriented and figure some law is better than no law."

The geneticists are now worried about moves to impose even more stifling restrictions on their laboratory work. Harvard scientists, for example, persuaded Rep. Harley Staggers, D-W.Va., to bottle up a bill which would have given local governments authority to impose more stringent standards.

Noted biologist Robert Sinshemer argues there are real grounds for concern that deadly bacteria could be created in the laboratories. "One could produce some pretty fearful organisms," he comments, noting, for example, that bacteria which manufacture their own botulinus toxin "would be a very deadly thing. The technology is too easy ... It's really within the capabilities of a small country, or terrorist group, or a warped graduate student."

Counters Cohen: "Genetic recombination is nothing new. What we are doing in test tubes is just an application of what nature does in living cells all the time. By worrying about these speculative hazards, we're delaying the ability of American medicine and agriculture to cope with real problems like pollution and disease."

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