How to Keep Your Shirt—If You Put It in Genes

The stock prices on Wall Street are one way of comparing the worth of the various companies that now claim to be in the genetic engineering business. Stock prices, however, relate to perceived worth, an evanescent quality that differs from actual worth by the levitational factor known as hype. It is this factor that has helped substantially in getting the new industry off the ground.

The hype factor, well understood to the professionals on Wall Street, often goes unrecognized by small investors, such as the widows and orphans who are left holding the baby when the stock prices collapse. For the latter class of investors, the following advice is humbly offered.

A common route to commercial viability is to produce a product. Although much of the gene splicing industry seems intent on eschewing this well-trampled path to success, signs of a well-defined intent to manufacture something should not be regarded as an outright handicap. Which companies have definite plans to produce products in the United States? To find out, the would-be investor might address himself to the Office of Recombinant DNA Activities at the National Institutes of Health. This office keeps a list of all approved applications to use the recombinant DNA technique on a commercial scale (defined as more than 10 liters), apart from a certain category of experiments that are exempt. Companies not on this list presumably have no production plans that have yet reached the stage of detail required to win NIH approval.

The list, as of 16 March 1981, is as shown. Eli Lilly and Genentech are partners in the production of insulin by various methods; Burns-Biotec Laboratories is a wholly owned subsidiary of Schering-Plough, which has a contract with the European-based firm Biogen to produce interferons. Hoffmann-La Roche has a contract with Genentech to the same end. The volumes of approved projects were not specified after 1980.

—Nicholas Wade

Recombinant DNA: Large-scale proposals approved by NIH as of 16 March 1981.

Sponsor	Gene(s) cloned	Maximum volume in liters	Date of submission	Date approved
Eli Lilly	Human insulin A Human insulin B	150 150	6/8/79	10/5/79
Eli Lilly	Human insulin A Human insulin B	2000 2000	4/2/80	4/7/80
Genentech	Human somatostatin Human insulin A Human insulin B	750 750 750	8/23/79	12/3/79
Genentech	Human growth hormone	750	11/12/79	4/1/80
Genentech	Human somatostatin Human insulin A Human insulin B Human proinsulin Human thymosin alpha 1	750 750 750 750 750	2/15/80	4/9/80
Eli Lilly	Human proinsulin	2000	2/20/80	4/7/80
Eli Lilly and Genentech	Human proinsulin Human insulin A Human insulin B	2000 2000 2000	3/6/80	4/9/80
Burns-Biotec Laboratories	Human leukocyte interferon	750	5/14/80	7/22/80
Genentech	Human growth hormone	750	5/12/80	7/22/80
Genentech	Human leukocyte interferon Human fibroblast interferon	750 750	5/13/80	7/22/80
Genentech	Human leukocyte interferon Human fibroblast interferon	750 750	9/4/80	11/4/80
Burns-Biotec Laboratories	Human leukocyte interferon	750	9/12/80	11/4/80
Burns-Biotec Laboratories	Human leukocyte interferon	750	9/12/80	11/4/80
Genentech	Human leukocyte interferon		12/5/80	2/2/81
Genentech	Bovine growth hormone		12/5/80	2/2/81
Hoffmann-La Roche	Human leukocyte interferon Human fibroblast interferon		12/9/80	2/2/81
Burns-Biotec Laboratories	Human leukocyte interferon		12/10/80	2/20/81
Schering-Plough	Human leukocyte interferon		12/10/80	2/20/81

Novel Help for the Handicapped

A program is under way at the Tufts–New England Medical Center Hospital in which capuchin monkeys are being trained as aides to the severely handicapped. Capuchin monkeys, native to South and Central America, are familiar as the tiny companions of street corner organ grinders.

The program is headed by educational psychologist Mary Joan Willard. Willard, who did postdoctoral work with psychologist B. F. Skinner, came upon the idea of training capuchins as aides to the severely disabled after meeting a quadriplegic and thinking that maybe simians could be of help. She started a pilot program with two monkeys in 1977 and has since obtained grants from the Paralyzed Veterans of America and the National Science Foundation. The capuchins are trained by having them imitate simple actions on command and rewarding them when they do it right. Complex tasks can be performed by training the monkeys in the series of simple actions which are the task's components.

Hellion, a 3-year-old female, is the first monkey to be placed in a quadriplegic's home. She has learned to feed her owner, open, close and lock doors with a key, turn lights on and off, move small objects from one place to another, and take a record from an album cover and place in on the turntable. These tasks are performed on verbal command with the help of a small laser, operated by mouth, to

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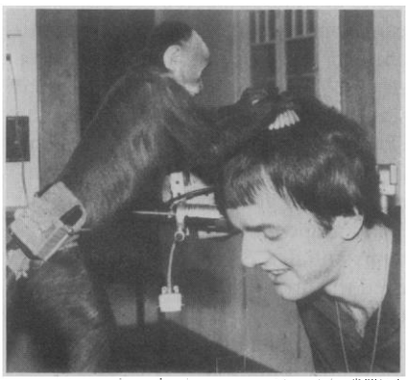
indicate which objects are to be used for which task. Hellion needs additional training, however. When left to her own devices, she may upset wastebaskets and scatter the trash, knock over objects on tables and dressers and otherwise engage in ordinary monkey business. She is now being trained not to touch certain things in the apartment.

Even if Willard's program shows



Mary Joan Willard

that simian helpers are feasible and desirable, capuchin aides are not thought to be the final answer for the thousands of people confined to wheelchairs or unable to use their upper limbs. "But we think our work could have a significant impact on the daily lives of those who have a real need to supplement the help that is provided by human and mechanical means," says Willard.

—Scherraine Mack

Meet Dr. X, the Jackson Place Science Adviser

Is it a step up or banishment to the bureaucratic hinterlands? The Office of Science and Technology Policy (OSTP) has been given new quarters at 744 Jackson Place, an elegant town house just across the street from the White House. Among its neighbors will be the Council on Environmental Quality and the Harry S. Truman Scholarship Foundation.

Although it is a prime location, it is not quite such a prestige address as the Old Executive Office Building adjacent to the White House, where most senior advisers have their offices. OSTP has, however, been assigned some space in the executive office for the President's science adviser when one is appointed, so he will still have at least one foot in the corridors of power.

The reassignment of office space may in fact say little about OSTP's standing in the White House hierarchy. A clearer statement is the fact that its budget has been cut and there is still nobody named to head the office.—***Colin Norman***

NIH Committee Sheds Darkness on UCSD Case

Anyone seeking to understand the strange case of the virus that was miscloned at the University of California, San Diego (UCSD) last summer should make every effort to avoid reading the recent report on the issue prepared by a committee of senior officials at the National Institutes of Health (NIH).

Ian Kennedy, a highly skilled researcher and experimentalist, resigned from UCSD last September after it became clear that he had cloned Semliki Forest virus, a procedure then but not now in violation of the NIH's recombinant DNA guidelines. The cloning violation was perhaps of no great significance compared with the fact that Kennedy had, for whatever reasons, come to lose the trust of his colleagues (*Science*, 26 September 1980).

The NIH committee has confined itself to looking at the tip of the iceberg, the violation of the NIH rules.

First, it opines that it would "not be fruitful" for the NIH to try to resolve the differences between Kennedy's version of events and that arrived at by the UCSD Institutional Biosafety Committee (IBC), which investigated the incident. Perhaps there was less to resolve than the NIH committee feared. The painstaking research of the IBC, which reviewed every notebook and witness, and the statements of a researcher in a jam, are not of equal credibility, although Kennedy deserves the benefit of every doubt.

In Kennedy's version he mentions an experiment that involved the cloning of certain viral particles in mouse L cells. The experiment, he says, took place in January 1980. The IBC, in its detailed chronology of events, says nothing about the L cell experiment, but makes plain that the first cloning—without which the L cell experiment could not have been done—took place in March or April of 1980.

Asked if the NIH committee was aware of this contradiction, chairman Richard Krause, director of the National Institute of Allergy and Infectious Diseases, says, "I would have to go back to my notes to make certain." But the contradiction lies at the heart of the misunderstanding between Kennedy and the IBC.

Instead of following the IBC's example in saying nothing about the L cell experiment, the NIH committee, in a spasm of investigative zeal, wrote off to San Diego to ask for the "MUA"—the notification of the experiment that Kennedy would have had to file with the IBC. Back came the reply that, surprise of surprises, there was no MUA on file.

Could it be that the reason for the absence of the MUA was the absence of the experiment? The NIH committee was too caught up in the excitement of having discovered a new violation, one that had quite escaped the detection of the IBC, to consider such a conjecture. "There were serious violations," the NIH committee solemnly concluded, in Kennedy's cloning of Semliki Forest virus and "in his conduct of recombinant DNA experiments in mouse L cells without prior IBC approval."

If the committee wasn't at all interested in finding out what did happen at UCSD, why waste its time on something that quite possibly didn't?

Distributed with the report are letters praising the NIH committee for its "accuracy and good judgment."

—Nicholas Wade

Research on Anomalies

A new center for the scientific study of psychic phenomena and other alleged anomalies has been set up at Eastern Michigan University by sociologist Marcello Truzzi. With a focus on sifting facts, the center's aim is to be "constructively skeptical" toward the phenomena it examines. Psychic entertainers, UFO sightings by scientists, and police use of psychics are three projects already in hand.

—Nicholas Wade