## Unusual Partners Launch a Biotechnology Venture

The federal government is joining forces with industry, the University of Maryland, and a state county to create an organization devoted to basic research in biotechnology. The arrangement, which was officially announced last week, is believed to be the first of its kind.

According to the plans, which are still somewhat sketchy, the research will focus on the development of tools to aid in the study and the synthesis of proteins, including computer applications to design new macromolecules.

The proposed organization arises from converging interests. The University of Maryland is pushing to become a major resource of biotechnology research. Maryland's Montgomery County, where the center will be located, is aggressively pursuing economic development and is the home of the National Institutes of Health, several biotechnology companies, and other high technology corporations. The third partner, the National Bureau of Standards, has a strong base in physical sciences that are now being applied to biotechnology.

Bureau director Donald R. Johnson says that the bureau will focus, for example, on new methods for chemical analysis, chemical separation, and enzyme stabilization.

Headquarters for the organization—to be called the Center for Advanced Research in Biotechnology—will be located in Rockville, Maryland, where computer modeling and other tools will be developed. Other research will be conducted at the various campuses of the University of Maryland and the National Bureau of Standards, which is 2 miles from the center's future location.

Money for the center will come from a variety of sources. Not much start-up cash or overhead is needed because the land for the center's future building has been donated and researchers at the center are expected to be supported by their home institutions, companies, or agencies. Organizers plan to ask the Maryland state government for $300,000 for seed money.

One potentially prickly problem is how to determine patent rights to inventions which arise from the collaborative research. Michael G. Hanna, Jr., director of the Litton Institute of Applied Biotechnology, who was active in the development of the center proposal, says that as yet no formulas have been nailed down to assign patent rights.—**MARJORIE SUN**

## Is Shortage of Engineers a Matter of Definition?

Asked the apparently simple question of whether there is a shortage of engineers, experts on engineering manpower are likely to respond, "What do you mean by shortage? What do you mean by engineers?" At a 2 February symposium at the National Academy of Sciences titled "Labor Market Conditions for Engineers: Is There a Shortage?" the experts suggested, in effect, that a shortage is in the eye of the beholder.

In round numbers, 1.2 million people are currently counted as engineers in the American work force. The studies discussed at the Academy symposium were in general accord in projecting a 5 percent average annual growth rate in demand over the next 10 years, indicating that some 500,000 new jobs will open up for engineers. There will, however, be only about half enough newly graduated engineers to fill these jobs. Does this mean a 50 percent shortfall? Not if the engineering marketplace continues to operate as it has.

A key element in the ebb and flow of manpower in engineering has been what the studies tag "occupational mobility"—people not classified as engineers who take positions with engineering job descriptions. They may be from such disciplines as math and physics, or may have been trained as engineers and transferred back from other pursuits, or may be technicians upgraded to fill engineering slots. To a remarkable degree, employers have effectively balanced supply and demand by orchestrating occupational mobility. Therefore, said Williams College economist Michael McPherson, who chaired the meeting, the consensus was that there is not likely to be a shortage in the sense of jobs going begging. Half the additional jobs in prospect would be filled by newly graduated engineers and the rest by occupational mobility.

That this mobility raises important qualitative questions was a view strongly reflected in the discussion throughout the symposium. An obvious concern is the effect on productivity and, ultimately, on U.S. competitiveness. Companies also have to pay higher search costs and job vacancy rates are higher since hiring the occupationally mobile is, typically, more trouble than signing on the newly qualified engineering graduate.

Should industry shift away from its reliance on "in mobility"? Some participants at the symposium thought that employers would take advantage of technological advances that would make it possible, in effect, to substitute capital for labor. Some suggested that a rising demand for engineers with highly specialized training would shut out outsiders increasingly in the future. Others saw occupational mobility as a public policy issue. Noting that it is impossible to predict the demand for particular skills 10 years in advance, Ronald Kutscher of the Bureau of Labor Statistics asked, "Are we relegating those in surplus areas to the scrap heap at an early age? What happens to those who made the wrong choice?"

Much the same question can be asked about the fate of experienced engineers. Salaries of new graduates in engineering have continued to rise, but engineers well into their careers are less in demand and are losing ground financially.

Aside from academic employment, immigration of engineers from overseas was discounted as a major factor in projections of engineering manpower. However, some participants at the symposium indicated that they thought the estimate that immigrants in the engineer workforce here would not much exceed 5 percent suffered the same unreliability as statistics on immigrant employment.

Even with large numbers of immigrants teaching in U.S. universities, a shortage of engineering faculty is seen as continuing. In part, at least, this is attributed to restraints on universities in paying premium salaries in shortage categories. Universities do pay differentials, however, and some perspective on the larger academic marketplace was provided by the participant who noted that at one Big Ten

University an associate professor in computer engineering commands a $35,000 annual salary "and it should be more. They can get an associate professor in the humanities for nineteen or twenty thousand and only humanitarian considerations prevent it from being lower."—JOHN WALSH

## Contraband Cells

Many researchers do not know it—and a few have learned it the hard way—but they need a permit from the United States Department of Agriculture (USDA) to bring cultured cells into this country from abroad. The reason for this is the possibility that the cells or their culture medium might harbor pathogens that could cause economic damage to the U.S. agricultural industry. A major concern is foot-and-mouth disease (FMD), which is no longer found in this country, but does exist in many others. (Australia, Japan, and the United Kingdom are exceptions.)

Although researchers have always exchanged cell lines, they are apparently doing it more now because of the great popularity of monoclonal antibodies, with their high specificity and reproducibility, as research tools. The antibodies are produced by hybridomas, lines of hybrid cells formed by fusing mammalian cells, generally from mice. Virtually all cultured mammalian cells have been in contact with fetal calf serum, a possible source of the FMD virus, at some point in their life.

Investigators who have tried to import hybridomas developed by their foreign colleagues have run into problems. "If the country of origin has a history of foot-and-mouth disease, we will deny entry," says Laura Peterson of the USDA's Animal and Plant Health Inspection Service. Two or three cell lines were stopped in early February by USDA inspectors, Peterson notes.

Moreover, the investigator will not get a permit if there is a chance that the cell culture contains FMD virus, unless the culture goes through quarantine at the Plum Island (New York) Animal Disease Center where it can be tested for possible infectivity. This must be arranged in advance and can cost thousands of dollars because the material must currently be tested in living animals. The USDA hopes to develop a much cheaper test tube assay for FMD virus, but this is at least 2 years away and will be something of an inconvenience.

Meanwhile, some researchers are doing a bit of quiet smuggling, says one investigator who wants to remain anonymous for the obvious reason. When USDA inspectors detect such contraband, they impound it. If a permit cannot be obtained, the cells may be sent back to the country of origin. Otherwise they will be incinerated.

—JEAN L. MARX

## NIDA Sees Bias in Scientists' Drug Meeting

The refusal by the National Institute on Drug Abuse (NIDA) to sponsor an upcoming meeting of drug experts has highlighted the intense and polarized nature of the conflicts that run through the field.

The National Association of Drug Abuse Programs is planning to hold its biennial scientific meeting in New York at the end of March. NIDA agreed to be one of the sponsors and approved the format, which includes debates on a number of controversial subjects, including the dangers of marijuana use.

However, when NIDA learned the names of two of the panel moderators it protested and told the meeting organizer, Barry Stimmel of Mount Sinai Medical Center, that the agency would withdraw its sponsorship. The two are Lester Grinspoon and Norman Zinberg, both psychiatrists at Harvard University. Both are identified with the more pragmatic—or lenient—or open-minded (depending on who is doing the identifying)—approach to drug use. Both favor decriminalization (not legalization) of marijuana.

Stimmel says that Jack Durell, NIDA's associate director for science, told him NIDA objected to the two individuals because panel moderators should be "neutral." Stimmel says Grinspoon and Zinberg are respected senior authorities on drug abuse, and not regarded as extremists. Besides, Grinspoon's panel, on the "social" use of marijuana, was scheduled to include a paper by Robert Dupont, NIDA director under Jimmy Carter who has become an outspoken anti-drug crusader. Stimmel said he thought the NIDA decision was "injudicious" and "unfortunate."

Grinspoon goes further, claiming that NIDA's decision is a sign that it is becoming "increasingly politicized." Several participants in the conference point out that NIDA in its attempt to establish a political constituency has been cultivating the parents' groups. The agency is under "a lot of pressure to put out word that all drug use is bad," says Stimmel.

Durell indicated as much when he told *Science* that the two psychiatrists tend to take an "open exploratory view" rather than one which puts primary emphasis on the hazards of drugs.—CONSTANCE HOLDEN

## San Diego Picks the Stars over Sodium

The San Diego city council has now reversed an earlier decision to install sodium street lights that might have eventually blinded the nearby Palomar Mountain observatory. (*Science*, 15 July 1983, p. 247).

At issue was the replacement of San Diego's 27,000 aging mercury-vapor street lights. The cheapest alternative, used in many cities, is the so-called low-pressure sodium lamp. It also happens to be the type most favored by astronomers, emitting nearly all of its spectral energy in the yellow sodium doublet lines, which the researchers can filter out or ignore. However, they were opposed by councilman William Mitchell because their deep yellow color makes people "look like cadavers." In June he persuaded the council to install pink-orange *high*-pressure sodium lamps, whose broad-band spectrum is impossible to ignore.

Nearly 9000 of the high-pressure lamps have already been installed. On 7 February, however, after stormy debate, the council voted 6 to 3 to reverse itself. The two members who switched their votes said the astronomers had convinced them that protecting a resource like Palomar was more important to the city than quibbling over the color of lights.

—M. MITCHELL WALDROP