PASTEUR MEETING

FRENCH SCIENCE SALUTES BIOTECHNOLOGY

PARIS, France—The French government and scientific establishment joined forces to demonstrate France's commitment to biotechnology by cosponsoring a week-long biotech exposition here in September, under the aegis of the Institut Pasteur and the Ministry of Industry and Research.

The Institut's François Gros provided a novel summation, commenting that the traditional scientific and industrial definitions of biotechnology are inadequate because they fail to include its epistomological and human dimensions. He argued that biotechnology is an attitude of spirit on the part of researchers, technicians, industrialists, governments, and even the public—who, faced with a science that is constantly changing, must nevertheless apply it to serve society.

Other speakers concentrated on the scientific rather than philosophical aspects of biotechnology. Maxime Schwartz (Institut Pasteur, Paris) described his controversial hypothesis on the mechanism of protein export by bacteria. Gram positive bacteria such as *Bacillus subtilis* secrete proteins that are synthesized with a short "signal sequence" at one end that directs the cell to export rather than retain the molecule. Schwartz suggested that the signal sequence binds to a specific signal recognition particle in the cell, sending the protein-synthesizing complex to the cell membrane where secretion begins.

Schwartz's hypothesis, which is analogous to the signal pathway that has been proposed for eukaryotic secretory proteins, may have important implications for industrial production of specific proteins by gram positive bacteria. He predicted that once the secretion process is really understood, researchers will be able to engineer the bacteria to export products for enzyme production, infection control, and protection of agricultural products from pathogens.

IMAGE UNAVAILABLE FOR COPYRIGHT REASONS

Researchers at Smith Kline & French used the expression vector pKC30 to analyze the transcriptional activator protein cII. The two diagrams on the left show the contact sites for cII binding to DNA. The contact points, marked by light circles, are all on one side of the double helix. The diagrams on the right show the same segment with the contact sites for RNA polymerase (dark circles), which activates transcription. RNA polymerase binds primarily to the opposite side of the double helix, sandwiching the DNA between itself and cII.

Research on new gene transfer and expression vectors dominated many colloquia. M. Rosenberg (SmithKline & French Laboratories, Philadelphia) described a new expression vector that uses regulatory signals from the phage λ to produce large quantities of cloned gene products. "The system has been used to express efficiently more than a dozen prokaryotic gene products," Rosenberg announced. "In each case the protein of interest was obtained at levels between five and 30 percent of total cellular protein." Rosenberg also claims he can modify his vector to express eukaryotic genes in *E. coli* by "just adding a ribosome binding system."

Retroviruses have recently come into favor as vehicles for gene transfer in mammalian cells and in mammals themselves. Richard Mulligan (Massachusetts Institute of Technology, Cambridge) noted that retroviruses are "uniquely suited for utilization as cloning vehicles"—they integrate efficiently into the host chromosome, they infect many different types of host cells, and at least some of them appear to transduce nonviral genes. Mulligan, in collaboration with Rudolf Jaenisch (University of Hamburg), has used retrovirus vectors to introduce new genes into the germ line of mouse embryos.

A new strategy for developing plant gene transfer vectors based on cauliflower mosaic virus (CaMV) was proposed by L. Hirth (Institute of Molecular & Cellular Biology, Strasbourg). CaMV belongs to the only group of plant viruses with a double stranded DNA genome, which makes it a good candidate for receiving cloned genes. Although Hirth's group has elucidated much of the molecular biology of this virus, they have not yet overcome the technical obstacles to its application as a gene vector.

While the speakers concentrated on reviewing current trends in basic research, it was clear that many of the attendees had their eyes on the future applications of the work. The road "From Basic to Applied Research in Modern Biology"—the theme of the conference—still seems a long one.

—Vivian Lee

NEW CLASSIFICATIONS, PERSONNEL

U.S. PATENT OFFICE PLANS REORGANIZATION TO DEAL WITH GENETIC ENGINEERING

WASHINGTON, D.C.—The U.S. Patent and Trademark Office (PTO) is considering changes in personnel, patent classification, and lines of authority to encompass the rapid growth and new technologies of genetic engineering, according to assistant commissioner for patents Rene Tegtmeyer. Several patent attorneys working in biotechnology support the PTO plans, but some also question whether these steps will mean more consistent and quicker decisions from the examiners. Only time and litigation will set the ground rules for patenting, they say.

One problem is the increasing workload. The PTO's proceedings remain secret until it issues a patent, so it is difficult to determine if there is a backlog of genetic engineering applications. According to PTO statistics, almost half the 263 genetic engineering patents of the past 20 years were