present training grant program to place renewed emphasis on real laboratory research.

Evidence presented at the advisory meeting—some of it fairly solid, some anecdotal—suggests that there is a correlation between the amount of time a young physician spends in a research setting and future career development. The new "Physician Scientist Award," which provides 5 years of support, is intended to get around what Wyngaarden calls the "toe-in-the-water" approach of a 1- or 2-year training program, particularly those which include a lot of clinical rather than laboratory work. Candidates for the physician-scientist award must have an M.D. and a sponsor who is a recognized basic researcher who will provide close supervision for at least the first 3 years. The award carries a stipend of approximately $30,000 a year, plus another $10,000 to $20,000 annually in research support. So far, some 80 M.D.'s have applied and NIH expects to give out as many as 40 awards in the first round. Eventually Wyngaarden hopes NIH will be able to support as many as 225 would-be physician-scientists at any given time as a way of ensuring a future supply of doctors in research.

The issue of physician-researchers takes on added complexity when considered in the context of biomedical research personnel as a whole. The data indicate that the absolute numbers of physicians going into research has remained relatively constant during the past decade. It is the ratio of M.D. researchers to Ph.D.'s that has shifted in favor of the latter as Ph.D.'s have proved themselves more and more successful at getting grants. One explanation lies in the changing nature of science itself. As biomedical research has evolved during the past decade, it is apparent that the technical skills and educational background that make one able to manipulate monoclonal antibodies or conceive experiments in genetic engineering are more in demand. As long as the pool of M.D. researchers, with the talent for recognizing new syndromes and advancing clinical medicine, remains at some undetermined but satisfactory level, the influx of Ph.D.'s in biomedical research may presage no loss to medicine at all.

The problem, which is not new, lies in figuring out how many M.D. and how many Ph.D. researchers really are needed, how to train them appropriately, and how to devise institutional ways to enable them to work creatively together.

—BARBARA J. CULLITON

Administration Announces Intent to Leave UNESCO

The Reagan Administration decision to withdraw at the end of 1984 from the United Nations Educational, Scientific and Cultural Organization (UNESCO) was made with many of the U.S. scientists and scientific organizations that were consulted favoring continued membership. The balance of opinion among them appears to be that, while UNESCO deserves serious criticism, the advantages of U.S. participation outweigh the disadvantages if science programs alone are considered.

Over the last six months, the State Department carried out a review of U.S. participation in UNESCO with the National Science Foundation (NSF) responsible for assessing the pros and cons of U.S. involvement in UNESCO's scientific activities. So far State has declined to make public either the overall evaluation or NSF review, but several sources outside government familiar with the latter say it reflected a consensus for staying in.

The Administration statement attributed the U.S. intention to withdraw to a conclusion that UNESCO

"—has extraneously politicized every subject it deals with;

—has exhibited hostility toward the basic institutions of a free society, especially a free market and a free press; and

—has demonstrated unrestrained budgetary expansion."

In discussing the withdrawal, U.S. officials made no detailed references to UNESCO's scientific activities. The impression is that the positive evaluation by the federal science agencies and nongovernment groups was simply overshadowed by the charges of UNESCO politicization and mismanagement. The U.S. contribution amounts to 25 percent of the UNESCO budget now running at about $200 million a year.

U.S. critics charge that UNESCO increasingly has taken an anti-Western and particularly anti-U.S. stance. They say that UNESCO policies are now closely identified with the interests of the less-developed countries (LDC's) and this has been translated into a general hostility to Western democratic institutions and attitudes.

The immediate concern in the scientific community is about the future of U.S. participation in major international scientific programs should the withdrawal be carried out. These include the Man in the Biosphere program, the International Geological Correlation Program, and the International Hydrological Program.

Among those who see serious consequences in a U.S. withdrawal is Harvard biophysicist Arthur K. Solomon who has a long involvement in UNESCO affairs and is an advocate, though not an uncritical one, of continued U.S. membership. Solomon argues that since the cooperation of governments is required, large projects depend on UNESCO. If UNESCO should suspend cooperation with the United States because of U.S. withdrawal then this country would, for example, be blocked from pursuing important research on the so-called Greenhouse Effect caused by the buildup of carbon dioxide in the atmosphere. Solomon notes also that the International Council of Scientific Unions (ICSU), the principal world organization of scientific organizations, receives a third of its budget from UNESCO and would be hit hard by funding reductions that U.S. withdrawal from UNESCO would presumably cause.

National Academy of Sciences (NAS) home secretary Walter A. Rosenblith says that the academy estimated the consequences of U.S. withdrawal and "is very clearly on the record" as favoring continued U.S. membership. He said that in such fields as the earth sciences, climate, environment, and ecology, no alternative arrangements would be satisfactory and ICSU, for example, could not serve as an adequate substitute for UNESCO.

In the formal letter informing UNESCO director general Amadou-Mahtar M'Bow of U.S. intentions to withdraw, Secretary of State Shultz wrote that "It is likely that the resources we presently devote to UNESCO will be used to support such cooperation. Any alternative programs which the U.S. develops could, in principle, serve as a basis for future cooperation between the US and UNESCO." State Department officials express optimism that the United States will be able to make alternative arrangements on most important collaborative scientific pro-

grams and have begun the effort to find ways, if the United States breaks up with UNESCO, to pick up the pieces.—JOHN WALSH

Richter to Head SLAC

Stanford University physicist Burton Richter, 52, corecipient of the 1976 Nobel Prize for the discovery of the J/Psi particle, has been appointed director of the Stanford Linear Accelerator Center (SLAC) effective 1 September 1984. He will succeed Wolfgang Panofsky, 65, who has headed the center since its founding in 1961.

SLAC

Burton Richter

"There is a universal conviction that Burt Richter is exactly the right person for the job," says Stanford President Donald Kennedy. Richter will now be administering the construction of the Stanford Linear Collider at SLAC, a machine he conceived and designed.—M. MITCHELL WALDROP

Massachusetts Forbids Use of Impounded Pets in Labs

A law, signed late in 1983, gives Massachusetts the distinction of having the broadest and most stringent state controls on the use of animals in research. The law, which starts to take effect in October, will prevent researchers from obtaining animals—primarily dogs and cats—from pounds either within or outside Massachusetts. These restrictions are expected to increase about fivefold the cost of using dogs for experiments.

The new law was reluctantly supported by members of the biomedical research community in Massachusetts to head off more restrictive controls. It was a compromise between them and a strong coalition of animal welfare groups, called Protect Our Pets. The ProPet group had gathered enough signatures to place a referendum on the ballot in November that, if approved, would have required researchers to keep elaborate records for all animals used in research and to allow inspections of animal care facilities by the New England Antivivisection Society (NEAS).

"This is our first victory," says Aaron Medlock, director of NEAS. "We are very pleased with the new law. [This] may influence other states to clean up their own acts, and it has shown that the research community is willing to live without impounded animals." He notes that California is the only other state now considering similar legislation.

Other measures to restrict the use of animals in research have been submitted to the Massachusetts legislature, according to Medlock. These include proposals to eliminate the use of nonhuman primates in research, to stop racetrack greyhounds from ending up in laboratories, and to curb "unnecessary experimentation." This last proposal would make it "illegal to subject animals to experimentation if an alternative is available, if the experiments are repetitive, if data are available elsewhere, or if the experiment is solely for demonstrative purposes," he says. "It's up to the scientific community to find alternatives that don't infringe on the rights of these animals."

Although the recently enacted Massachusetts law does not prevent researchers from using animals bred for experimental purposes, Medlock also would like to see that practice eliminated. He says that it is "much preferred" that lost and abandoned pets be destroyed rather than be used in research. This preference is often not understood by researchers who note that more than 250,000 unclaimed pets are destroyed each year in Massachusetts.

Meanwhile a committee from several academic and research institutions, led by Ronald Hunt who directs the Animal Resources Center of the Harvard Medical School and also the New England Regional Primate Center, is considering starting a dog-breeding center to make up for the more than 6000 such animals used annually for research in Massachusetts.

—JEFFREY L. FOX

Regulators Agree on Grain Dust Standards

After months of negotiation with the White House, the Labor Department's safety branch, the Occupational Safety and Health Administration (OSHA), has backed away from a strong position on grain dust hazards. Instead it has softened a proposed rule that is meant to prevent dust explosions. Over 100 people have been killed in grain elevator blasts in the last 6 years.

Seven months ago, OSHA submitted what it considered a final proposal to the White House for review. To bring an end to disputes over what does and does not constitute a safe working environment, OSHA said that grain elevator owners should remove dust in buildings regularly, never allowing more than 1/8 of an inch to accumulate. This standard was a weakened version of a level recommended by a National Academy of Sciences report, which suggested that the maximum dust level be set at 1/64 of an inch (*Science*, 4 November 1983, p. 485).

The grain handling industry objected strongly, and for months the White House Office of Management and Budget (OMB) held the rule in a technical review. Now OSHA has agreed to make several changes in the proposal. One OSHA official explains, "If we hadn't done it, OMB would never have let it out." As an alternative to meeting the 1/8-inch standard, elevator owners will be allowed to sweep once a shift or install pneumatic dust control systems. "Sweeping doesn't necessarily mean you control the dust," says an OSHA staffer, for inspectors have seen inches of dust accumulate in a single shift. OSHA was willing to make the changes because it was eager to spring the proposal loose from the White House and put it out for public comment. Hearings will probably begin in May.

—ELIOT MARSHALL