the directorate that administers international programs. The only substantial cut made by the panel of an item that appeared in both the Reagan and Carter budgets was dropping of an ocean margin drilling program which was accorded $12 million in the Reagan revised budget.—***John Walsh***

More About Cloned Mice

In January reports of the first successful nuclear transplantation experiment with a mammal attracted a great deal of attention, primarily because the achievement meant that mammalian clones—identical copies of an individual—might be produced (*Science*, 23 January, p. 375). The three mice resulting from this experiment were not themselves clones, according to a strict definition of the term. But true cloned mice have now been produced, according to Karl Illmensee of the University of Geneva, Switzerland, who described his latest experiments at a recent symposium in Keystone, Colorado.

Illmensee followed the same procedures for transplanting embryonic nuclei that he and Peter Hoppe of the Jackson Laboratory in Bar Harbor, Maine, had developed for the earlier work. This time the Geneva researcher used the nuclei of 7-day-old mouse embryos rather than the 3- to 4-day-old embryos studied previously.

He transplanted the nuclei into eggs whose own nuclei were removed and implanted the resulting embryos into foster mothers who ultimately gave birth to a total of eight mice that were products of the transplantations. Three of the mice were "triplets" and two were "twins," according to Illmensee, although he could have called them clones just as accurately.

One finding of the current research is that nuclei from only two embryonic tissues, the ectoderm and proximal endoderm, retain the potential to produce whole mice. Of these, the ectodermic nuclei, which gave rise to six mice, were the best by far.

Nuclear transplantations have been successful with amphibians such as the frog but had not been accomplished with higher animals until Illmensee and Hoppe succeeded, almost 2 years ago. The mammalian experiments have been criticized by some observers, who are opposed to the potential use of the methods for cloning humans. But Illmensee restricts his own interest to studying the development of the mouse. "Nuclear transplantation," he concludes, "is the only way to test biologically the developmental potential of the entire genome."—***Jean L. Marx***

Levy to Leave NHLBI

Robert I. Levy, director of the National Heart, Lung, and Blood Institute (NHLBI), has resigned his position, effective 23 September, to go to Tufts University. At Tufts he will be vice-president for health sciences and dean of the Tufts University School of Medicine.

Levy, an expert on lipid metabolism, has been at the NHLBI for 18 years and became its director in 1975.

Although an acting director of NHLBI has not yet been named, Levy expects that it will be Peter Frommer, a cardiologist who is currently deputy director of the institute.

—***Gina Bari Kolata***

Heroin No Better than Morphine as Analgesic

Despite public pressure on the government to make heroin available for treatment of patients with cancer pain, two clinical studies have indicated that there is scarcely any difference between heroin and morphine, either in analgesic properties or side effects.

Findings from the latest study, conducted at Georgetown University, were reported by pharmacologist William Beaver at a meeting of the Interagency Committee on New Therapies for Pain and Discomfort at the National Institutes of Health (NIH). Beaver and oncologist Philip Schein compared the effects of intramuscular injections of morphine with those of heroin in 44 cancer patients. From patients' reports of pain relief and side effects they concluded that heroin is 2.5 times as strong as morphine—that is, it takes 2.5 times as much morphine as heroin to achieve the same results. Side effects were commensurate with pain relief and did not differ markedly between the drugs.

These results are consistent with preliminary findings reported earlier by a Memorial Sloan-Kettering Institute team headed by Raymond Houde. The Houde studies, conducted on cancer patients with postoperative pain and those with chronic cancer pain, revealed that the peak of analgesic effectiveness was slightly shorter with heroin. They found that both drugs improved patients' moods when they relieved pain but there were no special euphoric effects from heroin. They concluded that there is "no indication that heroin has any unique advantages over morphine in either patient population."

Beaver, at the NIH meeting, said he believed heroin should be made available to physicians because some patients respond better to some narcotics than to others and "I like a lot of strings for my bow." But, he said, more important than heroin is the need to have existing narcotic analgesics, such as hydromorphone (Dilaudid) and oxymorphone (Numorphan), available in highly concentrated form. When a patient's pain is too severe to be alleviated by oral doses of narcotics (which are about one-eighth as potent as injections), frequent injections are required and can be very painful. The more soluble the drug, the smaller the dose can be. Heroin is sometimes preferable to morphine because of its high solubility, but other drugs could fill this need if manufacturers made them available in more concentrated form.

Beaver noted, however, that failure to adequately manage cancer pain is still due more to ignorance and lack of finesse on the part of doctors than to the absence of appropriate drugs. The primary obstacle, he asserted, continues to be fear of addicting patients to narcotics. Thus, he said, a patient's natural increase in tolerance to a drug, necessitating higher doses, may be mistaken for addiction. Doctors have also been known to assume that oral and parenteral doses of opiates are equivalent, or to load a patient down with sedatives and tranquilizers and then fail to give him enough analgesic for fear of further depressing his central nervous system.

—***Constance Holden***