



African-American doctors like Barbara Justice (left) have stepped up pressure on Daniel Hoth (right) and other NIH officials for government-sponsored clinical trials of interferon alpha.

blind this' and 'T-Cell that', she says. "I'm hung up on my patients getting better."

Her argument reflects the problem of applying the usual methods of scientific assessment to an issue in which there is great hostility towards the government. NIH sponsored the analysis because it felt it had a public health obligation to determine if an unapproved drug being used by thousands of people actually worked. Yet when NIH concluded that it did not, it is not surprising that the agency failed to get that message across. The African-American groups who see interferon alpha as a African solution to the AIDS problem were not persuaded to drop their efforts by a government report that, to them, was based on obscure scientific standards rather than real experience. And some errors in the NIH report, including aggregating incompatible trials, fuelled suspicions that the US government was trying to suppress the drug.

Cell Culture Co. Inc, as a treatment for respiratory disease in cattle. Cummins has conducted clinical trials of interferon, with varying success, on a number of human and animal diseases. Earlier this year, he received approval for interferon-alpha clinical trials on AIDS patients in the United States.

In 1989, Cummins travelled to Kenya to test interferon alpha in cattle diseases. He met Koech, who was studying AIDS therapies and had seen a 1986 paper by Cummins on the use of low-dose interferon alpha to treat feline leukaemia, a disease that is related to AIDS. Cummins showed Koech data from a trial he had started the previous year in Texas of interferon on HIV-positive patients. He then provided Koech with interferon-alpha powder from Japan and Koech began uncontrolled clinical trials on Kenyan AIDS patients. After a few weeks Koech reported dramatic improvements, and announced at a press conference that he had

The twisted history of Kemron and a host of similar interferon-alpha-based products contributes to the confusion. Interferon-alpha therapy was developed 20 years ago by Joseph Cummins, a Texas veterinary microbiologist and president of the Amarillo

discovered a secret AIDS treatment he called KEO-89. In February 1990, he announced that the drug was oral interferon alpha and would be marketed as Kemron.

Hoping to replicate the results in a placebo-controlled trial, Cummins sent Koech interferon tablets in January 1990. But Koech decided that results were so promising that it would be unethical to withhold the drug from a placebo population.

The situation soon became chaotic. Cummins discovered that many of the interferon-alpha tablets — and the matching placebos — that he had shipped to Koech were instead being sold on the black market for as much as \$50 each.

Since then, Cummins' company has sued an Australian company for patent infringement after it began marketing a product called Immunex in Africa and the United States, and a US company, also called Immunex, has threatened to file a trademark infringement suit against the US importers. The result is that the drug will now sell in the United States as Immuviron, without FDA approval, at about \$8 a dose, nearly one hundred times the cost of production.

Advocates continue to use and prescribe oral interferon alpha, pointing out that, unlike accepted AIDS drugs such as AZT, it is nontoxic in low doses. Although it may not cure AIDS, they believe that it alleviates symptoms and want NIH to evaluate as it does other AIDS drugs — not as a cure, but as a therapy. Given the continuing demands for clinical trials from the hundreds of US AIDS patients being treated with interferon alpha who believe that their government is suppressing a promising treatment, NIH may find these arguments hard to resist.

Christopher Anderson

NSF drops flat-rate plan for grants in mathematics

Washington. A plan hastily conceived by the US National Science Foundation to award mathematics grants of a predetermined amount (see *Nature* 359, 94; 1992) has been withdrawn after complaints that it would not achieve the goal of funding more research. NSF had regarded the plan as a model for preserving the vitality of various disciplines without spending more by standardizing the size of grants and limiting the amount of overhead (so-called indirect costs) paid to universities for sponsoring research on campus.

Last May, NSF's mathematics advisory group asked the foundation to find a way to fund 100 or so more proposals each year despite a flat budget. The obvious solution was to reduce the size of existing grants by a small amount and to apply the money saved to new grants. By the end of August, NSF had a plan by which investigators would receive grants of either \$20,000 or \$30,000, depending on the quality of the research, and \$10,000 more for a graduate

or postdoctoral student. Budgets would not be negotiated individually, and no allowances would be made for variations in indirect costs and other expenses.

NSF sent a letter to the mathematics community explaining the plan and announcing that it would take effect on 1 October. But officials soon discovered that researchers were not pleased with its work. "They screwed up, there's no other way to put it", says Jerry Bona, former chairman of the advisory committee and a mathematics professor at Pennsylvania State University.

One problem with the NSF plan was that it would not have funded any more grants. "We would have wound up raising some grants and cutting others drastically", says Bona, "but there would have been no new grants in the first two years." Another problem was the approach to indirect costs. By failing to recognize the wide variation in rates among research universities, set during annual negotiations with the government, NSF was ignoring existing federal

policy and penalizing private universities, where costs are generally higher than at public universities.

After meeting the science policy committee of the American Mathematical Society in early September and hearing protests from the community, NSF decided to defer the plan. "NSF's policy is to pay the appropriate indirect costs and this project does not change that policy", says Judith Sunley, executive officer for the NSF directorate that includes mathematics and a former director of the division.

The mathematics advisory committee will discuss the issue at its meeting next week and is likely to ask NSF to devise a better plan. Sunley says that NSF hopes to have a new version ready by January, when Fred Wan of the University of Washington joins NSF as director of the mathematics division. Until then, NSF will continue its current policy of negotiating individual budgets for each grant.

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