SCIENCE IN SOCIETY

Dutch Pull the Plug on Cow Cloning

AMSTERDAM—In an unprecedented move, the Dutch minister of agriculture on 26 February put a stop to cloning experiments carried out by Pharming, a company based in Leiden, the Netherlands, that specializes in producing drugs in milk. According to the government, Pharming must desist from cloning cows until it proves that drugs from such animals are better than those made by other methods. The ban came a few hours after Pharming announced the births of Holly and Belle—two calves cloned from embryonic cells—and applies only to work at Pharming. In a pointed response, the company announced plans to move its cloning research to the United States.

Several competing companies view cloning as a way to boost the efficiency of protein production in cows and sheep. Pharming currently uses a technique in which embryos are injected with the gene encoding a desired pharmaceutical protein and placed in another cow's womb. But this fairly haphazard method leads to many nontransgenic calves that fail to produce the target drug. Pharming is interested in using nuclear transfer to clone cows, because the technique could speed the process of growing herds that reliably produce drugs in their milk. Researchers could use cloning to produce transgenic embryos, screen for those that carry the desired gene, and then use cloning to produce many copies of the successful embryos. This would hasten research and development, the company says.

The Dutch government, however, permits genetic engineering and animal cloning only when there aren't feasible alternatives in lower organisms and when the benefits to society outweigh animal suffering. Since last April, the government has required that all research proposals in the field—from public and private entities—be evaluated by a committee of researchers, ethicists, and animal-welfare experts.

The experiment that produced Holly and Belle was performed under a temporary exemption while the committee discussed Pharming's research. In January, however, it advised agriculture minister Jozias van Aartsen to halt the project. The panel said that before Pharming can clone more cows, it must demonstrate that the cows can deliver better drugs than yeast or other alternatives can. Van Aartsen accepted the committee's recommendation and put the kibosh on further Pharming work in this area.

Pharming officials say the decision cripples its efforts to compete with Scottish and U.S. labs that are also racing to develop cloning for use in producing drugs in milk. The egg-injection technique is not a viable commercial approach, says Pharming Vice President Gerard van Beynum. He says the company "has no choice" now but to move its cloning research to the United States, where it will be carried out with Infigen Inc., a company based in DeForest, Wisconsin.

The government's decision applies only to Pharming's current proposal; it doesn't outlaw cloning per se. But it underlines the Dutch authorities' resolve to allow animal biotech only under strict conditions—a position that, Van Beynum charges, threatens to undermine the country's scientific strength. The government has abdicated its powers to regulate responsible uses of cloning, he says: "By chasing the technology away, you give up control."

–Martin Enserink

Martin Enserink is a science writer in Amsterdam.

DOE NATIONAL LABS

Problems Plague Oak Ridge Reactor

The Department of Energy (DOE) is investigating a series of mishaps and management problems at an Oak Ridge (Tennessee) National Laboratory reactor. The incidents, occurring over the past 9 months, prompted Oak Ridge officials in January to shut down the reactor, reassign the senior manager of the High Flux Isotope Reactor Facility (HFIR), and conduct an independent examination of the problems at the facility. A separate DOE review is due for completion 13 March.

HFIR, which remains shut for a long-scheduled inspection, is one of two DOE reactors used in neutron-scattering research. The second, at Brookhaven National Laboratory in Upton, New York, has been off-line since late 1996, following the discovery of a tritium leak. Unlike the Brookhaven facility, called the High Flux Beam Reactor, the 32-year-old HFIR is used primarily to produce radioactive isotopes for research, medical, and industrial applications. However, 150 to 200 neutron researchers use the reactor each year for neutron scattering studies, a number that has grown in recent years. Both DOE and Oak Ridge managers say that HFIR's problems are unlikely to delay resumption of operations after the inspection is completed at the end of the month.

Seven specific events since last June—none of which posed immediate danger to the reactor or the public—led Oak Ridge director Al Trivelpiece to shut the reactor on 6 January and remove Hal Glovier as director of the research reactor division. He is now a senior technical staff consultant at the lab. Trivelpiece then called in Harold Denton, the former head of nuclear reactor regulation at the Nuclear Regulatory Commission, to conduct an independent assessment. According to DOE documents, the incidents included maintenance problems with backup cooling motors, an electrical injury to a member of the reactor crew, and the failure to shut down a water valve in a tank that is part of the emergency cooling system.

"The fact that there have been so many incidents in so short a time has really raised our concern," says Iran Thomas, materials science chief in DOE's office of basic energy sciences. Denton's panel recommended that reactor personnel focus less on paperwork and more on day-to-day operations and that the lab improve the way problems are identified and reported. Its advice was welcomed by lab officials. "There was an inattention to detail, and there have been a lot of opportunities for staff distractions" given the inspection and the pending upgrades, explains Jim Ball, Oak Ridge associate lab director for advanced materials, physical, and neutron sciences.

DOE, meanwhile, is wrapping up work on its own investigation, and the department likely will take a share of the blame. Thomas notes that the Office of Nuclear Energy is responsible for operating the reactor, while his basic science office foots the bill. "We're sending [Oak Ridge] mixed signals," he says. Last year DOE concluded that such muddled lines of authority were a major reason behind Brookhaven's failure to note and fix the tritium leak. However, Thomas and Ball say that neither the Denton report nor the DOE study sees any reason to delay restarting the reactor.

OAK RIDGE NATIONAL LAB

Poor control? Oak Ridge's High Flux Isotope Reactor has been plagued with management problems.

–Andrew Lawler