State University, says: "Retrospectively you can say that we can't go back and check, but it is always easy to look back. I don't think that Ian Wilmut needed to do more." He adds: "I wouldn't be so quick to run up red flags saying that no-one has been able to reproduce the work. It's too soon. If by 2000 no-one has duplicated it, I'll start being concerned. But am I concerned in 1998? Not at all."

Zinder and Sgaramella argued that their scepticism had been provoked by the fact that no-one has reproduced the results. But David Wells, a scientist at the Ruakura agriculture research centre in New Zealand, who has reproduced Wilmut's work on cloning from fetal fibroblasts, and is engaged in cloning adult bovine cells, describes the controversy as "premature".

Wells says it is unfair to expect rapid confirmation of the results, given the time and money needed for such experiments, the long gestation periods of farm animals and the seasonality of their reproduction.

Bob Moore, who has recently retired as

deputy director of the Babraham Agricultural Institute near Cambridge, says he is not surprised that other scientists have not yet repeated Wilmut's finding, given the difficulties of obtaining success. "I think people are having difficulties reproducing the results, but you only have to look at [the low efficiency of] Wilmut results to predict that they should be having difficulties."

Moore describes the controversy as a "storm in a teacup". He points out that Dolly is part of a growing body of science that has witnessed a logical progression from the production of clones from embryos, and differentiated fetal fibroblasts, to the routine generation of embryos from adult somatic cells, even though, apart from Dolly, none have gone to term.

Jean-Paul Renard, a scientist at the French national agricultural agency INRA, who is attempting to clone cattle from adult cells, is even more confident. "Our work leads us to think that Dolly is a reality, and will be reproduced," he says.

James argues that, contrary to popular belief, few groups are racing to reproduce the Dolly experiment. For commercial purposes, cloning from fetal fibroblasts is more efficient, while their genetic modification is relatively straightforward, he says. "It delivers what we need — a genetically modified animal." Wilmut's group has so far not attempted to repeat the experiment simply because "Dolly is not commercially useful," James argues.

"You are talking at least \$1 million" to repeat the Dolly experiment, says Robl. He is also pursuing cloning from fetal fibroblasts as the most immediately promising commercial option, while carrying out research to develop more efficient systems for cloning from adult cells.

Zinder remains unconvinced by such arguments, asserting that the extensive media and political reaction to cloning has obscured the fact that "the emperor has no clothes". He says Wilmut should have been required to repeat the result before his paper was published.

Declan Butler

Genome panel defends researchers' — and families' — interests

[WASHINGTON] The latest recommendations from the international organization that coordinates the work of genome researchers are meeting criticism from those seeking to defend patients' privacy. The organization wants scientists to retain the ability to gather more information about DNA samples from subjects' medical records, and researchers to be able to overrule subjects in some cases by informing family members about their findings.

The ethics committee of the Human Genome Organisation (HUGO) also recommends that research samples obtained with consent and stored "may be used for other research" if subjects are informed at the time of the original donation and do not object — and provided that information identifying the subject is either replaced with a code allowing the individual to be traced, or stripped from the samples.

But HUGO's statement expresses strong reservations about the irreversible 'stripping' of information. Even if it is appropriate in certain circumstances, it should be done with caution, "since it may preclude valuable uses of the samples and validation of results".

The retention of codes allowing subjects to be traced would mean that a subject might be contacted years after participating in a research trial by researchers pursuing another study. Some privacy advocates argue that this should happen only in rare, extenuating circumstances. Virtually all oppose it as a general policy.

Many scientists feel strongly that irreversible loss of access to subject information seriously damages a sample's

value. For instance, stored tumour samples might be found to contain a particular oncogene, but its prognostic value would be impossible to discover if subjects or their records could not be traced.

Bartha Maria Knoppers, a law professor at the University of Montreal and chair of the HUGO ethics committee, says the statement seeks to define an ethical middle ground between allowing researchers unfettered access to samples and attached clinical information, and requiring specific informed consent for each use of a sample.

The statement was drafted by scientists, ethicists and lawyers from ten countries. Its publication comes as governments, international organizations and societies around the world are working to define ethical standards for the use of DNA samples that neither hobble research nor trample on patients' rights.

In the United States, researchers can at present gain access to tissue samples gathered for other research, or through clinical practice, by persuading local ethics boards that they are essential to a study, and that their use will not harm subjects.

The ethics committee studied some 75 statements by private, national and international groups before coming to its conclusions. It will present them to HUGO members at a meeting in Turin, Italy, late next month. The HUGO statement is not legally binding but "is meant to inspire national approaches", says Knoppers.

HUGO's caution about irreversibly stripping identifying information from samples, and its recommendation that researchers should be able to use samples

collected for one purpose for other studies, is welcomed by Mark Sobel, chief of the molecular pathology section at the US National Cancer Institute and president-elect of the Association for Molecular Pathology. The recommendations are "wonderful," he says. "They would be consistent with what most research communities and the pathology community would want."

But others say the statement bends too far towards researchers' interests. Retaining links to enable a researcher to obtain more information raises "real concerns about the invasion of privacy" that have not been given "adequate acknowledgement or weight" by the HUGO committee, says Ellen Wright Clayton, associate professor of paediatrics and law at Vanderbilt University in Nashville, Tennessee.

Clayton was lead author of a more conservative 1995 statement by a working group convened by the US National Institutes of Health and the Centers for Disease Control and Prevention.

The HUGO statement also recommends that researchers should be allowed to overrule a subject's wishes that blood relatives should not be informed of findings, if the findings point to "a high risk of having or transmitting a serious disorder and prevention or treatment is available".

"Genetic information is both personal and familial," says Knoppers. "We can't just [exclude] the real and morally valid interests of family members." But not all researchers agree. "I have trouble with overriding an individual's need for privacy except in an immediately life-threatening situation," says Sobel.

Meredith Wadman