created by chopping up DNA with enzymes and sorting the fragments by size—from the same three sources, and also looked at DNA obtained from animals belonging to the same herd as the ewe. Dolly's fingerprints matched the donor ewe's but not those of the herd. "These two [reports] are fairly powerful demonstrations that Dolly is what they say she is," Wall concludes.

The two Japanese calves, obtained by fusing oviduct cells from one cow with enucleated eggs from another, apparently are as well. Last week, Yukio Tsunoda, a professor of animal reproduction at Kinki University's Faculty of Agriculture in Nara, announced that DNA testing has confirmed that the calves are offspring of the oviduct cell donor. "I think there is no mistaking that they have repeated the Roslin procedure," says Tomohiro Kono, a developmental biologist at Tokyo University of Agriculture. The Japanese team, including researchers from both Kinki and the Ishikawa Prefectural Livestock Research Center in Nara, also said that they have an additional four cows pregnant with cloned embryos.

Now, cloning researchers can move on to other challenges, such as trying to improve their success rates, currently a few percent at most. This effort should be helped by the ability to study cloning in mice, which have shorter life cycles and require much less care and space than, say, sheep or cows. With improvements, says Wilmut, nuclear transfer "is going to be a very reliable, robust [cloning] method." **–ELIZABETH PENNISI**

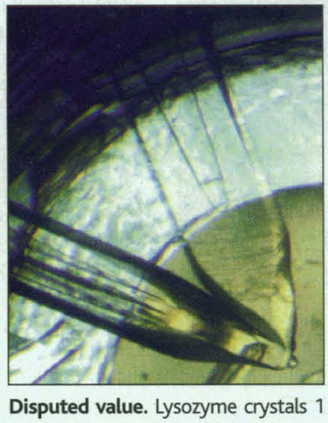
With reporting from Dennis Normile in Tokyo.

PETER MENZEL/PNI

SPACE SCIENCE

Negative Review Galls Space Crystallographers

The promise of space-grown protein crystals has been a major selling point for the international space station. Larger and more perfect than Earth-grown versions, they could reveal new molecular details and new targets for drug designers. But a group of academic scientists who issued a review of the field last week said that crystal-growth experiments NASA has already flown aboard the space shuttle have not lived up to expectations. The seven members of the American Society for Cell Biology (ASCB) said in their report that the field has made "no serious contributions" to scientific knowledge and there is "no justification" for continuing such studies in space.



NEW CENTURY PHARMACEUTICALS

Disputed value. Lysozyme crystals 1 cm long grown aboard the Mir space station, and Representive Tim Roemer, who distributed negative report.

Released on the eve of the House vote on NASA's 1999 budget, the report was distributed at a 15 July press conference at the Capitol by Representative Tim Roemer (D–IN) as he sought support for an amendment to eliminate the space station. At press time, the amendment was not expected to pass, but the report has infuriated some protein crystallographers. "I think the report is absolutely wrong," says Larry DeLucas, a crystallographer at the University of Alabama, Birmingham. "I can't believe the [ASCB] would get behind a statement like that." DeLucas says his NASA-funded space-based research helped reveal a protein structure that has contributed to the ongoing development of influenza drugs. And Daniel Carter, a biophysicist who formerly worked for NASA and now directs New Century Pharmaceuticals, a company in Huntsville, Alabama, that receives funding from NASA, says his space-based work crystallized proteins 10 times larger than those grown on the ground, making them available for structural studies. Of the ASCB report, Carter says, "it just seems to be more of an opinion than a review of the facts."

Members of ASCB's panel were unanimous in giving NASA's crystallography program bad marks. So far, the $9-million-a-year effort has not lived up to claims that it would aid drug development for Alzheimer's disease and breast cancer, says the chair of ASCB's panel, biologist Donald Brown of the Carnegie Institution of Washington, D.C. "The [Earth-based] crystal community doesn't feel that real gains have been made in space," says Brown. Another member of the panel, Harvard University crystallographer Stephen Harrison, says he conducted a literature search for crystals grown in microgravity conditions and determined that "none of the modest successes reported" had made a "significant impact" on drug design or structural biology.

A third member of the panel, Washington University biologist Ursula Goodenough, explains that "it became untenable for those of

ScienceScope

SOUNDING THE INFOTECH ALARM

The nation's information technology (IT) infrastructure is looking increasingly "fragile" in the face of the growing torrent of data it must process, a presidentially appointed panel warns in a forthcoming report. It recommends a doubling in federal R&D to more than $2 billion a year.

According to a draft leaked to CNN, without more spending in areas such as high-end computing and software, the United States risks "being overcome by nations with a clearer plan and a stronger view of the future."

The big problem, says panel co-chair Ken Kennedy, head of the Rice University Center for Research on Parallel Computation in Houston, is that the size and rapidly increasing complexity of IT systems have "far outstripped the growth in research." Hence, key systems, such as those for air traffic control, are based on software that may be unreliable, insecure, error-prone, or difficult to upgrade. Kennedy also says the alleged shortage of IT workers in the U.S. is real and "very serious." The panel's interim report is due out early next month (see www.hpcc.gov).

COURT SIDES WITH TOBACCO

A court ruling has attacked a milestone Environmental Protection Agency (EPA) report that classified secondhand smoke as a human carcinogen. On 17 July, 5 years after the report came out, Judge William Osteen of North Carolina's 4th U.S. District Court ruled in favor of tobacco company plaintiffs that the "EPA did not demonstrate a statistically significant association" between secondhand smoke and lung cancer. He also chastised the agency for being "publicly committed to a conclusion before research had begun."

The EPA study, one of several dozen to suggest a link between cancer and secondhand smoke, has been used to bolster lawsuits and is credited by some with the quick spread of indoor smoking bans nationwide. R. J. Reynolds now says it may challenge such ordinances.

EPA says it will appeal the ruling. But antismoking advocates such as Robert Kline, director of the Tobacco Control Legal Clinic at Northeastern University law school, contend it really doesn't matter. Says Kline, "It's going to be hard to put the genie back in the bottle."

Contributors: Constance Holden and Luis Campos