Companies Clone Kids!!

First sheep. Then cows. Now goats have joined the herd. Two companies—in the United States and Canada—are gearing up to use cloned goats to produce a human anticlotting protein and a substance that makes spider webs strong.

The first cloned goat, born last October, is described in the May *Nature Biotechnology* by researchers at Genzyme Transgenics in Framingham, Massachusetts, and their colleagues. Last week Montreal-based Nexia Biotechnologies sprang into the act, announcing the birth of four cloned goats in the last 2 months. Both companies used nuclear transfer, the strategy that produced the sheep Dolly in 1996.

Cloned goats may produce milk for silk.

Genzyme is using cloned goats to produce human antithrombin III, a protein that can be used to prevent damaging blood clots after strokes or heart attacks. Scientists first injected fertilized goat eggs with the gene for antithrombin, explains Genzyme biochemist Patricia Dimond. When the female fetuses were 40 days old, researchers fused fetal cells with goat eggs whose DNA had been removed. The eggs were then put into females. The foreign gene causes the protein to be made in the goats' mammary glands and secreted in their milk. Genzyme now has three cloned transgenic goats, the first of which is already churning out antithrombin.

Nexia, meanwhile, intends to clone fast-maturing dwarf goats to pump out a protein that orb-weaving spiders use in their dragline silk. The protein "has high strength and is biodegradable," says Nexia's Costas Karatzas, which suits it for a great range of medical and engineering uses, including sutures. Procedures are still being refined, but Karatzas says he expects to have the first silkmaking clones alive and kicking by fall.

As a living factory and a model for learning more about cloning, "the goat is going to be a good system," says Robert Wall, a geneticist at the U.S. Department of Agriculture in Beltsville, Maryland. Goats are abundant milk producers and don't take as long as cows to mature.

One Dinosaur, Oceans Apart

Scientists have found that a species of dinosaur that frequented what is now Colorado some 150 million years ago also lived on the other side of the Atlantic Ocean, in Portugal, at about the same time. Described in the current *Journal of the Geological Society of London*, the find is thought by scientists to be the first dinosaur species found on two separate continents.

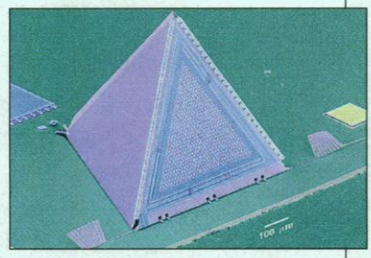
The dino in question is a hulking two-legged predator, *Allosaurus fragilis*, first found in Colorado in 1877. Now paleontologist Bernardino Perez-Moreno of the Universidad Autónoma de Madrid and colleagues have identified the same creature from 150-million-year-old rock formations in Leira, 155 kilometers north of Lisbon. The skeleton, of a juvenile dino, is incomplete, but has telltale bones such as the pelvis, vertebrae, and fragments of leg bones.

Co-author Dan Chure of Utah's Dinosaur National Monument says he was surprised to find an *Allosaurus* in Europe. "I've been looking at reputed *Allosaurus* [bones] from all over the world," he says, but had found no evidence that they existed outside North America. The Portuguese creature, however, says Chure, has unmistakable pelvic features unique to *A. fragilis*. The animals were "clearly much more widespread than we would have thought," he notes.

One puzzle is how the *Allosaurus* wound up on two continents: The supercontinent of Pangea had broken up tens of millions of years earlier, and by 170 million years ago Portugal was separated from North America by a sea hundreds of kilometers wide. Chure says a Pangean population may have split when the Atlantic formed. Alternatively, says Perez-Moreno, "perhaps there was a land bridge for the [dinos] to cross." In any case, says geologist Alan Smith of Cambridge University, who specializes in reconstructing ancient geography, "you cannot get rid of the central Atlantic between Africa and America at this time—the evidence is incontrovertible."

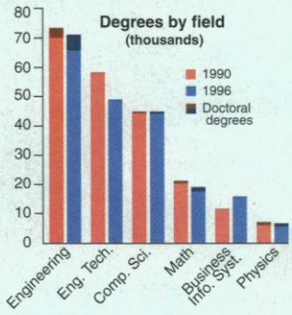
Mini-Mike

Less than a millimeter wide, this little pyramid is a teensy microphone, part of a low-power "single-chip radio" being developed at Bell Labs' Lucent Technologies in Murray Hill, New Jersey. The incredible shrinking radios "are going to be something that will permeate your life," imbedded in everything from cell phones and computers to toys, predicts Peter Gammel, head of wireless components research. He says miniaturization of such technology will make it possible to have the ultimate "Dick Tracy watch"—the futuristic wrist appendage of the famous cartoon detective that was invented in 1947—with room even for interactive video.



Techie Degrees Declining

Although it dominates the world, the U.S. high-tech industry may be running low on human capital, according to a new report from the American Electronics Association (AEA) in Washington, D.C. Fewer students are majoring in six "core" high-tech fields. That "could substantially undermine the future growth" of the U.S. electronics and information technology industry, the report says.



AEA found that although Ph.D.s are up, largely owing to the heavy presence of foreign nationals, there has been a 6% drop in associate, bachelor's, and master's degrees, from 212,400 to 199,170.

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