

RANDOM SAMPLES

edited by CONSTANCE HOLDEN

Rugged Family Planning for Ticks

In another first for biotechnology, scientists say they've come up with the first vaccine against an external parasite—in this instance an Australian cattle tick.

Several thousand blood-sucking *Boophilus microplus* ticks can seriously debilitate an animal, transmitting bacterial diseases such as anaplasma and babesiosis. In Australia's northern cattle country, ticks cause production losses of more than \$100 million a year.

Ticks, being external, are normally beyond the reach of a cow's immune defenses. But now Biotech Australia and the Commonwealth Industrial Research Organization (CSIRO) have come up with a bioengineered vaccine that enables cows to fight back by throwing a wrench in ticks' reproductive cycles. Biotech project manager Gary Cobon says it all began in 1982 when CSIRO researchers experimented with injecting cattle with homogenized tick tissue. They observed that female ticks feeding on the cattle turned bright red and failed to reproduce. That's because ticks have to borrow hormones from cow blood to complete their reproductive cycles; the anti-tick antibodies they ingested disrupted the absorptive capacity of their guts. In 1986 CSIRO researchers identified and purified the main antigen, a protein that coats the cells lining tick guts. Biotech scientists later cloned the gene for the protein, and the company is now mass-producing a slightly modified version for an injectable vaccine which, scientists predict, will greatly reduce tick infestations.

The new vaccine, TickGARD, offers an alternative to chemical drenches, which can contaminate meat. Australian ticks have become resistant to most of them anyway. Cobon says the vaccine could also prove a boon to Mexico and the cattle-producing countries of Latin America, where *B. microplus* causes annual losses estimated at \$1 billion.



No more wandering. Ten-thousand-year-old settlement near Hallan Ceni in eastern Turkey where pig teeth were unearthed.

Bringing Home the Bacon

Hunters and gatherers ceased their roaming about 10,000 years ago, conventional wisdom has it, when they learned to domesticate grains. But data from Turkey suggest that in more northern areas, hunter-gatherers may have settled down for a more carnivorous reason: Pigs.

Pork on the hoof may have made the first settled life possible, says archaeologist Michael Rosenberg of the University of Delaware at Wilmington, who with his colleagues found pig teeth at a 10,000-year-old settlement in eastern Turkey. The teeth were slightly smaller than those of wild pigs, suggesting they came from a domesticated strain that had easier access to food and didn't have to have defenses against predators.

Just as important is what the team didn't find: cereal grains such as wheat and barley. "So another resource must have made it possible to settle down," Rosenberg says. Pigs are a good candidate, he adds, because they domesticate easily and don't require much work. Rosenberg's colleague Richard Redding of the University of Michigan also notes that pigs convert 35% of their food calories into meat—compared to a rate of only 13% for sheep.

"It's pretty compelling, taken all together," agrees archaeologist Mary Voigt of the College of William and Mary in Virginia. Rosenberg says the new find doesn't cast the grains hypothesis into question for places further south, like the Levant, where grain crops were prevalent. "It's always been suggested that dense stands of wheat and barley drew people to settle down....I think they go with the most plentiful resource," he says.

Crack on the Wane in New York

The use of crack cocaine among young city dwellers has declined dramatically since its peak in 1989, according to the latest data from New York City. Five years ago, roughly 75% of people under the age of 21 arrested for any reason tested positive for cocaine in urinalysis. But now that's true of only 20%, reports Bruce Johnson, a sociologist at the National Development and Re-

search Institutes in Manhattan, in a paper slated for the August issue of the *American Journal of Public Health*.

The data reflect the fact that cocaine is "no longer 'in' among high-risk kids" in New York, Johnson says. The shift has little to do with law enforcement efforts or drug availability, but is rather a generational change, says Johnson. Kids "have seen older siblings or parents destroyed" by cocaine, so they are

turning away from the drug—in some cases reverting to the familiar staple, marijuana.

Unfortunately, he says, the wane of crack doesn't seem to mean poor inner-city youth are leading any more successful lives. The deterioration of families that was such a marked feature of 1980s means many have grown up in such chaotic circumstances that they don't have the basic competencies necessary to get or keep a job. Says Johnson: "During the '80s we created more [such people], and more are being created now."

Mathematical March on Washington

A mathematician and a physicist have decided to hit the road to battle for more research funding in their fields. They plan to enlist a throng of researchers to embark on foot from Boston some time next summer, and, after seeking shelter and raising consciousness at universities along the route, wind up in Washington at the doors of the White House.

Marching on the capital is not exactly a new idea, but for scientists, who have often been accused of political passivity, it's definitely out of character. Masterminding the trek are Tristan Hubsch, a Howard University mathematical physicist, and Per Berglund, a string theorist at the Institute for Advanced Study at Princeton. "The basic idea," says Hubsch, "is to get together, walk this stretch, do some mathematics and physics along the road, and get some attention for fundamental research and make a statement about the insufficient funding."

Berglund says that, doing 15 to 20 miles a day, they could cover the roughly 500 miles in a month. They envisage starting with a few dozen hardy researchers and recruiting more along the way. With more than a year's advance notice, the duo figures, their colleagues may be encouraged to set aside the necessary time—as well as to get in shape for what's being dubbed a "walking workshop."