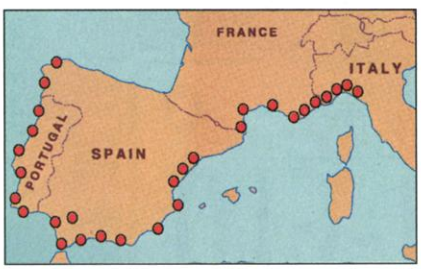
Latin Ants Form European Union

A massive cavalcade of Argentine ants has been discovered in southern Europe, extending from the Atlantic coast of Spain to Mediterranean Italy. The invaders recognize each other as if they were all from the same nest. That makes them the world's largest insect colony—and also offers researchers more fodder for evolutionary theorizing.

Argentine ants, introduced to Europe in the early 1900s, form unusual supercolonies outside their native range, with workers moving freely between nests and gathering food for unrelated queens. This behavior violates a major plank of evolutionary theory: kin selection, which predicts that workers will only serve closely related queens.

Scientists studying the ants in California have proposed that the supercolonies are a random development: the result of passing through a population bottleneck in which the ants lost half their genetic variation—including genes that help ants recognize friend and foe.



Family of ants.

To see if that happened in Europe, ecologist Laurent Keller and colleagues at the University of Lausanne in Switzerland captured ants from 33 locations in the ant swath. Putting pairs of ants from different places together, they found that, indeed, strangers hardly ever fought. However, when they looked at 22 genetic markers, they found that the European populations had lost less than 30% of their Argentine genetic variation—probably not enough to support the bottleneck theory. Instead, the researchers suggest, cooperation arose because combativeness was not helpful to the species while occupying new territory.

Judging from history, supercolonies may just be a quirk of invading populations, says entomologist Neil Tsutsui of the University of California, Davis. Once securely settled, aggressive ants may once more come to the fore as selfish workers begin to favor related queens.

Plastic Invasion

Ballast water from merchant ships has long been known to spread invasive organisms that mess up marine ecosystems. Now a global survey of oceangoing debris suggests that floating plastic—from soda bottles to fishnets—also gives noxious invaders free rides. Over the past decade, ecologist David Barnes of the British Antarctic Survey studied the debris that washed up on 30 island beaches around the globe, inspecting it for animals such as barnacles, polychaete worms, and bryozoans. Some of these hitchhikers were carried by natural life rafts, such as hunks of driftwood. But in an analysis of roughly 200 pieces of flotsam published in the 25 April issue of *Nature*, Barnes found that washed-up human trash had more than doubled the number of animals hitching rides to far-off places.

The most disturbing trends, he says, are in the Southern Ocean surrounding Antarctica. Although he found no fauna in samples from the edge of Antarctica, that may change, he warns, as the Antarctic is expected to heat up 2°C over the next century.

Molars at Zero G

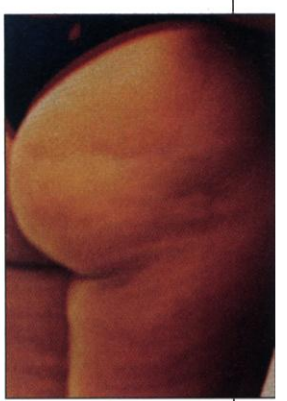
Astronauts spending weeks or months in a weightless environment don't have to worry just about losing bone mass—they also may come home with a mouthful of cavities, says a Japanese dentist.

Hidenobu Senpuku, a research dentist at the National Institute of Infectious Diseases in Tokyo, took several dozen mice aboard an airplane flying in parabolic loops to create periods of weightlessness. He found that at zero gravity, *Streptococcus mutans*, the bacterium that causes cavities, accumulated on the teeth 40 to 50 times faster than on Earth. Senpuku explains that in zero gravity the flow of saliva, primarily secreted from the roof of the mouth, is disrupted and can't properly fulfill its cleansing role. Senpuku plans to repeat the experiment with human volunteers and hopes eventually to check the mouths of astronauts on the international space station.

Kazuo Fukushima, a bacteriologist at Nihon University School of Dentistry in Matsudo, near Tokyo, calls the experiment "interesting and useful," especially if space tourism comes to pass and ordinary plaque-ridden civilians, not just the young and fit, go into orbit. Senpuku says he is developing a zero-gravity toothbrush that will ooze toothpaste from the tips of the bristles and then reabsorb it.

Fat Deposits

Pay now, use later? Maybe. A company called StemSource is offering liposuction patients a highly speculative deal: For about $1500, it will sift through their shed fat for potentially useful stem cells and store them for 5 years. If stem cell research ever pays off, the cells could be used to produce genetically matched replacement tissues for the donors.


Ready for banking?

This business plan got its start just a year ago, when plastic surgeon Marc Hedrick of the University of California, Los Angeles, School of Medicine and colleagues reported that they had coaxed cells isolated from liposuction samples to become cells resembling bone, cartilage, and muscle. Hedrick wasted no time in founding StemSource. Although cells taken from bone marrow have shown similar talents, he says banking liposuctioned cells enables patients to forgo the painful bone marrow donation procedure.

It's a "cool" idea, says geneticist Markus Grompe of Oregon Health & Science University in Portland, although he warns that "the therapeutic potential of these cells is completely uncertain." So far, there are no clinically proven treatments using stem cells derived from fat or bone marrow. But because the donors are already having liposuction, "there is no additional medical risk."

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