Gene Sets Milers and Sprinters Apart

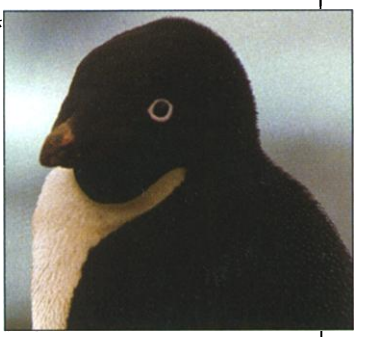
A single gene may help explain why some runners are great sprinters while others excel at long distances, according to new research.

Angiotensin converting enzyme (*ACE*), which regulates blood pressure and metabolic functions, is encoded by a gene with two forms: *D* and *I*. To examine the variants' effects on athletic performance, geneticist Hugh Montgomery and colleagues at University College London studied a group of 78 British Army recruits who had gone through the same basic training program. Recruits with two *I* alleles showed an 11-fold greater improvement with training on a barbell-curling task than those with two *D* versions of the gene, the researchers reported on 30 November at the London "Genes in Sport" conference.

A gene may favor short-term bursts of muscle power.

Indeed, when the team surveyed elite British athletes, they found that the *D* allele is more common among top swimmers and 200-meter runners than in the general population. They speculate that it encourages growth of "fast twitch" anaerobic muscle fibers, which generate brief bursts of high-octane power. The *I* allele, in contrast, was more common in 5000-meter runners and previously has been shown to be more widespread in high-altitude mountaineers. It may encourage "slow twitch" fibers ideal for long stretches of efficient motion, they theorize.

How the *ACE* gene might influence muscle fiber growth remains unclear, however. And Alex MacGregor, an epidemiologist at St. Thomas' Hospital in London, cautions that muscle performance is just one of many keys to athletic success. "It's difficult moving from a muscle type to getting a person up a mountain," he says.



Penguin Murder Mystery

The austral spring usually finds Antarctica's Adélie penguins happily swimming ashore to mate. But this year all is not well. When biologist Lyn Irvine surveyed two island colonies near Australia's Mawson station on 25 November, she found at least 100 dead birds—and many more sick ones—at the approximately 15,000-strong colony.

The only other known mass death occurred in 1972, and researchers have "no idea" what is causing the current die-off, says Australian Antarctic Division biologist Knowles Kerry. But one possibility is disease, so Mawson researchers are taking precautions. They have restricted visits to the colonies and are sanitizing footwear before visits to block the spread of any pathogens.

Meanwhile, they have sent specimens of the dead birds to Hobart, Tasmania, for pathological analysis that might help solve the mystery.

Pesticide Lunch

The Environmental Protection Agency (EPA) said last month that it is once again accepting controversial studies in which companies dose people with pesticides.

Industry researchers expose paid volunteers to pesticides in order to determine the minimum level of a toxicant that causes effects such as headaches, nausea, and changes in the activity of enzymes in the blood. They say human experiments are better than animal studies for setting realistic safety standards. But Clinton-era EPA chief Carol Browner barred the agency from using the human data in setting limits for pesticides on produce after activists argued that the tests—unlike drug trials—offer no potential benefit to the participants. And an EPA advisory panel that wrestled with the issue for over 2 years (*Science*, 1 January 1999, p. 18) condoned some human pesticide studies but advised against the minimum-response tests.

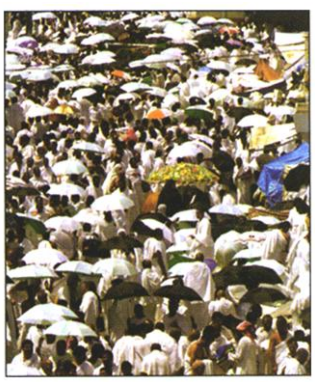
EPA spokesperson Dave Deegan says the agency's new stance, first reported in the *Los Angeles Times*, is not a policy change because there never was "a formalized policy" on the issue. But outsiders say the agency should formulate official guidelines for human studies if it is going to encourage them. Bioethicist Arthur Caplan of the University of Pennsylvania in Philadelphia, a member of the advisory panel, says EPA is "desperately in need of a policy."

The Perils of Pilgrimage

The pilgrimage to Mecca is the pinnacle of Islamic religious life, but it poses a significant health risk to the faithful. Crowded conditions during the 6-day pilgrimage can cause deadly bacterial meningitis in pilgrims and their family members back home. And during this year's Hajj a particularly virulent meningitis bug called W135 apparently struck, researchers reported last month in Atlanta.

After an outbreak in 1987, Saudi Arabia started requiring vaccination for each pilgrim entering the country. But even vaccinated people can become carriers of *Neisseria meningitidis* and infect others in their household upon return.

To gauge the risks, Annelies Wilder-Smith of the Communicable Disease Centre in Singapore tested a group of about 171 Singaporean pilgrims and their 233 close contacts. She found that 17% of the travelers came back carriers, and of those, almost 80% had the W135 strain. None became ill, but 8% of their household contacts were infected; three developed meningitis and one died. Perhaps every pilgrim could be given antibiotics when they return, says Wilder-Smith; a single dose of Cipro does the trick.



The Singapore results are "striking," says epidemiologist Nancy Rosenstein of the U.S. Centers for Disease Control and Prevention (CDC) in Atlanta. But CDC does not recommend special measures to protect household members, because less than 1% of U.S. pilgrims came back with W135 this year. One possible reason may be that U.S. pilgrims have better housing in Mecca, Rosenstein says.

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