RANDOM SAMPLES

edited by CONSTANCE HOLDEN

Cheaper Test for Tracking AIDS

A new diagnostic test that could make it easier and cheaper to monitor the health of people infected with the AIDS virus will soon be on the market.

Cleared for marketing on 18 May by the U.S. Food and Drug Administration, the test measures levels of critical white blood cells, known as CD4 cells, that steadily decline in people with HIV. Cell levels are currently measured by an expensive technique known as flow cytometry, which can only measure one blood sample at a time, and samples must be no more than 2 days old.

Now, however, T Cell Sciences of Needham, Massachusetts, has developed a system, called TRAx CD4, that requires no fancy machines, can test several samples at once, and allows samples to be stored at room temperature for 5 days. The essential difference is that flow cytometry measures CD4 levels by scattering laser light through live blood cells. TRAx CD4, in contrast, passes killed blood cells over a plate coated with antibodies to the CD4 receptor—a variation of the standard enzyme-linked immunoassay commonly used to detect HIV infection.

So far, users seem impressed. AIDS researcher Thomas Quinn of the National Institute of Allergy and Infectious Diseases and Johns Hopkins University says he has found TRAx CD4 to be "an excellent method for determining CD4 cell counts." Quinn adds that he'd like to see it used in places like Haiti and Uganda, which lack flow cytometry equipment and have to ship frozen blood samples elsewhere.

Susan Primrose, manager of market development at T Cell Sciences, says the company is not currently targeting developing countries, where "they're having a difficult enough time getting therapies in." Rather, the first users are expected to be labs in developed countries that cannot afford a flow cytometer—a full-scale machine costs up to $250,000—and currently pay a reference lab $50 or more to run each CD4 test. The new system, she says, will use machines most labs already have. Each test will cost only about $18.

Sex-Cancer Link?

Male traits from excess randiness to bellicosity have long been attributed to testosterone. But a new study suggests the picture is slightly more complicated when it comes to frequency of male sexual activity. One responsible party may actually be a testosterone metabolite, the hormone dihydrotestosterone (DHT), says physician Christos Mantzoros of Boston's Beth Israel Hospital. And this finding, he says, may help explain the link that exists between frequent sex and cancer of the prostate gland.

Several years ago, physicians in Athens asked 92 Greek army recruits how many orgasms a week they averaged. Mantzoros compared these reports with analyses of their blood samples. In the 20 May *British Medical Journal*, Mantzoros and colleagues at the Harvard School of Public Health say they found testosterone levels of no value in predicting sexual activity. Rather, it was DHT. The recruits averaged 3.9 orgasms per week; those with DHT levels 2 or more standard deviations above the mean were likely to chalk up at least one extra orgasm a week.

Mantzoros says his findings may help explain why research—by physician Ronald Ross and colleagues at the University of Southern California—has shown a link between high levels of sexual activity and prostate cancer in older males. Because DHT is required to spur the cell division leading to normal prostate development, Mantzoros reasons, high DHT levels may touch off cancerous cell proliferation.

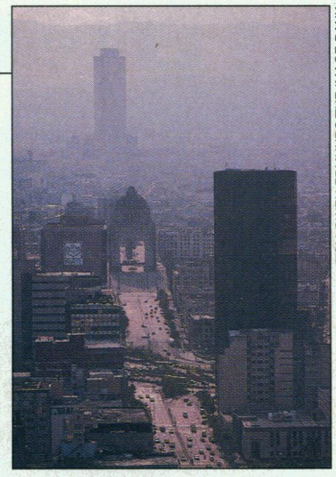
William Catalona, a urologist and prostate cancer researcher at Washington University in St. Louis, calls this mechanism "very plausible." He says DHT's potency is five times that of testosterone, so even tiny increases might be enough to account for a greater incidence of prostate cancer. What's more, he says, men who lack the enzyme to convert testosterone to DHT have underdeveloped prostates. Not only is their sexual performance impaired, he says, but they never develop prostate cancer.

Betting on the Future

Julian Simon, bête noire of those he labels "doomsayer" environmentalists, insists that humankind's lot is getting ever better. And for the second time, he's offered to bet money on it.

Back in 1980 Simon, an economist at the University of Maryland, College Park, bet Stanford ecologist Paul Ehrlich and two colleagues that over 10 years the price of certain scarce metals would fall as increased demand spurred production. Ehrlich said scarcity would boost prices. Simon won. Now he's issued a new challenge, published on the *San Francisco Chronicle*'s op-ed page on 12 May, in which he says he's willing to bet that "just about any trend pertaining to material human welfare will improve" with time.

Well, almost any. Ehrlich and a Stanford colleague, atmospheric scientist Stephen Schneider, responded with a list of 15 trends they say will worsen over the next 10 years—including global warming, air pollution, and loss of species. They're willing to lay $1000 on each. But Simon's not playing. He told *Science* he will only gamble on "direct" measures of human welfare, such as life expectancy, leisure time, and purchasing power. Ehrlich and Schneider's list, he says, dwells on "aspects of our environment whose connection to human welfare is questionable." So for the moment, the betting window is closed.



TOM OWEN EDMUNDS/THE IMAGE BANK

Gassy haze. Mexico City smog.

Clearing the Air in Mexico City

At times, Mexico City, nestled in a high mountain basin, can barely be seen though its thick layer of smog. The causes of the miasma are many, but now scientists from the University of California, Irvine, say that at least one may be amenable to a quick fix: gas leaks.

It's been widely believed that most of Mexico City's ever-present haze comes from cars and factories. But at the American Chemical Society (ACS) meeting in Anaheim, California, in April, the Irvine researchers, led by atmospheric chemists Donald Blake and Sherwood Rowland, reported that leaks of liquefied petroleum gas (LPG)—commonly used for heating and cooking—are responsible for as much as one quarter of the city's ozone pollution. Ozone is the biggest component of urban smog.

That interpretation—based on the analysis of over 200 air samples—opens the door to some potentially simple cleanup schemes, such as re-engineering pipes and hoses, especially if most of the leaks are occurring at central refining facilities or when residential tanks are being filled, says Blake. Stopping all the leaks could lower ozone levels by as much as 25%, the researchers estimate. Failing that, Blake says gains could be made by reformulating the mix of fuels in LPG.

The researchers have briefed Mexico City's air quality officials, and the government is now trying to nail down the precise sources of the LPG emissions.