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https://www.100test.com/kao_ti2020/223/2021_2022_2008_E5_B9_B4_E6_96_87_c73_223005.htm 第十篇 An AIDS Mystery Solved

(1) About 15 years ago, a well-meaning man donated blood to the Red Cross in Sydney, Australia, not knowing he has been exposed to HIV-1, the virus that causes AIDS. Much later, public-health officials learned that some of the people who got transfusions containing his blood had become infected with the same virus. Presumably they were almost sure to die. But as six years stretched to 10, then to 14, the anxiety of health officials gave way to astonishment. Although two of the recipients have died from other causes, not one of the seven people known to have received transfusions of the man's contaminated blood has come down with AIDS. More telling still, the donor, a sexually active homosexual, is also healthy. In fact his immune system remains as robust as if he had never tangled with HIV at all. What could explain such unexpected good fortune?

(2) A team of Australian scientists has finally solved the mystery. The virus that the donor contracted and then passed on, the team reported last week in the journal *Science*, contains flaws in its genetic script that appear to have rendered it innocuous. "Not only have the recipients and the donor not progressed to disease for 15 years," marvels molecular biologist Nicholas Deacon of Australia's Macfarlane Burnet Centre for Medical Research, "but the prediction is that they never will." Deacon speculates that this "impotent" HIV may even be a natural inoculant that protects its

carriers against more virulent strains? of the virus, much as infection with cowpox warded off smallpox in 18th-century milkmaids. (3) If this _____ proves right, it will mark a milestone in the battle to contain the late-20th century 's most ter-rible epidemic. For in addition to explaining why this small group of people infected with HIV has not become sick, the discovery of a viral strain that works like a vaccine would have far-reaching implications. “ What these results suggest, ” says Dr. Barney Graham of Tennessee 's Vanderbilt University, “ is that HIV is vulnerable and that it is possible to stimulate effective immunity against it. ” (4) The strain of HIV that popped up? in Sydney intrigues scientists because it contains striking abnormalities in a gene that is believed to stimulate viral duplication. In fact, the virus is missing so much of this particular gene known as nef, for negative factor that it is hard to imagine how the gene could perform any useful function. And sure enough, while the Sydney virus retains the ability to infect T cells white blood cells that are critical to the immune system 's ability to ward off infection it makes so few copies of itself that the most powerful molecular tools can barely detect its presence. Some of the infected Australians, for example, were found to carry as few as one or two copies of the virus for every 100000 T cells. People with AIDS, by contrast, are burdened with viral loads thousands of times higher. (5) At the very least, the nef gene offers an attractive target for drug developers. If its activity can be blocked, suggests Deacon, researchers might be able to hold the progression of disease at bay, even in people who have developed full-blown AIDS. The need for

better AIDS-fighting drugs was underscored last week by the actions of a U.S. Food and Drug Administration advisory panel, which recommended speedy approval of two new AIDS drugs, including the first of a new class of compounds called protease inhibitors. Although FDA commissioner David Kessler was quick to praise the new drugs, neither medication can prevent or cure AIDS once it has taken hold. (6) What scientists really want is a vaccine that can prevent infection altogether. And that's what makes the Sydney virus so promising and so controversial. Could HIV itself, stripped of nef and adjacent sections of genetic material, provide the basis for such a vaccine, as Deacon and his colleagues cautiously suggest? Ongoing work on SIV, the simian immunodeficiency virus that causes an AIDS-like illness in monkeys, indicates that this might be less far-fetched than it sounds. Ronald Desrosiers at the New England Regional Primate Research Center has demonstrated that when the nef gene is removed from SIV, the virus no longer has the power to make monkeys sick. Moreover, monkeys inoculated with the nef free SIV developed marked resistance to the more virulent strain. (7) But few scientists are enthusiastic about testing the proposition by injecting HIV however weakened into millions of people who have never been infected. After all, they note, HIV is a retrovirus, a class of infectious agents known for their alarming ability to integrate their own genes into the DNA of the cells they infect. Thus once it takes effect, a retrovirus infection unlike those of viruses that cause measles, smallpox and any number of other diseases is permanent. While some retroviruses are benign, others

can strike without warn-ing. Some remain hidden for years, only to trigger disease late in life when the immune system starts to de-crease. (8) This makes vaccine development extremely risky. A weakened strain of SIV that protected adult monkeys, for example, looked safe until researchers at the Dana Farber Cancer Institute in Boston showed that newborn monkeys with immature immune systems did not respond as healthy adults do. All the young primates, in fact, developed the very disease the weakened virus was supposed to prevent. For this and a host of other reasons, most AIDS researchers argue that the only prudent strategy is to concoct? a hybrid? vaccine, putting the key features of a disabled AIDS virus into something more benign than a retrovirus. Among the leading candidates: the vaccinia virus that successfully wiped out smallpox. (9) A handful of researchers, however, argue that the more dangerous retroviral vaccine should not be written off prematurely. Desrosiers, for one, believes the situation in parts of the developing world (where the chance of HIV infection may reach 40% among sexually active adults) has become so desperate that a retroviral vaccine may be worth the _____. A live vaccine made from HIV, he maintains, can be made safer by removing not just the nef gene but several others as well. Desrosiers has found that he can cripple HIV by chemically deleting four of its nine known genes and still get a virus that replicates, at least in chimpanzees. (10) At present, concerns about safety are so overwhelming that efforts to develop a live retroviral vaccine are unlikely to win much support. But that could change as studies of long-term survivors that small, charmed circle of people

who have been infected with the AIDS virus but have remained disease-free provide new in-sights into the weaknesses of the viral enemy and the untapped strengths of its human targets. “ These individuals, ” observes Dr. Warner Greene, director of the Gladstone Institute of Virology and Immunology in San Francisco, “ are natural experiments, and they hold a great secret that we are still trying to decipher?. ” Indeed, it is entirely possible that the eight Australians who have caused such a stir will be cited by medical texts as the first people on the planet to be successfully, if accidentally, vaccinated against the AIDS virus a virus that until now has seemed all but invincible. 100Test 下载频道开通 , 各类考试题目直接下载。详细请访问 www.100test.com