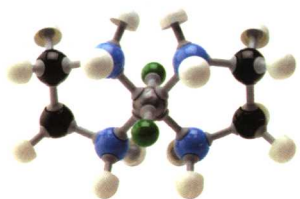


科学就是力量 ▼ 知识就是财富

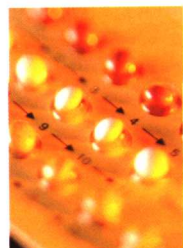
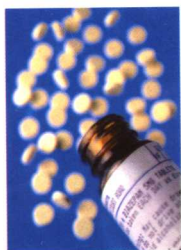
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双语 十万个为什么

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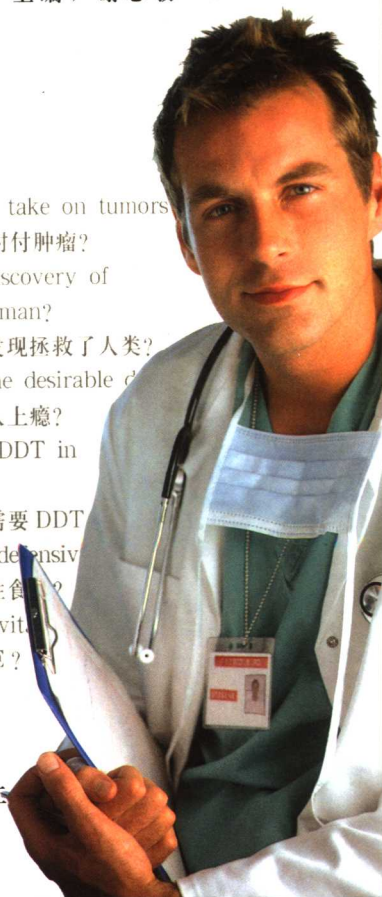


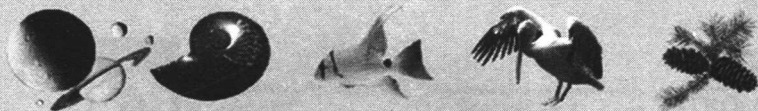
► 主编 / 谢志敏 ◀



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- 为什么尼古丁会让人上瘾?
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- 为什么需要维生素E?

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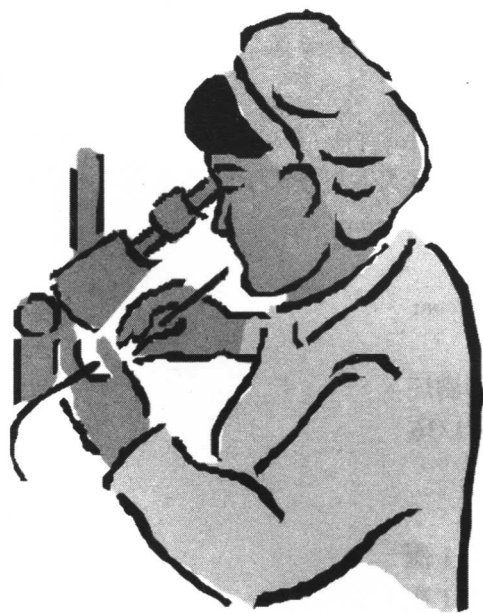
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医学

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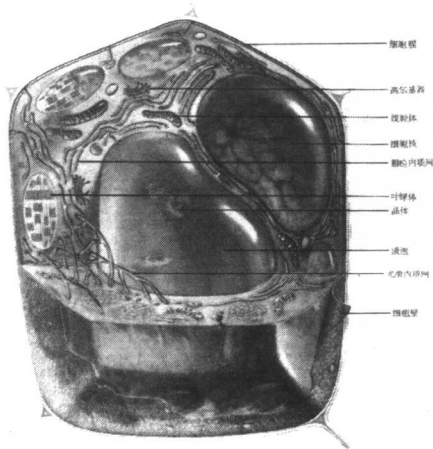




Why Could T Cells Take On Tumors

为什么 T 细胞可以对付肿瘤？

Tumors normally fend off any attacks by the immune system. But now scientists have found a way to give immune cells an edge, thereby shrinking tumors throughout the body. The work breathes life into cancer immunotherapy, a field that has struggled to achieve success in humans.



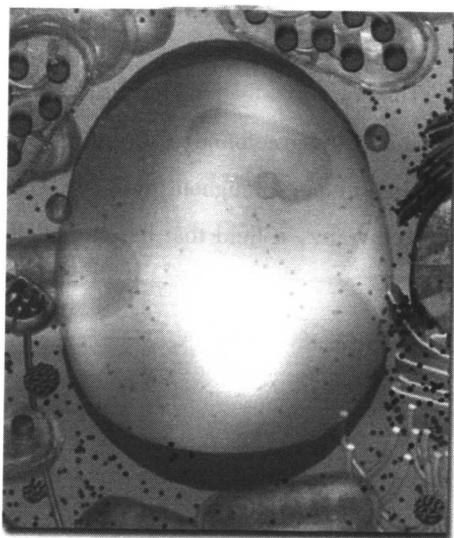
肿瘤通常可以抵御来自免疫系统的任何攻击,但现在科学家们已找到一种方法,可以给免疫细胞一把利刃,来斩杀体内的肿瘤。该项工作带给癌症免疫疗法一线希望,癌症免疫疗法是人类力争取得成功的领域。

Unlike foreign intruders such as bacteria, tumor cells are the patient's own and therefore are less violently attacked by the immune system. However, the tumor surfaces of certain cancers have antigens molecules that awaken the immune system and induce it to respond. Melanoma, a particularly dangerous form of skin cancer, is one of these.



But scientists have struggled for years to study the small number of T cells, the immune system's first line of defense, that are thought to fight these tumors.

肿瘤细胞不和其他的细菌一样,它不是侵入人体的外来物,是人体自身的细胞,因此不会受到免疫系统的攻击。然而,一些恶性肿瘤表面有抗原——一种能唤醒免疫系统并使之产生回应的分子。一种非常危险的皮肤癌——黑素瘤,就是这类恶性肿瘤的一种。但科学家们多年来一直努力研究一小部分被认为可以抗癌的T细胞。它们是免疫系统的第一道防线。

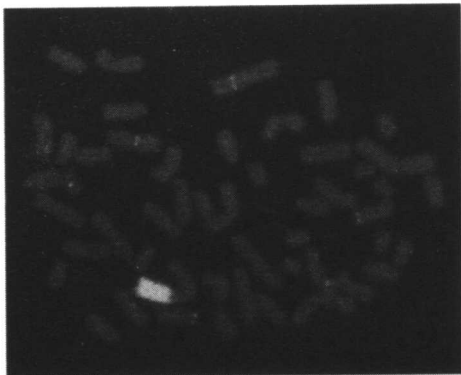


Reasoning T cells to be effective, would have to make up the bulk of cells in each patient's immune system, the team administered chemotherapy to the patients to temporarily wipe out large numbers of existing immune cells. Then they reinfused the highly aggressive T cells, which had been allowed to multiply. In six of the 13 patients, all tumors decreased in size by at least 50%. The NCI group saw some tumor shrinkage in four others, they report online in *Science* 19 September. Ten of the volunteers, all of whom were expected to die within a few months, remain alive 6 to 24 months after the first treatment.

要分析T细胞的有效性,科学家们必须在每一位患者的免疫系



统内用这些 T 细胞取代大部分的其他细胞,他们对患者实施化疗来



暂时消灭现有的免疫细胞,然后向患者体内注入对癌细胞有很大杀伤性的 T 细胞,并且使它们进行复制。13 位患者中有六人体内所有肿瘤的体积都缩小了至少一半。全国癌症研究小组发现,其余四人体内肿瘤

有所萎缩,他们在 9 月 19 日《科学》杂志的网上对此进行了报道。自愿接受测试的人中有十位被判定只能活几个月,但他们接受第一次治疗后活了 6 个月到两年。



Why To Say The Discovery Of Penicillin Saved Human

为什么说青霉素的发现拯救了人类？

In 1922, Fleming accidentally discovered an antibiotic^① that killed bacteria but not white blood cells. While suffering from a cold, Fleming

made a culture^② from some of his own nasal secretions^③. As he examined the culture dish,

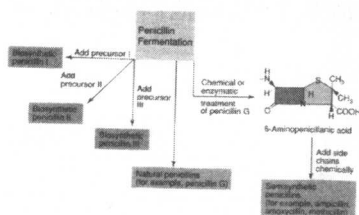
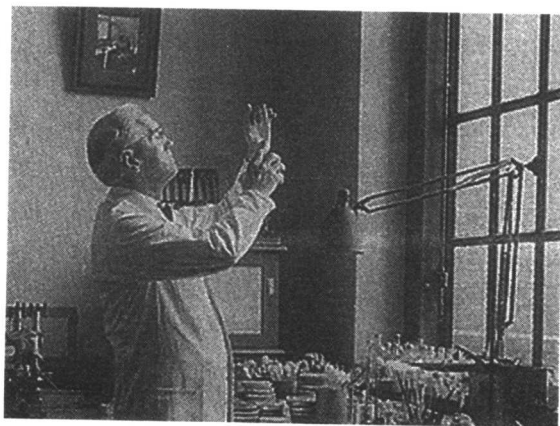


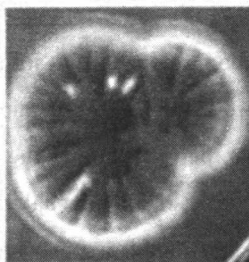
Figure 12.11 Industrial production of penicillins. The normal fermentation leads to the natural penicillins. If specific precursors are added during the fermentation, various biosynthetic penicillins are formed. Semi-synthetic penicillins are produced by chemically adding a specific side chain to the 6-aminopenicillanic acid nucleus.

filled with yellow bacteria, a tear fell from his eye into the dish. The next day when he examined the culture, he found a clear space where the tear had fallen. His keen observation and inquisitiveness led him to the correct conclusion: the tear contained a substance





that caused rapid destruction of the bacteria, but was harmless to human tissue. The antibiotic in the tear he named lysozyme^④. It turned out to be of little practical importance, because the germs^⑤ that lysozyme killed were relatively harmless, but this discovery was an essential prelude to that of penicillin, as we shall see.

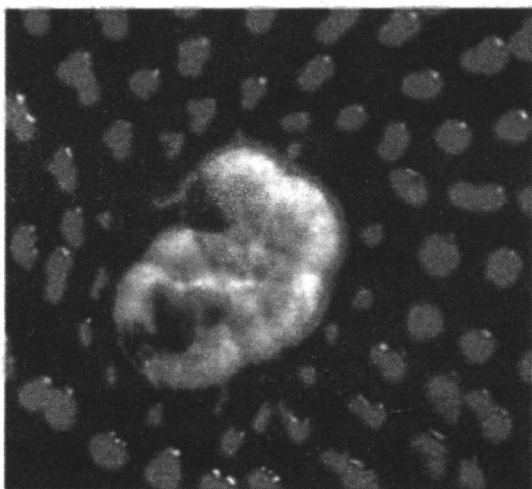


青霉素

弗莱明



1922 年弗莱明意外发现了一种能杀灭细菌而不危害白血细胞的抗生素。在他患有感冒期间,弗莱明用他的一些鼻腔分泌物作培养基。



当他观察充满黄色细菌的培养皿时,一滴眼泪从他的眼中落入培养皿中。第二天当他观察培养基时,发现在眼泪滴落处非常清亮。他敏锐的观察力和盘根问底的个性使他得出正确结论:眼泪中含有一种能迅速杀灭细菌而

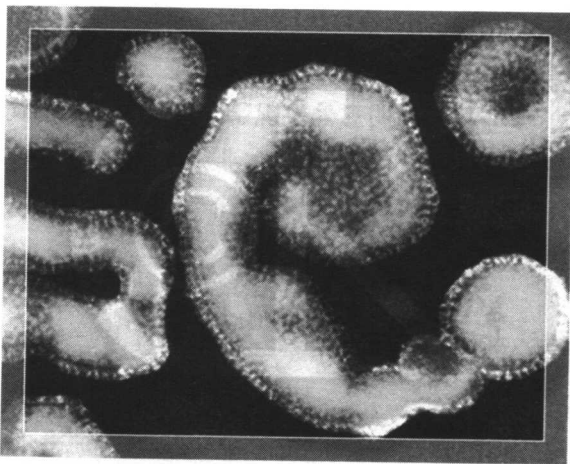
对人体组织无害的物质。他命名眼泪中的这种抗生素为溶菌酶,尽



管由于它所杀灭的细菌对人体相对无害而没有实用价值,但正如我们将看到的,这一发现却是发现青霉素的必要序曲。

In 1928, Fleming was doing research on influenza^⑥. While carrying out some routine laboratory work that involved microscopic examination of cultures of bacteria grown in petri dishes^⑦ (flat glass dishes with covers), Fleming noticed in one dish an unusual clear area. Examination showed that the clear area surrounded a spot where a bit of mould^⑧ had fallen onto the dish, which had been left uncovered. Remembering his experience with lysozyme, Fleming concluded that the mould was producing something that was deadly to the *Staphylococcus*^⑨ bacteria in the culture dish.

1928 年弗莱明从事流行性感
冒的研究。当他
进行常规实验工
作,即用显微镜观
察在皮氏培养皿
(有盖的小玻璃器
皿)里培养的细菌
培养基时,弗莱明
注意到在一个器



皿中有一块不同寻常地清亮的地方。观察表明清亮处围绕着一一些真菌落入没有封盖的器皿而导致的污点。想起溶菌酶的经历,弗莱明断定这种真菌在培养基器皿中产生一种杀死葡萄菌的物质。

Fleming isolated the mould and identified it as belonging to the genus^⑩ *Penicillium*^⑪, and he named the antibiotic substance it produced penicillin.



弗莱明分离了这种真菌,确认它属于青霉菌类。于是他命名这种真菌产生的抗生素物质为青霉素。

关键词注解:

- ①antibiotic *n.* 抗生素
- ②culture *n.* 培养基
- ③nasal secretion *n.* 鼻腔分泌物
- ④lysozyme *n.* [生化]溶菌酶
- ⑤germ *n.* 病菌
- ⑥influenza *n.* 流感
- ⑦petri dish *n.* 皮氏培养皿
- ⑧mould *n.* 霉菌
- ⑨staphylococcus *n.* 葡萄球菌
- ⑩genus *n.* 属
- ⑪penicillium 青霉菌类





Why To Properly Take Vitamins

为什么要正确服用维生素？

Most people probably do not need to take^① vitamin pills to improve their health. Yet millions of people do.



大多数人或许并不需要服用维生素丸来增强体质。但数以百万计的人却有必要服用。

The American Medical Associations noted that vitamins can help keep people healthy when used correctly. For example, children may need to take vitamins for a while; pregnant

women and women breast-feeding^② their children may need vitamins; people who do not eat meat or are eating less food to lose weight^③ may need them. In general, other people do not. But they should try to eat moderate amounts of all kinds of foods—fruits and vegetables, grains, milk products, and meat and fish.

美国医学协会指出,若服用得当,维生素有助于人体健康。譬



如,儿童可能需要服用一段时间的维生素丸;孕妇和哺乳期妇女可能需要服用;不食肉或节食减肥者也可能需要服用。一般说来,其余的人并非有此需要。不过,他们应尽量对各种各样的食品都适量地吃一点,诸如水果和蔬菜、谷物、乳制品,还有肉和鱼。

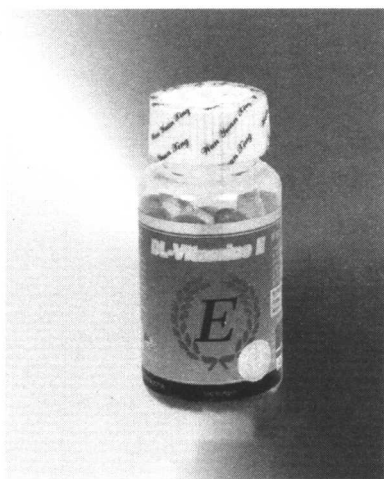
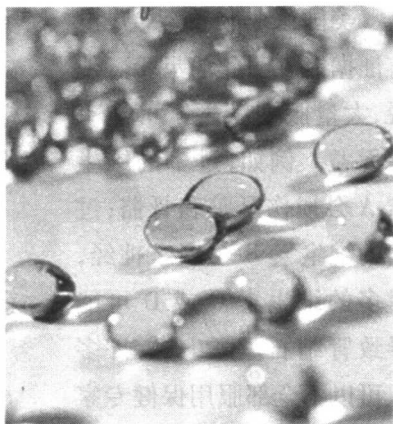
About half of all Americans who take vitamins use small amounts just to increase their vitamin levels a little. The health care groups say these people probably are not harming themselves. The other half uses large amounts in an effort to^④ prevent some things as cancer and heart disease.

服用维生素的美国人中,约有半数的人只是少量服用,以略微提高体内的维生素水准。卫生保健组织称,这样可能不会危害健康。

还有半数的人则大剂量服用,目的在于预防癌症和心脏病等疾病。

AMA says that there's no proof that this works. And huge amounts of vitamins, he says, can be harmful. For example, too much vitamin A can damage the liver and bones; too much vitamin B can damage the nerves; too much vitamin C or vitamin D may produce kidney^⑤ stones.

Dr. notes that many people may not get all the vitamins^⑥ health experts say we need every day. But those





daily levels, he says, already are a little higher than we need for good health.

美国医学协会认为,没有证据能表明此法灵验。他说,大量服用维生素可能有害无益。例如,过多的维生素 A 会损伤肝脏和骨骼;过多的维生素 B 会损害神经,过多的维生素 C 或 D 可能导致肾结石。医生说,许多人可以不全部服用保健专家认为我们所需的维生素。但是,他说,那些日常定量已经略微超出人体健康所需的水准了。



关键词注解:

- ①take pill 吃药
- ②breast-feed 母乳喂养
- ③lose weight 减肥
- ④in an effort to 力求,力争
- ⑤kidney *n.* 肾
- ⑥vitamin *n.* 维生素