



The
Economist

人体免疫

immunology

The Economist

听读系列



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免疫学 好好睡觉

为了确保疫苗完全发挥作用，晚上要睡个好觉

Immunology

Give it a rest

To ensure vaccines work properly, get a good night's
sleep

Rain

bilibili 狂奔的外刊

1. **VACCINES** GET all the glory, but it is really the **immune system** that does the **heavy lifting**. Indeed, those with weak immune systems often benefit little from vaccines. Aware of this, researchers have long thought that people **deprived** of sleep also **ought** to benefit less from vaccines, as sleeping less is thought to reduce immune function. A new **analysis** reveals that this is clearly the case—though only in men.



vaccine /'væksi:n/ **noun** [C, U] a substance that is put into the blood and that protects the body from a disease 疫苗; 菌苗

immune system **noun** the system in your body that produces substances to help it fight against infection and disease 免疫系统

heavy lifting **noun** [U] hard or difficult work 重任; 重担; 艰巨的工作

deprive sb/sth of sth to prevent sb from having or doing sth, especially sth important 剥夺; 使丧失; 使不能享有

ought **modal verb** *negative ought not to, short form especially BrE oughtn't to* used to say what is the right thing to do 应该; 应当

analysis /ə'næləsɪs/ **noun** [U, C] the detailed study or examination of sth in order to understand more about it; the result of the study (对事物的) 分析, 分析结果

2. The immune system is **metabolically** expensive for the body to operate. When resources run low, it cannot function as well as it might when well supported. This is why people who are **profoundly** cold for long periods of time tend to fall ill—their bodies are burning **calories** to stay warm that might otherwise have been used to **fuel** their defence.

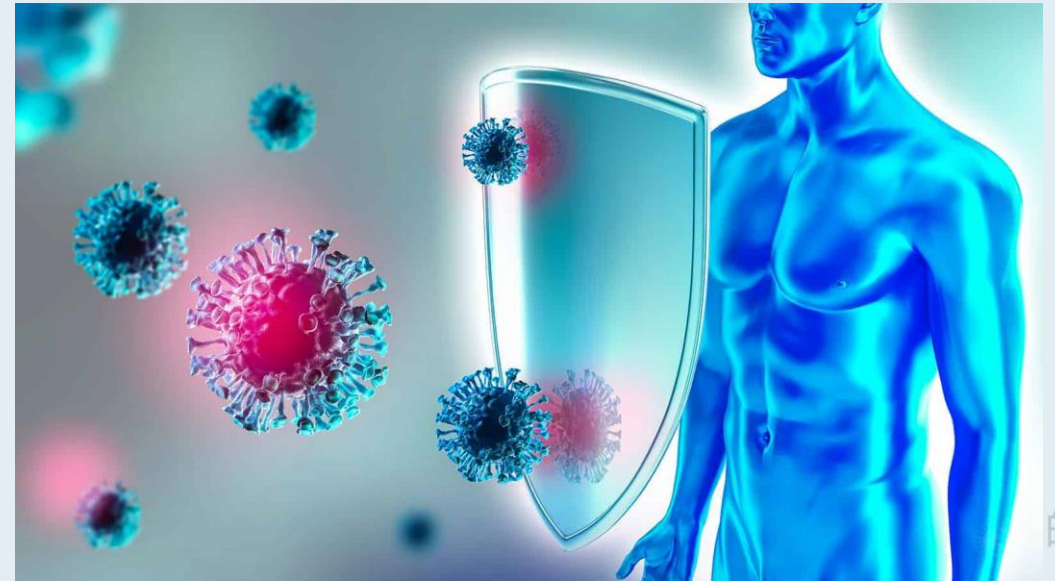
metabolism /mi'tæbəlaɪz(ə)m/ *noun*

[U, sing.] (*biology* 生) the chemical processes in living things that change food, etc. into energy and materials for growth 新陈代谢

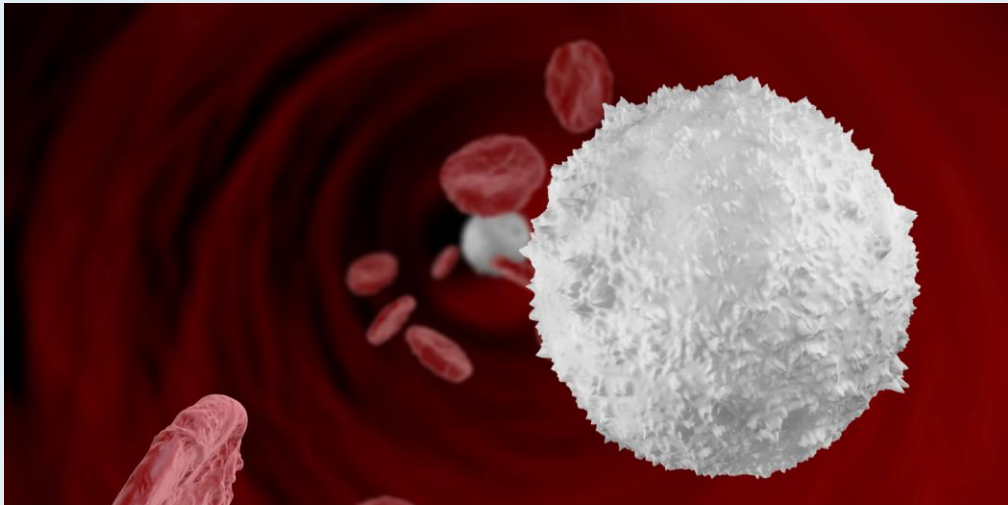
profoundly /prə'faʊndli/ *adverb* (*medical* 医) very seriously; completely 严重地; 完全地; 彻底地

calorie /'kæləri/ *noun* a unit for measuring how much energy food will produce 大卡, 千卡, 卡路里 (测量食物含多少热量的单位)

fuel /fjuəl/ *verb* [T] ~ sth to increase sth; to make sth stronger 增加; 加强; 刺激



3. The immune system is similarly **hamstrung** by a lack of sleep since a number of its key **components**, such as the **white blood cells** that produce **antibodies**, are **predominantly** made by the body when a person is **slumbering**. Yet it has remained unclear whether poor sleep at a time of vaccination leads to reduced immune benefits.



hamstring /'hæmstrɪŋ/ **verb** [often passive]~

sb/sth to prevent sb/sth from working or taking action in the way that is needed 妨碍；使不能正常工作（或行动）

component /kəm'pəʊnənt/ **noun** one of several parts of which sth is made 组成部分；成分；部件

white blood cell **noun** (also 'white cell) (also *technical* 术语 **leuco·cyte**) (*biology* 生) any of the clear cells in the blood that help to fight disease 白细胞；白血球

antibody /'æntɪbɒdi/ **noun** *pl.* **anti·bodies** a substance that the body produces in the blood to fight disease, or as a reaction when certain substances are put into the body 抗体（血液中抵抗疾病或当某些物质进入身体时产生反应的物质）

predominantly /prɪ'dɒmɪnəntli/ **adverb** mostly; mainly 主要地；多数情况下

slumber /'slʌmbə/ **verb** [I] (*literary*) to sleep 睡；睡眠

4. Vaccines work by presenting the immune system with the foreign material of a **pathogen**. The system **reacts** by making antibodies, though these do not last for ever—they **circulate** in great numbers shortly after a real or vaccine-induced invasion but their population **wanes** over time. **Eventually**, another shot of vaccine is needed to **boost** the antibody **count**.



pathogen /'pæθədʒ(ə)n/ **noun** (*technical 术语*) a thing that causes disease 病原体

react /rɪ'ækt/ **verb** [I] ~ (to sth) (by doing sth) to change or behave in a particular way as a result of or in response to sth 起反应; (对 ...) 作出反应; 回应

circulate /'sɜ:kjʊleɪt/ **verb** [I, T] when a liquid, gas, or air **circulates** or **is circulated**, it moves continuously around a place or system (液体或气体) 环流, 循环

wane /weɪn/ **verb** [I] to become gradually weaker or less important 衰落; 衰败; 败落; 减弱

eventually /ɪ'ventʃʊəli/ **adverb** at the end of a period of time or a series of events 最后; 终于

boost /bu:st/ **verb** ~ sth to make sth increase, or become better or more successful 使增长; 使兴旺

count /kaʊnt/ **noun** [*usually sing.*] (*technical 术语*) a measurement of the amount of sth contained in a particular substance or area (某物在某物质或面积中) 量的计数 a raised white blood cell count 升高的白血球数

5. For their study, Karine Spiegel at the French National Institute of Health and Medical Research and Eve Van Cauter at the University of Chicago speculated that insufficient sleep might damage the ability of the immune system to react to vaccines and thus result in fewer circulating antibodies.

Inserm



La science pour la santé
From science to health

French National Institute of Health and Medical Research *noun* 法国国家卫生研究院

University of Chicago *noun* 芝加哥大学, 美国芝加哥私立研究型大学

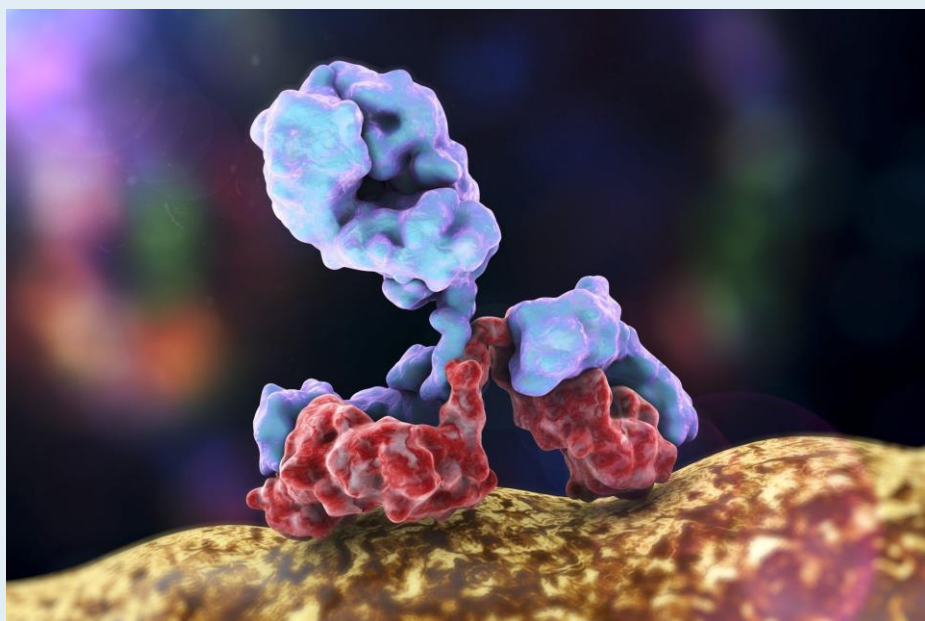
speculate /'spekjuleɪt/ *verb* [I, T] to form an opinion about sth without knowing all the details or facts 推测; 猜测; 推断

insufficient /ɪnsə'fɪʃ(ə)nt/ *adjective* ~ (to do sth) | ~ (for sth) (*formal*) not large, strong or important enough for a particular purpose 不充分的; 不足的; 不够重要的

thus /ðʌs/ *adverb* (*formal*) as a result of sth just mentioned 因此; 从而; 所以



They **pooled** the results of seven studies in which a total of 603 **participants** between the ages of 18 and 60 had had their antibody response to vaccines **monitored** and who had also been asked how many hours of sleep they were getting each night.



pool /pu:l/ **verb** ~ sth to collect money, information, etc. from different people so that it can be used by all of them 集中资源（或材料等）

participant /pɑ:'tɪsɪp(ə)nt/ **noun** ~ (in sth) a person who is taking part in an activity or event 参与者；参加者

monitor /'mɒnɪtə/ **verb** ~ sth | ~ what, how, etc. ... to watch and check sth over a period of time in order to see how it develops, so that you can make any necessary changes 监视；检查；跟踪调查

6. Dr Spiegel found that men showed a strong relationship between insufficient sleep (defined as fewer than six hours of **kip** a day) and antibody response. The **magnitude** of the effect, when sleep **duration** was recorded **objectively** by a lab rather than self-reported by a patient, was similar to the amount of antibody waning seen in an average person two months after being given the **Pfizer-BioNTech covid-19 jab**.

kip /kɪp/ **noun** [U, C, usually sing.] (BrE) (informal) sleep 睡觉

magnitude /'mægnɪtjuːd/ **noun** ~ (of sth) [U] (formal) the great size or importance of sth; the degree to which sth is large or important 巨大; 重大; 重要性

duration /dʒʊ'reɪ(ə)n/ **noun** [U] (formal) the length of time that sth lasts or continues 持续时间; 期间

objective /əb'dʒektɪv/ **adjective** not influenced by personal feelings or opinions; considering only facts 客观的; 就事论事的; 不带个人感情的

Pfizer-BioNTech covid-19 jab **noun** 辉瑞疫苗, 辉瑞公司生产的新冠疫苗



The vaccines given to sleep-deprived men, therefore, still provided protection but the effect was less **potent** from the start and lasted for less time, on **average**.



potent /'pəʊt(ə)nt/ **adjective** having a strong effect on your body or mind 有强效的；有力的；烈性的；影响身心的

average /'æv(ə)rɪdʒ/ **noun** a level which is usual 平均水平；一般水准

7. The results were published this week in **Current Biology**. Dr Spiegel says that encouraging patients to get plenty of sleep before and after a vaccination **appointment** is an ideal way for a medical system to **maximise** its vaccine **stock** and **ensure** that the benefits granted are as large as possible.



Current Biology *noun* 《当代生物学》，著名生物学期刊

appointment /ə'pɔɪntm(ə)nt/ *noun* [C] a formal arrangement to meet or visit sb at a particular time, especially for a reason connected with their work 约会；预约；约定

maximise /'mæksimaɪz/ *verb* ~ sth to make the best use of sth 充分利用；最大限度地利用

stock /stɒk/ *noun* [U, C] a supply of goods that is available for sale in a shop/store (商店的) 现货，存货，库存

ensure /ɪn'ʃʊː/ *verb* to make sure that sth happens or is definite 保证；担保；确保

8. As for why the results in women were not significant, Dr Spiegel and her colleagues **theorise** that sleep affects female response to vaccines too but that **hormone interference**, driven by varying stages of the **menstrual** cycle,



theorise /'θiəraɪz/ **verb** [I, T] ~ (about/on sth) | ~ sth | ~ that ... to suggest facts and ideas to explain sth; to form a theory or **THEORIES** about sth 从理论上说明; 形成理论; 理论化

hormone /'hɔ:məʊn/ **noun** a chemical substance produced in the body or in a plant that encourages growth or influences how the cells and **TISSUES** function; an artificial substance that has similar effects 激素; 荷尔蒙

interference /ɪntə'fɪər(ə)ns/ **noun** [U] ~ (in sth) the act of **INTERFERING** 干涉; 干预; 介入

menstrual /'menstrʊəl/ **adjective** connected with the time when a woman **MENSTRUATES** each month 月经的

contraception and hormone-replacement therapies, is probably altering immune response in profound and unknown ways that throw off the results. It is a subject area that urgently needs more attention, argue the researchers.



contraception /kɒntrə'sepʃ(ə)n/ **noun** [U] the practice of preventing a woman from becoming pregnant; the methods of doing this 避孕 (法) ; 节育 (法)

hormone replacement therapy **noun** [U] = **HRT** [U] the abbreviation for 'hormone replacement therapy' (medical treatment for women going through the **MENOPAUSE** in which **HORMONES** are added to the body) 激素替代疗法 (全写为 hormone replacement therapy, 为更年期女性注射激素以提高体内雌激素水平)

alter /'ɔːltə/ **verb** [I, T] to become different; to make sb/sth different (使) 改变, 更改, 改动

throw sth/sb ↔ off to manage to get rid of sth/sb that is making you suffer, annoying you, etc. 摆脱; 甩掉

9. Vaccines are an important tool in the world's **armoury** against disease and there is no **getting around** the fact that developing and **administering** them is a difficult and expensive process. But patients could at least be encouraged to give their immune system a rest before getting jabbed. It costs nothing, and could pay considerable **dividends**.

armoury /'ɑ:məri/ **noun** (formal) the things that sb has available to help them achieve sth 锦囊; 宝库

get around to deal with a problem successfully 成功地对付; 解决; 克服

administer /əd'mɪnɪstə/ **verb** [often passive] (formal) to give drugs, medicine, etc. to sb 给予, 施用 (药物等)

dividend /'dɪvɪdend/ **noun** an amount of the profits that a company pays to people who own shares in the company 红利; 股息; 股利

