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The Immune System



Chapter 1

The Immune System

Learning Objectives

- to master some basic skills to build medical words with affixes concerning the human immune system and to expand accurate usage of amphibious words in both general and medical contexts;
- to improve comprehensive linguistic abilities to discuss immunity;
- to increase awareness of the importance of the immune system and consciousness of boosting one's immunity.

Part 1

Pre-reading Tasks



Task 1 Compare and Contrast

Directions: In medical English, **amphibious words**, a term derived from amphibious animals such as frogs and toads that can live both on land and in water, have flexible meanings in both general contexts and medical contexts. Please consult your dictionaries, write down the Chinese equivalents of the amphibious words in the table below, and pay attention to their different meanings used as **general expressions (GE)** and **medical expressions (ME)** respectively. The first one is exemplified for you to follow.

Amphibious Words	GE	ME
appendix	(书、文件等的)附录	阑尾
cold		
drop		
essential		
exposure		
host		
screen		

(Continued)

Amphibious Words	GE	ME
strain		
tissue		
ward		

Task 2 Read and Translate

Directions: Please read the following 10 pairs of sentences, and keep an eye on the 10 amphibious words you learned from the table in Task 1, which are interpreted differently as GE and ME. Translate the English sentences into Chinese.

1. For convenience, we have also provided a glossary in an appendix. (GE)

With an acute inflammation of his appendix, he had to have it removed. (ME)

2. You'll catch a chill if you do not keep warm in cold weather. (GE)

In winter or seasonal changes, the elderly or children are easy to suffer from a heavy cold. (ME)

3. It was stated that standards at the hospital were dropping. (GE)

I have known the feeling of wearing contact lens without eye drops. (ME)



4. The essential character of the town has been destroyed by the new road. (GE)

The thesis is a study on early hearing impairment with essential hypertension. (ME)

5. All the candidates have been getting an enormous amount of exposure on television and in the press. (GE)

Travel increases the risk for exposure to measles virus and its further spread into susceptible populations if not vaccinated. (ME)

6. The college is playing host to a group of visiting Russian scientists. (GE)

When the eggs hatch, the larvae eat the living flesh of the host animal. (ME)

7. Government employees may be screened by the security services. (GE)

Men over 55 should be regularly screened for prostate cancer. (ME)

8. The dogs were straining at the leash, eager to get to the park. (GE)

The Delta strain is more transmissible, more adapted to humans and faster to replicate. (ME)

9. Under the circumstance of financial crisis, using less tissue means saving more money. (GE)

All the cells and tissues in the body benefit from the increased intake of oxygen. (ME)

10. He brought his arm up in a futile attempt to ward off the blow. (GE)

A toddler was admitted to the emergency ward with a wound in his chest. (ME)

Task 3 Lead-in Questions

Directions: Read the questions below and answer them in details.

1. Do you believe you are in good physical conditions? Why or why not?

2. What do you think of your lifestyle? Is it immunity-friendly?

3. What do you do in your everyday life to boost your natural defense system?

4. Do you think one's immunity system becomes weaker with aging? Will the conclusion you draw have some impact on your current lifestyle?

Part 2 Texts



Text A



Understanding the ¹Immune System

1 The **immune system** is made up of cells and organs that protect your body from outside ²invaders such as ³bacteria, viruses, ⁴fungi, and ⁵parasites that can cause ⁶infection and disease. The immune system also **gets rid of** abnormal ⁷pre-cancerous cells and cancerous cells that are growing out of control. When it works correctly, it **fights off** infection and keeps you healthy. However, when the immune system is weak, ⁸germs and other abnormal cells in the body can more easily cause



infections and diseases. Key organs and cells of the immune system are briefly discussed **as follows**.

2 The first line of defense against germs is your skin, the single largest organ of the body. It provides a physical barrier that keeps bacteria and viruses

from entering the body. Viruses such as **HIV** cannot get through normal, healthy and unbroken skin. However, it can get into the body through unbroken ⁹mucous¹⁰membranes.

3 The internal parts of your immune system **take care of** germs that do get inside the body. The **white blood cells** that defend the body from invaders and get rid of possibly dangerous abnormal cells, begin their lives in the **bone** ¹¹marrow. Once they leave the bone marrow, they travel to the ¹²lymph organs, which serve as a **home base** for mature white blood cells. There, the white blood cells ¹³await instruction to go out and fight infection.

4 Lymph organs are spread throughout the body and include the **lymph** ¹⁴nodes, ¹⁵thymus, ¹⁶spleen, ¹⁷appendix, etc. Lymph nodes are located in the neck, ¹⁸armpits, ¹⁹abdomen, and ²⁰groin. Each lymph node contains cells that are ready to fight invaders. The spleen is an important organ for a healthy immune system. It is about the size of a fist, and it is located in the upper left of the abdomen (also called “belly”). One of its key roles is to ²¹filter blood and to identify and get rid of white blood cells that are **worn out**.

5 Some key cells of the immune system are ²²dendritic cells and ²³macrophages. Dendritic cells are found mostly in the skin and mucous membranes that protect the openings of the body (e.g. nose, mouth, and throat). These cells capture and carry invaders to the lymph nodes or spleen. The name of macrophages comes from Latin meaning “big eaters”. Macrophages protect different organs, such as ²⁴intestines, lungs, ²⁵liver, and brain. Like dendritic cells, they capture and carry invaders to the lymph organs. These two types of white blood cells are known as ²⁶scavengers. They eat foreign invaders, **break** them **apart**, and display pieces of the germs known as ²⁷antigens on their surfaces. The body can then make ²⁸antibodies to that specific germ, which helps to get rid of that invader faster and remember it in the future. These cells also produce **chemical messengers** that instruct other immune cells to **go into action**.

6 T cells and B cells are also important cells of the immune system. Once antigens are processed and displayed on the surface of macrophages, they can be recognized by T cells which “see” the antigens displayed, ²⁹coordinate, direct the activity of other types of immune cells, such as macrophages and B cells, and call them into action to fight the ³⁰intruder. T cells also produce many different chemical messengers in order to communicate effectively with other immune system cells. B cells are another type of immune cell that is turned on by T cells. When a B cell recognizes an antigen, it

produces antibodies. An antibody is a protein that **attaches to** an antigen as a key fits a lock. Each antibody matches a specific antigen.

7 When you are exposed to a germ for the first time, it usually takes a while, several weeks to a few months, for your body to produce antibodies to fight it. But if you were exposed to a germ in the past, you will usually still have some B cells (also called memory cells) in your body that recognize or remember the repeat invader. This allows the immune system to go into action right away. This is why people get some diseases, such as ³¹chickenpox or ³²measles, only once. This is also how ³³vaccines work. They introduce your body to an inactive or ³⁴modified form of a particular germ and ³⁵trigger your immune system to produce antibodies to that germ.

Anon. 2021. *Understanding the immune system*. Thewellproject. Retrieved on July 26, 2022, from Thewellproject website.

(722 words)

Notes

1. (Para. 1) The immune system is made up of cells and organs that protect your body from outside invaders such as bacteria, viruses, fungi, and parasites that can cause infection and disease. 免疫系统由一些细胞和器官组成，保护你的身体免受细菌、病毒、真菌和寄生虫等外部入侵者造成的感染和疾病。
1) be made up of: 由……组成。
2) 句中的 protect... from... 意为“保护……不受……伤害”，from 后可接名词、动名词或代词。
2. (Para. 2) Viruses such as HIV cannot get through normal, healthy and unbroken skin. However, it can get into the body through unbroken mucous membranes. 艾滋病病毒等病毒无法穿透正常、健康、完整的皮肤。然而，它可以通过未破损的黏膜进入人体。
mucous membranes: 黏膜。它是生物体（口腔、胃、肠、尿道等器官）中由上皮组织和结缔组织构成的膜状结构。其结缔组织部分被称为固有层，其上皮组织部分被称为上皮，内有血管和神经，能分泌黏液。黏膜是人体免疫系统的第一道防线。
3. (Para. 4) lymph nodes: 淋巴结。淋巴结一般呈肾形或卵圆形，直径一般为 0.1—2.5 厘米。每个淋巴结都由一个纤维状外套膜（capsule）包裹，纤维质延伸至内部形成小梁。其功能类似于过滤器，内部蜂窝状的结构聚集了淋巴球，能够将病毒与细菌摧毁。淋巴结分布在全身，在躯干处相对密集。

4. (Para. 5) Dendritic cells are found mostly in the skin and mucous membranes that protect the openings of the body (e.g. nose, mouth, and throat). 树突状细胞主要存在于保护身体开口（如鼻子、嘴和喉咙）的皮肤和黏膜中。
 - 1) dendritic cells: 树突状细胞，又称树状细胞、树突细胞，是一种存在于哺乳动物的白细胞。它们存在于血液和暴露于环境中的组织中，如皮肤、鼻子、肺、胃和小肠的上皮组织。它们的作用是调节对当前环境刺激的先天和后天免疫反应，其最重要的功能是将抗原处理后呈递给免疫系统的 T 细胞。
 - 2) 句中 openings 为 open 的名词形式，意为“洞口，开口，缺口”。
5. (Para. 5) They eat foreign invaders, break them apart, and display pieces of the germs known as antigens on their surfaces. The body can then make antibodies to that specific germ, which helps to get rid of that invader faster and remember it in the future. 它们吃掉外来入侵者，将其分解，并在自身表面展示被称为抗原的细菌碎片。然后，身体就会产生针对这种特定细菌的抗体，这有助于更快地清除入侵者，并在未来记住它的样子。
6. (Para. 6) Once antigens are processed and displayed on the surface of macrophages, they can be recognized by T cells which “see” the antigens displayed, coordinate, direct the activity of other types of immune cells, such as macrophages and B cells, and call them into action to fight the intruder. 一旦抗原被处理并展示在巨噬细胞表面，它们就会被 T 细胞识别，T 细胞会“看到”展示的抗原，协调、引导巨噬细胞和 B 细胞等其他类型的免疫细胞的活动，并使其运转起来对抗入侵者。
 - 1) macrophages: 巨噬细胞，是由血液中的单核细胞穿出血管后分化而成的。巨噬细胞是形似变形虫的细胞，吞食并处理大型异物、细胞排泄出的老旧废物、衰老的红细胞等，也会前往发生炎症的部位处理异物。它在人体内参与非特异性防卫（先天性免疫）和特异性防卫（细胞免疫），是一种功能很多的白细胞。
 - 2) T cells: T 细胞，因其来源于胸腺（thymus）而得名。在人体胚胎期和初生期，骨髓中的一部分多能干细胞或前 T 细胞迁移到胸腺内，在胸腺激素的诱导下分化成熟，成为具有免疫活性的 T 细胞。它具有多种生物学功能，如直接杀伤靶细胞，辅助或抑制 B 细胞产生抗体，对特异性抗原和促有丝分裂原的应答反应以及产生细胞因子等。
 - 3) B cells: B 细胞，因其被发现于鸟类的法布利氏囊（Bursa of Fabricius）而得名。B 细胞的祖细胞存在于胎肝的造血细胞岛（island of hematopoietic cells）中，此后其产生和分化场所逐渐被骨髓所代替。成熟的 B 细胞主要定居于淋巴结皮质浅层的淋巴小结和脾脏的红髓和白髓的淋巴小结内。B 细胞在抗原刺激下可分化为浆细胞，浆细胞可合成和分泌抗体，主要执行机体的体液免疫。
 - 4) 该句中加引号的 see 为比喻说法，意为 T 细胞以某种方式检测、察觉到了抗原。



- 5) call... into action: 使……行动起来; 召唤……投入战斗。
7. (Para. 6) An antibody is a protein that attaches to an antigen as a key fits a lock. Each antibody matches a specific antigen. 抗体是一种蛋白质, 它附着在抗原上, 就像钥匙配锁一样。每个抗体都与特定的抗原相匹配。
该句是比喻说法, 正如每把锁都有专门对应的钥匙, 每种抗原都有专门匹配的抗体, 因为抗原决定簇和抗体分子的超变区之间的空间结构存在互补性。这种特异性是抗原抗体反应的最主要特征, 在传染病的诊断与防治方面得到了有效利用。
8. (Para. 7) This allows the immune system to go into action right away. 这(种特性)让免疫系统可以立即投入战斗。

Word List

1. **immune** [ɪ'mju:n] *adj.*
that cannot catch or be affected by a particular disease or illness 有免疫力的
2. **invader** [ɪn'veɪdər] *n.*
an army or a country, etc. that enters another country, etc. by force in order to take control of it 侵略者; 侵入物
3. **bacterium** [bæk'tɪrɪəm] *n.*
(*pl.* bacteria) a very small organism that exists in large numbers in air, water and soil, and also in living and dead creatures and plants, and is often a cause of disease 细菌
4. **fungus** ['fʌŋɡəs] *n.*
(*pl.* fungi) a covering of mold or a similar fungus, for example on a plant or wall, that is extremely small and looks like a fine powder 真菌
5. **parasite** ['pærəsəɪt] *n.*
a small animal or plant that lives on or inside another animal or plant and gets its food from it 寄生生物
6. **infection** [ɪn'fekʃ(ə)n] *n.*
an illness that is caused by bacteria or a virus and that affects one part of the body 感染
7. **pre-cancerous** ['prɪ: 'kænsərəs] *adj.*
displaying characteristics that may develop into cancer 癌症前期的
8. **germ** [dʒɜ:rm] *n.*
a very small living thing that can cause infection and disease 病菌
9. **mucous** ['mju:kəs] *adj.*
relating to or producing mucus 黏液的; 分泌黏液的