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科学探索丛书

THE HUMAN BODY

人 体

Fighting Disease

战胜疾病

KATE BOEHM JEROME (美) 著

外语教学与研究出版社

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关静瑞 注

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如果你希望读到地道的英语，在享受英语阅读乐趣的同时又能增长知识、开拓视野，这套由外语教学与研究出版社与美国国家地理学会合作出版的“国家地理科学探索丛书”正是你的选择。

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这套丛书以英文注释形式出版，注释由国内重点中学教学经验丰富的英语教师完成。特别值得推荐的是本套丛书在提高青少年读者英语阅读能力的同时，还注重培养他们的科学探索精神、动手能力、逻辑思维能力和沟通能力。

本丛书既适合学生自学，又可用于课堂教学。丛书各个系列均配有一本教师用书，内容包括背景知识介绍、技能训练提示、评估测试、多项选择题及答案等详尽的教学指导，是对课堂教学的极好补充。

本套丛书是适合中学生及英语爱好者的知识读物。

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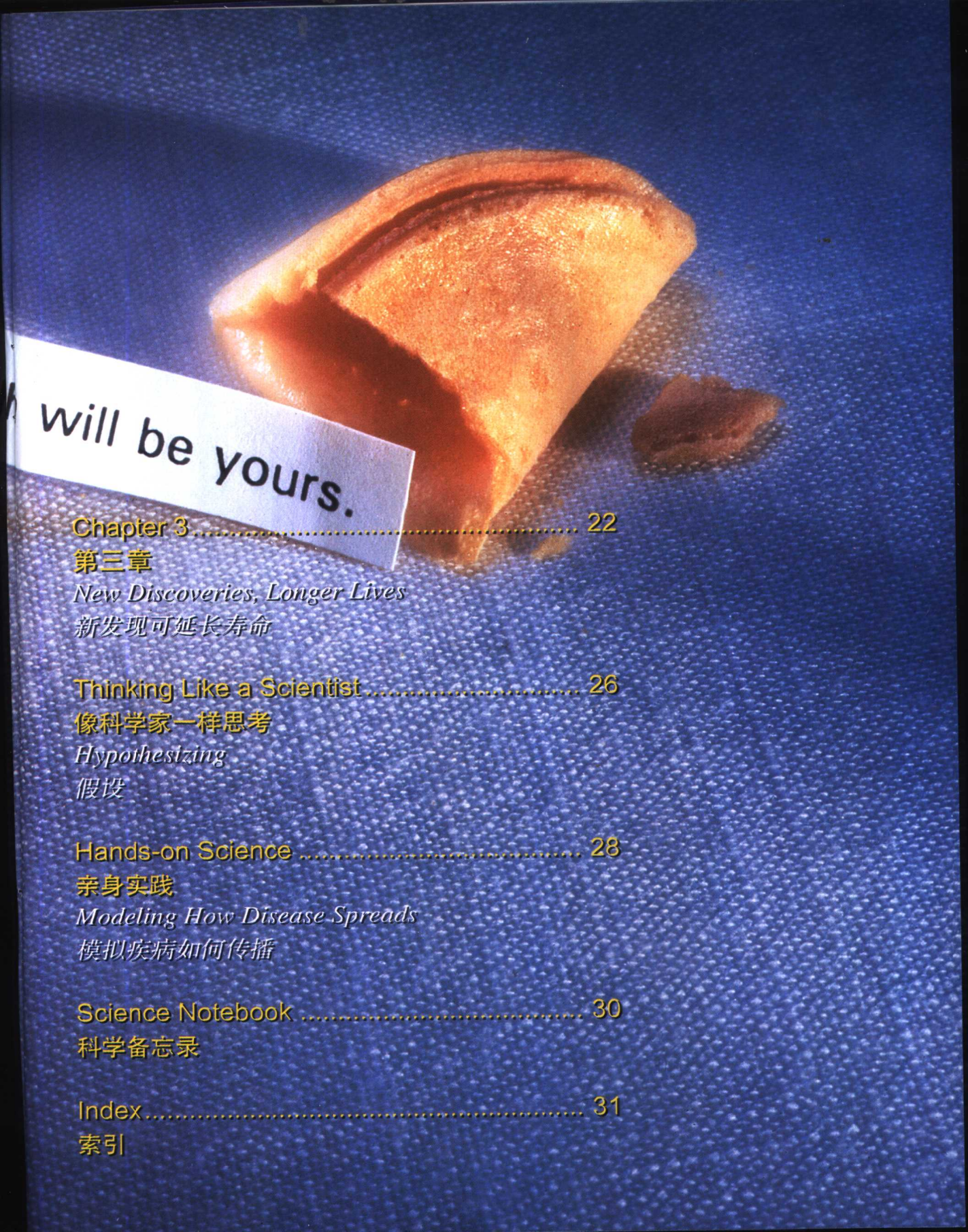
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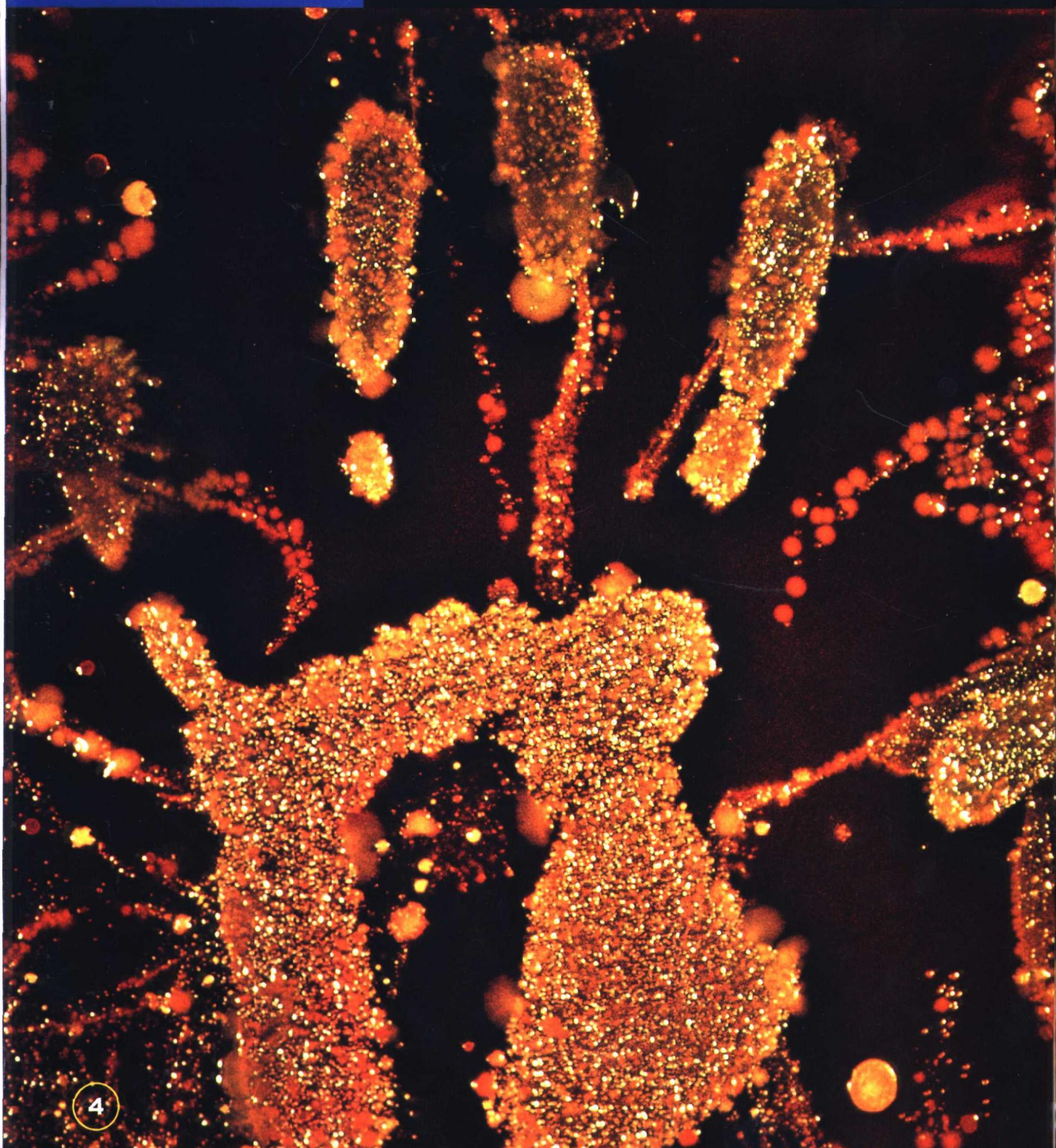
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Introduction

引言

The Unseen World Around Us

我们周围的隐形世界



What an interesting handprint¹! What is it made of? Clay²? Paint? No, you're not even close!



The handprint in the picture is made of germs³ commonly found on human skin⁴. These germs are so tiny⁵ you can't even see them. You can bet⁶ that they're there, though ... and this handprint proves⁷ it.

How was it made? A person's hand was pressed down onto a plate containing⁸ nutrients⁹ that germs feed on. After the hand was removed¹⁰, germs too small to see were left behind. The germs were allowed¹¹ to multiply¹² and grow. Soon the tell-tale¹³ shape of a human hand came into view¹⁴.

We are exposed¹⁵ to billions of germs every day. They live all around us. Some even live on us and in us. Yet most of us are healthy human beings. Why aren't we sick all the time?

The simple answer is that our bodies have their own systems¹⁶ of protection. Fortunately¹⁷, medical research is helping us out¹⁸. But fighting disease¹⁹ is a constant²⁰ battle²¹. Today, we are in a much better position²² to win than ever before.

1. handprint	<i>n.</i>	手印
2. clay	<i>n.</i>	黏土
3. germ	<i>n.</i>	细菌
4. skin	<i>n.</i>	皮肤
5. tiny	<i>n.</i>	微小的
6. bet	<i>v.</i>	敢说; 确信
7. prove	<i>v.</i>	证明
8. contain	<i>v.</i>	包含
9. nutrient	<i>n.</i>	营养成分
10. remove	<i>v.</i>	移开
11. allow	<i>v.</i>	允许

12. multiply	<i>v.</i>	繁殖
13. telltale	<i>adj.</i>	泄密的
14. come into view		出现在眼前
15. expose	<i>v.</i>	暴露
16. system	<i>n.</i>	系统
17. fortunately	<i>adv.</i>	幸运地
18. help...out		帮助……解决困难
19. disease	<i>n.</i>	疾病
20. constant	<i>adj.</i>	持续的
21. battle	<i>n.</i>	战役; 战斗
22. position	<i>n.</i>	形势; 状况

Chapter 1

第一章

Your Body's Lines of Defense

你的身体防线



The year was 1906. Several members of a New York family mysteriously¹ fell ill². A new cook had just been hired³. People began to wonder. Was the new cook poisoning⁴ the family's food?

As it turned out, Mary Mallon, the cook, was guilty⁵—but not in the way you might think! The family had a disease called typhoid fever⁶. This disease travels from person to person through water or food. Although Mary did not appear⁷ to be sick, she was a carrier⁸ of the typhoid germ, shown below. Without knowing it, Mary was spreading⁹ the disease to other people when she prepared their food.

So how can we protect ourselves from things we can't even see? Luckily, our bodies have natural lines of defense. We also have medicines that help our body's defense systems work even better. Today vaccines¹⁰ protect us from typhoid and many other diseases.

It's important to understand what causes disease and how our bodies fight disease. There are many things we can do to protect ourselves and stay healthy¹¹.

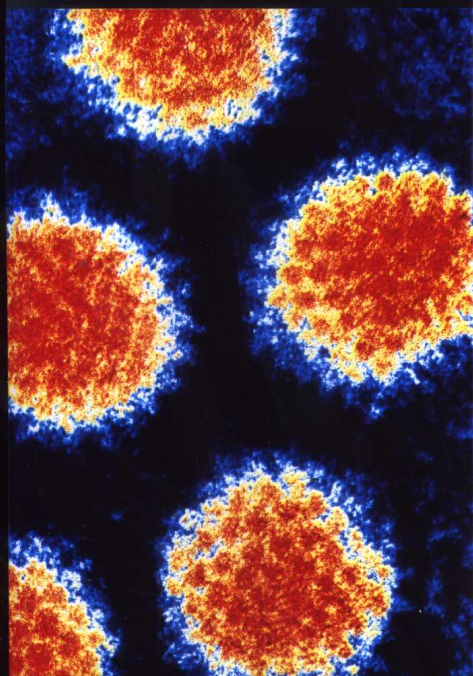
What do eating well, sneezing¹², and washing your hands have in common¹³?

1. mysteriously	adv.	神秘地
2. fall ill		生病
3. hire	v.	雇用
4. poison	v.	使中毒; 毒害
5. guilty	adj.	有罪的
6. typhoid fever		伤寒
7. appear	v.	看起来
8. carrier	n.	携带者
9. spread	v.	传播
10. vaccine	n.	疫苗
11. stay healthy		保持健康
12. sneeze	v.	打喷嚏
13. in common		公有; 共同
14. enlarge	v.	放大

The germ that causes typhoid fever.
(greatly enlarged¹⁴)



Adenovirus²², a type of virus that causes the common cold



Protist inside a red blood cell infected²³ with malaria²⁴



Some Diseases Can Spread

Have you ever noticed how colds seem to spread quickly from just one person? One day your friend is sneezing. A few days later you start to sniffle¹. Then a younger brother or sister gets a runny nose². Soon it seems that everyone in your home is reaching for³ a tissue⁴. Why does this happen?

It happens because a cold is a communicable disease⁵. It is an illness that can spread from person to person. Communicable diseases are caused by pathogens⁶—what most people think of as germs. Pathogens include⁷ viruses⁸, some bacteria⁹, protists¹⁰, fungi¹¹, and even some parasites¹². Most of these pathogens are too small to be seen with the human eye. We can see many of them only by looking at them under a microscope¹³.

Viruses

The pathogens that cause diseases such as influenza¹⁴ (the flu) and the common cold are viruses. Viruses are extremely¹⁵ small and are not even considered¹⁶ living organisms¹⁷. Viruses cannot reproduce¹⁸ on their own. They have to invade¹⁹ a living cell²⁰ and take it over to make more viruses.

Bacteria

They live all around us in the air, water, and soil. Some bacteria are actually helpful to humans. Other kinds of bacteria are harmful. Harmful bacteria act as²¹ pathogens in

1. sniffle	v.	抽鼻子	13. microscope	n.	显微镜
2. runny nose		流鼻涕	14. influenza	n.	流行性感冒(缩写为 flu)
3. reach for		(伸手)去够	15. extremely	adv.	极其地; 非常地
4. tissue	n.	纸巾	16. consider	v.	认为
5. communicable disease		传染病	17. organism	n.	生物
6. pathogen	n.	病原体	18. reproduce	v.	繁殖
7. include	v.	包含; 包括	19. invade	v.	侵入
8. virus	n.	病毒	20. cell	n.	细胞
9. bacterium	n. (pl. bacteria)	细菌	21. act as		充当
10. protist	n.	原生生物	22. adenovirus	n.	腺病毒
11. fungus	n. (pl. fungi)	真菌	23. infect	v.	感染
12. parasite	n.	寄生虫	24. malaria	n.	疟疾

the human body and can make us sick. Bacteria are very small and can reproduce quickly. The streptococci¹ bacteria, at right, have been magnified² more than 6,500 times so that they can be seen clearly.

Protists

Many protists do not harm humans, but some are pathogens that can make you ill. In the image³ on the bottom of page 8, the green area pictures a protist invading a red blood cell (dark red area). This protist causes the disease malaria. Mosquitoes⁴ can carry these pathogens. When an infected female⁵ mosquito bites⁶ a person, the protists can move from the mosquito into its victim⁷'s bloodstream⁸. Most cases of malaria occur⁹ in tropical¹⁰ countries.

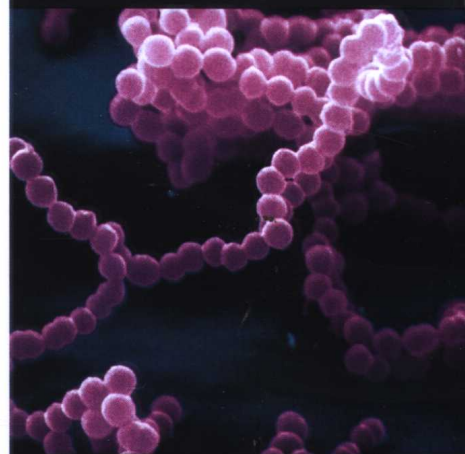
Fungi

Most fungi are either helpful or harmless¹¹ to humans. However, a few act as pathogens. Some of those cause skin infections. If you have ever felt the itch¹² of athlete's foot¹³, you know what a fungus can do.

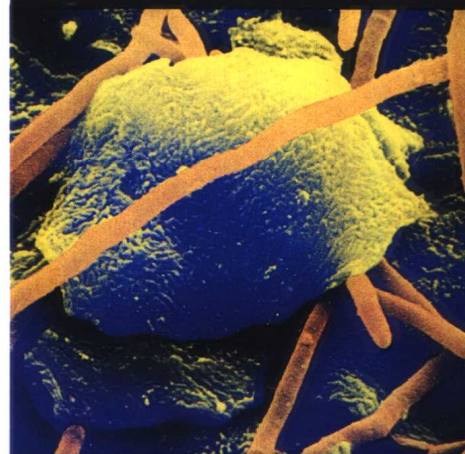
Parasites

Some organisms, called parasites, get their energy by feeding on other living things. The tapeworm¹⁴ in the picture to the right is a parasite. It lives inside a person's intestines¹⁵ where it takes nutrients directly from food the person ate. This parasite is one pathogen that can grow very long. Some tapeworms can measure¹⁶ up to¹⁷ 9 meters (30 feet) long.

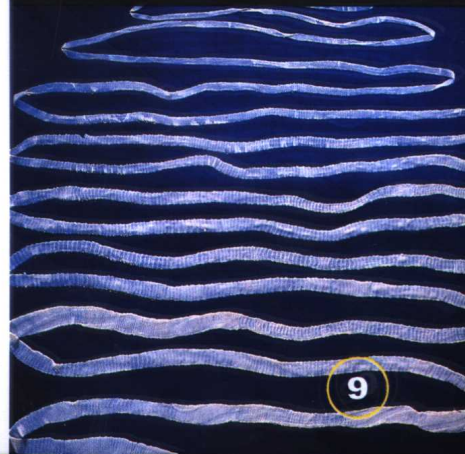
Bacteria that cause strep throat¹⁸



Fungi (orange) that cause skin infections, such as athlete's foot



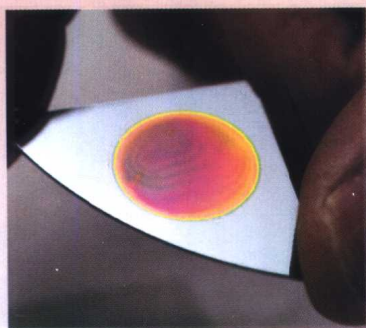
Tapeworm, a parasite that can cause intestinal and other problems



1. streptococcus	<i>n.</i>	(<i>pl. streptococci</i>)	10. tropical	<i>adj.</i>	热带的
		链球菌	11. harmless	<i>adj.</i>	无害的
2. magnify	<i>v.</i>	放大	12. itch	<i>n.</i>	发痒
3. image	<i>n.</i>	图像	13. athlete's foot		脚癣
4. mosquito	<i>n.</i>	蚊子	14. tapeworm	<i>n.</i>	绦虫
5. female	<i>adj.</i>	雌性的	15. intestine	<i>n.</i>	肠
6. bite	<i>v.</i>	咬; 叮	16. measure	<i>v.</i>	测量
7. victim	<i>n.</i>	受害人	17. up to		多达
8. bloodstream	<i>n.</i>	(循环系统的)血流	18. strep throat		脓毒性咽喉炎
9. occur	<i>v.</i>	发生; 出现			

What if... ?

Researchers are working on a "smart⁷ bandage⁸." This bandage will contain a tiny sensor⁹ able to identify¹⁰ germs in a wound. What if you cut yourself? How do you think this bandage would help you avoid an infection?



Natural Defenses

What can you do to protect yourself from these pathogens? Lucky for you, your body has several lines of defense to help you avoid¹ disease. Your body's system of fighting disease is called the immune system². It is hard at work 24 hours a day. You don't even have to think about it to make it work. The immune system's main job is to protect you from communicable diseases. How does your body protect you?

One of your body's best ways of fighting disease is to keep pathogens from ever getting inside your body. The largest organ³ of your body is part of this first line of defense. What is this organ? It's your skin. Most pathogens can't get through⁴ skin unless⁵ the skin is broken. Can you guess why it's important to keep a cut or scrape⁶ clean?

1. avoid	v.	避免
2. immune system		免疫系统
3. organ	n.	器官
4. get through		通过
5. unless	conj.	除非

6. scrape	n.	刮伤; 擦伤
7. smart	adj.	智能的
8. bandage	n.	绷带
9. sensor	n.	传感器
10. identify	v.	认出; 识别

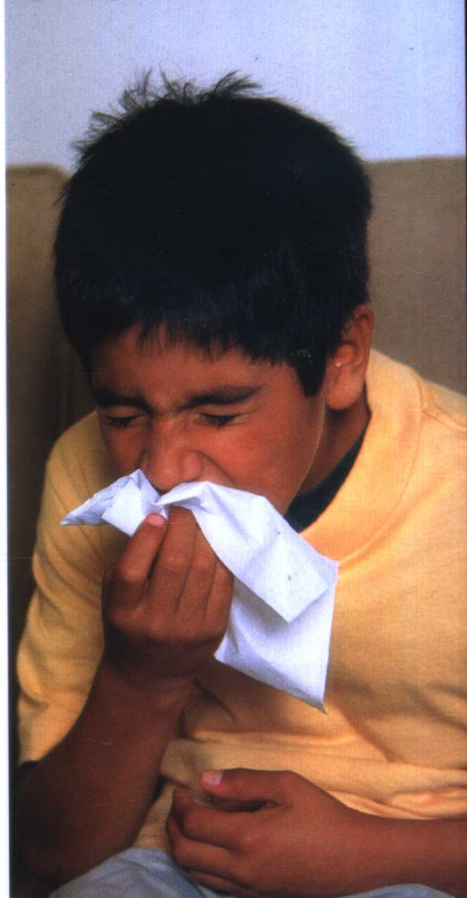
Pathogens also invade your body through other openings, such as your nose and mouth. What does your body do when this happens? Here's a hint¹: "Achoo!" That's right, when you sneeze, your body is helping to protect you.

Just think about a sneeze. You sniff and a chain reaction² begins. Something irritates³ the hairs in your nose. The hairs activate⁴ nerve⁵ cells. The cells send a message to your brain. In a split second⁶, your brain sends an order to your chest muscles⁷ to sneeze. As you "achoo," air speeds out of your body at up to 160 kilometers (100 miles) an hour. Mucus⁸ and germs also fire out of your body as you sneeze.

You barely⁹ have time to think about a sneeze. It is your body's immediate¹⁰ response¹¹ to protect you. The sticky¹² mucus lining¹³ in your nose and throat¹⁴ helps trap¹⁵ pathogens. Then your body gets rid of¹⁶ them when you cough or sneeze.

Tears and saliva¹⁷ are part of your immune system. If dust¹⁸ carries pathogens into your eyes, tears often wash them away. If you eat something with pathogens in it, your saliva can protect you. Saliva, along with¹⁹ the digestive juices²⁰ in the stomach, can kill pathogens.

Your body has many ways to keep pathogens out. Sometimes, however, they manage to get through the first lines of defense. When this happens, pathogens take up²¹ residence²² in your body and make you sick.



1. hint	<i>n.</i>	暗示
2. chain reaction		连锁反应
3. irritate	<i>v.</i>	刺激
4. activate	<i>v.</i>	使活动
5. nerve	<i>n.</i>	神经
6. split second		瞬间
7. muscle	<i>n.</i>	肌肉
8. mucus	<i>n.</i>	黏液
9. barely	<i>adv.</i>	几乎不能
10. immediate	<i>adj.</i>	立即的
11. response	<i>n.</i>	反应

12. sticky	<i>adj.</i>	黏的
13. lining	<i>n.</i>	内层; 衬里
14. throat	<i>n.</i>	嗓子
15. trap	<i>v.</i>	阻止; 抑制
16. get rid of		摆脱
17. saliva	<i>n.</i>	唾液
18. dust	<i>n.</i>	灰尘
19. along with		与……一道
20. digestive juice		消化液
21. take up		占据
22. residence	<i>n.</i>	居住; 住处

Stay Tuned!

Does chicken soup cure¹⁷ a cold? Medical research says probably not. However, eating chicken soup seems to make people feel better. So maybe it's worth a bowl or two. Researchers are still working on a cure for the common cold. Stay tuned to see what happens!



Attacking the Pathogens

Don't think the fight is over when you get sick. In fact, the battle in your body is probably just beginning. When pathogens find their way into your body, white blood cells come to the rescue¹. The lymphatic system² helps produce and move these cells throughout your body. The vessels³ that make up the lymphatic system carry a clear fluid⁴ called lymph⁵. This fluid has seeped⁶ out of blood vessels and contains many white blood cells.

To see how white blood cells defend the body, let's look at what happens when you catch a cold. When a cold virus successfully invades your nose, chemicals are released⁷ to tell your body something is wrong. This starts a chain of⁸ events⁹ that brings many white blood cells to the scene to destroy the viruses.

As white blood cells move from the lymph system to the area where the virus was found, the lining of your nose often swells¹⁰. More mucus is produced. This makes it harder for you to breathe. You get a stuffed-up¹¹ feeling. The good news about all that discomfort is that it means your immune system is hard at work.

What are some other signs¹² that show your body is fighting the cold virus?

The lymphatic system is a body system that helps us fight disease. This network¹³ is made up of nodes¹⁴, small vessels, and organs, such as the spleen¹⁵ and tonsils¹⁶ (not shown).

1. rescue	<i>n.</i>	援救; 营救
2. lymphatic system		淋巴系统
3. vessel	<i>n.</i>	管; 脉管
4. fluid	<i>n.</i>	流质; 液体
5. lymph	<i>n.</i>	淋巴液
6. seep	<i>v.</i>	渗出
7. release	<i>v.</i>	释放
8. a chain of		一系列; 一连串
9. event	<i>n.</i>	事件

10. swell	<i>v.</i>	肿
11. stuff up	<i>v.</i>	把……塞(堵)起来
12. sign	<i>n.</i>	迹象; 征兆
13. network	<i>n.</i>	网络
14. node	<i>n.</i>	结
15. spleen	<i>n.</i>	脾
16. tonsil	<i>n.</i>	扁桃体; 扁桃腺
17. cure	<i>v.</i>	治愈

Lymphatic System



Antibodies¹ and Immunity²

Your body reacts³ to pathogens in many different ways. Specialized⁴ white blood cells are able to recognize⁵ different types of pathogens. They produce chemicals that fight them. Sometimes certain white blood cells produce antibodies. The antibodies attach⁶ themselves to specific⁷ pathogens and weaken⁸ them. As the number of antibodies increases, the pathogens become targets⁹ for white blood cells to destroy.

Have you ever had chicken pox¹⁰? If so, you've probably gotten it only once. Why? It's because your immune system has memory¹¹ cells. If you are infected with the chicken pox virus again, your immune system recognizes the pathogen. Then your immune system can quickly make antibodies to protect you. These antibodies give you immunity, or resistance¹², to protect you from getting sick again.

So if antibodies protect you, why do you keep getting sick with colds year after year¹³? Your body may have produced antibodies against particular¹⁴ cold viruses. But there are hundreds of different types of viruses that cause the common cold. You don't have antibodies against them all. So every time a new type infects your body, you get sick and you produce new antibodies against that particular type of virus. Another problem is that a cold virus can change to form new kinds of viruses. So the immune system has to keep working to produce new kinds of antibodies against whatever¹⁵ pathogens show up¹⁶.

The young woman in the pink T-shirt carried a measles¹⁷ virus to her college campus¹⁸. All of the college students in the picture got sick from it. The good news is that now they probably all have immunity against the measles virus.

1. antibody	<i>n.</i>	抗体
2. immunity	<i>n.</i>	免疫力
3. react	<i>v.</i>	起反应
4. specialized	<i>adj.</i>	专门的
5. recognize	<i>v.</i>	认识; 识别
6. attach	<i>v.</i>	附着
7. specific	<i>adj.</i>	特定的
8. weaken	<i>v.</i>	削弱
9. target	<i>n.</i>	目标; 对象

10. chicken pox		水痘
11. memory	<i>n.</i>	记忆
12. resistance	<i>n.</i>	抵抗力; 抗病性
13. year after year		年年; 每年
14. particular	<i>adj.</i>	特殊的
15. whatever	<i>adj.</i>	无论怎样的
16. show up		出现
17. measles	<i>n.</i>	麻疹
18. campus	<i>n.</i>	校园