ANTIBIOTICS

Antibiotics block the life cycle of bacteria that invade the human body. The first of these antibiotics, penicillin, works by blocking the molecules that construct the cell walls of particular bacteria. The bacteria, with incomplete cell walls, are not able to reproduce.

When penicillin was introduced during World War II, it was truly a "miracle drug." Until that time, anyone who was cut or wounded stood a great risk of infection. Once penicillin became available, the situation changed. Wounded soldiers, children with ear infections, and many others began to benefit from the ability to block the growth of bacteria.

While humanity may have won that particular battle against bacteria, the war is far from over. The reason is that in any bacterial population, there are bound to be a few bacteria that, for one reason or another, are not affected by a particular antibiotic. For example, they may have a slightly differently shaped enzyme that builds cell walls, so that penicillin will not fit onto that particular shape of the enzyme. These bacteria will not be affected by that particular drug.

For that small group, the antibiotic is a real godsend. It doesn't affect **them**, but it does wipe out all of their competition. They are thus free to multiply, and, overtime, all of the bacteria will have whatever properties that made those individuals resistant.

Traditionally, medical scientists have dealt with this phenomenon by developing a large number of antibiotics, each of which intervenes in the bacterial life cycle in a slightly different way.

Consequently, if you happen to have a bacterium that is resistant to one antibiotic, probably it will succumb to the action of another. You may, in fact, have had the experience of going to a doctor with an infection, being given an antibiotic, and then finding that it didn't work. In all likelihood, all your doctor had to do then was prescribe a different antibiotic and everything was fine.

The problem is that as time has passed, more and more bacteria have become resistant to antibiotics. In fact, currently, there is one strain of bacteria- Staphylococcus-that is resistant to every commercially available antibiotic except one, and in 1996, a bacterium with lowered resistance to that last antibiotic appeared in Japan.

The appearance of drug-resistant bacteria is not particularly surprising; in fact, it probably should have been **anticipated**. Nevertheless, in the late 1980s, there was a general sense of **complacency** among scientists on the antibiotic question. Little profit was to be made by developing the one-hundred-and-first antibiotic. Drug companies concentrated their efforts on other areas. Therefore, a gap developed between the production of new antibiotics and the development of resistance among bacteria.

By the early 1990s, this gap was recognized and highlighted in several national news magazines. More companies returned to develop new kinds of antibiotics, and currently, a number are undergoing clinical trials. By early in the twenty-first century, some of these new drugs will start to come on the market, and the problem will be "solved," at least for the moment.
Additional research will focus on the processes by which cells repair the constant damage to DNA, but the computer design of new drugs, the development of new antibiotics, and techniques to combat bacteria should remain a top priority.

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Question 31 How do antibiotics treat infections?
A. They interfere with the reproductive cycle of bacteria.
B. They construct cell walls to resist bacteria.
C. They inject enzymes that explode in affected cells.
D. They increase the mitosis of healthy cells

Question 32 Which of the sentences below best expresses the information in the highlighted statement in the passage?
A. Some antibiotics affect a population of bacteria more efficiently than others.
B. There are several reasons why some bacteria do not respond to most antibiotics.
C. The effect of antibiotics on bacteria is to bind them together into one population.
D. A small number of bacteria in any sample will probably be resistant to a specific antibiotic.

Question 33 According to paragraph 3 and 4, why do some bacteria benefit from antibiotics?
A. The antibiotic eliminates competing bacteria, allowing resistant bacteria to reproduce.
B. The resistant bacteria compete with the antibiotic, and the bacteria become stronger.
C. The competition helps the resistant bacteria to multiply by reproducing with the resistant type.
D. The properties of the antibiotic are acquired by the bacteria, making it resistant to the competition.

Question 34 The word "**them**" in the passage refers to _____.
A. whatever properties
B. resistant bacteria
C. their competition
D. those individuals

Question 35 The word "**anticipated**" in the passage is closest in meaning to _____.
A. predicted
B. concealed
C. investigated
D. disregarded

Question 36 The word "**complacency**" in the passage is closest in meaning to _____.
A. consensus of agreement
B. fear of consequences
C. lack of concern
D. awareness of potential

Question 37 It can be inferred that _____.
A. research to develop new antibiotics will not be necessary in the future
B. the scientific community was not surprised by the resistant strains of bacteria
C. antibiotics are not very expensive when they are made available commercially
D. it takes years for a new drug to be made available commercially for consumers

Question 38 The author mentions all of the following reasons for drug resistant bacteria to appear EXCEPT _____.
A. There was not enough profit incentive for companies to continue developing new antibiotics

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B. Statistically, some drug-resistant bacteria will occur naturally in any large population of bacteria
C. The newer antibiotics were not as strong and effective as the original penicillin-based drugs
D. Competing bacteria are destroyed by antibiotics, allowing resistant bacteria to prosper.

Question 39 Which of the following statements is NOT a main idea of the passage?
A. Many strains of bacteria have become resistant to the antibiotics currently available.
B. Funding for the production of new antibiotics has been allocated to drug companies.
C. The first antibiotics were very effective in blocking the reproduction of bacteria.
D. New antibiotics are being developed to combat bacteria that resist the older antibiotics

Question 40 Which of the following best expresses the main idea of this passage?
A. The "miracle drug" penicillin
B. Drug-resistant bacteria
C. Staphylococcus infections
D. Gene therapy treatments

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