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| 1. | Which disease is correctly paired with the cause of the disease?  |
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| **A.** | athlete’s foot - fungi  |

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| **B.** | malaria - viruses  |

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| **C.** | influenza - bacteria  |

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| **D.** | pneumonia - protists  |

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| 2. | Which **best** contrasts a bacterium and a virus? |
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| **A.** | A bacterium can reproduce, whereas a virus will not reproduce. |

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| **B.** | A bacterium does not live in living things, whereas a virus does. |

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| **C.** | A bacterium is a one-celled living organism, whereas a virus is a nonliving organism. |

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| 3. | A tapeworm lives in the intestines of its host. Which example ***best*** describes the relationship between the tapeworm and its host? |
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| **A.** | The tapeworm benefits from its host; however, the host is not affected. |

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| **B.** | The tapeworm does not benefit from its host, but the host does benefit. |

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| **C.** | The tapeworm benefits from its host, and the host is negatively affected. |

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| 4. | How does biotechnology ***most*** benefit the economy of North Carolina? |
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| **A.** | creation of jobs |

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| **B.** | creation of hybrid plants |

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| **C.** | creation of new medicines |

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| **D.** | creation of transgenic species |

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| 5. | Which is a benefit of genetically modified foods?  |
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| **A.** | The cost of research is included in the cost to the consumer. |

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| **B.** | The cost of food will decrease, and the quality of food will increase. |

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| **C.** | When foods are genetically modified, they no longer need to be studied.  |

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| **D.** | When foods are genetically modified, they are completely resistant to disease and drought. |

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| 6. | Which **best** describes a controversial issue associated with the use of genetically modified crops? |
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| **A.** | the use of genetically modified crops to increase potential yield |

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| **B.** | the short-term use of genetically modified crops in famine-stricken countries |

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| **C.** | the development of genetically modified crops which are resistant to herbicides |

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| **D.** | the long-term effects which may arise from the use of genetically modified crops |

 |
| 7. | North Carolina has over 400 biotechnology companies. How would the economy ***most likely*** change if that number were reduced by half?  |
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| **A.** | The economy would decline because of job loss.  |

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| **B.** | The economy would suffer as funding for research decreases.  |

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| **C.** | The economy would increase due to an increase in production. |

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| **D.** | The economy would improve when the government offers assistance.  |

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| 8. | A doctor prescribed an antibiotic to treat an illness. Which type of illness did the doctor ***most likely*** treat? |
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| **A.** | cancer |

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| **B.** | heart disease |

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| **C.** | viral infection |

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| **D.** | bacterial infection |

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| 9. | Which application of biotechnology is of greatest economic benefit to North Carolina?  |
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| **A.** | development of livestock that are more domesticated |

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| **B.** | development of livestock that produce higher quality meat |

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| **C.** | development of crops that can be grown in extremely dry environments |

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| **D.** | development of crops that can be grown in extremely low temperature |

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| 10. | Why is the prevention of epidemics usually easier than the prevention of a pandemic? |
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| **A.** | The diseases in an epidemic are less severe than in a pandemic. |

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| **B.** | Diseases causing pandemics are more contagious than diseases in an epidemic. |

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| **C.** | Affected individuals in epidemics are usually more concentrated in one area than in pandemics. |

 |
| 11**.** | DNA analysis performed by a forensic scientist on blood found at a crime scene is compared to the DNA analysis of four suspects as shownbelowWhich suspect was **most likely** present at the crime scene?  |
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| **A.** | Suspect A |

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| **B.** | Suspect B |

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|  **C.** |  Suspect C |

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| **D.** | Suspect D |

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| 12. | Juan’s doctor diagnoses him with a virus, then writes a prescription for a medication. What type of medication did the doctor probably give Juan? |
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| **A.** | anti-viral |

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| **B.** | antibiotic |

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| **C.** | anti-bacterial |

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| 13. | Which ***best*** compares an epidemic and a pandemic? |
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| **A.** | An epidemic is caused by bacteria, while a pandemic is caused by viruses. |

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| **B.** | A pandemic is spread by humans, while an epidemic is spread by insects and rodents. |

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| **C.** | A pandemic occurs in a small region, while an epidemic occurs in a much larger region. |

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| **D.** | An epidemic affects a small population of humans, while a pandemic affects a large population of humans. |

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| 14. | Which condition must be fulfilled in order for a virus to reproduce?  |
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| **A.** | A virus must have completed internal replication of its DNA.  |

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| **B.** | A virus must be absorbed by a living cell.  |

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| **C.** | A virus must store a surplus of tRNA and amino acids.  |

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| **D.** | A virus must have taken over the protein production resources of a cell.  |

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| 15. | Which is the easiest way for a person to prevent microbial infections? |
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| **A.** | Avoid contact with animals. |

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| **B.** | Isolate themselves at home. |

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| **C.** | Sterilize everything in the home. |

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| **D.** | Wash hands frequently with hot water and soap. |

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| 16. | Diseases that can be transmitted between organisms are  |
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| **A.** | infectious.  |

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| **B.** | inherited.  |

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| **C.** | environmental.  |

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| **D.** | congenital.  |

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| 17. | Which are ***most closely*** related to biotechnology?  |
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| **A.** | medicine and agriculture |

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| **B.** | construction and engineering |

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| **C.** | water treatment and electricity generation |

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| **D.** | communication and information technology  |

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| 18. | Which is the ***most useful*** change made to crops using applications of biotechnology? |
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| **A.** | Crops use more nutrients. |

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| **B.** | Crops need more fertilizer. |

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| **C.** | Crops resist more diseases. |

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| **D.** | Crops take more time to grow. |

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| 19. | Which action would ***most quickly*** reduce the spread of an infectious disease? |
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| **A.** | isolating all carriers |

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| **B.** | improving sanitary conditions |

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| **C.** | restricting population growth of the vector |

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| **D.** | increasing the population density of humans in the area |

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| 20. | Which person would benefit ***most*** from biotechnology?  |
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| **A.** | a cook |

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| **B.** | a farmer |

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| **C.** | an architect |

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| **D.** | an automobile engineer |

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| 21. | Which area of biotechnology would **most likely** create ethical issues within human society? |
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| **A.** | insulin production by bacteria |

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| **B.** | organ cloning for use in transplants |

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| **C.** | genetic engineering to improve agricultural yields |

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| **D.** | DNA and forensic testing of crime scene evidence |

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| 22. | Which characteristic makes it easy to spread, but difficult to treat and prevent certain fungal infections? |
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| **A.** | Fungi are multicellular. |

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| **B.** | Fungi are heterotrophic. |

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| **C.** | Fungi reproduce by spores. |

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| **D.** | Fungi grow in dry environments. |

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| 23. Which aspect of modern life could most likely cause an epidemic to turn into a  pandemic?  |
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| **A.** | vaccination  |

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| **B.** | transportation  |

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| **C.** | communication  |

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| **D.** | sanitation  |

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| 24. | After World War I, an outbreak of the Spanish Flu killed 50 million to 100 million people around the world. Which **best** describes this occurrence? |
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| **A.** | Epidemic, because it happened within a relatively short time span. |

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| **B.** | Epidemic, because it affected many individuals in multiple countries. |

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| --- | --- |
| **C.** | Pandemic, because it happened within a relatively short time span. |

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| **D.** | Pandemic, because it affected many individuals in multiple countries. |

 |
| 25. | How are quarantines used to slow the spread of an epidemic? |
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| **A.** | Quarantines prevent individuals from eating food that is potentially contaminated. |

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| **B.** | Quarantines allow enough time for antibiotics to take effect in infected individuals. |

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| **C.** | Quarantines keep infected individuals separate so they cannot pass the disease to others. |

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| **D.** | Quarantines keep people inside their homes so that family members can provide care for each other. |

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| 26. | Which organisms require a host cell to reproduce? |
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| **A.** | protozoan |

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| **B.** | bacteria |

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| --- | --- |
| **C.** | viruses |

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| 27. | Which contagion is correctly matched to the disease it causes?  |
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| **A.** | polio - virus |

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| **B.** | rabies - fungus |

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| **C.** | influenza - parasite |

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| **D.** | chicken pox - bacteria |

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| 28. |  Millions of people living all over the world have cancer. Is cancer a  pandemic?  |
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| **A.** | No, because cancer is not contagious.  |

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| **B.** | No, because cancer is not always fatal.  |

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| **C.** | Yes, because millions of people have cancer.  |

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| **D.** | Yes, because people all over the world have cancer.   |

 |
| 29. | Which career field is ***most closely*** related to biotechnology? |
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| **A.** | medicine |

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| **B.** | journalism |

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| **C.** | meteorology |

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| **D.** | political science |

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| 30. | Which situation would ***most*** favor the spread of infectious disease?  |
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| **A.** | overcrowding |

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| **B.** | use of vaccines |

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| **C.** | small population  |

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| **D.** | sanitary conditions |

 |
| 31. | Many countries in the world eat a diet consisting mostly of rice which is filling but is often low in nutritional value. Which one of these biotechnologies could be used to create a more nutritional rice? |
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| **A.** | genetic modification of current rice plants |

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| **B.** | selective breeding of current rice plants |

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| **C.** | cloning of current rice plants |

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| 32**.** | Bacteria cells can be used to produce insulin for the treatment of diabetes in humans. Which **best** explains how the bacteria cells are able to produce insulin for humans? |
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| **A.** | The bacteria have been grown on a petri dish containing insulin. |

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| **B.** | The bacteria have been genetically engineered to contain the DNA needed to produce insulin. |

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| **C.** | The bacteria have been exposed to radioactivity to create mutant strains capable of producing insulin. |

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| **D.** | The bacteria have been grown on a petri dish containing sugar; the bacteria produce insulin in response to the sugar. |

 |
| 33. | Which is a benefit of storing the genetic information of people who have previously committed a serious crime? |
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| **A.** | Offenders will be easier for potential victims to identify since their genetic information is on file. |

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| **B.** | Offenders can be genetically profiled to determine which type of crime they will commit in the future. |

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| **C.** | Offenders can be more easily identified by their genetic information if they commit a crime in the future. |

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| **D.** | Offenders can have their genetic information altered so that they are less likely to commit crimes in the future. |

 |
| 34. | A mosquito can spread the West Nile Virus but remains unaffected by the disease. Which **best** describes the mosquito? |
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| **A.** | vector |

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| **B.** | parasite |

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| --- | --- |
| **C.** | mutagen |

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| --- | --- |
| **D.** | pathogen |

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