The Plague!

A Reading A–Z Level Z1 Leveled Book
Word Count: 1,883

Connections

Writing

Research to learn more about Alexander Fleming or another scientist who discovered a medicine that helped stop the spread of disease. Write a biography to share with your class.

Social Studies

Research to learn more about the Renaissance and the rebirth of Europe after the plague. Design a poster to share your findings with your class.

LEVELED BOOK • Z[1]

The Plague!

MULTI LEVEL W•Z•Z[0]

Written by Sean McCollum
Illustrated by Loic Derrien

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Focus Question

What was the impact of the Black Death on Europe's history?

Words to Know

bacteria	immune system
contagion	infect
digestive	microbe
DNA	sanitation
exotic	symptoms
hygiene	viruses

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Correlation

LEVEL Z1	
Fountas & Pinnell	W–X
Reading Recovery	N/A
DRA	60

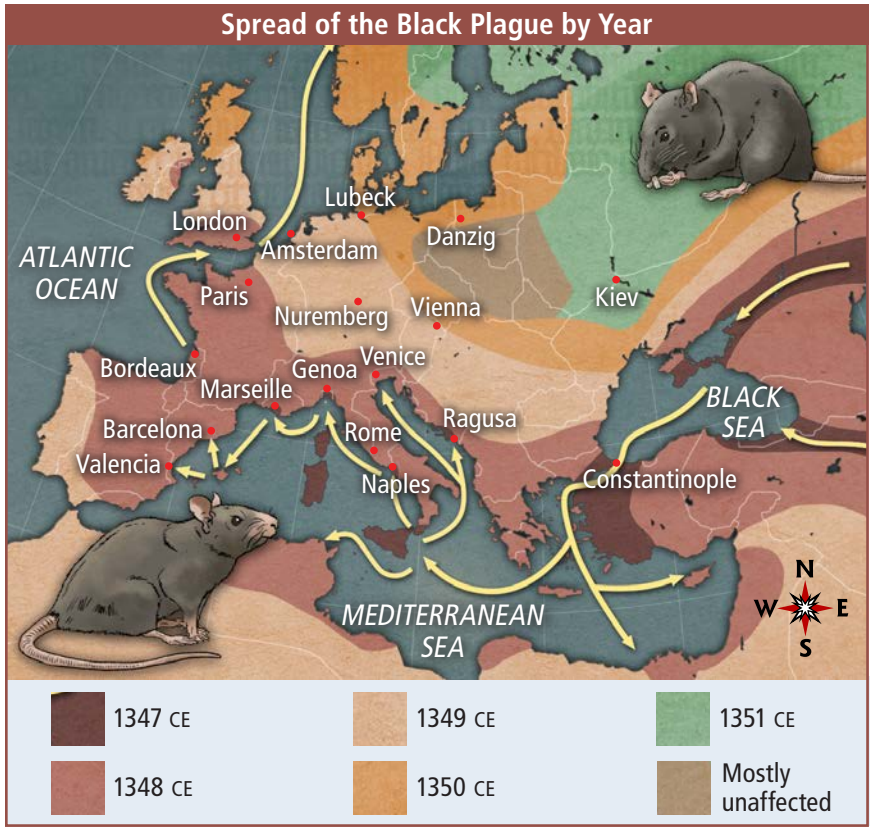


Table of Contents

The Plague Ships

The scene and smell must have been staggering. In October 1347, a dozen trading ships sailed into the port of Messina, Sicily—part of modern-day Italy. The vessels had made the long voyage across the Black Sea. The arrival of the ships likely caused excitement around the docks, as ships such as these often carried news and **exotic** goods from the East.

Those who greeted them, though, got the shock of their lives—and perhaps the cause of their deaths. Most of the crew aboard the ships were already dead. The sailors working the ropes and sails were in agony, oozing pus and blood from black boils on their skin. The citizens of Messina had heard rumors of a terrible disease spreading in Asia. These ships and sailors brought a deadly, invisible cargo to Europe—the plague.

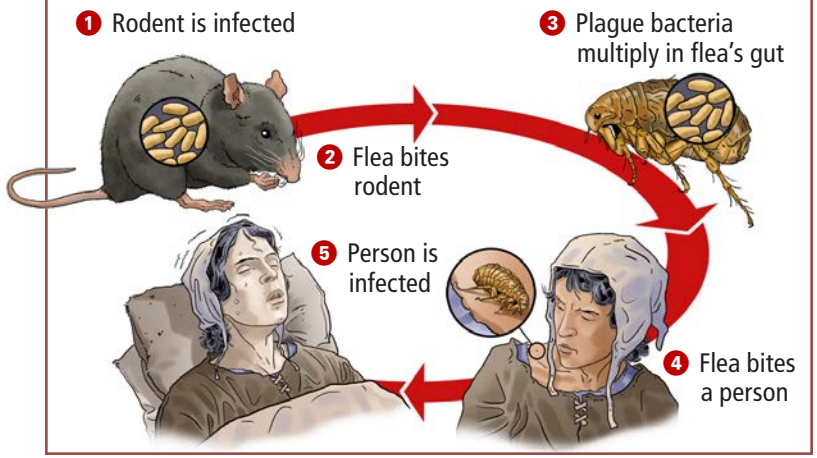
This outbreak of plague, later called the Black Death, rapidly spread across Europe and North Africa. Strangers unknowingly passed it to strangers, friends brought it to friends, and ships carried it to unsuspecting ports where it found fresh victims. It left tens of millions of people dead. Rich or poor, royalty or peasantry—none were safe. It was one of the worst outbreaks of disease in history.

The Fleas of Disease

In the 1300s, no one had yet made the connection between germs and illness. The idea that **bacteria** or **viruses** could cause a cold, the flu, or other sickness was unknown.

No one had made the connection between the plague and fleas, either. It was not until 1894—almost 550 years later—that scientists identified the likely culprit: a bacterium called *Yersinia pestis.* These bacteria get into the **digestive** tract of a species of flea that feeds primarily on the blood of black rats and other rodents. Many historians believe the bacteria began killing off rodent colonies that they normally lived in. The fleas were then forced to go looking for other warm-blooded creatures to feed on, including humans.

How Rats and Fleas Helped Spread the Plague



The poor public **sanitation** and human **hygiene** of the 1300s did not help. Especially in overcrowded cities, human waste and garbage were often dumped in the streets. Bugs were regular houseguests, and getting bitten by fleas and other pests was an unpleasant fact of life.

Not all researchers are convinced that fleas were the only source of the Black Death or even the main one. Many other diseases were capable of causing deadly outbreaks, including cholera and typhus. Some researchers argue that the outbreak in 1347 spread too fast and killed too quickly to be *Yersinia pestis.* They wonder if the Black Death might actually have been a deadlier **microbe** they have yet to identify. However, *Yersinia pestis* remains the leading suspect, based on descriptions of the **symptoms** by people of the time. Archaeologists have also found the **DNA** of these bacteria in mass burial sites from the mid-1300s.

What seems clear is that humans began passing this deadly disease to each other directly. A person's pus, blood, or saliva could **infect** others it touched. A simple cough or handshake could transmit the sickness to the next victim. Once human-to-human contact began spreading the disease, it became all but unstoppable.

Death Stalks Europe

At the time, there was no effective treatment for a disease as serious as the plague. Once a person was infected, the bacteria took three to five days to reveal themselves. As the illness ran its course, victims experienced headaches, fever, chills, diarrhea, vomiting, swelling, and intense pain. They might die quickly or live another three to five days, but historians estimate that only one in five people who got the symptoms survived.

Part of what made the plague so deadly was that it could come in different forms. In bubonic plague, *Yersinia pestis* bacteria first attack the lymph nodes in the neck, groin, and underarms. Lymph nodes are vital organs of the **immune system** that allow the body to battle disease. In response to the attack, the lymph nodes swell and blacken with poisoned blood and pus, becoming boils called *buboes.* The infected blood and other fluids eventually poison and kill the victim.

The Black Death also seems to have taken the form of pneumonic plague. Victims of pneumonic plague do not develop buboes; instead, bacteria attack their lungs, causing them to bleed heavily, or hemorrhage.

Pneumonic plague can also spread through tiny drops of blood or saliva that become airborne when infected people cough. Some experts wonder if this is the form that allowed the Black Death to spread as rapidly as it did.

People infected with bubonic or pneumonic plague could also develop septicemic (sep-teh-SEE-mik) plague when bacteria multiplied in their blood. This form of plague would poison the victim's bloodstream and was almost always fatal.

By 1348, the Black Death was spreading across Europe. Travelers, traders, and trading ships carried it to new areas. It often took weeks before an infected village, town, or city knew something was horribly wrong. By then, it was too late to do anything about it. By 1351, there was hardly a corner of Europe that the Black Death had not reached.

Filthy and crowded medieval towns allowed the plague to spread very quickly.

Panic and a Prayer

Once people realized that plague had reached their community, many panicked. Terrified families abandoned sick loved ones. Shopkeepers shut their doors. Doctors, clergy, and officials fled the places and people they served. City folk escaped to the countryside, thinking it would be safer there. By fleeing, though, they often helped spread the disease.

Because no one understood the causes of the Black Death, few people had effective ideas about how to fight or control it. Desperate people tried useless cures like strapping a skinned chicken to the buboes or drinking potions made from "unicorn horn" that swindlers sold. Others burned incense or wore flowers to purify the air.

Many people turned to their faith in hope of rescue. Bands of Christians called "flagellants" walked from town to town, bloodying their backs with spiked whips. They prayed this would prove to God that they were sorry for their sins and that they would be forgiven and spared.

Other Europeans took a very different attitude toward their fate. With so much disease and death around them, some gave up hope of survival. They ate, drank, and partied as if the world were ending, and some were sure it was.

In many areas, Christian groups wrongly blamed Jews for causing the plague. Many Jewish communities were attacked and their people driven off or killed. The head of the Catholic Church, Pope Clement VI, issued a declaration making it clear that Jews were not at fault and should not be victimized. During the mid-1300s, though, more than two hundred Jewish communities were wiped from the map of Europe.

A few cities instead used common sense to try to control the disease. Port cities soon realized that visiting ships were a source of **contagion** and began to block those that came from plague-infected areas. Some port authorities imposed regulations requiring ships to wait forty days before being allowed to dock. The waiting period, or quarantine, was meant to confirm that the ship's crew were plague-free before allowing them to come in contact with local residents.

Leaders in some areas also figured out that stopping the movement of people was the best hope of slowing the spread of the disease. Infected families were blocked from leaving their houses. Officials set limits on travel and trade to and from their cities. Work crews hurried to get victims buried as soon as possible, often in mass graves, for fear that their corpses could infect others.

The Aftermath

Imagine half the people of your town or city gone, shops closed, stores empty of food. That was the experience of many of the people who survived the worst period of the Black Death, from 1347 to 1353.

Record-keeping in medieval Europe was spotty, so historians can only estimate the death count. There were about eighty million Europeans before the Black Death struck. Experts calculate that an astonishing 40 to 60 percent of those people died, though the death rate varied greatly by location. In Spain and southern France, the plague may have killed 75 to 80 percent of the population. In Germany and England, the rate may have been closer to 20 percent. Cities were usually the hardest hit, as the disease spread easily in crowded, dirty neighborhoods. Nearly 60 percent of Londoners died, as well as half the residents of Paris.

After 1351, the outbreak eased for reasons scholars are still investigating. Survivors may have built up immunity to the disease, or the bacteria may have changed into a less deadly form. Plague outbreaks happened again and again for the next five hundred years. None, though, ever matched the devastation of the Black Death.

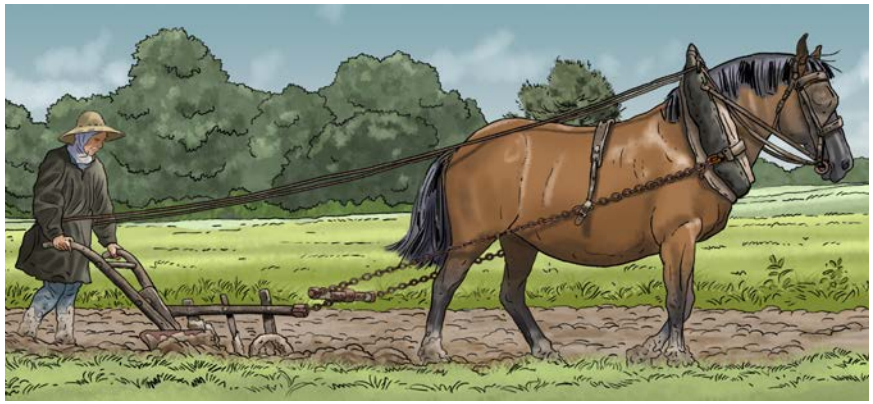
Europe was left a very different world after the mid-1300s. One result was a massive shortage of workers. The absence of skilled artisans and laborers caused a crisis in manufacturing. Workers were able to demand better pay and treatment.

Without enough peasants to work the fields, crops were left unplanted or unharvested. Livestock died from the plague or from a lack of tending. As a consequence, Europeans suffered widespread food shortages and starvation.

Peasants now had more bargaining power, however. Some moved from their home villages to where they were offered better opportunities.

The aftermath of the Black Death had a big impact on survivors' views about society and the meaning of life as well. Many questioned their belief in religion and the church. Some challenged their leaders, lords, and kings. The authority of powerful individuals had proven useless in protecting the people they controlled and ruled.

There were many examples of important progress in post-plague Europe. Agriculture improved as farmers experimented with better practices and equipment to grow more food with fewer hands. Public health and medicine also saw positive changes as more communities recognized the importance of sanitation and put in place better ways to limit and treat disease outbreaks.



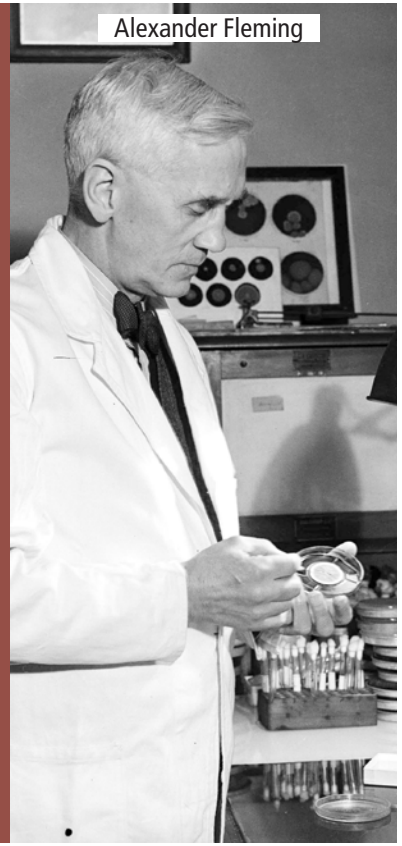
The invention of the heavy plow helped end food shortages following the plague years. It allowed farmers to till fields much faster by using horses rather than oxen to pull the plow.

Rebirth

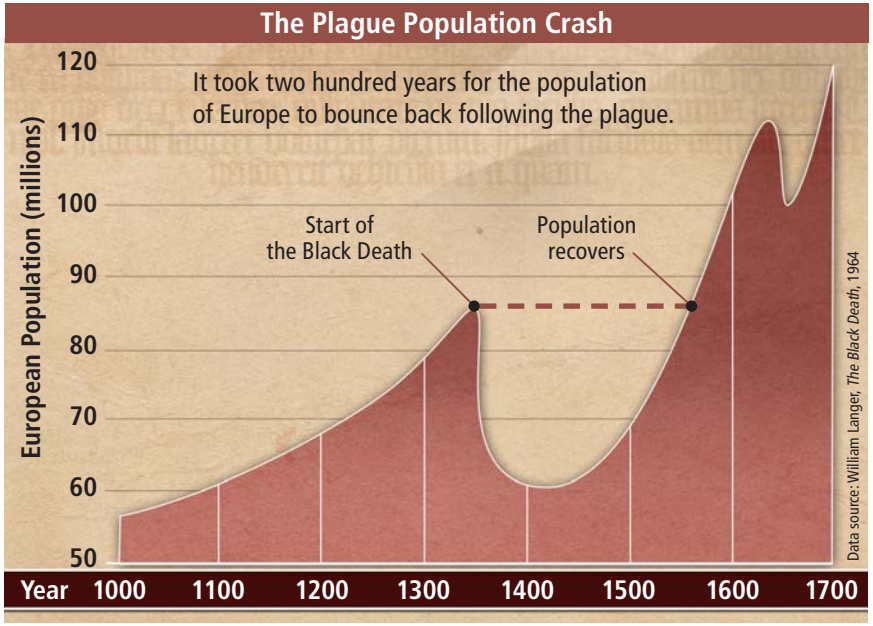
Modern science and medical care have made another outbreak of the Black Death all but impossible. Plague bacteria are still out there living in the fleas of some rodent colonies. However, antibiotics—medicines designed to kill harmful microbes in the body—can quickly stop most cases. Modern sanitation and public health programs also help control the spread of most forms of disease.

Antibiotics: The Miracle Drug

Antibiotics are a recent development in human history. Before the mid-1800s, some healers recognized that certain plant molds and other fungi attacked bacteria. In the 1800s, more research led to a better understanding of the link between microbes and disease. Then in the 1920s, Scottish biologist Alexander Fleming accidentally discovered a plant mold that destroyed a dangerous form of bacteria. Out of his research came the wonder drug penicillin, which is capable of killing many forms of bacterial infection. Fleming was awarded the Nobel Prize in Medicine in 1945 for his breakthrough work.



Alexander Fleming



In the mid-1300s, the mystery and horror of the Black Death terrorized many Europeans into believing the end of the world was upon them. In terms of death rates, it remains the most destructive event in European history.

At the same time, some historians link the ruin it caused with the Renaissance period, which soon followed. Lasting from the late 1300s until the 1600s, the Renaissance was a huge cultural shift in Europe. It inspired great advancements in medicine, science, art, and philosophy. *Renaissance* means "rebirth" in French, and after the horror of the Black Death, a period of rebirth was precisely what Europe needed.

Glossary

bacteria *(n.)* small one-celled organisms that sometimes cause infections and disease (p. 5)

contagion *(n.)* an illness spread through direct or indirect contact or the process by which such an illness is spread (p. 10)

digestive *(adj.)* of or relating to the action of breaking down food for use by the body (p. 5)

DNA *(n.)* a code that carries genetic information about a living thing; abbreviation of deoxyribonucleic acid (p. 6)

exotic *(adj.)* different because of a mysterious or unusual quality; from another country or a faraway place (p. 4)

hygiene *(n.)* cleanliness for the purpose of staying healthy (p. 6)

immune system *(n.)* a system that moves antibodies through the body to fight infection (p. 7)

infect *(v.)* to spread a disease-causing organism to another person, animal, or plant (p. 6)

microbe *(n.)* a microscopic organism (p. 6)

sanitation *(n.)* the act, process, or facilities used to keep a place clean or remove waste (p. 6)

symptoms *(n.)* specific signs of illness or injury (p. 6)

viruses *(n.)* microscopic organisms that infect the body; diseases caused by a virus (p. 5)