

Extra Life: A Short History of Living Longer

Episode 3 - Drugs

Penicillin and Medical Drugs



In the third episode of *Extra Life*, science writer Steven Johnson and historian David Olusoga discuss advancements in medicine and how the development of different drugs have completely altered the trajectory of human life expectancy over the last century. They have a particular focus on the origins of penicillin: the accidental discovery of an antibiotic mold by Alexander Fleming, and the first clinical trials of the drug carried out by a team of scientists led by Howard Florey during World War II.

Warm-up:

Brainstorm responses to the following questions:

1. How often do you hear about diseases on the news?
2. What are some diseases you are most familiar with?
3. Are there any medicines used to treat these diseases? Do you know what they are?
4. What is an antibiotic?
5. What is the difference between bacteria and a virus?

For more curricular materials connected to *Extra Life* and “The Living Century” by Steven Johnson, visit www.pulitzercenter.org/extralife.

Key Vocabulary
[Life expectancy](#)
[Medical drug](#)
[Penicillin](#)
[Antibiotics](#)

 Alexander [Fleming](#)
[Petri dish](#)
[Septicemia](#)
[Bacterial infection](#)
[Howard Florey](#)
[Pathology](#)
[In vivo](#)
[Staphylococcus](#)
[Viral infection](#)

Introducing the Videos: [Extra Life | Episode 3: Penicillin](#) and [Extra Life | Episode 3: Medical Drugs](#)

In these video clips, David Olusoga speaks about Alexander Fleming’s firsthand experience witnessing the effects of bacterial infection in soldiers during World War I. This understanding of the deadliness of bacterial infection was followed by Fleming’s accidental discovery of penicillin, when mold developed on an uncovered petri dish of staphylococcus bacteria on Fleming’s desk. Olusoga also delves into the first clinical trials of penicillin, speaking to work done by Howard Florey and a team of scientists in the U.K. during World War II. Steven Johnson also contextualizes the penicillin story within World War II, and speaks to the successful development of penicillin that could be used to treat bacterial infections in humans as the dawn of the “antibiotic age.”

Watch the “Penicillin” clip (three minutes and 37 seconds) and the “Medical Drugs” clip (five minutes and 14 seconds), and then answer the comprehension questions below.

Comprehension Questions:

Why does the story of Alexander Fleming “give hope to anyone with an untidy desk?”	
What landed on one of Fleming’s uncovered petri dishes?	

What effect did the penicillin mold have on the staphylococcus bacteria?	
Why did scientists smear penicillin producing mold on the insides of their coats?	
Why did Howard Florey and his team travel to the United States to continue their work on penicillin?	
How did life expectancy change following the antibiotic age?	

Discussion Questions:

1. What is something new you learned from the video clips?
2. How is the story of penicillin similar to the development of the COVID-19 vaccine? How is it different?
3. The documentary mentions how the work on penicillin was overshadowed by the Manhattan Project and the development of the atomic bomb. Why do you think this is?
4. How do you think people's opinions of medicine as a field might have changed following the development of penicillin?
5. How do you think people's opinions of medicine will change after the pandemic and the COVID-19 vaccine?