

The Accidental Discovery of Penicillin

Scientific Example

In 1928, Alexander Fleming accidentally discovered penicillin after noticing mould growth on a bacterial petri dish. The petri dish was left out over summer break without being incubated.

When Fleming returned, he observed that the bacteria, *Staphylococcus aureus*, were no longer growing around the mould. Distinct clear zones surrounded the mould where bacteria could not grow. Through further investigation, Fleming identified the mould to belong to a species called *Penicillium*. He found that the mould produced an antibacterial substance that could be grown and filtered into a filtered agent he called, penicillin. This discovery led to the development and usage of penicillin as an antibiotic used to treat bacterial infections in people around the world (Halдар & Mobashery, 2026).

Nature of Science Connection

The discovery of penicillin shows how creativity and imagination are a part of scientific work. Ultimately, Fleming did not know or intend for the petri dish to be left out over summer break without being incubated, but his creativity and imagination to investigate the mould led to the discovery of penicillin. His curiosity to understand why the *Staphylococcus aureus* was not growing around the mould allowed his creative mind to grow and filter the antibacterial substance produced by the mould. This discovery shows that from unexpected observations, and with a little creativity, groundbreaking discoveries can occur.

Why This Matters?

The discovery of penicillin helps us as scientists, students, teachers, or even the general public understand how important creativity and curiosity is to scientific work. Fleming's accidental discovery can inspire people to not dismiss irregular results, but to ask further questions on why those results occurred. From then on, understanding scientific work or discoveries doesn't seem so daunting, but rather much more inviting to explore for anyone. Fleming's work can inspire students to be more open-minded and willing to investigate, while allowing teachers to paint a more accurate picture of how scientific discoveries are made.

Learning or Classroom Use

This case card could be used to introduce lessons on how scientific discoveries were made. Showcasing Fleming's story can help push for future scientists to ask more questions and not dismiss irregular results. This would also help challenge common misconceptions in science allowing for students to follow routes that are contrary to what is commonly accepted (Malaterre et al., 2023).

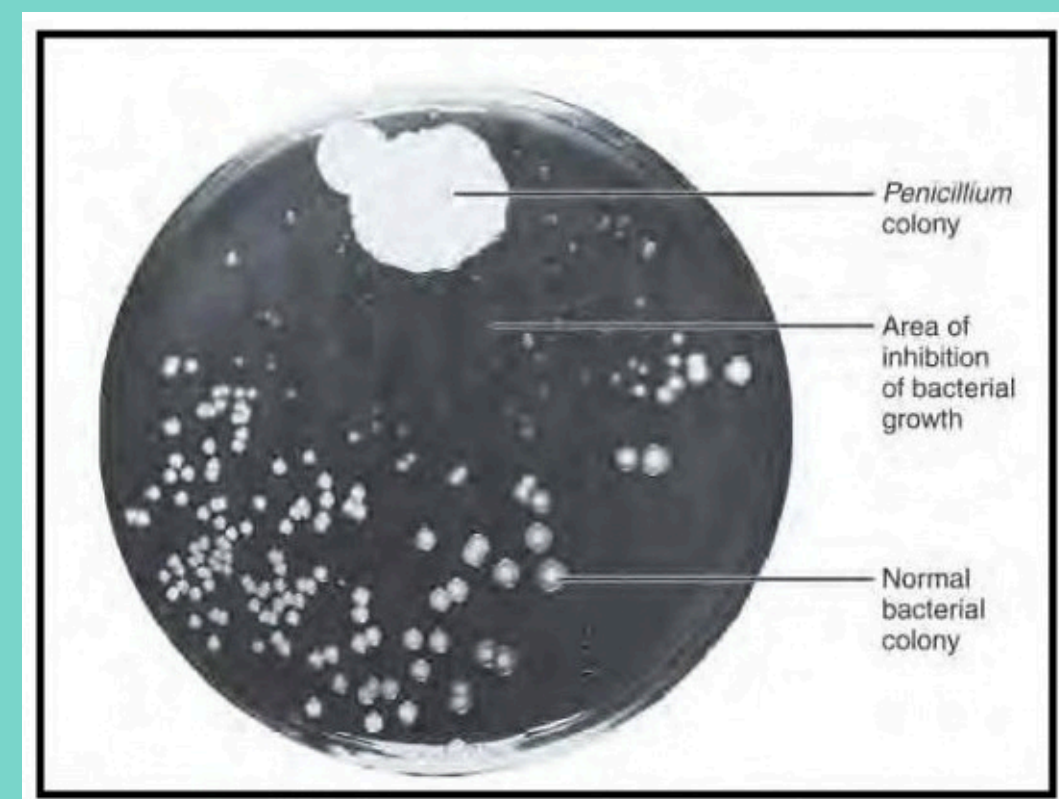


Figure 1. Petri dish Fleming observed when he discovered that penicillin inhibits the growth of bacteria (WiB, n.d.).

References

Halдар, J., & Mobashery, S. (2026). In recognition of the 80th anniversary of Nobel Prize for discovery of penicillin: Call for papers for a special issue. *ACS Infectious Diseases*, 12(1), 2–10. <https://doi.org/10.1021/acsinfecdis.5c01012>

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