

A Twist in the Evidence

Scientific Example

The discovery of the structure of DNA

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The discovery of the structure of DNA was the process of determining the physical structure of DNA, with the conclusion being that DNA has a double-helical structure. This discovery is largely associated with James Watson and Francis Crick, both researchers who worked on making physical models of DNA. The work produced by Watson and Crick, while critical, depended on the deductions and evidence from other researchers. In fact, the work carried out in the decades prior to the breakthrough in 1953 by scientists like Friedrich Miescher, Phoebus Leven and Erwin Chargaff paired with evidence collected by Rosalind Franklin and Maurice Wilkins, was what Watson and Crick were able to use to piece together the structure.

Nature of Science Principle

Scientific knowledge is based on supporting evidence. The discovery of the structure of DNA showcases this nature of science in the fact that evidence collected by Rosalind Franklin, a skilled x-ray crystallographer, gave crucial clues for Watson and Crick's model. In early 1952, Franklin and a PhD student, Raymond Gosling, were able to take a photo of DNA, famously known as "Photograph 51", which gave evidence of the helical structure of DNA. Watson and Crick utilized this information as the basis for their physical model, along with other gathered information from both the past and their own work. This discovery demonstrates how scientific knowledge is formed through supporting evidence that allows scientists to develop explanations.

Why This Matters

Scientific knowledge being based on supporting evidence is as important to the general public as it is to people in the academic community. In academia, this not only allows scientists to evaluate claims in a way that can prove reliability, but can help to distinguish opinions from fact. Understanding this feature of science fosters a deeper, more critical thinking, which, in this day and age, where false information is spread far and wide, having the necessary critical thinking skills to be able to determine credibility is now a vital asset.

Learning or Class Room Use

A possible use for this case card could be for a teacher to use it as a discussion prompt when covering the scientific method. After reading the card, ask them to discuss as a group or class why they think evidence in the scientific field matters, or even ask them to look over other scientific discoveries or articles and distinguish between scientific knowledge and an unsupported theory.

References

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