

The Making of A Scientist

Summary: This article is an account of a curious child channelizing his curiosity to become a scientist. Ebright was a highly curious child since his childhood. His mother; his only companion during childhood; helped in further deepening his curiosity. Ebright began his journey by collecting butterflies. After that, he worked on tagging the monarch butterflies so that the scientists' community could be benefited. Later on, he did research on utility of gold spots on pupae of monarch butterflies. He became famous when his paper on working of cell was published in a scientific journal. Ebright participated in many science exhibitions but winning an award for the sake of wining was never his goal. He participated in those exhibitions because he wanted to do a task as best as that could be done.

Question 1: How can one become a scientist, an economist, a historian? Does it simply involve reading many books on the subject? Does it involve observing, thinking and doing experiments?

Answer: Reading books is just one aspect of learning. This is an exercise in information gathering. It is how your brain processes the information that affects the degree of learning. The first and the foremost criterion to become a genius in one's chosen field is to have great curiosity and unending hunger to discover more. Next criterion is a good sense of observation which helps you to correlate your findings with what you see or experience in the real world. Experiments are must to test your findings against possible variables and in real life situations. And last, but not the least criterion is an urge to work really hard on your area of interest.

Question 2: Discuss Ebright's works in the light of what you have studied in your science books.

Answer: Ebright's works are directly related to Biology. Discovery of cell's structure has helped scientific community to understand the way any organism functions and grows. This has helped scientists to discover how disease causing organisms attack us and grow inside our body. This must have given them idea to counter a particular disease. DNA

fingerprinting is helping police to pinpoint the real culprit. This was not possible when DNA was discovered. Monarch butterflies present an amazing example of a tiny creature migrating thousands of miles from North America to the rainforest of Amazon. Some day we can be in a position to develop as sturdy and reliable navigation system as that of the Monarch butterflies.

Question 3: What is DNA fingerprinting? What are its uses?

Answer: 99.9% of human DNA sequences are same in every human being. But the rest DNA sequences have so much variation that they cannot be same in two individuals; except in monozygotic twins. This variation can be profiles through DNA fingerprinting or DNA profiling.

Uses of DNA Fingerprinting:

In establishing the parentage of a person.

In identifying a criminal.

In identifying a dead person if the dead body is damaged beyond recognition.

Question 4: How do honeybees identify their own honeycombs?

Answer: Honeybees have signaling chemicals; like many other insects. They leave trails for fellow honeybees so that they can reach a source of nectar or honeycomb. Honeybees also communicate through complex dance patterns to show the distance and direction of a flower or of honeycomb. It is believed that they take the help of location of the sun to find their direction.

Question 5: Why does rain fall in drops?

Answer: We know that rain is formed because of condensation. Soon after condensation, the water vapour turns into tiny ice crystals. Since all of the vapour in atmosphere does not condense at once hence there is not possibility of formation of a large pool of water. The tiny ice crystals further melt into water when travel down. Thus, rain falls in drops.

Sometimes, when the size of ice crystals is large or condensation is too fast, we experience hailstorms instead of rains.