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# Microscope



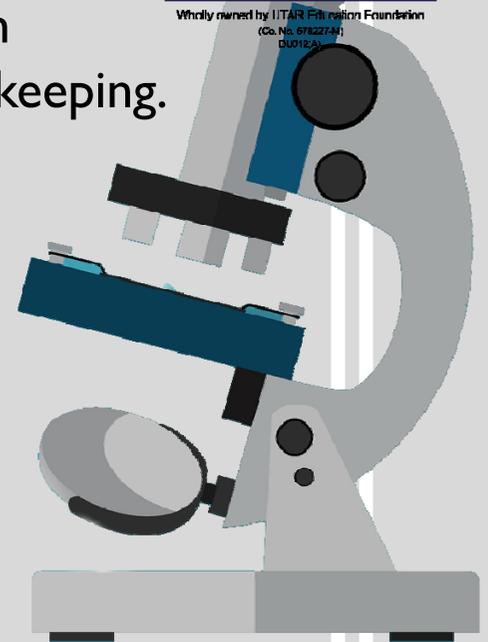
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Dutch microbiologist Antonie van Leeuwenhoek (1632 – 1723) invented the microscope and used it in scientific research. Leeuwenhoek was born into a poor family in the city of Delft in the Netherlands. His father died when he was young. At the age of 16, he became an apprentice with a cloth merchant in Amsterdam and learned bookkeeping.

Although Leeuwenhoek did not receive proper science training, he was particularly interested and curious about new things. His favourite pastime was reading. In his formative years, Leeuwenhoek met a learned and knowledgeable man who had a huge collection of books. The man enjoyed telling strange and interesting stories to Leeuwenhoek. It was then that Leeuwenhoek began to understand about nature, which enriched his vision.



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While working at the cloth merchant shop, Leeuwenhoek heard that the optical shop next door could grind and produce lenses that could magnify things. However, he could not afford to buy the expensive lenses. Whenever he was free, he would peep into the optical shop and see the craftsmen grinding the lenses. In order to grind lenses to allow people to see microscopic objects clearly and unseen by the naked eye, he decided to become the apprentice of an old craftsman and learnt humbly from him.

Leeuwenhoek successfully grinded two bright and delicate lenses and stacked them together to observe chicken feathers. He saw that the magnified appearance resembled tree branches. As he changed the distance between the two lenses, the visual effects changed instantaneously. He could not fully understand this discovery, thus he continued to think about ways to improve the lenses.

As Leewenhoek passed by an iron shop one day, he saw a blacksmith making iron tools. His mind was immediately filled with the method of transforming and magnifying his lenses. It was made possible that the blacksmith made an iron frame and iron cylinder, whereby the lenses would be installed on both ends of the cylinder, which in turn was installed on the iron frame. With the design, the distance between the two lenses could be easily adjusted. That was how the first microscope was invented.



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Leewenhoek was eventually fired by the owner of the shop which he worked with, because he slacked on the job. To make a living, he returned to his hometown to work as a guard at the city hall. Regardless of this, he did not give up on his research and continued to develop and transform his microscope. In his lifetime, he handgrounded 419 lenses and produced 247 simple microscopes with the magnification power of 40 to 300 times.

Although Leewenhoek had not received a proper education, in 1680, he was appointed as a Fellow of the Royal Society of London at the age of 48. The Royal Society was an authoritative society in the world's science and technology field.

Later, Leewenhoek observed water drops using his microscope and discovered microorganisms. This was followed by the discovery of red blood cells and yeast. In 1683, he published his first batch of bacteria diagrams in the journal of the Royal Society, called "Philosophical Transactions of the Royal Society". He then became a world renowned microscopist and microbiologist.

### **Food for Thought:**

- With great determination and efforts in exploring microscopes, Leewenhoek became a world famous microscopist and microbiologist.
- In innovation or invention, help from other experts is needed in order to obtain the desired results at a faster pace.

