

# an **APPLE** a day ...

\* For any **RUST** to occur - you need moisture, oxygen and certain iron enzymes.

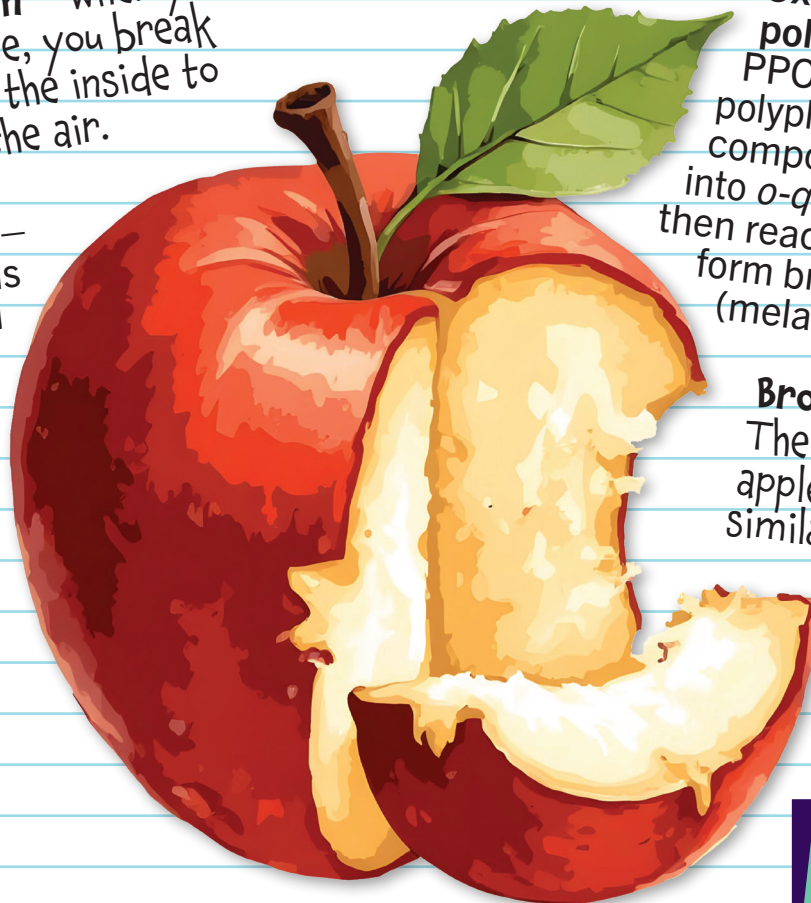
## WHY DOES AN APPLE RUST?

When an apple is cut or bruised, its cells are damaged, and this exposes its enzymes to oxygen. This reaction produces brown-coloured melanin, making the apple look rusty or discoloured. This is called enzymatic browning.

## HERE'S HOW IT WORKS SCIENTIFICALLY:

**Exposure to oxygen** – When you cut or bite an apple, you break its cells, exposing the inside to oxygen in the air.

**Enzyme activation** – The apple contains an enzyme called polyphenol oxidase (PPO). When this enzyme comes into contact with oxygen, it starts a reaction.



**Oxidation of polyphenols** – PPO helps turn polyphenols (natural compounds in apples) into *o*-quinones, which then react further to form brown pigments (melanin).

**Browning effect** – The melanin gives the apple its brown colour, similar to how rust forms on iron when it reacts with oxygen and water.

## HOW TO SLOW IT DOWN:

- 🍏 **Lemon juice** – Contains ascorbic acid (Vitamin C), which slows oxidation by reacting with oxygen first.
- 🍏 **Cold storage** – Slows down enzyme activity.
- 🍏 **Water or honey water** – Reduces oxygen contact, preventing browning.

