

The Great Floral Revolution

Today, more than 270,000 species of flowering plants exist on our planet. Yet this was not always the case. If we travelled back in time 200 million years, we would see dinosaurs roaming through forests of conifers, cycads and ferns. Flowers and pollinators would still be nowhere to be found.

Exactly when the first flowering plants evolved remains one of the great mysteries of natural history. Their existence is suggested by pollen grains more than 135 million years old. An important clue was also provided by the discovery of a fossil plant named *Archaeofructus* in present-day China. The name of this extinct plant comes from Greek and means “ancient fruit”. It was most likely an inconspicuously flowering ancestor of modern water lilies, a freshwater plant inhabiting the margins of lakes more than 125 million years ago.

The flower was one of the major evolutionary innovations that allowed plants to reproduce far more efficiently. Among the ancient groups of flowering plants that survive today are the modest shrub *Amborella* from New Caledonia, water lilies and lotuses, as well as star anise. Its star-shaped fruits are still used as a spice in mulled wine and traditional Christmas baking.

Many millions of years ago, the story of flowering plants began, and without them human civilisation could never have arisen. Flowering plants provide us with food such as fruit, vegetables, pulses and cereals. They are also known as angiosperms, from the Greek words *angeion* (“container”) and *sperma* (“seed”), referring to seeds enclosed within fruits. This greatly increased their chances of dispersal and survival. The next time you eat an apple, perhaps you will remember just how far back its story truly began.

Distribution of continents on Earth 125 million years ago (Cretaceous Period, Mesozoic Era)

Timeline

Beginning of the Mesozoic Era – Triassic	251 million years ago
Gnetophytes – first flower-like structures	250 million years ago
Beginning of the age of reptiles (dinosaurs)	243 million years ago
Jurassic	201 million years ago
Cretaceous	145 million years ago
One of the oldest flowering plants – <i>Montsechia vidalii</i>	130 million years ago
Flowering plant – <i>Archaeofructus</i>	125 million years ago
Asteroid impact in present-day Mexico	66 million years ago

Beginning of the Tertiary – Palaeocene	66 million years ago
Major expansion of flowering plants	100 million years ago
Beginning of the Quaternary – Pleistocene	2.6 million years ago

Archaeofructus

One of the earliest flowering plants, dating back around 125 million years.

Likely a distant ancestor of modern water lilies.

Aquatic plant.

Inhabited the margins of freshwater lakes.

Flowers or inflorescences were unisexual, with female structures above and male structures below.

Approximately 50 cm tall.

Resembled the modern aquatic and aquarium plant hornwort (*Ceratophyllum*).

Leaves arranged in a spiral pattern.

Discovered in China in 2001.

Three distinct species have been described so far.

An even older flowering plant may be the similar *Montsechia vidalii*, discovered in Spain.