

PROTISTS

Dinoflagellates

400 MYA – PRESENT

Dinoflagellates are a large group of single celled algae-like protists. When they are environmentally stressed, they secrete an armoured shell, called

a cyst, which helps them survive difficult times. It is these cysts that can be preserved and found as fossils.

Domain	Eukaryota
Kingdom	Animalia
Phylum	Myzozoa
Class	Dinoflagellata
Unranked	Protists

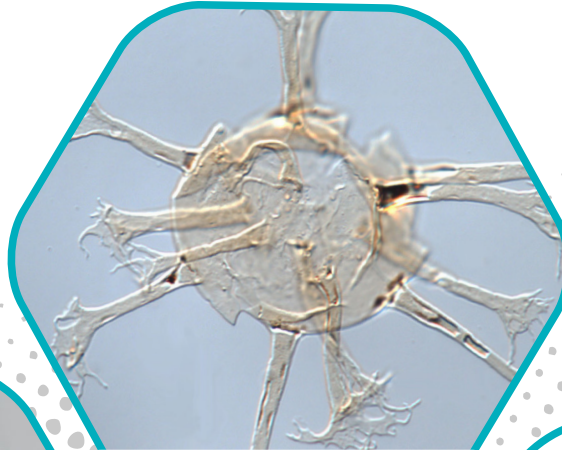
Fossil Record

The oldest dinoflagellates are from the middle Triassic. Dinoflagellates are extant (still around today) and form a major part of marine plankton. It is likely that some acritarchs from the Paleozoic are ancestors of dinoflagellates, but this is still a matter of debate.

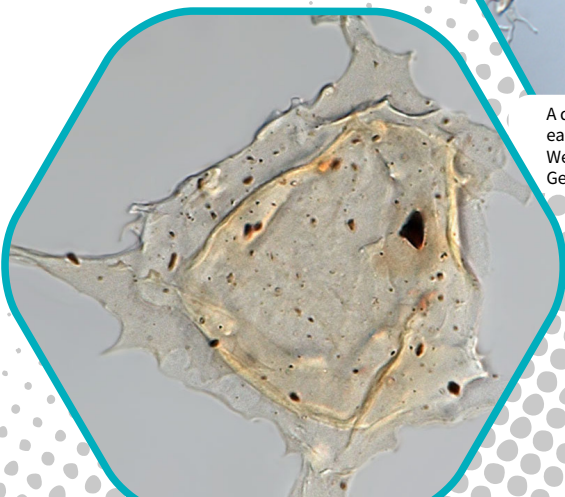
Habitat and Lifestyle

Dinoflagellates live in salt and fresh water and are very widespread. About half the species are photosynthetic. Some of these, called zooxanthellae, live symbiotically with modern reef corals and provide the corals with energy in the form of sugars produced by photosynthesis.

A few species of dinoflagellate are parasitic, and others are predators. Sometimes, when there are abundant nutrients in the water, dinoflagellates will reproduce very rapidly in huge numbers, giving rise to 'red tides' that, as they secrete toxins, may kill large numbers of fish.



A dinoflagellate cyst, *Oligosphaeridium* sp., early Cretaceous (about 120 million years old), Western Australia. Image from Dan Mantle, Geoscience Australia.



A dinoflagellate cyst, *Phoberocysta neocomica*, early Cretaceous (about 135 million years old), Western Australia. Image from Dan Mantle, Geoscience Australia.

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DID YOU KNOW



If you are out in a boat at night, you will sometimes see bluish coloured flickers in the ocean as it splashes against the side of the boat or in the wake of the boat as it motors or sails along. These are most often from blooms of bioluminescent dinoflagellates, which give off brief flashes of light when they are disturbed.