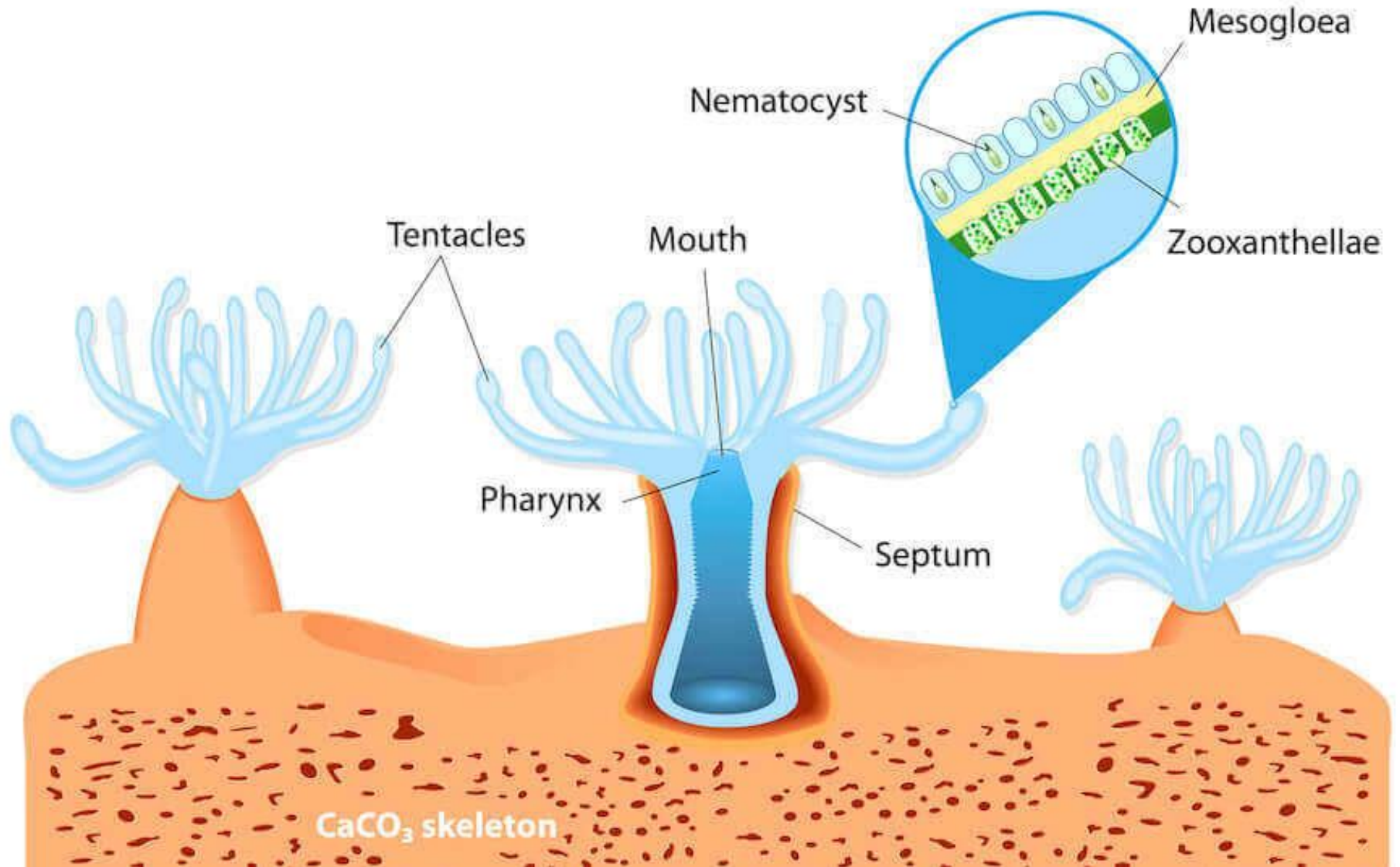
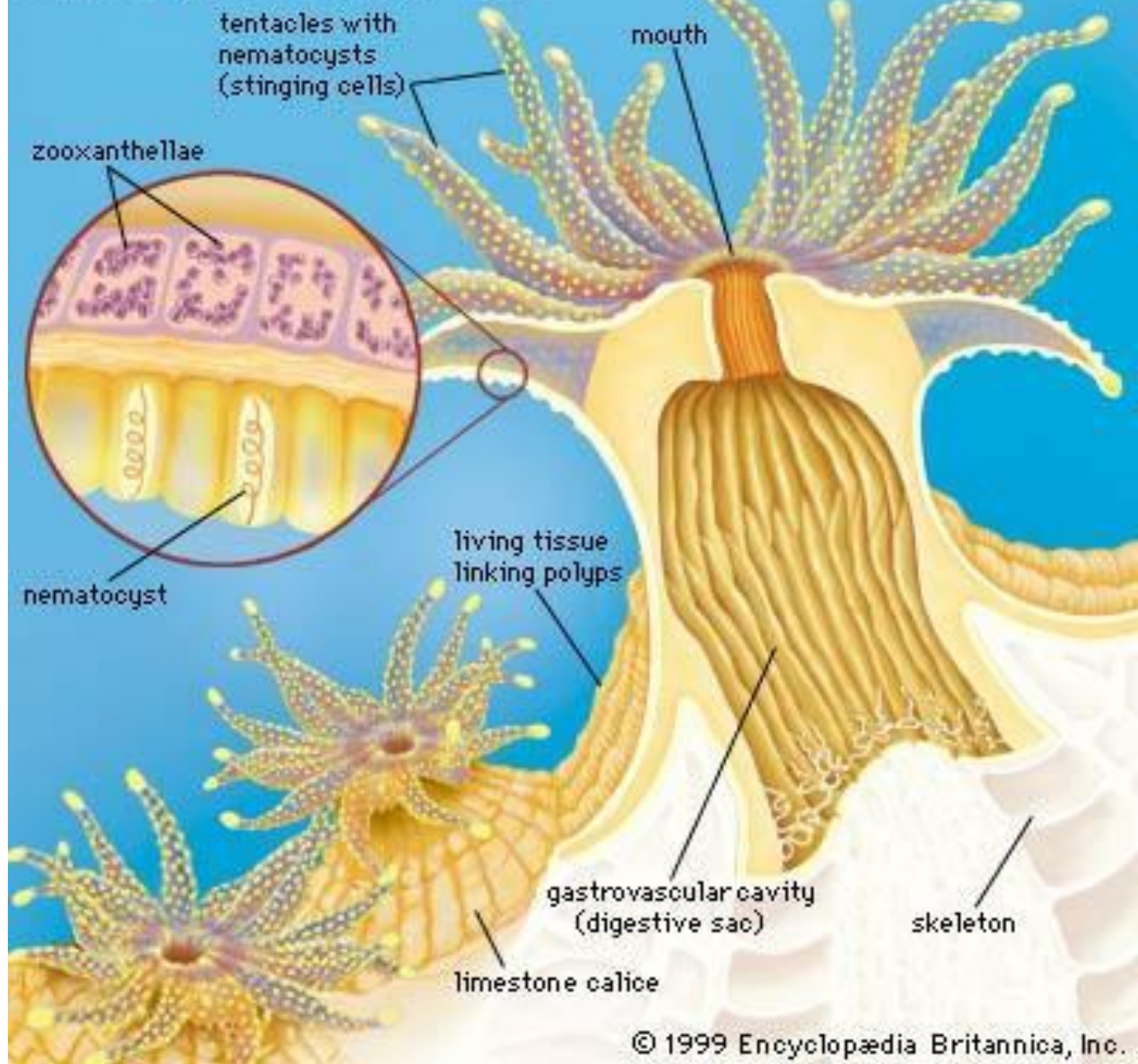


CORAL ANATOMY

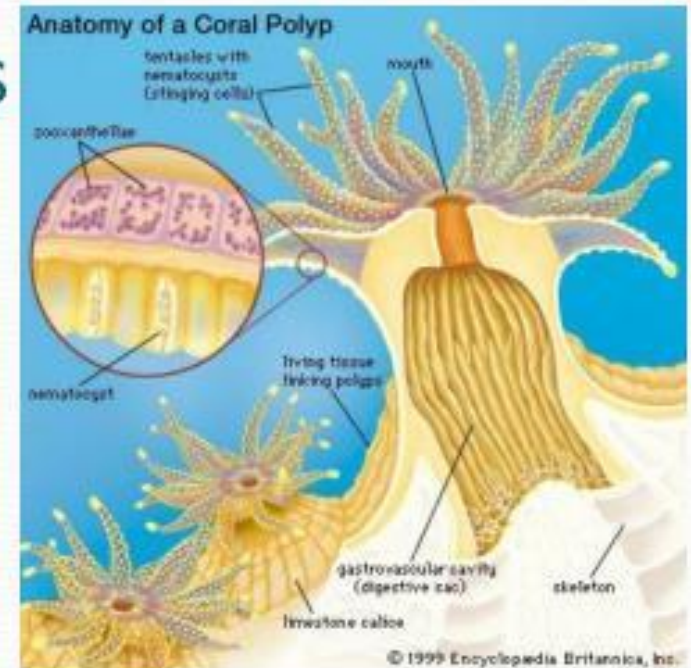


Anatomy of a Coral Polyp



Coral/ Zooxanthellae Symbiosis

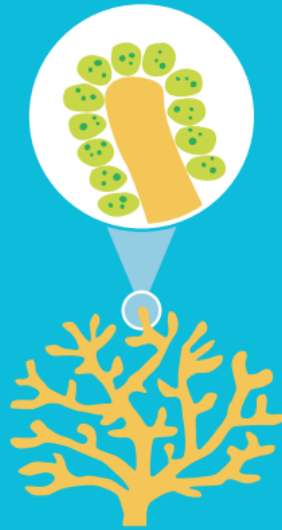
- Zooxanthellae produce the nutrients (phosphate, nitrates, and carbon) needed by coral through photosynthetic activities.
- Coral provides the zooxanthellae w/ protection and access to light (also provides steady supply of carbon dioxide for photosynthetic processes)
- coral gets nutrients, algae gets substances it needs- why coral reefs grow so close to surface of water- need sunlight for photosynthesis



1 **HEALTHY CORAL**

Coral and algae depend on each other to survive.

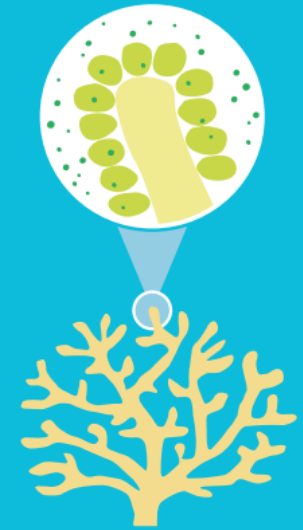
Corals have a symbiotic relationship with microscopic algae called zooxanthellae that live in their tissues. These algae provide their host coral with food and give them their colour.



2 **STRESSED CORAL**

If stressed, algae leave the coral.

When the symbiotic relationship becomes stressed due to increased ocean temperature or pollution, the algae leave the coral's tissue.



3 **BLEACHED CORAL**

Coral is left bleached and vulnerable.

Without the algae, the coral loses its major source of food, turns white or very pale, and is more susceptible to disease.



4 **DEAD CORAL**

Coral is left bleached and vulnerable.

Without enough plant cells to provide the coral with the food it needs, the coral soon starves or becomes diseased. Soon afterwards, the tissues of the coral disappear and the exposed skeleton gets covered with algae.



■ **Note: 2 types of coral!**

- Without Zooxanthellae (do not build reefs)
- With Zooxanthellae (do build reefs)

■ **Zooxanthellae = Symbiotic relationship between coral polyp and algae** (commensalism)

- Daytime: Zooxanthellae photosynthesize for the coral
- Nighttime: Coral polyps feed with tentacles & stingers
- **BLEACHING:**

■ Zooxanthellae leave the polyp (they give coral its color) because:

- Water is too cloudy for photosynthesis
- Water temperature is too high





Fungia sp. skeleton



Polyps of *Eusmilia fastigiata*



Pillar coral, *Dendrogyra cylindricus*



Brain coral,
Diploria labyrinthiformis



Paragorgia sp



Yellow octocoral
White stylaster coral in left background