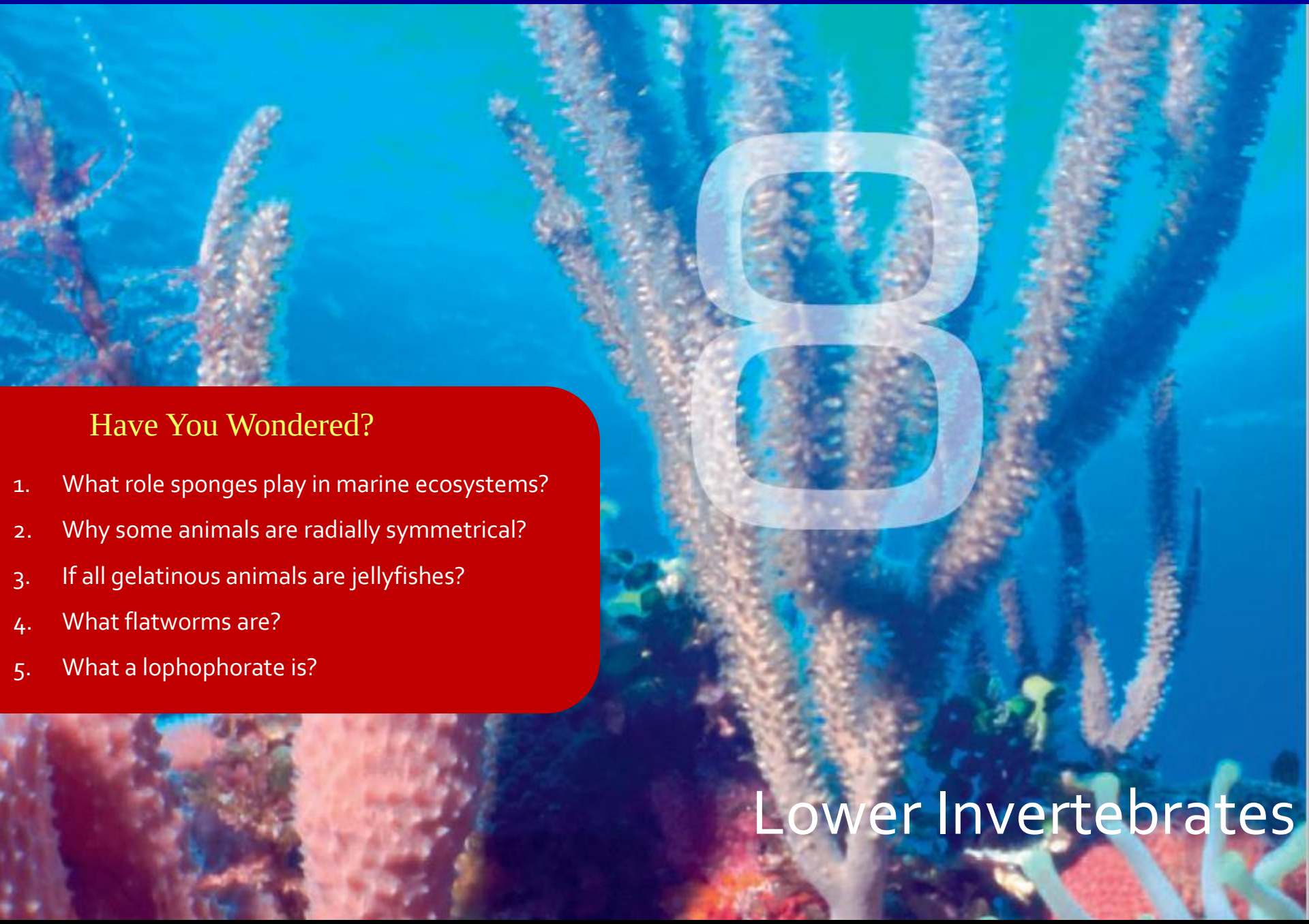


8

Have You Wondered?

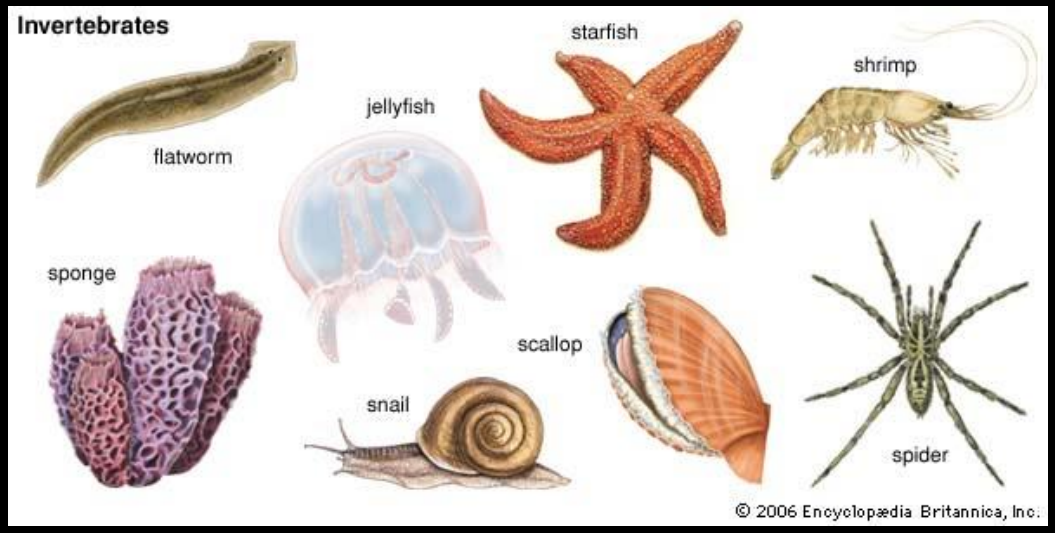
1. What role sponges play in marine ecosystems?
2. Why some animals are radially symmetrical?
3. If all gelatinous animals are jellyfishes?
4. What flatworms are?
5. What a lophophorate is?

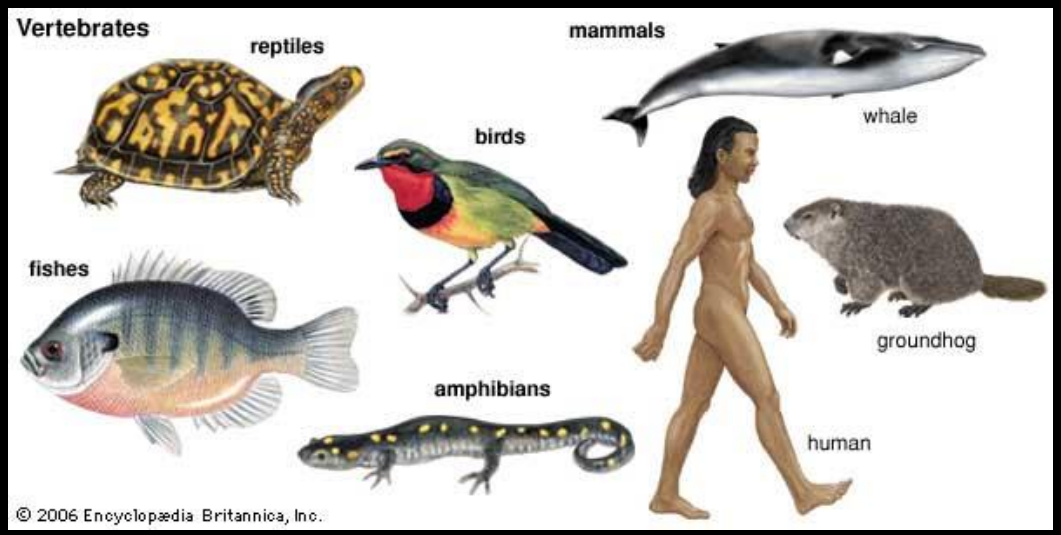
Lower Invertebrates

Animals

- Animals are organisms that are multicellular, eukaryotic and that lack rigid cell walls. They are *heterotrophs*: cannot produce their own food and need to consume other organisms.
- Except for adult sponges, animals can actively move, even those that live a sessile lifestyle. Animals that don't have a backbone are called invertebrates; they represent the vast majority of animal species. Animals with a backbone are called vertebrates.

Invertebrate and vertebrate





An ***invertebrate is an animal*** that lacks a vertebral column.

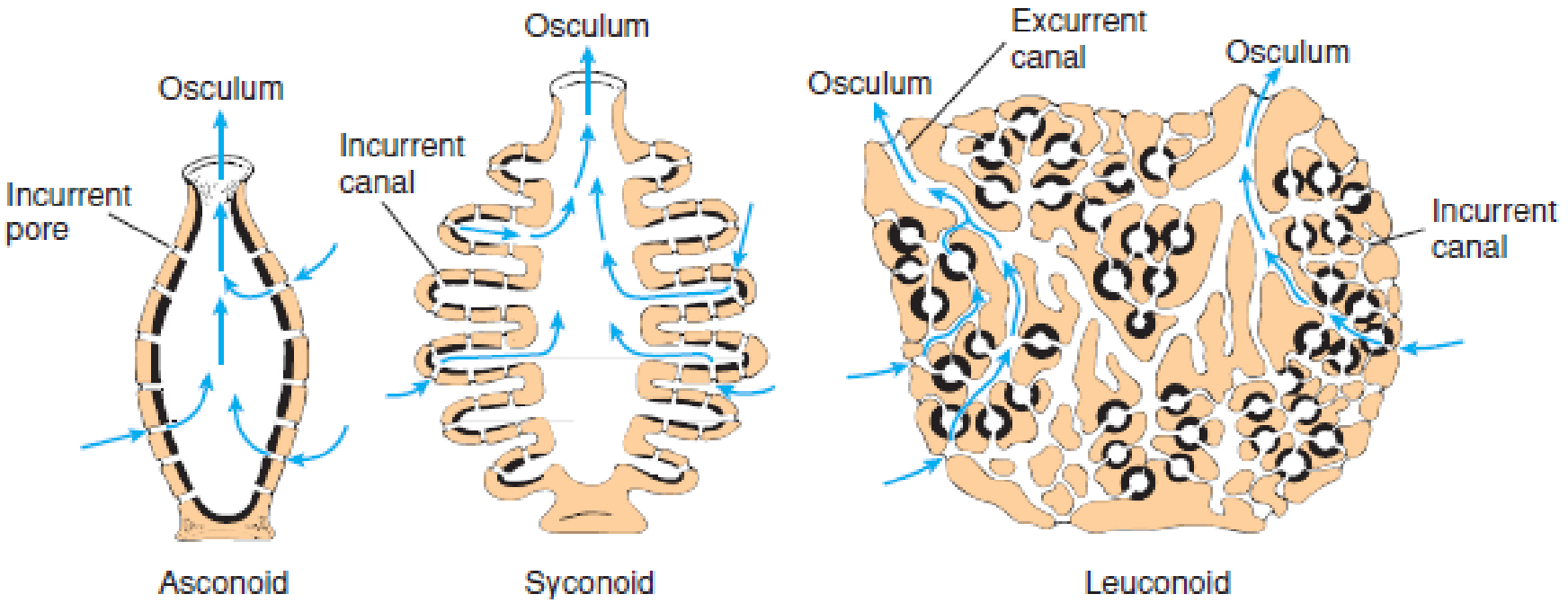
A ***vertebrate is an animal*** that possesses an internal skeletal rod (commonly called a backbone) composed of units known as vertebrae.

GLOSSARY

Sponges

- Sponges are animals that are best described as complex aggregations of specialized cells. The cells are largely independent of each other and do not form true tissues and organs.

Sponge

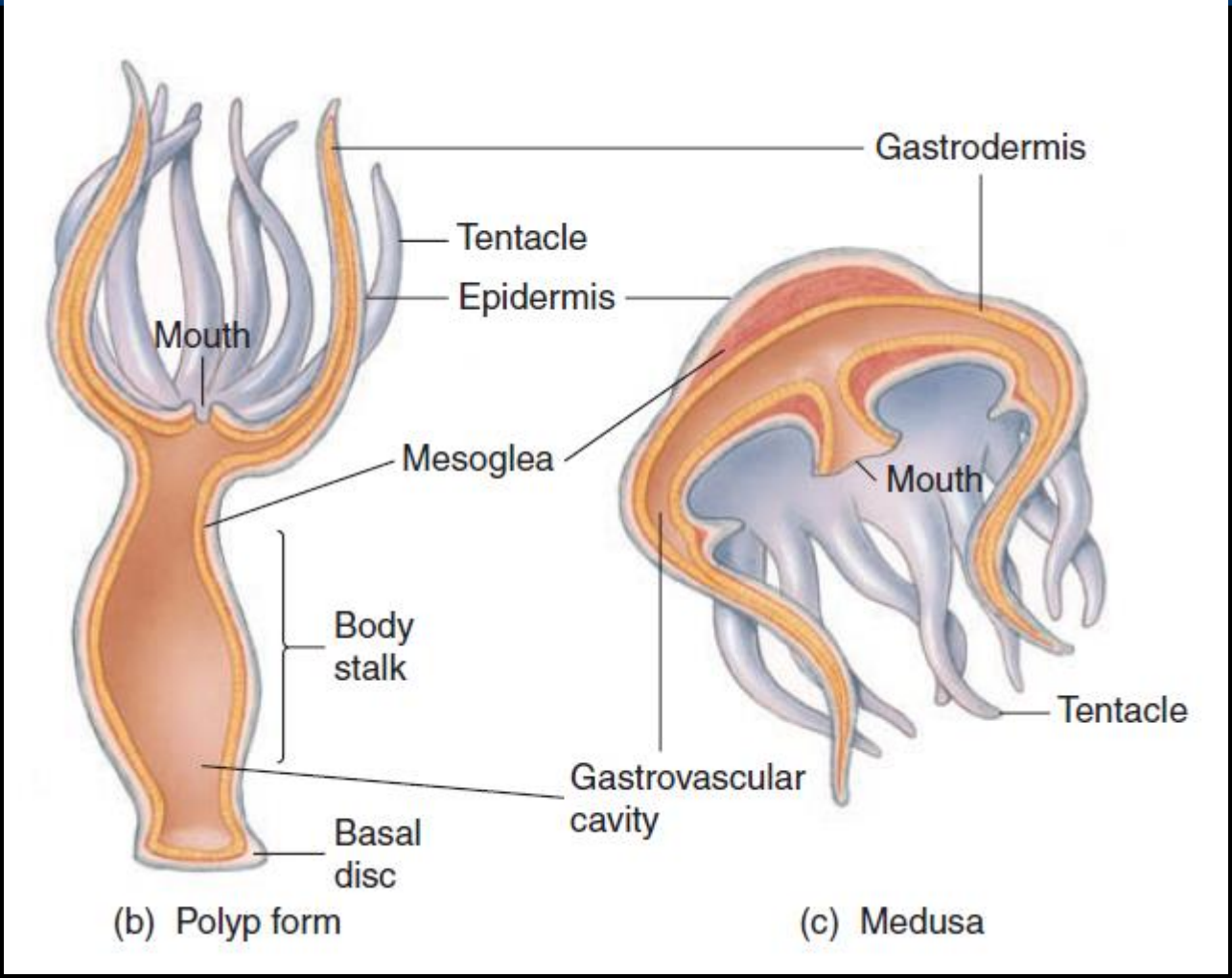

Osculum
Incurrent pore
Asconoid
Osculum
Incurrent canal
Syconoid
Excurrent canal
Osculum
Osculum
Incurrent canal
Leuconoid

Sponges

Ecological Role

- Sponges are important inhabitants of shallow water ecosystems and compete for space with animals like corals and bryozoans, playing an important role in calcium recycling.
- The spicules and toxins of sponges deter most predators, though hawksbill sea turtles and angelfish have evolved adaptation to withstand them.
- Sponges form symbiotic relationships with a variety of other organisms. Many bacteria and some dinoflagellates live within their tissues, and the spongocoel offers shelter for a variety of organisms.
- Chemicals have been isolated from Caribbean sponges that block DNA synthesis in tumors and there is the prospect of utilizing them in cancer treatment. The antibacterial properties of sponges are also being studied.

Cnidarians


Gastrodermis
Tentacle
Epidermis
Mouth
Mesoglea
Mouth
Body stalk
Tentacle
Gastrovascular cavity
Basal disc
(b) Polyp form
(c) Medusa

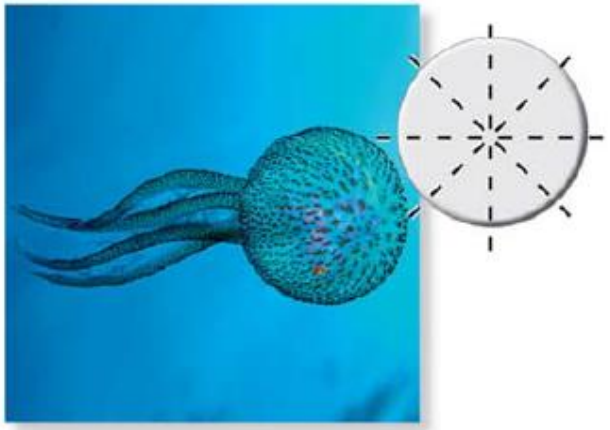
Jellyfish

Ecological role

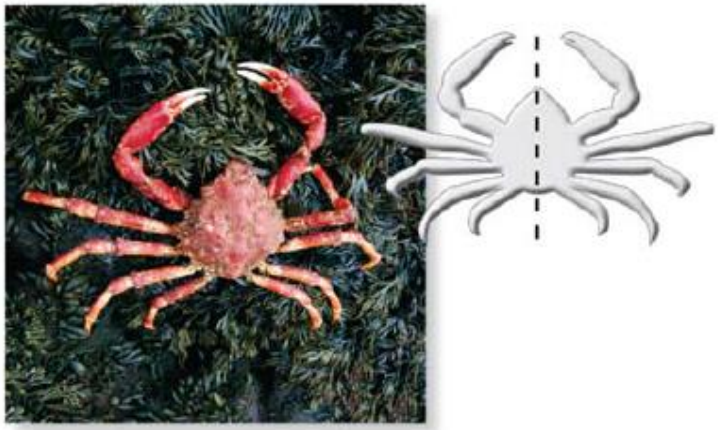
- Cnidarians are predators, and because they are well protected by their stinging cells, few predators prey on them.
- However some species are adapted to eat jellyfish, including several sea turtles and some fishes, and the crown-of-thorns starfish is an important predator of corals in the Indo-Pacific.
- Reef-building corals create the largest living structure on the planet, which is a three dimensional habitat for many other species and offers a solid substrate for attachment of benthic organisms. Tropical coral reefs are one of the environments with the highest species diversity on earth. Moreover, they are important wave buffers and protect the coast from storm damage.

Bilateral symmetry

Sponges:
no clear symmetry



Cnidarians and Ctenophores:
Radial symmetry



Almost all other animals:
Bilateral symmetry