



Animal Interaction

Prof. D. R. Borhade



Introduction



- The interactions between different organisms in an environment.
- Species interactions in communities are important factors in natural selection.
- All living things depend on their environment to supply them with what they need, including food, water, and shelter.
- Environment consists of physical factors such as soil, air, and temperature and also of other organisms.
- An organism is an individual living thing & many living things interact with other organisms in their environment.
- In fact, they may need other organisms in order to survive. This is known as interdependence.

Types of Interaction

1) Competitive Interaction

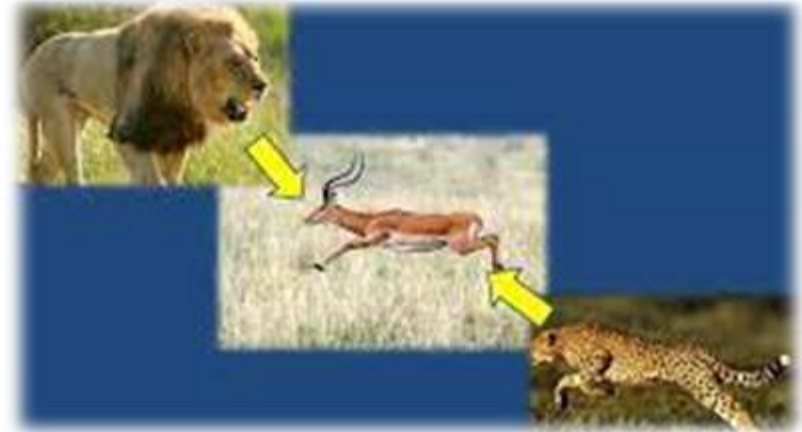
2) Consumer – Resource Interaction

3) Detritivore – Detritus Interaction

4) Mutualistic Interaction



Competition



- Competition is a relationship between organisms that strive for the same resources in the same place.
- The resources might be food, water, or space.
- Competition occurs whenever they both try to get the same resources in the same place and at the same time.
- The two organisms are likely to come into conflict, and the organism with better adaptations may win out over the other organism.

Types of Competition

1. Intra specific competition :

- occurs between members of the same species.
- For example, two male birds of the same species might compete for mates in the same area. This type of competition is a basic factor in natural selection. It leads to the evolution of better adaptations within a species.



2. Inter specific competition :

- occurs between member of different species.
- For example, predators of different species might compete for the same prey.



Commensalism

- A symbiotic relationship in which one species benefits while the other species is not affected.
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- One species typically uses the other for a purpose other than food.
- Eg:- mites attach themselves to larger flying insects to get a “free ride.”
- Hermit crabs use the shells of dead snails for homes.
- Clown fish live with sea anemones for protection from predators and the sea anemone is neither helped nor harmed

Eg: Remora fish & Shark



Sea anemone & Hermit crabs



Mutualism

- A symbiotic relationship in which both species benefit
- Characterized by both species benefiting from the association

➤ *Types of Mutualism*

- 1) *obligate Mutualism*
- 2) *facultative Mutualism*

1) *Obligate Mutualism*

- The species involved are in close proximity and interdependent
- The absence of one meant the death of the other
- They would not be able to survive without each other
- They tend to co-exist and evolve together

Eg.:- The lichen



Lichen on rock



Lichen on tree bark



Moss Lichen



Lichen on log

2) *Facultative Mutualism*

- The interacting species derive benefit from each other but not fully dependent on one another
- One can still survive even without the other
- The more common form of mutualism in nature
- Eg.:- Bees and flowers

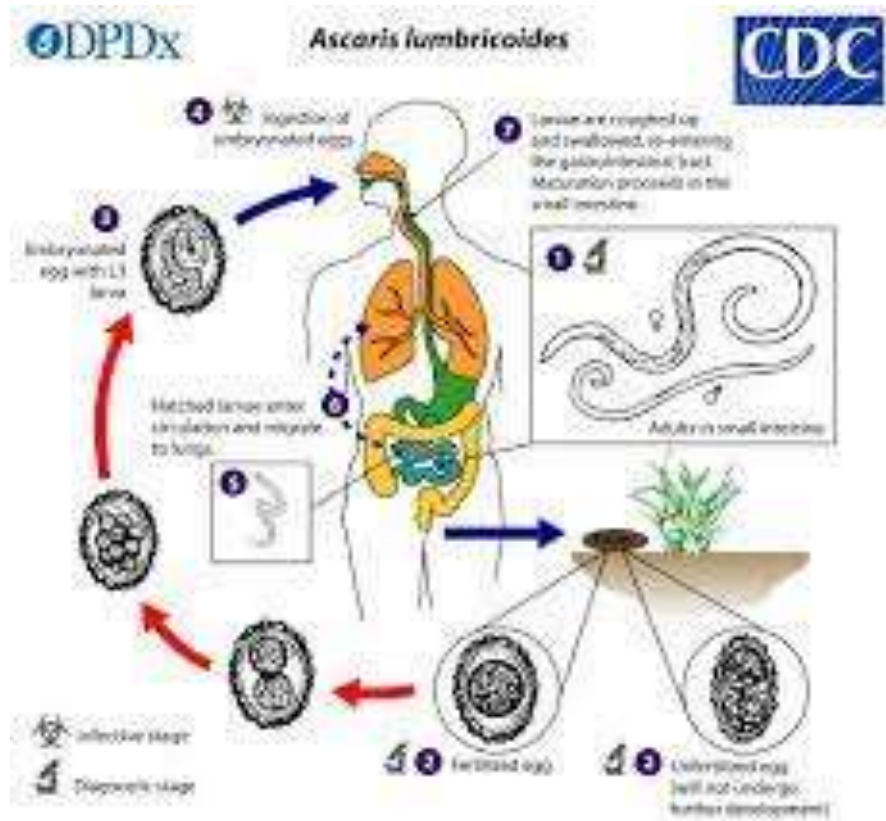


Parasitism

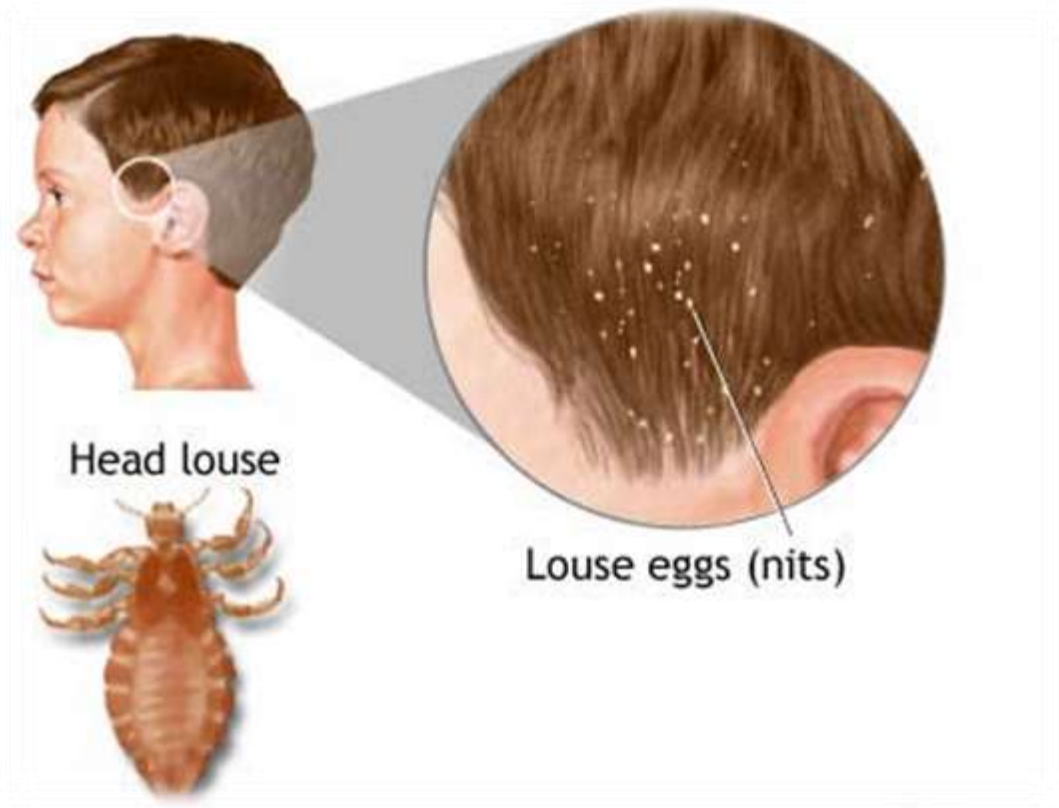
- A symbiotic relationship in which one species (the parasite) benefits while the other species (the host) is harmed.
- Many species of animals are parasites, at least during some stage of their life.
- Most species are also hosts to one or more parasites.
- Some parasites live on the surface of their host & some live inside their host.
- They may enter the host through a break in the skin or in food or water

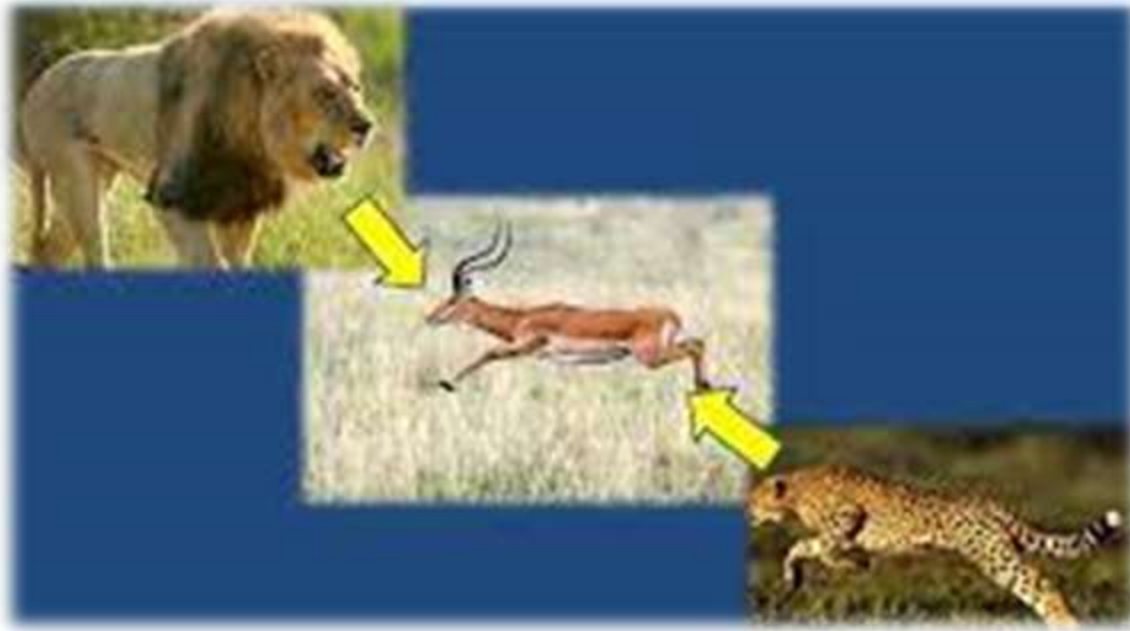


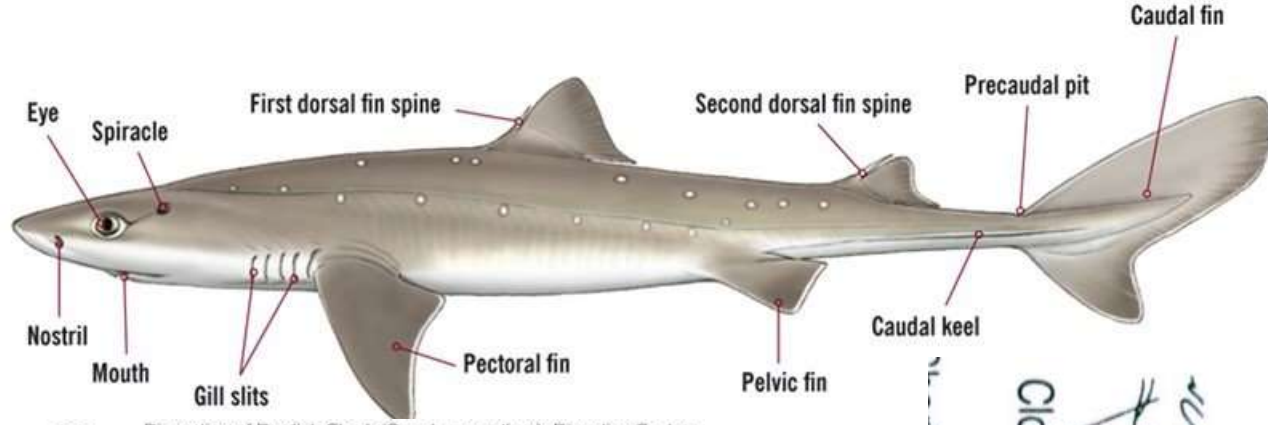
Eg: Ascaris & Man



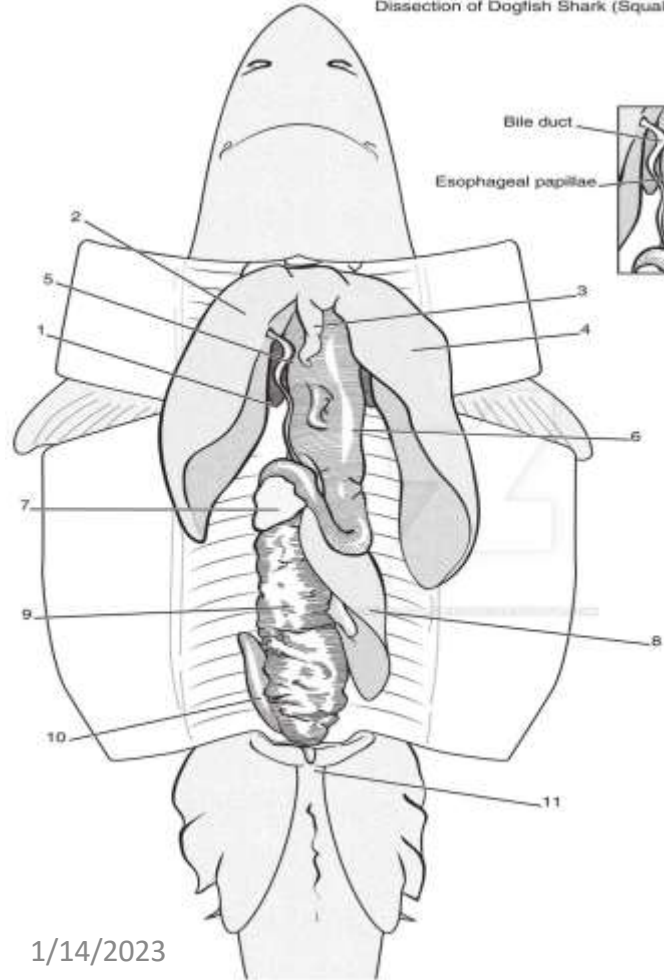
Eg: Lice & Human



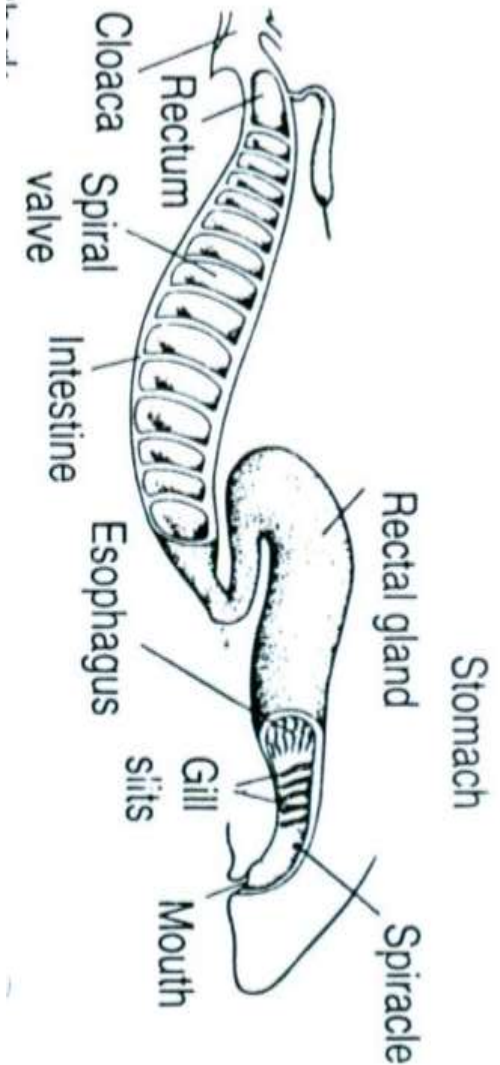




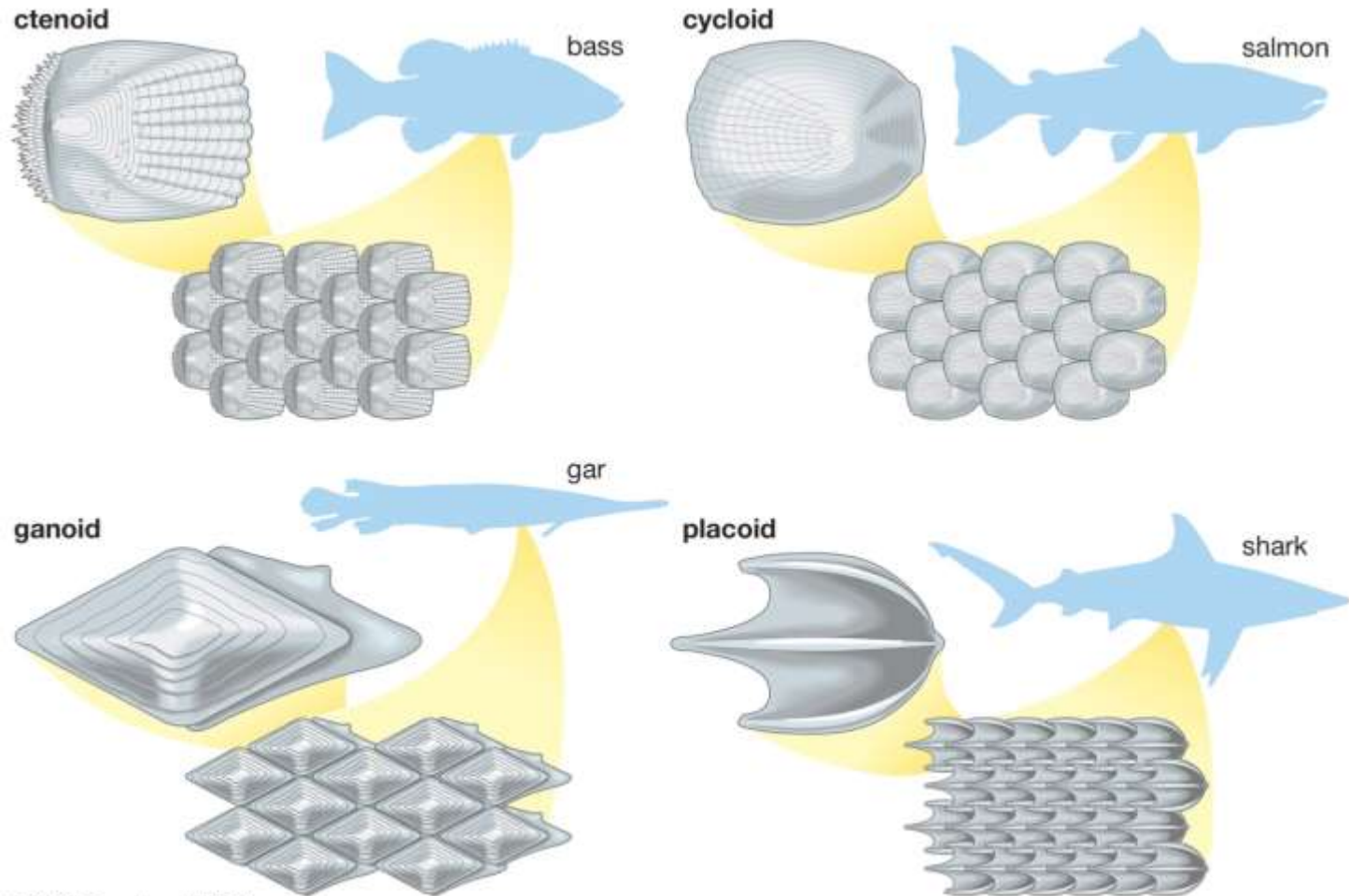
Dissection of Dogfish Shark (*Squalus acanthus*): Digestive System



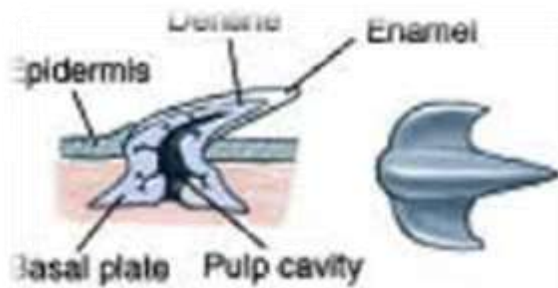
- 1. Gall bladder
- 2. Left lobe of liver
- 3. Median lobe of Liver
- 4. Right lobe of liver
- 5. Bile duct
- 6. Stomach
- 7. Pancreas
- 8. Spleen
- 9. Spiral intestine
- 10. Rectal gland
- 11. Rectum



Aim: Temporary preparation of scales & its identification from locally available fish



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Placoid scales
(cartilaginous fishes)

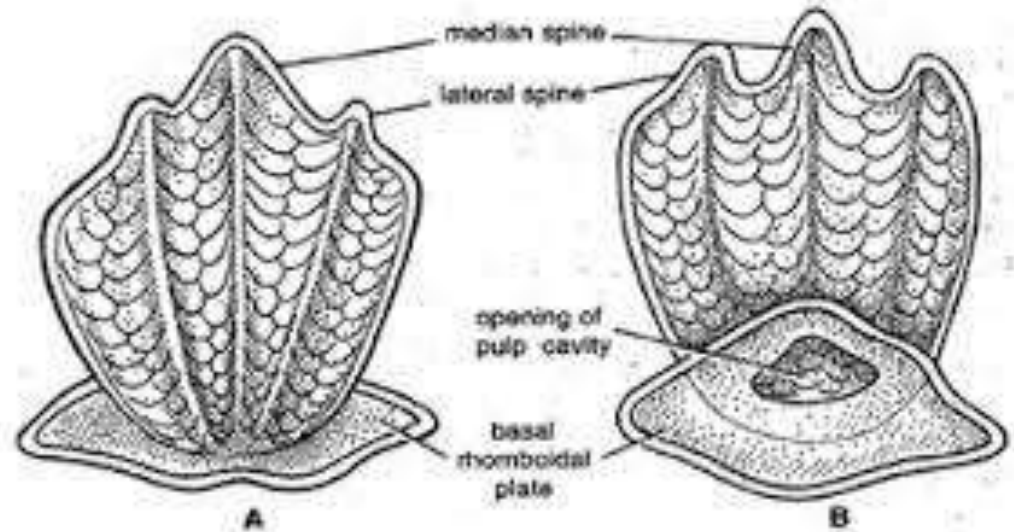
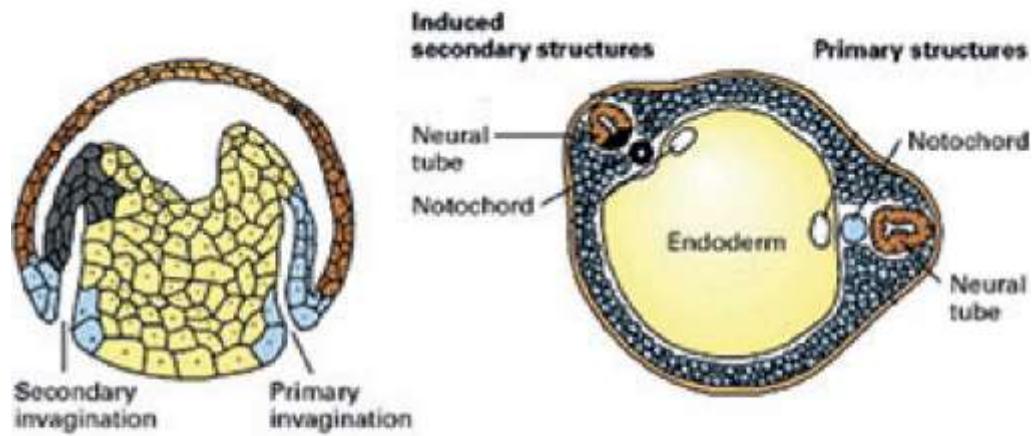
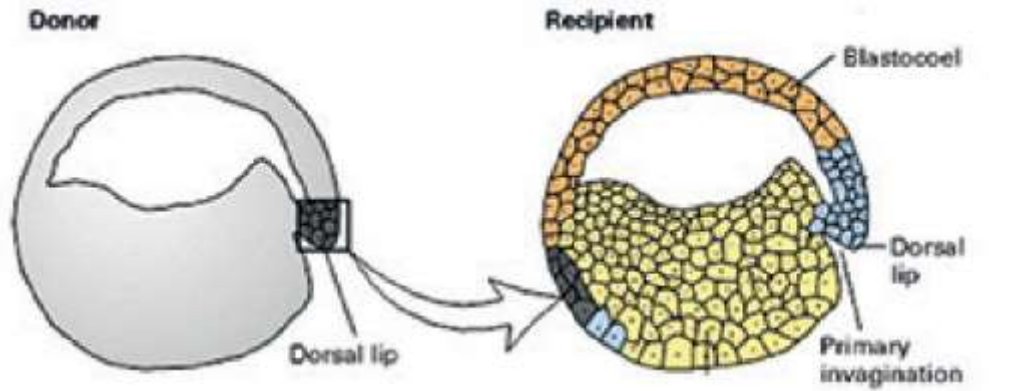
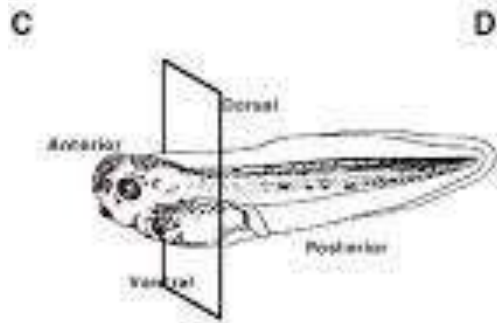
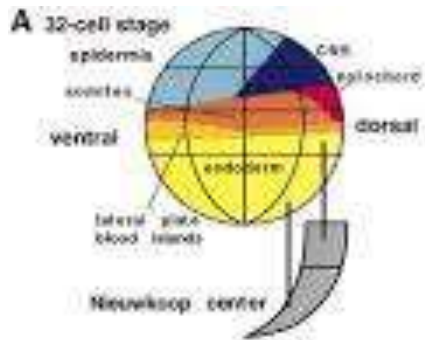
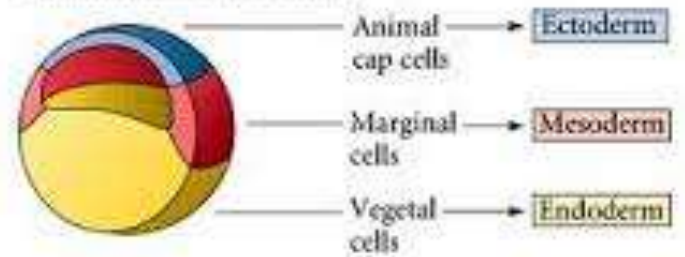


Fig. 6.9. Placoid scales of *Scoliodon*. **A**–Dorsal view; **B**–Ventral view.

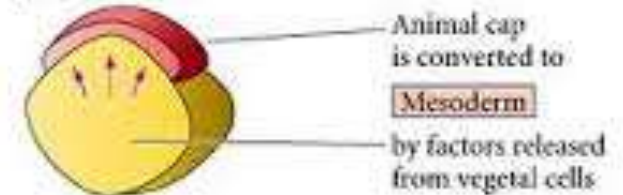




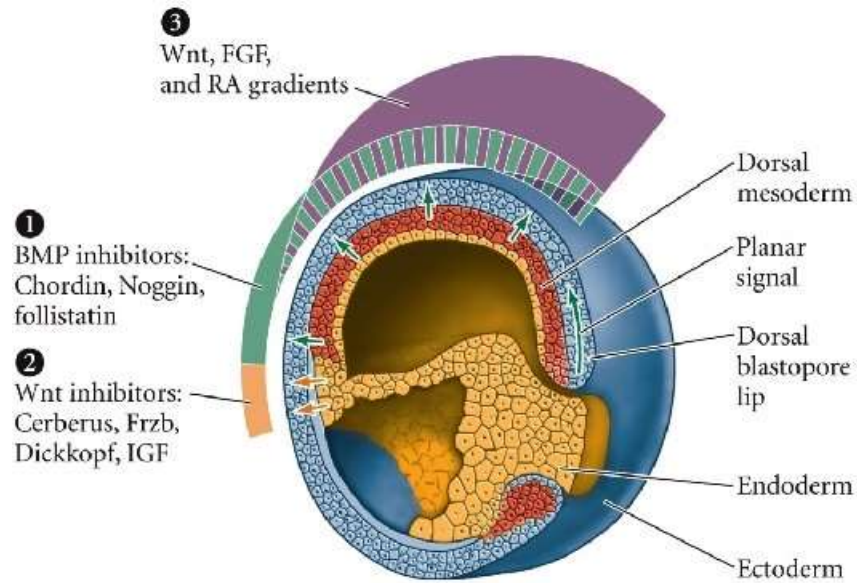
(A) Dissected blastula fragments give rise to different tissue in culture:



(B) Animal and vegetal fragments give mesoderm



Model of the organizer function and axis specification in the *Xenopus* gastrula



DEVELOPMENTAL BIOLOGY, 9e, Figure 7.35

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