



# Animal kingdom

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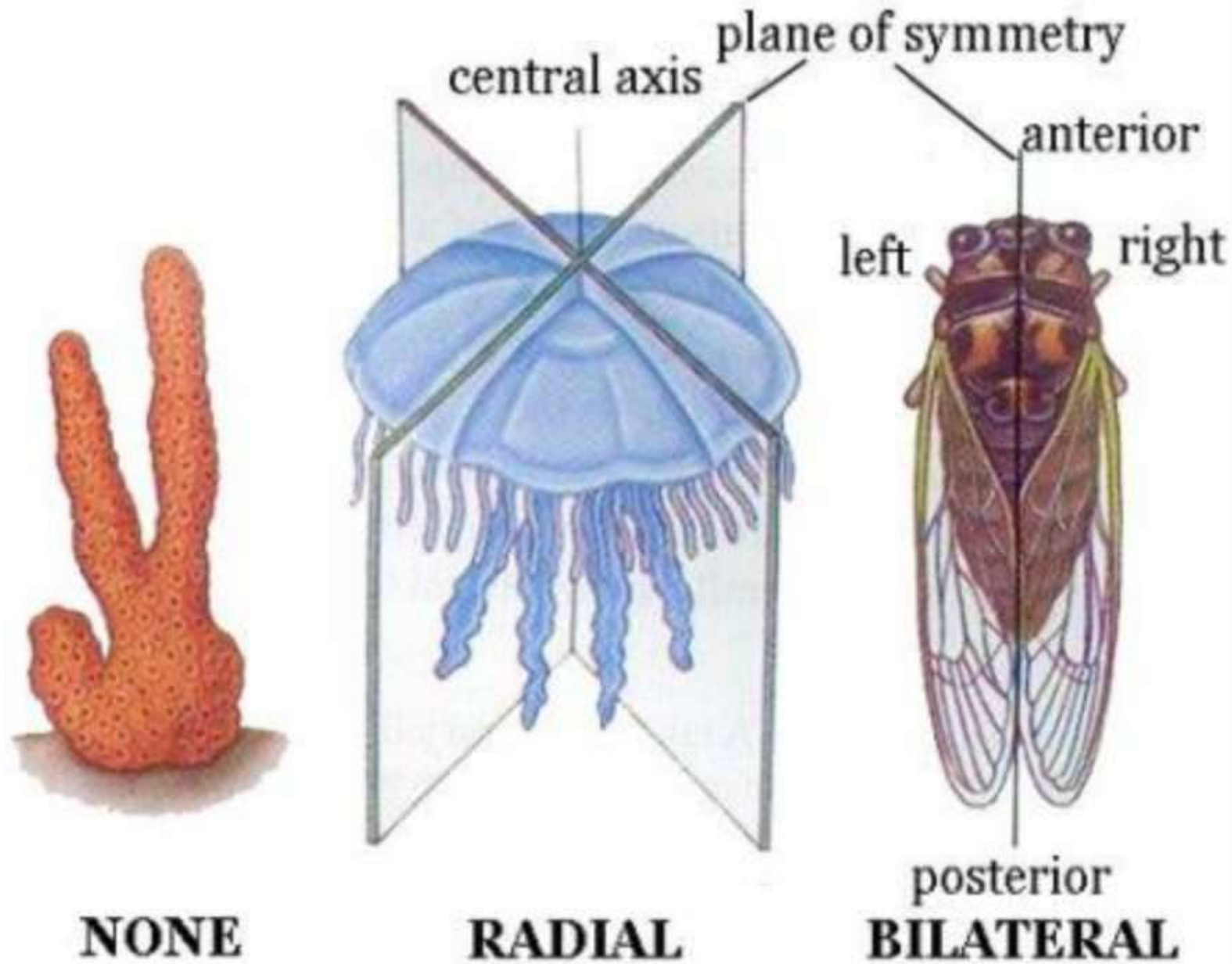


## **Level of Organization**

- 1) Cellular level – sponges**
- 2) Tissue level - coelenterates**
- 3) Organ level - Platyhelminthes**
- 4) Organ system level - Annelids, Arthropods, Molluscs, Echinoderms and Chordates.**



# Symmetry



- **Asymmetrical – sponges.**
- **Radial - Coelenterates, ctenophores and echinoderms.**
- **Bilateral - annelids, arthropods to chordates.**

## Germlayer (जर्म परत)

Triploblastic  
[त्रिपरतीय]

- ① endoderm (अन्तर्दर्म)
- ② Mesoderm (मीजोडर्म)
- ③ Ectoderm (ऐक्टोडर्म)

Diploblastic  
(द्विपरतीय)

- ① endoderm (अन्तर्दर्म)
- ② ectoderm (ऐक्टोडर्म)



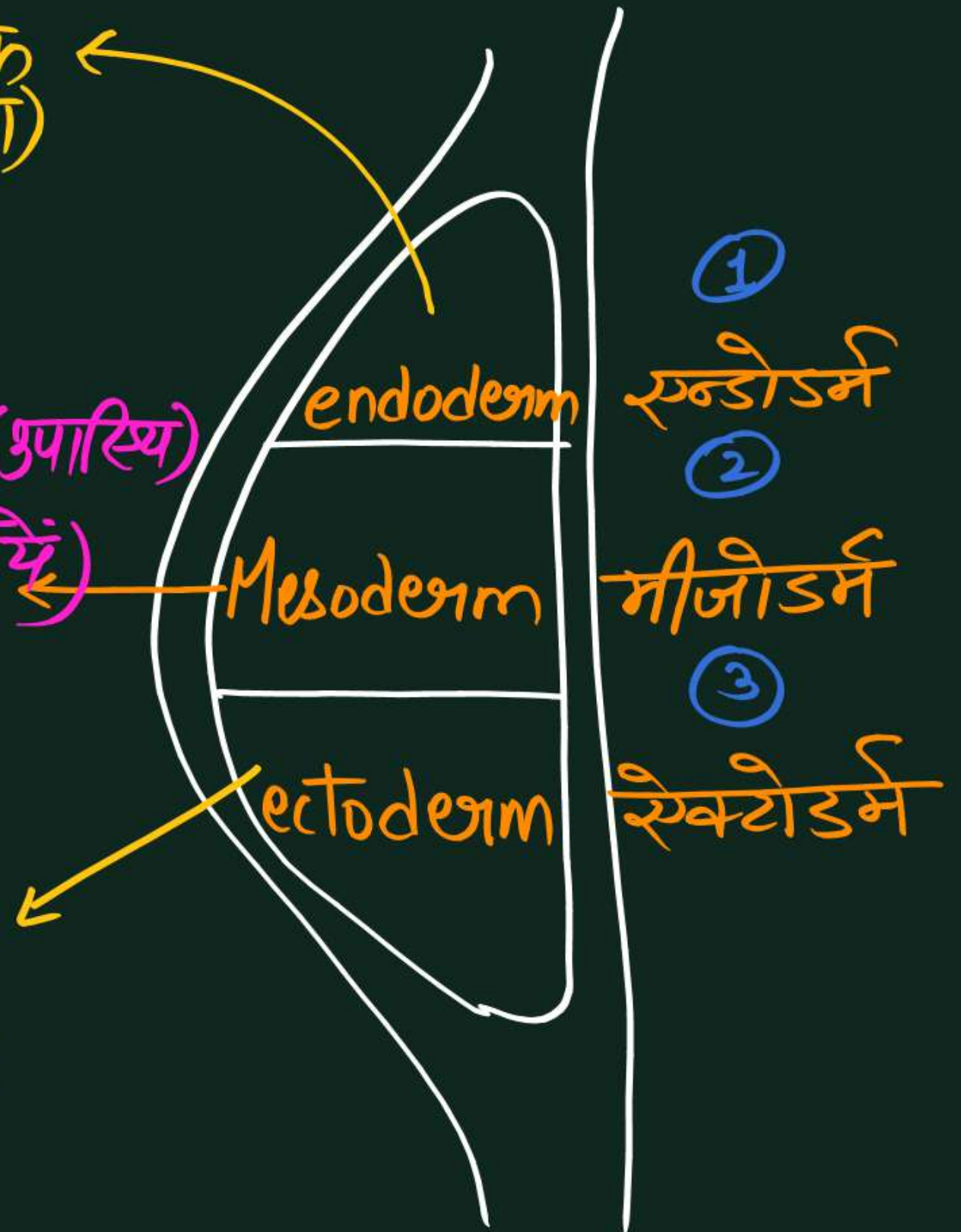
Internal Organs (आन्तरिक अंग)

Red Bone marrow (लाल अस्थिमज्जा)

Blood (रक्त), Bones (अस्थि), Cartilage (अपास्थि)

Heart (हृदय), Blood Vessels (रक्त नलिकाएँ)

Skin (त्वचा), Kidney (पूत्रक), Brain (मस्तिष्क)





## **Sex**

- **Monoecious or Bisexual or hermaphrodites :**
- **It refers to both when the male and female reproductive organs are present in the same organisms.**
- **E.g. Liver fluke ,Tapeworm and earthworm.**



## **Dioecious or unisexual**

- **It is referred to when the male and female reproductive organs are distinct, which means they are present in two separate organisms.**
- **E.g. Humans, dogs and tiger.**



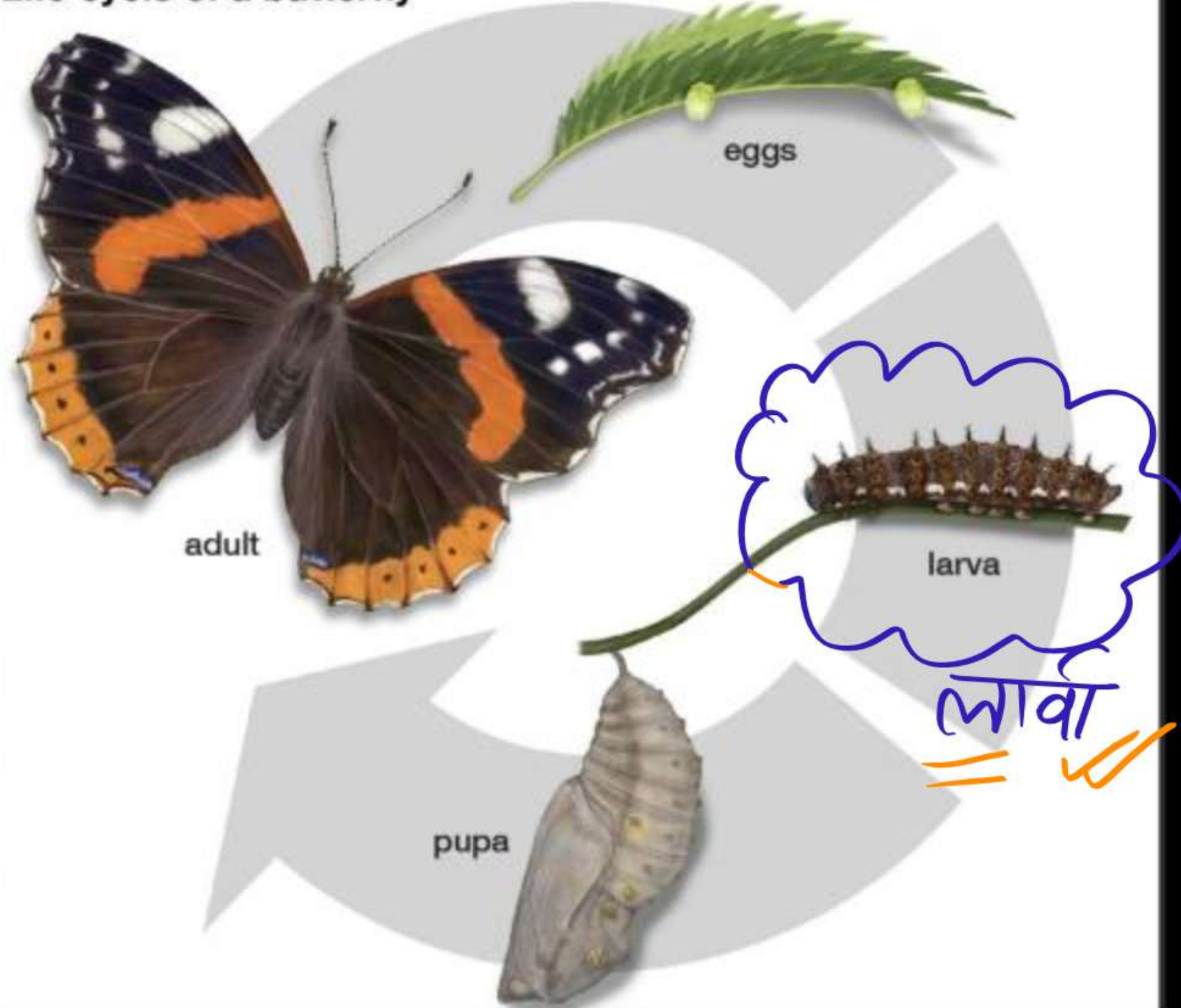


# Development

Direct development	Indirect development
1. It is a type of development in which an embryo develops into a mature individual without involving a larval stage.	1. It is a type of development that involves a sexually - immature larval stage, having different food requirements than adults.
2. Metamorphosis is absent.	2. Metamorphosis involving development of larva to a sexually mature adult is present.
3. It occurs in fishes, reptiles, birds, and mammals.	3. It occurs in most of the invertebrates and amphibians.



## Life cycle of a butterfly



दायाल २०)

Metamorphosis



# Development (विकास)

(अप्रत्यक्ष विकास)

Indirect Development

Larva (लार्वा) ✓

"Metamorphosis" ✓

(कायान्तरण)

# Butterfly (तितली)

# Silk Moth (रेशम का कीड़ा)

# Mosquito (मच्छर)

# Frog (मैदक)

(प्रत्यक्ष विकास)

Direct Development

Larva → X

# Fish (मछली)

# Reptiles (सरीसृप)

# Birds (पक्षी)

# Mammals (स्तनधारी)