



Class 11 Academic Program-2020

BIOLOGY 2ND PAPER

Lecture : Z-01

Chapter 01 : Animal Diversity & Classification

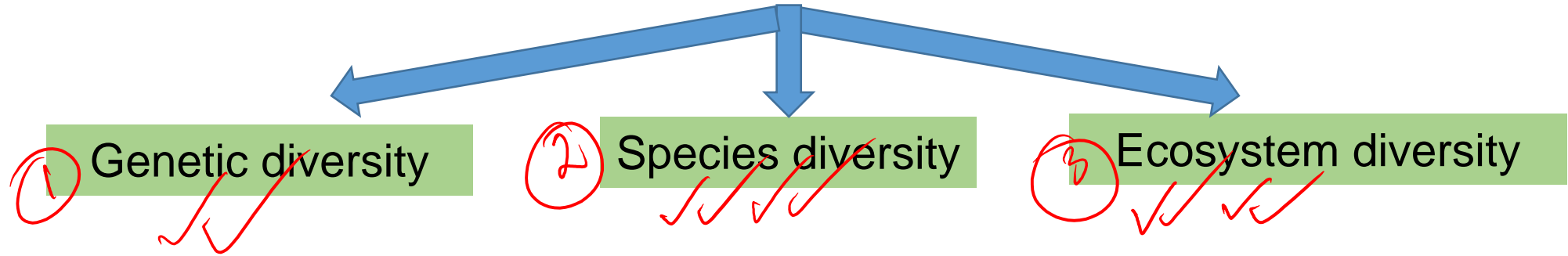
Sifat Chowdhury
SSMC
5th year



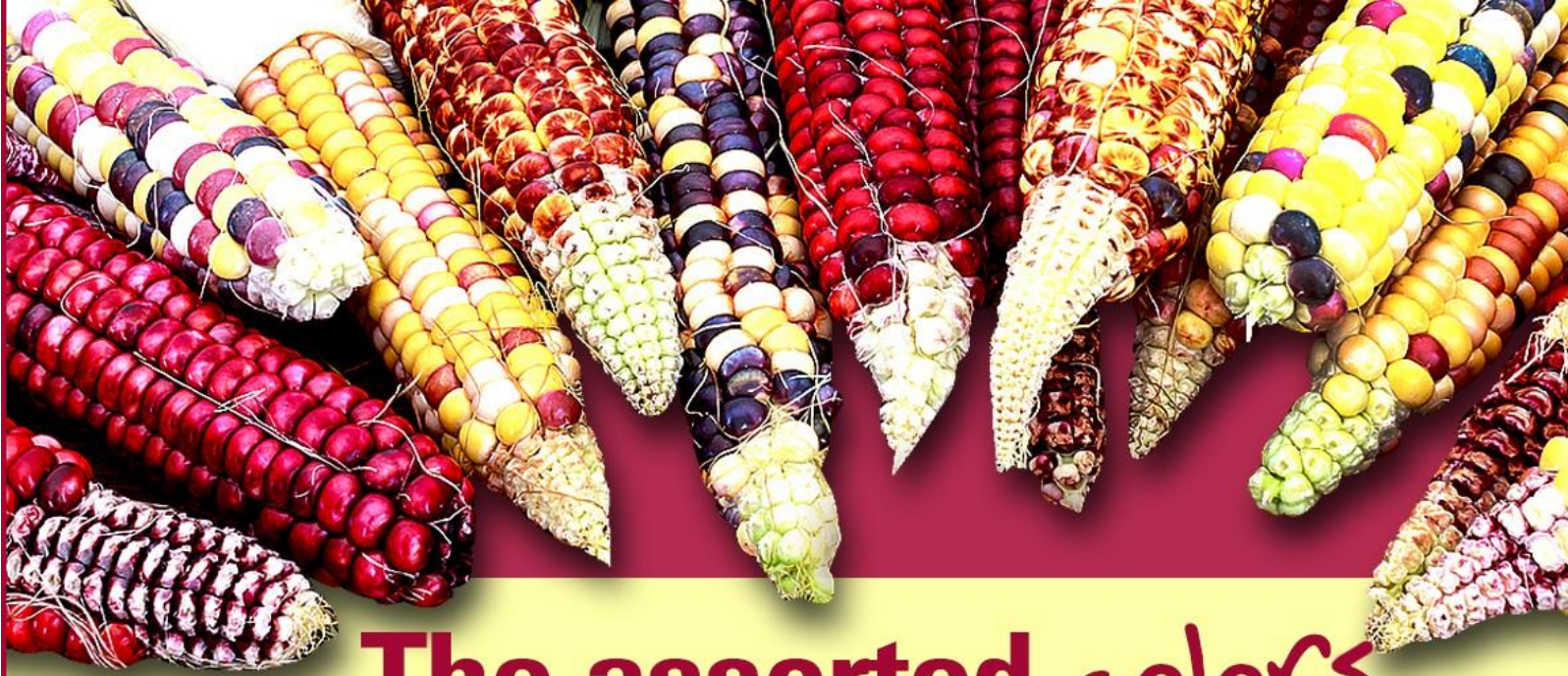
What we will learn today

- ① Prince → ✓ Porifera
- ② Charm → ✓ Cnidaria
- ③ Plays → ✓ Platyhelminthes
- ④ Nice → ✓ Nematoda
- ⑤ Music → ✓ Mollusca
- ⑥ And → ✓ Annelida
- ⑦ Always → ✓ Arthropoda
- ⑧ eats → ✓ Echinodermata
- ⑨ Chocolate → ✓ Chordata

Animal diversity



Genetic diversity



The assorted colors
of kernels in different varieties of corn
are a result of **genetic diversity**.

Species Diversity



Ecosystem Diversity



Marine ecosystem



Forest ecosystem

Basis of Animal Classification

✓ Body shape

✓ Grades of organization

✓ Way of living

✓ Cleavage & development

✓ Germ layers

✓ Symmetry

✓ Metamerism

✓ Tagmatization

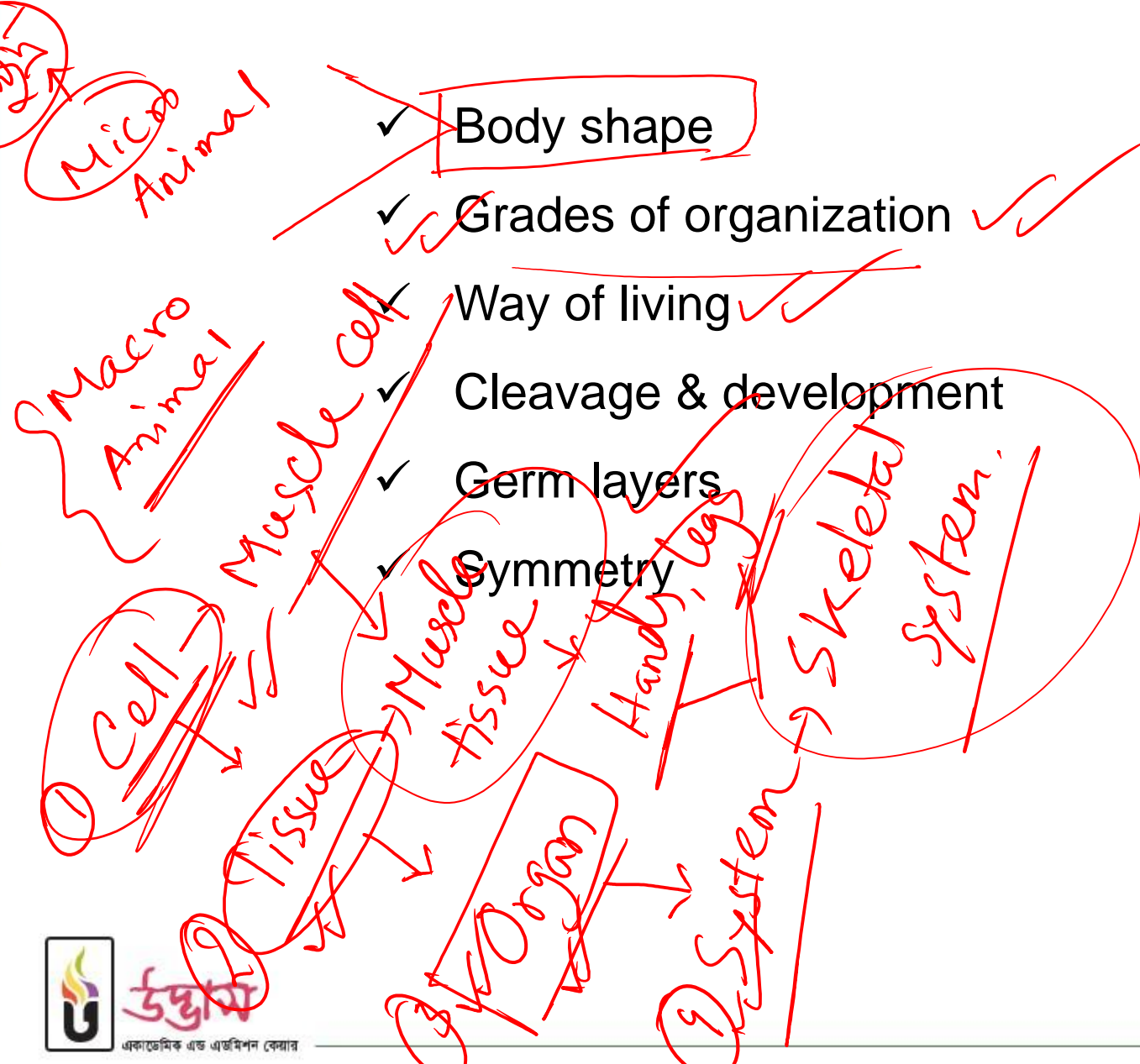
✓ Polarity

✓ Planes

✓ Coelom

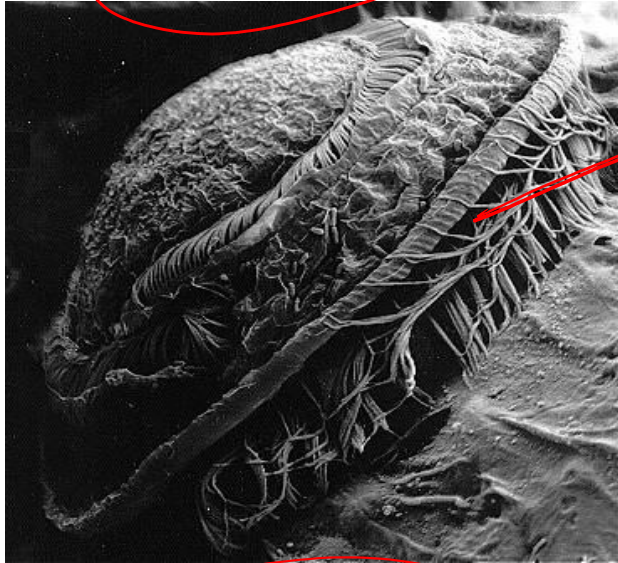
✓ Notochord

✓ Alimentary canal



Body Shape

Micro-animal



Trichodina anabasi

Macro-animal

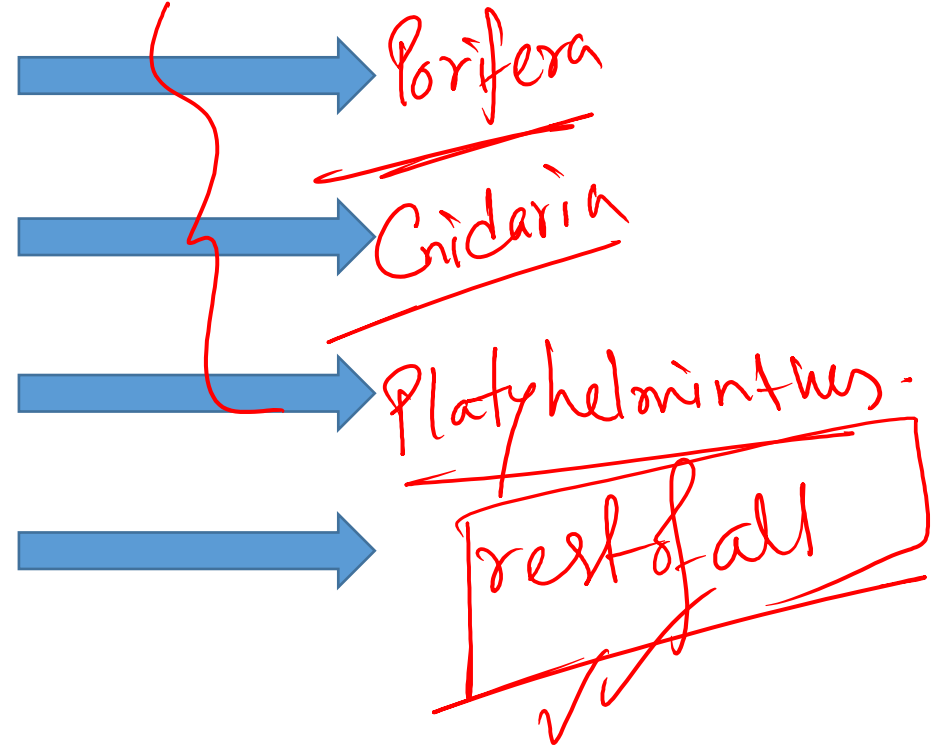


Cavia porcellus

Guinea pig

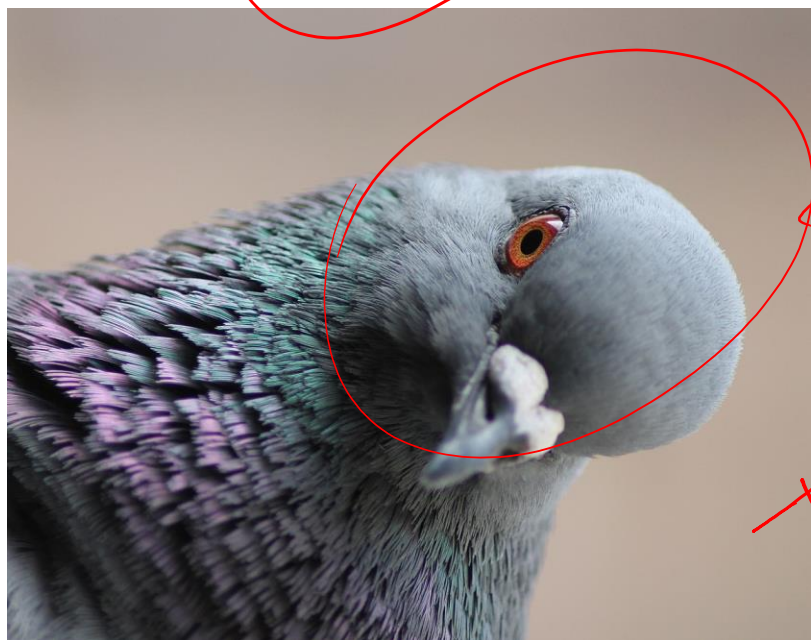
Grades of Organization

- Worst*
- ① Cellular grades of organization
 - ② Cell-tissue grades of organization
 - ③ Tissue-organ grades of organization
 - ④ Organ-system grades of organization
- Best*



Way of living

Free living



Columba livia

Dependent

Harmful

Symbiotic

Parasite



Fasciola hepatica

Cleavage & development

Radial cleavage

Spiral cleavage

Bilateral cleavage

Arthropoda

Annelida, Mollusca

Chordata

Cleavage

MITOSIS

Animal

vegetal pole

Nucleus

egg

Yolk sac

Whole cell

Holoblastic

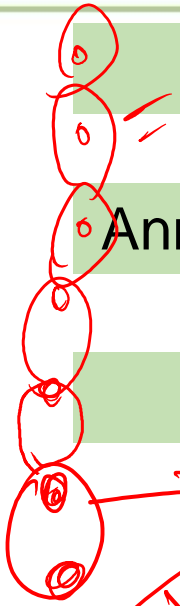
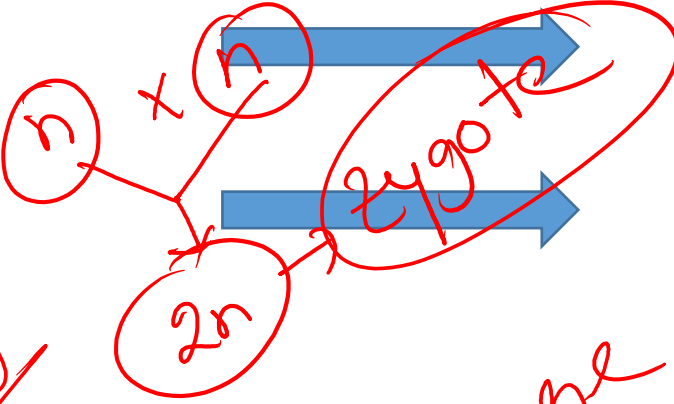
Cleavage

Meroblastic

Partial division

spiral cleavage

Bilateral



বিশ্রাম কাজের অঙ্গ, এক সঙ্গে গাঁথা; নয়নের মণি যেমন নয়নের পাতা।



Germ layers

Diploblastic

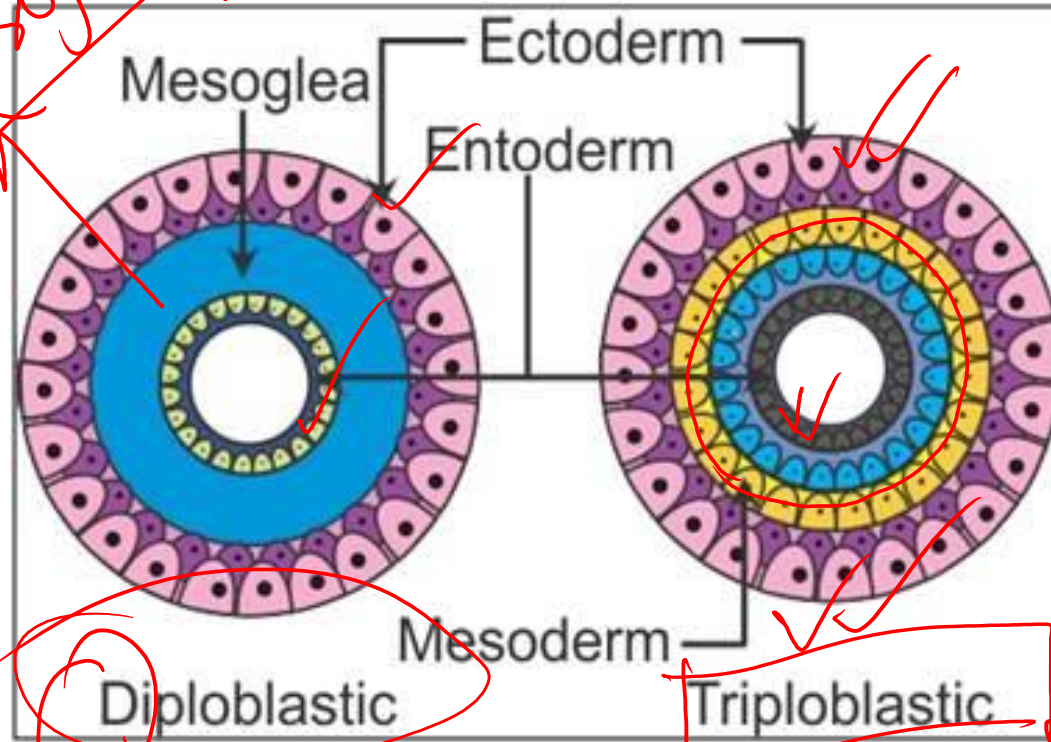


Cnidaria

Triptoblastic



Platyhelminthes to Chordata



Handwritten notes in red ink:

- 1. Skin
- 2. Muscle
- 3. Alimentary Canal
- Mesoglea

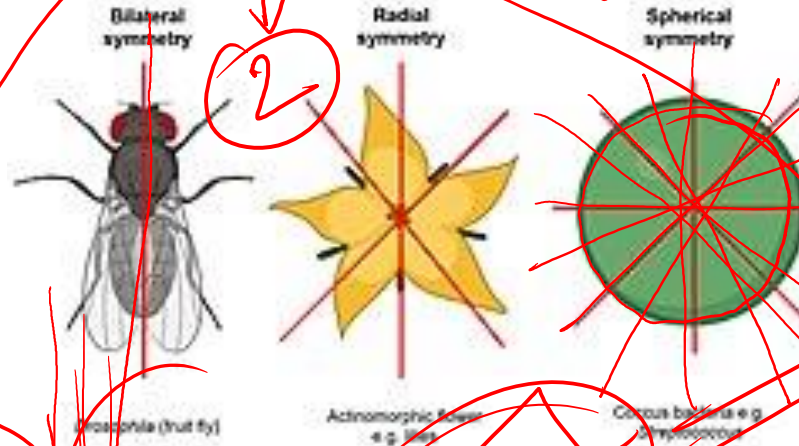
Handwritten notes in red ink:

1. Ectoderm
2. Mesoderm
3. Entoderm

Middle

Symmetry

Spherical, radial, biradial, bilateral, asymmetry



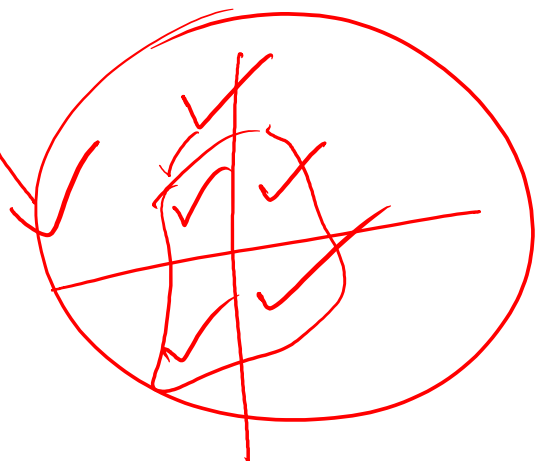
Handwritten notes in red ink:

- At the top left, "Vokor" and "Radiolaria" are written with arrows pointing towards the center.
- Below them, "Radio" is written with an arrow pointing to "Spherical".
- "Spherical" is circled in red.
- Below "Spherical", "Infinity" is written with an arrow pointing to the circled word.
- On the far left, "Heliozoa" is written vertically.

Handwritten note in red ink: "More than 2. Similar" with a bracket pointing to the radial and spherical symmetry examples.

Handwritten notes in red ink:

- "Sea animal" is written with an arrow pointing to the sea animal example.
- "Sea animal" is circled in red.
- "Hydra" is written with an arrow pointing to the sea animal example.
- "Jelly fish" is written with an arrow pointing to the sea animal example.
- "Sea animal" is written again in a larger circle at the bottom.



Metamerism

Homonomous metamere

Heteronomous metamere

Asegmental

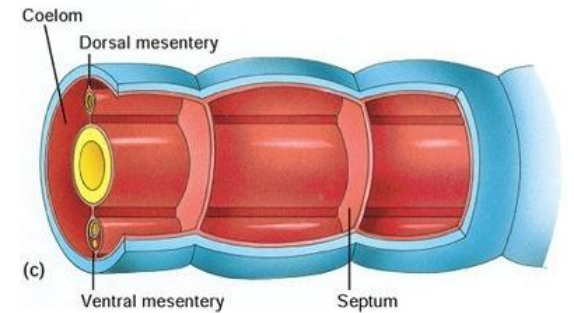
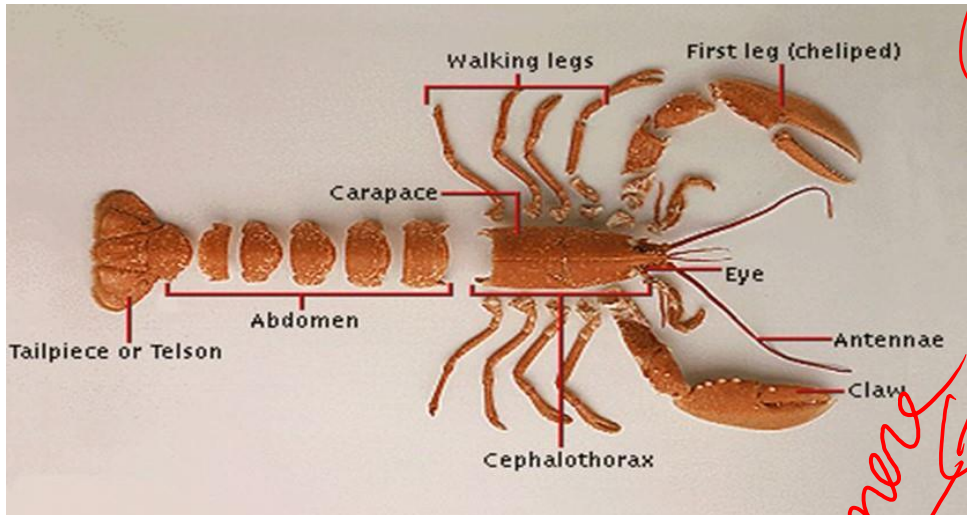


Earthworms

Insects

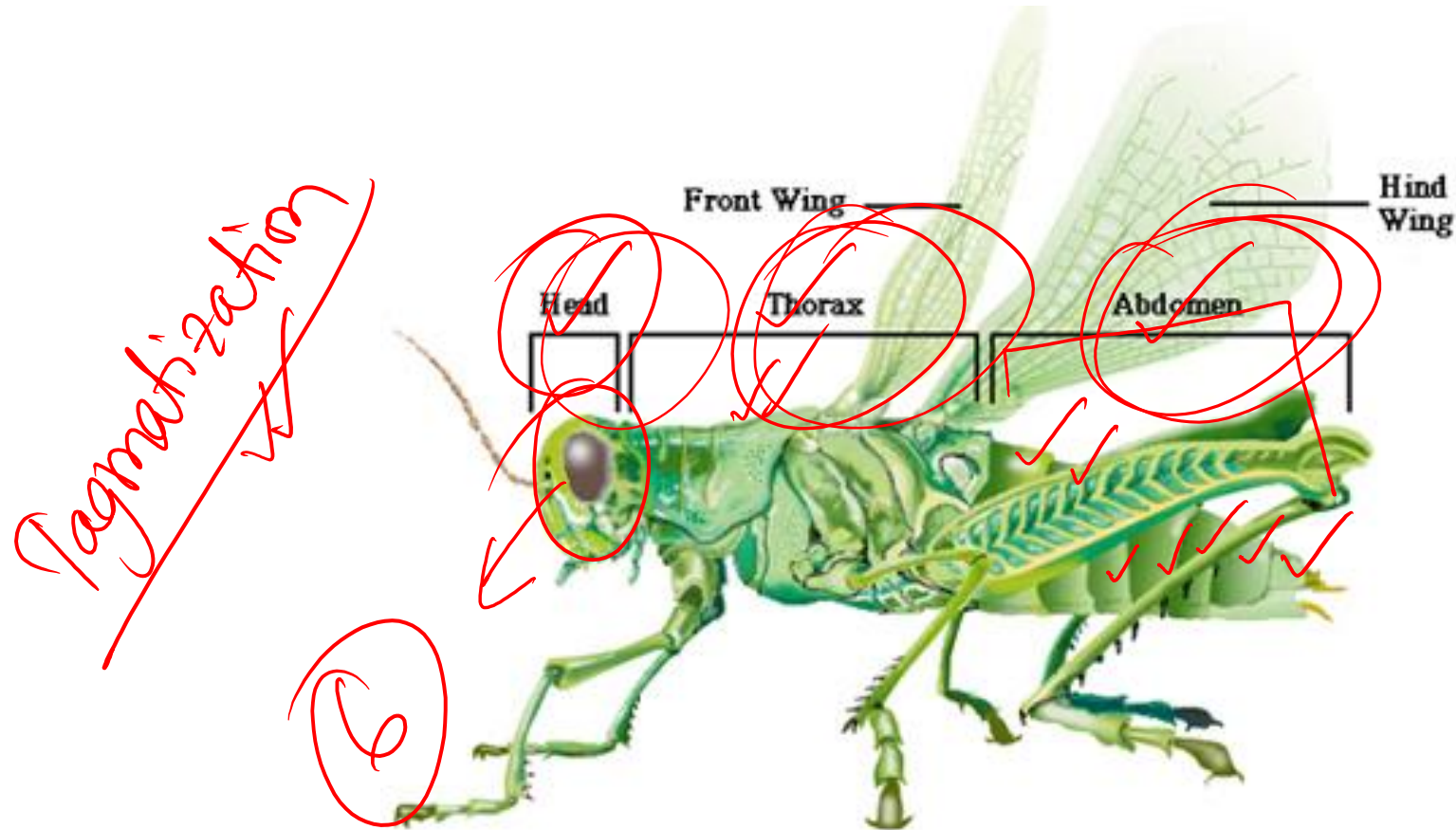
Sea star, Oysters

Handwritten notes:
 Same
 Different
 Homo
 Hetero
 Earthworm
 Metamerism
 metamer

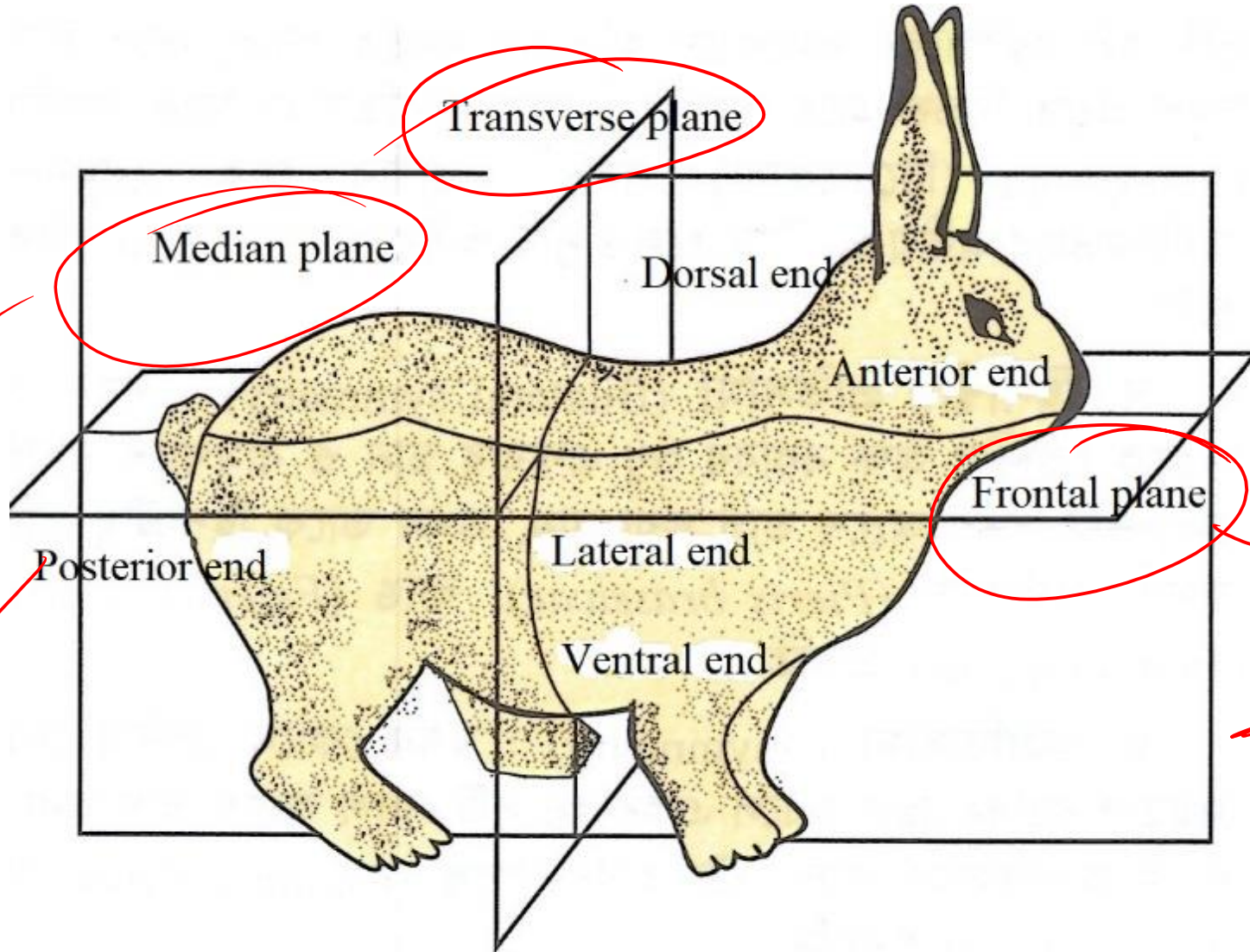


Tagmatization

Arthropoda phylum has this feature



Polarity & Planes



Sagittal plane

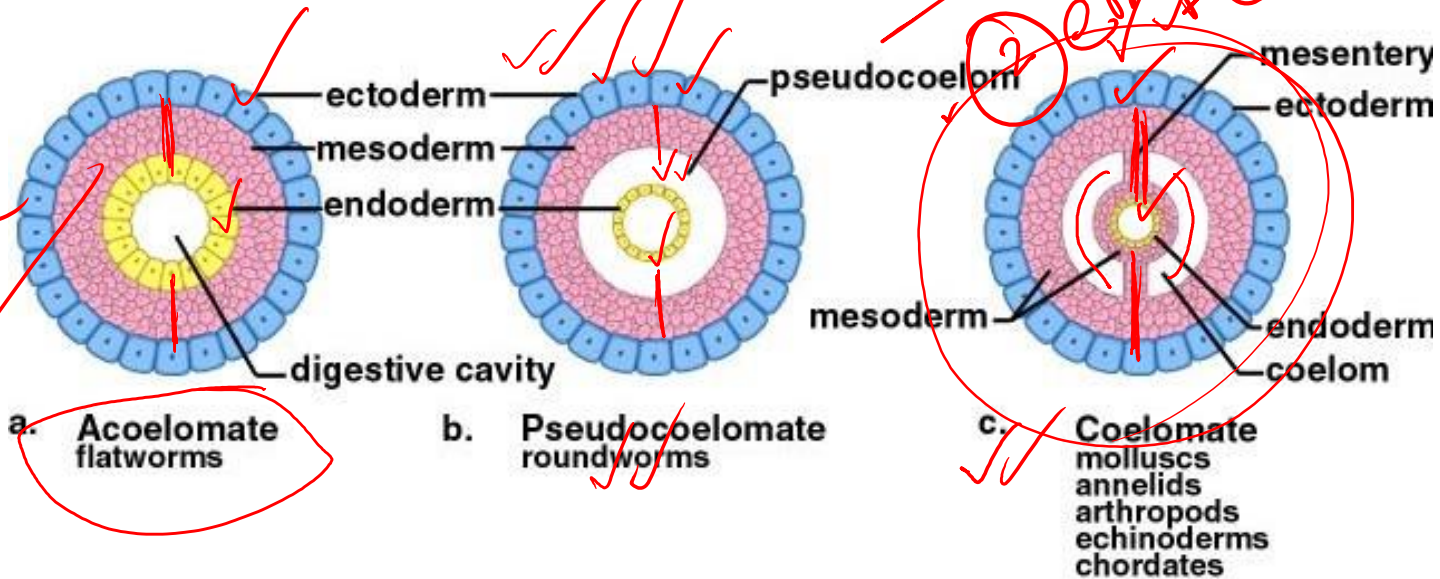
Coronal plane

Coelom

Acoelomate

Pseudocoelomate

Eucoelomate



PC → Chordata
 Porifera → Platyhelminthes
 Coelom → Peritoneum
 Empty space

5***
 2/6/21
 Nematode

Ectoderm
 Endoderm

Poll Question-01

Which of the following is a pseudocoelomate?

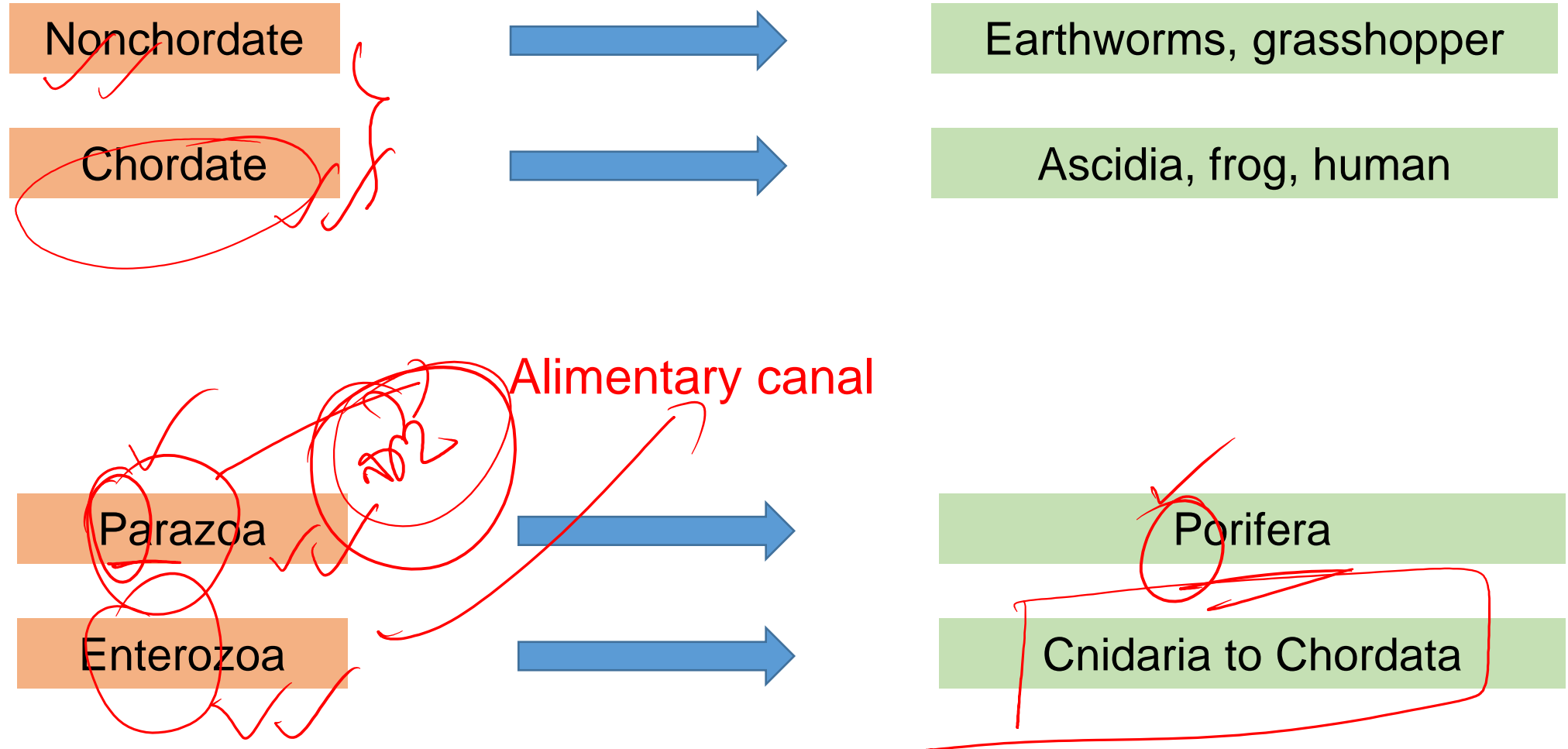
(a) Platyhelminthes

(b) Nematoda

(c) Mollusca

(d) Annelida

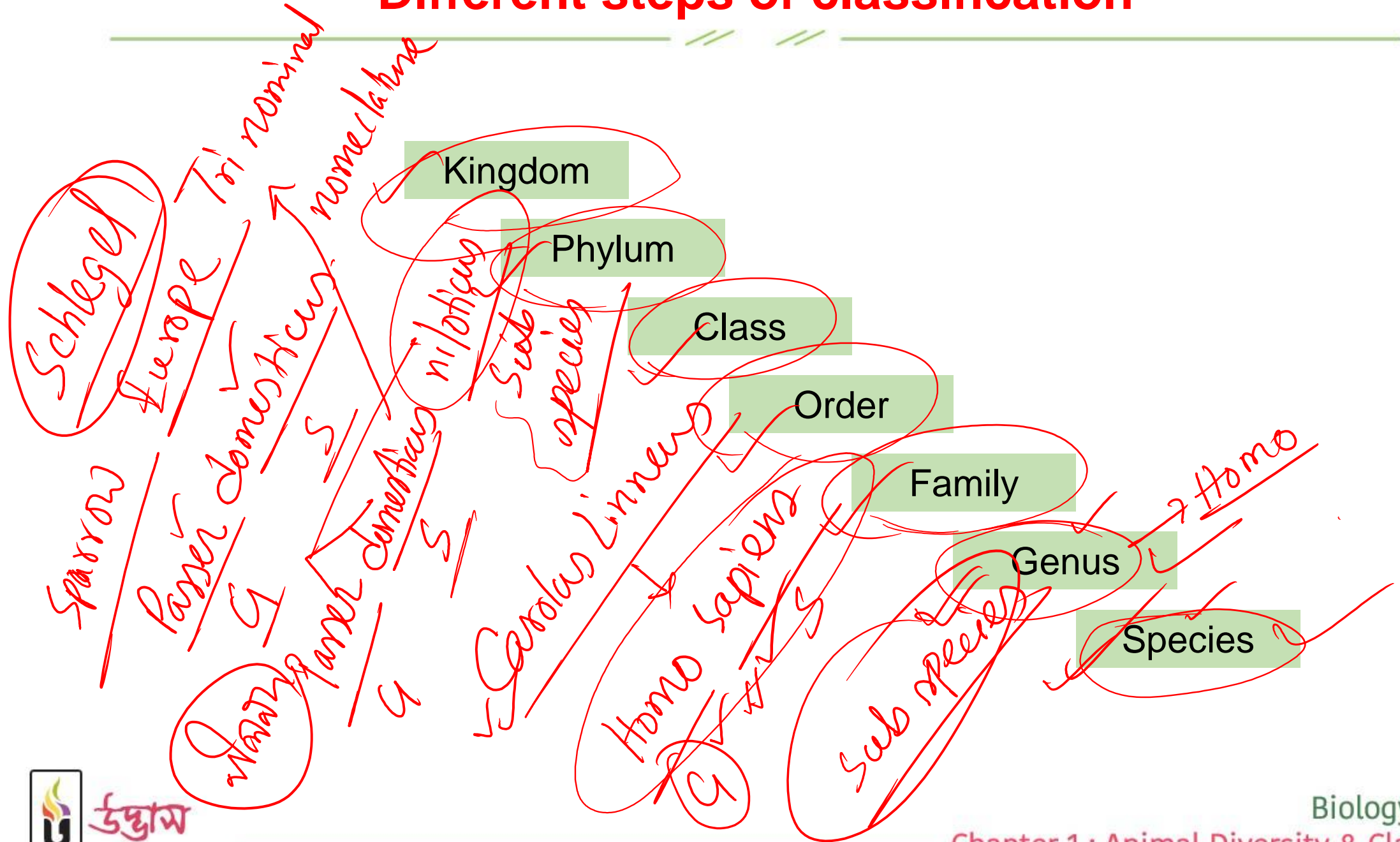
Notochord



বিশ্রাম কাজের অঙ্গ, এক সঙ্গে গাঁথা; নয়নের মণি যেমন নয়নের পাতা।



Different steps of classification

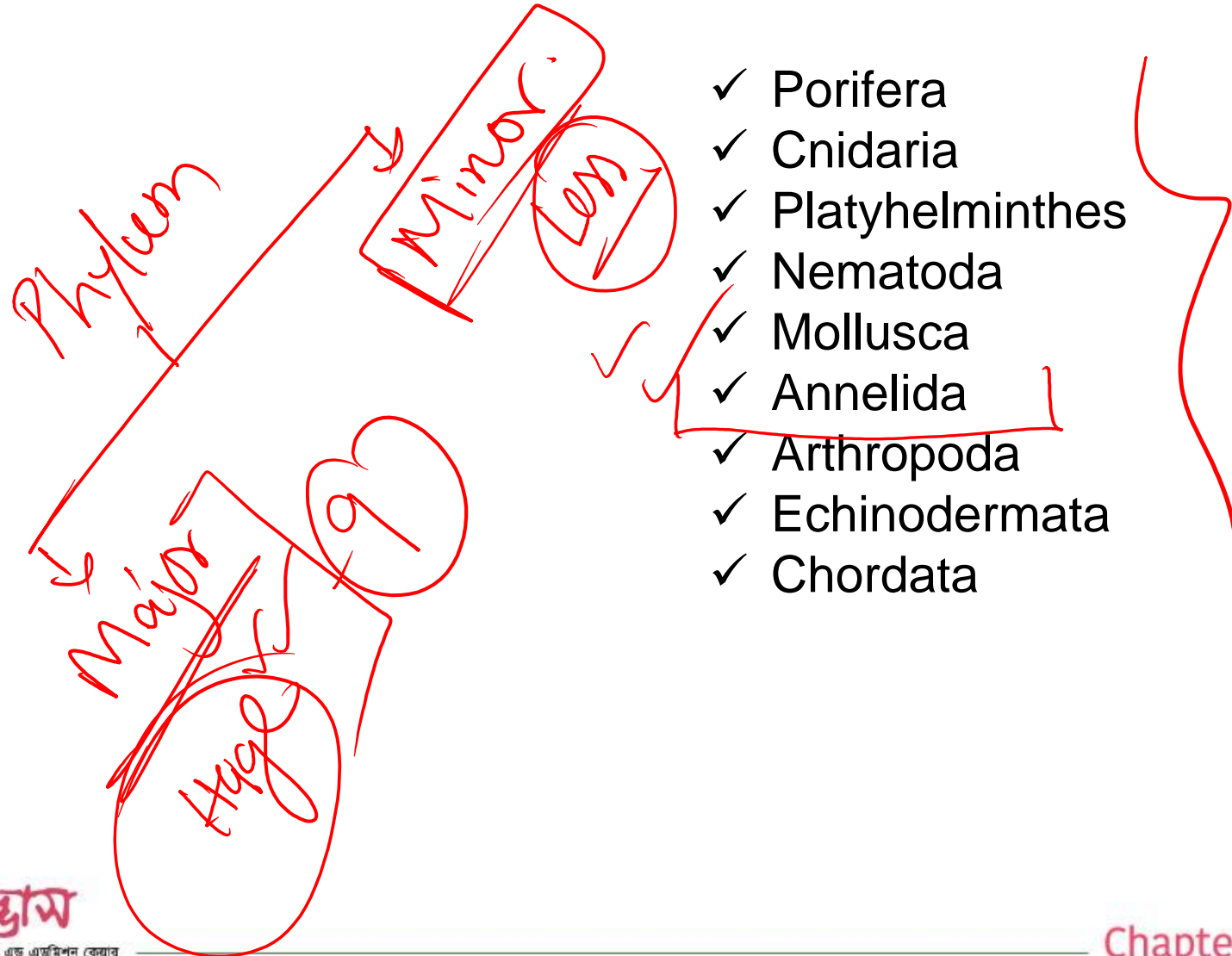


Binomial nomenclature

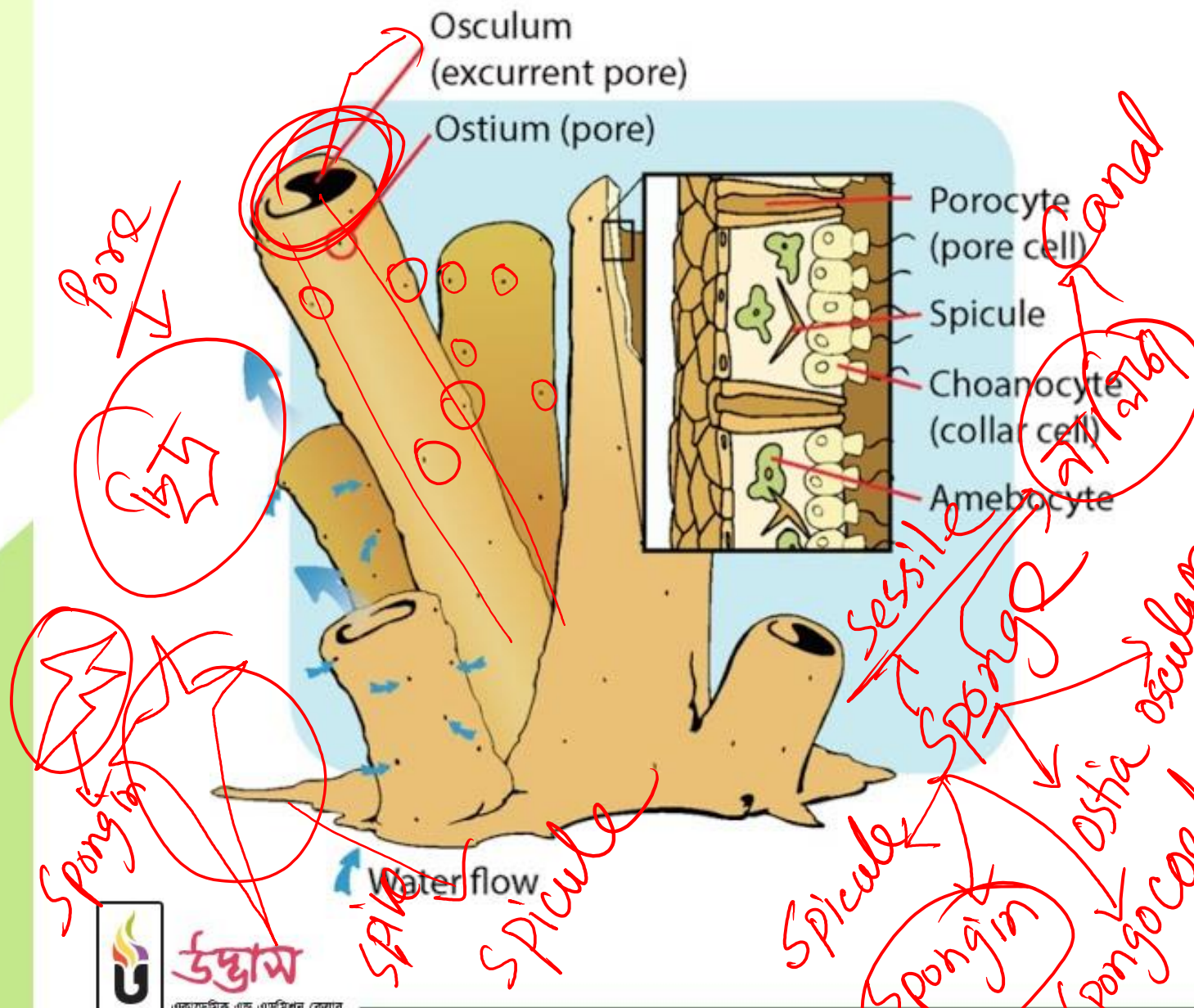
- ✓ Scientific name has two parts.
- ✓ The first part is genus name and the second part is specific epithet.
- ✓ The scientific name must be Latin or latinized. The entire two-part name must be written in italics (or underlined when handwritten).
- ✓ The genus name is always written first and it must be capitalized. The specific epithet is never capitalized.

Major phyla

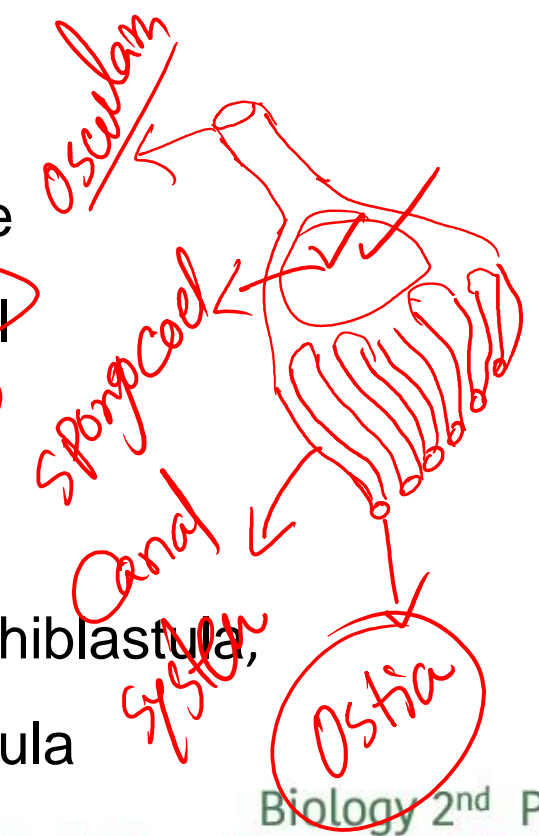
There are 33 phyla in kingdom Animalia. 9 of them are called major phyla. Rest of them are called minor phyla.



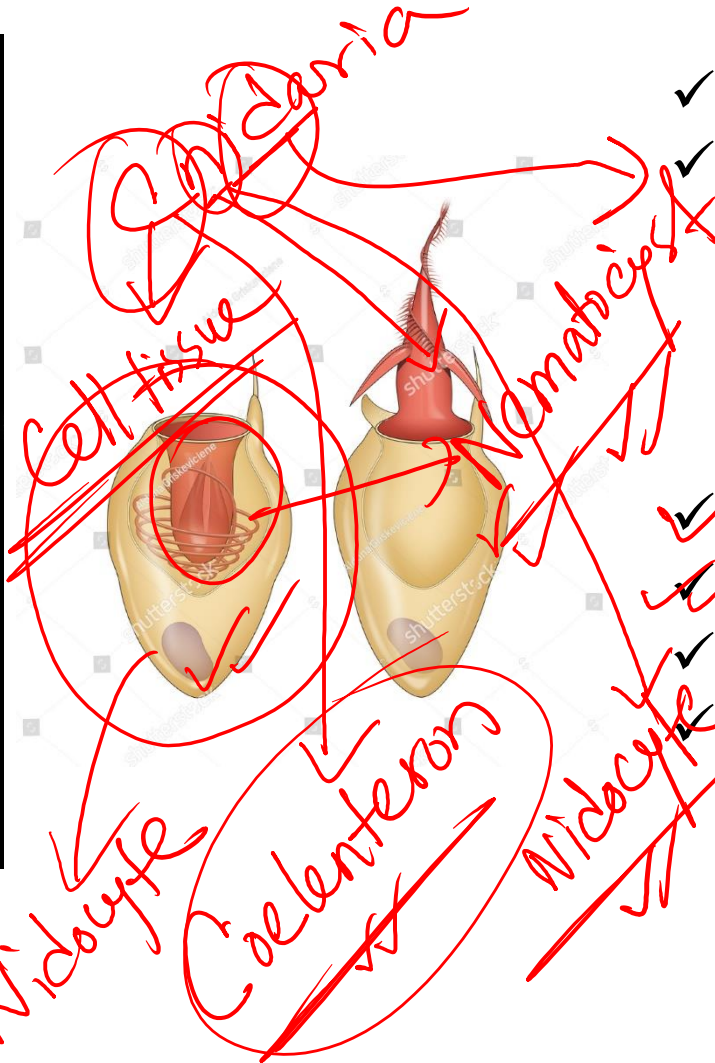
Porifera



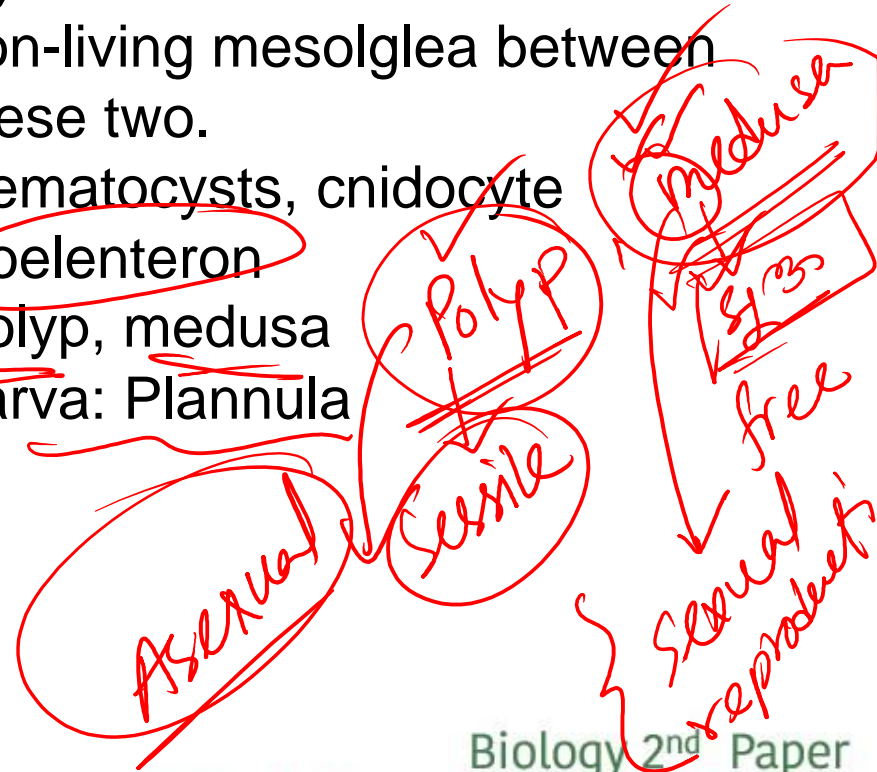
- ✓ Cellular grades of organization
- ✓ Ostia
- ✓ Canal system
- ✓ Spicule
- ✓ Spongina
- ✓ Choanocyte
- ✓ Spongocoel
- ✓ Osculum
- ✓ Sessile
- ✓ Larva: Amphiblastula,
Parenchymula



Cnidaria



- ✓ Cell-tissue grades of organization,
- ✓ Radial symmetry
- ✓ Diploblastic. Outer layer is called epidermis and inner layer endodermis. There is non-living mesoglea between these two.
- ✓ Nematocysts, cnidocyte
- ✓ Coelenteron
- ✓ Polyp, medusa
- ✓ Larva: Plannula



Platyhelminthes



- ✓ Bilateral symmetry
- ✓ Triptoblastic
- ✓ Acoelomate
- ✓ The skin is covered with ciliated epidermis or ~~cuticle.~~
- ✓ Parenchyma, mesenchyme
- ✓ Sucker, hook
- ✓ Flame cell

Plate

excretory organ



Poll Question-04

Flame cell is a characteristic of ____

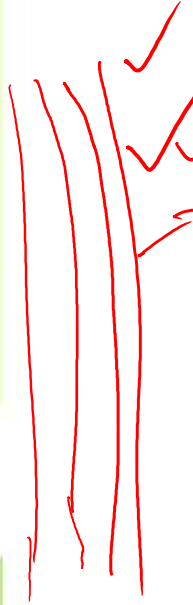
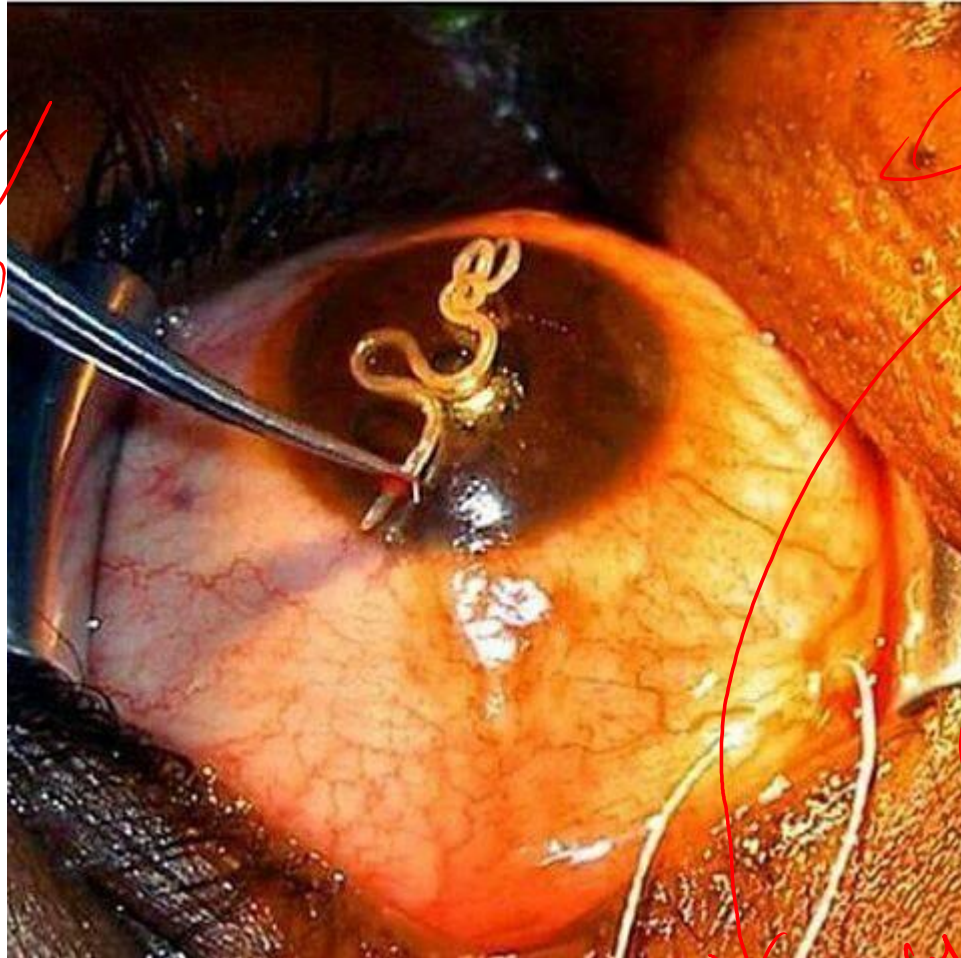
(a) Platyhelminthes

(b) Nematoda

(c) Mollusca

(d) Annelida

Nematoda



Handwritten notes in red ink:

- ✓ tubewithin tube
- ✓ Nematoda
- ✓ Tubular
- ✓ elastin
- ✓ Coelomak
- ✓ No respiratory system & Cardiovascular system. Not segmented

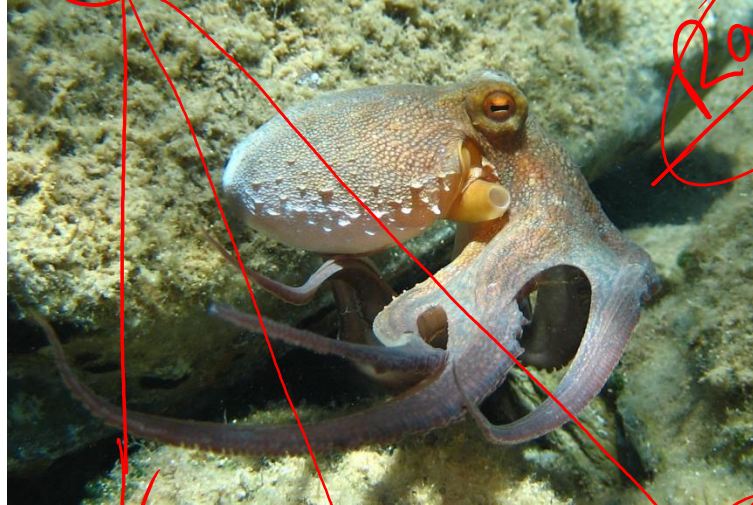
- ✓ Bilateral symmetry
- ✓ Triptoblastic
- ✓ Pseudocoelomate
- ✓ Unsegmented
- ✓ The skin is covered with elastin made cuticle.
- ✓ Tube within a tube
- ✓ Respiratory system and circulatory system are absent
- ✓ Sexual dimorphism

Handwritten note in red ink: male / female

Poll Question-03

- Which of the following shows sexual dimorphism?
- (a) Platyhelminthes
 - (b) Nematoda
 - (c) Mollusca
 - (d) Annelida

Mollusca



- ✓ Bilateral symmetry (except gastropoda)
- ✓ Coelomate
- ✓ Mantle, shell
- ✓ Haemocoel
- ✓ Radula (except Bivalvia)
- ✓ Respiration occurs through ctenidium or lung or both of them or mantle.

Mollusca → Mouth cavity

Radula

Blood

Haemocoel

empty space

Muscular

Muscular feet

Mantle

Respiration

Poll Question-02

Radula is a characteristic of ____

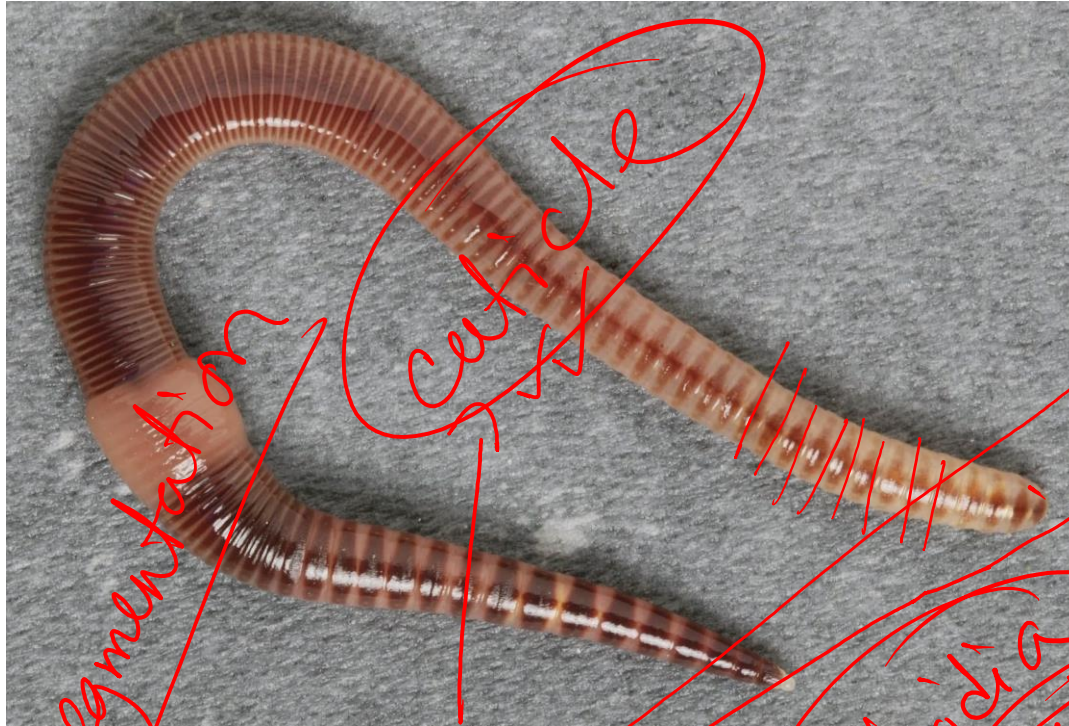
(a) Platyhelminthes

(b) Nematoda

(c) Mollusca

(d) Annelida

Annelida



- ✓ Bilateral symmetry
- ✓ **Coelomate**
- ✓ The skin is covered with cuticle.
- ✓ True segmentation
- ✓ **Setae, parapodia**
- ✓ Nephridia *excretory system*
- ✓ Closed circular system
- ✓ **Larva: Trochophore**

Poll Question-05

- Which of the following is the excretory organ of annelida?
- (a) Setae
 - (b) Parapodia
 - (c) Nephridia
 - (d) Trochophore

লেগে থাকো সৎ ভাবে,
স্বপ্ন জয় তোমারই হবে।



উদ্ভাস

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