

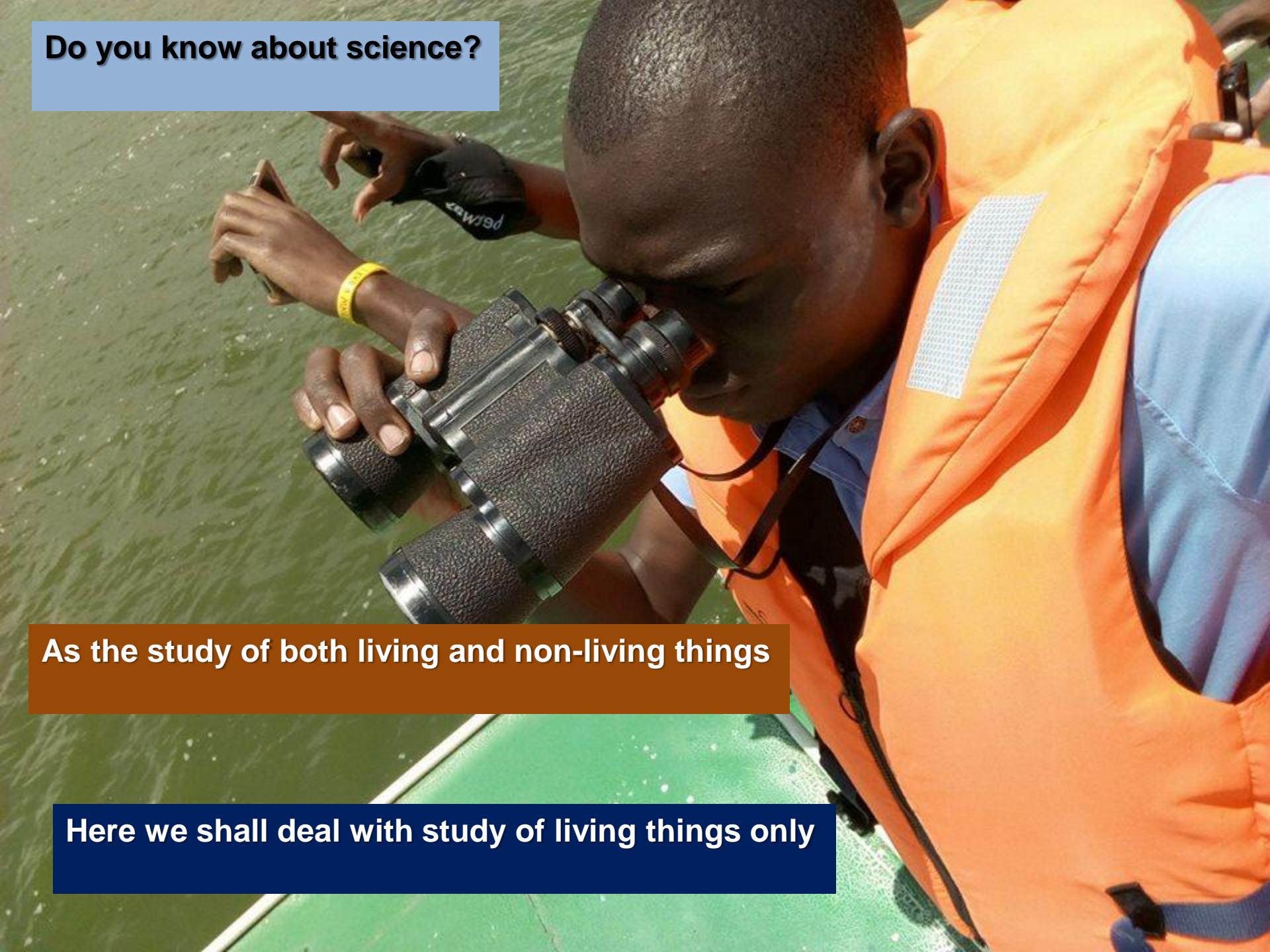
DIVERSITY OF LIVING THINGS

A Senior one biological presentation by Emmanuel Kiganda



**EMMANUEL KIGANDA
BSc. MUST**

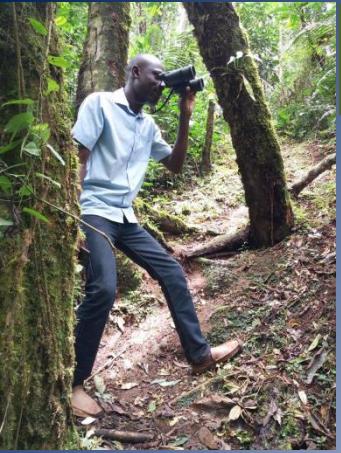
For more information, WhatsApp +256704321793



Do you know about science?

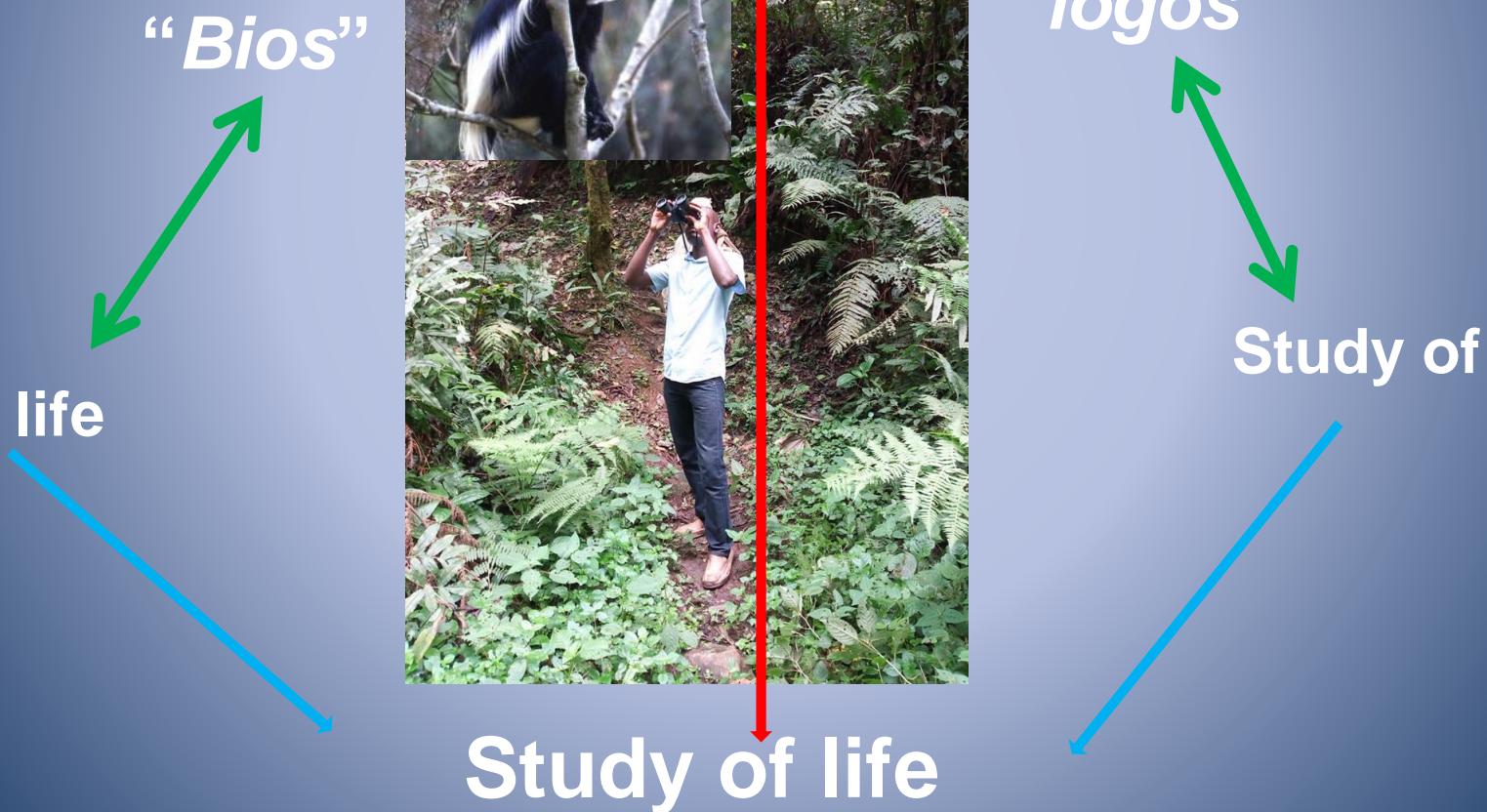
As the study of both living and non-living things

Here we shall deal with study of living things only



Can you define the term “biology”

BIOLOGY

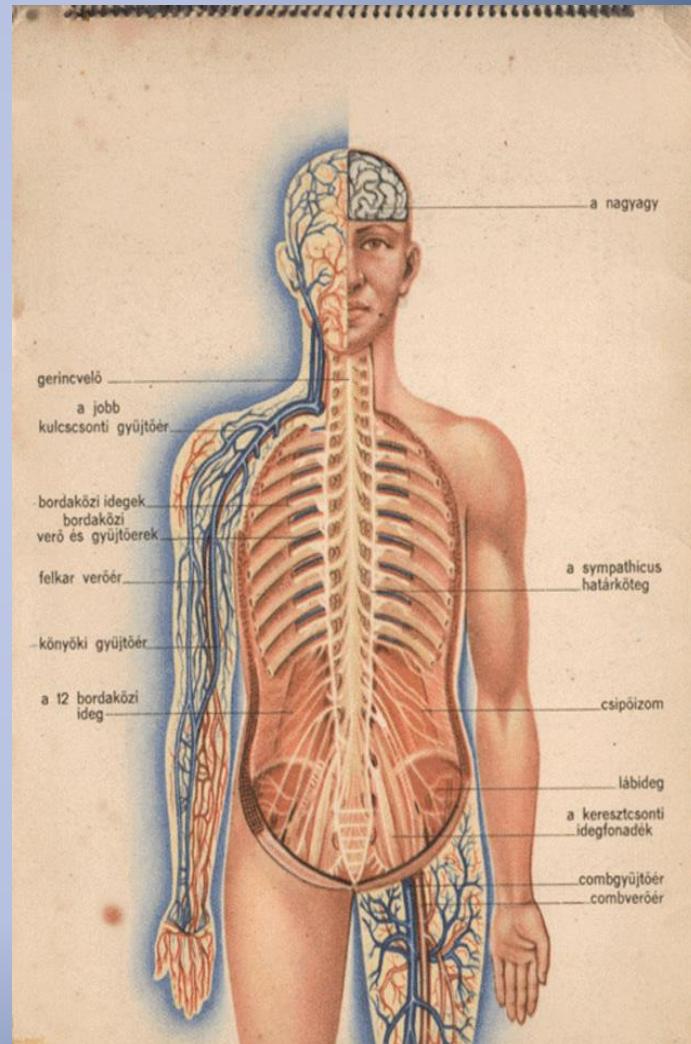


BRANCHES OF BIOLOGY

1) Botany



3) Anatomy



2) Zoology



Describe the different branches of biology you know

BRANCHES OF BIOLOGY CONT'D....

4) Nutrition



6) Mycology



5) Ecology



7) Entomology



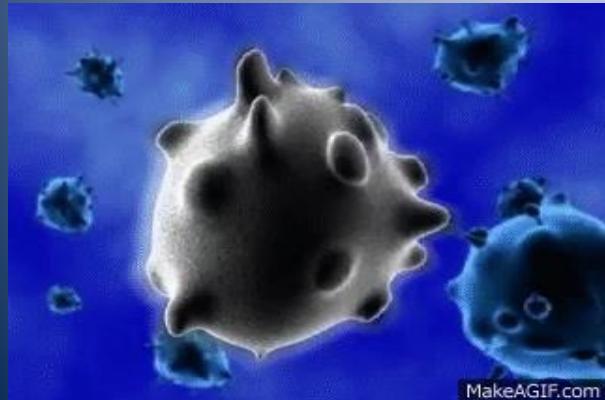
BRANCHES OF BIOLOGY CONT'D....

MICROBIOLOGY

8) Bacteriology



9) Virology



10) Ornithology



11) Ichthyology



BRANCHES OF BIOLOGY CONT'D....

12) Physiology



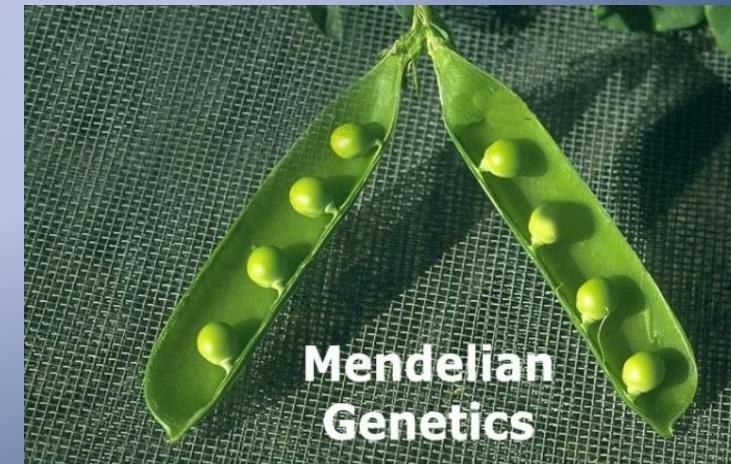
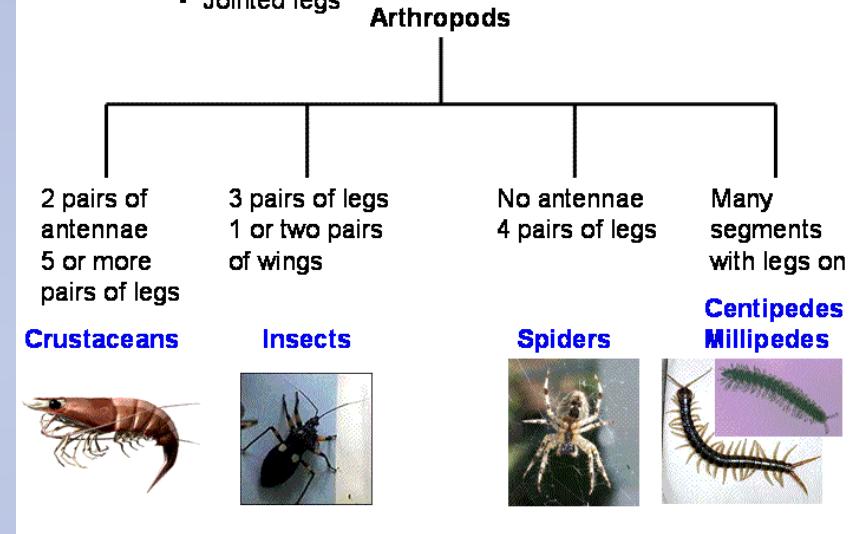
13) Genetics



14) Taxonomy

All arthropods have:

- A hard skeleton on the outside of their body
- Jointed legs

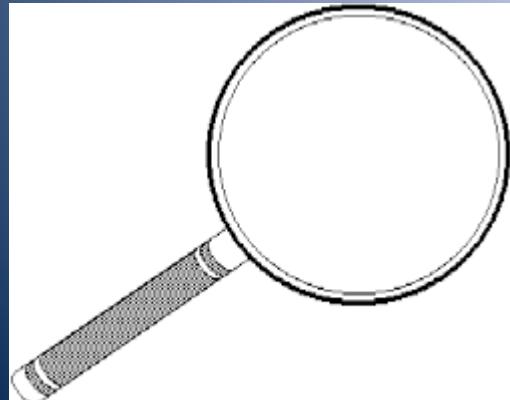


MICROSCOPES

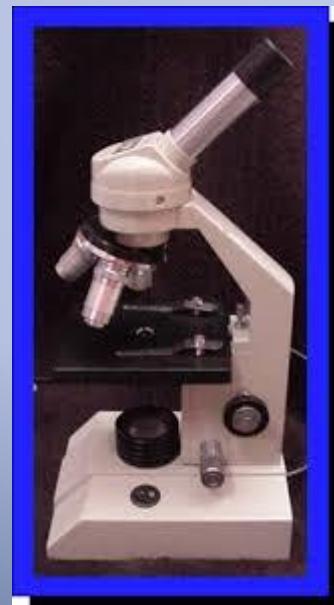
Can you differentiate between simple and compound microscopes?

How do you calculate the magnification of both a hand lens and a compound light microscope?

Hand lens



Compound microscope



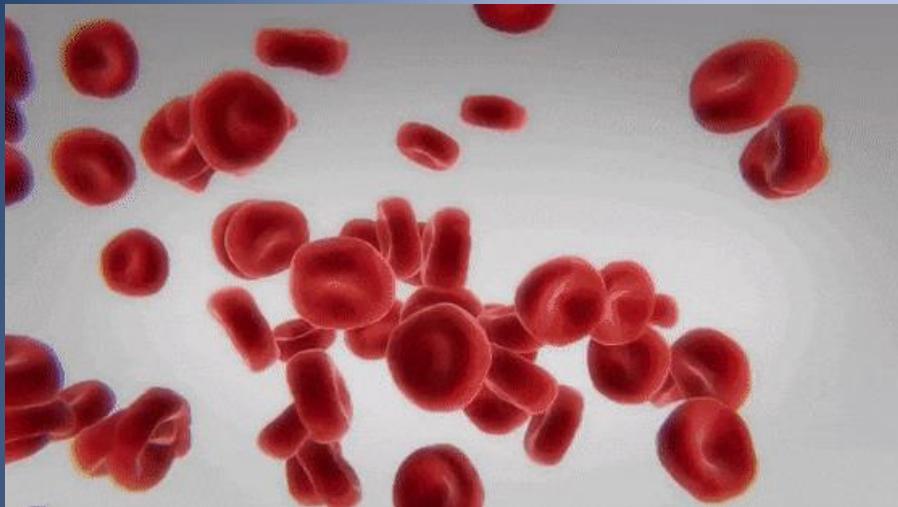
Electron microscope



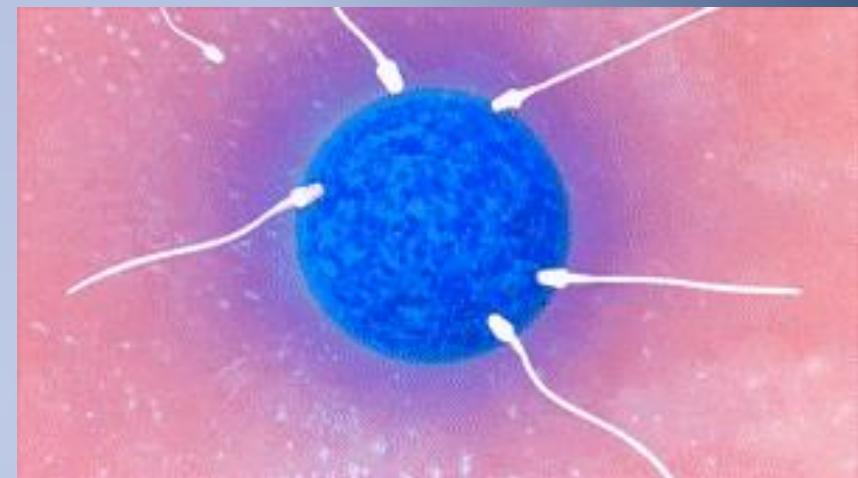
Can you describe how the following specialized animal cells are adapted to perform their functions

Can you state the location of each animal cell in the body

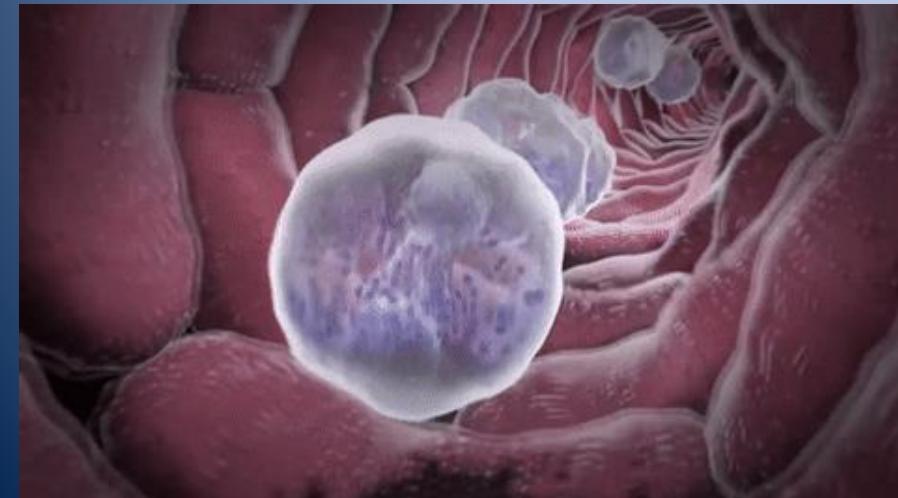
Red blood cells



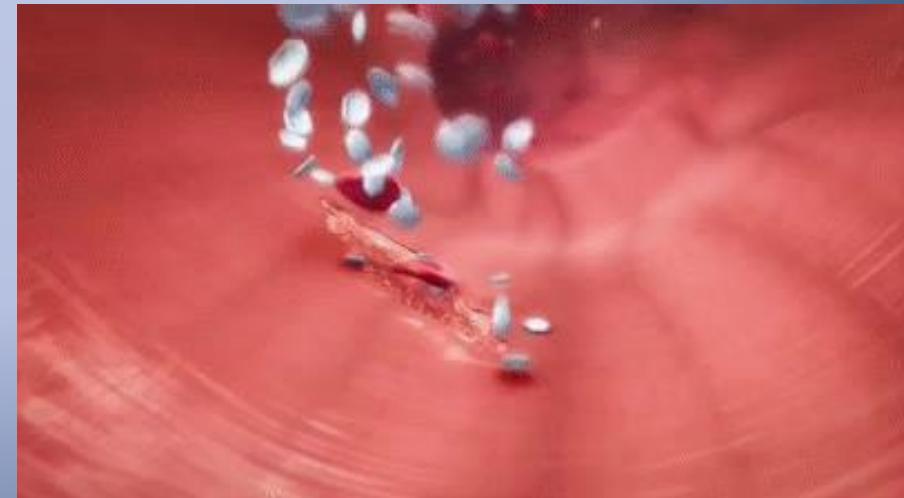
Ovum(egg cell) & Sperm cells



White blood cells



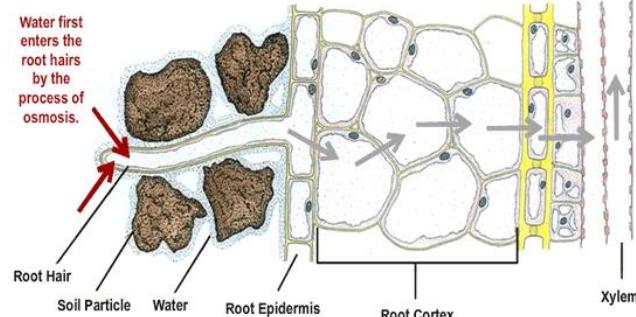
Platelets



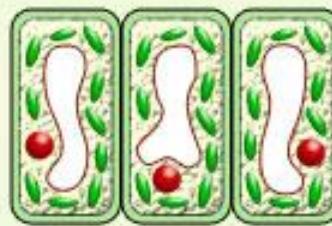
Can you describe how the following specialized plant cells are adapted to perform their functions

Can you state the location of each plant cell in the plant body

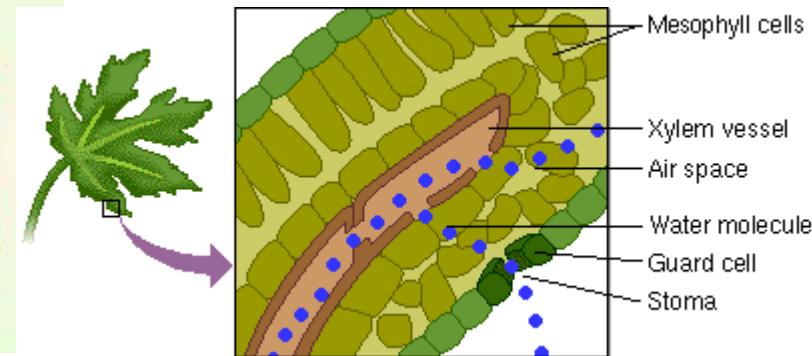
ROOT HAIR CELL



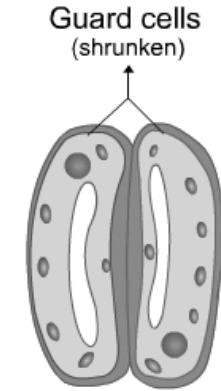
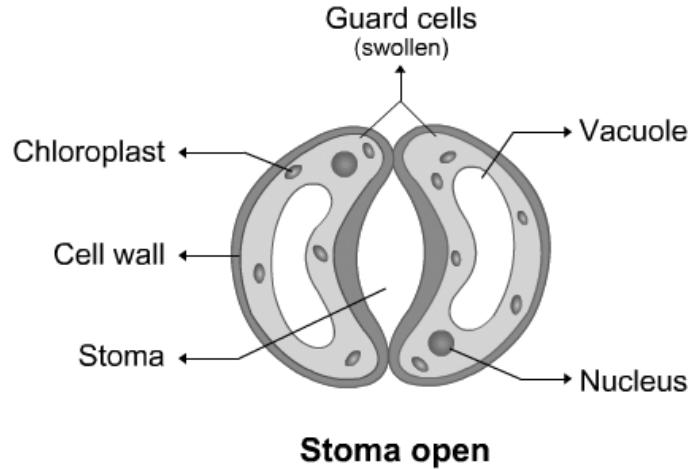
PALISADE CELL



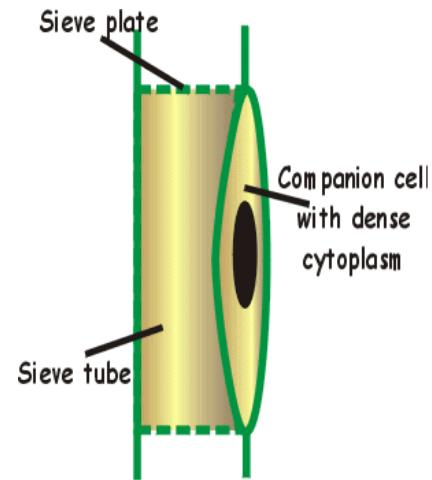
XYLEM CELL



GUARD CELL



SIEVE TUBE CELL



KINGDOM MONERA(BACTERIA)

Which unicellular organisms are shown in the micrograph below?



CLASSIFICATION OF BACTERIA ACCORDING TO SHAPES



Coccus



Diplococcus



Streptococcus



Staphylococcus



Rod/ Bacillus



Filament



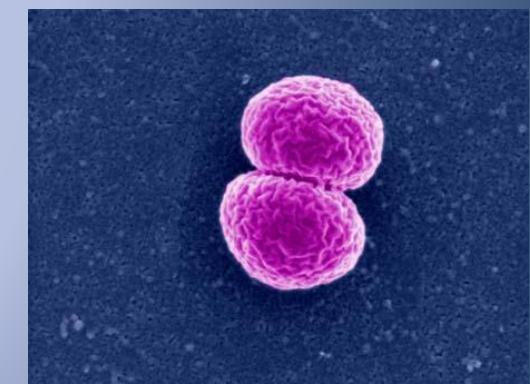
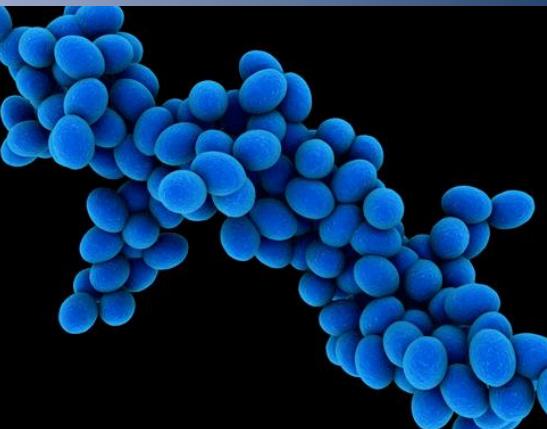
Vibrio/ Comma



Stalked
bacterium



Spiral



Are the bacteria in chains, clusters, pairs or single?

Observe the shape for each group of bacteria

PROTOCTISTA KINGDOM(Protozoans & algae)



Have you ever viewed a protist such as an amoeba in water?

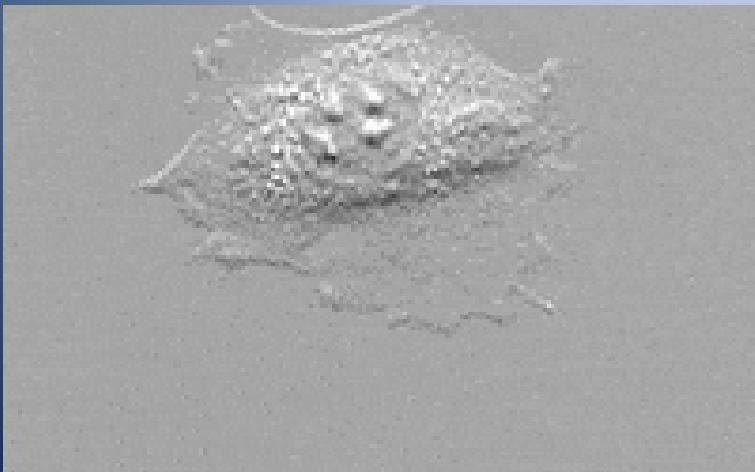
AMOEBA

LOCOMOTION



- **Locomotes by means of pseudopodia**
- **Reproduces by cell division(binary fission)**
- **Feeds by engulfing(phagocytosis)**

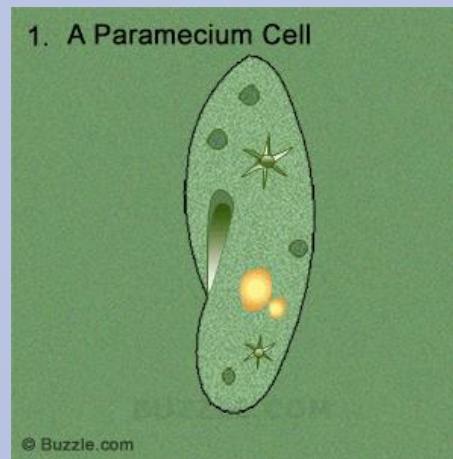
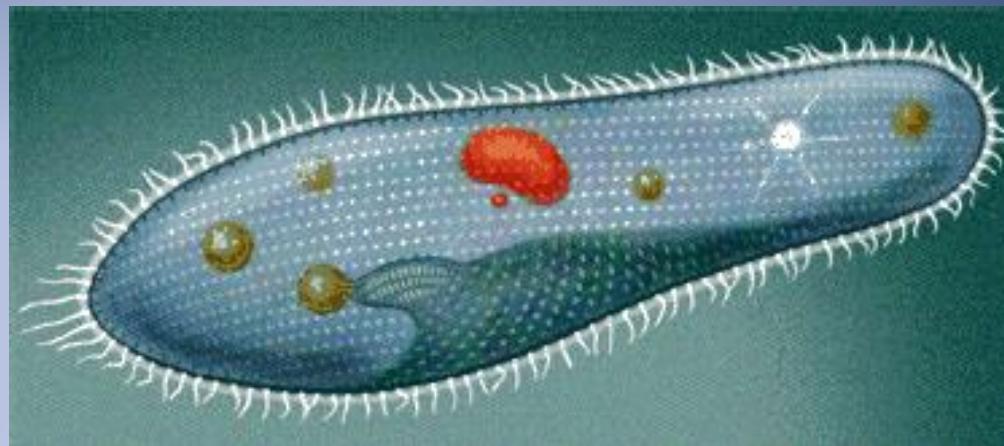
REPRODUCTION



FEEDING



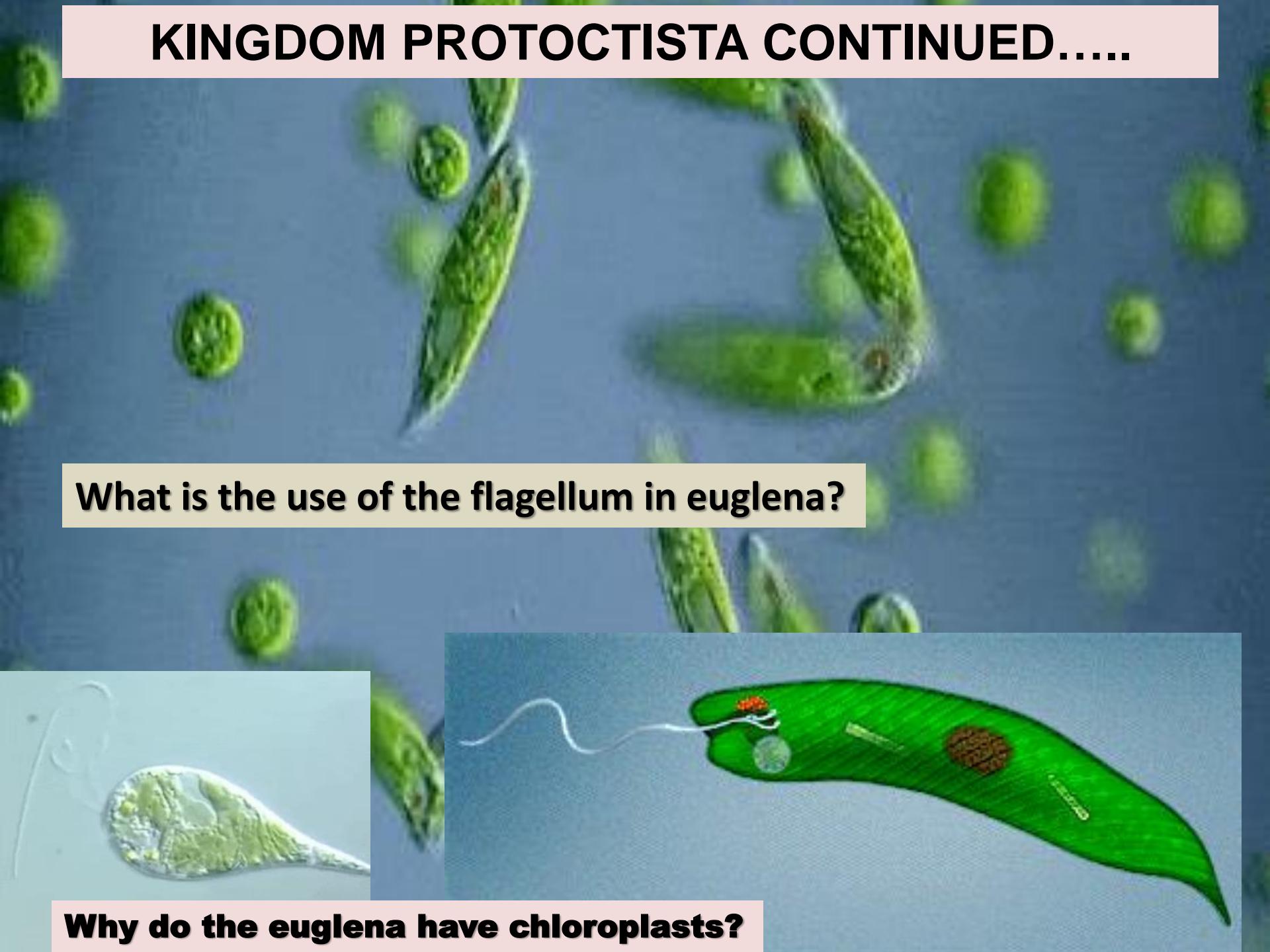
PARAMECIUM



How does a paramecium;

- Move?
- Feed?
- Reproduce?

KINGDOM PROTOCTISTA CONTINUED.....



What is the use of the flagellum in euglena?

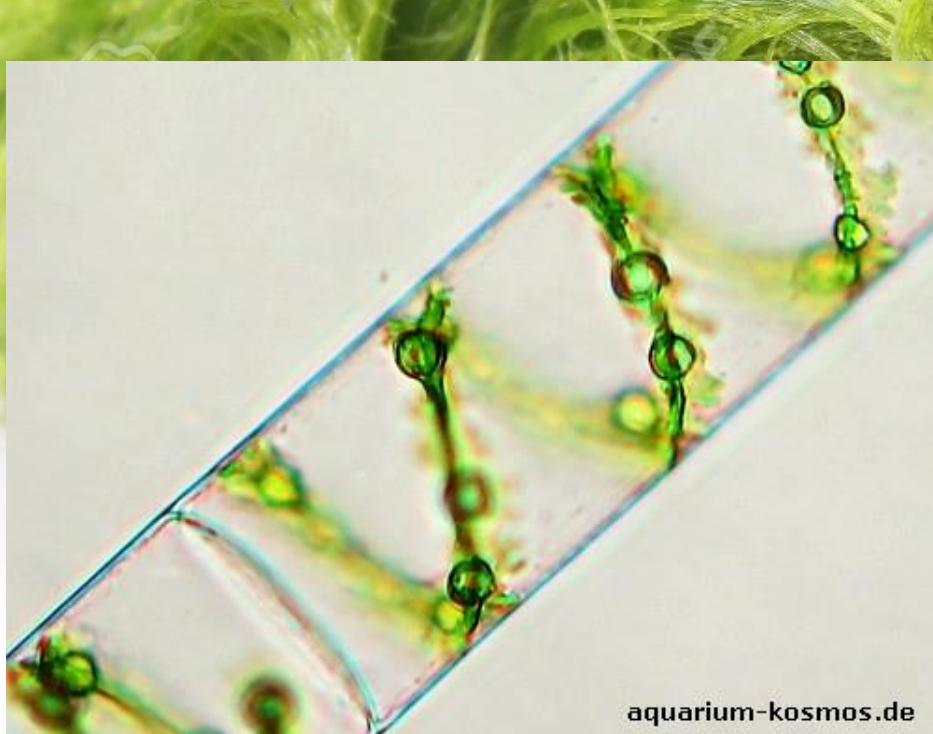
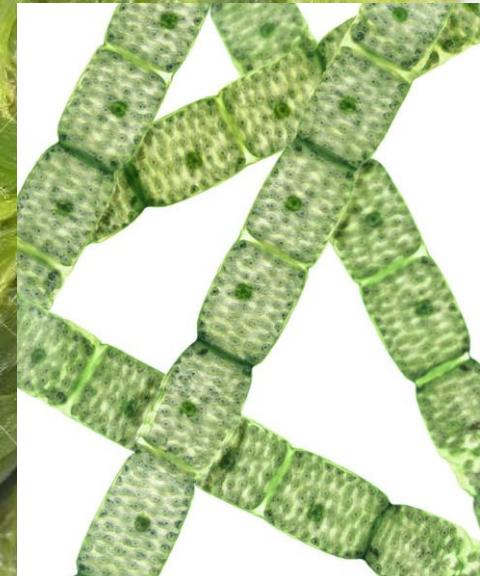


Why do the euglena have chloroplasts?

THE FILAMENTOUS ALGAE (*Spirogyra*)

Can you observe

- the cells in each filament
- the numerous chloroplasts



KINGDOM FUNGI

KINGDOM FUNGI

BREAD MOULDS, MUSHROOMS AND RING WORM)



RING WORM



TOAD STOOL



PLANT KINGDOM

Pteridophytes (Ferns)



Bryophytes (Mosses)



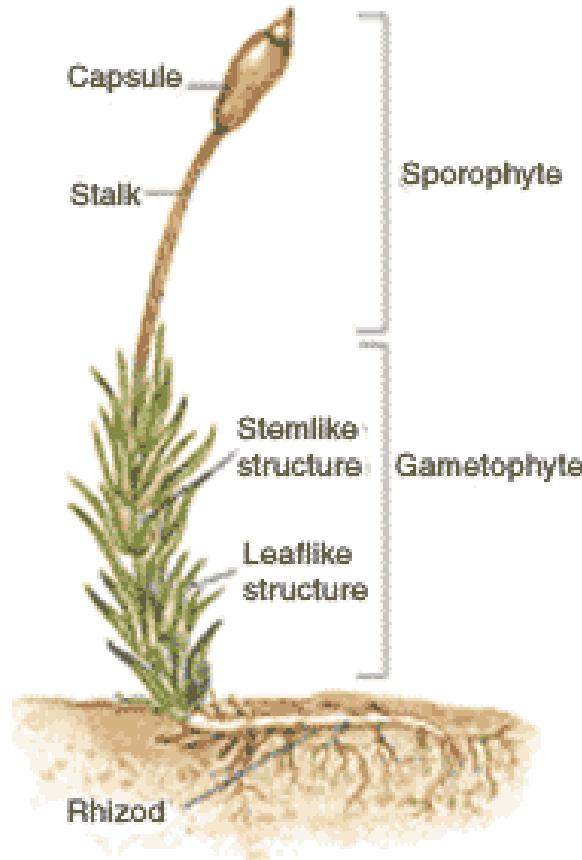
Gymnosperms (Conifers or cone bearing plants)



Angiosperms (flowering plants)

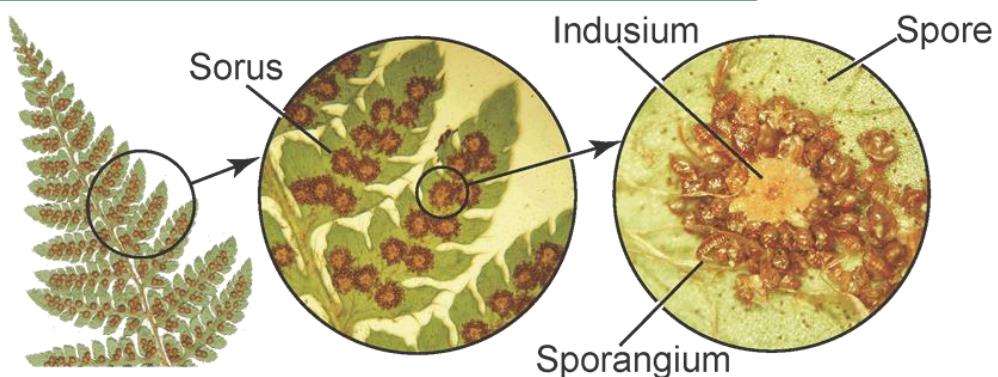
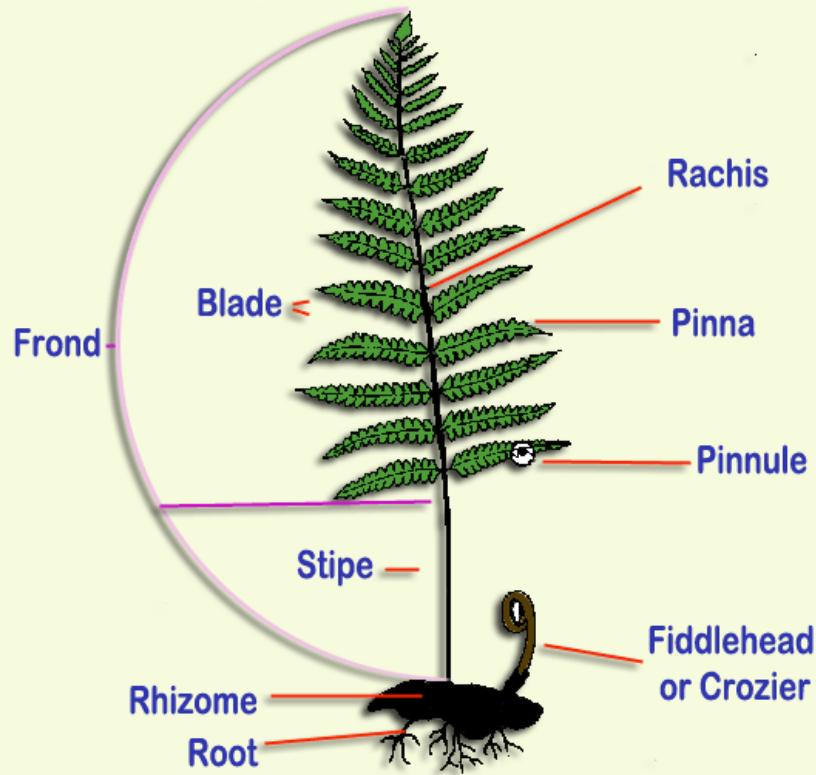


DIVISION BRYOPHYTA (Class musci)



DIVISION PTERIDOPHYTA(e.g male fern dryopteris)

The Parts of a Fern



DIVISION SPERMATOPHYTA

(sub division gymnospermae)

Cycads

Pine tree



Cypress



Cedar



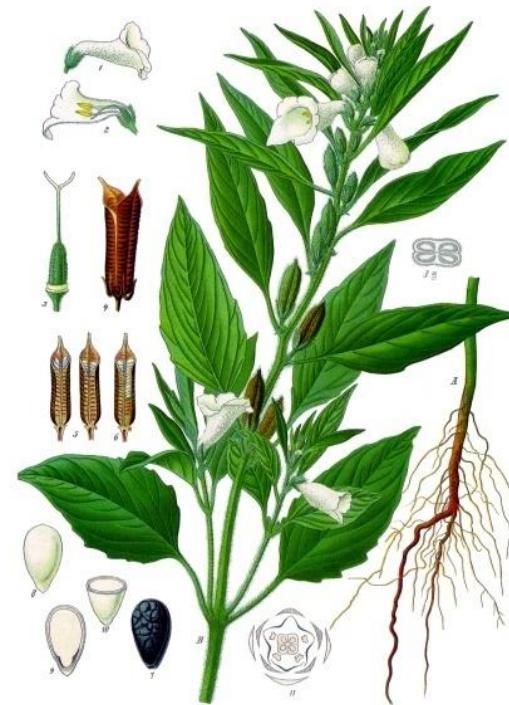
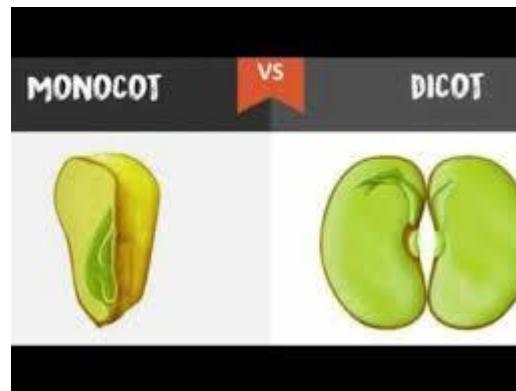
DIVISION SPERMATOPHYTA (sub division angiospermae)



MONOCOTS Vs DICOTS



- Have parallel leaf venation
- Leaves have leaf sheath
- Have fibrous root system



- Have network leaf venation
- Leaves have a petiole
- Have tap root system

Summary of plant classification

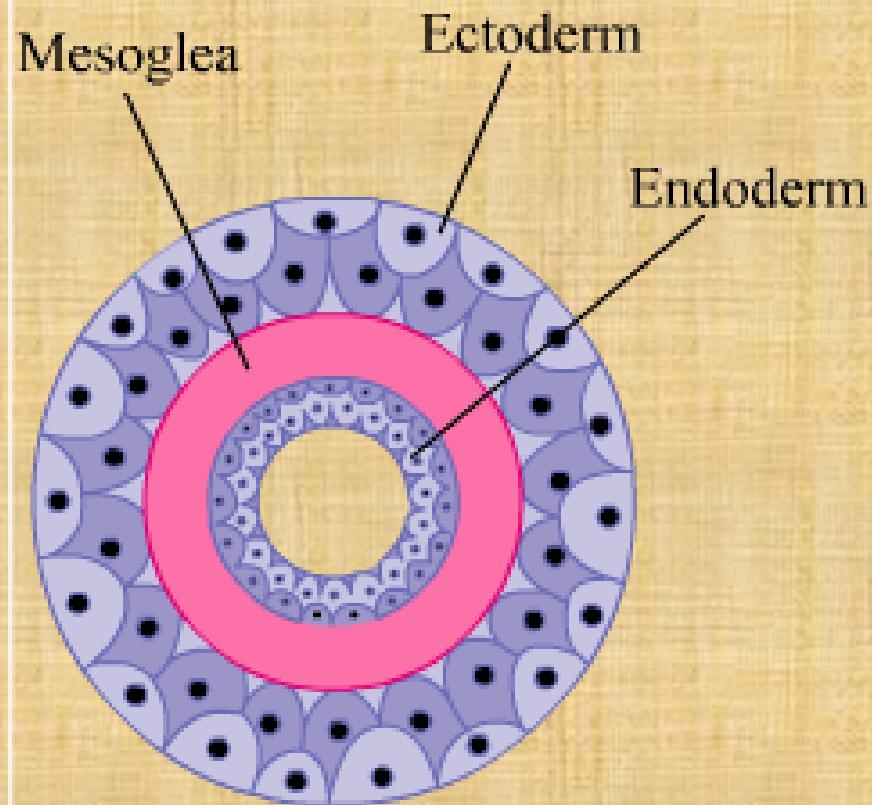
Kingdom	Division	Sub division	Examples	Class	Examples	Sub class
Plantae	Tracheophyta	Spermatophyta		Angiosperms		Monocotyledons Dicotyledons
		Pteridophyta	Fern Horse tail	Gymnosperms	Cycads Conifers Gingko pines, cypress, cedar tree	
	Bryophyta			Musci	mosses	
				Hepaticae	liverworts	

ANIMAL KINGDOM

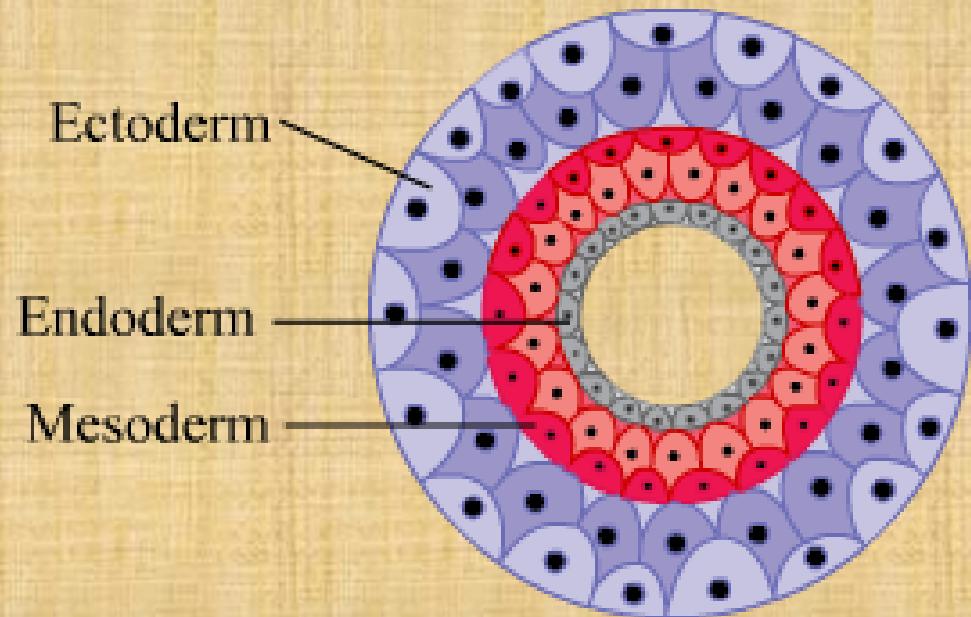
Phylum	Examples
1. Porifera	sponges
2. Coelenterata	hydra
3. Platyhelminthes	'Flat' worms e.g. tapeworm
4. Nematoda	'Round' worms e.g. <i>Ascaris lumbricoides</i>
5. Annelida	'Ringed' worms e.g. earth worms
6. Mollusca	snails
7. Echinodermata	star fish
8. Arthropoda	cockroach
9. Chordata	man

CLASSIFICATION BASING ON LAYERS OF CELLS

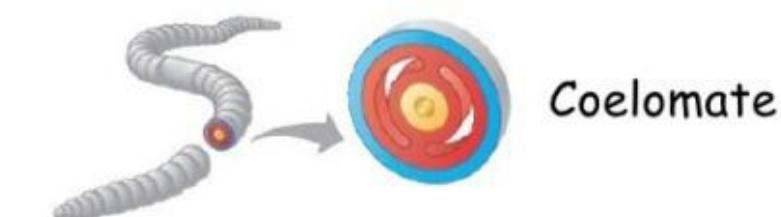
Diploblastic Organisation



Triploblastic Organisation



BODY CAVITIES(COELOM)



Coelomate

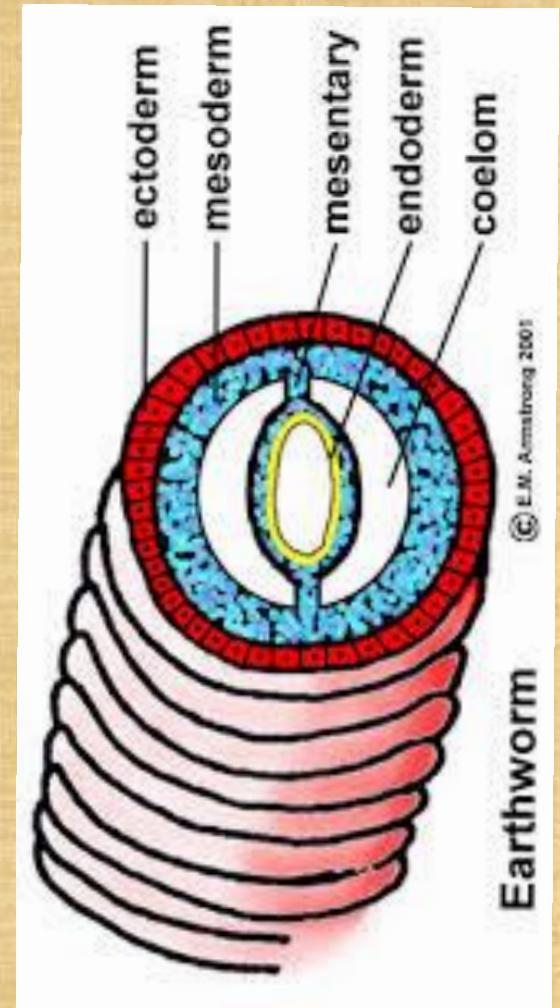
Body
Cavities



Pseudocoelomate



Acoelomate



a) Segmented worm

b) round worm c)

flat worm

PHYLUM PORIFERA

SPONGES

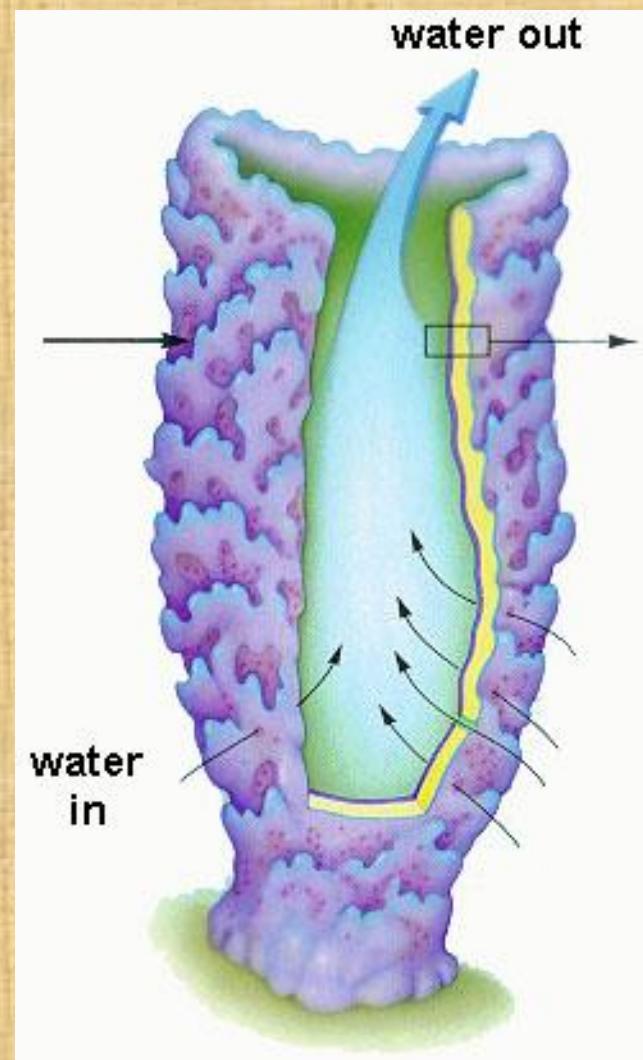
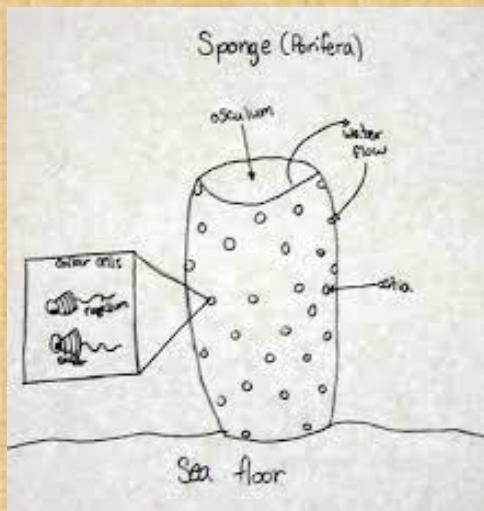


C

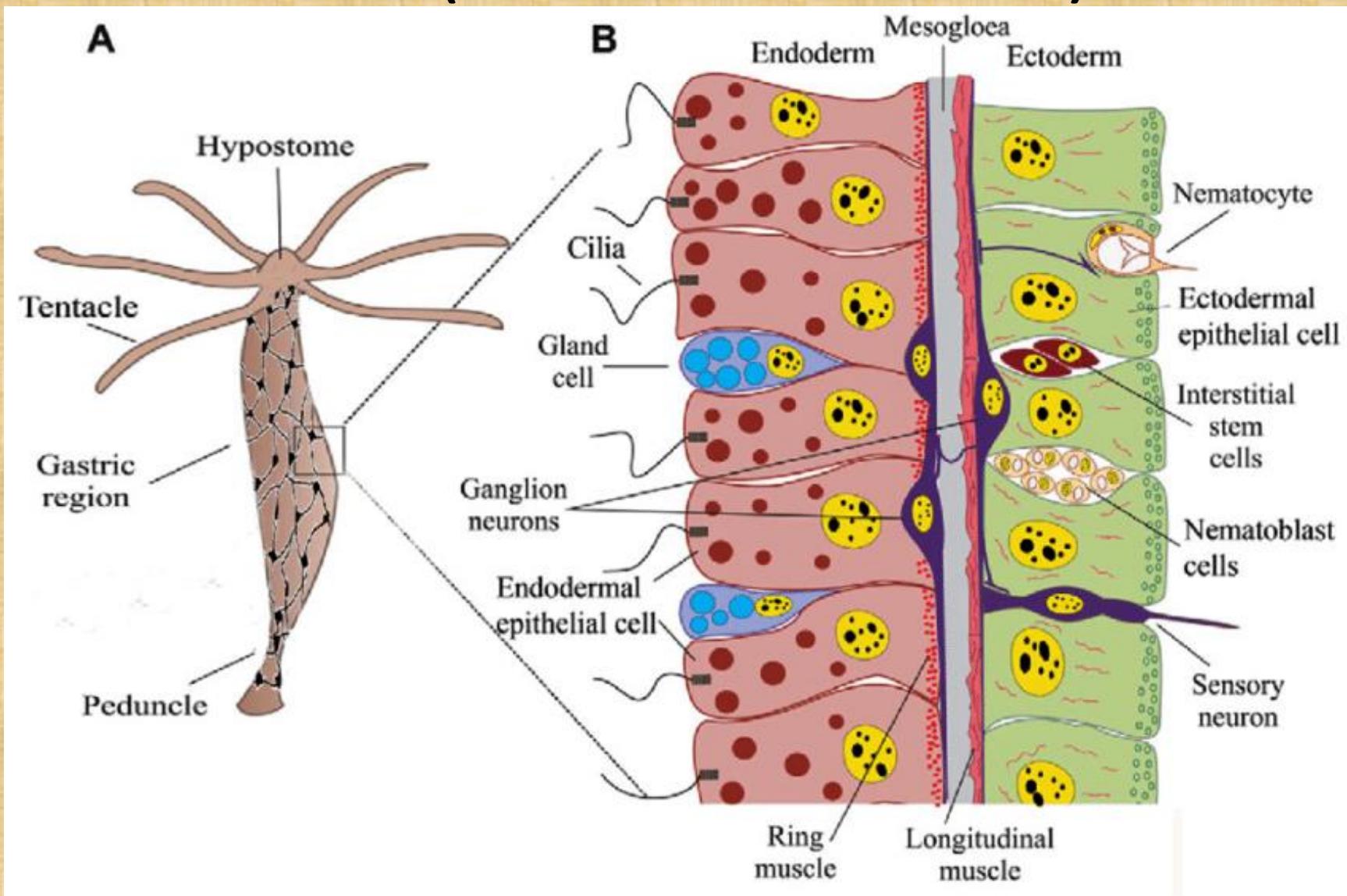
BLUE
WORLD



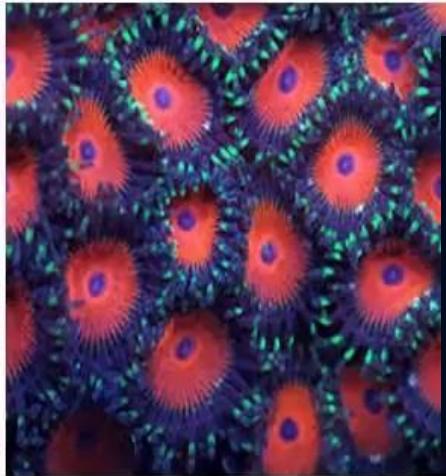
THE SPONGES have pores all over the body



HYDRA BODY WALL(MULTICELLULAR)



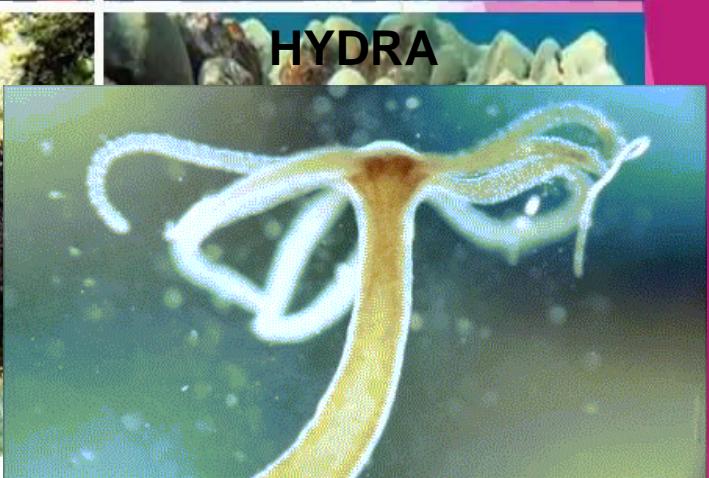
THE CNIDARIANS



JELLY FISH



HYDRA



PHYLUM - COELENTERATA

THE CNIDARIANS continued....

Jelly fish



Sea anemone



wifilamanagerah.tumblr.com



Physalia (Portuguese Man of War)



Hydra



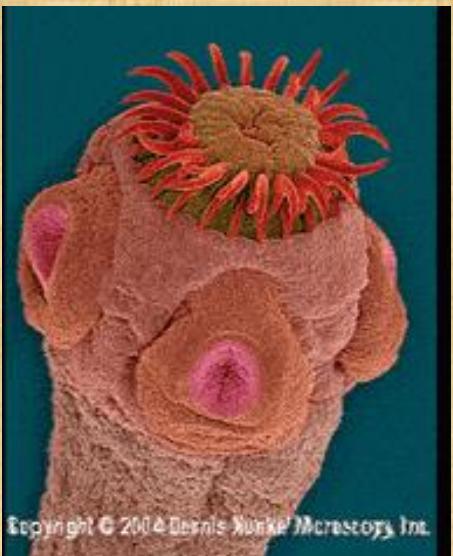
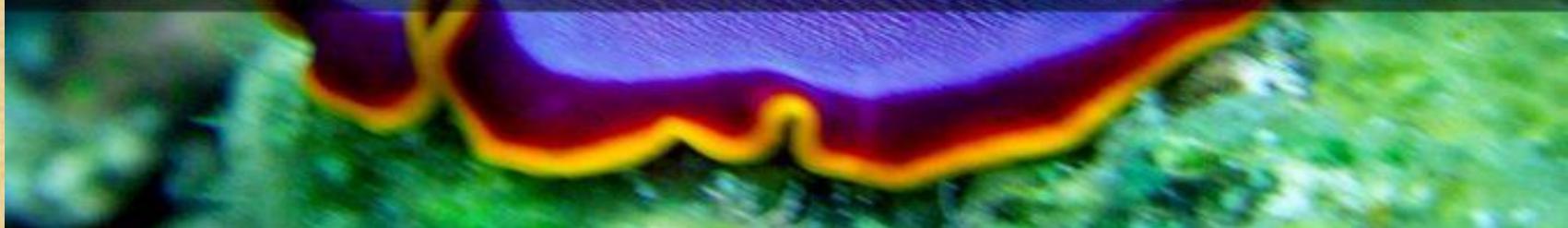
Obelia

Observe the stinging tentacles in all species



PLATYHELMINTHES

ALSO KNOWN AS FLATWORMS, TAPE WORMS, AND FLUKES



Copyright © 2004 Dennis Kunkle Microscopy, Inc.



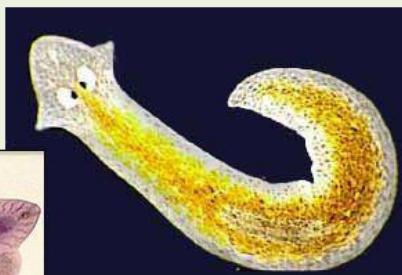
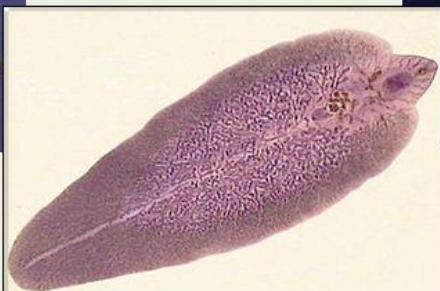
An adult fluke can grow up to
20 to 30 mm in length
MakeAGIF.com

LIVER FLUKE

PLATYHELMINTHES(FLAT WORMS)

Phylum: Platyhelminthes

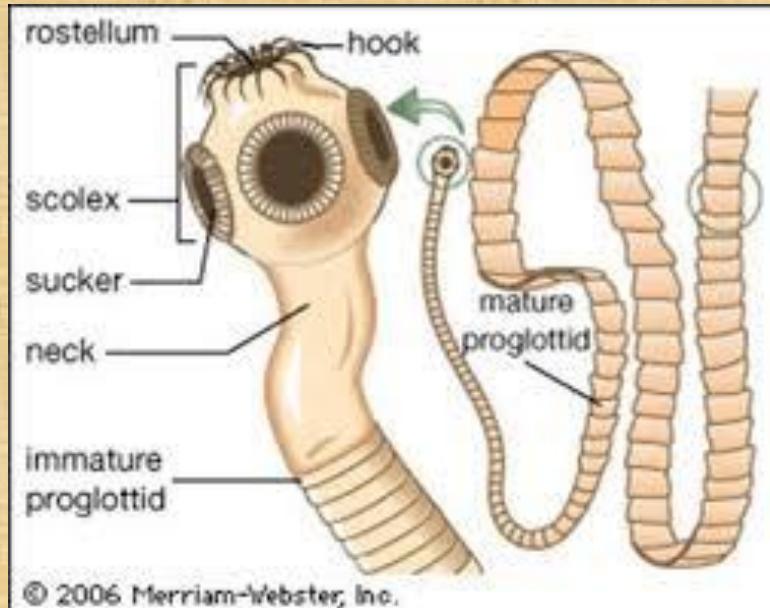
- “flatworms”
- Examples: tapeworms, flukes, planarians



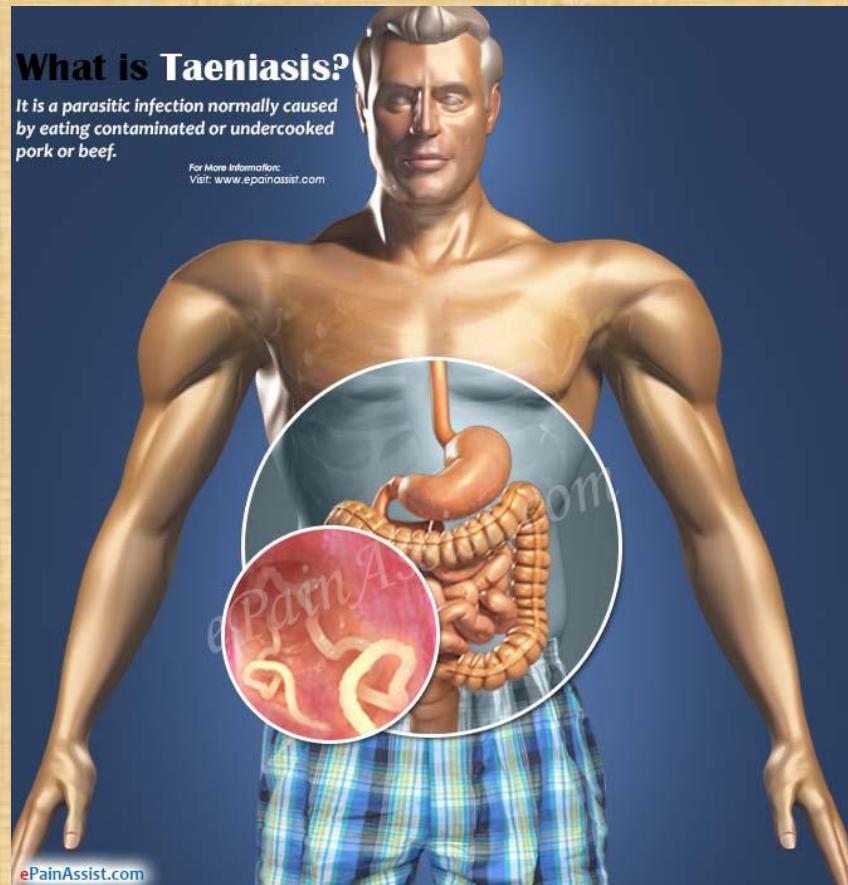
THE TAPE WORM(Genus Taenia)



A 6.2 m long tape worm from gut of man after eating raw meat



***Taenia solium*(Pork tapeworm) causes TAENIASIS**



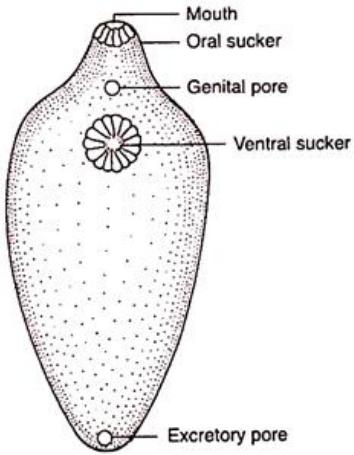


Fig. 8.2: External morphology of Liver-fluke (*Fasciola hepatica*)

The liver fluke ***Fasciola hepatica*** causes **Fascioliasis**

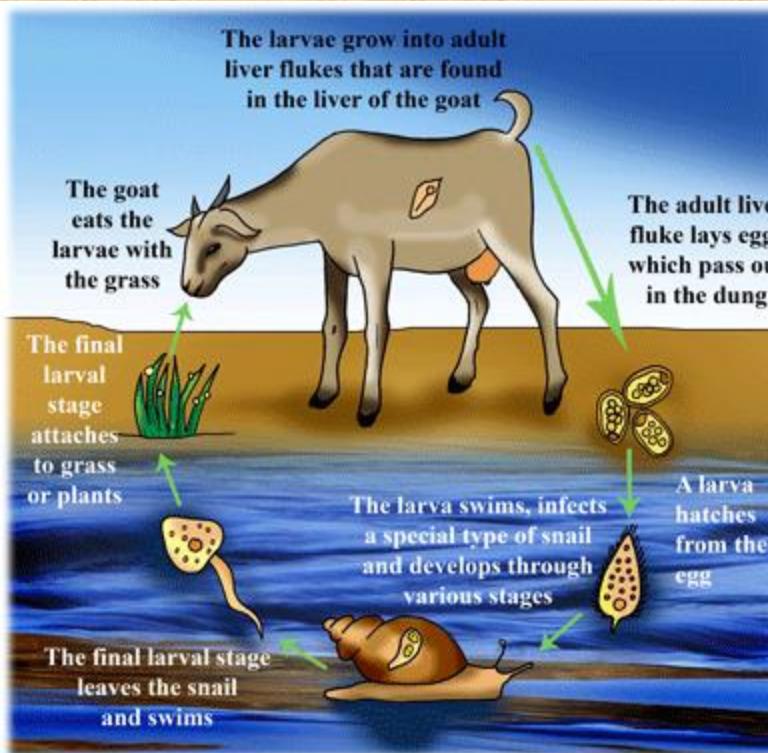


THE FLUKES

Blood flukes of genus schistosoma cause **schistosomiasis** or bilharzia



Schistosoma mansoni



Spray using molluscicides to kill fresh water snail



Phylum Nematoda



The Roundworms

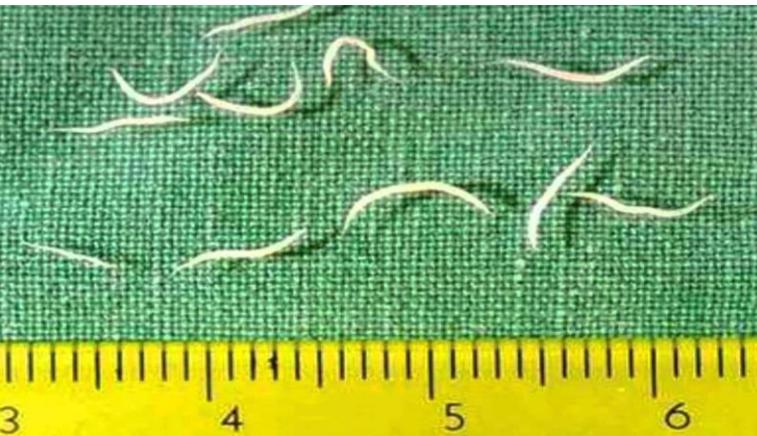


NEMATODES(Round worms)

Common round worm



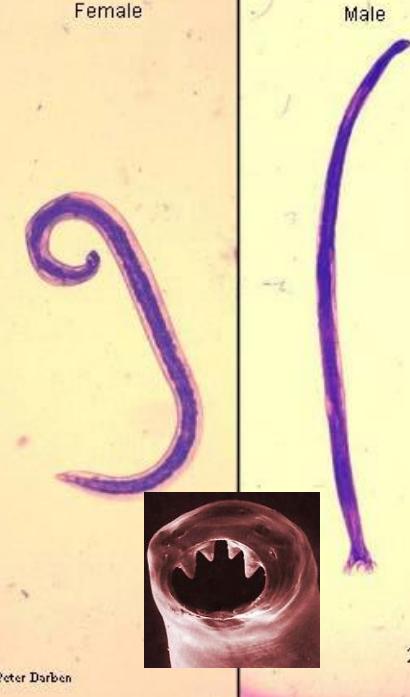
Pin worms



Hook worm

Ancylostoma duodenale

Female



Filarial worm causes elephantiasis



Thread worm



Whip worm



SYMPTOMS OF ROUND WORMS

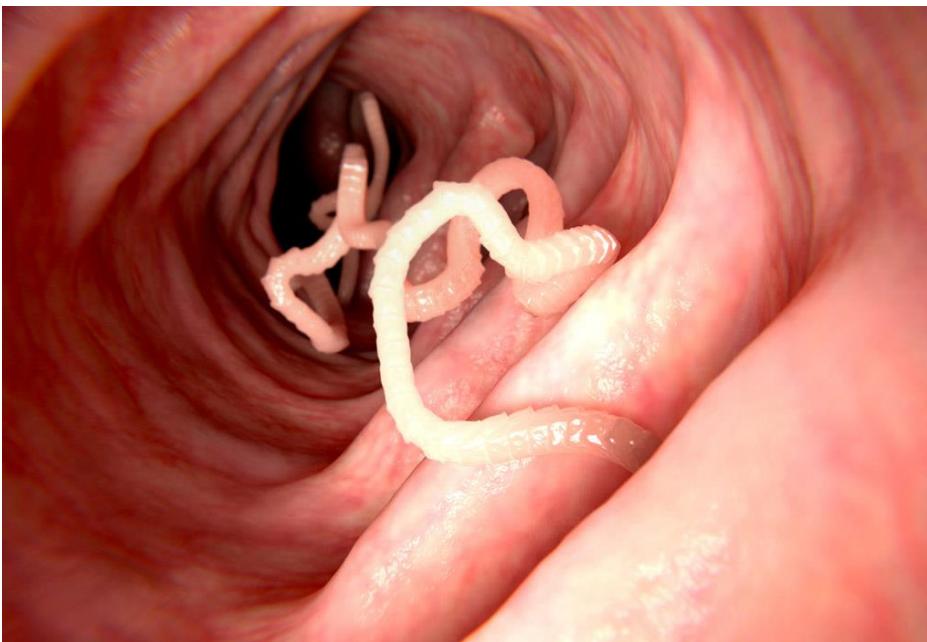
Itching anal opening



skin inflammations



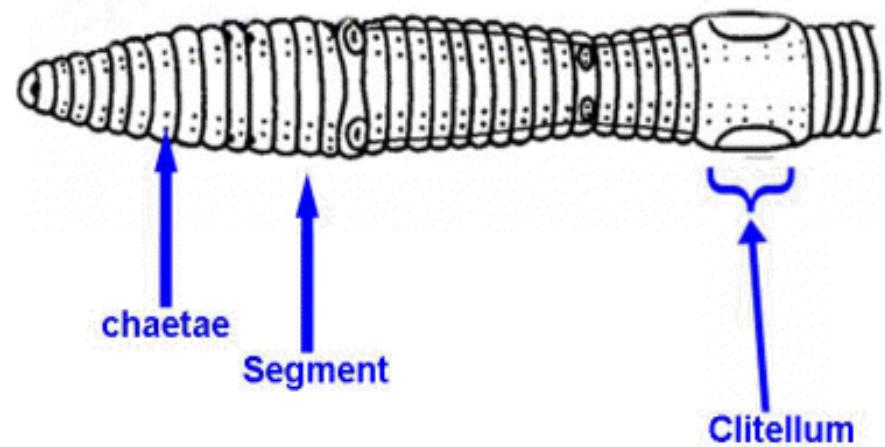
Pin worm
infection spread
by scratching



Swelling tissues



Phylum Annelida



All Segmented worms e.g. Earth worms

PHYLUM ANELIDA (segmented worms)

Earth worm



Lug worm or sand worm



Leech(Hirudins)



MakeAGIF.com

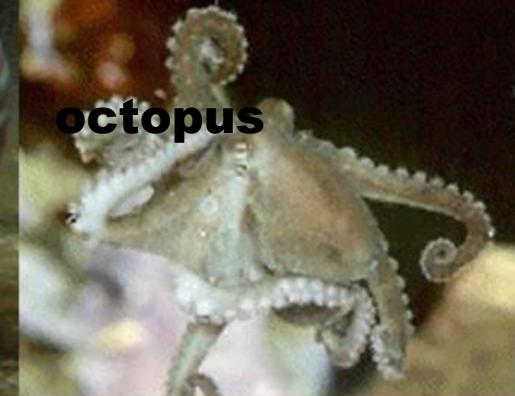
Bristle worm



snail



octopus



Phylum Mollusca

squid



oyster



Clam



Soft-bodied animals such as gastropods(snails)

The fresh water snail,*Lymnea truncatula*



Garden snail

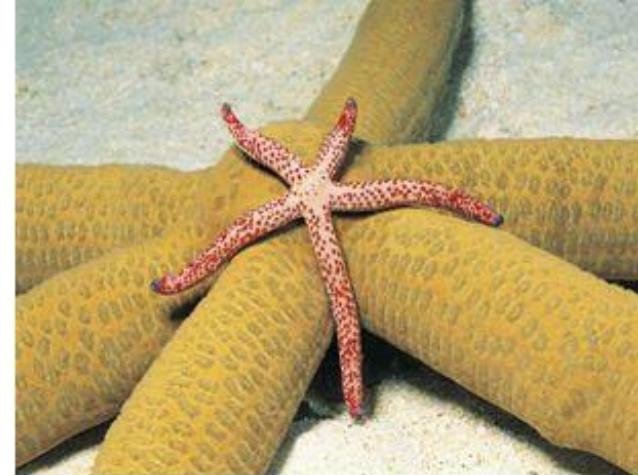
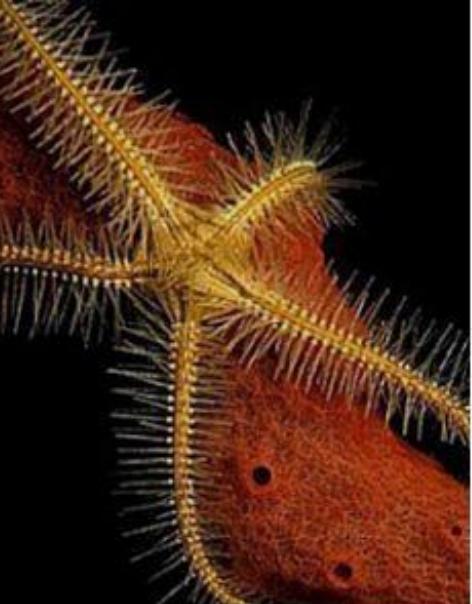


Squid



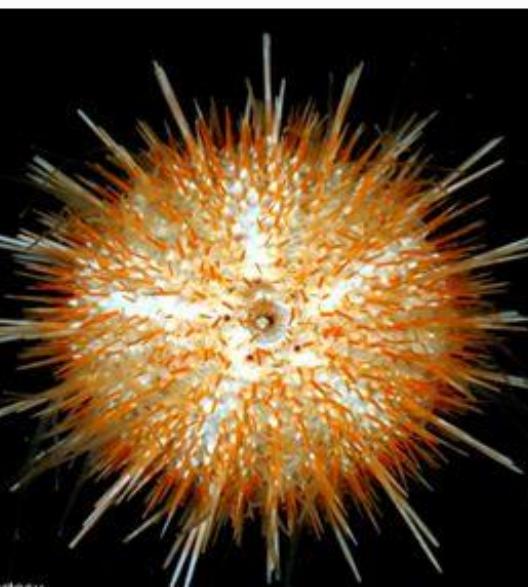
Octopus





Phylum Echinodermata

e.g sea star



PHYLUM ECHINODERMATA(Animals with spiny skin)

STAR FISH(legs can regenerate)



SEA CUCUMBER



SEA URCHIN



SEA LILIES



ARTHROPODA



Gk. “*arthros*” – joint + “*podos*” – foot

CLASS CRUSTACEA

CRAB



CRAY FISH



LOBSTER



SHRIMP



CLASS CHILOPODA (CENTIPEDES)



WALKING LEGS(1 pair per segment)



CARNIVOROUS(feeding on lizard)



MOUTH PARTS(powerful mandibles)



CLASS DIPLOPODA (MILLIPEDES)

TOO MANY WALKING LEGS(2 pairs per segment)



Coil & uncoil



HERBIVOROUS



CLASS ARACHNIDA

spider



scorpion



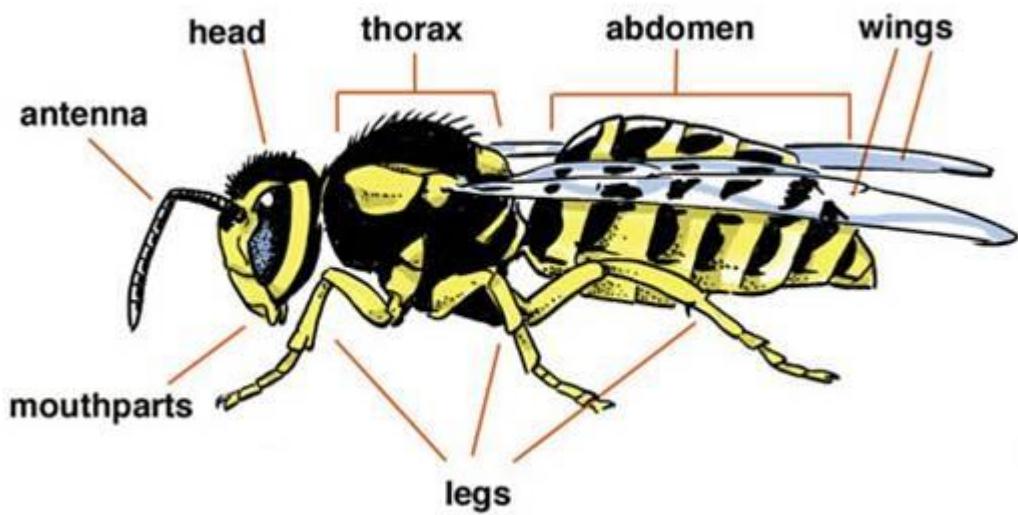
tick



Mite (under microscope)



CLASS INSECTA



CLASS INSECTA

(ORDER *Dictyoptera*)

e.g. cockroaches



- Have hard outer wings



ORDER HYMENOPTERA(Bees,wasps & ants)

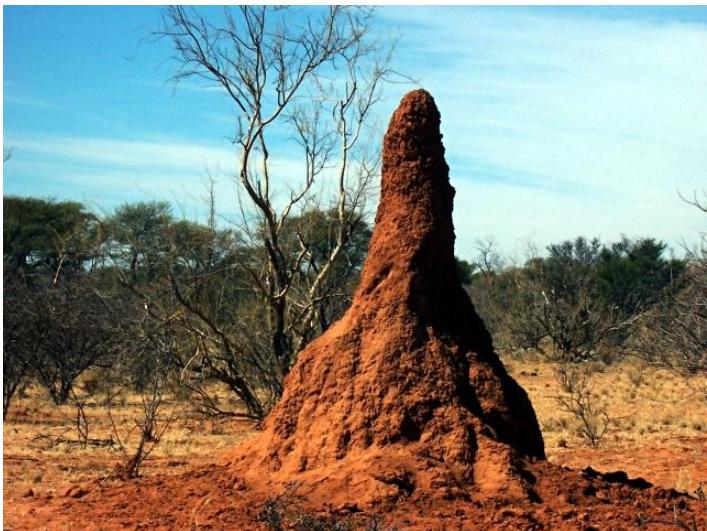


- Have membranous wings



ORDER ISOPTERA(termites)

Termite mound



Soldier termite



Have outer
wings
similar to
inner wings

Winged termite



Worker termite



Queen termite

ORDER LEPIDOPTERA(*Butterflies & moths*)

Moth



- Have scales(powdery) on wings



Butterfly



ORDER DIPTERA (*Flies & Mosquitoes*)

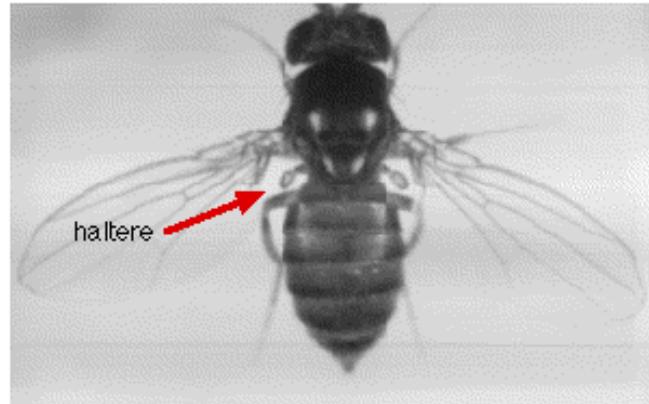
House fly



Mosquito



- Have 1 pair of wings. The second pair is reduced to halteres for balancing when flying



ORDER HEMIPTERA(True bugs)

shield bug



Water bug



bed bug

(Have short outer wings)



ORDER ORTHOPTERA(Grass hoppers, locusts & crickets)

Grass hopper



Locust

Have long straight wings



Katydid



Cricket



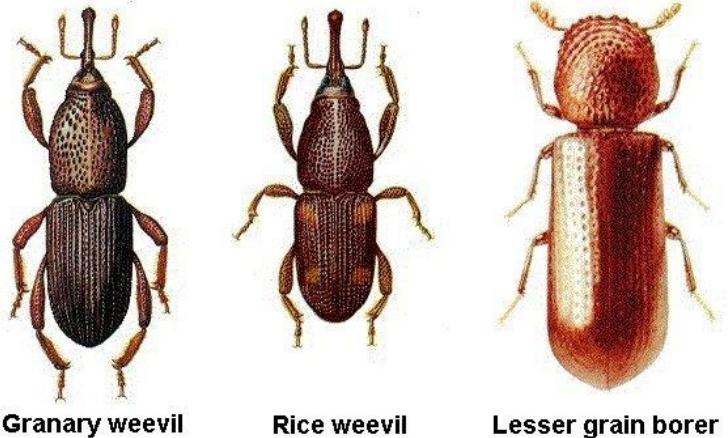
ORDER COLEOPTERA

(Beetles, weevils & fire flies)

Dung beetle



weevils



Lady bug
beetle



Have sheath-like outer
wings covering the
abdomen)



Fire flies

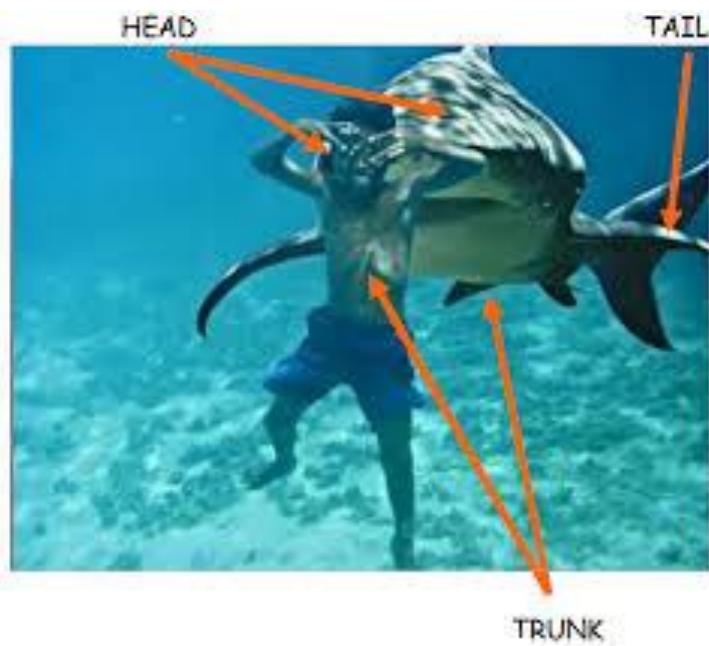
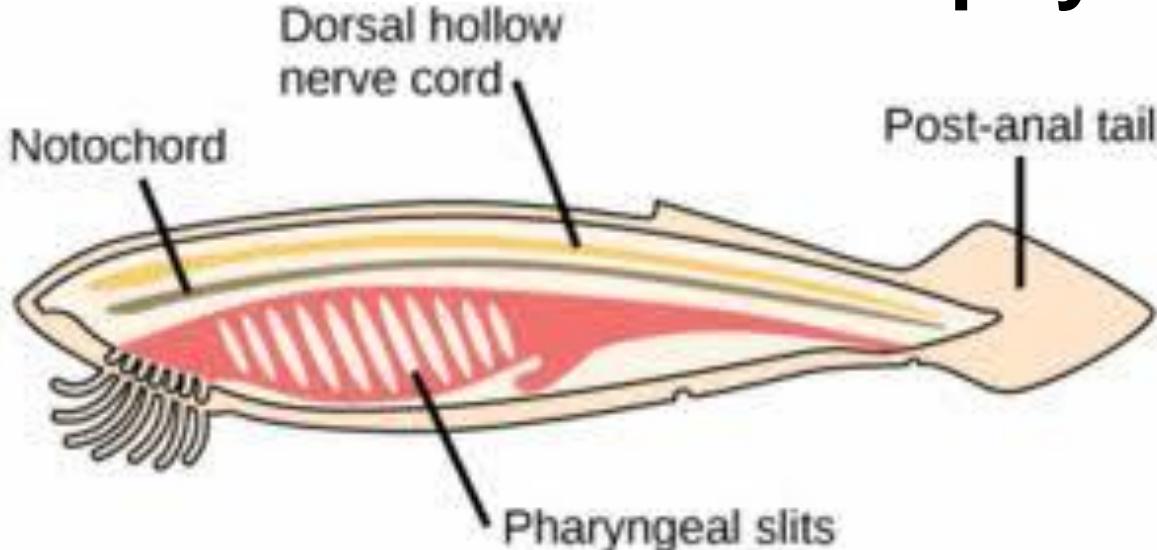


Phylum Chordata

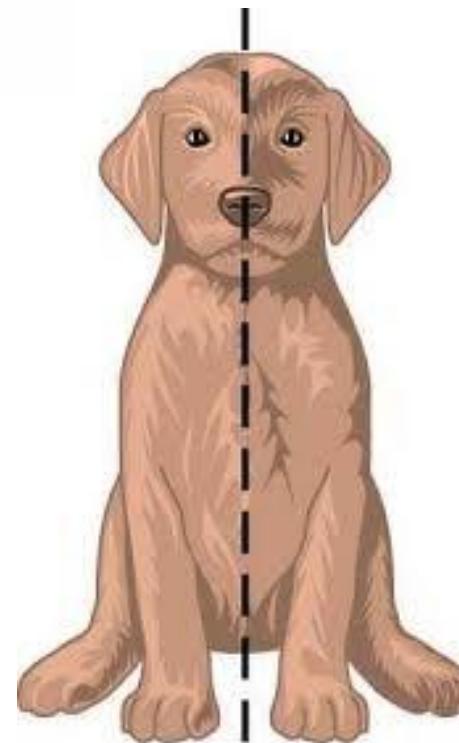
A Tribute to the Diversity We Know



Characteristics of phylum Chordata



Bilateral symmetry

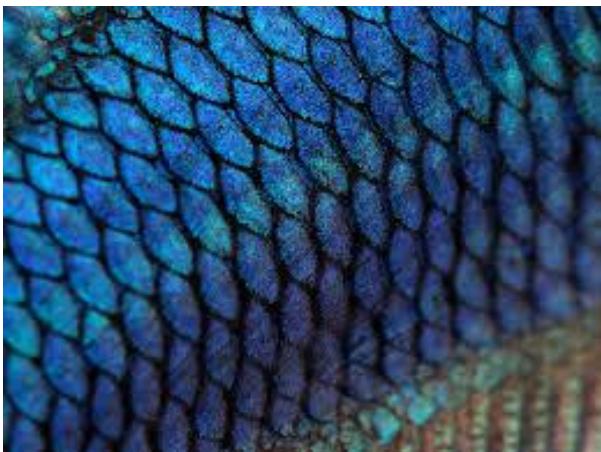


Precision Graphics

CLASS PISCES(Fish)



Have scales



Have gills for breathing



Have fins to swim



Undergo external fertilization



CLASS AMPHIBIA(Live both on land & water)

Toad



Newt



Frog



Salamander



Chameleon

CLASS REPTILIA

Turtle



Crocodile



Python



Tortoise



Komodo dragon



Monitor lizard





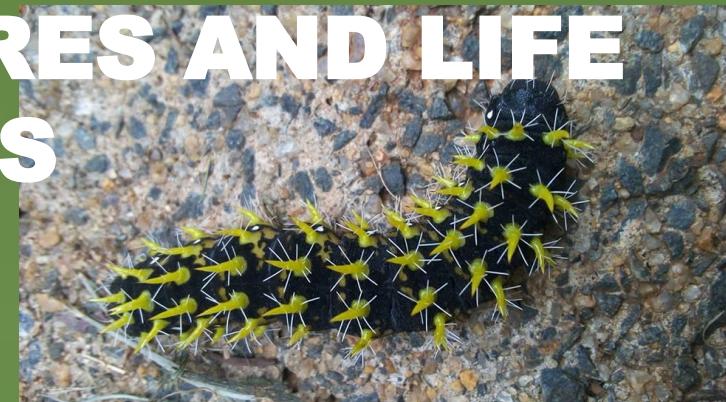
Class Aves: Birds

Mammals

Class Mammalia



EXTERNAL FEATURES AND LIFE CYCLES



EXTERNAL FEATURES AND LIFE CYCLES OF SOME OF THE SELECTED INSECTS TO BE CONTINUED.....