

ENTOMOLOGY



DR. R. K . SHARMA

Asstt. Professor –cum- Jr. Scientist.

Deptt. of Vety. Parasitology.

Bihar Veterinary College , Patna-14

INTRODUCTION,

General account, Classification & Morphology.



ENTOMOLOGY

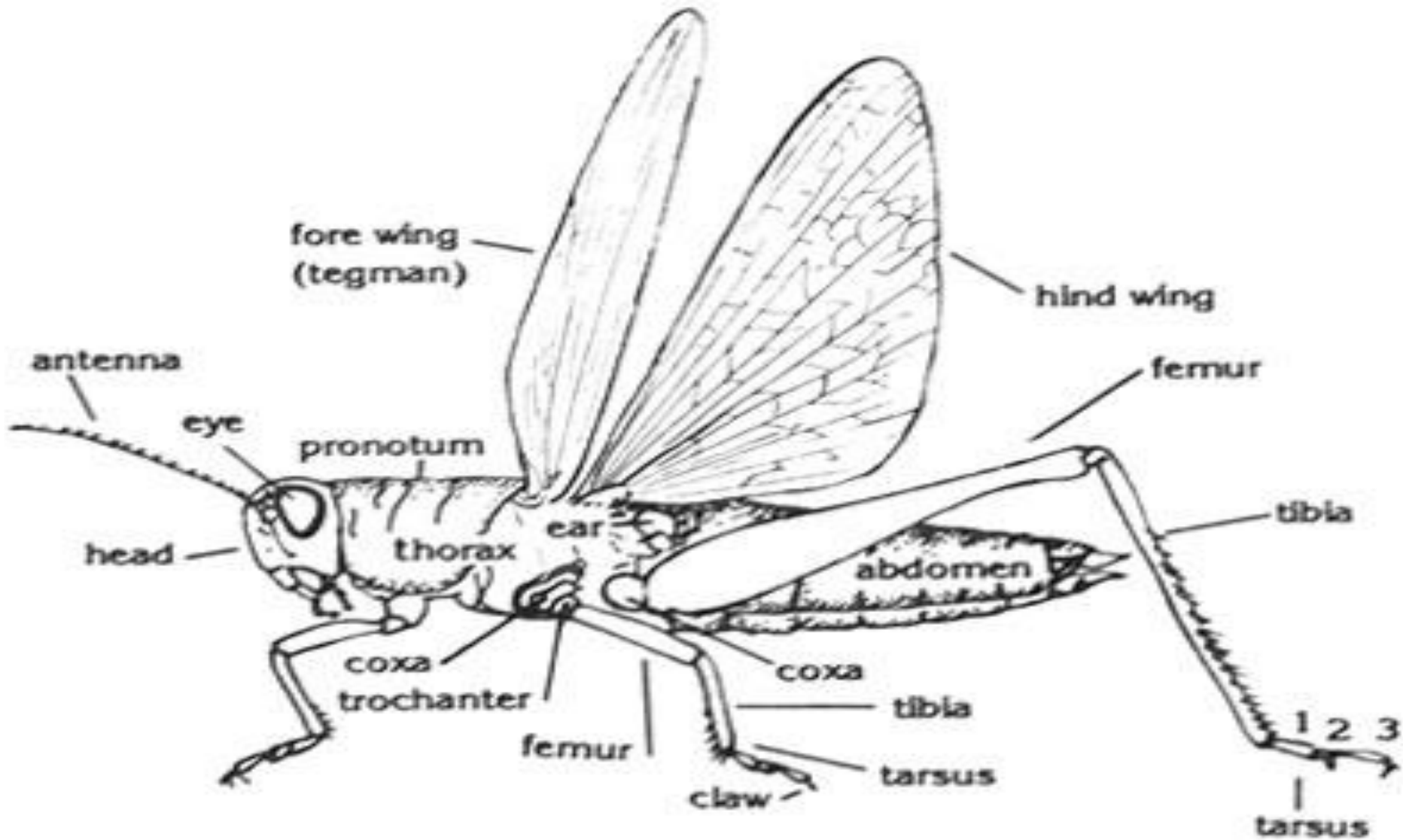
Entomology = Entoma + logos .
Science of insects + Insects + Science

All kinds of Arthropods of phylum Arthropoda

Arthros = Jointed . Podos = Foot.

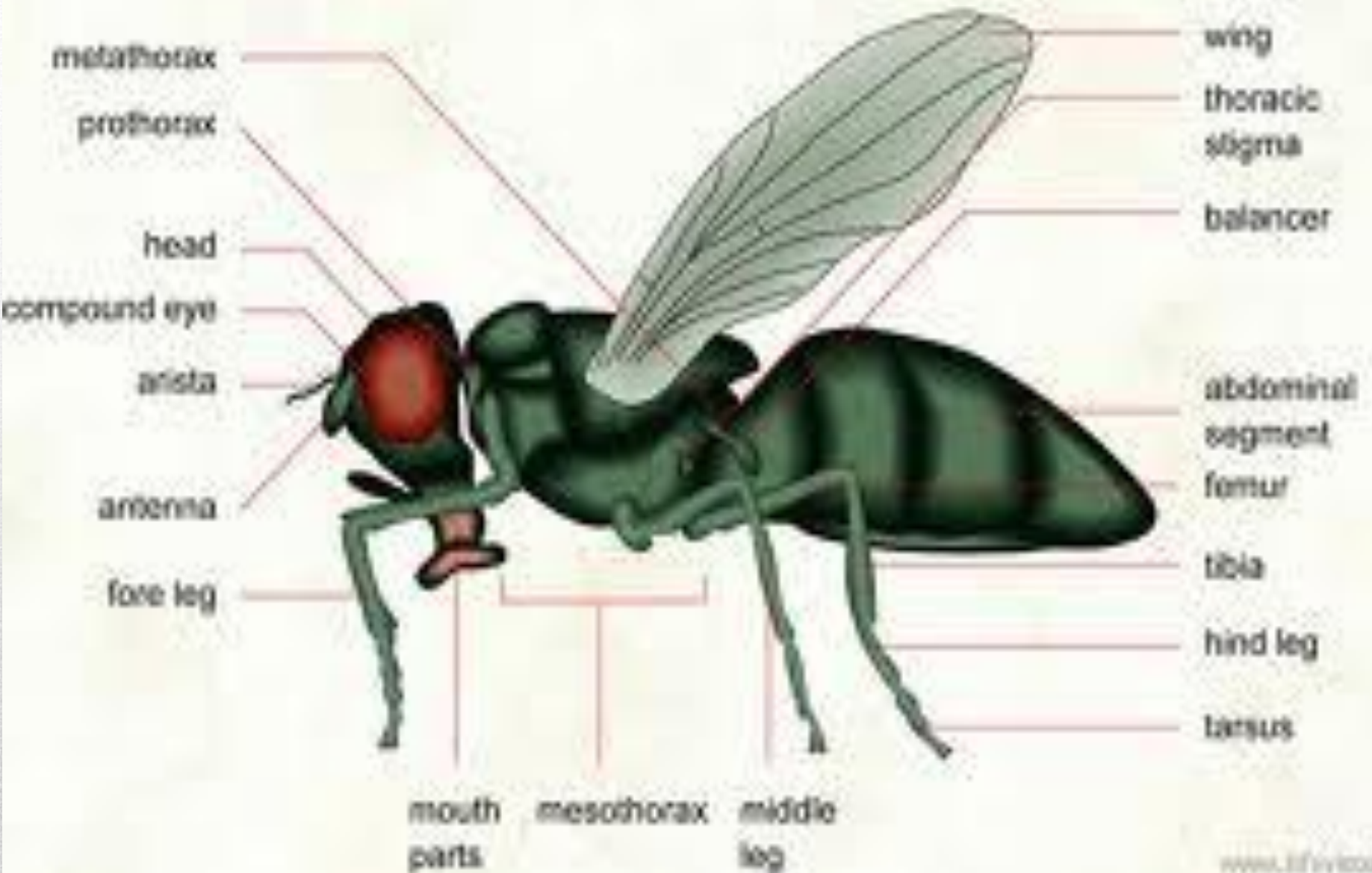
Main characteristics of Arthropoda :-

1. A hard chitinous exoskeleton .
 2. A segmented body.
 3. A jointed limb .
-



Body part of a typical “INSECT”

MORPHOLOGY OF A FLY (lateral view)



MOULTING :

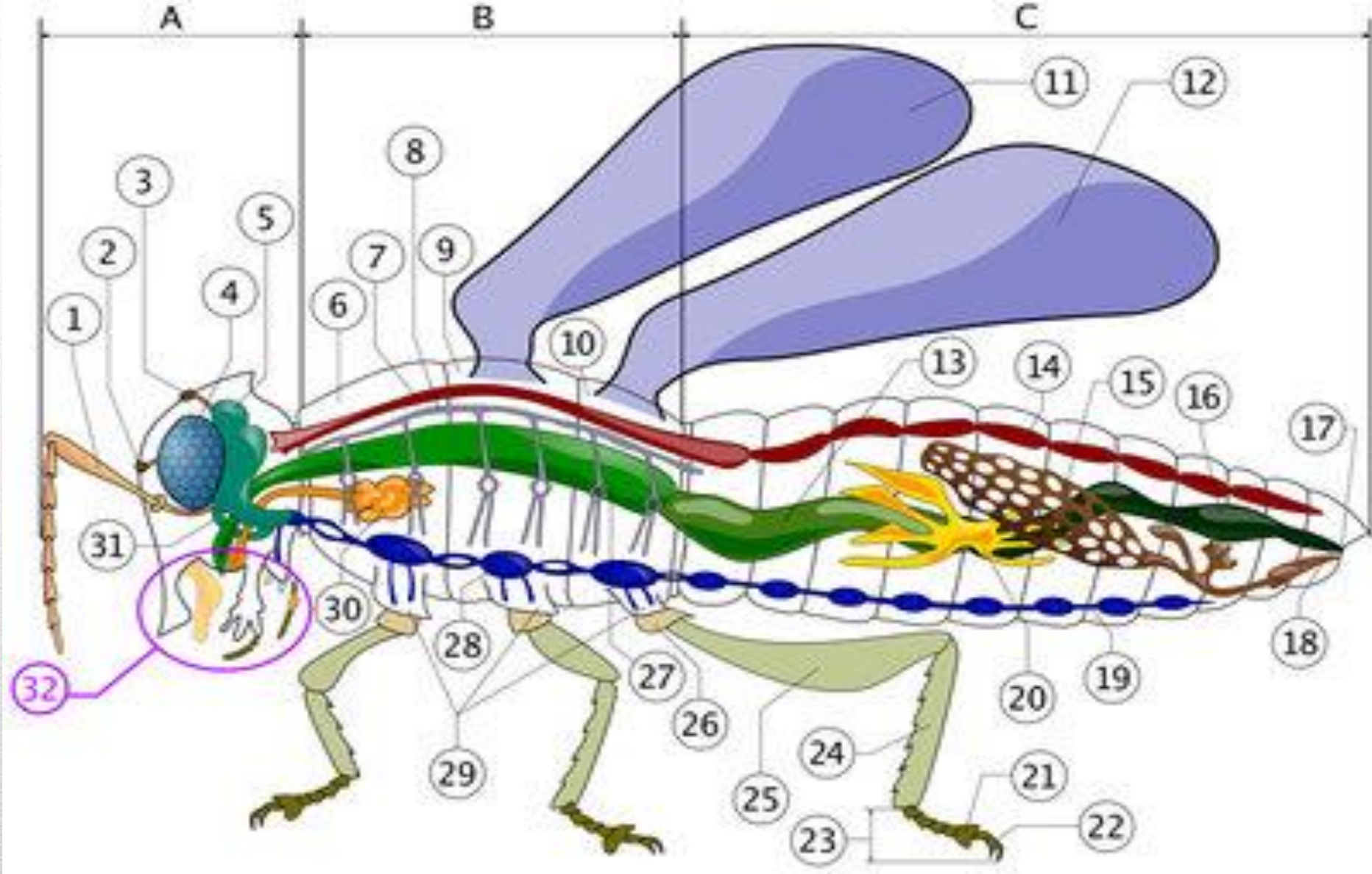
Moulting is formation of new exoskeleton periodically after casting off the old chitinous covering during the growth of an arthropod , Each casting of the exoskeleton is called ‘ Moulting or Ecdysis,



ECDYSIS / MOULTING



ECDYSIS OR MOULTING

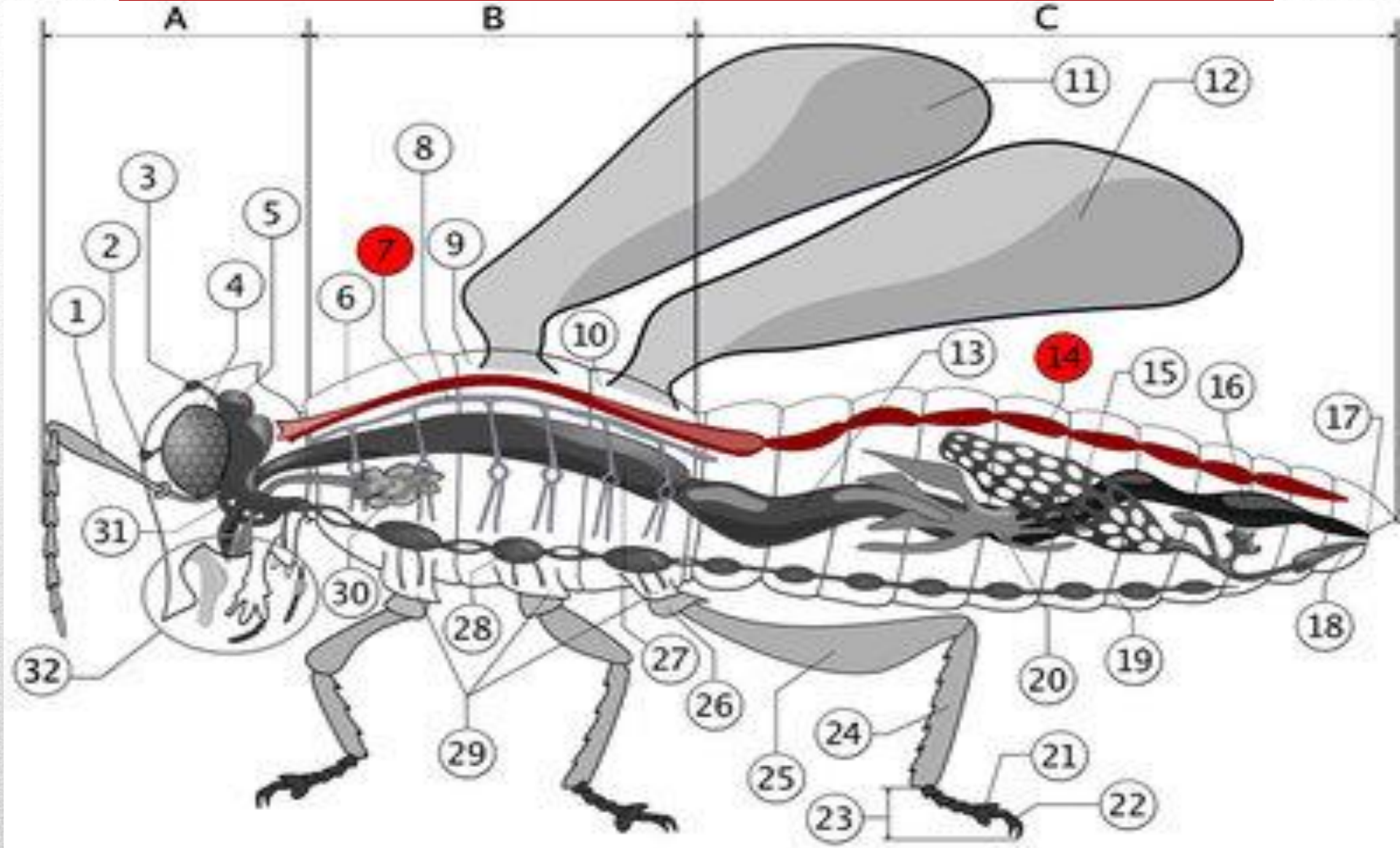


THE INTERNAL ORGAN

CIRCULATORY SYSTEM

Circulatory system consists of enlarged dorsal blood vessels , which is enclosed in a compartment of the haemocoel full of blood called 'Pericardium'.

'Ostia' is opening in its wall .



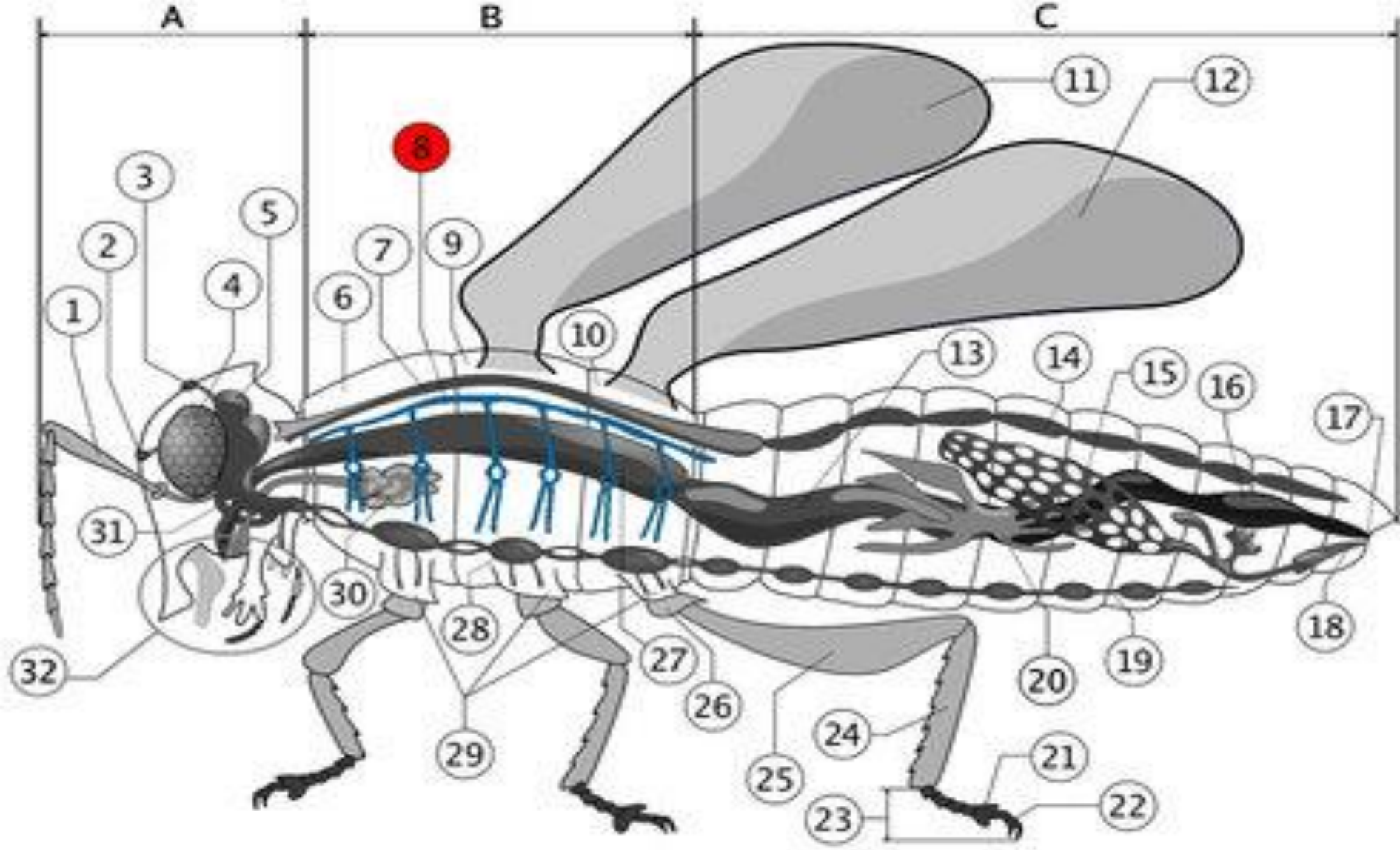
THE ORGAN OF CIRCULATION : “HEART”

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SOURCE-GOOGLE

RESPIRATORY SYSTEM

Respiratory system is small circular opening in the exoskeleton called ‘**Spiracles**’. Which allow air into the body.

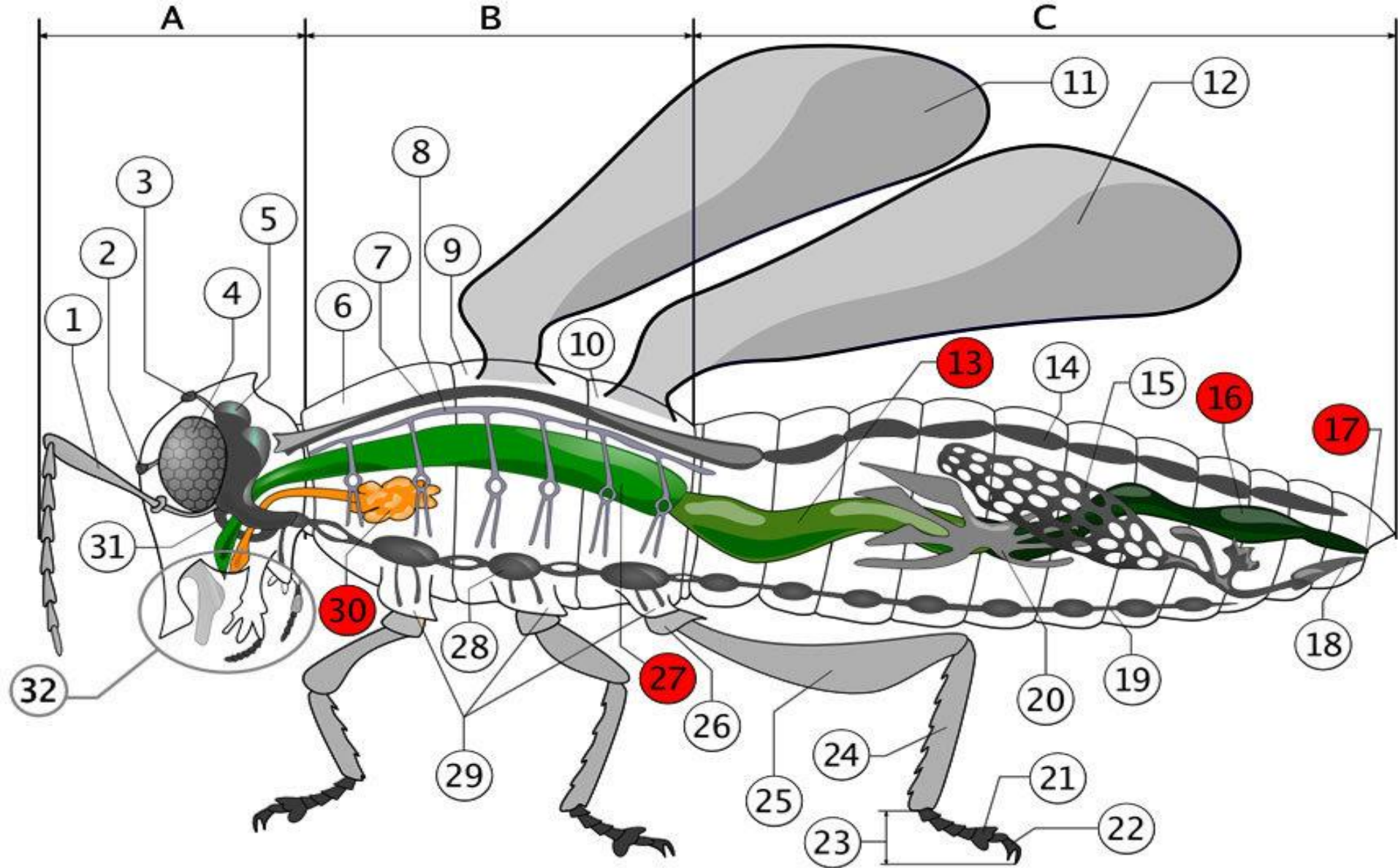


THE ORGAN OF RESPIRATION

DIGESTIVE SYSTEM

Digestive system divided into three parts :-

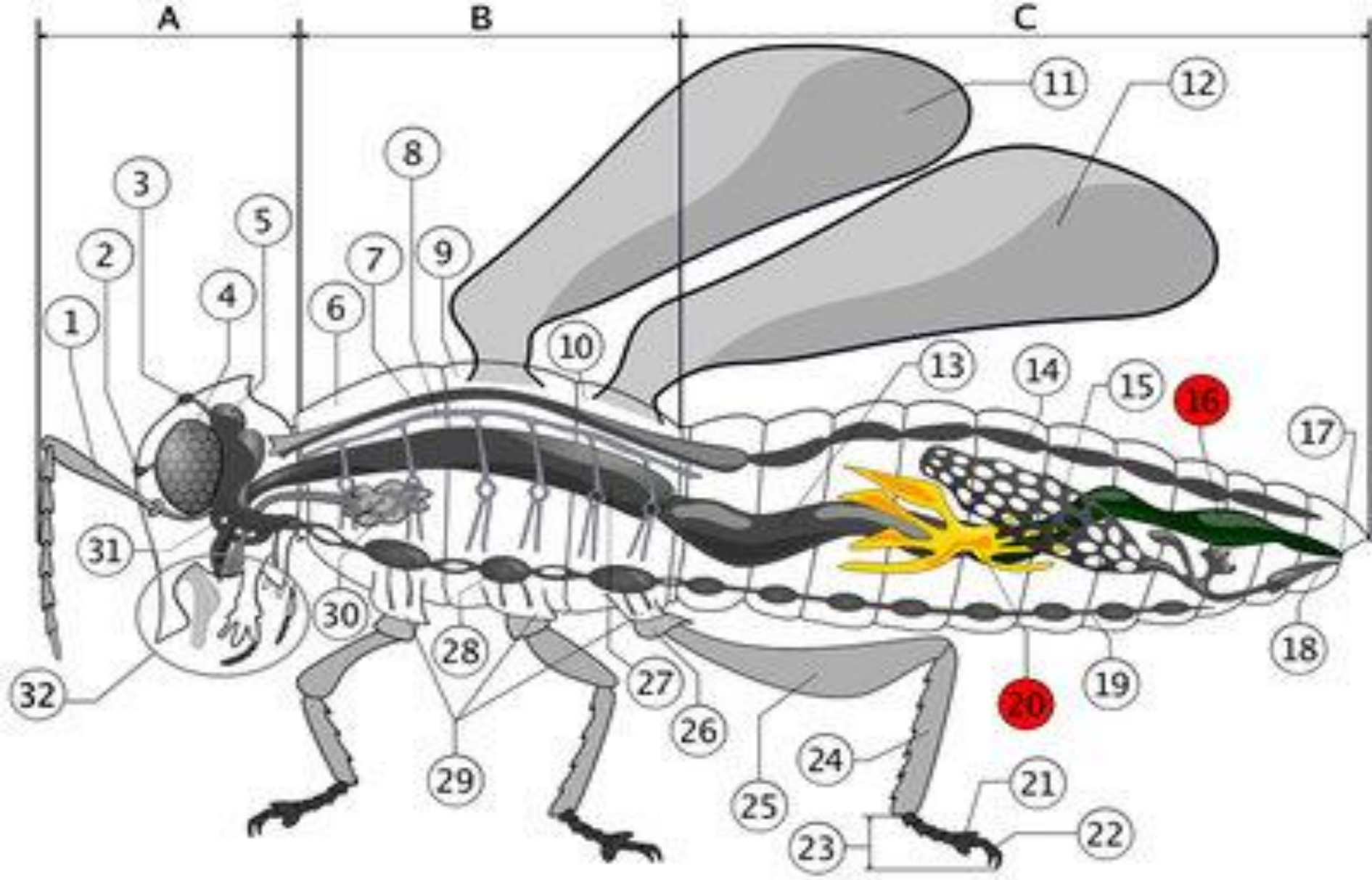
- (1) Fore gut or Stomodaeum.
 - (2) Mid gut or Mesenteron .
 - (3) Hind gut or Proctodaeum.
-



THE ORGAN OF DIGESTION

EXCRETORY SYSTEM

At the junction of mid gut and hind gut there are variable number of excretory tubules called as ‘Malpighian tubules’ .



THE ORGAN OF EXCRETION

CLASSIFICATION

Arthropoda (Phylum)



Subphylum

Mandibulata

Chelicerata

Pentastomida

Class



Insecta

Arachnida

Subclass



Apteriygota

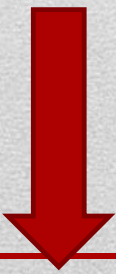
Pteriygota

Division



Endopterygota

Exopterygota



ORDER



Siphonaptera (Fleas)

Diptera (True flies)

Hymenoptera (Bees)

Coleoptera (Beetles)

Lepidoptera (Butter flies, Moths)

Neuroptera (Lace wings)

ORDER



Orthoptera (Cockroach, Grasshopper)

Pthiraptera (Lice)

(a) Siphunculata'

Anoplura' (Sucking lice)

(b) Mallophaga (Biting lice)

Hemiptera (Bugs)

Odonata (Dragon fly)

Isoptera (Termites)

Diptera



SUBORDER



Nematocera

Brachycera

Cyclorrhapha

Family

Family

Ceratopogonidae (Midge)

Musidae (House, Stable Fly)

Simuliidae (Black flies)

Calliphoridae (Blow fly)

Psychodidae (Sand fly)

Hippoboscidae (Forest tick)

Culicidae (Mosquitoes)

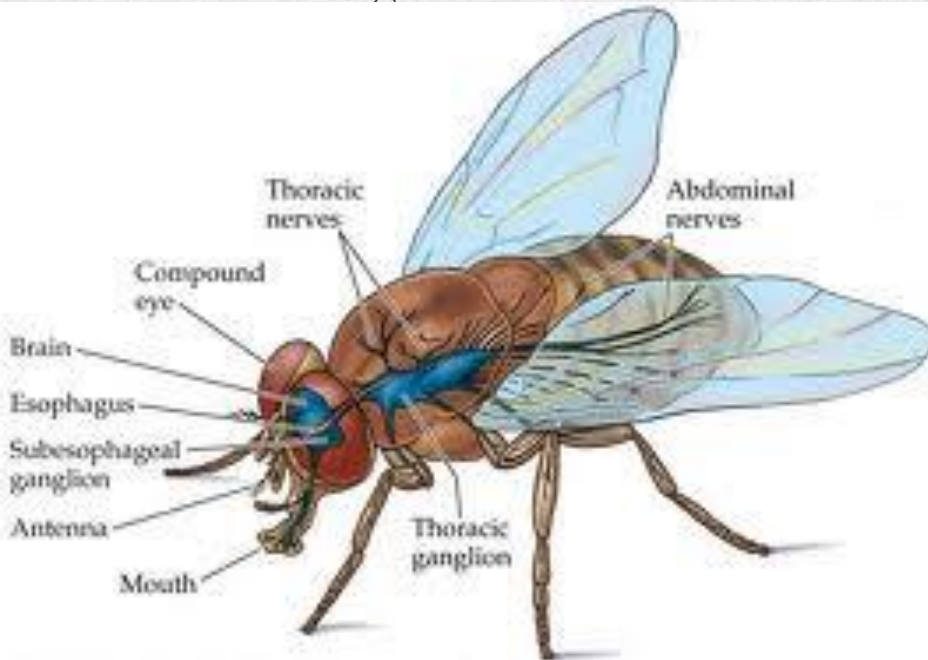
Osteridae (Bot fly)



Tabanidae (Horse flies)

INSECTA

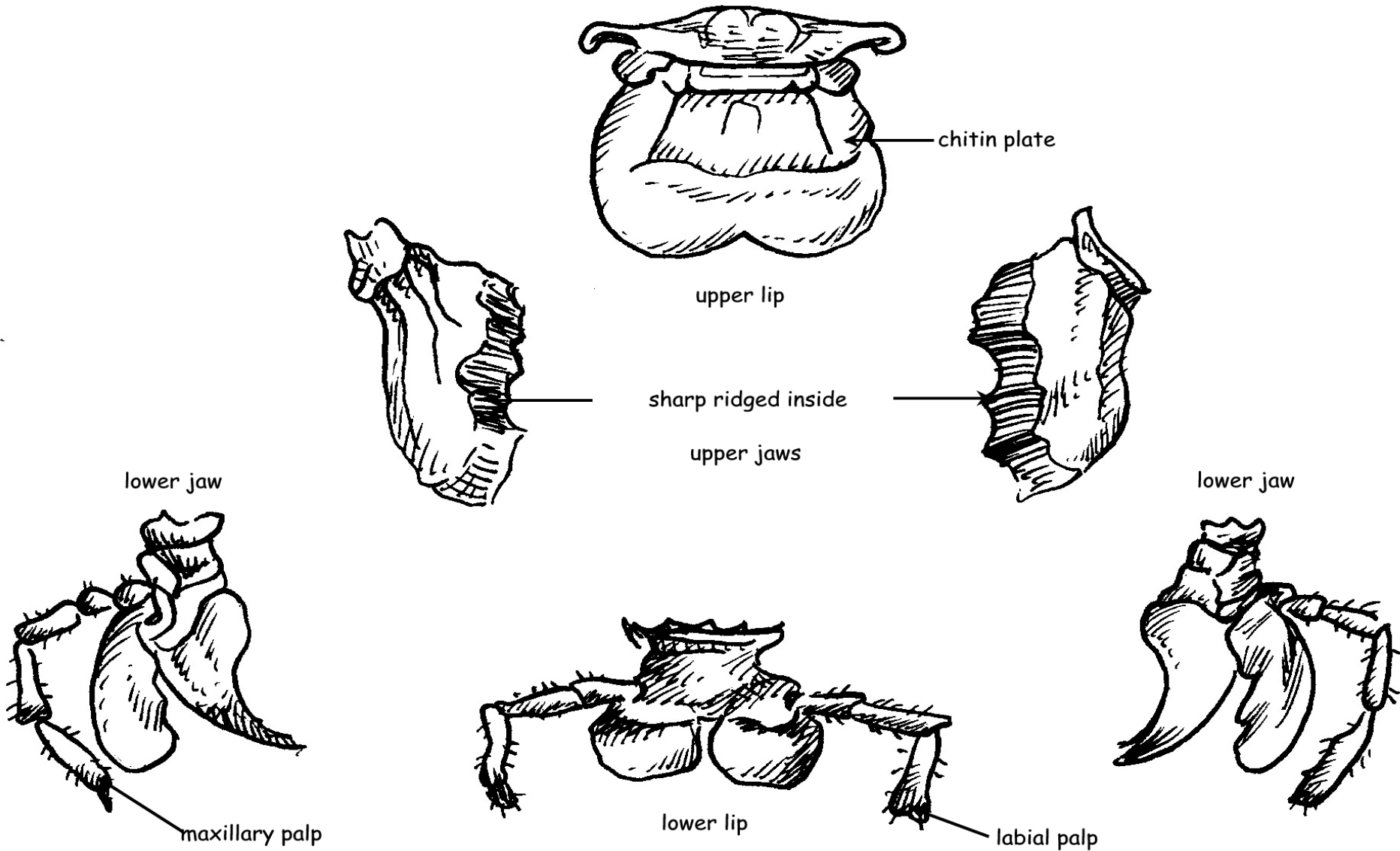
1. Three (3) pairs of legs .
2. Body is divided into 3 parts
Head, Thorax, and
Abdomen .
3. Single pair of sensory
antennae .
4. Eyes are absent or reduced
but well developed in blood
sucking .



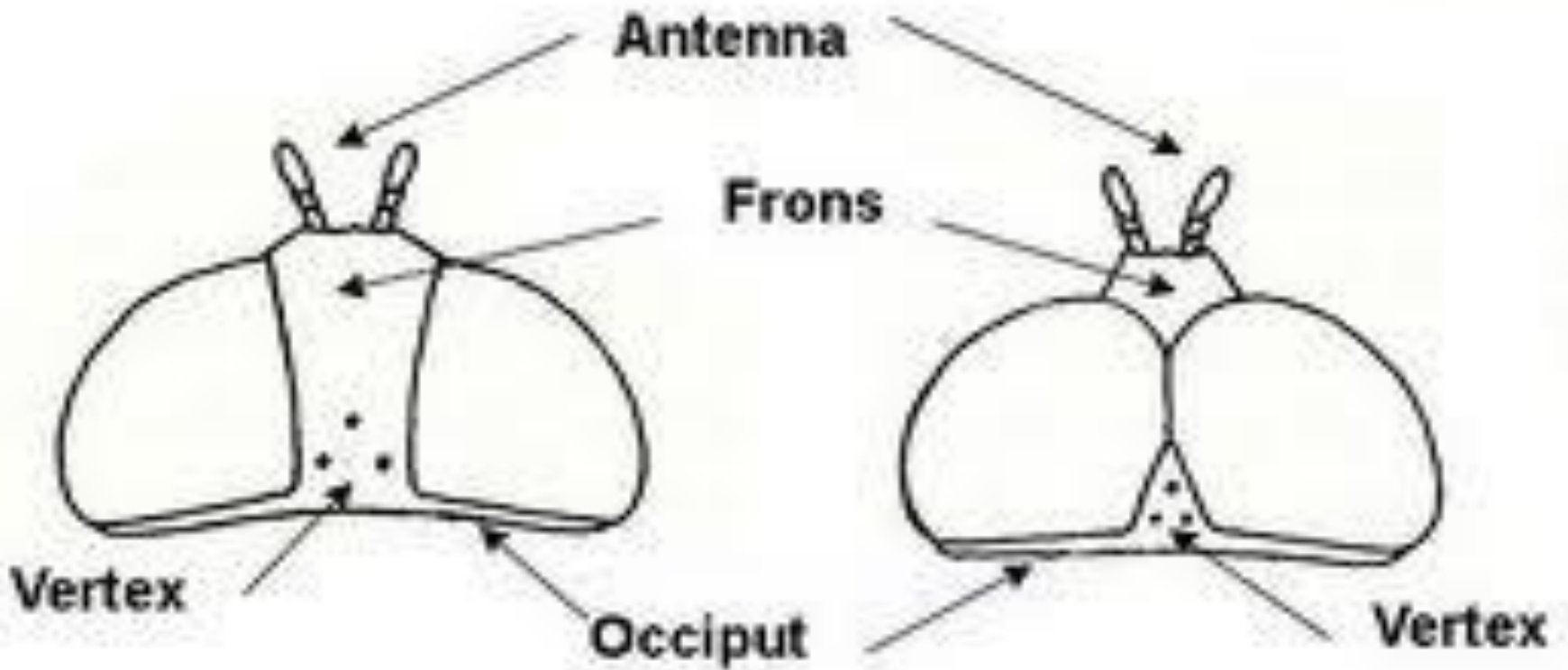
ARACHNIDA

1. Four (4) pairs of legs .
2. Body is divided into 2
parts ~~Cephalothorax &~~
Abdomen .
3. No antennae .
4. Eyes are absent or
reduced .





MOUTH PARTS OF AN INSECT



Female Eye (Left)

Male Eye (Right)

DICOPTIC & HOLOPTIC EYES

Male

Meomyia faces

Female



HOLOPTIC & DICOPTIC EYES

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SOURCE- GOOGLE

Calliphoridae
Lucilia sp



Male Simulium head from above

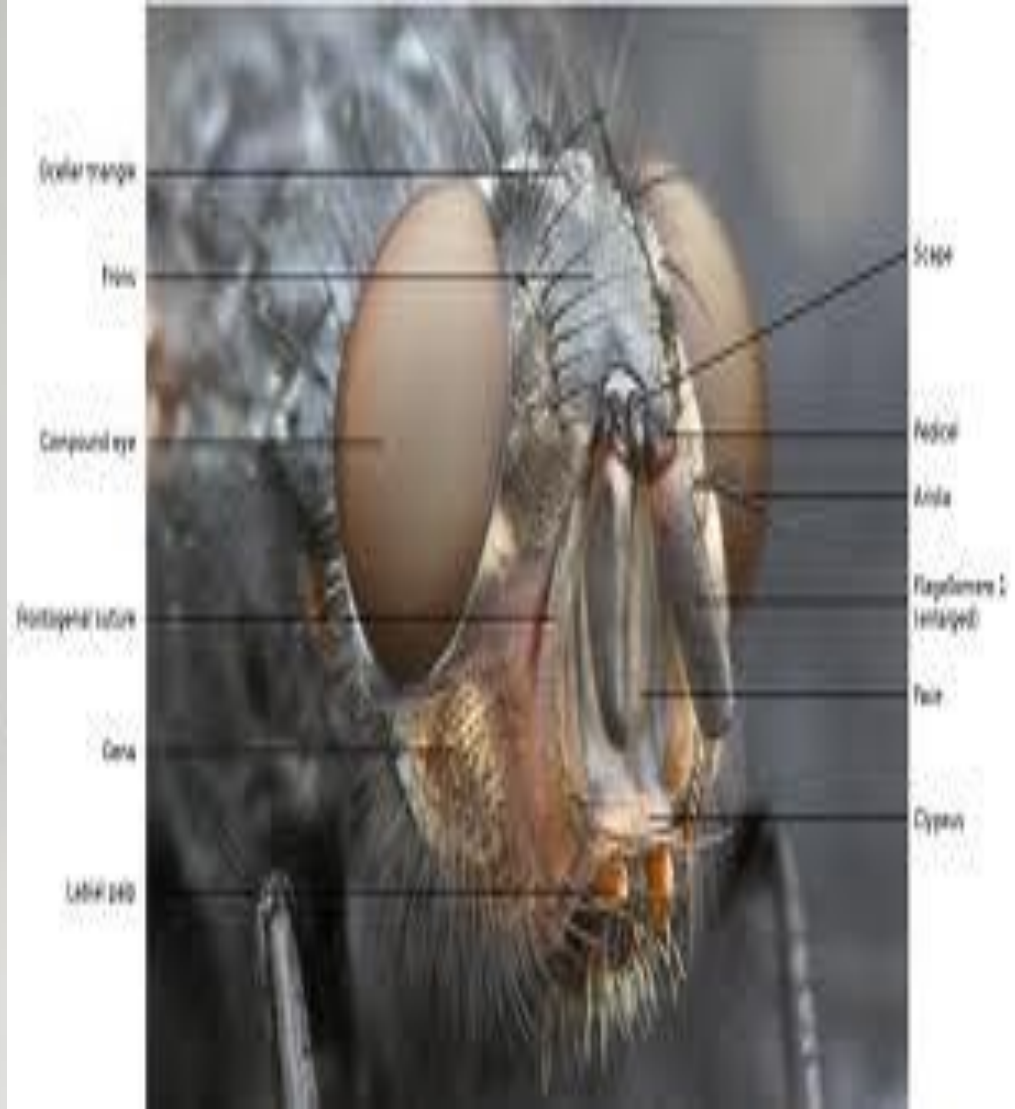


Photo J.B.Davies

HOLOPTIC TYPE EYES

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DICOPTIC TYPE EYES

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