

## Points to Remember

### Indian cattle Leech (Invertebrate)

**Scientific name :** *Hirudinaria granulosa*

**Taxonomic position :**

Phylum → Annelida  
 Class → Hirudinea  
 Order → Gnathobdellida  
 Genus → Hirudinaria  
 Species → granulosa

**External morphology :**

**Shape & size:** soft, vermiform, elongated & segmented.

**Colour :** Dorsal surface - olive green  
 ventral surface - orange yellow or orange red.

**Body segmentation :** Metamerism - 33 segments.

**Receptors :** 1) Annular 2) segmental

**Suckers:** Helps in attachment and locomotion.

1) anterior or oral sucker(helps feeding) 2) posterior sucker

#### External apertures

**Mouth:** It lies in the middle of anterior sucker.

**Anus:** It opens on the mid-dorsal side of 26<sup>th</sup> segment.

**Nephridiopores:** 17 pair in each segment from 6 to 22.

**Male genital pore:** Mid ventral opening between 2<sup>nd</sup> & 3<sup>rd</sup> annuli of 10<sup>th</sup> segment.

**Female genital pore:** Mid ventrally between 2<sup>nd</sup> & 3<sup>rd</sup> annuli of 11<sup>th</sup> segment.

#### Divisions of the body

Cephalic region	1st - 5th
Pre-clitellar region	6th, 7th and 8th
Clitellar region	9th, 10th and 11th
Middle region	12th - 22nd
Caudal region	23rd - 26th
Posterior sucker	27th - 33rd

### Common Rabbit (Vertebrate)

**Scientific name :** *Oryctolagus cuniculus*

**Taxonomic position :**

Phylum → Chordata  
 Sub phylum → Vertebrata  
 Class → Mammalia  
 Order → Lagomorpha  
 Genus → Oryctolagus  
 Species → Cuniculus

**External morphology :**

**Shape & size :** Elongated and cylindrical body.

**Colour:** It varies from white to black and white.

Body is covered with fur to keep it warm.

**Body-division :** head, neck, trunk and tail.

#### External apertures

**Head:** It is ovoid, flattened and bears a truncate snout.

**Mouth :** It is a transverse slit-like bounded by upper and lower lip.

**External ear/pinnae:** It is situated at the top of the head

**Neck:** It connects the head with the trunk.

**Trunk:** An anterior thorax and a posterior abdomen.  
 Female have 4 or 5 teats or nipples.

**Anus :** It is in posterior end of abdomen at the base of tail

\* In females, on the ventral side **vulva** is present.

\* In males, **penis** is present in the ventral side of anus.

**Tail:** Short - used to give signals in danger.

**Integument (Skin):** It forms outer cover to the body.

**Derived structures :** Hairs, claws, Nails, Glands -  
 Sweat glands, sebaceous glands(regulate body temperature) and mammary glands(secretes milk)

### Indian cattle Leech

**Body wall :** It includes five layers.

1. **Cuticle** – outermost layer.
2. **Epidermis** - It lies below the cuticle.
3. **Dermis** - Lies below the epidermis, formed of connective tissue.
4. **Muscular layer** –Formed of circular and longitudinal muscles.
5. **Botryoidal tissue** –Lies beneath longitudinal muscles and fills the entire coelom around the gut.

### Common Rabbit

**Coelom (Body cavity) :**

It is a coelomate animal. Its body has thoracic cavity and abdominal cavity separated by diaphragm.

**Diaphragm :** Breathing movements are brought by the movement of the diaphragm.

**Thoracic cavity :** Lungs and heart are present in it.

**Abdominal cavity :** It encloses digestive and urinogenital system.

<p><b>Locomotion</b> : (i) looping or crawling movement (ii) Swimming movement.</p> <p><b>Digestive System</b> : It includes long alimentary canal and digestive glands.</p> <p><b>Food Flow</b> : Mouth→Buccal cavity→Pharynx→ Crop→Stomach→Intestine →rectum →Anus</p> <p><b>Feeding</b> : It feeds by sucking the blood of cattle and other domestic animals.</p> <p><b>Hirudin</b> : It prevents coagulation of blood by secreting a protein.</p>	<p><b>Locomotion</b> : It takes place by leaping movement.</p> <p><b>Digestive System</b> : It includes the alimentary canal and the associated digestive glands.</p> <p><b>Food Flow</b> : Mouth→Buccal cavity→ Pharynx→ oesophagus →Stomach→ small Intestine →caecum →large intestine →Anus</p> <p><b>Diphyodont dentition / Heterodont</b> : Incisors(I), canines(C), premolars(PM) &amp; molars(M)</p> <p>Dental formula of rabbit <math>\left( I \frac{2}{1}, C \frac{0}{0}, PM \frac{3}{2}, M \frac{3}{3} \right) \frac{2033}{1023}</math></p> <p>Canines are absent.</p> <p><b>Diastema</b> – gap between incisors and premolars.</p>
<p><b>Respiratory System</b> : It takes place through the skin.</p>	<p><b>Respiratory System</b> : It takes place by a pair of lungs.</p>
<p><b>Circulatory system</b> : It has haemocoelic system.</p> <p><b>Four channels</b>: one above, one below and two on either side of the alimentary canal acts as heart</p>	<p><b>Circulatory system</b> : It is of blood, blood vessels and heart.</p> <p><b>Four chambered heart</b></p>
<p><b>Nervous system</b> : It is of a nerve ring and a paired ventral nerve cord. Nerve ring is formed of suprpharyngeal ganglion, circumpharyngeal connective and subpharyngeal ganglion.</p>	<p><b>Nervous system</b> : It includes central nervous system(CNS-brain &amp; spinal cord), peripheral nervous system(PNS – cranial nerves(12 pairs) and spinal nerves(37 pairs) and autonomic nervous system(ANS- sympathetic &amp; para sympathetic nerves).</p>
<p><b>Excretory system</b> : It takes place by 17 pairs of <b>nephridia</b> from 6<sup>th</sup> to 22<sup>nd</sup> segment.</p>	<p><b>Excretory system</b> : kidney made of several nephrons It separates the nitrogenous wastes from blood and excretes it in the form of urea.</p>
<p><b>Reproductive system</b> :It is hermaphrodite because both the male and female reproductive organs are present in the same animal.</p> <p><b>Male</b> : It have 11 pairs of testes, 1 pair in each segment from 12 to 22 segments in testes sac.</p> <p><b>Female</b> : It consists of ovaries, oviducts and vagina.</p> <p><b>Development</b> : Internal fertilization – cocoon or egg case formation – young leech.</p> <p><b>Medicinal uses of Leech</b> :</p> <ul style="list-style-type: none"> <li>* Used to treat cardiovascular diseases.</li> <li>* Saliva from leech are used for preparation of pharmaceutical drugs that can treat hypertension.</li> </ul>	<p><b>Reproductive system</b> : Sexual dimorphism</p> <p>* <b>Male</b> : It have a pair of testes, seminiferous tubules, epididymis, <b>vas deferens</b>. (sperm duct).</p> <p><b>Accessory glands</b> : prostate gland, cowper’s gland and perineal gland.</p> <p>* <b>Female</b> : Ovary→Oviducts→fallopian tube → uterus→ vagina→ vestibules (or) urinogenital canal→ vulva</p> <p><b>Accessory glands</b> : Cowper’s gland and perineal gland.</p>