

General Entomology

Lecture (2)

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Lecture Topics

- **Why are insects so successful?**
- **Characteristics of Class Insecta**
- **The insects integument**

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Why are insects so successful?

- **Insects are small in size**
 - Take advantage of many niches (environment).
- **Insects are high reproductive animals**
 - Having many generations in short time.
- **Metamorphosis.**
 - Adult does not competing with the young for food.
- **Wide variety in food choices**
 - Eating plants, animals & decaying matters



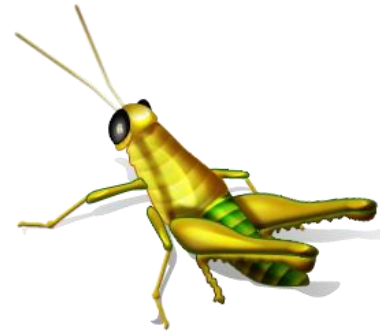
Ladybird larvae



Adult ladybird

Characteristics of Class Insecta

- A hardened external skeleton.
- 3 body regions: **head, thorax, and abdomen.**
- Pair of antennae.
- 3 pairs of legs on the thorax.
- Pair of compound eyes (some insects have no eyes).
- 1 or 2 pairs of wings (some adults are wingless).

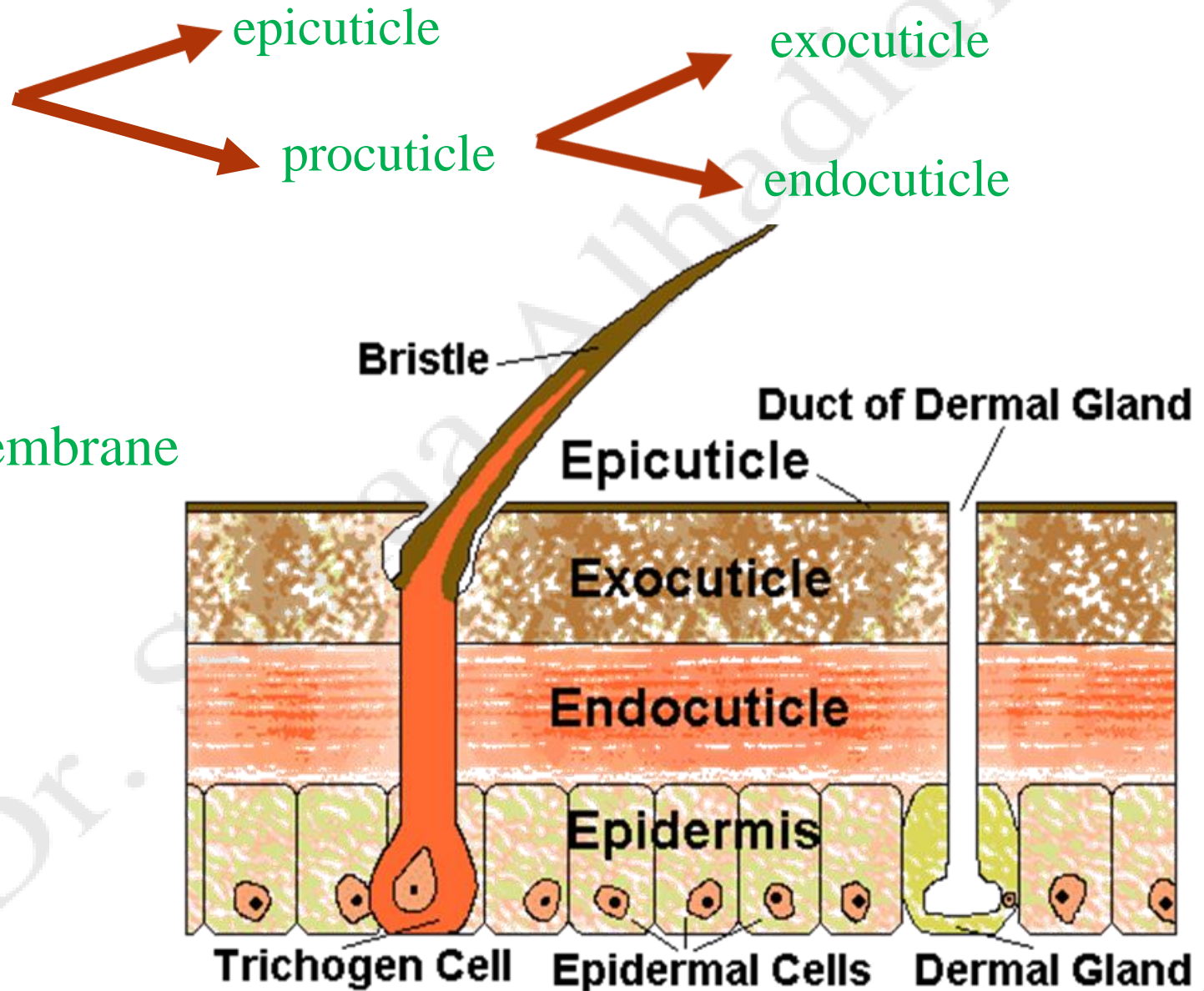


The Integument (exoskeleton)

- Cuticle

- Epidermis

- Basement membrane



The Integument (exoskeleton)

- Is a main important reason of the amazing success of insects.
- Has incredible mixture of flexibility and strength > allows insects their freedom of movement without loss of defense and protection.
- Integument made up of three parts from outside to inside: -
 1. **The cuticle:** a non-living layer consist of two layers.
 - a. The epicuticle no chitin and is highly resistant to water & solvents.
 - b. Chitinous cuticle (procuticle) comprised of the exocuticle and endocuticle (protein and chitin fibers).
 2. **The epidermis:** a living single layer of secretory cells and includes specialized cells, such as gland cells and sensory cells.
 3. **The basement membrane (Basal lamina):** is an amorphous layer about 0.5 micrometers thick.

Integuments function

- Exoskeleton
- Muscle attachment
- Defence (from fungi, bacteria, predators, parasites, and chemicals)
- Locomotion (movement)
- Respiration
- Feeding
- Excretion
- Water control
- Food reserve

Human Skeleton



Insect Exoskeleton



Nice armor, friend.



HISSESSS!!!!



Insect moulting

- Insects molting when they grow or increase in size.
- Take off the old cuticle and replacing it with new one
- Molting is controlled by hormones.
- **Apolysis** is breaking the connections between the epidermal cells and the cuticle.
- **Ecdysis** is the emerging from the remnants of the old cuticle.
- **Molting = Apolysis + Ecdysis**



Thanks for listening

