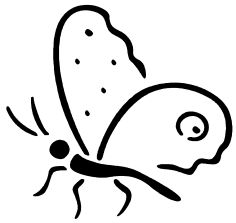
Unit 4 - Integument, Development & Reproduction
Study Guide

Unit objectives

1. Describe the three layers of an insect's integument.
2. Describe the advantages and disadvantages of an exoskeleton.
3. Discuss the life cycles of insects.
4. Using the proper terms for the structures involved, explain the steps in the molting process.
5. Explain the role of JH and Ecdysone, where they come from, and how they are used together during the molting process.
6. Identify the internal and external reproductive structures of insects and describe what they do or are used for.



Introduction

Integument Layers

Which layers make up the exoskeleton?

What is the epicuticle made of?

What is the exocuticle made of? How do these two compounds interact?

Which layer of the exoskeleton is flexible but still contains protein and chitin?

Which layer is waterproof? What makes it waterproof?

Which layer is cellular?

Which layers make up the integument?

What is the function of the basement membrane?

Exoskeleton advantages

What are three functions (or advantages) of the exoskeleton?

Disadvantages
What are the disadvantages to having an exoskeleton?

Molting process
Name and describe the four molting steps:

Molting hormones
Where is Juvenile Hormone secreted?

Where is ecdysone secreted?

What is the function of JH in the larval stage?

What is its function in the adult stage?

What is the function of ecdysone?

When JH levels drop, and the insect is ready to molt, what kind of cuticle is formed?

What is sclerotization?

How would you explain the appearance of an "albino" insect?

What determines the length of time it takes for an insect to go from the egg to the adult stage?

Which types of insects have indeterminate growth?

What is another name for an imago?

Explain"
Ametabolous Development:

Hemimetabolous Development:

Holometabolous Development:

Research on your own
Define:
Diapause –
Aestivation –
Hibernation –

Quiescence –
Univoltine-
Bivoltine
Multivoltine-
Hypermetamorphosis-
Triungulin -

Larval Types:

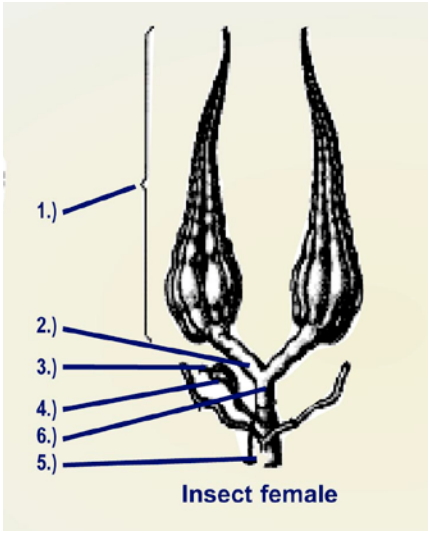
- eruciform–
- scarabaeiform
- campodeiform
- elateriform
- vermiform

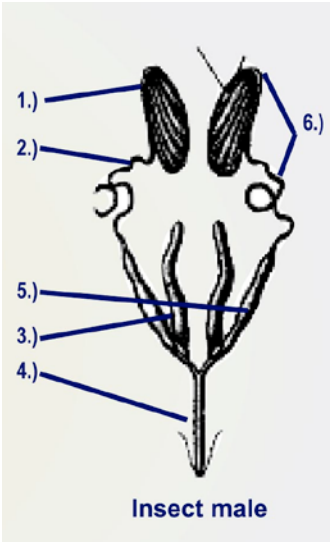
JH analogs or mimics - Journal Entry **ASSIGNMENT**

Reproductive System

Fill in the names of the insect reproductive organs:

Female:
1.)
2.)
3.)
4.)
5.)
6.)





Male:
1.)
2.)
3.)
4.)
5.)
6.)

Why do you think a female insect does not have a uterus?

Reproductive Organ Functions

List the functions of the following reproductive organs.

Male

- aedeagus:
- accessory gland:
- testes:

- vas deferens:
- seminal vesicle:
- ejaculatory duct:

Female

- ovary:
- ovarioles:
- lateral oviduct:
- spermatheca:
- oviduct:
- accessory glands:
- spermatheca:
- common oviduct: