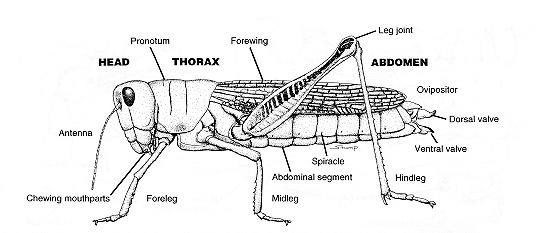
University of Salahaddin **Entomology**   
Department of Biology  
3rd Class Year **Lab2**

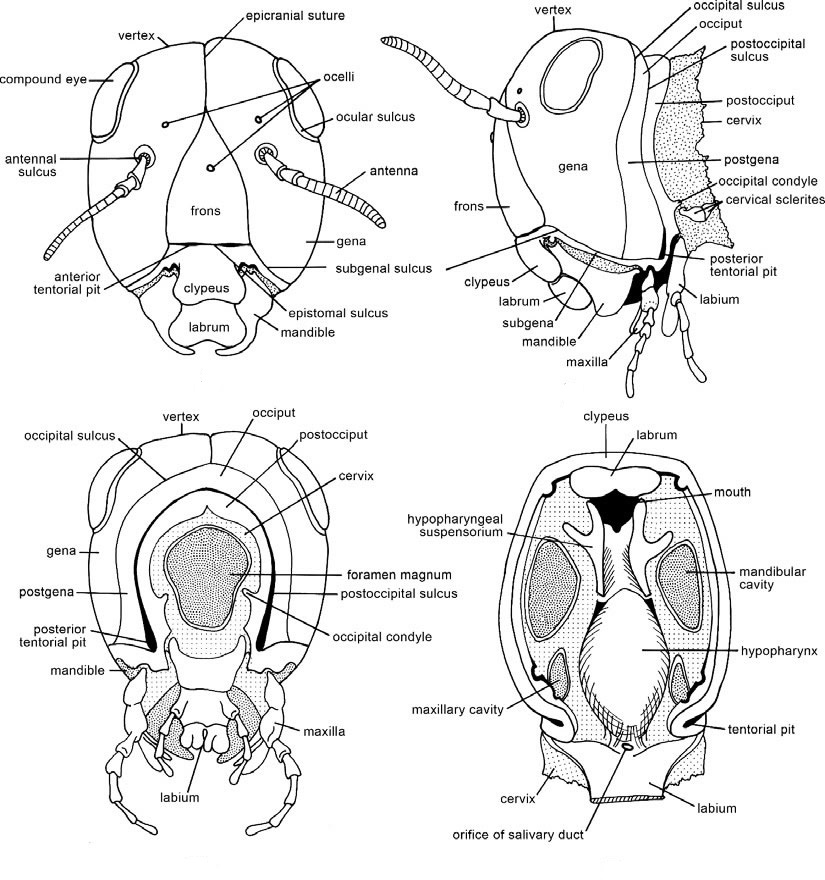
**External Morphology**

**Head Capsule**



**The Head**

* [The head](Presentation4.ppt), being the anterior tagma, bears the major sense organs and the mouthparts.
* The head of an insect is composed of a series of segments (6 segments), which are specialized for:
  + [food gathering](Presentation4.ppt) and manipulation,
  + [sensory perception](Presentation4.ppt), and
  + [neural integration](Presentation4.ppt).
* Considerable controversy still surrounds the problem of segmentation of the insect head.
* There are three preoral and three postoral segments.
* The first preoral segment is preantennal; it is called the *protocerebral*or [*clypeolabral*](Presentation4.ppt)segment. The segment itself has disappeared but its appendages remain as the *clypeolabrum*.

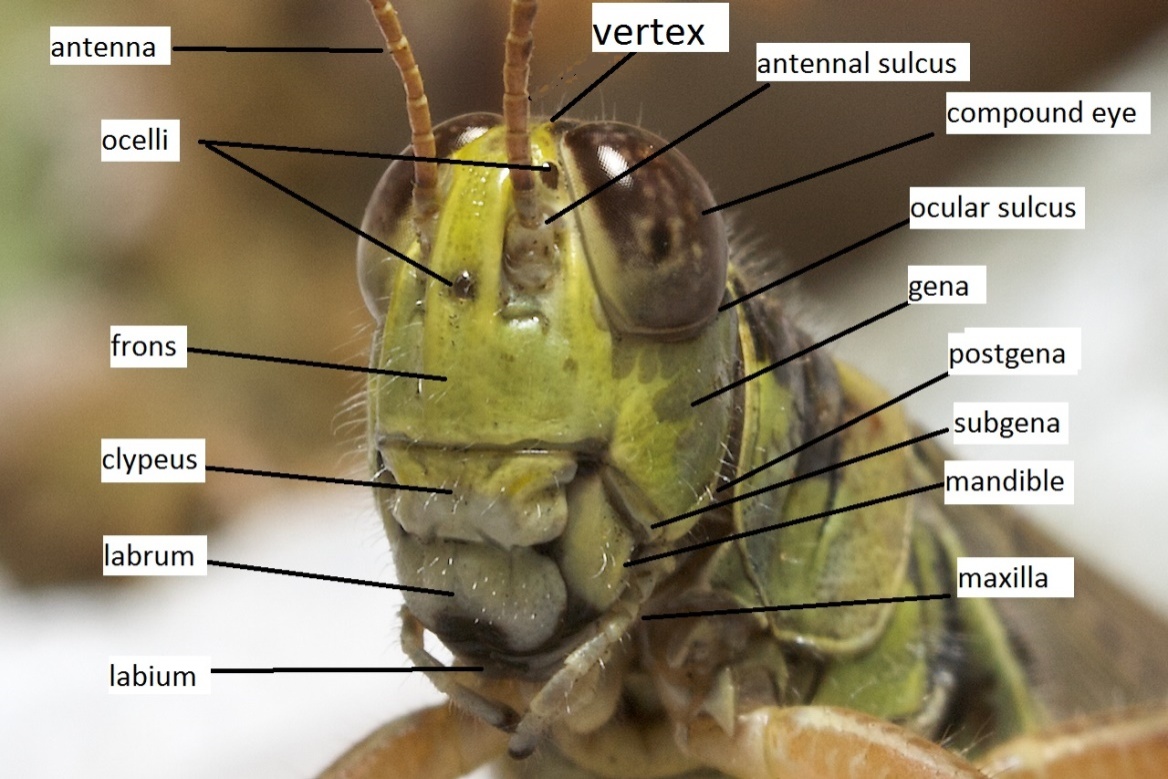


**A- Anterior**

**B- Lateral**

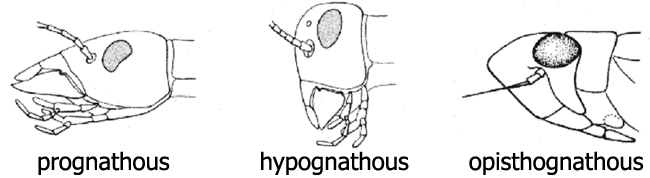
**C- Posterior**

**D- Ventral**



**AXIAL POSITION**

* The posture or orientation of the head in its resting position relative to the long axis of the body can be important in providing definitions of the anatomical features of the head.
* Axial position in insects typically falls into three basic categories:

1. prognathous.
2. hypognathous.
3. opisthognathous.

* Some predaceous insects, such as carabid beetles and earwigs, display the [**prognathous**](Presentation4.ppt). Condition in which the mouthparts are directed anteriorly.
* [**Hypognathous**](Presentation4.ppt) refers to insects with the head vertically oriented and the mouth directed ventral.

The hypognathous position is evident in most major groups of insects and can be seen in the grasshopper, house fly, and honey bee. Other conditions are probably derived from ancestors with a hypognathous head

* The [**opisthognathous**](Presentation4.ppt)condition is characterized by posteroventral position of the mouthparts

The opisthognathous condition is displayed in many fluid-feeding Hemiptera, including true bugs, leafhoppers, whiteflies, and aphids.



aphid