1 Ch1. Tooth Development

Odontogenesis

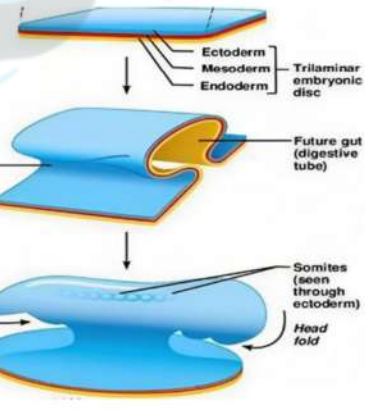
- Crown Formation
- Root Formation
- Functions of Cell Layers
- Clinical Considerations

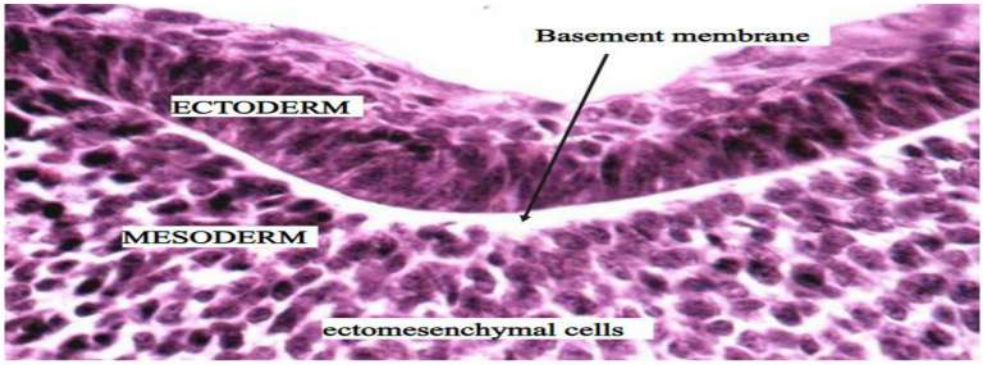
- Developmental stages of teeth are classified into 2 ways:

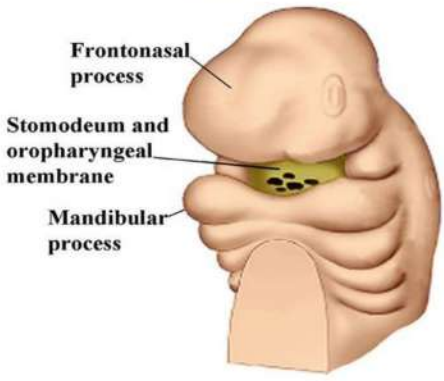
- **Morphological Stages:**
1. Dental lamina.
2. Bud stage.
3. Cap stage.
4. Bell stage:
   a) Early bell stage.
      (No hard dental tissue)
   b) Late bell stage.
      (The first layer of dentine is laid down.)

- **Histophysiological stages:**
1. Initiation.
2. Proliferation.
3. Histodifferentiation.
4. Morphodifferentiation.
5. Apposition.

- At 5-6 (W.I.U.) the primitive oral cavity (stomodeum) is lined by ectoderm of two or three layers; The basal layer is columnar and the superficial layer is (flattened cells).
- The ectoderm is separated from mesoderm (ectomesenchymal cells) by basement membrane.







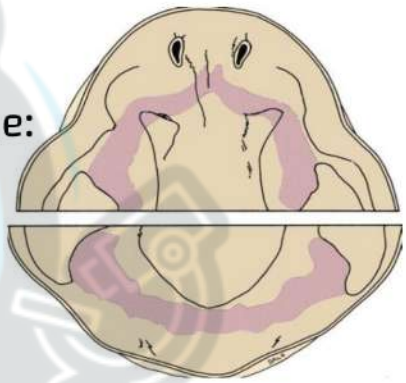
A- Morphological Stages

(1) Dental Lamina Stage:

At the 6th W.I.U.:

- By the influence of the ectomesenchymal cells (neural crest cells) in the underlying mesoderm, the basal columnar cells of ectoderm will proliferate into different rates forming separate islands of ectoderm in the underlying mesoderm.
- These islands will grow laterally to coalesce together and form the Primary Epithelial Band which extends along the free margin of the jaws.

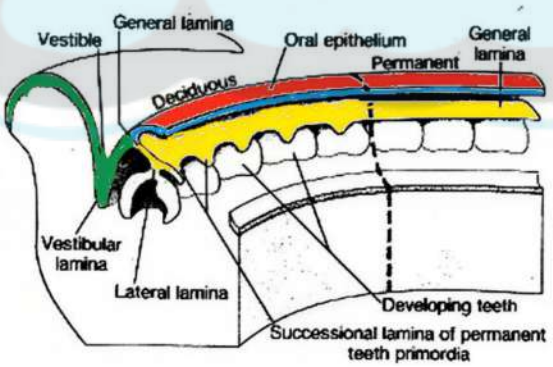
At 7th W.I.U.:

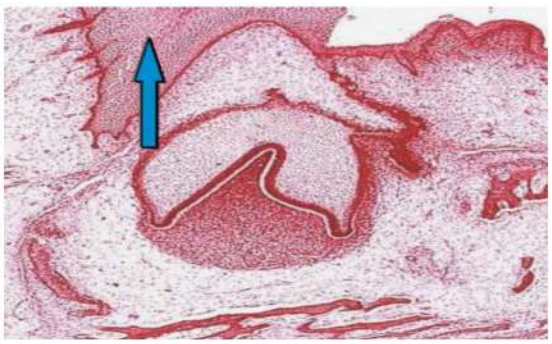


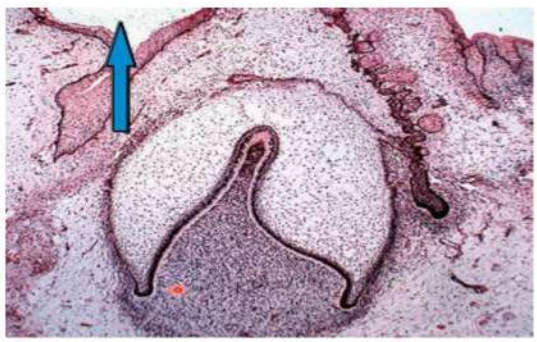
- The primary epithelial band divides into two laminae:
  a) facially located vestibular lamina.
  b) lingual dental lamina.

a) Vestibular Lamina:

- Ectodermal proliferation labial or buccal to the dental lamina, the cells rapidly enlarge and then the central cells degenerate to form clef which become the vestibule between cheek, lip and the jaw.

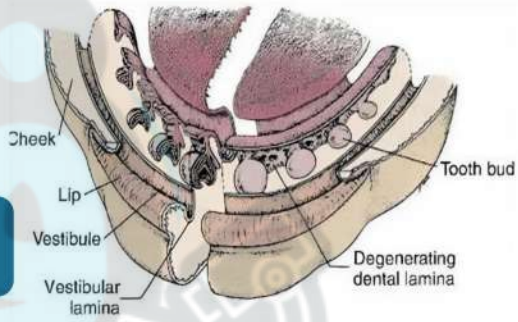






b) Dental Lamina:

- The dental lamina is a sheet-like structure or lamina which extends along the entire free margin of the jaws where deciduous teeth develop.
- Permanent successors develop from a long extension of the dental lamina into the ectomesenchyme lingual to the developing deciduous tooth. This lingual extension of dental lamina is called successional dental lamina.
- Permanent molars have no deciduous predecessors, so they are non succedaneous. They develop from a posterior extension of the dental lamina distal to the deciduous second molar (E).



Main Dental Lamina

Labial / Lateral Lamina

- 10 buds of deciduous teeth.

lingual extension

- successional dental lamina.
- 10 buds of Permanent successors.

posterior extension

- 6 buds of Permanent molars.