

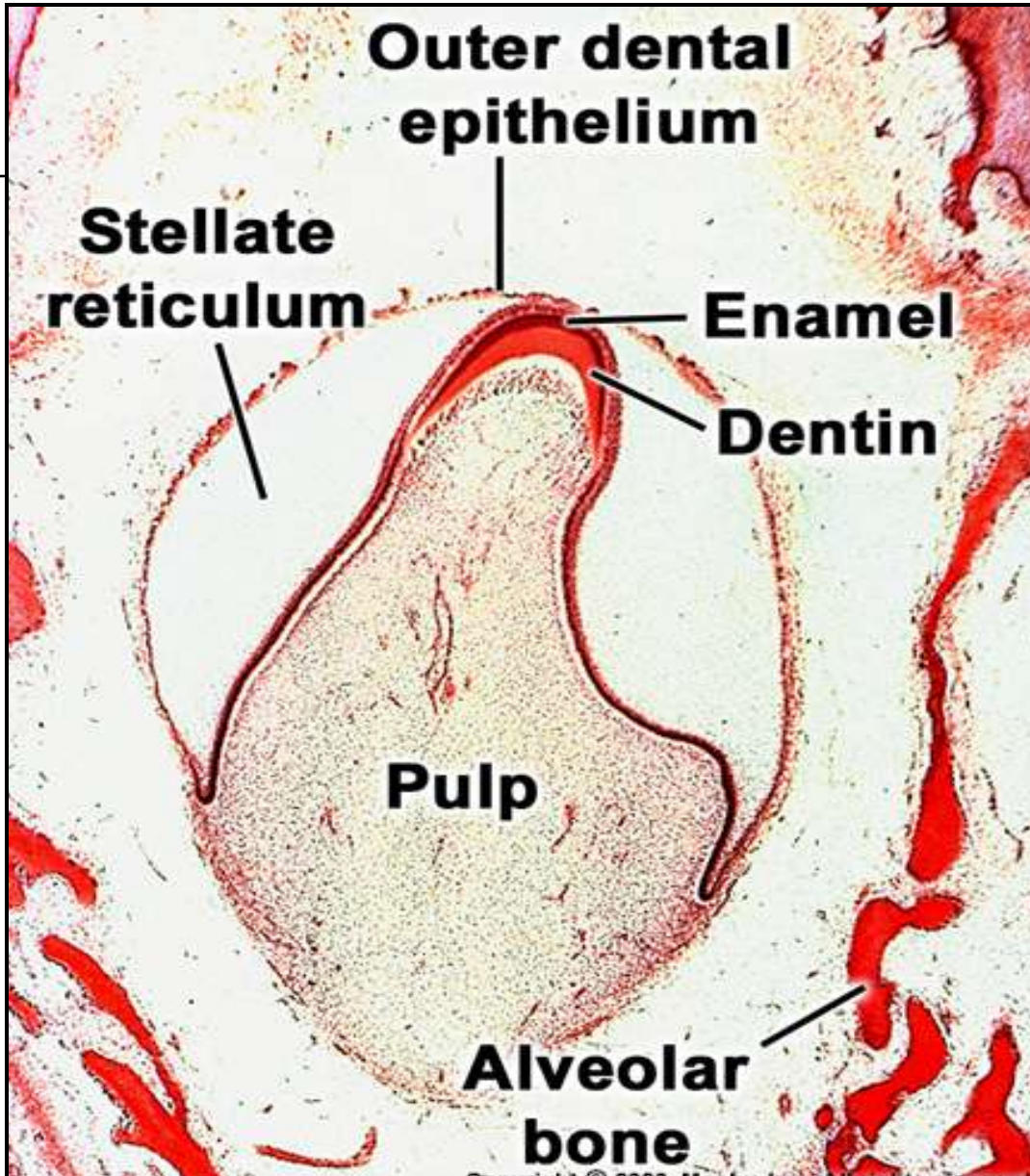


AMELOGENESIS

DR VIJAYALAKSHMI.K

Amelogenesis:

- Enamel-highly mineralised epithelial tissue
- Process of formation of enamel is called amelogenesis.
- 2 step process-1.matrix formation.
-2.maturation.
- Prerequisite for enamel formation is formation of dentin.
- Occurs in advanced bell stage of tooth development.

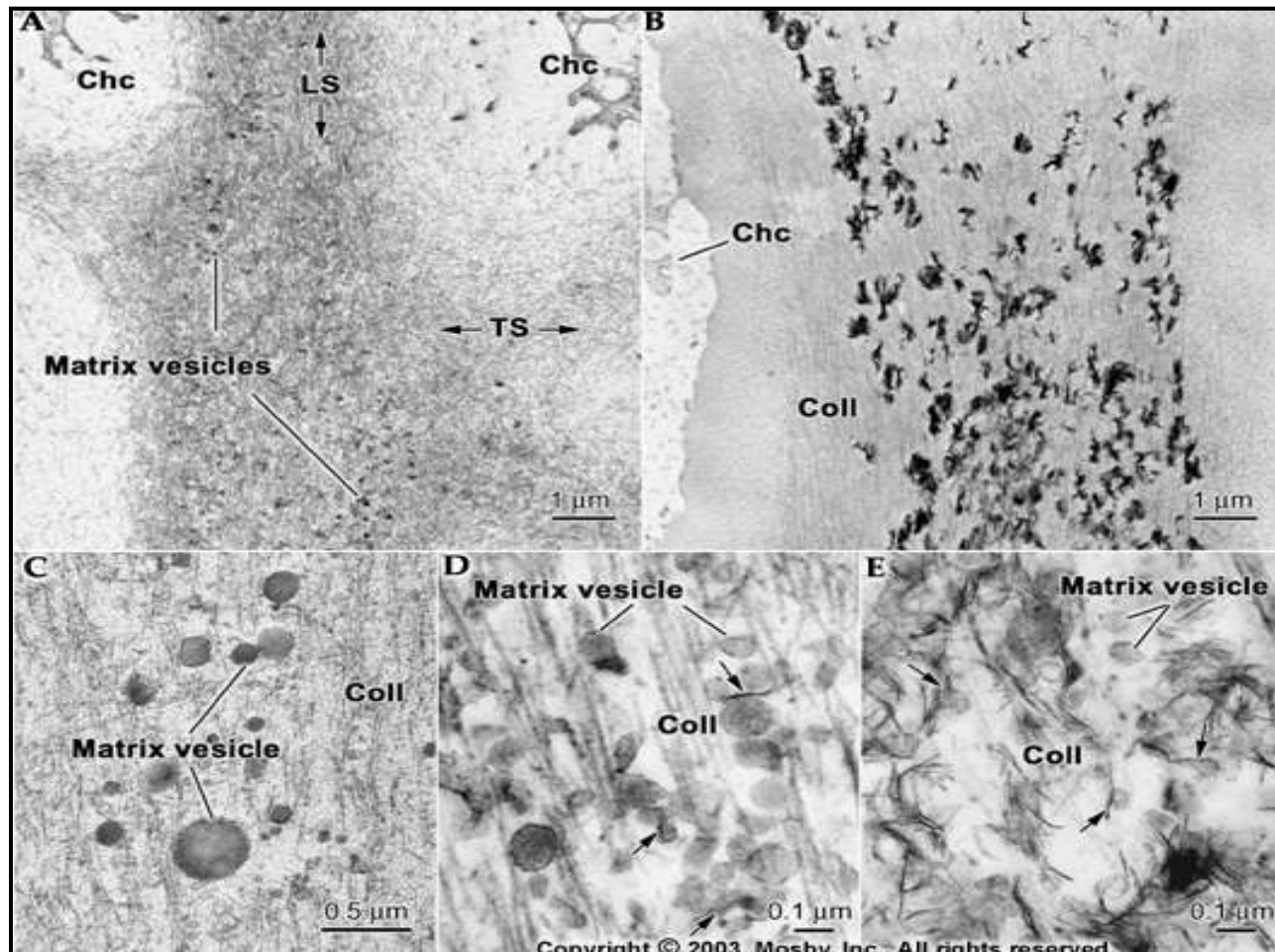


Advanced bell
stage

Amelogenesis:

- Mineralisation by formation of matrix vesicle.
- First formed enamel is soft or moderately hard tissue.
- Hardest enamel is obtained by addition of ribbon like crystallites can increase in both width and thickness.

Mineralisation of Enamel:



Mineralization of Enamel:

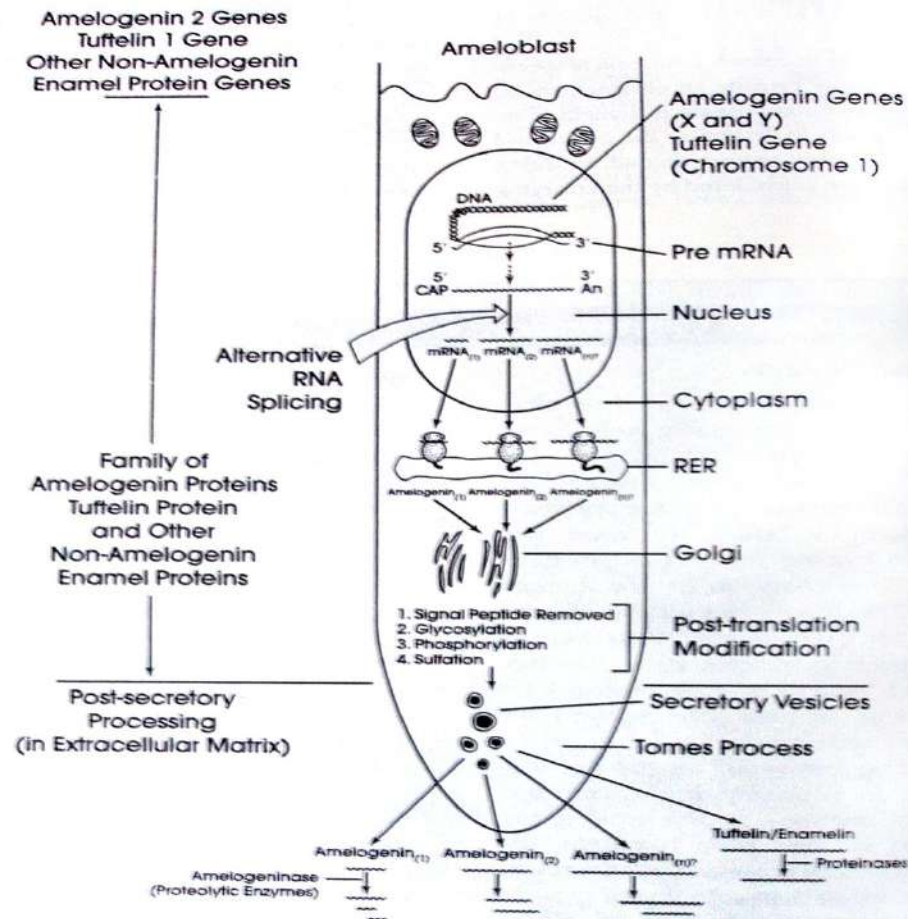
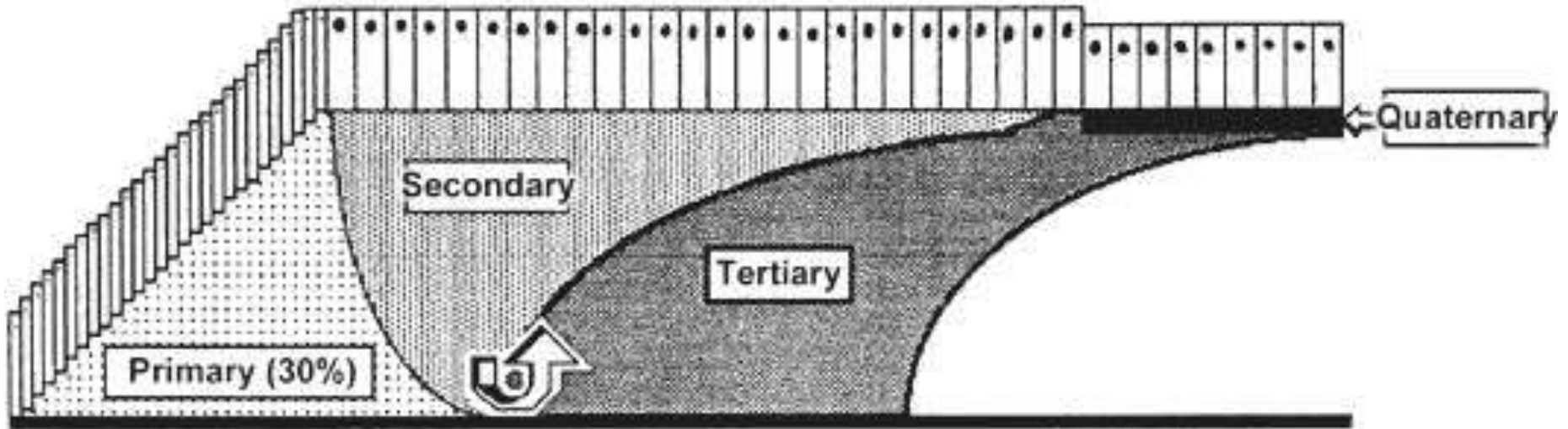
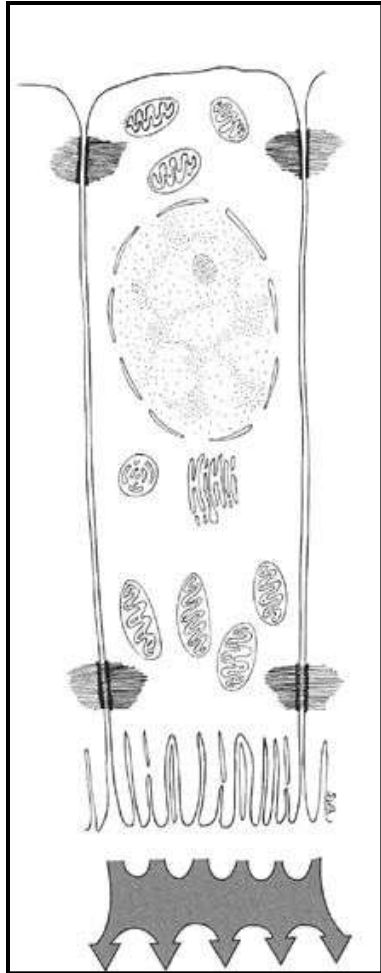


Figure 10-3 The presecretory and postsecretory mechanisms leading to a heterogeneous family of enamel proteins. Note that amelogenin can now be substituted for "other nonamelogenin enamel protein genes." (From Deutsch D et al: *Connect Tissue Res* 32:97, 1995.)

Pattern of Mineralisation:



Secretory stage



Enamel proteins:

Amelogenin

Enamelin

Tuftelin

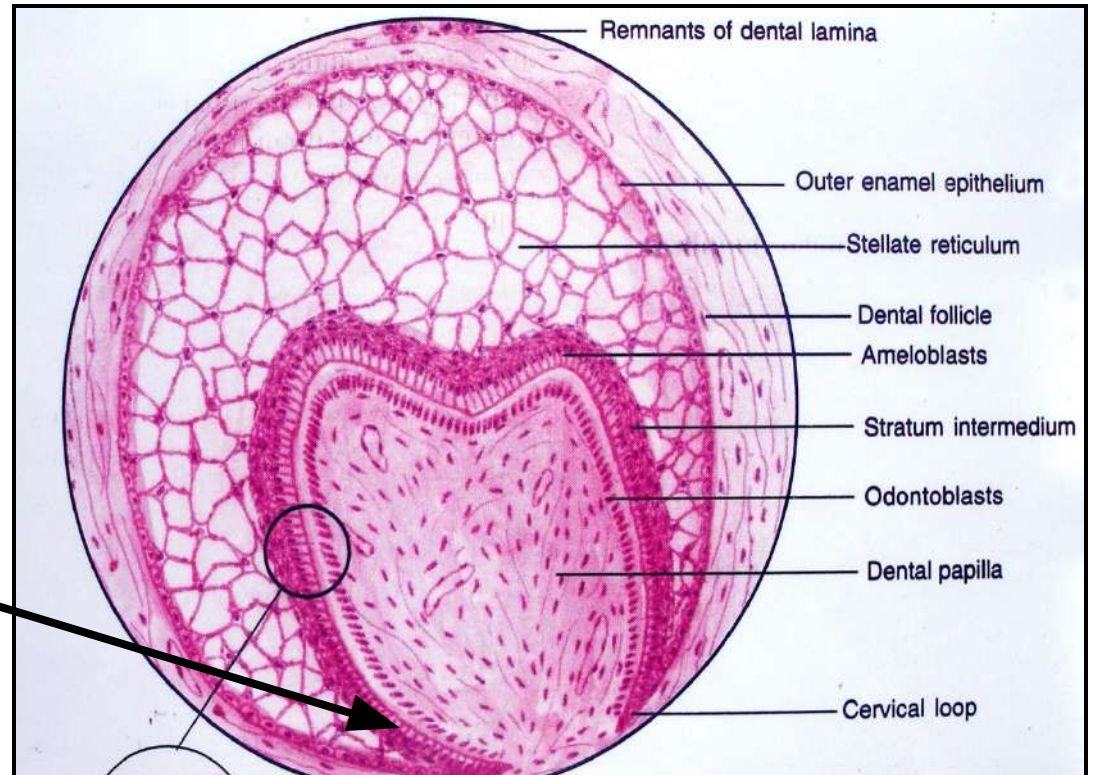
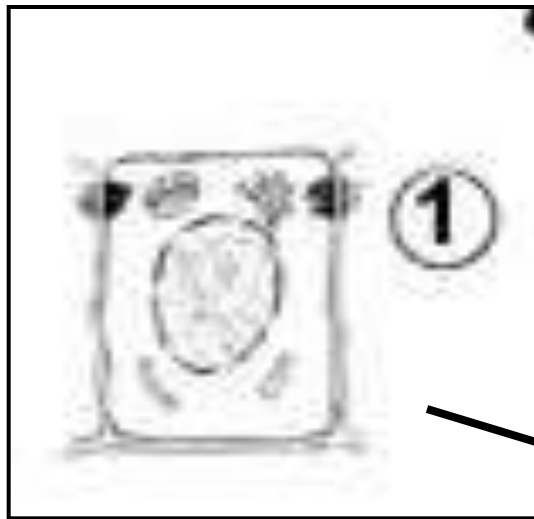
amelin



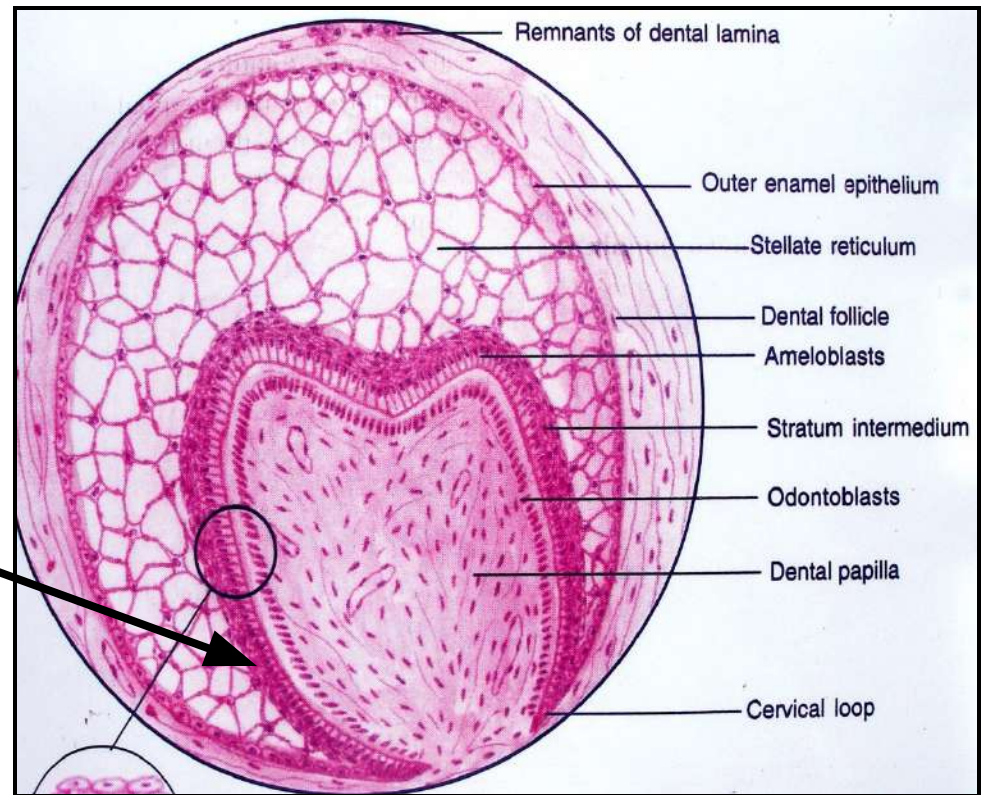
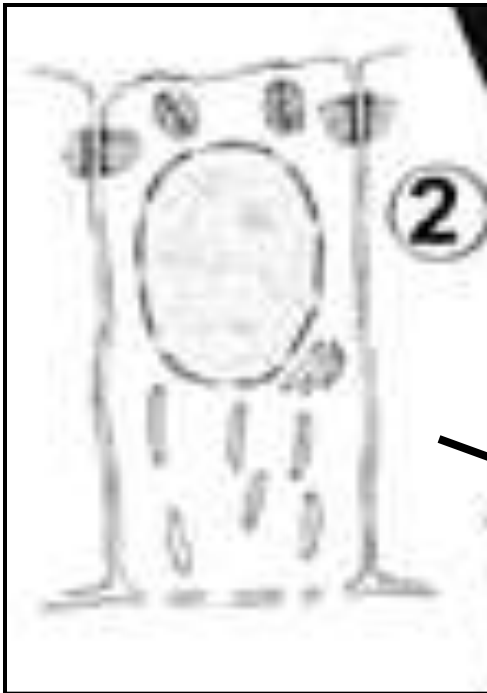
Life cycle of ameloblasts:

- Morphogenetic stage.
- Differentiation stage.
- Secretory stage.
- Maturation stage.
- Protective stage.

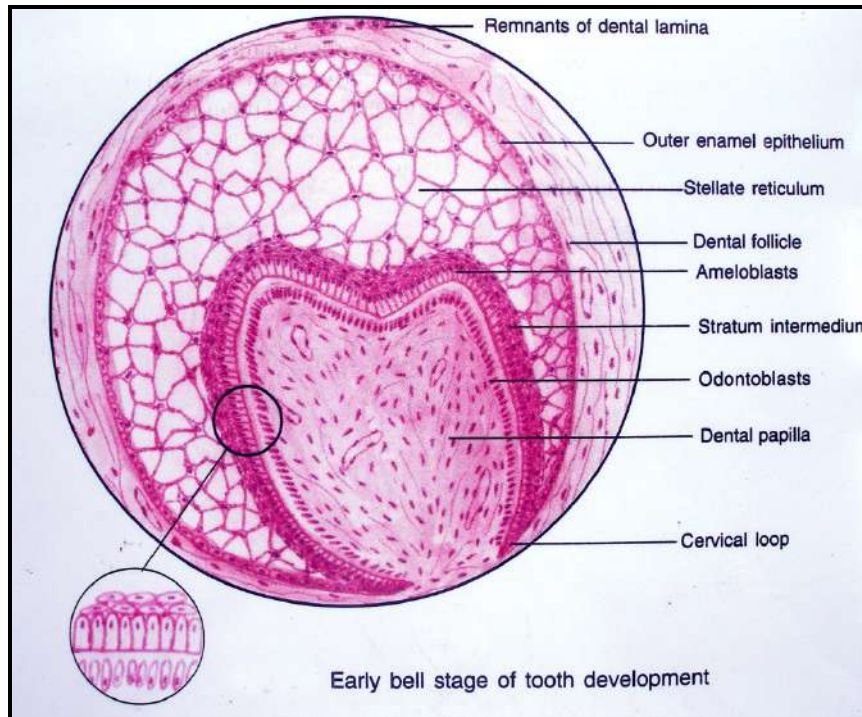
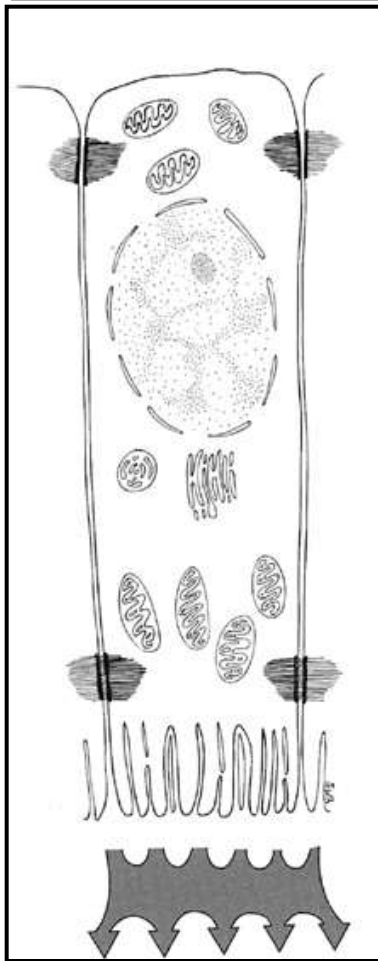
Morphogenetic stage:



Differentiation Stage:

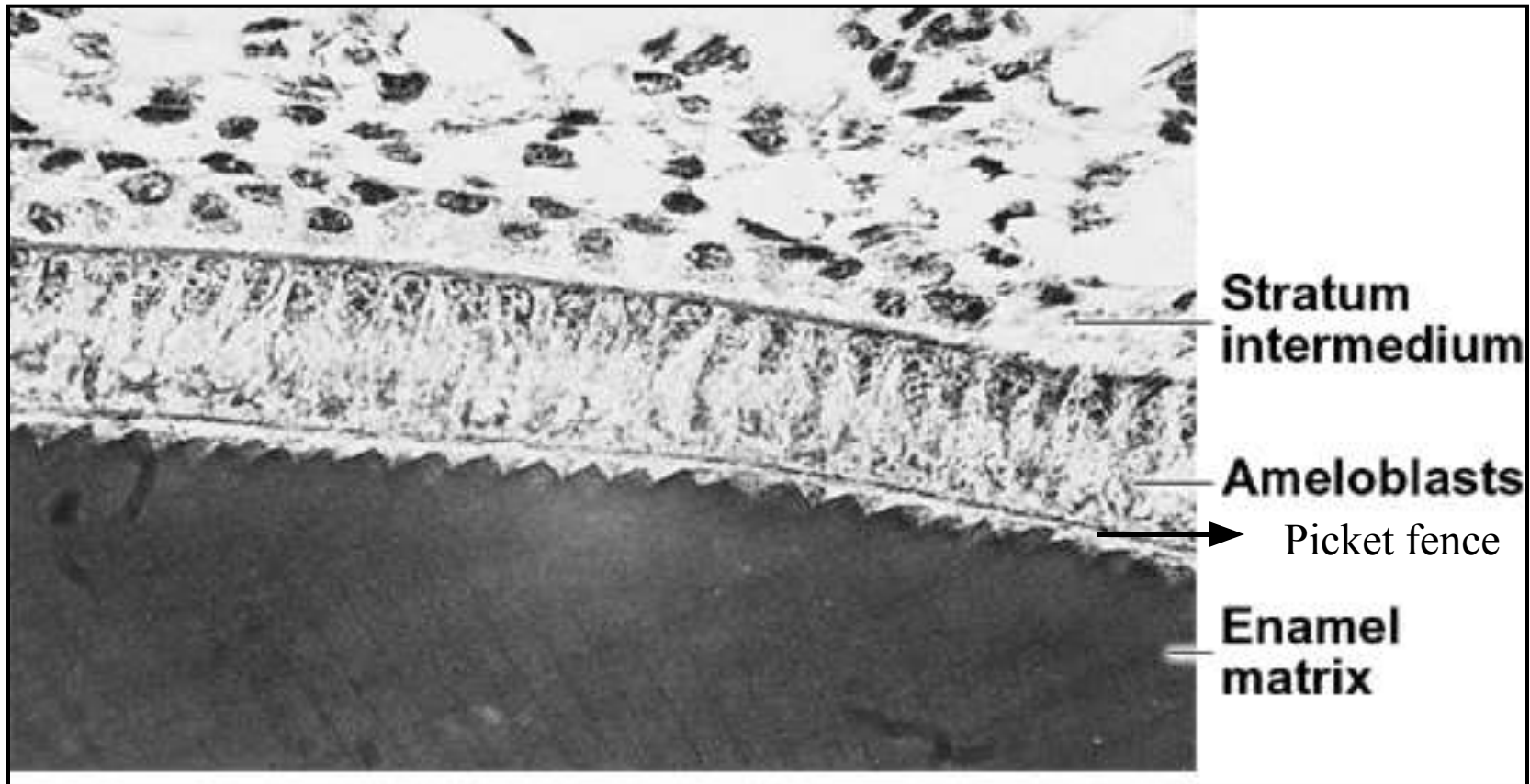


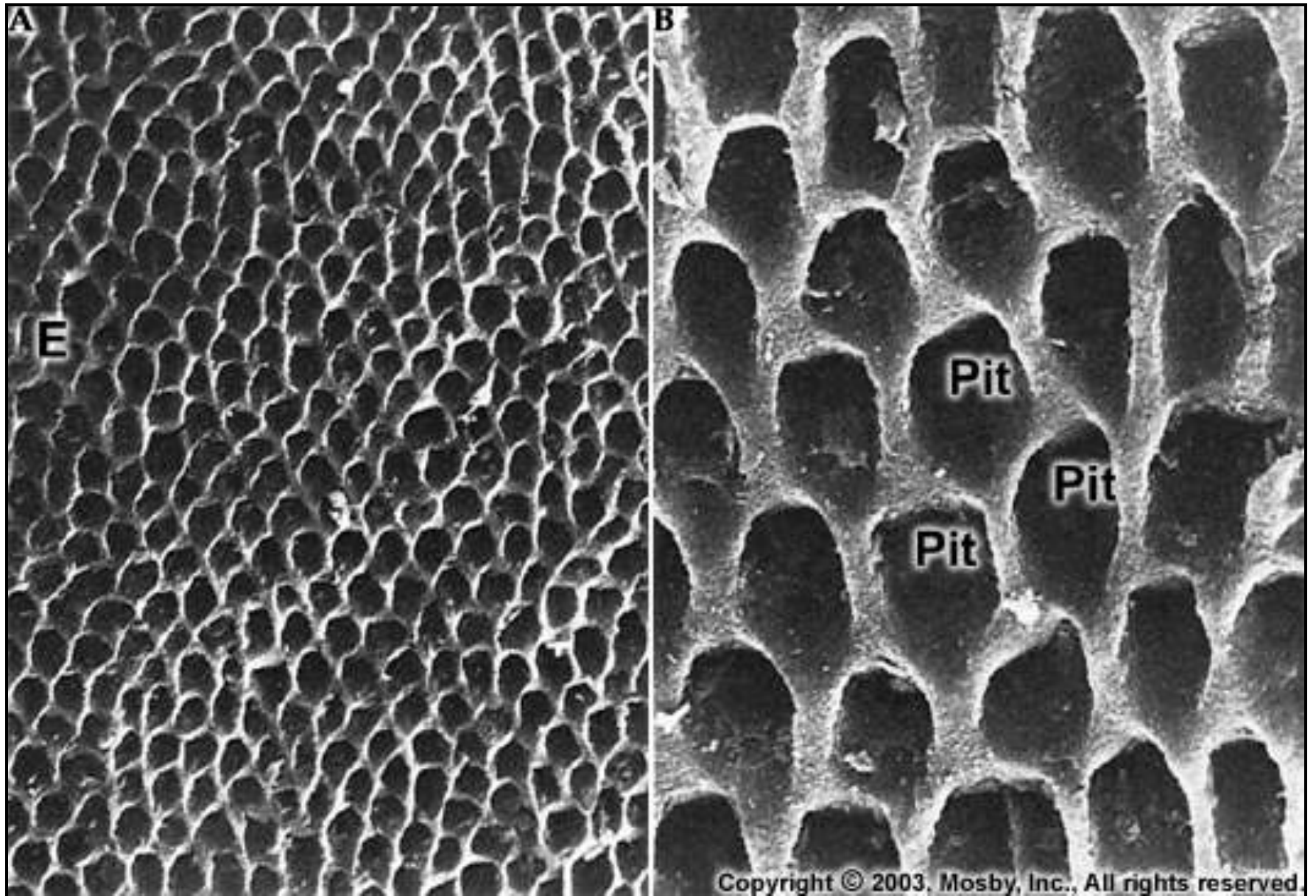
Secretory stage:

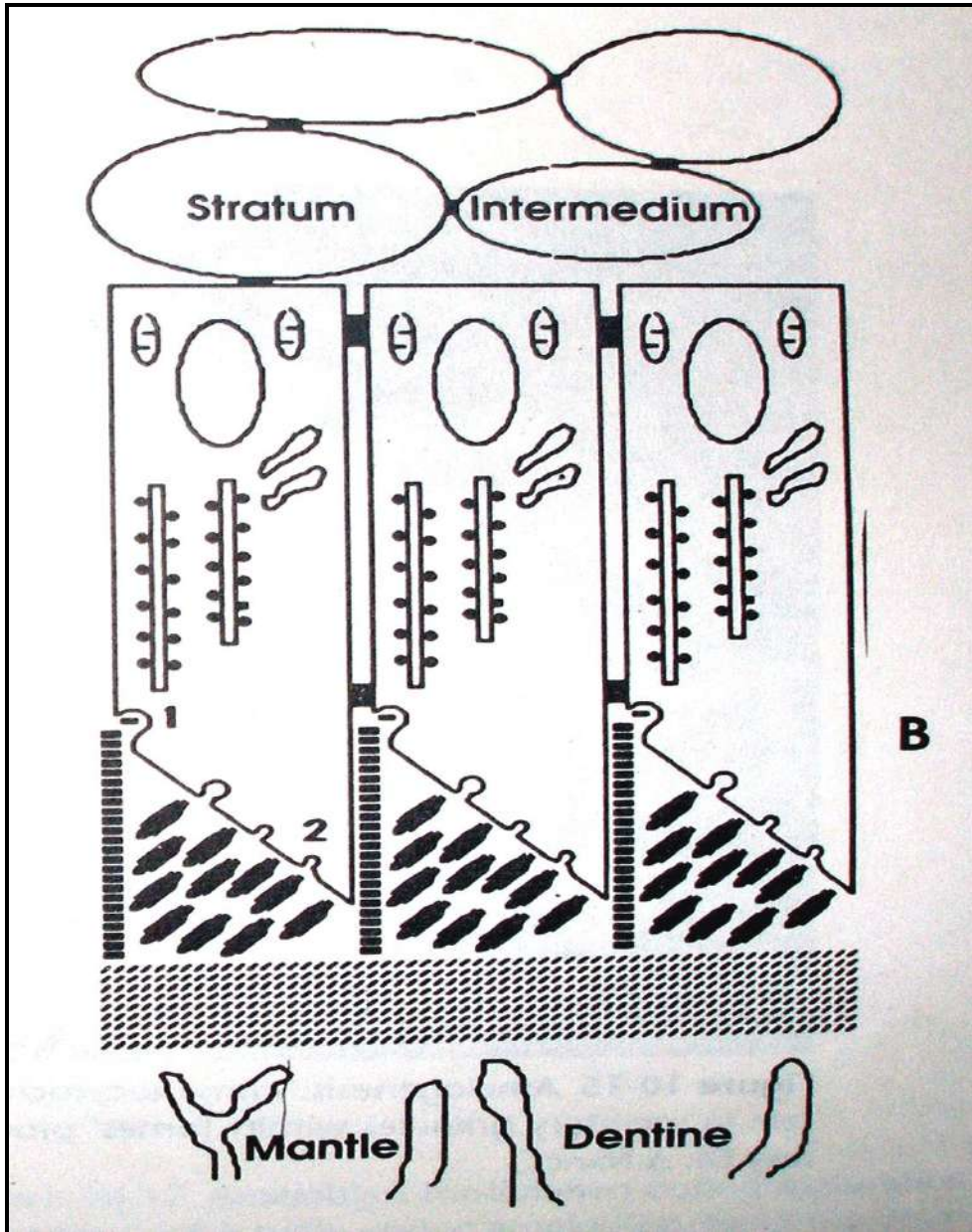


Enamel
proteins:
Amelogenin
Enamelin
Tuftelin
amelin

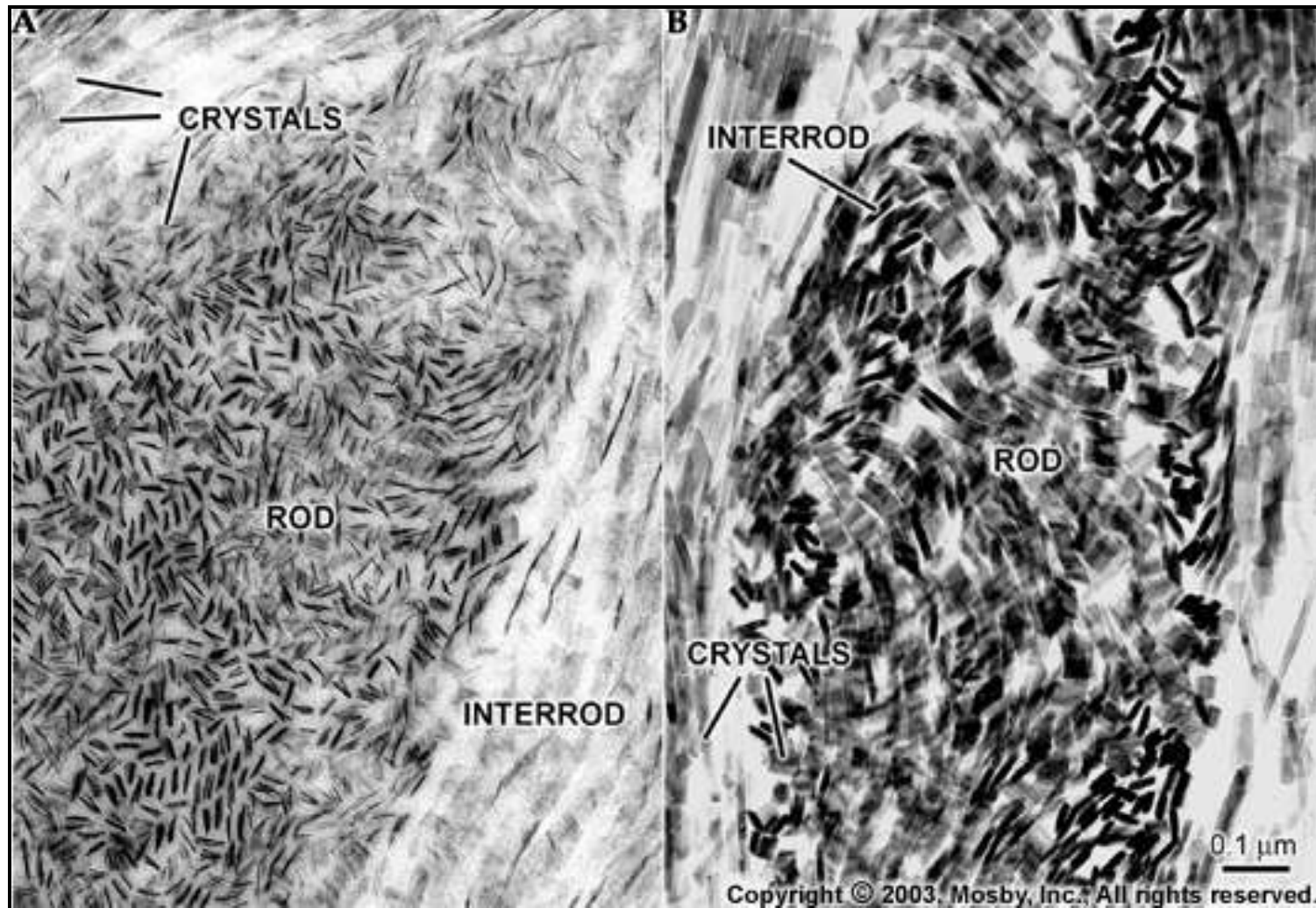
Picket fence appearance of Tome's Process:



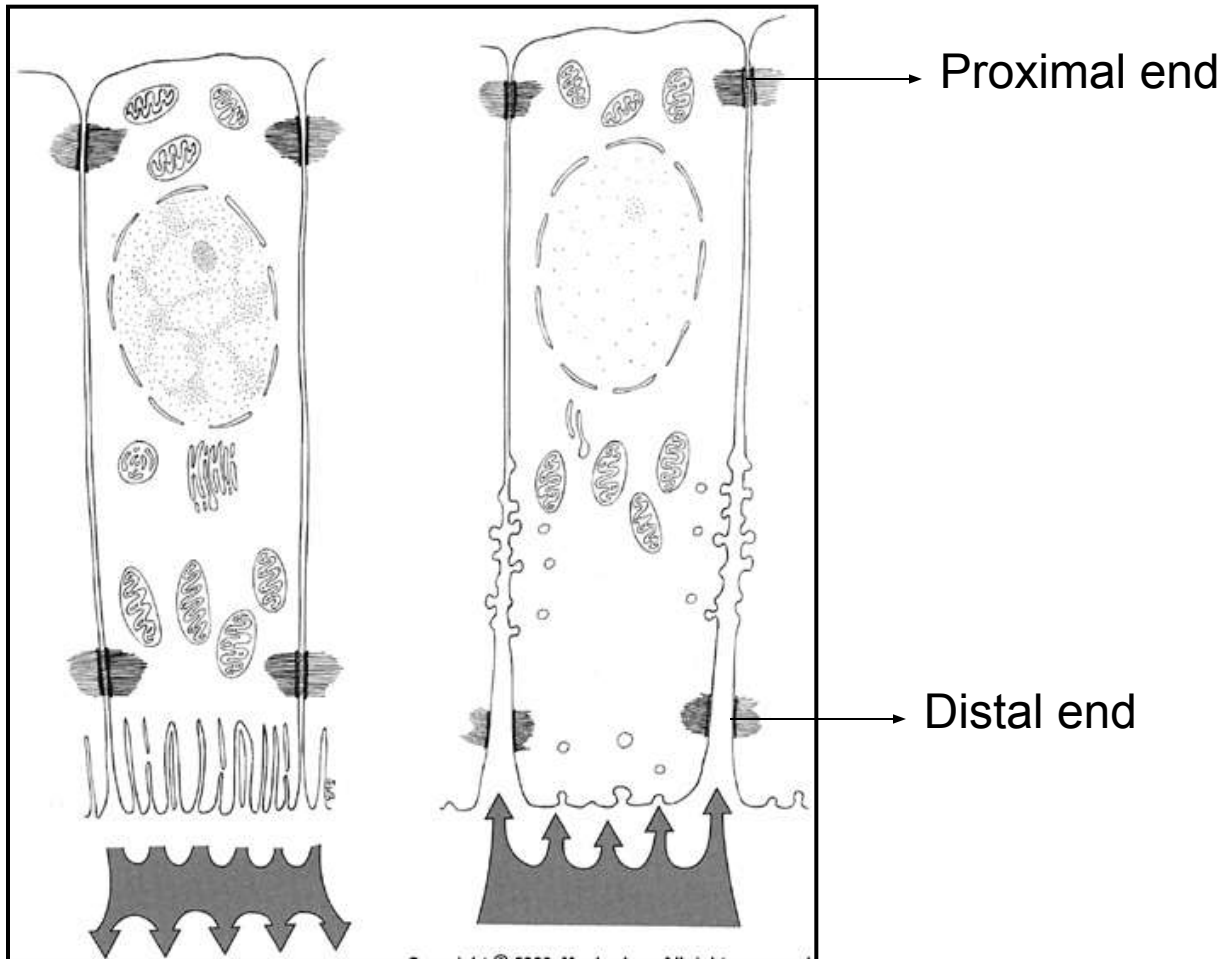




Pattern of crystal Formation

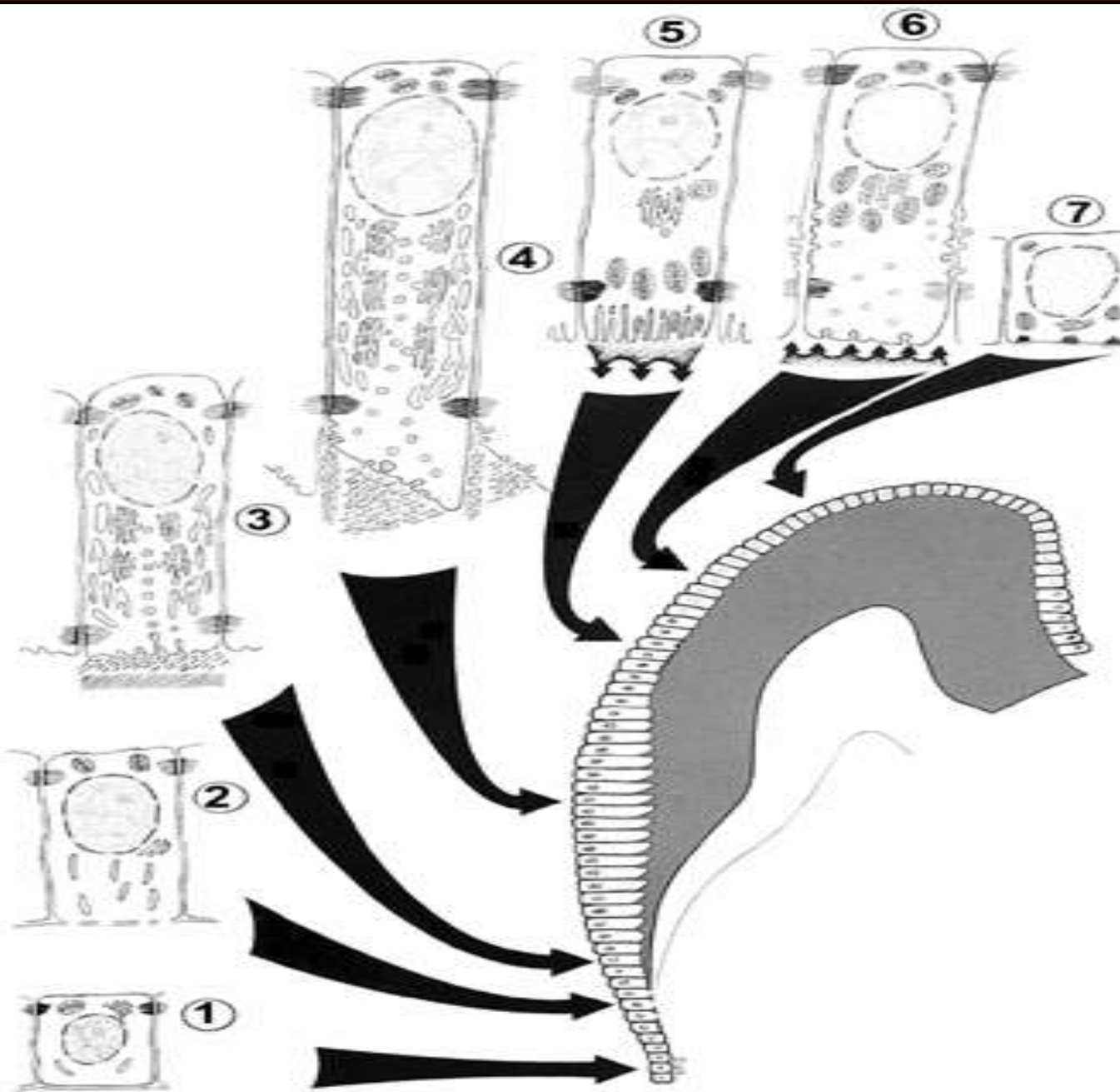


Maturation Stage:



Protective stage

- Formation of Reduced enamel epithelium.
- Formed by Inner enamel epithelium, stellate reticulum, stratum intermedium, outer enamel epithelium.
- Disturbance to this layer result in cementum deposition on the crown.



Clinical consideration:



Syphilis



Clinical consideration:



Hypoplastic



Hypomaturation



Hypocalcified

**FAILURE CAN NEVER OVER TAKE YOU UNTIL
YOUR DETERMINATION TO SUCCEED IS
STRONG ENOUGH**

