

**LEMBAR PENGESAHAN
BAHAN AJAR NON ISBN**

1	Judul	:	Molecular aspects of the pathogenesis of periodontitis
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Ketua Program Studi



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Molecular aspects of the pathogenesis of periodontitis

drg. Dian Yosi Arinawati, MDSc, PhD

Sabtu, 11 Mei 2019
08:00 – 10:00 WIB

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THE PERIODONTIUM

- An organ system composed of:
 - Hard tissue: bone and cementum
 - Soft tissue: periodontal ligament and gingiva
- Function:
 - Provide tooth stability
 - Fixation and adaptation to the mechanical and biochemical challenges of the oral cavity

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GINGIVA

- Composed by:
 - Collagens
 - Proteoglycans
 - Fibronectin
 - Osteonectin
 - Tenascin
 - Elastin.
- Adjacent to epithelium is rich of collagen type I and III
- Collagen type IV were found within basement membranes located at the junctions of connective tissue with epithelium and cementum, in rete pegs and around blood vessels and nerves.
- Type VI collagen is found near the basement membrane and is distributed in a diffuse microfibrillar pattern

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PERIODONTAL LIGAMENT

- Predominantly a fibrous tissue with a very high rate of turnover
- Composed by:
 - Collagen types I and III (largely)
 - Collagen type V, XII and type VI, latter present as microfibril
 - Collagen type XIV (undulin), tightly associated with the fibrils
 - Small leucine-rich proteoglycans including fibromodulin and perlecan
 - CD-44, localize to the surface of the resident fibroblasts
 - Syndecan-1 and syndecan-2
 - Tenascin, where it is present in attachment zones along cementum and bone
 - Fibronectin and vitronectin are found on collagen fibrils
 - Elastin (small amount)

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Cementum

- Histologic evaluation indicates that cementum has an ultrastructure similar to bone and dentin
- Component:
 - 50% of the inorganic matrix of cementum is Hydroxyapatite
 - 90% of the organic matrix is composed of types I and III collagens
 - types V and VI collagen at pericellular locations
 - type XIV collagen associated with Sharpey's fibers.
 - Proteoglycans are primarily associated with cementoblasts and cementocytes: versican, decorin, biglycan, fibromodulin and lumican
 - Syndecan-2, localized in acellular cementum
 - Nonfibrous proteins: bone sialoprotein, osteopontin, tenascin, fibronectin, osteonectin

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Bone

- Like the other tissues of the periodontium, type I and III collagens are the predominant organic constituents of bone.
- Biochemical analyses of alveolar bone extracts have revealed the presence of biologically active polypeptides, including bone sialoprotein and osteopontin.
- The major proteoglycans identified in alveolar bone are chondroitin sulfate rich and are most likely a mixture of decorin and biglycan.