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Confocal microscopy of expression of gingival epithelial tight junction components

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Confocal microscopy was used to analyse patterns of expression of tight junction components in gingival epithelium. The gingival attachment of healthy tissues was characterized by uniform strong staining at cell contacts for tight junction components ZO-1, ZO-2, occluding, JAM-A and claudins-4 and -15. In contrast, the pocket epithelium of the periodontal lesion showed scatted, uneven staining for oral epithelial cells in culture. Following ligation of CD24 expressed by these cells the pattern of tight junction component expression of the healthy gingival attachment developed rapidly.

There was evidence for non-uniform and focal expression only of tight junction components in the pocket epithelium. In the cell culture model ligation of CD 24 induced a tight junction expression profile equivalent to that observed for the healthy gingival attachment. Ligation of CD24 expressed by gingival epithelial cells by lectin-like receptors of commensal oral streptococci could meditate the phenotype of health, whereas pathogenic organisms associated with periodontal disease might not effectively signal through CD24.