1. 請說明牙周病 (periodontitis) 與植體周圍炎 (peri-implantitis)的組織病理發現，致病機轉 (pathogenesis)及其異同 (40%)。

2. 請先說明下列短文的大意(摘自 Lee et al. Resolvin E1 Reverses Experimental Periodontitis and Dysbiosis. J Immunol. 2016; 197(7): 2796-806)。然後加上你所學的知識說明牙周致病菌和牙周病的關係及牙周致病菌和牙周病發炎反應之間的可能交互作用 (40%)。

Periodontitis is a biofilm-induced inflammatory disease characterized by dysbiosis of the commensal periodontal microbiota. It is unclear how natural regulation of inflammation affects the periodontal biofilm. Promoters of activeresolution of inflammation, including resolvin E1 (RvE1), effectively treat inflammatory periodontitis in animal models. Two clinically relevant experiments were performed in rats: prevention and treatment of ligature-induced periodontitis with RvE1 topical treatment. The gingival transcriptome was evaluated by RNA sequencing of mRNA. The composition of the subgingival microbiota was characterized by 16S rDNA sequencing. Periodontitis was assessed by bone morphometric measurements and histomorphometry of block sections. H&E and tartrate-resistant acid phosphatase staining were used to characterize and quantify inflammatory changes. RvE1 treatment prevented bone loss in ligature-induced periodontitis. Osteoclast density and inflammatory cell infiltration in the RvE1 groups were lower than those in the placebo group. RvE1 treatment reduced expression of inflammation-related genes, returning the expression profile to one more similar to health. Treatment of established periodontitis with RvE1 reversed bone loss, reversed inflammatory gene expression, and reduced osteoclast density. most of the subgingival microbiota with increased relative abundance after disease induction exhibit a trend to return to levels more associated with a healthy periodontium following RvE1 treatment. RvE1 treatment tends to shift the microbiota toward a composition more associated with periodontal health. The data suggest that modulation of local inflammation has a major role in shaping the composition of the subgingival microbiota.

3. 請說明 a) 上顎前牙單顆牙拔牙後，其硬組織垂直與水平方向解剖學上變化。薄骨生物型 (thin bone biotype bone wall; 骨板厚度小於 1mm) 臉側骨壁 (facial bone wall)與厚 (thick)骨生物型臉側骨壁的變化是否有所不同？ b) 上顎前牙單顆牙拔牙，拔牙窩洞(extraction socket)復原 8 週後，唇側軟組織厚度和原始唇側軟組織下方骨壁厚度型態 (厚骨生物型 vs. 薄骨生物型)的關係。a) 與 b) 在植牙治療上之臨床意義 (20%)。

試題隨卷繳回