

1. The pathogenesis of periodontitis involves a complex immune/inflammatory cascade that is initiated by the bacteria in the dental plaque biofilm that forms naturally on the teeth. The susceptibility to periodontitis appears to be determined by the host response; specifically, the magnitude of the inflammatory response and the differential activation of immune pathways. Please describe in details the pathogenesis of periodontal diseases including the role of innate immunity, the failure of acute inflammation to resolve (thus becoming chronic) and the cytokine pathways that regulate the activation of acquired immunity. (40%)
2. Please describe the development and composition of dental plaque biofilm and the difference of dental plaque biofilm between healthy sites and sites with periodontal disease. (20%)
3. Please write a scientific proposal that you are planning to do in your graduate study. (It should include Aims, Background, Materials & Methods and anticipated results.) (40%).