

Advanced Course in Oral Microbiology

Lecture/Lab. Academic year 1,2 credits 2,4

[Keywords] Cariogenic bacteria, periodontal pathogenic bacteria, virulence factors, effect of antibacterial agents, polymerase chain reaction

[Academics] Keiji Nagano, Hiroshi Miyakawa

[Course aims]

The human oral cavity provides multiple environments for growth of many bacterial species. Specific biofilm formed at many sites in the oral cavity causes dental caries and periodontal disease. It is important to understand the mechanisms, bacterial species and virulent factors associated with dental caries and periodontal disease. It is also important to control formation of biofilm as part of the prevention and treatment of this disease. Therefore, it is necessary for students to understand the role of antibacterial agents in the treatment of oral biofilm. In this course, students gain an understanding of the procedure used to identify bacterial species causing dental caries and periodontal disease, the molecular characteristics of virulence factors, and experimental principles. Students will also learn how to control oral biofilm with antibacterial agents.

[Course objectives]

The goals of this course are for students to be able to:

- (1) Understand the virulence factors involved in typical cariogenic bacteria.
- (2) Understand the virulence factors involved in typical periodontal pathogenic bacteria.
- (3) Understand the control and regulation of antibacterial agents used to treat infectious diseases.

[Course content]

Class	Theme	Content	Academics
1	Analysis of pathogenic cariogenic and periodontal bacteria using polymerase chain reaction		Keiji Nagano Hiroshi Miyakawa
2	Analysis of pathogenic cariogenic bacteria and periodontal bacteria		Keiji Nagano Hiroshi Miyakawa
3	Culture of pathogenic periodontal bacteria, and analysis of virulence factors and volatile sulfuric compounds.		Keiji Nagano Hiroshi Miyakawa
4	Effect of antibacterial agents on formation of biofilm and planktonic bacteria.		Keiji Nagano Hiroshi Miyakawa

[Class implementation method]

Combination of face-to-face learning and distance learning

* Class implementation depends on the implementation policy of each department (graduate school), interdisciplinary studies, and school.

[Grading policies]

Your overall grade in class will be decided based on class attendance and reports.

[Textbook]

Students will be informed of which textbook to use.

[Reference book]

Students will be informed of which reference book to use.

[Preparation for course]

Students must understand the course objectives and prepare appropriately for classes.