UNIVERSITÀ
DI TORINO

ID

VP101_CHIR

Visiting Professor Program
Academic Year 2024/2025

TEACHING COMMITMENT: **20 hours**

COURSE TITLE

Bacteriology and Immunology of Periodontal Diseases

TEACHING PERIOD

1st term

SCIENTIFIC AREA

Microbiology / Immunolgy

LANGUAGE USED TO TEACH

English

COURSE SUMMARY

Discussion and/or lecture presentations addressing recent literature as related to the microbial etiology and pathogenesis of periodontal diseases. The course will be directed to dental students, graduate students in periodontology and other interested students in post-graduate programs in the UNITO Dental School.

This section of the Parodontologia I course is designed to provide students with the knowledge and the basic tools necessary for understanding the microbial ecology and the immunopathology of periodontitis. The section includes a thorough discussion on the composition and architecture of the oral and periodontal microbiome around teeth and dental implants. The cellularity and the humoral components of the innate and adaptive immune response contributing to the pathophysiology are discussed in depth. The kinetics of microbial colonization and relative development of the destructive inflammatory immunopathology will be highlighted. The immunopathology which plays a central role in the etiopathogenesis of periodontal diseases will be

treated in detail and particular emphasis will be placed on the host pro-inflammatory susceptibility. Special attention will be also given to the development of the CD4+ T cell immune response and its various prominent phenotypes: Th1, Th2, Th17 and Tregs.

LEARNING OBJECTIVES

Knowledge and understanding skills:

1. The Oral Microbiome Biogeography: Archea, Bacteria and Phages, Virus and Fungi;
2. Bacteriology of Periodontal Disease: (i) Structure, composition, and ecology of the microbial biofilm; (ii) Symbionts, pathobionts and keystone pathogens; (iii) Virulence Factors of Oral and Periodontal Microorganisms;
3. Mucosal barrier and Humoral Innate Defenses: Epithelial Cells, Defensins and Complement and Immune evasion;
4. Innate Immunity and Antigen Presentation: White blood cell function Neutrophil/Monocyte, Macrophages and Langerhans cells, & Dendritic cells;
5. Cellular Immune Response: Contribution of T cells - Th1, Th17, ???T cells, MAIT cells and Treg cells;
6. Humoral Immune Response: Contribution of B cells / Plasma cells;
7. Host Response: Primary and Secondary Mediators of Inflammation in Periodontitis: Cytokines, Chemokines, Prostaglandins;
8. Immunopathological Mechanisms in Periodontitis, Candidiasis and Rheumatoid Arthritis.

1. Laboratory of Biologia Cellulare di CIR Dental School;
2. Laboratories of the Dipartimento di Scienze Cliniche e Biologiche.

OTHER ACTIVITIES BESIDES THE COURSE

Periodontology MASTER Students:

- Oral Microbial Ecology and Nososymbiocity;
- Pathophysiology of periodontitis;

HYGIENE Students:

- Immunity Interactions and Periodontal Diseases.

VISITING PROFESSOR PROFILE

The candidate should be Professor of Periodontology with peculiar knowledge in Oral Biology. Her/his research interest has to be centered on mucosal immunology focused on the development of the T cell-mediated immune response in oral infections. Specifically knowledge in research activity on the immune plasticity after chronic oral colonization with a keystone pathogen (Porphyromonas gingivalis) in animal models of periodontitis. The candidate research interest should be focused in the clinical sciences on the metabolomics of periodontitis and peri-implantitis.

CONTACT REFERENT

Mario Aimetti
mario.aimetti@unito.it