

[Keywords] Diabetes, Periodontitis, Bone metabolism, Molecular biology, RNA, Exosome

[Academics] Professor/Nobuhiko Takahashi, M.D., Ph.D.

[Course aims]

Diabetes mellitus is one of the systemic diseases with which dental practice is most familiar. Furthermore, diabetes mellitus is known to interact with periodontal disease. In addition, patients with diabetic nephropathy require caution when using NSAIDs and antimicrobial agents, and diabetic patients take antithrombotic agents because they are prone to complications from atherosclerosis. The aim of this special lecture is to deepen understanding of the relationship between the pathophysiology of diabetes and dentistry (periodontal disease, bone metabolism, etc.) at the molecular level. Specifically, we will search for and carefully read relevant English-language articles to determine what is known and what is not known, and discuss what experimental systems are needed to verify these issues. Through this kind of work, we will touch upon some aspects of how to diagnose the whole body at the molecular level.

[Course objectives]

1. To explain the latest molecular mechanisms of the relationship between glucose metabolism and periodontal disease and bone metabolism.
2. To be able to set up a new research problem through a careful reading of the literature.
3. To be able to explain the basic experimental system to solve the problem.

[Course content]

| Class | Theme | Content | Academics |
|--------------|---|--|--------------------|
| 1 { 3 | Research and present on the relationship between glucose metabolism and periodontal disease and bone metabolism. | 1) Searching the literature 2) Close reading of the literature 3) Discussion | Nobuhiko Takahashi |
| 4 { 7 | Establish issues to be clarified in the future regarding the relationship between glucose metabolism and periodontal disease and bone metabolism. | 1) Close reading of the literature 2) Discussion | Nobuhiko Takahashi |
| 8 { 10 | Discuss and present methods for solving the problem (especially using molecular biological methods) | 1) Presentation and discussion | Nobuhiko Takahashi |

[Class implementation method]

Face-to-face learning

Class implementation depends on the implementation policy of each department (graduate school) or school.

[Grading policies]

Attendance, discussions, and presentations will be evaluated.

[Textbook]

Others: Research papers and handouts will be distributed as needed.

[Remarks]

Emphasis is placed on the student's independent learning attitude.

[Preparation for course]

The research issue shall be based on the latest information available at the time of the assignment.

Search domestic and international literature on your own research topic and examine its contents.

Learn about the theories and methodologies necessary to solve the problem.

[practical experience]

Nobuhiko Takahashi (Medical Doctor)

[Educational content utilizing practical experience]

Lectures and discussions will be given on the pathophysiology of diseases from the viewpoint of molecular mechanisms, utilizing practical experience as an internist in a medical institution, and will be useful in promoting basic research.