

[Keywords] Oral histology, tooth, periodontal tissue, hard tissue, biomineralization

[Academics] Kazuharu Irie, Akihiro Hosoya

[Course aims]

This course deals with the morphologic aspects of cells and extracellular components of tooth and periodontal tissue, especially the cellular events involved in biomineralization and regeneration of periodontal tissue. Students are expected to understand the process of biomineralization with a background knowledge of tooth development. In the laboratory work, students learn how to prepare tissue for a light microscope and an electron microscope, and how to deal with use of animals for experimental purposes.

[Course objectives]

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

- (1) Understand the morphologic features of enamel, dentine, dental pulp, cementum, periodontal ligament, and alveolar bone.
- (2) Understand the mechanism of biomineralization.
- (3) Acquire the skills needed to handle animals for experimental purposes.
- (4) Learn the appropriate techniques for preparing specimens for light microscopy and electron microscopy.
- (5) Learn the techniques for staining of sections and immunohistochemistry for light and electron microscopy.
- (6) Use histomorphometry when using hard tissue for research.

[Course content]

Class	Theme	Content	Academics
1	Classroom lectures.	tooth development, formation of hard tissue, biomineralization	Kazuharu Irie Akihiro Hosoya
2	Laboratory courses focused on learning the techniques used for morphologic approaches in hard tissue.	1) Perfusion fixation via the aorta. 2) Conventional hematoxylin-eosin staining of sections. 3) Special and immunohistochemical staining (uses and purposes, techniques, evaluation). 4) Techniques for cryosection and electron microscopy (sample preparation, cutout, staining).	Kazuharu Irie Akihiro Hosoya

[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.