

[Keywords] Tissue regeneration, Demineralized bone, Demineralized dentin, Periodontal ligament, Bone regenerative surgery

[Academics] Masaru Murata

[Course aims]

Regenerative medicine is an advanced form based on biomaterials science. PhD-course students must learn the natural structure and components of organ and medical materials for all patients in the field of oral regeneration. The aims are to understand the oral specificity and to study functional structure from human natural organs. This course addresses the importances of the structure not to prevent neovascularization and the growth factors.

[Course objectives]

1. To understand the structure and components of dentin, periodontal ligament, and bone.
2. To explain collagenous materials and ceramics.
3. To explain BMPs, demineralized bone, and demineralized dentin.
4. To explain the history and the present of the graft medicine.

[Course content]

Class	Theme	Content	Academics
1	Dentin, periodontal ligament	Dentin biology, Homeostasis mechanism of periodontal ligament	Masaru Murata
2	Medical materials	Collagenous materials and ceramics	Masaru Murata
3	Autograft materials	Bone regenerative surgery by demineralized bone and demineralized dentin	Masaru Murata

[Class implementation method]

Combination of face-to-face learning and distance learning

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

[Grading policies]

Oral or written examination.

[Textbook]

Advances in Oral Tissue Engineering (ed.M.Murata and I-W.Um, Quintessence Publishing, Chicago)

[Reference book]

Regenerative medicine of tooth and bone (Gakusaikikaku, in Japanese)

Science of bone (MDP, in Japanese)

[Preparation for course]

Students must read the textbook and the related articles.