Biomaterials for tissue regeneration

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My focus

Development of biomedical materials to support our lives is a very important research field. Ceramic biomaterials technology, owing to its high affinity with bone tissues, has given us artificial bones for orthopedic applications. Further research is required to produce biomaterials with high performance for regeneration of living tissues. Such technologies are extended not only to repair bone tissues but also to reconstruct soft tissues and its biological functions. To design novel biomaterials, fundamental understanding about the interaction between materials and living tissues is essential.

Development of novel biomaterials for bone-repairing

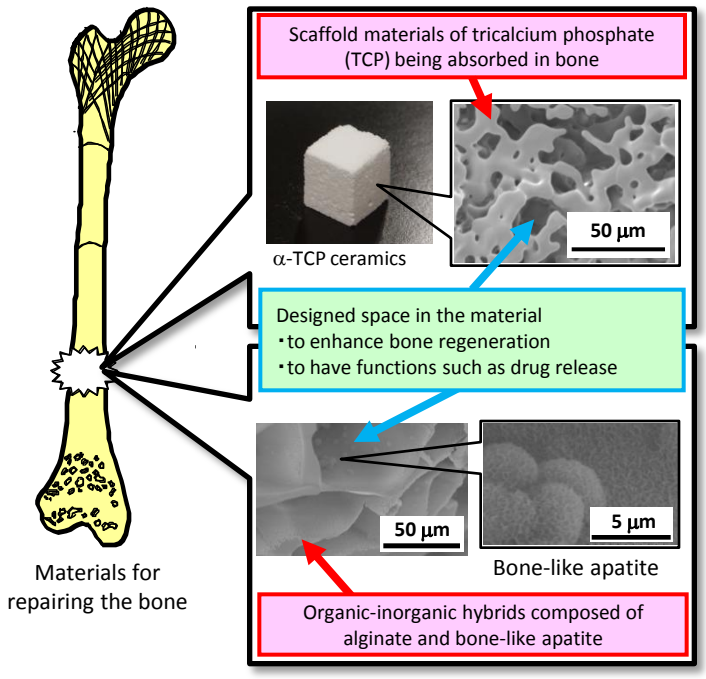
Research project

My research project focuses on the development of biomaterials with new functions for enhancement of tissue regeneration, based on the fundamental understanding of chemical and biological behaviors of materials in biological system. To create biomedical materials for tissue regeneration, organic-inorganic hybrids, ceramics, polymers and metals are investigated.

Development of materials

- Bioabsorbable materials with functions for enhancement of bone tissue regeneration.
- Designed pores in the materials for additional functions including drug delivery and improvement of mechanical properties.

Artificial biomaterials has been developed for substitution of the damaged bone functions, in order to improve quality of lives of patients. Bone tissue regeneration will be enhanced by well-designed biomaterials. Bioabsorbable materials derived from calcium phosphates and organic-inorganic hybrids are candidates that produce bone substitutes and its related technology.



Development of bioabsorbable artificial bone.