

Division of Frontier Engineering	Research field	Biomedical Engineering	Lab. ID FE07
Laboratory web site	https://sites.google.com/view/bioengineering-lab-tanaka/		
Research subjects			
The mission of this laboratory is to create novel and effective methodologies of treatment, prevention, and diagnosis for osteoporosis from the aspect of bioengineering. For the treatment, tissue-engineered bones with highly-mechanocompatible with bone tissue are studied utilizing techniques of tissue-engineering. For the prevention, we focus on electromyostimulation on as a promising non-pharmacological intervention, feasible for elderly people, to prevent osteoporosis. For the diagnosis, we are developing an optical bone densitometer utilizing infrared laser diodes, which smaller, safer, and easier to operate than the conventional X-ray device. To these ends, cell culture, animal experiments, device development and computer simulations are performed in our laboratory.			
Master/Doctor course: Education policy, curriculum, typical activity in the laboratory			
Acquiring broad knowledge is required to accomplish a bioengineering research. Knowledge of biology and medicine are important in applications of the research to clinical and engineering fields. Several research groups are organized in the laboratory. We have group meetings weekly in order to brainstorming with the members, and a lab meeting monthly by presentations from each group with progress reports and literature surveys . Individual meetings with the professor are also held at any time and current problems are deeply discussed. Spontaneous actions are required for all students based on thier research plan, managing time and relationships with other lab members.			
Daily life in the laboratory, etc.			
All information about our laboratory such as lab meeting schedule, experimental protocols, and graduation/master theses are accessible in our private laboratory web site. All students use their own laptop computers in the laboratory, and access to Internet through the university Wi-Fi network. Workstation PCs are also available in our laboratory for various simulation, CAD, and image processing. To deal with animals and cells, the special knowledge and experimental skill are required for all the students.			
Message or comments by the laboratory faculty staffs			
Technological innovations are often created in the border areas of established academic or engineering fields. Bioengineering is just in the border or fusion area including mechanical engineering, medicine, biology, and material engineering and so on, in which our creativity is stimulated by the variety of concepts. And, environmental diversity growths our adaptability to the rapid-changing technology and global society. It is encouraging us to study broad knowledges, especially abroad.			
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