

Department of Biological Sciences

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Introduction

□ Graduate Program

The Department of Biological Sciences is dedicated to excellence and thus strongly encourages students to expand their creativity and think more independently during master's or doctorate degree coursework. All graduate students take a series of intensive courses which are intended to provide a deep fundamental understanding of the discipline as well as an introduction to research at the frontiers of each area of specialization. In addition to conducting experimental research, students learn to effectively communicate with other students as well as faculty through a variety of presentations including departmental and graduate student seminars. One prerequisite for a doctoral degree at KAIST is that students should at least one paper in an international peer-reviewed scientific journal. All students admitted to the graduate program are provided with a generous stipend for living expenses in addition to a full scholarship covering all tuition. The financial supports are largely from the Korean Ministry of Science and Technology, but some students are supported by industrial sources or a professors' own research funding. All students are also provided with subsidized dormitory housing.

The research efforts of the faculty of the Department of Biological Sciences can be grouped under two broad topics: biological/biomedical sciences and biotechnology. The research interests of the biological/biomedical faculty of the Department of Biological Sciences include a wide range of topics related to the control of normal and malignant cell growth and differentiation study, intracellular signalling pathway, DNA replication in eukaryotes, regulation of gene expression, control of the cell cycle, mechanism of circadian rhythm, structure and development of the nervous system and so on. The faculty of biotechnology focuses on more applied aspects of biology that include the development of medicinal compounds, food products, and useful metabolites, as well as safety tests, with a particular emphasis on state-of-art approaches based upon genomics and/or proteomics and bioinformatics. The ultimate aim of the Department is to educate graduate students with broader intellectual ability and vision to become leading scientists in the field of biological sciences.

□ Undergraduate Program

Students pursuing the baccalaureate degree at the Department of Biological Sciences will be systematically trained by the accomplished faculty members. This training will allow students to fully understand the essential and fundamental issues of life sciences so to maximize the student's potential as a biological scientist. The undergraduate education of our department focuses on offering superb training opportunity for those interested in biological sciences and biotechnology. Courses offered by the Department emphasize the knowledge in areas of fundamental biology and biotechnology, directly or indirectly, relevant to human health and disease. In addition, the curriculum also provides superb opportunities for those interested in the medical sciences in the future.

Courses required for completion of the undergraduate program include topics under intensive research by many laboratories in the graduate school as well as those considered essential ones by biomedical or bio-related industries. These include Cell biology, Biochemistry, Molecular biology, Genetics, Developmental biology, Neurobiology, and Biological physics as core courses. For those interested in biotechnology or bioengineering, the following courses are also offered: Applied biological physics, Microbial and cell biotechnology, Reaction engineering, Genetic engineering, Food engineering, and Environmental biotechnology. It is mandatory for students to take two experimental

courses-offered together with biochemistry and cell biology- to acquire lab experiences during their undergraduate program.