

科目ナンバリング		U-LAS14 20038 LE68											
授業科目名 <英訳>		Introduction to Molecular Biotechnology-E2 Introduction to Molecular Biotechnology-E2					担当者所属 職名・氏名		医学研究科 助教 Erik WALINDA				
群	自然科学科目群			分野(分類)		生物学(各論)			使用言語		英語		
旧群	B群	単位数	2単位		週コマ数	1コマ		授業形態	講義（対面授業科目）				
開講年度・ 開講期	2024・前期		曜時限	金2			配当学年	主として1・2年生		対象学生	理系向		
【授業の概要・目的】													
Molecular Biotechnology is an exciting, evolving and interdisciplinary area of science that is expected to impact not only on the way we live but human life itself. It is being used to produce chemicals, medicines and other essential products in recombinant bacterial, plant and animal cells; to create transgenic plants that synthesize novel therapeutics or are resistant to various stresses, and transgenic animals with increased productivity; and is even being applied to modify humans through gene therapy and regenerative medicine. To fully understand these methodologies and their potentials, we will start the course by outlining the current understanding of genomes and genes and their regulation, then focus on the concepts behind basic laboratory techniques routinely used to isolate and analyze DNA and proteins, examine how these principles and methodologies are used to generate transgenic organisms, and finally discuss the benefits and hazards of such transgenic applications.													
【到達目標】													
To appreciate the tremendous potential of molecular biotechnology through a solid understanding of its basic principles, techniques and current applications, and so be able to address, from a fully informed point of view, the moral and bioethical issues that arise from the use of such breakthrough technologies.													
【授業計画と内容】													
Main Topics:													
1. Introduction; overview, concepts, development and future													
2. Genome organization, DNA and genes													
3. Gene expression and regulation													
4. Principles and techniques of recombinant DNA technology													
5. Molecular techniques for gene identification													
6. Molecular techniques of gene analysis													
7. Recombinant proteins: synthesis and analysis													
8. Methods and applications in microbial molecular biotechnology													
9. Methods and applications in plant molecular biotechnology I and II													
10. Methods and applications in animal, human and medical biotechnology I and II													
11. Social and ethical issues of molecular biotechnology													
12. Final examination													
13. Feedback													
Please note that these 11 lecture subjects will cover the complete 14 lecture course of the series.													

Introduction to Molecular Biotechnology-E2(2)へ続く													

Introduction to Molecular Biotechnology-E2(2)

【履修要件】

特になし

【成績評価の方法・観点】

Evaluation will be based on class attendance and active participation (~25 %), quizzes (~30 %), other assignments (5 %), and a final assignment/examination (~40 %).

【教科書】

Full handouts and videos will be distributed in class

【参考書等】

(参考書)
授業中に紹介する

【授業外学修（予習・復習）等】

The general structure and format of this lecture course will be in the form of FLIP lectures. Here, on-demand Videos and Handouts for each lecture will be uploaded on Panda one week before each class so that students have time to go through them carefully. These videos will include full explanations of the materials as well as other visual tools such as animations and videos that will help better explain the concepts. Then, during each weekly class, we will discuss the concepts presented in the videos, with each student explaining their answers to various thought-provoking questions, thereby developing deeper insights into the materials. On-line Forums will be opened after the class to allow students to discuss areas that are still unclear or to upload videos that better explain certain issues. Quizzes throughout the semester will challenge the understanding and learning of the various concepts.

【その他（オフィスアワー等）】