Transgenic Organisms Gr.1 and 2
Thursday 9:30-12:00 @ A-2024(Group1)
Wednesday 9:30-12:00 @ KMB318(Group2)
Instructor: Assist.Prof.Dr. Alper Yilmaz
Email: alyilmaz@yildiz.edu.tr
Office Hours: by appointment
http://yarbis.yildiz.edu.tr/alyilmaz/course/viewCourse/id/6399

Course Goals

In this course, you will:

1. Comprehend the importance of cloning strategies for generating various types of vector.
2. Learn that stable integration of foreign DNA into host genome is possible via viral vectors.
3. Learn the concept of knock-out where a region is deleted from genome in all cell in an organism.
4. Discuss the advantages and disadvantages of GMO products.

Course Materials

There's no set textbook for this course. Students are expected to follow the lecture through handouts.

Lecture notes are handed in copy center across our department. PDF versions of lecture slides can be downloaded from YARBIS page.

Lecture notes contain mostly pics with sparse text, thus you need to listen the instructor and take notes.

Grading

Your grade will come from the following sources:

- Midterm: 35%
- Final: 40%
- Quiz: 10%

- Debate: 10%
- Attendance: 5%

There will be 3 quizes and highest 2 scores will be considered. If you attend all lectures or miss only one lecture then you'll get 5 points for attendance. For every 1-2 lectures missed you'll lose 1 point.

For the debate, each student will pick a side (for or against GMO) and defend his/her position individually with **scientific articles**. Also, a short report of the findings should be handed in to instructor.

Communication

I'm trying to respond emails as quickly as possible. If you don't get a response within 1-2 days please don't hesitate to send a reminder email.

The changes pertaining to exam date, time and assignment due dates should be decided in class after discussing with everybody. Please don't ask for changes individually, otherwise notification of whole class becomes a hassle.

Schedule

Below is the tentative schedule for the course. Depending on the speed we go through topics there might be shifts in the schedule. For each week, first date is for Group 2 and second date is for Group 1.

February 17/18. Introduction

Introduction to cloning strategies.

February 24/25. Cloning (cont'd) and cDNA libraries

March 2/3. Viral Vectors

Since we learned cloning strategies, let's build a viral vector

March 9/10. Lentiviral vectors

Special type of viral vectors using Retrovirus genomes

March 16/17. Knock-out mice

How to delete or insert regions from or into genome in whole organism

March 23/24. In vitro Mutagenesis

Random or targeted mutations in DNA with a purpose

March 30/31. Transgenic Applications

In various model organisms

April 6/7. Transgenic Applications / Transgenic Animal Classification

Cont'd from previous week and their classification according to use cases

(April 13/14). Midterm

April 20/21. Transgenic Applications in Agriculture

How to generate transgenic plants and the golden rice story

April 27/28. Advanced Vectors for Transgenic Plant Production

Replacing antibiotic resistance gene and non-plant sequences from vectors

May 4/5. GMO testing

How to determine if a product is transgenic or not

May 11/12. Debate

Let's see advantages and disadvantages of GMO products

May 18/19. Topic for Group2 / Holiday for Group1

TBD

May 25/26. Bioengineering Meeting For Group2 / Topic for Group1

TBD

Acknowledgments

This syllabus was adapted from Benjamin Schmidt and Andrew Goldstone.