Syllabus

Course: PCB4917- Modeling Rare Genetic Diseases.
Date: Jan 12th to February 11th, 2026
Time and Location: 9:30 am to 12:35 pm; 1:55 pm to 4:55 pm, CGRC Rm 438 and Rm 436.
Contact information: Dr. Xiaofei Bai
Email: baixiaofei@ufl.edu
Office hours: CGRC Room 438 by appointment

Introduction

Welcome to the immersion course. This section will provide hands-on experiences using the nematode model system *Caenorhabditis elegans,* which contains approximately 3000 disease-associated genes. You will receive instruction on designing and applying the novel and powerful gene-editing technique CRISPR/Cas9, focusing on establishing precision disease modeling in *C. elegans*.

What will you learn when finishing the course?

1) Basic molecular biology techniques, including PCR, restriction enzyme digestions, and electrophoresis.
2) Basic strategies to design CRISPR/Cas9 gene editing.
3) The *C. elegans* maintenance and operation.

What will you need for the class?

The course will be textbook-free. However, it will be helpful if you can read the literature below before attending the classes. Download the literature using the UF network.

http://www.wormbook.org/chapters/www_strainmaintain/strainmaintain.html
https://www.sciencedirect.com/science/article/pii/S1046202316302857?via%3Dihub

Learning assessment during the class.

1) **Participation and discussion:** the class attendees will be requested to actively participate in all class activities and meetings.
2) **Exam:** There will be no exam for the course. However, everyone will be required to submit a final report by the end of the course, which will include their CRISPR/Cas9 design and final data.
3) **Presentation:** You will give a final presentation in your project groups at the end of the classes.

Grade components and scale:
The participation of the class: 20% of the total grade
Final report: 50% of the total
Presentation: 30% of the total grade.

Scale: A ≥ 90.00%; A- ≥ 86.66%; B+ ≥ 83.33%; B ≥ 80.00%; B- ≥ 76.66%; C+ ≥ 73.33%; C ≥ 70.00%; C- ≥ 66.66%; D+ ≥ 63.33%; D ≥ 60.00%; D- ≥ 56.66%; F < 56.66%

Illness and unforeseen things will be excused to miss the class. However, proper documentation will be required to explain the absence. You can find UF policy for excused absence here: https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/

Academic honesty
Any cheating, plagiarism, or other forms of academic dishonesty will result in a 0 grade. For additional information on Academic Honesty, please visit the UF Student Honor Code and Student Conduct Code at https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/

If you have any questions, concerns, or comments on the course, please feel free to contact me by email baixiaofei@ufl.edu or by phone 352-294-8447.

Schedule

Date	Time	
Jan 12th to Jan 19th	9 am to 12 pm	Location is CGRC Rm436 Course introduction and discussion Introduction of disease modeling in the model systems Introduction of *C. elegans* biology and genetics
Jan 12th to Jan 19th	1 pm to 5 pm	Location is CGRC Rm 438 *C. elegans* maintenance and operation
Jan 20th to Jan 27th	9 am to 12 pm	Location is CGRC Rm436 CRISPR/Cas9 gene editing introduction and designing
Jan 27th to Feb 9th	9 am to 12 pm	Location is CGRC Rm 438 Genotyping CRISPR edited animals and phenotype the *C. elegans*.
Feb 11th	9 to 12 pm	Location is CGRC Rm436 Last presentations.
Feb 11th		Deadline to submit the final report.

Note: There will be no lecture classes on weekends, but the students will be approved and get access to the lab by maintaining the *C. elegans* or performing experiments if needed.