

[到達目標]

- To understand the biology and diversity of nematodes
- To understand the uses of the nematode *Caenorhabditis elegans* in modern biological research
- To understand the anatomy and life cycle of *C. elegans*
- To learn how to create new strains containing desired mutations by designing crosses between animals
- To acquire the knowledge and experience needed to begin genetic research with *C. elegans*

[授業計画と内容]

About half the classes will occur in the classroom, and half in my laboratory, as indicated below; some changes to the following might occur depending on circumstances.

Class# Topic

- 1 Classroom: Intro to class, wild worm collection kits distributed
- 2 Classroom: Life cycle/development; assessment of wild worm collection
- 3 Lab: Wild worm observation I : brightfield microscopy
- 4 Lab: Wild worm observation II : PCR on cleaned species
- 5 Classroom: Wild worm observation III : BLAST, Species IDs, some informatics (MSA); then RNAi theory for next lab class
- 6 Lab: RNAi on *C. elegans*
- 7 Lab: RNAi on *C. elegans*
- 8 Lab: Wild worm observation IV : Chromosome counting/fluorescence microscopy; crossing mutant strains
- 9 Classroom : Meiosis
- 10 Lab: microinjection of gonads (CRISPR-Cas9 editing)
- 11 Classroom: Sex Determination/Sex Chromosomes
- 12 Lab: Live imaging of *C. elegans*
- 13 Classroom: Nematode Parasitism
- 14 Classroom: Aging, End of the class, Survey for this class
- 15 Classroom: short presentations
- 16 Lab: feedback on class

[履修要件]

This is an introductory course. There are no requirements, but a basic familiarity with biology and genetics will be beneficial.

[成績評価の方法・観点]

Evaluations will be based on participation, short quizzes, and a final presentation, with contributions of 40%, 40%, and 20%, respectively, to the final grade.

[教科書]

授業中に指示する

[参考書等]

(参考書)

Fay, Starr, Spencer, Johnson 『Worm Breeding for Dummies: A guide to genetic mapping in *C. elegans*』
(PDF textbook)

[授業外学修（予習・復習）等]

Students will have to understand technical vocabulary in English. This may require studying outside of class hours.

[その他（オフィスアワー等）]

Office hours will be 1 hour once per week, schedule to be announced on the first day of class.

This class involves some genetic experiments on nematodes.

遺伝子実験：対象(ヒト以外の動物、植物、生物等)

[主要授業科目（学部・学科名）]