Reproductive Biology

Syllabus Number 5J392
Special Subjects
Elective 2 credit

OTA RYOMA

1. Course Description

Reproduction is essential for the continuation of a species. The applied aspects of reproductive biology have important implications for animal breeding and human clinical reproductive health. In this course, the mechanisms of animal reproduction will be lectured at molecular, cellular, and organismal levels. Furthermore, reproductive technologies used in our society will be introduced. This course aims to acquire knowledge and skills related to DP1, DP2, and DP4.

2. Course Objectives

The goals of this course are as follows;
1) a fundamental understanding of animal reproduction including physiology, anatomy, and endocrinology.
2) an understanding of the molecular and cellular mechanisms controlling germline cell establishment, gametogenesis, and fertilization.
3) being able to address the sexual and reproductive issues in our lives.

3. Grading Policy

The final grade will be evaluated based on two reports after 5th and 10th lecture (20 points each) and a final examination (60 points). A score of 60 points or more (out of 100 points) is passed. Students with attendance less than 2/3 (less than 9 lectures) will not qualify for the evaluation.
To give feedback, reports will be added comments and returned, and the answers of the final examination will be uploaded to LMS.

4. Textbook and Reference

Textbook
There is no specific textbook for this course. Handouts of the lecture PowerPoints will be provided.
Reference
館鄰 著　生殖生物学入門 UP BIOLOGY　東京大学出版 ISBN: 9784130631327
日本繁殖生物学会 編　繁殖生物学　株式会社インターズー ISBN: 9784899957881
Scott F. Gilbert 著　Developmental Biology 10th edition　株式会社メディカル・サイエンス・インターナショナル ISBN: 9784895928052

5. Requirements(Assignments)

Because this course requires knowledge related to cell biology, molecular biology, developmental biology, and animal physiology, I recommend that students take these courses. Leaning of them will help students understand the lectures in this course.
Keywords in the next lecture will be uploaded to LMS. Students should check their meanings before the lecture. If you have any questions about content of the lecture, please contact and ask the teacher.

6. Note

I recommend that students take the courses of cell biology, molecular biology, developmental biology, and animal physiology, but it is not required.

7. Schedule

[1] Introduction to reproductive biology
[2] Modes of reproduction
[3] Primordial germline cells formation
[4] Sex determination in somatic cells and the germline cells
[5] Mitosis and meiosis in the germline cells
[6] Testicular anatomy and spermatogenesis
[7] Ovarian anatomy and oogenesis
[8] Germline stem cell niche
[9] Reproductive endocrinology
[10] Oocyte maturation and ovulation
[11] Fertilization
[12] Genomic imprinting
[13] Assisted reproductive technology
[14] Reproductive technologies for animal breeding
[15] Examination and commentary