



שם הקורס

Developmental Biology

מרצה

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סמסטר

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דרישות הקורס

הרכב הציון הסופי

60% Final exam, 30% Presentation, 10% Participation in presentations

מבנה הקורס

The developmental biology course is open for undergraduate and graduate students from the Faculty of Life Sciences, Faculty of Medicine, and the Sagol School of Neuroscience.

The goal of the developmental biology course is to establish a broad foundation for understanding genetic processes in embryonic development, with an emphasis on the development of the nervous system. The major topics of the course include: (1) Principles of cell signaling and their roles in development. (2) Cellular differentiation, proliferation and regeneration. (3) Bio-signaling and the regulation of gene expression in development. (4) Pattern formation in development and organogenesis. (5) Mutations and developmental defects, degeneration and emergence of cancer in adults. The course emphasizes advanced research techniques, and the use of stem cell in research, genetic engineering, and modern imaging techniques.

The course is divided into 4 sections: Early development in invertebrates (lectures 2-4), early development in vertebrates (lectures 5-7), development of the nervous system (lectures 8-10), and organogenesis and regeneration (lectures 11-13). In the beginning of the course, the class will be divided into 4 groups. Each group will receive a research article on the topic covered in class. In the final lecture of each section (lectures 4, 7, 10, and 13), these research articles will be presented by the students who will discuss the scientific and experimental principles presented in these articles.

Student presentations (5-7 minutes long) will be pre-recorded by the students, and submitted to the section lecturer at least 3 days prior to the presentation. In addition, every student is required to write two multiple-choice questions ("American") that will be answered and discussed in class during the presentations. Students who will not send the recording of the presentation and the questions will not be able to participate in the presentation, and therefore will not have a grade for the presentation (30% of the course grade). The presentation will be graded by the section lecturer. Participation in these discussions will contribute up to 10 points to the final grade (2.5 points for each of the 4 discussions).



Topic	Date
Introduction: principles, model systems, research methods, and molecular pathways in developmental biology	1 10.10.21
Development of the body plan, genetically and molecularly, in Drosophila	2 17.10.21
Polarity and segmentation in Drosophila, genetically and molecularly	3 24.10.21
Cellular polarity in development Presentation #1: Early development in invertebrates	4 31.10.21
Early Development of Vertebrates: cleavage, gastrulation and axis formation	5 07.11.21
Early Development of Vertebrates: stem cells	6 14.11.21
Development of the Ectoderm Presentation #2: Early development in vertebrates	7 21.11.21
Development of the nervous system I – patterning and morphogenesis	8 28.11.21
Development of the nervous system II – cell specification and differentiation	9 12.12.21
Development of the nervous system III – Summary Presentation #3	10 19.12.21
Organogenesis: Limb development	11 26.12.21
Coordination between neighboring cells during development	12 02.01.22
Regeneration of adult tissues and summary Presentation #4: Tissue patterning	13 09.01.22
קריאת חובה	
קריאת רשות	
ספרי הקורס:	
<ul style="list-style-type: none"> • Developmental Biology 9th or 10th Edition, Scott F. Gilbert ☞ Principles of Development 5th Edition, Lewis Wolpert, Cheryll Tickle, Alfonso Martinez Arias 	
הערות	