**Biology of the Nucleus**

**Nuclear Organization, Dynamics and Activity**

Course No. 88839

**Course teachers** – Yosef Gruenbaum and Eran Meshorer

This is an advance course for graduate students (M.Sc and Ph.D.). The course will take place every other year during the 2nd semester. Lectures will be given 2hr/week (2 credit points). It will combine frontal lectures by teachers and seminar talks by the student. The grade will be given following the evaluation of the students’ seminars.

The course is limited to 20 students.

**Course description:** Chromatin structure, organization and dynamics underlie every aspect of genome function. In recent years, the combined use of novel imaging tools, structural analyses, cell biological and genetic analyses and genomic studies have led to major progresses in our understanding the relationships between chromatin structure and dynamics and its functions in replication, transcription, mitosis and meiosis. The aim of this course is to present exciting examples of recent studies, to offer perspectives on future developments and highlight the existing conceptual and technical problems. The topics covered include: nuclear organization and chromatin structure, epigenetic regulation of chromatin, chromatin organization during meiosis, chromatin and the nuclear envelope, nuclear bodies, RNA dynamics and distribution, the nucleolus and bioinformatics in the genome era.

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| # lecture | Date | Presenting | Remarks |
| 1 | 17.2 | Eran | Epigenetics |
| 2 | 24.2 | Eran | Nuclear bodies |
| 3 | 3.3 | Yossi | Higher order organization of chromatin |
| 4 | 10.3 | Ohad Medalia | The nuclear lamina by cryoEM |
| 5 | 24.3 | Yossi | NPC |
| 6 | 31.3 | Yaron Shav-Tal | The journey from gene to gene product |
| 7 | 7.4 | Amir Eden | DNA methylation |
| 8 | 28.4 | Kadener | Small RNA |
| 9 | 12.5 | Ofir Hakim | 3D genome organization |
| 10 | 19.5 | Yuval Garini |  |
| 11 | 26.5 | seminars |  |
| 12 | 2.6 | seminars |  |
| 13 | 9.6 | seminars |  |
| 14 | 16.6 | seminars |  |