MCB 2 course

Format
Each lecture:
- 10-15min introduction by DS or TB
- One paper presentation by a student

Recitations:
- Questions about lectures from previous week
- Preparation of background for that week
- Students should already have read the suggested literature coming into the recitation

Exam (tentative):
Select a paper, present, defend it, tell us why you like it, tell us what you would do next; done in a team of two students

Paper presentation
Presentations will be interactive: the presenter can ask questions to the audience; anybody can interrupt to ask something at any time.

Explain:
- Main question that is addressed
- Approach used, in particular the experimental techniques
- Message of each figure: what does each piece of data show?
- In how far are the conclusions of the paper supported?
- Group discussion: starting from this paper, what is the next thing to do?

Ask us (Daria, Tobias, Marjon, Aparna) before your presentation if anything is unclear!
- Send us an e-mail to arrange a meeting anytime
- Or drop by in the walk in hour: Fri 10-11am either DS or TB will be available

Syllabus

(DS) Meetings 1 and 2: Structure of Cell/Membrane, Cell specialization

Meeting 1, March 5th:
Basics of course plan, getting to know students, what have they taken before in cell bio.
What is life, what is a cell, what are basic structures of cell, why are we covering what we picked?
To read: in Essential Cell Biology, Chapter 15 through page 510
Alberts Molecular Biology of the Cell Chapter 12

Recitation 1 March 6th:
Meeting 2, March 7th: Signal Sequences Localize Proteins in the Cell

(TB) Meetings 3 and 4: Cytoskeleton; molecular motors, self-organization

Recitation 2, March 11th:
• in Essential Cell Biology Chapter 17
• Alberts Molecular Biology of the Cell Chapter 16

Read for Meeting 3, March 12th:
Reconstitution of actin-based motility of Listeria and Shigella using pure proteins. Loisel TP, Boujemaa R, Pantaloni D, Carlier MF.

Read for Meeting 4, March 14th:
Dynamic instability of microtubule growth. Mitchison T, Kirschner M.

(DS) Meetings 5 and 6: Vesicular Trafficking

Read for Recitation 3, March 18th:
Essential Cell Biology, rest of Chapter 15
Read Alberts Molecular Biology of the Cell Chapter 13, Intracellular Vesicular Traffic


Read for Meeting 5, March 19th:

Read for Meeting 6, March 21st:
Balch, WE, Dumphry, WG, Braell, WA and Rothman JE (1984)
Reconstitution of the Transport of Protein between Successive Compartments of the Golgi Measured by the Coupled Incorporation of N-Acetylglucosamine. Cell 39:405-416

(DS) Meetings 7 and 8: Signalling

Read for Recitation April 8th:
Essential Cell Biology, Chapter 16, Cell Communication
Alberts Molecular Biology of the Cell Chapter 15, Mechanisms of Cell Communication
Read for Meeting 7, April 9th:
Feedback Loops Shape Cellular Signals In Space and Time
Science 2008 October 322:390-395
Brandman O and Meyer T

Read for Meeting 8, April 11th:
Spontaneous Cell Polarization through Actomyosin-Based Delivery of the Cdc42 GTPase, (2003) Science
VOL 299, PAGE 1231-1235
Wedlich-Soldner... Li,

(TB) Meetings 9 and 10: Migrating Cells

Read for Recitation, April 15th:
- Alberts chapter 16

Read for Meeting 9, April 16th:
Actin microfilament dynamics in locomoting cells.
Theriot JA, Mitchison TJ.

Read for Meeting 10, April 18th:
A local coupling model and compass parameter for eukaryotic chemotaxis.
Arrieumerlou C, Meyer T.

(TB) Meetings 11 and 12: Developmental issues; biological pattern formation

Read for Recitation April 22nd:
- Wolpert, Principles of development, chapters 1 and 11

Read for Meeting 11, April 23rd:
Gradient formation of the TGF-beta homolog Dpp.
Entchev EV, Schwabelissen A, González-Gaitán M.

Read for Meeting 11, April 25th:
Synchrony dynamics during initiation, failure, and rescue of the segmentation clock.
Riedel-Kruse IH, Müller C, Oates AC.