

Cellular Machines II:
Fundamentals and Applications of Biomolecular Mechanosystems

TUD Master Course (Molecular Bioengineering):
Cellular Machines (WS 2018)
(2 SWS Lecture, 2 SWS Seminar)

TUD Master Course (Nanobiophysics):
optional: Cellular Machines: Molecular Motors (WS 2018)
(2 SWS Lecture)

TUD Master (Physics): Minor (Molecular Bioengineering, Cellular Machines)
Cellular Machines (WS 2018)
(2 SWS Lecture, 2 SWS Seminar)

<u>LECTURES:</u>	Tuesdays 11.10 am - 12:40 pm, BIOTEC seminar room E05		
<u>SEMINARS:</u>	Tuesdays 1.00 pm - 2.30 pm, BIOTEC seminar room E05		
<u>PRACTICALS:</u>	for MBE students already finished in October 2018		
<u>LECTURERS:</u>	Stefan Diez	diez@bcube-dresden.de	463-43010
	Michael Schlierf	schlierf@bcube-dresden.de	463-43050

Course Information:

- all information including lecture notes (always updated after the lecture) at <https://intranet.crt-dresden.de/students/literature-slides.html>
- General information also at <http://www.mpi-cbg.de/-diez/CellMach2018WSGen.pdf>
- Material for referates + lecture notes also at <http://www.mpi-cbg.de/-diez/CellMachWSRef>
(login: **cellular**, password: **machines2010**)

Grades:

- TUD Master Course (Molecular Bioengineering, over 2 semesters):
50% oral examination (20 min in the weeks after the lecture period)
30% oral presentation (30 min) during the seminar
20% lab participation and protocol (already finished October 2018)
- TUD Master Course (Nanobiophysics):
100% oral examination (15-20 min in the weeks after the lecture period)
- TUD Master (Physics):
1/2 oral examination (20 min in the weeks after the WS 2018/19 lecture period)
1/2 oral presentation (30 min) during the seminars (referate)

Referates (for Master Students Molecular Bioengineering and Physics):

- One group of 3 students per seminar will present the work of one important lab/person in the field of Cellular Machines / Molecular Motors. The labs/persons are specified beforehand and the total presentation time (including discussion) should be about 60 minutes.
- The presentations should be structured as follows:

- a) All three speakers together present the CV of the principal investigator, including major career steps and introduction to the general field of research of the presented lab/person
 - b) Each speaker then presents a detailed description of one breakthrough (usually based on one major publication) during 12-15 min. As a group, please aim at presenting at least one classic publication (from the early times) and one recent publication of the research group.
 - c) All speakers wrap-up by a discussion about the importance of this work + outlook
- Grades will be given to the students individually.
 - Students are encouraged to present as lively as possible. Questions from the audience during the presentation are encouraged.
 - Labs/persons to be presented:
 - Ron Vale (University of California San Francisco)
 - Steve Block (Stanford University)
 - James Spudich (Stanford)
 - Timothy J. Mitchison (Harvard)
 - Yale E. Goldman (University of Pennsylvania)
 - Marileen Dogterom (TU Delft)
 - Each presenting group of students should, at the day of the presentation, hand in an A4 hardcopy of the talk and send (before the presentation) the electronic file (pdf) to stefan.diez@tu-dresden.de
 - We will aim to prepare the lecture handouts before the lectures, check on the CRTD Intranet (or on <http://www.bcube-dresden.de/research-groups/diez/teaching>) on Monday evening / Tuesday morning before the lecture.
 - All students who are not presenting talks themselves are expected to stay during the seminars and participate in the discussions. The content of the seminars will be part of the oral examinations for MBE and Physics students.

Lecture Topics (tentative schedule - changes possible):

#	Date	Topic (Order may change)	Seminars
1	9.10.	Introduction + Microtubules (Stefan Diez, B CUBE, TU Dresden)	no seminar
2	16.10.	Actin Filaments and Networks (Martin Glaser, U Leipzig)	no seminar
3	23.10.	Cell Motility !!! Shifted Starting Time !!! (W1/3 Symposium)	no seminar
4	30.10.	Kinesin-1 (Stefan Diez, B CUBE, TU Dresden)	Ron Vale
5	6.11.	Other Microtubule Motors (Stefan Diez, B CUBE, TU Dresden)	Steve Block
6	13.11.	Actin Motors and Muscle (Stefan Diez, B CUBE, TU Dresden)	James Spudich
7	20.11.	Axoneme + Intraflagellar Transport (Gaia Pigino, MPI-CBG Dresden)	
8	27.11.	Mitosis (Jan Brugues, MPI-CBG Dresden)	Yale E. Goldman
9	4.12.	Cytoskeletal Diseases (Hauke Drechsler, B CUBE, TU Dresden)	Marileen Dogterom
10	11.12.	Intermediate Filaments (Cecile Leduc, Institut Pasteur Paris)	Timothy J. Mitchison
11	18.12.	Nanotechnology with Motor Proteins (Stefan Diez, B CUBE, TU Dresden)	Wrap Up and Glühwein
		Examinations and Labcourses	