

Cellular Machines II:
Fundamentals and Applications of Biomolecular Mechanosystems

TUD Master Course (Molecular Bioengineering):
Cellular Machines (WS 2017)
(2 SWS Lecture, 2 SWS Seminar)

TUD Master Course (Nanobiophysics):
optional: Cellular Machines: Molecular Motors (WS 2017)
(2 SWS Lecture)

TUD Master (Physics): Minor (Molecular Bioengineering, Cellular Machines)
Cellular Machines (WS 2017)
(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 2016		
<u>LECTURERS:</u>	Stefan Diez	diez@bcube-dresden.de	463-43010
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Course Information:

- all information including lecture notes (always updated after the lecture) at https://intranet.biotec.tu-dresden.de/students/lectures_html
- General information also at <http://www.mpi-cbg.de/~diez/CellMach2017WSGen.pdf>
- Material for referates + lecture notes also at <http://www.mpi-cbg.de/~diez/CellMachWSRef>

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 2017)
- 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 2017/18 lecture period)
1/2 oral presentation (30 min) during the seminars (referate)

Referates (for Master Students Molecular Bioengineering, Nanobiophysics and Physics):

- One group of **3 students** per seminar will present the work of one important lab/person in the field of Cellular Machines / Motor Proteins. 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) The first speaker presents the CV of the principal investigator, including major career steps and introduction to the general field of research (including one classical paper / breakthrough from the earlier career of the presented lab/person)
 - b) The second and third speakers present a detailed description of two recent breakthroughs (major papers, each about 10-15 min) from that lab
 - 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:
 - Steve Block (Stanford University)
 - Jonathon Howard (Yale University)
 - Ron Vale (University of California San Francisco)
 - Thomas Pollard (Yale University)
 - Richard McIntosh (University of Colorado Boulder)
 - Each presenting group of students should, at the day of the presentation, hand in an A4 hardcopy of the talk and send the electronic file afterwards to stefan.diez@tu-dresden.de
 - We will aim to prepare the lecture handouts before the lectures, check on the BIOTEC Intranet (or on <http://www.bcube-dresden.de/research-groups/diez/teaching>) on Monday afternoon before the lecture.
 - All students who are not presenting talks themselves are welcome 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 (about 15 slots needed)
1	10.10.		no seminar
2	17.10.	Introduction + Microtubules (Stefan Diez, B CUBE, TU Dresden)	no seminar
3	24.10.	Kinesin-1 (Stefan Diez, B CUBE, TU Dresden)	no seminar
-	31.10.	----- Holiday ----	-----
4	7.11.	Other Microtubule Motors (Stefan Diez, B CUBE, TU Dresden)	Ron Vale
5	14.11.	Axoneme + Intraflagellar Transport (Gaia Pigino, MPI-CBG Dresden)	Steve Block
6	21.11.	Actin Motors and Muscle (Stefan Diez, B CUBE, TU Dresden)	Thomas Pollard
7	28.11.	Mitosis (Jan Brugues, MPI-CBG Dresden)	Jonathon Howard
8	5.12.	Actin Filaments and Networks (Martin Glaser, U Leipzig)	Richard McIntosh
9	12.12.	Plant Cytoskeleton (Wim Walter, Uni Hamburg)	Reserve slots
10	19.12.	Nanotechnology with Motor Proteins (Stefan Diez, B CUBE, TU Dresden)	wrap up and Glühwein
		Examinations and Labcourses	