

## BIMM 120: INTRODUCTORY MICROBIOLOGY –FALL 2004

108 Peterson Hall  
T Th 5:00 – 6:20 P.M.

DR. KIT POGLIANO

DATE	TOPIC	READINGS*
Th Sept 23	1. Overview – microorganisms and their position in the world; Start structure and function	1.3, 1.4, 2.1-2.6, 11.4-11.5 4.4,
T Sept 28	2. Structure and function of prokaryotes: the cell wall and outer membrane	4.5--4.9, 6.2, 11.8 Paper 1: "A molecular view..."
Th Sept 30	3. Flagella and chemotaxis	4.10-4.12, 8.11
T Oct 5	4. Pili and other cell structures	4.13-4.14 Paper #2 "Dense population..."
Th Oct 7	5. Bacterial growth, extreme environments	Chapter 6
T Oct 12	6. The bacterial cell cycle	Paper #3: "Localization of..."
Th Oct 14	7. Fermentation, Aerobic respiration	(5.4-5.10 – review) 17.19-17.20,
T Oct 19	8. Anaerobic respiration, Lithotrophy	17.13-17.15., 17.8-17.12 Paper 4: "A role for excreted...."
Th Oct 21	9. Syntrophy, Photosynthesis, cyanobacteria	17.21, 17.4-17.5, 12.25
<b>T Oct 26</b>	<b>10. MIDTERM</b>	
Th Oct 28	11. Growth control and Antibiotics	Chapter 20
T Nov 2	12. Genetic exchange	10.6-10.11 Paper 5: "SOS response induction by $\beta$ -lactams..."
Th Nov 4	13. Transcription, Movie: "Conversations in genetics: Lucy Shapiro interviewing François Jacob"	Chapter 8, section III (8.4-8.10)
T Nov 9	14. More genetics, global control networks	8.9, 8.10 Paper 6: "Mealybug $\beta$ -proteobacterial endosymbionts.."
<b>Th Nov 11</b>	<b>Veterans day holiday</b>	
T Nov 16	15. Pathogenesis	21.1, 21.6-21.12 Paper 7: "Supramolecular..."
Th Nov 18	16. Symbiosis, root nodules	19.22
T Nov 23	18. Microbial differentiation 1: Antibiotic production, biofilms	30.5, 19.3, 12.24 Paper 8: "Fungus growing..."
<b>Th Nov 25</b>	<b>Thanksgiving</b>	
T Nov 30	19. Microbial differentiation 2: caulobacter and spore formation	12.16, 4.15, 12.20
Th Dec 2	20. Bioterrorism	25.11, 27.6,
<b>T Dec 7</b>	<b>FINAL EXAM 7-10 PM</b>	

\*Numbers refer to textbook sections, papers are from the class reader, which is available at Soft Reserves and the class web site.

Class web site: <http://www.biology.ucsd.edu/classes/bimm120.FA04/>

DR. KIT POGLIANO

Email: [kpogliano@ucsd.edu](mailto:kpogliano@ucsd.edu)

Office hours: Friday, 9:15-10:10 AM

Office: 4113 NSB-1

Phone: (858) 822-1314

### Required text:

"Brock: The Biology of Microorganisms" 10<sup>th</sup> edition, by Madigan *et al.*

*If necessary, please review the material in Chapter 3 (Chemistry) and the first half of Chapter 7 (Molecular Biology).*

The textbook readings add depth, detail and breadth to the material covered in lecture.

### Course Reader (web site)

The course reader contains eight sets of additional, required readings. Because microbiology is a rapidly moving science, many important and exciting findings are not presented in textbooks. These papers will provide a more complete picture of modern microbiology.

The papers will be introduced in class on the Tuesday of the week indicated, and discussed further in section that week. *Questions from the papers will appear on the Midterm and Final.*

I recommend that you invest the time necessary to understand these papers. Do not hesitate to attend either your TA's or my office hours if you have questions!

### Exams:

There will be one midterm (100 points), and one final exam (200 points). Each exam will consist of multiple choice questions, and will include questions taken directly from the papers.

Copies of recent midterm and final exams are available on the class website.

### To prepare for these exams:

1. Attend lectures! *Many questions will come directly from the lectures.*
2. Read the related material in the text. *These readings will reinforce the lectures and provide additional information that you may find useful.*
3. Read the papers! *Both exams will have questions about the papers; these questions will require that you understand the experiments, and what conclusions they allow.*
4. Attend section regularly, as you will be able to ask questions about the lectures and papers.
5. Bring a #2 pencil to class! *I will provide the forms, but you are responsible for the pencil.*
6. Do not cheat! *Disciplinary steps will be taken when cheating is discovered. These steps may include failing the exam and being reported to the appropriate authorities.*

In past years, the students who do best regularly attended lecture and section, read the textbook, and read the papers before attending section.

### Statement of Academic Integrity:

Students are expected to do their own work, as outlined in the UCSD Policy on Academic Integrity published in the UCSD General Catalog. Academic misconduct will not be

tolerated, and any student who engages in suspicious conduct will be confronted and subjected to the disciplinary process. Cheaters will receive a failing grade on the exam, and/or in the course. They may also be suspended from UCSD.

**Academic misconduct includes but is not limited to:**

1. Cheating, such as using "crib notes" or copying answers from another student during the exam.
2. Plagiarism, such as using the writings or ideas of another person, either in whole or in part, without proper attribution to the author of the source.
3. Collusion, such as engaging in unauthorized collaboration on exams, completing for another student any part or the whole of an exam, or procuring, providing or accepting materials that contain questions or answers to an exam or assignment to be given at a subsequent time.

**Exam inquiries:**

During the exam: If you think that a question is written ambiguously or feel that more than one answer is correct, raise your hand and ask a TA for clarification. I will try to identify most ambiguities this way, so the grading key can be modified before the exams are graded.

After the exam: Prepare a written explanation, with documentation if possible (i.e.: references to text), and deliver the query to Dr. Pogliano via campus mail. If you want a reply, include a self-addressed, stamped envelope.

*Just one written inquiry, and no verbal inquiries, will be considered for each exam, from each student.*

If I find that a question has more than one answer or should be discarded after the exams have been graded, all of the exams will be regraded using the new answer key.

The following deadlines apply and will be strictly observed: Midterm, November 1, Final exam, December 7.

Address your query to Dr. Kit Pogliano mail code 0349, no postage is required if you use the campus mail service (not the US mail boxes on campus! !). You can also drop it in my mailbox on the 4<sup>th</sup> floor of Bonner Hall. Include a self-addressed, stamped envelope for the reply.

**Grades:**

The course grade will be based on performance on the midterm and final exam.

\*\*\*The final course grade will be altered only in cases of clerical error. Requests based on the final grade not reflecting the amount of effort invested in the class or your enthusiasm for the course material, will be returned without comment.\*\*\*

TA	E-mail address
Richard Lee	r14lee@ucsd.edu
Kristal Miles	kmiles@ucsd.edu
Edward Pang	ekpang@ucsd.edu
Alexandra Purdy	apurdy@ucsd.edu
Jonathan Shum	jshum@ucsd.edu

You are not required to attend section, but will probably find doing so helpful, as the TA's will review class material, and discuss and answer questions about the papers.

Section will start the second week of class.

### Section times and locations:

#	Time	Location	TA
A01	Tu 7:00-7:50 PM	HSS1128A	cancelled
A02	Tu 3:00-3:50PM	York Hall 3010A	Alix
A03	Tu 4:00-4:50PM	York Hall 3010A	Alix
A04	Th 7:00-7:50 PM	HSS1128A	Richard
A05	Th 3:00-3:50PM	York Hall 3010A	Jonathan
A06	Th 4:00-4:50PM	York Hall 3010A	Jonathan
A07	Tu 2:00-2:50 PM	York 4080A	Kristy
A08	M 4:00-4:50 PM	WLH 2113	Edward

\*\*\*\*Watch for updates to this schedule weeks 1 and 2!\*\*\*\*

## General guidelines for reading the papers:

### Familiarize yourself with the related topic:

Read the related material in the textbook, to familiarize yourself with the subject matter. Research papers are written for people who already know something about the subject matter.

I have included some summaries of the papers, which were published together with the research article. These provide good background information and present the results for a broad audience. Read these first, to familiarize yourself with the topic.

Attend Tuesday lectures to hear the summary!

Attend section to hear your TA's summary, and to ask questions!

## Try to answer the following questions:

### 1. What questions were addressed in this paper? \_

Frequently the introduction (or the first few paragraphs of Science and Nature articles) will present background information and raise the questions that will be addressed in the paper.

### 2. What were the main conclusions from the paper? \_

The main conclusions will be summarized in the abstract, and further discussed in the discussion section. Why were these conclusions important?

### 3. What experiments were performed to answer these questions?

These will be briefly summarized in the abstract, sometimes also in the discussion (or the last few paragraphs of science or nature papers), and will be discussed at length in the results section of the paper.

### 5. For each experiment: \_

What conclusion did the experiment allow?

What were the caveats of each experiment (ie: Were there alternative explanations?)? What experiments ruled out these alternatives?

**Read the paper before attending section, and ask your TA any questions you may have.**

If questions remain, attend either your TA's or our office hours and we will try to clarify the matter!

## Paper Schedule, BIMM120

Week #	Starting with:	Reading
1.	M Sept 27	Paper 1: A molecular view of microbial diversity and the biosphere. Pace, N. <i>Science</i> , 276:734-739
2.	M Oct 4	Paper 2: Dense populations of a giant sulfur bacterium in Namibian shelf sediments. Schulz <i>et al.</i> <i>Science</i> 284:493-496.
3.	M Oct 11	Paper 3: Localization of bacterial DNA polymerase: evidence for a factory model of replication. Lemon and Grossman, <i>Science</i> 282:1516-1520
4.	M Oct 18	Paper 4: A role for excreted quinones in extracellular electron transfer. Newman and Kolter, <i>Nature</i> 405:94-97.
5.	M Oct 25	No paper, midterm this week
6.	M Nov 1	Paper 5: SOS Response induction by $\beta$ -lactams and bacterial defense against antibiotic lethality. Miller <i>et al.</i> , <i>Science</i> 305:1629-1631.
7.	M Nov 8	Paper 6: Mealybug $\beta$ -proteobacterial endosymbionts contain $\gamma$ -proteobacterial symbionts. von Dohlen <i>et al.</i> , <i>Nature</i> 412:433-436.
8.	M Nov 15	Paper 7: Supramolecular structure of the <i>Salmonella typhimurium</i> Type III protein secretion system. Kubori <i>et al.</i> <i>Science</i> 280:602-604
9.	M Nov 22	Paper 8: Fungus-growing ants use antibiotic-producing bacteria to control garden parasites. Currie <i>et al.</i> , <i>Nature</i> 398: 701-704  <i>This paper will be discussed in section both weeks 9 and 10, due to Thanksgiving break.</i>