

Biology 1A Lab Exam I, Spring 2007

Bring a photo ID to the lab exam.

When: Wednesday, 3/21 from 6:40-8:15 PM, in various rooms (see below). **BE ON TIME.** The exam will begin **EXACTLY AT 6:40 PM** (If you can not make the exam time, and only if you have arranged with Mike Meighan, then your exam will be scheduled earlier or later on Wednesday).

Where: See below.

What: The 100-point exam (note some past exams were worth only 90 pts) will cover Labs 1-6. For more information see below and the backside.

Level: Challenging! See the past exams in the exam reader.

Studying: Read the manual. For each lab be able to complete each objective. Be familiar with results and why they occurred. Look at your worksheets and pre-labs. Answers to these sheets are posted outside of 2084 VLSB. There are three samples of Lab Exam #1 in the Exam Reader (available at Replica Copy, 2040 Oxford).

Format: The exam will take the full 95 minutes and will begin at **6:40 PM sharp**. Do not be late. The exam will include multiple choice, short answers, essays, diagrams and fill-in-the-blanks. Be familiar with the equipment that you have used and why you performed certain procedures.

Reviews: Webcast reviews from last fall are available on-line from our webpage (towards the bottom) <http://mcb.berkeley.edu/courses/bio1a/Spring2007/>

Office Hours: Lab GSI office hours are held one hour prior to each lab (except W/F 8-9 AM). Discussion GSIs office hours are from 10-2, M-F. Come and ask questions.

Be seated by 6:30 PM in your assigned room so that we can start handing out scantron forms.

	GSI Name	Room #		GSI Name	Room #
101	Melissa	1 Pimentel	112	Steve	155 Dwinelle
102	Gary	2050 VLSB	113	Helen	1 Pimentel
103	Tabitha	2050 VLSB	114	Gary	2050 VLSB
104	Edward	4 LeConte	115	Helen	1 Pimentel
105	Tabitha	2050 VLSB	116	Steve	155 Dwinelle
106	Paul	1 LeConte	117	Helen	1 Pimentel
107	Jake	155 Dwinelle	118	Gary	2050 VLSB
108	Steve	155 Dwinelle	119	Helen	1 Pimentel
109	Rohini	2040 VLSB	120	Melissa	1 Pimentel
110	Steve	155 Dwinelle	121	Edward	4 LeConte
111	Rohini	2040 VLSB	122	Paul	1 LeConte

Seating diagrams on the backside.

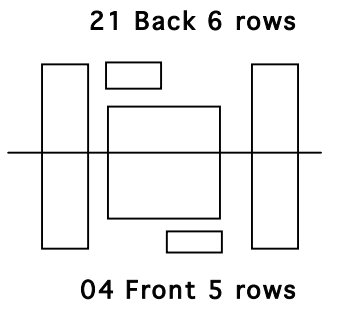
General Sample Questions/Guideline. This list is only a **guide**.

- 1) Any of the objectives in the lab manual. (Any safety questions will be very easy.)
- 2) Microscope Lab--Determine the size of field of view, calibrate a microscope, discuss what happens when you change magnification--depth of focus, amount of light, etc.
- 3) Cells & cell theory. Pro- vs. eukaryotes. Features of various kingdoms.
- 4) Monerans--cell morphology, cell wall structure and Gram-staining. Cyanobacteria--heterocyst vs. photosynthetic cell.
- 5) Discuss the locomotion and classification of protists.
- 6) Discuss various cell types and how they are arranged into functional tissue/organs/organisms.

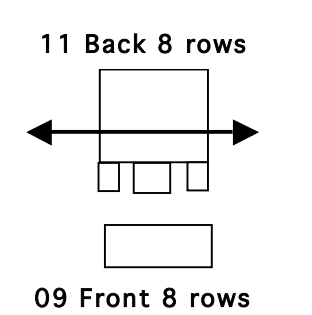
Continued on the backside.

- 7) Enzyme stuff: Kinetics, substrate concentration and varying enzyme concentration. How to affect enzyme activity. Why is it affected? Isozymes. Determine K_M . Why have different blanks? Role of DNS? How to measure the rate of a reaction--disappearance of substrate, appearance of product. How do you make dilutions? How do you determine enzyme activity of "spit"?
- 8) Photosynthesis--light-dependent vs. -independent reactions. How to measure each? In various conditions? What are uncouplers? Inhibitors? How do they work? What is the role of an osmoticum? Explain osmotic pressure. What is the difference between a blank and a control? What is DCPIP? How is DCPIP functioning? What are pigments? What wavelengths are reflected/absorbed by a pigment of a given color? How could you isolate pigments and purify them? How could you make an absorption spectrum of a solution of pigments? Of purified samples?
- 9) What are restriction enzymes (RE)? Their role in the bacterium? How can we use them in experiments? What are the role of buffers? When would you add them? What is meant by restriction digestion? What sizes of DNA would be produced by a given RE (given the RE sequence and the % base composition)?
- 10) How does electrophoresis work? What sort of predictions can you make about how various samples might migrate? How would you generate a standard curve and then apply the knowledge? What results would you get from specific digests, etc.? Generate a map of a piece of DNA from the restriction digestion. Is the DNA circular or linear? How could you clone in a given piece of DNA? What results would you predict if you transformed a certain type of bacteria with a given plasmid?
- 11) Be able to analyze crosses and make predictions. Be able to recognize recombinants and parental types. Use correct genetic notation for fruitflies.
- 12) What is a ligation reaction? What is transformation and what are some of the steps? Identify various types of colonies--why are they blue, white, etc. on AMP X-gal plates? What would happen if you used a given plasmid and were given different types of plates, etc. ?
- 13) Experimental design. What are controls? Which would you use in a given experiment? What data would you collect? Why? Advantage?
- 14) Define complementation. How could you determine the number of genes in a given pathway? How would you determine the order of steps of a given pathway?
- 15) Understand how sequencing reactions work. What is the difference between deoxy and dideoxy nucleotides?

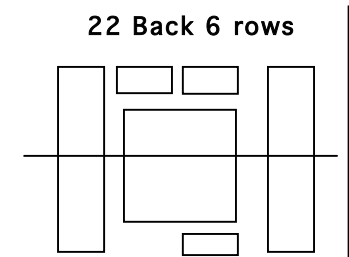
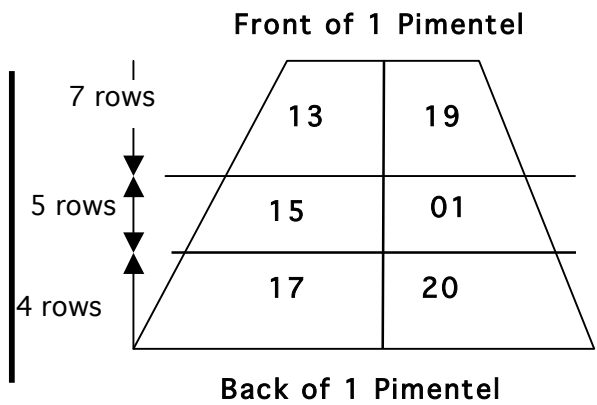
Seating is assigned by section #, within each room, by row #. There should be at least 2 empty seats between each student (1,4,7, etc.)



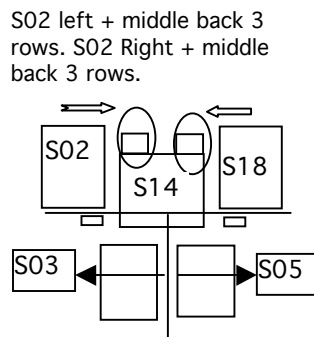
Front of 4 LeConte



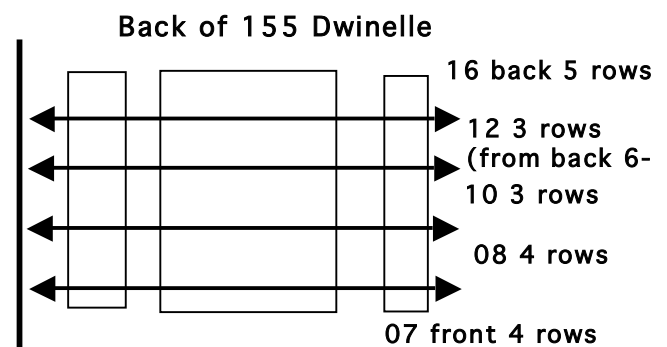
Front of 2040 VL SB



Front of 1 LeConte



Front of 2050 VL SB



Front of 155 Dwinelle