

Instructor- Dr. James Youngblom (Ph. D. - University of Minnesota- Dept. of Genetics and Cell Biology)

Contact Information:

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Office- N260, phone: 664-6924

**Office Hours-** 11-12:30 on Tues. & 9:30-11 on Thurs. or by appt.

**Required books-** *DNA Science* by Micklos & Freyer, 2nd Edition

*Genentech: The Beginnings of Biotech* by Sally Smith Hughes

This is predominantly a hands-on laboratory class. To succeed, you must understand each lab exercise. Read each day's lab exercise before coming to class. Read the protocol and the supplementary material before and after each lab exercise. Understand why you are performing each step in a protocol. It is critical that you know and understand the expected result for each exercise. When performing the lab exercises, split the duties evenly. Do not let one person do all of the lab work. Rotate duties so that both of you know how to perform all of the laboratory tasks. Strive for excellent results. All of these labs will generate appropriate results, if the experimental procedures are done properly.

Pay attention and ask questions during the lectures and films. Take good notes during the lectures. All films, lectures, handouts, and lab exercises can be a source for an exam question.

**Attendance is expected for all labs.** If you know in advance that you cannot attend all labs, please see me about taking this class another time. **Attendance is required.** (-10 for unexcused absences).

**Dates to Remember-**

Fri. Feb. 21- Last day to drop a course

Mar. 23 to 27- No classes, Spring Break Week

Tues. Mar. 31- Campus closed, Cesar Chavez Day

Fri. May 8- Warrior Day

Fri. May 15- Last day of classes

Final Exam- Wed. May 20, 2 p.m.

**Grading:** > 90% = A-, > 80% = B-, > 70% = C-, > 60% = D-, < 60% = F

I will use +/- grading system.

## **Tuesday Schedule**

All labs listed below with a # are from DNA Science; all other labs will be from class handouts.

#1-Jan. 29- Lab #1, #2	lecture- “Lab Safety”
#2-Feb. 5- Lab #3, Electroporation	lecture- “Agarose Gels; Electroporation” <b><u>Assignment #1 due at beginning of class</u></b>
#3- Feb. 12- Lab #3	lecture- “Use of Restriction Enzymes”
#4- Feb.19- Lab #9	lecture- “Transforming <i>E. coli</i> ” <b>Take Home Exam due/Quiz (25 pts.)</b>
#5- Feb. 26- Lab #10, Set up PCR	lecture- “PCR 1”
#6- Mar. 4- Lab #11, Analyze PCR	lecture- “PCR 2”
#7- Mar. 11- Lab #12A, Analyze PCR	<b>Take Home Exam due/Quiz (25 pts.)</b> lecture- “Making Solutions”, Assn #2 due
#8- Mar. 18- Lab #12B	
Mar. 25- Spring Break Week	lecture- “CRISPR-Cas 9”
#9- Apr. 1- CRISPR project	<b>MIDTERM EXAM (75 pts)</b>
#10- Apr. 8- CRISPR project	lecture- CRISPR, lab notebooks
#11- Apr. 15- CRISPR project	lecture- “Recombineering”, <b>Notebooks due</b> , Quiz on “Genentech”, Chap 1-3
#12- Apr. 22- CRISPR project	lecture- “DNA sequencing Technology” Quiz on “Genentech”, Chap 4- end.
#13- Apr. 29- CRISPR project	<b>Take Home Exam due/Quiz (25 pts.)</b> <b>Lab Notebooks due</b>
#14-May 6- CRISPR project	Concept Maps due
#15-May 13- CRISPR project	Lecture- “Current Events in Biotechnology”

**Final Exam: Wed. May 20 at 2:00, 100 pts**

**Total pts = 360 pts.:**

Assignments #1 = 5 pts.

Assignment #2 = 10 pts.

Midterm exam = 75 pts.

Three Take Home Exams = 45 pts.

Quiz #1-3 = 36 pts.

Book quizzes = 30 pts.

Concept Map = 24 pts.

Lab notebooks = 35 pts.

Final Exam = 100 pts.

<b>Assessment</b>	<b>Date</b>	<b>Points</b>	<b>Percent of Final Grade</b>
<b>Assignment 1</b>	Due Feb. 5	5 pts.	1.4%
<b>Take Home Exam #1 &amp; quiz</b>	Due Feb. 19	27 pts.	7.5%
<b>Take Home Exam #2 &amp; quiz</b>	Due Mar. 11	27 pts.	7.5%
<b>Assignment 2</b>	Due Mar. 11	10 pts.	2.8%
<b>Exam 1</b>	Apr. 1	75 pts.	20.8%
<b>Lab Notebook</b>	Due Apr. 15	10 pts.	2.8%
<b>Book quizzes</b>	Apr. 15, 22	30 pts.	8.3%
<b>Take Home Exam #3 &amp; quiz</b>	Due Apr. 29	27 pts.	7.5%
<b>Lab Notebook</b>	Due Apr. 29	25 pts.	6.9%
<b>Concept Map</b>	Due May 6	24 pts.	6.7%
<b>Final Exam</b>	May 20	100 pts.	27.8%
		360 pts.	100%

All **exams** and quizzes will be a mixture of different types of questions (including solving problems and short essay). **The final exam is comprehensive.** The exams cover readings, lectures, films, and lab exercises. No leaving the classroom during exams.

The **Take Home Exams** are designed to assist students in reviewing materials and getting the most of out of this class. These assessments are to be completed individually not as a team or a group. The 12 pt. quizzes are taken on the day that Take Home Exams are due and are based on the Take Home Exams. Questions on the quizzes are related to questions on the Take Home Exam.

**New this term- Bonus Points-** Up to 10 bonus points can be earned for students that successfully create and identify a recombinant plasmid. Groups will be assigned to produce either pCRISPR::0 or pCRISPR::rpsL.

**Quizzes-** The quizzes are based on the book '*Genentech: The Beginnings of Biotech*'. The first quiz on Apr. 15 covers the beginning of the book through the end of chap. 3. The second quiz on Apr. 22 covers chap. 4-end. The quiz questions will all come directly from the book.

**Writing Assignment:**

You will be given a short article to read in week 1- see the document titled "rDNA debate" on Blackboard. At the end of the article is a related question. Your **assignment** is to answer the question by writing a 200-250 word response. Make sure you have 200-250 words in your response (don't count the words in your title, references, your name, etc.). Don't copy text from any sources. Don't copy this article! Read the article, highlight important points, and then write your answer in your own words. Run a spelling and grammar check. Proof read your writing to make sure your sentences are coherent. Write a thoughtful, nuanced reply. Use complete sentences. Print your document. It should all be on one page. **Make sure it is double-spaced.** The assignment is due on Feb. 5. It will be graded and returned to you on Feb. 12. Grades are based on the quality of your writing (grammar, coherency) and the strength of your arguments. Between Feb. 12 and Mar. 4 you need to spend 5 minutes with your instructor reviewing your writing. This part of the assignment is worth 5 pts. On Mar. 4, everyone is giving a second article and second question. Your 2<sup>nd</sup> writing **assignment** is to answer these questions with a 150-200 word response. This part of the assignment is worth 10 pts and is due on Mar. 11.

**Concept Map-** Concepts maps are due on May 6. The concept maps should illustrate all of your lab work from the start of the CRISPR project through week 14. Each pair of students submits one concept map. Students will be given the poster board for the concept maps. The concepts maps are grading on their thoroughness, accuracy, creativity, and the amount of effort put into the production.

**Lab Book-** The lab books are a documentation of your work related to the *CRISPR* project. Documentation should begin on Apr. 1 and continue until the work is completed at the end of the semester. Every week starting on Apr. 1 needs a clear entry. Each student submits one lab book. They will be graded twice. The first grade is based on your entry for Week #10 (Apr. 8; 10 pts). Lab books need to be turned in at the end the class on Apr. 15. The second grade is based on entries for week #12 Apr. 22 and is due on Apr. 29. Grades are based on the accuracy, neatness, and thoroughness of your lab notes.

**Make-up-** If you know you can not be in class on the day of an exam or quiz, please see me beforehand so we can discuss your situation. In some circumstances, I will allow a make-up exam. If something comes up unexpectedly on the day of an exam or quiz, please call me. If you a leave a message, leave a phone number and I will contact you to discuss your situation. Don't 'let it ride' and plan on discussing it with me later. If your situation warrants a make-up exam or quiz, then schedule your make-up ASAP. If I don't hear from you soon enough, you will get a 0.

**Cheating-** Students caught cheating are automatically awarded an F. They are no longer allowed in class and a report is filed with the Dean of Student Affairs. All electronic devices (including

phones) & headphones must be kept in purses or backpacks during the exams and quizzes. No exceptions. You can use a real calculator and not the calculator function on a cell phone or PDA.

**Taping Policy-** Audiotaping of classes is permitted only with prior permission of the instructor; videotaping is not permitted under any circumstances. Authorized tapes are for the personal use of the student, and may not be distributed to others without the permission of the instructor.

**Guest Policy-** Guests are not permitted in this class due to the present of hazardous chemicals.

### **How to do well in this class-**

1. **COME TO CLASS-** take good notes, ask questions. Go over your notes, rewrite them, and think about them after each lecture.
2. If material is unclear, come and see me in my office.
3. Use YouTube and other sources to review important concepts.
4. Start early in the semester and stay on top of the material. Don't start studying the night before the exams.
5. Strive for good results. Plan each experiment carefully with your partner.
6. Strive to understand each week's exercise. Why are we doing it and what is the expected result? What is the biological basis of the technique?
7. Talk to others about each experiment- What was supposed to happen? Why did this happen? Why did we do this?