

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

Contact Information:

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Office Hours- Wednesday 9-10 am, Thursday 11-12 am, Friday 9-10 am, or by appt.

Required text- *DNA Science* by Micklos and Freyer, 2nd Edition

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.** (+1 bonus= on time arrival; -15 for unexcused absence)

Dates to Remember-

Monday, Sept. 5- No classes, Labor Day

Monday Sept. 19- Last day to drop a course

Tuesday, Oct. 11- No classes, Columbus Day

Friday, Nov. 11- No classes, Veteran's Day

Thursday and Friday- Nov. 24 and 25 - No classes, Thanksgiving break

Wednesday, Dec, 7- No classes, Reading Day

Friday Dec. 9- (last day of classes)

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

I will use +/- grading system.

Schedule

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

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| Aug. 24- Lab #1, #2 | lecture- "Lab Safety" |
| Aug. 31- Lab #3, Electroporation | lecture- "Agarose Gels; Electroporation" <u>Assignment #1 due at beginning of class</u> |
| Sept. 7- Lab #3 continued, start cDNA Analysis | lecture- "Use of Restriction Enzymes" |
| Sept. 14- Plasmid mini-preps, RE digests | lecture- "Nemertea cDNA sequencing" Lab Report due (20 pts.), Lab write-up due |
| Sept. 21- Plasmid gels Samples to Nevada Genomics | lecture- "DNA sequencing Technology" |
| Sept. 28- cDNA analysis, Primer design | lecture- "DNA sequencing Technology 2" |
| Oct. 5- Lab #9, Samples to Nevada Genomics | lecture- "Transforming E. coli; Making Solutions" Lab Report due (25 pts.) |
| Oct. 12- Lab #10, cDNA analysis, Order primers | MIDTERM EXAM (80 pts) |
| Oct. 19- Lab #11, #12, samples to Nev. Gen. | lecture- Gene Mapping Strategies |
| Oct. 26- Lab #12, cDNA analysis | lecture- RNAi |
| Nov. 2- PCR, alpha-actinin | lecture- PCR |
| Nov. 9- DNA Subway gene annotation | Lab Report due (25 pts.), lecture- Transcriptomics |
| Nov. 16- DNA Subway | Lab write up due, Quiz #1 (20 pts.) lecture- "The Biotech industry" |
| Nov. 23- DNA Subway | Student Presentations (6 groups) |
| Nov. 30- DNA Subway, clean up | Student Presentations (6 groups) Lecture- "Current Events in Genetics" |

Final Exam: Wednesday Dec. 14 at 2:00 120 pts

Total pts = 400 pts.:

Two exams = 200 pts.

Three lab reports = 70 pts.

Assignments #1 = 20 pts.

Quiz #1 = 20 pts.

Lab write ups = 15 + 45 = 60 pts.

Student Presentations = 30 pts.

Both **exams** 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 **lab reports** are designed to assist students in reviewing materials and getting the most of out of this class. These lab reports are to be completed individually not as a team or a group.

Assignments #1 - see the document titled rDNA debate on Blackboard. The assignment is clearly spelled out on the last page.

Quiz #1- The quiz is based on a journal article from the March 4, 2011 issue of Science. This is a test of your ability to read and understand a primary journal article related to molecular genetics. A PDF of the article is available on Blackboard. In addition, there is a short analysis of the article on Blackboard (Science Article Supplement) that will provide additional information and help you understand the article. You should look at both publications but are only quizzed on the primary article (Science Article, Mar. 4), not the supplement.

Lab Book- New this term: the lab books are electronic and a documentation of all your work related to the *Nemertean* cDNA sequencing project. Documentation should begin on Sept. 8 and continue until the work is completed. Each pair of students submits one electronic journal together. A initial report is due on Sept. 14, documenting your progress to that point. The members of a pair will receive the same grade on the lab book, unless one member of a pair is absent between Sept. 14 and Nov. 16. For any absence, 3 pts. are subtracted from the absent student, 2 pts. are added to their partner.

Student Presentations (New this term)- Each pair of students will select one DNA sequence analysis to present to the rest of the class. Six presentations each on Nov. 23 and 30. Details to be discussed in class.

Make-up- If you know you can not be in class on the day of an exam, 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, 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, then schedule your make-up exam 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.