Cell and Developmental Biology (BIOL 205) Section 007
FALL 2018
Dr. Blaire Steinwand and Dr. Alaina Garland
TUESDAY AND THURSDAY 9:30AM-10:45AM
201 COKER HALL

INSTRUCTORS:
Dr. Blaire Steinwand
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Office hours: Tuesday and Friday 11:00-12:30pm
I am also available by appointment

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Graduate Teaching Assistants: Andrew Isdaner (aisdaner@live.unc.edu) and Angana Mukherjee (amukherjee@med.unc.edu)

Supplemental Instruction: Christiana Cornea (christiana_cornea@med.unc.edu) and Cere Poovey (cere@live.unc.edu)

Peer Mentors: Kevin Liu (liukev@live.unc.edu), Emily Shaljian (emshalj@live.unc.edu), Megan Mayers (meganm16@live.unc.edu), and Chichi Xue (zhuxq@live.unc.edu)

SAKAI SITE
(you must have an onyen to log on – go to https://itsapps.unc.edu/improv/#UserCreateOnyenPlace:createOnyen if you do not have an onyen.) The Sakai site will have postings from lectures such as outlines, power point slides, lecture goals and objectives, and supplemental material we mention in lecture. We will also post announcements regarding student concerns on this site. It is your responsibility to check it regularly.

REQUIRED TEXT for 1st half of the course:

REQUIRED TEXT for 2nd half of the course: Principles of Development. 5th Edition by Lewis Wolpert, Cheryll Tickle, and Alfonso Martínez Arias

REQUIRED PREREQUISITE: Basic knowledge of biology and chemistry as demonstrated by a C- or above in BIOL202
**QUIZZES: (7% of your grade):** Quizzes will be due the morning before nearly every class period at 9:00AM. All quizzes are timed. **It is your responsibility to complete the guided reading assignment prior to starting the quiz so that you can finish within the hour that you are given.** Late quizzes will receive a zero. **DO NOT ASK US TO MAKE AN EXCEPTION TO THIS RULE.**

**PARTICIPATION (6% of your final grade):** As an incentive to come to class prepared and be engaged, 6% of your grade will come from a program called Poll Everywhere that you use through your laptop or mobile phone and in-class activities. Note - missing just a couple of classes can quickly affect your participation grade! **NOTE: even if you have previously registered as a poll everywhere user, you MUST REGISTER AGAIN as Poll Everywhere at UNC-Chapel Hill has undergone some recent changes. Please visit poll.unc.edu to register!**

**DIGITAL ETIQUETTE:** This course will require you to use your laptop and/or cell phone during class time. While I recognize that you are an excellent multi-tasker, research suggests that your peers are not. Please be respectful of your classmates and restrict your use of digital devices to course content. If we see that you or your peers are distracted, we will ask you to put your devices away and you may forfeit your ability to earn participation points that day. There will be times when you have completed your work or answered a poll question, but your peers have not. We ask that you assist your peers when appropriate or use the time to review your notes while you wait. I understand that your devices connect you to your friends and family (a wonderful thing!) but the classroom should be a place apart, however briefly (even if it seems like an eternity to you), from the outside world and distractions. You will learn more if you concentrate on the course while you are here and your classmates will thank you for not impeding their ability to learn.

**PIAZZA:** There are hundreds of you and your questions are important to us. However, it is often difficult for a single instructor with so many students to address all of the e-mails that are received throughout the course of the semester. Therefore, in order to address your questions and concerns more efficiently, we will be using an online platform called “Piazza” this semester. You may post any questions that you have about the course to this site at any time and they will be answered by either a fellow student, a TA, or your instructor. Your questions may be more general and may relate to the course itself or they may be more specific and instead relate directly to content and/or material from class. In any case, Piazza will help you get them answered ASAP. **With the exception of private/personal questions and concerns (which are always welcome in our inboxes) please direct all questions to this discussion board.** You will receive a welcome e-mail from your instructor granting you access to the course within the first week of the semester and can start using Piazza right away.

**WHAT YOU SHOULD BRING TO CLASS EVERY DAY:**
1. Outlines from Sakai when available (either printed or on laptop).
2. Extra blank paper for drawings, notes, activities etc. (or tablet computer for drawing)
3. 3 x 5 index cards (with or without lines, preferably white).
4. POLL EVERYWHERE device: either your cell phone for texting or laptop/ipad/smartphone for web access
**REcITATION (7% of your final grade):** Attendance and participation in one of the recitations sections is required. These recitations are an extension of the class and allow time to go beyond material in class. They are not “help sessions”, but they will extend your knowledge of the field of cell and developmental biology. Material covered in recitation may be covered on exams too. For recitation, you may also be given pre-class assignments or in-class assignments, each worth 5 points, that are designed to reinforce and deepen your understanding of the material related to the course. Your pre-class recitation assignments must be printed and handed in at the beginning of recitation. In-class assignments are typically group problems. You must work out this problem in groups and turn in one answer on behalf of the group during the recitation period. There will be no make-up opportunities for in-class assignments if you do not attend a recitation in a given week. You may earn up to 5 additional points, during each half of the semester for class participation during the recitation sessions. If you are unable to attend the recitation for which you are registered one week, you may attend another section with prior permission of the TAs if there is room in another section. There is a maximum capacity for each section so please do not assume that you can attend another section if you miss a recitation.

*Recitation sections 701, 702, 703, 704, and 705 will meet in room 1378 in the Genome Sciences Building. Sections 706, 707, and 708 TBA.*

**SUPPLEMENTAL INSTRUCTION (SI) and Peer Mentoring:** ALL of the supplemental instructors and peer mentors were VERY successful students of ours and are equipped with the knowledge and skills that you need to be successful in this course. The SI instructors will offer multiple sessions of supplemental instruction a week and will post problem sets for you on Sakai. Peer mentors will offer one-on-one mentoring every week throughout the semester. They will all also be in class helping you learn! In order for them to help you approach and analyze problems, you should bring problem sets and questions to them outside of class. Each session held by an SI instructor or peer mentor will be scheduled for 1 hour - the times and location of these sessions will be posted on Sakai during the first week of class. You are not required to attend either, but attendance is highly recommended, since this is your opportunity to get more help in this course. It is also worth noting that they have all seen many of my exams! I suggest you fit SI or peer mentoring into your schedule and attend weekly as if it is a required class. The contact information for all of SI instructors and peer mentors is listed above. Check Sakai for times and locations.

*What is the difference between SI and peer mentoring?*

SI is going to look like a review session with a group of students in attendance each week. Peer mentors are offering more “one-on-one” help. If you are interested in reviewing the topics more broadly – attend SI. If you feel you need to sit down with someone and work one-on-one, see a peer mentor!

**DIVERSITY STATEMENT:** The Department of Biology values the perspectives of individuals from all backgrounds reflecting the diversity of our students. We broadly define diversity to include race, gender identity, national origin, ethnicity, religion, social class, age, sexual orientation, political background, and physical and learning ability. We strive to make this classroom and this department an inclusive space for all students.
And, this brings us to the goals of our course...

1. To provide you with the core principles of cell and developmental biology. The lecture and the book will introduce you to the fields of cell biology and developmental biology. After this class, you will have a basic understanding of cell and developmental biology and will be equipped to build upon this content with upper level courses in biology.

   Amended Bloom’s Taxonomy: developed as a method of classifying educational goals for student performance evaluation. You should think about this as you study for exams and ask yourself, am I using different kinds of thinking?

2. To gain higher level thinking skills that are necessary for scientists. To the right you can see the “Amended Bloom’s Taxonomy” pyramid. It was developed as a method of classifying educational goals for student performance evaluation. You should be well –equipped at remembering facts and content with good study habits. We are looking for you to apply and analyze. You are UNC students, we KNOW you can memorize! Move beyond this level of thinking. How can we achieve this? We will have in-class questions to practice this immediately and you will have homework problems to practice on your own. We will also explore classic experiments as a way of thinking through the logic of experiments and to see where the foundations of this content come from. While these may be new ways of thinking for you, practice is the most important way to gain these skills. FYI: UNC’s medical school sees this is an excellent pre-req course for medical school because it teaches students to think.

3. This course should excite you about cell and developmental biology and its applications to our real lives!

   TESTS: There will be three tests and a final exam given during the semester. The format will include both multiple choice and open-ended questions. These are not cumulative tests and will only cover the material specified on the course schedule. However, each part of the course builds on the knowledge from earlier sections, so do not “mentally erase” fundamental concepts from earlier in the semester. For all exams, you will need your PID number as identification on your exam sheet. Additionally, you may be asked to verify your identity, so it is required that you bring your one-card to each exam. Failure to produce a one-card or other picture ID if asked may result in a zero on that exam. Test material to study: guided readings, outlines, homework, lecture notes and activities, recitation assignments, and power point slides. Therefore, to succeed in this class, it behooves you to take each reading/homework seriously and actively engage in all class discussions. There is no option to drop a test grade and there are no extra credit options. Exams must be taken on the dates indicated during the regular class period; no makeup exams except in special circumstances, i.e., medical or family emergency documented in writing prior to missing the exam. The instructors reserve the right to give oral make-up exams. If you still do not understand content after your exam has been graded and would like to discuss concepts, we encourage you to meet with your TA or instructor. If you have a question related to points deserved, you must put it in writing no more than 5 days after an exam has been returned to you and turn it in to your instructor.

   NOTE: the final exam is December 11th in Coker 201.
HOW IS YOUR GRADE DETERMINED? [Note: there will be no changes to HOW your final average is calculated at the end of the semester and THERE IS NO EXTRA CREDIT...so please don’t ask! You will get the grade you EARN!] Your final average is calculated:

Total for the semester =

\[(0.20 \times \text{test}) + (0.20 \times \text{test}) + (0.20 \times \text{test}) + (0.20 \times \text{final exam}) + (0.07 \times \text{quizzes}) + (0.06 \times \text{participation score}) + (.07 \times \text{recitation})\]

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Schedule for the first half of BIOL205

<table>
<thead>
<tr>
<th>Date</th>
<th>Lecture #</th>
<th>Assignments to be completed BEFORE this class</th>
<th>Topics covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tues 8/21</td>
<td>1</td>
<td>Read Chapter 1. Sakai quiz due at 9AM: Introduction to the cell</td>
<td>Introduction to Cell Biology</td>
</tr>
<tr>
<td>Thrus 8/23</td>
<td>2</td>
<td>Read pages 121-155 in Chapter 4 and complete the guided reading assignment. Sakai quiz due at 9AM: Protein structure and function</td>
<td>Protein structure and function</td>
</tr>
<tr>
<td>Tues 8/28</td>
<td>3</td>
<td>Read pages 164-167 in Chapter 4 and complete the guided reading assignment on western blotting. Sakai quiz due at 9AM: How we study proteins</td>
<td>How we study proteins – Methods and Tools</td>
</tr>
<tr>
<td>Thrus 8/30</td>
<td>4</td>
<td>Read pages 359-374 in Chapter 11 and complete the guided reading assignment. Sakai quiz due at 9AM: Membranes</td>
<td>Membrane Structure and function</td>
</tr>
<tr>
<td>Tues 9/4</td>
<td>5</td>
<td>Read pages 383-398 in Chapter 12 and complete guided reading assignment. Sakai quiz due at 9AM: Membrane transport</td>
<td>Membrane transport</td>
</tr>
<tr>
<td>Thrus 9/6</td>
<td>6</td>
<td>Read pages 487-518 in Chapter 15 and complete guided reading assignment Sakai quiz due at 9AM: Targeting and Trafficking</td>
<td>Targeting and trafficking</td>
</tr>
</tbody>
</table>

RECITATION (8/21-8/24): Introductions

RECITATION (8/27-8/31): Read “Production of unique immunotoxin cancer therapeutics in algal chloroplasts“ and complete the pre-recitation assignment on methods utilized in this paper. Bring the pre-recitation assignment COMPLETED to recitation.

RECITATION (9/3-9/7): Go over methods used in “Production of unique immunotoxin cancer therapeutics in algal chloroplasts“ and think about the big picture of the work reported in this paper.
<table>
<thead>
<tr>
<th>Date</th>
<th>No.</th>
<th>Description</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tues 9/11</td>
<td>7</td>
<td>Review material.</td>
<td>Catch up, practice and preparation</td>
</tr>
<tr>
<td>NO RECITATION (9/10-9/14)</td>
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<tr>
<td>Thurs 9/13</td>
<td>8</td>
<td></td>
<td>Exam 1</td>
</tr>
<tr>
<td>Tues 9/18</td>
<td>9</td>
<td>Complete the guided reading assignment on Chapters 3 and 13. No quiz!</td>
<td>How cells obtain energy</td>
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<tr>
<td>RECITATION (9/17-9/21): Complete the figure analysis questions for your assigned expert group. See Sakai for expert group assignments.</td>
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<tr>
<td>Thurs 9/20</td>
<td>10</td>
<td>Read and complete guided reading assignment on Chapter 16</td>
<td>Cell communication</td>
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<td></td>
<td></td>
<td>Sakai quiz due at 9AM: Cell communication</td>
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</tr>
<tr>
<td>Tues 9/25</td>
<td>11</td>
<td>None.</td>
<td>Cell communication</td>
</tr>
<tr>
<td>RECITATION (9/24-9/28): Go over exam 1</td>
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<tr>
<td>Thurs 9/27</td>
<td>12</td>
<td>Read and complete guided reading assignment on Chapter 17</td>
<td>Cytoskeleton</td>
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<td>Sakai quiz due at 9AM: Cytoskeleton</td>
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<tr>
<td>Tues 10/2</td>
<td>13</td>
<td>Read and complete guided reading assignment on Chapter 18</td>
<td>Cell Cycle</td>
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<td>Sakai quiz due at 9AM: No quiz</td>
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<td>RECITATION (10/1-10/5): Figure presentations and paper summaries. Come prepared to present your assigned figure.</td>
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<tr>
<td>Thurs 10/4</td>
<td>14</td>
<td></td>
<td>Exam 2</td>
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<tr>
<td>NO RECITATION (10/8-10/12)</td>
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Schedule for the second half with Dr. Alaina Garland

*note that a more detailed schedule will be available later in the semester*

Tuesday, Oct 9th – Introduction to Development

Thursday Oct 11th – Cell Junctions/Fertilization

Tuesday Oct 16th – Fertilization and Cleavage

**Thursday Oct 18th – Fall Break**

Tuesday Oct 23rd - Cleavage and Gastrulation

Thursday Oct 25th - Induction and Determination

Tuesday Oct 30th - Gastrulation

Thursday Nov 1st - Gastrulation

Tuesday Nov 6th – Neurulation

Thursday Nov 8th – Induction, Differentiation, and Determination revisited

**Tuesday Nov 13th – Exam 3**

Thursday Nov 15th – Tetrapod limb development

Tuesday Nov 20th - Tetrapod limb development

**Thursday Nov 22nd – Thanksgiving Break**

Tuesday Nov 27th - Special Topics in Development

Thursday Nov 29th - Plant Development

Tuesday Dec 4th – Plant Development