Readings

The content and structure of the course follows closely the 6th edition of Alberts's Molecular Biology of the Cell.. The principal difference between the content this year (AY21/22) and the way it has been taught in the past (and again in the future, probably) is that we will not be explicitly covering material from Chapters 2-7. This is because the major now offers a separate course, Molecular Biology, YSC3257, that covers similar material to that seen in those Chapters, but in more depth. In addition, we will not be covering Chapters 20 (Cancer), 22 (Stem Cells), 23 (Pathogens and Infection), or 24 (Immunology).

Lectures

This is largely a flipped-classroom course. There are two sets of recorded lectures (i) Professor Tolwinski has recorded lectures corresponding to nearly every chapter in Alberts. Each slide is a figure from the text, and a large fraction of the figures from the text are included in the lecture. You will probably find these helpful as a guide to reading the text. (ii) You will be assigned a number of ~30 minute video lectures from experts in particular fields (www.iBiology.com)

Assessments

Participation: (20%) There are two components to this grade. The first is simply showing up and being attentive; unless you have an MC or an AD's note (or are feeling so badly that you *should* have one, in which case let me know). The second is contributing to our shared learning. It is not necessary to be among the most vocal in class to get top marks for participation; a good question or two in class is enough.

Problem Sets: (30%): Problem sets will be based on each chapter of the readings. You are free to work collaboratively if you like, but if you do I expect you to tell me who you worked with and on what questions. (The last 'question' on each problem set will be who you helped or got help from and on what questions). If you do get help from a classmate, be sure that can explain why you gave the answer you did, as I may call on you to explain your answers in class.

Great Questions: (15%). By 23:59 on the day of every class, you are to send me two questions using the Canvas "Inbox" feature. Questions of the "Can you explain better what you (or the text, the recorded lecture, my classmate, etc) meant when you (they) said x?" are just fine. So, too are deeper questions to which I may or may not know the answer - and indeed there may not *be* a good answer ("Why would evolution have led to this instead of that?). For each of the two questions you ask, you get one point; you can ask more, but you get credit for two. I reserve the right to give extra points for questions I find unusually thoughtful, or which have identified a problem with the way the material has been presented that was otherwise not apparent to me or to others. The questions will be posted to a discussion forum, with no identifying information. Your classmates will be able to respond if they choose, even if it is just to 'like' your question. Responding to the questions that others pose is one way to get credit for the 'class participation' grade.

Research Paper presentations: (20%). Twice in the semester you will present a scientific paper in class, and lead a discussion of that paper. You will have selected the paper from one that is referred to in one of the iBiology videos you will be assigned to watch. The presentation and discussion

should cover the background to the paper and the question being addressed, explain what each figure shows and what role/importance it plays to the paper as a whole, and what the conclusions of the paper are. Caveats or qualifiations to that conclusion should be discussed as well.

Final Paper: (15%): For one of the papers you presented in class, find an original research paper (not a review) that *cites* that paper and was published within five years of the first paper. In 1500 words or fewer, describe the results of this paper in a way that you think every one of your classmates should easily understand - that is, try to avoid using language that is in the paper that you yourself struggled to read. Your paper should include a figure of your own design that illustrates an experiment that was done or a result. Explain how this paper expanded or modified our understanding as it existed after the first paper.