

Biol 66: The Molecular Basis of Cancer Spring 2020

Professor Natasha Grotz
Tuesday/Thursday 2:25-4:15pm
Email to set up appointments

Objectives

1. To learn how to critically read primary scientific literature
2. To improve formulating and defending arguments
3. To practice experimental design
4. To understand how basic biological processes are misregulated in cancer
5. To gain an appreciation for how basic research informs/has informed our understanding of cancer

This course focuses on the primary literature which we will use to develop critical thinking and data analysis skills.

Organization

This course will be a mixture of small group problem solving/active class discussion of the primary literature and lectures/presentations. Generally, one paper will be discussed in depth each class session.

Reading

Each week, original research papers will be discussed. Papers for the week will be posted by Friday. It is essential that you read the assigned papers before class begins.

On the last day of the term, we will discuss the book, “When Breath Becomes Air” by Paul Kalanithi.

Assessment

Performance in this class will be based upon the following activities:

Participation: This is a measure of your engagement in the class and can take many forms including, but not limited to, asking thoughtful questions, willingly offering answers to questions, and active engagement with the material.

Problem Set: You will be given a paper to read and a series of questions to answer.

Paper questions: For some of the papers in the course, there will be a question to answer before the class discussion.

Presentation on Type of Cancer: You and your group will give a 20-minute presentation on a specific type of cancer. The purpose of this presentation is to introduce students to various types of cancer. Within the presentation, you and your group should cover the basic details of that type of cancer and include typical treatment options.

Presentation on Hallmark of Cancer: You and your group will give a 20-minute presentation on a specific hallmark of cancer. In this presentation, you should provide background on the hallmark and its importance in cancer.

Paper Preparation: You and your group will work with Professor Grotz to lead the discussion of an assigned paper.

News & Views: You will independently prepare a “News & Views” review of an assigned article. Your article should be written for a broad scientific audience and should appeal to all biologists and hopefully other scientists with some interest in biology.

Peer Review: You will pretend as if you have been asked to review an article before publication and will prepare a written review of an assigned article.

Throughout the course, students can expect to receive feedback on assignments. In instances when the assignment has not been adequately performed, this will be indicated in the feedback. Note that the failure to submit or complete assignments in a timely fashion and in a way that demonstrates engagement with and an understanding of the material may result in the student receiving NC.

Honor Principle

In all work pertaining to this course, students are expected to obey the Honor Principle (<http://dartmouth.smartcatalogiq.com/en/current/orc/Regulations/Undergraduate-Study/Academic-Honor>). Unless otherwise stated, assignments are to be performed and written independently. Any external sources used in preparing assignments are to be formally cited. For written work, only original research articles, reviews, articles, textbooks, or personal communication with researchers may be cited. In addition to putting a list of references at the end of the assignment, you need to note the author, year within your text whenever you use a reference. For more information, please see <https://writing-speech.dartmouth.edu/learning/materials/sources-and-citations-dartmouth>.

Student Accessibility Needs

Students requesting disability-related accommodations and services for this course are encouraged to schedule a phone/video meeting with me as early in the term as possible. This conversation will help to establish what supports are built into my online course. In order for accommodations to be authorized, students are required to consult with Student Accessibility Services (SAS; student.accessibility.services@dartmouth.edu; SAS website; 603-646-9900) and to email me their SAS accommodation form. We will then work together with SAS if accommodations need to be modified based on the online learning environment. If students have questions about whether they are eligible for accommodations, they should contact the SAS office. All inquiries and discussions will remain confidential.

Religious Observances

Some students may wish to take part in religious observances that occur during this academic term. If you have a religious observance that conflicts with your participation in the course, please contact me before the end of the second week of the term to discuss appropriate accommodations.

A Note About Health

The academic environment at Dartmouth is challenging, our terms are intensive, and classes are not the only demanding part of your life. There are a number of resources available to you on campus to support your wellness, including your undergraduate dean (<https://students.dartmouth.edu/undergraduate-deans/>), Counseling and Human Development (<https://students.dartmouth.edu/health-service/counseling/about>), and the Student Wellness Center (<https://students.dartmouth.edu/wellness-center/>). I encourage you to use these resources to take care of yourself throughout the term, and to come speak to me if you experience any difficulties.

Please note that if you are directly or indirectly affected by COVID-19 in a way that affects your ability to participate in the course, I encourage you to contact me as soon as possible so that we can work together to make sure you are aware of resources for assistance and so that we can implement any appropriate accommodations. If you are more comfortable, you can also reach out to your Dean.

Consent to Record

(1) Consent to recording of course and group office hours

a) I affirm my understanding that this course and any associated **group** meetings involving students and the instructor, including but not limited to scheduled and ad hoc office hours and other consultations, may be recorded within any digital platform used to offer remote instruction for this course;

b) I further affirm that the instructor owns the copyright to their instructional materials, of which these recordings constitute a part, and distribution of any of these recordings in whole or in part without prior written consent of the instructor may be subject to discipline by Dartmouth up to and including expulsion;

b) I authorize Dartmouth and anyone acting on behalf of Dartmouth to record my participation and appearance in any medium, and to use my name, likeness, and voice in connection with such recording; and

c) I authorize Dartmouth and anyone acting on behalf of Dartmouth to use, reproduce, or distribute such recording without restrictions or limitation for any educational purpose deemed appropriate by Dartmouth and anyone acting on behalf of Dartmouth.

(2) Requirement of consent to one-on-one recordings

By enrolling in this course, I hereby affirm that I will not under any circumstance make a recording in any medium of any one-on-one meeting with the instructor without obtaining the prior written consent of all those participating, and I understand that if I violate this prohibition, I will be subject to discipline by Dartmouth up to and including expulsion, as well as any other civil or criminal penalties under applicable law.

A Note Regarding Recordings

My plan is to record our class meetings via zoom.

A Note About Technology

Class meetings will be held over Zoom (dartmouth.zoom.us), and assignments will be submitted electronically. We will try to anticipate and accommodate any technology constraints; if you are experiencing technology barriers that are affecting your ability to participate and complete the coursework, please contact me as soon as possible.

Financial Difficulty

If you encounter financial challenges related to this class, please let me know.

Sexual Misconduct and Title IX

At Dartmouth, we value integrity, responsibility, and respect for the rights and interests of others, all central to our Principles of Community. We are dedicated to establishing and maintaining a safe and inclusive campus where all have equal access to the educational and employment opportunities Dartmouth offers. We strive to promote an environment of sexual respect, safety, and well-being. In its policies and standards, Dartmouth demonstrates unequivocally that sexual assault, gender-based harassment, domestic violence, dating violence, and stalking are not tolerated in our community.

The Sexual Respect Website (<https://sexual-respect.dartmouth.edu>) at Dartmouth provides a wealth of information on your rights with regard to sexual respect and resources that are available to all in our community.

Please note that, as a faculty member, I am obligated to share disclosures regarding conduct under Title IX with Dartmouth's Title IX Coordinator. Confidential resources are also available, and include licensed medical or counseling professionals (e.g., a licensed psychologist), staff members of organizations recognized as rape crisis centers under state law (such as WISE), and ordained clergy (see https://dartgo.org/titleix_resources).

Should you have any questions, please feel free to contact Dartmouth's Title IX Coordinator or the Deputy Title IX Coordinator for the Guarini School. Their contact information can be found on the sexual respect website at: <https://sexual-respect.dartmouth.edu>.

Class Schedule

Class Date	Topic
3/31-Tues	Introduction
4/2-Thur	Ras
4/7-Tues	Ras
4/9-Thurs	Ras
4/14-Tues	Ras
4/16-Thurs	Problem Set Due/Assignment Group Session
4/21-Tues	p53
4/23-Thurs	(5): HPV, (1): Deregulating Cellular Energetics/Paper Question Due
4/28-Tues	(6): Melanoma, (2): Inducing Angiogenesis/Paper Question Due
4/30-Thurs	(7): Lung, (3): Activating Invasion and Metastasis/Paper Question Due
5/5-Tues	(8): Breast, (4): Evading Apoptosis/Paper Question Due
5/7-Thurs	(1): Colon, (5): Evading Growth Suppressors/Paper Question Due
5/12-Tues	(2): Prostate, (6): Avoiding Immune Destruction/Paper Question Due
5/14-Thurs	(3): Leukemia, (7): Tumor Promoting Inflammation/Paper Question Due
5/19-Tues	SP (4): Liver, (8): Enabling Replicative Immortality/Paper Question Due
5/21-Thurs	Guest Lecture: Dr. Godek
5/26-Tues	Therapeutics
5/28-Thurs	Movie Discussion/Class Exercise
6/2-Tues	Book Discussion: When Breath Becomes Air/Peer Review Due