

## **BIOL 66: Molecular Basis of Cancer Winter 2025**

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

### **Objectives**

We will discuss and critically evaluate primary literature papers, discuss experimental design, and improve our understanding of how basic biological processes are misregulated in cancer.

### **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.

### **Class Climate and Inclusivity**

My goal is to create a learning environment that supports a diversity of thoughts, perspectives, and experiences and honors your identities (including race, gender, class, sexuality, religion, ability, etc.). If you have a name and/or set of pronouns that you would like me to use, please let me know. I ask that each of you also strive to honor the diversity of your classmates in all course discussion and learning activities. If you feel like your experience within this course is being impacted by actions or words during our class meetings or events outside of class, I encourage you to discuss these concerns with me or with someone in the [Office of Institutional Diversity and Equity \(IDE\)](#) at Dartmouth.

### **Grading**

- 8% participation
- 7% paper responses
- 10% paper assignment
- 15% in class group problem set
  - 7% presentation on type of cancer
- 23% presentation on hallmark of cancer
- 10% paper presentation/discussion
- 20% final paper assignment

### **Assessment**

Participation: Participation is a measure of your overall engagement with the class; it can take many forms including, but not limited to, attending class, asking thoughtful questions, willingly offering answers to questions, and actively working with the material.

Paper responses: For some of the papers in the course, you will be asked to submit responses after reading the assigned paper.

Paper Assignment: You will be given a paper to read and an associated assignment that will include providing a summary of the paper. In class, there will be a group problem set.

Presentation on Type of Cancer: You and your group will give a 15-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.

Presentation on Hallmark of Cancer: You and your group will give a 25-minute presentation on a specific hallmark of cancer. In this presentation, you should provide background on the hallmark and its importance in cancer.

Paper Presentation/Discussion: You and your group will work on preparation of figures from an assigned paper that you will present to/discuss with Professor Grotz.

Final Paper Assignment: You will be given a paper to read and an associated assignment that will likely include questions to answer in addition to providing a summary/review of the paper.

## **Honor Principle**

In all work pertaining to this course, students are expected to adhere to the Honor Principle:

<https://policies.dartmouth.edu/policy/academic-honor-principle>

<https://policies.dartmouth.edu/policy/academic-honor-policy-undergraduate-students-arts-and-sciences>

Unless otherwise stated, assignments are to be performed and written independently. Any external sources used in preparing assignments are to be formally cited. Appropriate outside resources include original research articles, reviews, articles, textbooks, or personal communication with researchers. Regarding the use of AI in the course, please see below. In addition to putting a list of references at the end of any assignments, you need to note the author, year within your text whenever you use a reference. For more information, please see <https://writing.dartmouth.edu/support/sources-and-citations>.

Honesty is the foundation of the academic pursuit of knowledge. If you have questions about how the Honor Principle applies to any aspect of this course, please do not hesitate to contact me.

## **AI**

For guidelines on the use of generative AI, please see

<https://policies.dartmouth.edu/policy/guidelines-using-generative-artificial-intelligence-genai-coursework>.

Although using an AI-content generator such as ChatGPT can be a useful way to learn more about specific aspects of cancer biology, the use of an AI-content generator to complete assignments in this course is prohibited. In other words, although you may choose to use these systems to learn more about a technique, for example, you may not ask these systems to directly provide answers to assignments you are submitting. Further, learning more about a technique through these systems is only a first step. You are expected to confirm what you have learned using other sources such as textbooks, primary literature articles and reviews, and, perhaps, scientific company pamphlets or websites, and you are responsible for citing sources used, including the use of AI-content generators.

## **Attendance**

You are expected to attend class in person; however, there may be times when you need to miss class due to emergent circumstances like illness or other medical reasons. If you are unable to attend class, please reach out to me as soon as possible.

## **COVID-19**

For information regarding COVID-19 guidance and resources, please see <https://covid.dartmouth.edu/home>.

## **Student Accessibility Needs**

Students requesting disability-related accommodations and services for this course are required to register with Student Accessibility Services (SAS; [Apply for Services webpage](#); [student.accessibility.services@dartmouth.edu](mailto:student.accessibility.services@dartmouth.edu); 1-603-646-9900) and to request that an accommodation email be sent to me in advance of the need for an accommodation. Then, students should schedule a follow-up meeting with me to determine relevant details such as what role SAS or its [Testing Center](#) may play in accommodation implementation. This process works best for everyone when completed as early in the quarter as possible. If students have questions about whether they are eligible for accommodations or have concerns about the implementation of their accommodations, they should contact the SAS office. All inquiries and discussions will remain confidential.

## **Religious Observances**

Dartmouth has a deep commitment to support students' religious observances and diverse faith practices. 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 meet with me as soon as possible—before the end of the second week of the term at the latest—to discuss appropriate course adjustments.

## **Socioeconomic Differences and Financial Difficulty**

Our community is composed of students from a variety of financial backgrounds. Socioeconomic diversity can be invisible, and you may be experiencing financial difficulties related to the cost of textbooks, materials, or other necessities for our class of which I am not aware.

If you encounter financial challenges related to this class, there may be sources of support for you. If you feel comfortable sharing your experience with me, you may. You may also consider meeting with a financial aid officer to discuss options, reaching out to the First-Generation Office if you are a first-generation student, browsing the [Funding Resources](#) page, or, for unexpected expenses, applying to the Barrier Removal Fund through the Financial Aid tile in [DartHub](#).

## **Mental Health and Wellness**

The academic environment 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: the [Counseling Center](#) which allows you to book triage appointments online, the [Student Wellness Center](#) which offers wellness check-ins, and your [undergraduate dean](#). The student-led [Dartmouth Student Mental Health Union](#) and their peer support program may be helpful if you would like to speak to a trained fellow student support listener. If you need immediate assistance, please contact the counselor on-call at (603) 646-9442 at any time. Please make me aware of anything that will hinder your success in this course.

## **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 community members have equal access to Dartmouth's educational and employment opportunities. We strive to promote an environment of sexual respect, safety, and well-being. Through the Sexual and Gender-Based Misconduct Policy (SMP), Dartmouth demonstrates that sex and gender-based discrimination, sex and gender-based harassment, sexual assault, dating violence, domestic violence, stalking, etc., are not tolerated in our community.

For more information regarding Title IX and to access helpful resources, visit Title IX's website ([sexual-respect.dartmouth.edu](http://sexual-respect.dartmouth.edu)). As a faculty member, I am required to share disclosures of sexual or gender-based misconduct with the Title IX office.

If you have any questions or want to explore support and assistance, please contact the Title IX office at 603-646-0922 or [TitleIX@dartmouth.edu](mailto:TitleIX@dartmouth.edu). Speaking to Title IX does not automatically initiate a college resolution. Instead, much of their work is around providing supportive measures to ensure you can continue to engage in Dartmouth's programs and activities.

## **Consent to Record**

By enrolling in this course,

1. I affirm my understanding that the instructor may record meetings of this course in our classroom.
2. I further affirm that the instructor owns the copyright to their instructional materials, of which these recordings constitute a part, and my distribution of any of these recordings in whole or in part to any person or entity other than other members of the class without prior written consent of the instructor may be subject to discipline by Dartmouth up to and including separation from Dartmouth.
3. [Right to Privacy Policy](#)

## Class Schedule

<b>Class Date</b>	<b>Topic</b>
<b>1/7-Tues</b>	<b>Introduction</b>
<b>1/9-Thur</b>	<b>Ras</b>
<b>1/14-Tues</b>	<b>Ras</b>
<b>1/16-Thur</b>	<b>Ras</b>
<b>1/21-Tues</b>	<b>Ras</b>
<b>1/23-Thur</b>	<b>Types of Cancer Presentations</b>
<b>1/28-Tues</b>	<b>Assignment Group Session Problem Set Due</b>
<b>1/30-Thur</b>	<b>Evading Growth Suppressors</b>
<b>2/4-Tues</b>	<b>Deregulating Cellular Energetics</b>
<b>2/6-Thur</b>	<b>Invasion and Metastasis</b>
<b>2/11-Tues</b>	<b>Inducing Angiogenesis</b>
<b>2/13-Thur</b>	<b>Evading Apoptosis</b>
<b>2/18-Tues</b>	<b>Avoiding Immune Destruction</b>
<b>2/20-Thur</b>	<b>Tumor Promoting Inflammation</b>
<b>2/25-Tues</b>	<b>Enabling Replicative Immortality</b>
<b>2/27-Thur</b>	<b>Therapeutics</b>
<b>3/4-Tues</b>	<b>Movie Discussion</b>
<b>3/6-Thur</b>	<b>Book Discussion: When Breath Becomes Air Final Assignment Due</b>