

Course Title: Cancer Biology

Number: G305

Credits: 8

Course Directors: Ross Levine, MD and Tuomas Tammela, MD, PhD

Course Prerequisites: Mechanistic Biology or Cancer

Engineering and Immunology

Grading Policy: Letter Grade

Course Description and Learning Objectives

Cancer Biology teaches how to think about cancer as a disease and also as a biological problem. This course leverages the world-class research and clinical expertise at Memorial Sloan Kettering. The course lasts for 8 weeks and considers both the biology of cancer and also clinical approaches to combatting this disease. 8 different, week-long topics are considered, including:

- Cancer as a disease
- Genetic and epigenetic mechanisms
- Computational biology and oncology
- Cancer signaling
- Cancer metabolism
- Metastasis
- Tumor modeling and heterogeneity
- Cancer types and microenvironments

Course Structure

The course meets daily from 9:30 am – 12:30 pm for eight weeks. Changes to that schedule are posted on the course grid and communicated to students via email.

Teaching Fellows

Teaching Fellows, drawn from senior GSK students and the postdoctoral community at MSK, are present in the course sessions. Their role is to act as an additional source of information/assistance, to help keep the discussion sessions moving, to conduct a review session, and to observe and grade the students on their participation. Each Teaching Fellow covers about two weeks of the course. Additionally, the Teaching Fellows will prepare a 2 to 3 questions from their section for the student problem set.

Assignments and Methods for Assessing Student Achievement

Take Home Exams (67%)

Students will be evaluated on their grasp of the concepts learned in class by completing take-home problem sets. Each problem set will include 4 or 5 questions that are worth 20 to 25 points each. The questions will include, but are not limited to, cases studies or interpretation of journal articles.

Class Participation and Attendance (33%)

Each student will be responsible for presenting at least one journal article. They must highlight the relevant background of the paper and its importance and caveats. All other students are expected to have come to class having thoroughly read the pre-assigned journal articles. They must also engage in the journal discussions by asking and answering relevant science questions.

All students are expected to attend the GSK Core Class regularly and on time. A student must notify the Senior Registrar/Curriculum Specialist and teaching fellow prior to class if they are going to be absent. This notice should be sent by email to mcdonagd@sloankettering.edu. A student is allowed a total of 3 absences across all courses that meet from February 2, 2026 through May 1, 2026 (i.e. absences are tallied over the entire semester and not per course). Any absences in excess of 3 will result in 4 percentage points being subtracted from a student's participation grade PER ABSENCE in the course in which the threshold was reached.

Basis for Grade Determination

Students will receive a final letter grade based on their class participation (33%) and performance on the take home problem sets (67%). The final letter grade will be determined using the following grading scale:

Letter Grade	Range
A	85-100
A-	82-84
B+	78-81
B	75-77
B-	72-74
C+	68-71
C	65-67
C-	62-64
F	<62

The problem sets will be sent out via email before 3:00 pm on the date specified in the course schedule; they will be due 7 days later, by 3:00 pm. Late submissions may not be accepted and could impact the final grade for the course.

Course Evaluation

Students are expected to complete surveys regarding the lectures and overall course via their student portal. This feedback will be used to evaluate the effectiveness and relevance of the topics and provide direction for the subsequent iterations of the course.

Academic Dishonesty, Plagiarism and Artificial Intelligence

The Policy can be found in the [Student and Faculty Handbook](#) linked on the GSK Website.

Course Schedule

The course schedule can be found on the next page.

Section III CANCER BIOLOGY - Ross Levine and Tuomas Tammela, Course Leaders						
	Topic	Instructor	Date	Student Presenter	Teaching Fellow	Block
21	Introduction to Cancer Biology	Pablo Sanchez Vela	Monday, March 2, 2026		Del Priore, Issy	5
	PAPER DISCUSSION	Pablo Sanchez Vela	Tuesday, March 3, 2026	Cherkas, Shelby	Del Priore, Issy	5
	No class - 2nd visit		Wednesday, March 4, 2026			
22	Oncogenes	Asmin Tulpule	Thursday, March 5, 2026		Del Priore, Issy	5
	PAPER DISCUSSION	Asmin Tulpule	Friday, March 6, 2026	Hanselman, Olivia	Del Priore, Issy	5
	Spring BREAK 3/7/2026-3/15/2026					
23	p53 and Tumor suppression	Scott Lowe	Monday, March 16, 2026		Del Priore, Issy	5
	PAPER DISCUSSION (end at 12:00)	Scott Lowe	Tuesday, March 17, 2026	Illouz, Sylvia	Del Priore, Issy	5
24	Cancer Evolution	Tuomas Tammela	Wednesday, March 18, 2026		Del Priore, Issy	5
	PAPER DISCUSSION	Tuomas Tammela	Thursday, March 19, 2026	Lange, Matthew	Del Priore, Issy	5
25	Digital Oncology	Adam Widman	Friday, March 20, 2026	Levin, Bailey	Del Priore, Issy	5
26	Genomic Analysis of Cancer	Jian Carrot-Zhang	Monday, March 23, 2026		Agbamu, Tejiri	6
	PAPER DISCUSSION	Jian Carrot-Zhang	Tuesday, March 24, 2026	Li, Faye	Agbamu, Tejiri	6
27	Colon Cancer	Karuna Ganesh	Wednesday, March 25, 2026		Agbamu, Tejiri	6
	PAPER DISCUSSION	Karuna Ganesh	Thursday, March 26, 2026	Magnus, Karina	Agbamu, Tejiri	6
28	Interactive Session/Group Project	Pablo Sanchez Vela	Friday, March 27, 2026		Agbamu, Tejiri	6
29	Lymphoma/Cancer Metabolism	Andrew Intlekofer	Monday, March 30, 2026		Agbamu, Tejiri	6
	PAPER DISCUSSION	Andrew Intlekofer	Tuesday, March 31, 2026	McIlhenny, Lauren	Agbamu, Tejiri	6
	Genetic Drivers of Hematopoietic					
30	Malignancies/Paper Discussion	Ross Levine	Wednesday, April 1, 2026	Mutaher, Mohammed	Agbamu, Tejiri	6
31	Topic TBD	Ivan Maillard	Thursday, April 2, 2026		Agbamu, Tejiri	6
	PAPER DISCUSSION	Ivan Maillard	Friday, April 3, 2026	Nadler, Rebecca	Agbamu, Tejiri	6
32	Leveraging Cancer Metabolism/Paper Discussion	Kayvan Keshari	Monday, April 6, 2026	Pavletich, Tatiana	Ryan, Kate	7
	Problem set I, topic #21-31, Distribute 4/6/2026 and due 4/13/2026		Monday, April 6, 2026			
33	Pancreatic cancer	Mara Sherman	Tuesday, April 7, 2026		Ryan, Kate	7
	PAPER DISCUSSION	Mara Sherman	Wednesday, April 8, 2026	Perea del Angel, Ana	Ryan, Kate	7
	No Class		Thursday, April 9, 2026			
	No Class		Friday, April 10, 2026			
34	Metastasis to CNS	Adrienne Boire	Monday, April 13, 2026		Ryan, Kate	7
	PAPER DISCUSSION	Adrienne Boire	Tuesday, April 14, 2026	Pope, Eleanor	Ryan, Kate	7
	New Faculty Showcase	Harini Veeraghavan	Wednesday, April 15, 2026		Ryan, Kate	7
35	Epigenetic control of oncogene signaling in sarcoma/PAPER DISCUSSION	Ping Chi	Thursday, April 16, 2026	Prabakaran, Adithya	Ryan, Kate	7
36	Lung Cancer/Paper Discussion	Charles Rudin	Friday, April 17, 2026	Styers, Hannah	Ryan, Kate	7
37	Neuron-Cancer Interactions	Kathryn Taylor	Monday, April 20, 2026		Benitez, Elizabeth	8
	Paper Discussion	Kathryn Taylor	Tuesday, April 21, 2026	Sussman, Carleigh	Benitez, Elizabeth	8
38	New Faculty Showcase: Mitochondrial Organization	Christina Gladkova	Wednesday, April 22, 2026	All students preapre to present	Benitez, Elizabeth	8

39	Cancer biomarkers and therapeutic targets from functional proteogenomics/Paper Discussion	Kojo Elenitoba-Johnson	Thursday, April 23, 2026	Ta, Christina	Benitez, Elizabeth	8
40	Therapeutic Antibodies/Pediatric Cancers/Paper discussion	Nai-Kong Cheung	Friday, April 24, 2026	Tarrab, Stephanie/Volpe, Christina/Xiao, Michael	Benitez, Elizabeth	8
41	Breast Cancer	Sarat Chandarlapaty	Monday, April 27, 2026		Benitez, Elizabeth	8
	PAPER DISCUSSION	Sarat Chandarlapaty	Tuesday, April 28, 2026	Afroz, Jalwa	Benitez, Elizabeth	8
42	New Faculty Showcase	Max Wilkinson	Wednesday, April 29, 2026		Benitez, Elizabeth	8
43	Prostate Cancer	Yu Chen	Thursday, April 30, 2026		Benitez, Elizabeth	8
	PAPER DISCUSSION	Yu Chen	Friday, May 1, 2026	Ahmed, Nibras	Benitez, Elizabeth	8
Problem set II, topic #32-43, Distribute 5/4/2026 and due 5/11/2026			Monday, May 4, 2026			