

IMPORTANT: This syllabus form should be submitted to OAA (gsbs_academic_affairs@uth.tmc.edu) a week before the start of each semester.

NOTE to STUDENTS: If you need any accommodations related to attending/enrolling in this course, please contact one of the Graduate School's 504 Coordinators, Cheryl Spitzenberger or Natalie Sirisaengtaksin. We ask that you notify GSBS in advance so we can make appropriate arrangements.

<p>Term and Year: Fall 2022</p> <p>Course Number and Course Title: GS04 1093: The Biology of Cancer Metastasis</p> <p>Credit Hours: 3 hours</p> <p>Meeting Location: GSBS Large Conference Room</p> <p>Building/Room#: MD Anderson, BSRB S3.8371</p> <p>WebEx/Zoom Link: N/A (in person)</p>	<p>Program Required Course: Yes</p> <p>Approval Code: No</p> <p>(If yes, the Course Director or the Course Designee will provide the approval code.)</p> <p>Audit Permitted: Yes</p> <p>Classes Begin: August 29, 2022</p> <p>Classes End: December 9, 2022</p> <p>Final Exam Week: December 5-12, 2022</p>
--	---

Class Meeting Schedule

Day	Time
Monday	3:30-5:00 PM
Wednesday	2:30-4:00 PM

<p>Course Director:</p> <p>Name and Degree: Daniel Frigo, PhD</p> <p>Title: Associate Professor</p> <p>Department: Cancer Systems Imaging</p> <p>Institution: MDACC</p> <p>Email Address: frigo@mdanderson.org</p> <p>Contact Number: 713-563-9673</p> <p>Course Co-Director:</p> <p>Name and Degree: Wenliang Li, PhD</p> <p>Title: Associate Professor</p> <p>Department: Institute of Molecular Medicine</p> <p>Institution: UTH</p> <p>Email Address: wenliang.li@uth.tmc.edu</p> <p>Contact Number: 713-500-3363</p>	<p>Course Instructors:</p> <p>1. Raghu Kalluri, MD, PhD MDACC, Cancer Biology rkalluri@mdanderson.org</p> <p>2. Guacon Wang, MD, PhD MDACC, Gastrointestinal Medical Oncology gwang6@mdanderson.org</p> <p>3. Anirban Maitra, MBBS. MDACC, Pathology, Anatomical amaitra@mdanderson.org</p> <p>4. Di Zhao, PhD MDACC, Experimental Radiation Oncology dzhao2@mdanderson.org</p> <p>5. Loukia Karacosta, PhD MDACC, Cancer Systems Imaging LGKaracosta@mdanderson.org</p> <p>6. Gigi Lozano MDACC, Genetics gglozano@mdanderson.org</p>
--	---

7. Nicholas Navin

MDACC, Genetics

nnavin@mdanderson.org

8. Dihua Yu, MD, PhD

MDACC, Molecular & Cellular Oncology

dyu@mdanderson.org

9. Jeff Rosen, Ph.D.

Baylor College of Medicine

irosen@bcm.edu

10. Florencia McAllister, MD

MDACC, Lymphoma and Myeloma

fmcallister@mdanderson.org

11. Xiang Zhang

Baylor College of Medicine

xiangz@bcm.edu

12. Shabnam Shalpour

MDACC, Cancer Biology

sshalapour@mdanderson.org

13. James Allison, PhD

MDACC, Immunology

jallison@mdanderson.org

14. Ronald DePinho, MD

MDACC, Cancer Biology

rdepinho@mdanderson.org

15. John Hagan, PhD

UTH, Neurosurgery

johnn.p.hagan@uth.tmc.edu

16. Li Ma, PhD

MDACC, Experimental Radiation Oncology

lima4@mdanderson.org

17. George Calin, MD, PhD

MDACC, Translational Molecular Pathology

gcalin@mdanderson.org

18. Daniel Frigo, PhD

MDACC, Cancer Systems Imaging

frigo@mdanderson.org

19. David Piwnica-Worms, MD, PhD

MDACC, Cancer Systems Imaging

dpiwnica-worms@mdanderson.org

20. Anthony Lucci, MD
MDACC, Surgical Oncology
alucci@mdanderson.org

21. John Heymach, MD, PhD
MDACC, Thoracic/Head & Neck Medical Oncology
jheykach@mdanderson.org

Course Description:

This course is designed to expose students to the most recent research in the field of metastasis research. The literature-based curriculum relies heavily on the expert opinions of the faculty lecturers to identify the most impactful and significant research in their respective fields. Students prepare presentations of original research articles and lead class discussions that will be overseen by faculty, thereby providing immersion into the specialized field of metastasis research.

Textbook/Supplemental Reading Materials (if any)

- Original research articles assigned by faculty instructors

Course Objective/s:

Dissect the mechanisms controlling cancer progression from the primary tumor site into the circulation and seeding distant organs.

At the conclusion of this course, students should have an understanding of: 1) how malignant tumors begin, 2) preclinical methods used to study metastasis, 3) how the disease evolves genetically, epigenetically, and metabolically, 4) how disseminated cancer cells can go undetected, 5) the roles of host-modifiable factors and the immune system in metastasis, and 6) how metastatic cancers are being monitored and targeted in the clinic.

This course is also dedicated to improving trainees' skills in critical reading, writing, and presenting cancer research.

Specific Learning Objectives:

1. To understand the steps in metastasis development and the role of tumor heterogeneity in the metastasis process.
2. To understand the role of the tumor microenvironment in promoting metastasis.
3. To understand the link between the cell cycle and metastasis.
4. To understand the molecular mechanisms of migration, invasion and angiogenesis as they relate to circulating tumor cells and disseminated tumor cells and their roles in metastasis.
5. To understand current treatments of metastasis - Conventional therapies and lessons from genomic sequencing.

Student Responsibilities and Expectations:

Evaluation and Grading: This course is designed to help students build a knowledge base that allows them to develop their scientific analytical and communication skills. Students will be evaluated on the basis of a basic concept tests (60% total: 20%/test (3 exams)), a group presentation/student seminar (20%) and overall participation (20%).

A. Basic Concept Tests: Students will be tested on the principles of metastasis. These will be take-home tests based on material from the lecturers and any assigned readings.

B. Student Seminar/Group Presentation (Journal club-style format): Students will team together (~2 students/group) to present on a pre-selected paper. Presentations will include the background/rationale for the study, hypothesis, approach, conclusions and overall strengths and weaknesses of the study as well as perceived overall impact. The leading faculty for each student seminar will lead the follow-up discussion.

C. Class Participation/Discussion: For student seminars (the journal club), the non-presenting students should also read the paper and come prepared. Students may be called upon at random to discuss the hypothesis, the strategy used to examine this hypothesis, the experiments described in each figure, and the conclusion. In addition, attendance to lectures and interactions with the lecturers will also be taken into consideration.

Scale: 100-92% A; 91.9-90% A-; 89.9-87% B+; 86.9-82% B; 81.9-80% B-; 79.9-77% C+; 76.9-72% C; 71.9-70% C-; 69.9-67% D+; 66.9-62% D; 61.9-60% D-; < 60% F

Grading System: Letter Grade (A-F)

Student Assessment and Grading Criteria : (May include the following)

First Exam (20 %)

Presentation (20 %)

Second Exam (20 %)

Third Exam (20 %)

Participation and/or Attendance (20 %)

Fall 2022
 GS04 1093: The Biology of Cancer Metastasis
GSBS Large Classroom, BSRB S3.8371
Mondays-3:30-5:00 pm/Wednesdays-2:30:-4:00pm

DATE	HOURS	TOPIC	SPEAKER
Monday, August 29	1.5	Introduction to Metastasis	Dr. Raghu Kalluri
Wednesday, August 31	1.5	Role of Tumor Microenvironment at the Primary Site: Part 1	Dr. Raghu Kalluri
Monday, September 5		NO CLASS- LABOR DAY	
Wednesday, September 7	1.5	Role of Tumor Microenvironment at the Primary Site: Part 2	Dr. Raghu Kalluri
Monday, September 12		NO CLASS	
Wednesday, September 14	1.5	Mouse Models of Metastasis	Dr. Guocan Wang
Monday, September 19	1.5	The Pathology of Metastasis	Dr. Anirban Maitra
Wednesday, September 21	1.5	Student Seminars	Dr. Daniel Frigo
Monday, September 26	1.5	Student Seminars	Dr. Di Zhao
Wednesday, September 28	1.5	Student Seminars	Dr. Loukia Karacosta
		FIRST EXAM EMAILED: DUE BY OCT 5, 2022, 10 AM	
Monday, October 3	1.5	Genetics of Metastasis	Dr. Guillermina Lozano
Wednesday, October 5	1.5	Tumor Evolution and Metastasis	Dr. Nicholas Navin
Monday, October 10	1.5	The Metastatic Niche	Dr. Dihua Yu
Wednesday, October 12	1.5	Minimal Residual Disease & Dormancy	Dr. Jeff Rosen
Monday, October 17	1.5	Role of the Microbiome in Metastasis	Dr. Florencia McAllister
Wednesday, October 19	1.5	Student Seminars	Dr. Wenliang Li
Monday, October 24	1.5	Role of Immune Cells in Metastasis	Dr. Xiang Zhang
Wednesday, October 26	1.5	Student Seminars	Dr. Shabnam Shalpour
Monday, October 31	1.5	Immunotherapy	Dr. James Allison
Wednesday, November 2	1.5	Student Seminars	

Monday, November 7	1.5	Waterfall chat on metastasis research: What are we missing?	Dr. Ronald DePinho
SECOND EXAM EMAILED: DUE BY NOV 14, 2022, 10 AM			
Wednesday, November 9	1.5	Student Seminars	Dr. John Hagan
Monday, November 14	1.5	microRNAs and Metastasis	Dr. Li Ma
Wednesday, November 16	1.5	lncRNAs and Metastasis	Dr. George Calin
Monday, November 21	1.5	Cancer Metastasis Metabolism	Dr. Daniel Frigo
Wednesday, November 23		NO CLASS – THANKSGIVING	
Monday, November 28	1.5	Imaging of Cancer Metastasis	Dr. David Piwnica-Worms
Wednesday, November 30	1.5	CTCs and ctDNA in cancer prognosis and treatment	Dr. Anthony Lucci
Monday, December 5	1.5	Treatment Options for Metastasis	Dr. John Heymach
FINAL EXAM EMAILED: DUE BY DECEMBER 12, 2022, 10 AM			
Wednesday, December 7	1.5	Make-up class if needed	

DF-WL/jal