

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 (preferably at least 3 days before the start of the semester) so we can make appropriate arrangements.

<p>Term and Year: Summer 2024</p> <p>Course Number and Course Title: GS14 1151: Cancer Neuroscience</p> <p>Credit Hour: 1</p> <p>Meeting Location: MDACC-Main Building</p> <p>Building/Room#: TBD</p> <p>Zoom Link: Join Zoom Meeting</p>	<p>Program Required Course: No</p> <p>Approval Code: No</p> <p>Audit Permitted: Yes</p> <p>Classes Begin: May 8, 2024</p> <p>Classes End: August 15, 2024</p>				
<p>Class Meeting Schedule</p>					
<table border="1"> <thead> <tr> <th data-bbox="89 934 808 976">Day</th> <th data-bbox="808 934 1508 976">Time</th> </tr> </thead> <tbody> <tr> <td data-bbox="89 976 808 1075">Wednesday</td> <td data-bbox="808 976 1508 1075">9:00 am – 11:00 am</td> </tr> </tbody> </table>	Day	Time	Wednesday	9:00 am – 11:00 am	
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Wednesday	9:00 am – 11:00 am				
<p>Course Director Name and Degree: Moran Amit, MD, PhD Title: Assistant Professor Department: Head and Neck Surgery Institution: MDACC Email Address: MAmit@mdanderson.org Contact Number: 713-794-5304</p> <p>Course Co-Director/s: (if any) Name and Degree: Jian Hu, PhD Title: Assistant Professor Department: Cancer Biology Institution: MDACC Email Address: JHu3@mdanderson.org Contact Number: 713-794-5238</p>	<p>Instructor/s</p> <p>1. Name and Degree: Jian Hu, PhD Institution: MDACC Email Address: kbhat@mdanderson.org</p> <p>2. Name and Degree: Peter Grace, PhD Institution: MDACC Email Address : JHu3@mdanderson.org</p> <p>3. Name and Degree: Andrew Shepherd, PhD Institution: MDACC Email Address: AShepherd@mdanderson.org</p> <p>4. Name and Degree: Yuan Pan, PhD Institution: MDACC Email Address: ypan4@mdanderson.org</p>				

NOTE: Office hours are available by request. Please email me to arrange a time to meet.

5. Name and Degree: **Juan Cata, MD**

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6. Name and Degree: **Patrick Dougherty, PhD**

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9. Name and Degree: **Sebastien Talbot, PhD**

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10. Name and Degree: **Nicole Scheff, PhD**

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Course Description:

This is the first program to integrate neuroscience and cancer biology to spur a wave of innovation in cancer research and treatments. By building on nearly a decade of collaborative research and discussions among our faculty, this course aims to explore the interface between cancer biology and neuroscience and the impact of the nervous system on tumor development, tumor progression, and patient outcomes. Classes will cover several emerging areas, including the neural regulation of cancer initiation and growth, neuro-immune interactions, neural plasticity in the tumor microenvironment, translating research from bench to bedside, and quality of life issues. The course will bring together leading experts from across the fields of neuroscience, cancer biology, and immunology, as well as oncologists, surgeons, neurologists, integrative medicine and palliative care specialists, patients, and patient advocates to facilitate discussion of exciting new concepts and developments in this emerging field.

The course will feature classes devoted to fundamental and translational research as well as workshops and panel discussions that include the following topics:

- Neural regulation of cancer
- Glial cell regulation of cancer
- Cancer neuro-immunology
- CNS and PNS malignancies
- Neurological sequelae of cancer therapies
- Quality of life, neural health, and rehabilitation

Textbook/Supplemental Reading Materials

1. <https://www.science.org/doi/10.1126/science.1236361>
2. <https://www.nature.com/articles/nrc.2016.38>
3. <https://www.nature.com/articles/s41586-020-1996-3>
4. <https://www.nature.com/articles/s41586-019-1576-6>
5. <https://pubmed.ncbi.nlm.nih.gov/18992743/>
6. [https://linkinghub.elsevier.com/retrieve/pii/S0092-8674\(20\)30327-5](https://linkinghub.elsevier.com/retrieve/pii/S0092-8674(20)30327-5)

Course Objective/s:

Upon successful completion of this course, students will have an in-depth understanding of:

- Neural regulation of cancer
- Cancer impact on the nervous system

Specific Learning Objectives:

1. Learn the cancer modeling system in neuroscience.
2. Learn the electrophysiology of cancer biologists.
3. Learn the concepts of neural regulation of cancer.
4. Learn the concepts of neural spread.
5. Learn the clinical implications of cancer neuroscience.

Student responsibilities and expectations:

Students enrolled in this course will be expected to perform the following activities each week.

1. Read, process, and review (study) material from 1 or 2 seminal reviews relating to the week's cancer neuroscience topic.
2. Read 6 research articles (e.g., review and primary research).
3. Write 2 one-page literature synopses for the assigned research articles (**see Course Grading** for more detail).
4. Prepare for and take course quizzes based on course lectures/ readings.
5. Attend and participate in the journal club review session.
6. Participate in and contribute to course discussions during lecture, and review sessions.
7. Prepare for and take a final examination based on the lecture and some reading materials.

Students are expected to complete all assigned reading material (reviews and research literature) prior to class. While you may work and discuss all course materials and assignments in groups, all writing assignments must be your own. Plagiarism and failure to properly cite scientific literature and other sources will not be tolerated and are grounds for dismissal from the course and further GSBS disciplinary action. Cheating or engaging in unethical behavior during examinations (quizzes and final) will be grounds for dismissal from the course without credit and further GSBS disciplinary action.

Grading System: **Pass/Fail**

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

Percentage	Description
Homework (20%)	Research article synopsis
Presentation (20%)	Journal Club with clinical correlation
Midterm Exams (10%)	Models in cancer neuroscience
Final Exam (40 %)	Comprehensive knowledge assessment in cancer neuroscience
Participation and/or Attendance (10%)	In-person or virtual

CLASS SCHEDULE

Date	Duration (Hour(s) taught by lecturer)	Lecture Topic	Lecturer/s
Wednesday, May 8 @ 9am - 11 am	2 hour	CNS Regulation of Cancer 1	Dr. Jian Hu
Wednesday, May 15 @ 9am - 11 am	2 hour	CNS Regulation of Cancer 1	Dr. Jian Hu
Wednesday, May 22 @ 9am - 11 am	2 hour	Neuroimmunology in Cancer I	Dr. Nicole Scheff
Wednesday, May 29 @ 9am - 11 am	2 hour	Neuroimmunology in Cancer II	Dr. Sebastien Talbot
Wednesday, June 5 @ 9am - 11 am	2 hour	Mechanisms of Cancer- and Cancer-Treatment induced Nerve injury	Dr. Patrick Dougherty
Wednesday, June 12 @ 9am - 11 am	2 hour	Effect of cancer therapy on CNS function	Dr. Yuan Pan
Wednesday, June 26 @ 9am - 11 am	2 hour	PNS Regulation of Cancer I	Dr. Moran Amit
Wednesday, July 3 @ 9am - 11 am	2 hour	Holiday Break	
Wednesday, July 10 @ 9am - 11 am	2 hour	PNS Regulation of Cancer II	Dr. Moran Amit
Wednesday, July 17 @ 9am - 11 am	2 hour	Journal Club	Dr. Moran Amit/ Dr. Jian Hu
Wednesday, July 24 @ 9am - 11 am	2 hour	Brain-body interactions in cancer neuroscience	Dr. Jeremy Borniger
Wednesday, July 31 @ 9am - 11 am	2 hour	Journal Club	Dr. Moran Amit/ Dr. Jian Hu
Wednesday, August 7 @ 9am - 11 am	2 hour	Perineural invasion, 4th route of metastasis	Dr. Juan Cata