

**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><b>Term and Year: Spring 2022</b></p> <p><b>Course Number and Course Title: GS21 1613: Introduction to Translational Cancer Research</b></p> <p><b>Credit Hours: 3.0</b></p> <p><b>Meeting Location: Spring 2022 – Virtual via Zoom</b></p> <p><b>Building/Room#: N/A</b></p> <p><b>WebEx/Zoom Link:</b></p>	<p><b>Program Required Course:</b> Yes <b>No X</b></p> <p><b>Approval Code:</b> Yes <b>No X</b> (If yes, the Course Director or the Course Designee will provide the approval code.)</p> <p><b>Audit Permitted:</b> <b>Yes X</b> No</p> <p><b>Classes Begin: January 11, 2022</b></p> <p><b>Classes End: April 26, 2022</b></p> <p><b>Final Exam Week: May 2-6, 2022</b></p>
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**Class Meeting Schedule**

Day	Time
<b>Tuesdays</b>	<b>3:00 – 5:00 PM</b>

<p><b>Course Director</b> Name and Degree: <b>Robert C. Bast, Jr., MD</b> Title: Vice President, Translational Research Department: Experimental Therapeutics, Professor Institution: UTH <b>MDACC</b> Email Address: <a href="mailto:rbast@mdanderson.org">rbast@mdanderson.org</a> Contact Number: 713-792-7743</p> <p><b>Course Co-Director/s:</b> (if any) N/A Name and Degree: Title: Department: Institution: UTH MDACC Email Address: Contact Number:</p> <p><b>NOTE:</b> Office hours are available by request. Please email me to arrange a time to meet.</p> <p><b>Teaching Assistant:</b> (if any) - N/A</p>	<p><b>Instructor/s</b> (Use additional page as needed)</p> <ol style="list-style-type: none"> <li>Robert C. Bast, Jr., MD MDACC <a href="mailto:rbast@mdanderson.org">rbast@mdanderson.org</a></li> <li>Clifton Dave Fuller, MD MDACC <a href="mailto:CDFuller@mdanderson.org">CDFuller@mdanderson.org</a></li> <li>Ernest Hawk, MD, MPH MDACC <a href="mailto:ehawk@mdanderson.org">ehawk@mdanderson.org</a></li> <li>Andy Livingston, MD MDACC <a href="mailto:JALivingston@mdanderson.org">JALivingston@mdanderson.org</a></li> <li>Maurie Markman, MD Cancer Treatment Centers of America <a href="mailto:Maurie.Markman@ctca-hope.com">Maurie.Markman@ctca-hope.com</a></li> <li>Christina Roland, MD MDACC <a href="mailto:CLRoland@mdanderson.org">CLRoland@mdanderson.org</a></li> </ol>
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**Course description:**

This course will provide a primer for translational cancer research and will review concisely the current understanding of human cancer biology that is driving interest in targeted therapy and personalized management for prevention, detection and treatment of cancer. Techniques used to characterize human cancers at a cellular and molecular level will be described. Concepts, examples and alternative strategies to achieve individualized targeted therapy will be presented. Processes for developing drugs and biomarkers will be reviewed. Translation from bench to bedside and back will be outlined for surgical oncology, radiation oncology, medical oncology and cancer imaging. Challenges for translation in cancer prevention will be considered. Infrastructure required for translational research will be reviewed, including tissue banks, biopsies, interventional radiology, molecular pathology, molecular imaging, bioinformatics, biostatistics, novel trial design and interactive databases. Objectives and paths for training and career development will be outlined as well as the sociology of team science. Interactions between Academe, Pharma, the NCI, FDA and Foundations will be explored. Finally, the course will analyze barriers to more rapid translation of cancer research to the clinic and community.

**Textbook/Supplemental Reading Materials (if any)**

- **The Emperor of All Maladies/A Biography of Cancer**  
Author, Siddhartha Mukherjee

**Course Objective/s:**

Upon successful completion of this course, students will have a knowledge of the current understanding of human cancer biology, individualized targeted therapy, processes for developing drugs and biomarkers, the translation from bench to bedside, the infrastructure required for translational research, as well as, the challenges of translational research.

***Specific Learning Objectives:***

1. Provide a primer of translational cancer research
2. Review the current understanding of human cancer biology that is driving the interest in targeted therapy and personalized management for prevention, detection and treatment of cancer
3. Review processes for developing drugs and biomarkers
4. Review infrastructure required for translational research including tissue banks, biopsies, interventional radiology, molecular pathology, molecular imaging, bioinformatics, biostatistics, novel trial design and interactive databases.
5. Outline objectives and paths for training and career development, as well as, the sociology of team science.
6. Explore interactions between academe, pharma, the NCI, FDA and foundations.
7. Analyze the barriers to more rapid translation of cancer research to the clinic and community.

**Student responsibilities and expectations:**

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

1. Read, process and review the assigned chapters from Emperor of All Maladies .
2. Participate in the discussion session during and following the student presentation of the assigned Emperor chapters.
3. Participate in and contribute to the course lecture discussion.
4. Prepare for an take the final examination based on the lecture topics.
5. Maintain an 85% attendance for the course.

Students are expected to complete all assigned reading material (book chapters) 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 the final examinations will be grounds for dismissal from the course without credit and further GSBS disciplinary action.

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

Percentage	Description
Homework (    %)	
Quiz (    %)	
Presentation ( 33.3   %)	Prepare and present slide presentation for assigned chapters of Emperor of All Maladies
Midterm Exams (    %)	
Final Exam (   33.4   %)	Prepare for and take the final examination that includes ~ 35 true/false and multiple choice questions on the lecture topics for the semester
Workshop or Breakout-Session (    %)	
Participation and/or Attendance ( 33.3   %)	Maintain 85% attendance and participate in presentation and lecture discussion each week

## CLASS SCHEDULE

Each week the student presentation is the first 20 minutes of class with discussion during and following the presentation. The lecturers provide 1 ½ hour lectures each week. The Spring 2022 schedule is below.

Week	Date	Topic	Lecturer(s)
1	January 11, 2022	The Challenge of Translational Cancer Research	Bast
2	January 18, 2022	The Heterogeneity of Human Cancer	Bast
3	January 25 <sup>th</sup>	No class – RCB traveling	
3	February 1, 2022	Development of Molecular Diagnostics	Bast
4	February 8, 2022	Development of Molecular Therapeutics	Bast
5	February 15, 2022	Drug and Biological Development	Bast
6	February 22, 2022	Personalization of Care	Bast
7	March 1, 2022	Cancer Prevention	Hawk
8	March 8, 2022	Multidisciplinary Cancer Care: Pediatrics, Surgery, Radiation	Livingston, Roland, Fuller
9	March 15, 2022	Imaging (GSBS Spring Break week)	Lecturer TBD
10	March 22, 2022	The Role of Government: The NCI	Hawk
11	March 29, 2022	Infrastructure	Bast
12	April 5, 2022	The Role of Government: The FDA	Markman
13	April 12, 2022	Training and Career Development	Bast
14	April 19, 2022	Pharmaceutical/Biotech Industry/The Role of Foundations	Bast
15	April 26, 2022	The Impact of Translational Research on Cancer Care	Bast
FINAL EXAM WEEK May 2 – 6, 2022 - No class [May 2 <sup>nd</sup> -RCB travel UPMC Hillman EAB]			

**\*\* Final Exam is a take home test (multiple choice and True/False) that will be distributed on or before April 26**

**FINAL EXAM DUE to Jene´ Reinartz via email by 5:00 PM on May 3<sup>rd</sup>**