Cancer Biology and CSBL6068

Cancer Biology Core 2; Advanced Cancer Biology

Fall and 2018

CLASS DAYS and TIME: Mondays, Wednesdays and Fridays 3:00 – 5:00 PM

CLASSROOM: TBD

COURSE FACULTY: Alexander Bishop

OFFICE LOCATION and HOURS: By appointment; GCCRI 3.100.14

EMAIL: bishop@uthscsa.edu

TELEPHONE: 2-9060

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COURSE DESCRIPTION AND OBJECTIVES

This team-taught course will build on knowledge developed in CSBL6068 Cancer Biology Core 1; An Introductory Course to provide an advanced view on cancer biology, from progression, standard of care and molecular alterations that drives recent diagnosis and therapeutic strategies. In addition, this course will offer an overview on special populations affected by cancers and models used in the investigation of cancer. Included are basic experimental methods, mouse models, ex vivo systems, molecular profiling and clinical trials. This course will expand on CSBL6068 introduction to the underlying molecular and cellular biology mechanisms involved in carcinogenesis, tumor growth, and metastasis. The implications of these biological findings on cancer prevention, diagnosis, and treatment will also be covered. The conceptual notions on clinical trials of cancer drugs and the process of development of novel therapeutic drugs in cancer will be discussed. Examples will be provided for 1) how specific cellular processes are altered during cancer initiation and progression, 2) how different cancers are being modeled and studied in the laboratory, 3) how the genetic landscape of human cancers is being deciphered, and 4) how novel therapeutics are being designed to target an individual tumor based upon its genetic signature. Required for Cancer Biology Discipline.

Pre-requisites – CSBL6068

Semester credit hours – 2.5 sch

By the end of this course, each student should be able to:

- Knowledge of different stages of cancer, types of cancer and the progression of the disease.
- Describe the hallmarks of cancer
- Describe cancer progression including proper nomenclature
- Describe common cell signaling pathways involved in cancer and how they are misregulated
- Describe the process of metastasis and the epithelial-to-mesenchymal transition
- The role of tumor microenvironment in tumor maintenance and metastasis
- The nature of cancer stem cells and arguments for and against the cancer cell stem hypothesis
- How tumors escape destruction by the host's immune system
- The role chronic inflammation plays in cancer
- Therapeutic interventions and known and potential drugable targets

COURSE ORGANIZATION

The main teaching modalities used in this course include:

1) Conventional didactic lectures in which information is delivered to the class

2) Textbook pre-reading/self-study and online short question preview for the lecture

3) Paper discussion at the end of the lecture

Materials – presentations are given in the common lecture format. Required reading assignments from The Biology of Cancer: Robert Weinberg (second edition) assigned reviews made accessible before the lecture through Canvas.

Computer Access – Various materials and assignments will require access to a computer with internet capabilities and the use of LMS (CANVAS)

Reading Assignments – Assigned pages/chapters from The Biology of Cancer: Robert Weinberg (second edition) will be provided. In addition, there may be specific reviews assigned by the lecturers and available to the students via Canvas.

ATTENDANCE

In order to achieve the expected level of competency, students must be fully engaged. Incorporated into each class will either be a short question session online or a short discussion of an assigned paper at the end of the lecture for which each student is graded. Therefore, attendance for every class session is expected.

It is recognized that a student may occasionally arrive late to class due to unexpected traffic problems or inclement weather. However, chronic lateness is considered an unprofessional behavior that disrupts the learning environment for everyone else in the classroom.

Please discuss all planned absences directly with Dr. Bishop in advance and call him to explain unplanned absences. Make up work will be required and determined on a case-by-case basis.

TEXTBOOKS

Required: The Biology of Cancer: Robert Weinberg (second edition) 2013

Recommended: To be provided by each lecturer via Canvas

GRADING POLICIES AND EXAMINATION PROCEDURES

Grading System

Testable material comes from 2 main sources: Lecture presentations and reading assignments.

A = 90-100% B = 75-89% C = 65-74% F = < 65%

Note: Fractions of grades are rounded to the nearest whole number for your final course grade. For example, 89.45 is an A, but 89.44 is a B, or 74.45 is a B, but 74.44 is a C.

A letter grade will be provided based on responses to short questions prior to each class based on assigned reading or discussions in class on assigned paper (40.5%), an assignment based on work conducted by peers towards the end of the course (55%) and participation in a class survey (4.5%).

Examination Protocol – Not applicable.

Grading Procedures – Results will be provided to students as quickly as possible. No "challenges" are allowed. However, a time will be scheduled outside of class so that students may review concepts of concern to them.

Make-up Work – A student who must miss a scheduled assignment for a serious reason must request an excused absence from the Course Director. Acceptable "serious reasons" usually involve serious illness or injury to the student (doctor's excuse may be required) or the student's family member. Examples of unacceptable reasons include: Not prepared or incomplete studying, over-sleeping, hangover, heavy traffic or any travel delays, other appointments or scheduled professional or personal commitments. If it is determined that missing an exam is justified, a make-up assignment will be scheduled. The make-up assignment will be given as soon as possible at a time designated by the Course Director. Any student who misses an assignment and does not receive an excused absence **will receive a grade of zero for that assignment**.

REQUESTS FOR ACCOMODATIONS FOR DISABILITIES

In accordance with policy 4.2.3, **Request for Accommodation Under the ADA and the ADA Amendments Act of 2008 (ADAAA)**, any student requesting accommodation must submit the appropriate request for accommodation under the American with Disabilities Act (ADA, form 100). to his/her appropriate Associate Dean of their School and a copy to the ADA Coordinator. Additional information may be obtained at http://uthscsa.edu/eeo/request.asp.

ACADEMIC INTEGRITY AND PROFESSIONALISM

Any student who commits an act of academic dishonesty is subject to discipline as prescribed by the UT System Rules and Regulations of the Board of Regents. Academic dishonesty includes, but is not limited to, cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an exam for another person, signing attendance sheets for another student, and any act designed to give unfair advantage to a student or the attempt to commit such an act. Additional information may be obtained at http://catalog.uthscsa.edu/generalinformation/generalacademicpolicies/academicdishonestypolicy/

TITLE IX AT UTHSCSA

Title IX Defined:
Title of the Education Amendments of 1972 is a federal law that prohibits sex discrimination in education. It reads "no person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance."

University of Texas Health Science Center San Antonio's Commitment:
University of Texas Health Science Center San Antonio (UTHSCSA) is committed to maintaining a learning environment that is free from discriminatory conduct based on gender. As required by Title IX, UTHSCSA does not discriminate on the basis of sex in its education programs and activities, and it encourages any student, faculty, or staff member who thinks that he or she has been subjected to sex discrimination, sexual harassment (including sexual violence) or sexual misconduct to immediately report the incident to the Title IX Director.

In an emergency, victims of sexual abuse should call 911. For non-emergencies, they may contact UPD at 210-567-2800. Additional information may be obtained at http://students.uthscsa.edu/titleix/

EMAIL POLICY

Every student is issued a University e-mail address and account at the time of enrollment. As a matter of University Policy, communications between students and faculty that occur using the student's University e-mail address is considered official business. Therefore, **students are expected to check their university email inboxes on a regular basis** so that any announcements, instructions, or information regarding this course will be received in a timely way. Missed communications due to inadequate monitoring of incoming emails on the University's email server will never be a valid excuse for unsatisfactory academic progress.

USE OF RECORDING DEVICES

Recording of lectures and other learning activities in this course by any means (*e.g.*, video, audio, etc.) is only permitted if approved by the instructor or required for compliance with Americans with Disabilities Act (ADA).

ELECTRONIC DEVICES

Cell phones must be turned off during all class meetings and exams. Computers and electronic tablets are allowed only for participating in classroom activities (*e.g.*, viewing slides presented in lecture or conference materials). No texting, tweeting, emailing, web-surfing, gaming, or any use of electronic devices that is not directly connected with classroom activities is permitted.

TENTATIVE CLASS SCHEDULE

Cancer Biology and CSBL6069

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WEEK	DATE	TOPIC	Assignment	Instructor and Modality
Week 1	9/26/18	Intro to Advanced Cancer Biology; Cancer Predisposition Syndromes	Ch 9, 12 + supplemental material	Robert Marciniak
	9/28/18	Epigenetic targets in cancer prevention and therapy	Supplemental material	Mike Wargovich
Week 2	10/1/18	Cancer Stem Cells	Supplemental material and Ch11 and 13	Pei Wang
	10/3/18	p53 and the DNA damage response	Chapter 9 and 12	Alex Bishop
	10/5/18	Radiotherapy in cancer treatment	Supplemental material	Rick Crownover
Week 3	10/8/18	Autophagy in cancer	Supplemental material	Pothana Saikumar
	10/10/18	Proteasome and Cancer treatment	Supplemental material	Maria Gaczynska
	10/12/18	Hormones and Cancer	Supplemental material	Linda deGraffenreid
Week 4	10/15/18	Prostate cancer	Supplemental material	Pratap Kumar
	10/17/18	Women's cancers	Supplemental material	LuZhe Sun
	10/19/18	Drug discovery, natural products to targeted therapy	Supplemental material	Sue Mooberry
Week 5	10/22/18	Mouse models of cancer	Chapter 13	Rong Li
	10/24/18	Cancer sequencing, profiling and precision medicine	Supplemental material	Yidong Chen
	10/26/18	Enrichment		
Week 6	10/29/18	Lung Cancer; Causes, profiling and treatment	Supplemental material	Alex Pertsemlidis
	10/31/18	Tumor immunology	Ch 15 and Supplemental material	Peter Dube
	11/2/18	Enrichment		
Week 7	11/5/18	Obesity and Cancer	Supplemental material	Linda deGraffenreid
	11/7/18	Targeted Cancer Therapeutics; DNA repair an Achilles heal of cancer	Supplemental material	Robert Marciniak
	11/9/18	Hematologic Malignancies	Supplemental material	Edward Medina
Week 8	11/12/18	Treatment of brain malignancies	Ch 16 and Supplemental material	Andrew Brenner
	11/14/18	Sarcomas	Supplemental material	Anand Karnad
	11/16/18	Pediatric Malignancies	Supplemental material	Greg Aune

Week 9	11/19/18	Chemotherapy and chemoresistance in cancer treatment	Ch 16 and Supplemental material	Ivan Reveles
	11/21/18	Enrichment		
	11/23/18	Thanksgiving		
Week 10	11/26/18	Immunotherapy	Ch 15 and Supplemental material	Nu Zhang
	11/28/18	Pancreatic Cancer	Supplemental material	Pei Wang
	11/30/18	The microbiome impact on cancer	Ch 15 and Supplemental material	Alexei Tumanov
Week 11	12/3/18	Drug design for cancer therapy	Ch 16 and Supplemental material	Doug Frantz
	12/5/18	Enrichment		
	12/7/18	Enrichment		
Week 12	12/10/18	Introduction to Clinical Trials	Ch 16 and Supplemental material	John Sarantopoulos
	12/12/18	Enrichment		
	12/14/18	End of course exercise		