

Cancer Biology and CSBL6068
Cancer Biology Core 1; An Introductory Course

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 provide an introduction to molecular oncology with a focus on defining cancer and key molecular/cellular changes often associated with the development of cancer. The goal of the course is to provide the student with a solid background in general cancer biology. This course requires a strong background in basic cellular processes, such as those covered in IBMS5007. These processes will be discussed with regard to how they are altered in cancer and whether such differences from normal biology offer a therapeutic opportunity to target cancer. Tumorigenesis is a multi-step process driven by genetic, epigenetic and metabolic/environmental changes that occur over time. Although cancer is a heterogeneous disease, many human tumors exhibit similar acquired physiological features. This course will cover the underlying molecular and cell biology mechanisms involved in carcinogenesis, tumor growth, and metastasis at a basic level. The implications of these biological findings on cancer prevention, diagnosis, and treatment will also be introduced. Upon completion of the class, students should have a general understanding of the mechanisms by which tumors gain and maintain a growth advantage as well as an initial handle on potential therapeutic targets.

This course is meant to be the basic introduction/foundation for CSBL6069, Cancer Biology Core 2; Advanced Cancer Biology. These two courses run in series but are meant to interweave with CSBL6075, Cancer Biology Enrichments. Together these three courses will run M,W,F afternoons, with CSBL6075 taking certain lectures slots from either CSBL6068 or CSBL6069 so there is no conflict between the courses.

Pre-requisites – INTD5007 (or INTD6007 and INTD6009 or medical pathology courses)

Semester credit hours – 1 sch

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

- Provide a description of what is cancer biology.
- Describe molecular oncology in terms of development and progression.
- Have 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 oncogenes and their importance in carcinogenesis
- Describe tumor suppressors and how they function
- Explain how tumor cells escape cell cycle control checks and apoptosis
- Describe the replicative immortality of cancer cells
- 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 characteristics of cancer metabolism and their implications
- 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 (50%), an in-class closed book exam (45%) and participation in a class survey (5%).

Examination Protocol – Exams may be composed of multiple choice, short answer, and essay questions. The proportion represented by each question type will vary.

No electronic devices, extra paper, books, backpacks, etc. are permitted in the testing area. Hats must be removed. You will **not be allowed to ask questions of the proctor** once the examination has started (except to point out potential typographical errors in the exam).

Late Arrival to Exams - Exams will be timed. **If you arrive late** to an exam, and are given permission to take the exam, you will not be given additional time to complete your test. If you arrive after another student has finished the exam and has departed the exam room, you will not be allowed to take the exam. If you miss an exam, you may be eligible for taking a make-up exam (see below).

Grading Procedures – Exam 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 Examinations – A student who must miss a scheduled exam 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 examination will be scheduled. The make-up exam will be given as soon as possible at a time designated by the Course Director. Any student who misses an exam and does not receive an excused absence **will receive a grade of zero for that exam.**

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/eoo/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
COURSE SUBJECT and COURSE NUMBER
COURSE TITLE
SEMESTER and YEAR

WEEK	DATE	TOPIC	Assignment	Instructor and Modality
Week 1	8/20/18	Course introduction, what is cancer	Chapter 2	Phillip Valente
	8/22/18	Cellular Oncogenes	Chapter 4	Ratna Vadlamudi
	8/24/18	Tumor Suppressor Genes	Chapter 7	Ratna Vadlamudi
Week 2	8/27/18	Multistep Tumorigenesis	Chapter 11	Robert Marciniak
	8/29/18	Enrichment		
	8/31/18	Cell Cycle in cancer	Chapter 8 and 10	Renee Yew
Week 3	9/3/18	Labor Day		
	9/5/18	Growth Factors and Signal Transduction	Chapter 5 and 6	Masahiro Morita
	9/7/18	Enrichment		
Week 4	9/10/18	Invasion/Metastasis	Chapter 14	LuZhe Sun
	9/12/18	Metabolism and Cancer	Supplemental material	Patricia Dahia
	9/14/18	The Biology of Angiogenesis	Supplemental material	Kay Oyajobi
Week 5	9/17/18	Tumor microenvironment	Chapters 9 and 12	Rong Li
	9/19/18	Molecular Diagnostics and Tumor Profiling	Chapter 14	Patricia Dahia
	9/21/18	Enrichment		
Week 6	9/24/18	Exam		