

**PHAR 5091**  
**Drug Discovery: Nuts and Bolts**

Fall 2016

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**CLASS DAYS and TIME:** 1 hour per week, on a day and time decided by the students and faculty

**CLASSROOM:** to be determined based on the number of students

**COURSE FACULTY:** Wouter Koek, Ph.D., Course Director

**OFFICE LOCATION and HOURS:** By appointment; Office 741E5

**EMAIL:** koek@uthscsa.edu

**TELEPHONE:** 567-3968

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**READ THIS DOCUMENT CAREFULLY - YOU ARE RESPONSIBLE FOR ITS CONTENTS.**

**COURSE DESCRIPTION AND OBJECTIVES**

The process of discovery of medicinal compounds has evolved from the earliest attempts to discover herbal remedies to the present quest to develop safe, efficacious medicines. The last hundred years have witnessed the introduction of drugs that have revolutionized medicine. History shows that it has been relatively easy to discover a new drug, but exceedingly difficult to discover one that is safe enough to be administered as a medicine. Early and recent drug discovery will be exemplified by reading, presenting, and discussing selected papers and book chapters (see below). The aim of this course is to help understand drug discovery and development.

**Pre-requisites** – Consent of instructor.

**Semester credit hours** – 1

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

- Understand the main phases of drug discovery and development.
- Understand the history and current state of drug discovery.

**COURSE ORGANIZATION**

**The main teaching modalities used in this course include:**

**1) Discussions.** After the first introductory class, during each meeting one of the students presents the required reading assignment (shown below) for discussion by the class and the instructor. In addition, each student writes a one-page drug discovery project proposal, which they present and discuss during the last meeting.

**Materials** – Copies of the reading materials will be provided.

**Computer Access** – Presentations require access to a computer with Microsoft Office.

## Reading Assignments –

Day	Topic	Presenter
1	Introductory Meeting	Instructor
2	Sneader Chapter 1: Introduction, pages 1-7 Paul Erlich: magister mundi. Drews J. Nat Rev Drug Discov 3:797-801, 2004	Student
3	Sneader Chapter 27: Drugs originating from the screening of dyes, pages 375-388	Student
4	Sneader Chapter 27: Drugs originating from the screening of dyes, pages 389-402	Student
5	Sneader Chapter 28: Drugs originating from the screening of organic chemicals, pages 403-415	Student
6	Sneader Chapter 28: Drugs originating from the screening of organic chemicals, pages 415-431	Student
7	Sneader Chapter 29: Drugs discovered through serendipitous observations involving humans Sneader Chapter 30: Drugs discovered through serendipity in the laboratory	Student
8	Case history: the discovery of fluoxetine hydrochloride (Prozac). Wong DT, Perry KW, DT Wong. Nat Rev Drug Discov 4:764-774, 2005	Student
9	Discovering risperidone: the LSD model of psychopathology. Colpaert FC. Nat Drug Discov 2: 315-320, 2003	Student
10	Drug Discovery and Development. Cordes EH, 61-74, 2014	Student
11	Drug Discovery and Development. Cordes EH, 74-84, 2014	Student
12	Overview of drug discovery and development. Ator MA, Mallamo JP, Williams M. Current Protocols in Pharmacology 9.9.1-9.9.12., 2006	Student
13	Overview of drug discovery and development. Ator MA, Mallamo JP, Williams M. Current Protocols in Pharmacology 9.9.13-9.9.26., 2006	Student
14	Case histories, magic bullets and the state of drug discovery. Drews J. Nat Rev Drug Discov 5:635-640, 2006	Instructor
	Presentation and discussion of one-page drug discovery project proposals	All students

## **ATTENDANCE**

In order to achieve the expected level of competency, students must be fully engaged. Therefore, attendance for every class session is expected.

## **TEXTBOOKS**

Recommended: Bartfai, Tamas, Lees, Graham V. The Future of Drug Discovery. Academic Press, 2013

## **GRADING POLICIES AND EXAMINATION PROCEDURES**

A maximum of 100 points can be obtained based on attendance and participation in the discussions (max 40 points), on the presentations of the readings (max 40 points), and on the written and presented one-page drug discovery project proposal (max 20 points).

### Grading System

Grading scale used to determine final grades: A = 90-100%      B = 80-89%      C = 70-79%      F = < 69%

## 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.

## 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**  
**PHAR 5091**  
**Drug Discovery: Nuts and Bolts**  
**Fall 2016**

WEEK	DATE	TOPIC	Presenter
Week 1		Introductory Meeting	Instructor
Week 2		Sneader Chapter 1: Introduction, pages 1-7 Paul Erlich: magister mundi. Drews J. Nat Rev Drug Discov 3:797-801, 2004	Student
Week 3		Sneader Chapter 27: Drugs originating from the screening of dyes, pages 375-388	Student
Week 4		Sneader Chapter 27: Drugs originating from the screening of dyes, pages 389-402	Student
Week 5		Sneader Chapter 28: Drugs originating from the screening of organic chemicals, pages 403-415	Student
Week 6		Sneader Chapter 28: Drugs originating from the screening of organic chemicals, pages 415-431	Student
Week 7		Sneader Chapter 29: Drugs discovered through serendipitous observations involving humans Sneader Chapter 30: Drugs discovered through serendipity in the laboratory	Student
Week 8		Case history: the discovery of fluoxetine hydrochloride (Prozac). Wong DT, Perry KW, DT Wong. Nat Rev Drug Discov 4:764-774, 2005	Student
Week 9		Discovering risperidone: the LSD model of psychopathology. Colpaert FC. Nat Drug Discov 2: 315-320, 2003	Student
Week 10		Drug Discovery and Development. Cordes EH, 61-74, 2014	Student
Week 11		Drug Discovery and Development. Cordes EH, 74-84, 2014	Student
Week 12		Overview of drug discovery and development. Ator MA, Mallamo JP, Williams M. Current Protocols in Pharmacology 9.9.1-9.9.12., 2006	Student
Week 13		Overview of drug discovery and development. Ator MA, Mallamo JP, Williams M. Current Protocols in Pharmacology 9.9.13-9.9.26., 2006	Student
Week 14		Case histories, magic bullets and the state of drug discovery. Drews J. Nat Rev Drug Discov 5:635-640, 2006	Instructor
		Presentation and discussion of one-page drug discovery project proposals	All students