FA2017 VS 113-00 Biochemistry of the Eye

This is a sample syllabus only. The instructors may make changes to the syllabus in future courses.

rhodopsin with ADRP mutation sites highlighted

VS 113
Biochemistry of the Eye

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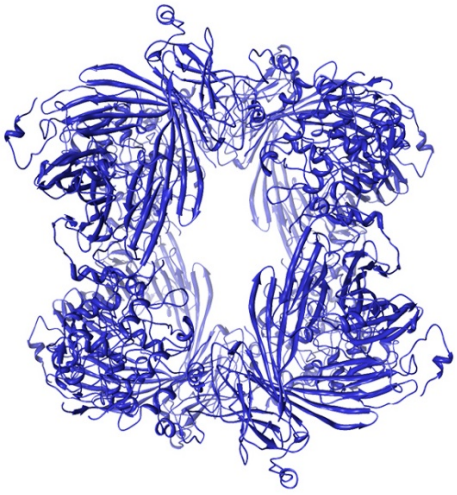
Dr. Steven Pittler

UAB SCHOOL OF OPTOMETRY
Knowledge that will change your world



α crystallin

Overview: Biochemistry and molecular biology have been the most rapidly developing areas of medical science in the past 40 years. Ocular biochemistry as a sub-specialty is growing at an equal pace—that is why this area holds importance for eye doctors. Ocular biochemistry includes the structures and metabolism of ocular tissues and fluids as well as important research and clinical applications in the field. This course will contain lectures on significant chemical reactions in the eye and how those reactions are related to normal and pathological ocular functions. Developments in the areas of basic and clinical research will also be examined with relationships to the diagnoses and treatment of patients.

Text, lectures and other sources of information: A text is not required for the course but one will serve as the primary reference for lectures: *Biochemistry of the Eye* (2nd ed.), publisher: Butterworth-Heinemann (Elsevier), Philadelphia, 2003. There are 2 copies in the Lister Hill Library on the 2nd floor, call number WW 101 W576b 2003. **Other references: Garrett and Grisham's text *Biochemistry* (updated 4th edition, as used in your Fundamentals 1 course, ISBN: 9780495109358) and Voet and Voet's *Biochemistry* (4th ed., Wiley, ISBN: 9780470570951), both available at the campus bookstore and in the Lister Hill Library.

Lectures are given for your benefit and are meant as the principal discussion mode of the course. Lectures also offer an opportunity to have questions answered about the material. Your participation is encouraged and expected. Attendance at lectures is mandatory and absences from lectures to study for exams will detract from your ability to master the course. Illness, understandably, constitutes a good reason for not attending lectures. You are responsible to make up any materials that you may have missed as well as quizzes or exams that you did not take. Responsibility includes all materials assigned in the text, given in the lectures and contained in any handouts. If any changes in this syllabus occur, they will be included under "Announcements" in the home page of our website in Canvas.

Lecture and discussion schedule: <u>This course meets from 8:30 am to 10 am in HPB 203.</u> Please be on time because we start promptly and entering the class late is disruptive and disrespectful to your fellow classmates. There will be six quizzes throughout the course, one exam and one cumulative final exam. Those dates are listed below. If you have a

valid reason and cannot be present for a quiz or an examination or are absent due to an illness, you must see Dr. Gross or Dr. Pittler as soon as possible to make other arrangements for a make-up examination. If you elect to depend upon transcripts as a sole source of lecture material, please be advised that this does not remove your obligation to attend lectures, and the faculty is not responsible for any transcript errors made by the transcriber.

Date	**Content**
	Class 1: Class overview
Tuesday 8/15/17	Ocular fluids, blood, tear film, aqueous and vitreous humor, crystallin proteins and
	cataract (Dr. Gross)
Tuesday 8/22/17	QUIZ 1 - 30'
	Class 2: ocular proteins, collagen, sclera (Dr. Gross)
Tuesday 8/29/17	**Class 3: visual transduction proteins**, part 1- photoactivation (Dr. Gross)
Tuesday 9/5/17	QUIZ 2 - 30'
	Class 4: visual transduction proteins, part 2- inactivation (Dr. Gross)
Tuesday 9/12/17	**Class 5: rods vs. cones, spectral tuning** (Dr. Gross)
	QUIZ 3 - 30'
Tuesday 9/19/17	**Class 6: ocular enzymes, LDH and aldose reductases, Na-K+ ATPases, matrix**
	metalloproteinases, lysozyme, PDE (Dr. Gross)
Tuesday 9/26/17	Review, exam material 1 (Dr. Gross)
Tuesday 10/3/17	**EXAM 1**
Tuesday 10/10/17	Fall mini-break
Tuesday 10/17/17	**Class 7: Precorneal tear film, carbs, ocular diabetes** (Dr. Pittler)
Tuesday 10/24/17	QUIZ 4 - 20'
	Class 8: glycosamino glycans and ocular structure (Dr. Pittler)
Tuesday,10/31/17	**Class 9: vitamin A, lipid storage disease, RPE visual cycle** (Dr. Pittler)
	QUIZ 5 - 20'
Tuesday, 11/7/17	**Class 10: Graves' disease**
	Steroids and paracrine hormones (Dr. Pittler)

Tuesday,11/14/17	**Class 11: ocular genetics** (Dr. Pittler)
Tuesday,11/21/17	QUIZ 6 - 20' **Class 12: ocular immunology** (Dr. Pittler)
Tuesday 11/28/17	Review, material from 1st exam (Drs. Gross and Pittler)
Tuesday, 12/5/16	Review, material from 2nd exam (Drs. Gross and Pittler)
Week of 12/11/16 TBA	**FINAL COMPREHENSIVE EXAM** (Volker Hall Lecture Hall C, 9:00 am – 12:00 pm)

Grades and grading policy: Pay close attention to your scores on the quizzes; they are indicators of how well you are doing. If you are experiencing difficulty please make an appointment with Dr. Gross or Dr. Pittler.

Quizzes: 25% total

Exam 1: 35%

Final comprehensive exam: 40% (~1/3 exam 1 material)

Lectures, quizzes and exams cannot be rescheduled since the curriculum is tightly structured with a number of subjects.Individual graded exams may be seen upon appointment with Dr. Gross or Dr. Pittler, within one week post-exam.

Disability Accommodation: UAB is committed to providing an accessible learning experience for all students. If you are a student with a disability that qualifies under Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act, and you require accommodations, please contact Disability Support Services for information on accommodations, registration and procedures. Requests for reasonable accommodations involve an interactive process and consist of a collaborative effort among the student, DSS, faculty and staff. If you are registered with Disability Support Services, please contact Dr. Gross to discuss accommodations that may be necessary in this course. If you have a disability but have not contacted Disability Support Services, please call 205-934-4205 or visit **uab.edu/dss** (Links to an external site.)Links to an external site..