

Biology of the Eye

ANA 6050, ANA 7055, BIO 6055, and BIO 7055

(3 Credits)

Fall 2018

Tuesday and Thursday; 2:30 – 3:45 pm

Main, Room 0168

Course directors: Drs. Zhuo-Hua Pan, Bruce Berkowitz, Renu Kowluru, and Markus Friedrich.

Objective:

- To understand the structure and function of the eye.
- To understand the causes of common eye diseases/disorders and clinical treatments.

Syllabus

- Sept. 4 Introduction (Dr. Pan, Ophthalmology, Visual and Anatomical Sciences [OVAS])
Structure and development of the human eye (Dr. Kowluru, OVAS)
- Sept. 6 Cornea – Morphology, biochemistry, and physiology
(Dr. Yu, OVAS)
- Sept. 11 Evolution of the eye (Dr. Friedrich, Biological Sciences)
- Sept. 13 Cornea – Infectious disease (Dr. Berger, OVAS)
- Sept. 18 Lens – Anatomy, biochemistry, and molecular biology (Dr. McDermott, OVAS)
- Sept. 20 Cornea – Corneal wound healing & refractive surgery (Dr. Montenegro, OVAS)
- Sept. 25 Lens – Cataract (Dr. McDermott, OVAS)

- Sept. 27 Choroid and choroidal circulation (Dr. Braun, OVAS)**
- Oct. 4 Exam I (2:30 – 3:45pm)**
- Oct. 9 Photoreceptors and phototransduction (Dr. Qiao, Henry Ford Hospital)**
- Oct. 11 Retinal circuitry and cellular organization (Dr. Ichinose, OVAS)**
- Oct. 16 Ganglion cell photoreceptors and subconscious vision (Dr. Zhang, Oakland University)**
- Oct. 18 Overview of Retinal Imaging Technology (Dr. Berkowitz, OVAS)**
- Oct. 23 Fundamentals of electroretinography: Basic and clinical considerations (Dr. Glybina, OVAS)**
- Oct. 25 Central visual pathways and processing (Dr. Ichinose)**
- Oct. 30 Exam II (3:00 – 4:20 pm)**
- Nov. 1 Retinal vasculature: development, circulation and diseases (Dr. Kowluru)**
- Nov. 6 Retinal regeneration in zebrafish (Dr. Thummel, OVAS)**
- Nov. 8 Non-coding RNAs in the eye and ocular diseases (Dr. Xu, OVAS)**
- Nov. 13 Retinal innate immunity (Dr. Kumar, OVAS)**
- Nov. 15 Retinal diseases (Dr. Abrams, OVAS)**
- Nov. 20 Glaucoma (Dr. Goyal, OVAS)**
- Nov. 27 Age-related macular degeneration (Dr. Adam, OVAS)**
- Nov. 29 Diabetic retinopathy (Dr. Chapman, OVAS)**
- Dec. 4 Drosophila eye development (Dr. Cook, Center of Molecular Medicine and Genetics and OVAS)**
- Dec. 6 Retinal gene therapies (Dr. Pan)**
- Dec. 9 Term paper due (for graduate credit)**
- Dec. 13 Exam III (2:45 – 4:45 pm)**