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)