

Dr. Shuliang Jiao

1. Application of Optical Coherence Tomography (OCT) in ocular biometry: The project will apply OCT to image the anterior segment of animal eyes to measure the growth of the eye with age. The project will provide normative data for the design of contact lenses for animal imaging. The project will also identify the lesions of the eye surface and examine the effects of these lesions on the imaging quality of the retina. Students will need to be familiar with Matlab to be eligible for the projects.
2. Imaging the fluorophores of the eye: This project will apply quantitative imaging method to characterize the fluorescent properties of the major fluorophors in the retina such as lipofuscin. Both in vivo and ex vivo imaging will be performed on animals and human donor eyes. The project will help establish the relationship between light intensity and wavelength with the fluorophor concentration, which will eventually contribute to the in vivo quantification of lipofuscin in the retina.
3. Innovative animal fixation methods and devices for in vivo retinal imaging: This project will focus on the development and validation of new animal fixation methods to provide effective stabilization of the eye. The animal fixation methods will help minimize eye motion artifacts in in vivo retinal imaging. The project will be developed on the basis of our current animal fixation methods.