Yutao Liu, MD, PhD

Associate Professor at Augusta University
Augusta, GA, US

Dr. Liu is a human molecular geneticist in glaucoma and keratoconus.

Biography

Dr. Liu is a human molecular geneticist in glaucoma and keratoconus. He is good at applying high-throughput sequencing and genotyping as well as microarray-based technologies into his genomics research. The long term goal of Dr. Liu?s laboratory is to dissect age-related genetic diseases using systematic approaches, including human genetics, functional genomics, and molecular/cellular biology. We work with clinicians very closely. Our lab has extensive research experience in the area of human genetics, bioinformatics, and functional genomics using several model systems, including human samples, cell/tissue culture and mouse models. Our research has been published in over 40 peer-reviewed articles, including Nature Genetics, PLoS Genetics, American Journal of Human Genetics, PNAS, IOVS, and Molecular Vision. Our research has been supported by a variety of different organizations, including the NEI, several private foundations (including TGF, GRF, AHAF, and RPB), and institutional supports. Our current research is focused on two vision-related disorders: keratoconus (KC) and glaucoma. KC, a progressive thinning of the cornea, is the most common corneal ectasia, affecting one in every 500 to 2000 Americans. KC causes moderate to severe astigmatism, nearsightedness, swelling and cornea scarring. 10-20% KC patients eventually need corneal transplants. Our KC research is to identify genetic mutations in both DNA sequence and structure (i.e. copy number) in multiplex KC families using second generation DNA sequencing. We collaborate with investigators from California, Iowa, Saudi Arabia, Israel, and Duke University in North Carolina. Glaucoma is characterized as a progressive loss of retinal ganglion cells and visual field. Our lab has been involved in the identification of several glaucoma-associated genes, LOXL1, CDKN2B-AS1, SIX6, GALC, and chr8q22 locus. Dr. Liu is a Co-Investigator of the NEIGHBORHOOD glaucoma consortium. Another project is to study how the exosomal miRNAs in the aqueous humor may affect glaucoma. We are characterizing how the exosomes and its content ? miRNA are involved in the pathogenesis of glaucoma. This may lead to the identification of biomarkers for glaucoma. In addition, we are interested in studying the ocular phenotypes in several transgenic mouse models by characterizing their intraocular pressure, retinal ganglion cells, and cornea thickness and curvature.

Areas of Expertise

DNA Copy Number Analysis, Animal Modeling, Functional Genomics, Human Molecular Genetics, Next Generation Sequencing

Education

University of Tennessee, Knoxville
Ph.D. Genome Science & Technology - Molecular Genetics & Functional Genomics

Truman State University
M.S. Biology

Beijing Medical University
M.D. Medicine
