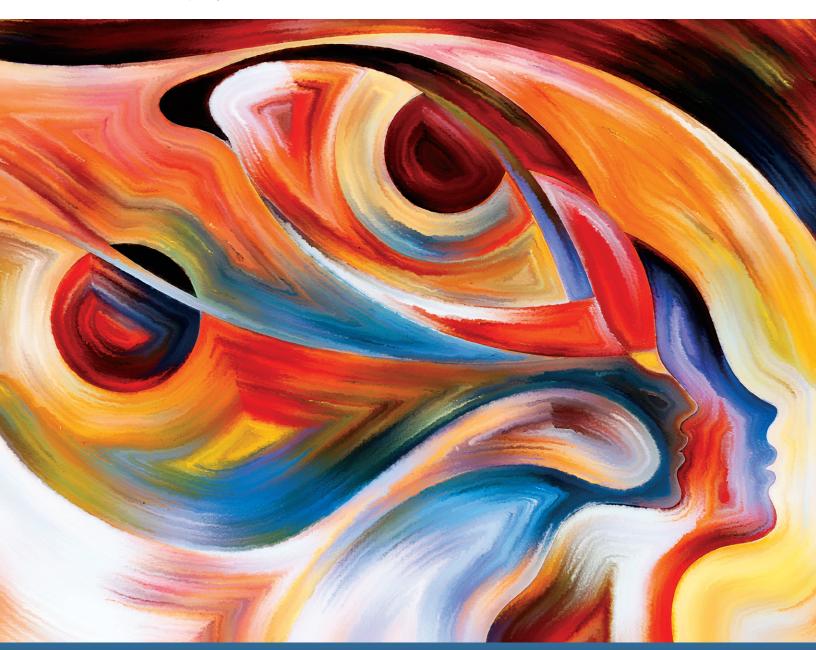




Annual Newsletter | April 2018



MESSAGE FROM THE CHAIR

Welcome to the inaugural edition of the Mason Eye Institute's See Newsletter.



The Mason Eye Institute strives for excellence in education, research and patient care. Our mission statement of restoring vision through education, innovation, and patient-centered care reflects our belief in providing the best possible service for the patients who trust us with their healthcare.

The department of ophthalmology has experienced 60% growth over the last 3 years. Our faculty represent every subspecialty in ophthalmology and we utilize the newest diagnostic and therapeutic techniques available. Being part of the University of Missouri, the academic flagship school of the "Show Me" state, enables us to translate research into the clinical care of our patients.

Our research ranks in the top 25% nationally in National Institutes of Health funding and we are proud to have a large and robust department that embraces a "bench to the bedside" philosophy in patient care. Our faculty are involved in a number of clinical trials and studies on the formation of cataracts, treatment of retinal diseases, and the etiology of congenital eye conditions. We are building new research space to complement the enlarging clinical facilities currently under construction.

The Mason Eye Institute is part of the School of Medicine at the University of Missouri. Educating medical students is one of our priorities as well as training 12 residents and 2 fellows a year. These care providers will serve as the next generation of clinicians and surgeons in the Midwest and nationally.

We are proud of what we are accomplishing regionally and nationally for vision care in the United States. The Mason Eye Institute is a center of excellence in patient care, research and education. Our faculty and staff welcome you to learn more about our department in the pages of "See."

Sincerely,

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Frederick W. Fraunfelder MD, MBA

Elizabeth Patee Mason Distinguished Professor of Ophthalmology and Chair Mason Eye Institute University of Missouri



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Jennifer Oliver, Optician Manager

Talia Benskin, Optician Assistant

Kevin Cossey, Optometric Technician

Cheryl Parnell, Optician Assistant

MASON EYE INSTITUTE CLINIC STAFF:

Practice Manager: Jennifer Tisone, MBA

Outpatient Supervisor: Laverne Fisher & Heather Barrett

Ophthalmic Technicians- certified: Taylor Cruse, COA; Megan Korte, COA; Victoria Robinson, COA & Barb Walton, LPN, COT

Ophthalmic Technicians- non certified: Kelsey Acton, Mandi Anglin, Paul Bernabe, Maya Davis, Paige Davison, Kristen Fisher, Diana Jones, Caleb Kammerer, Debbie Kratzer, Kyle Menie, Sarah Nigus, Denajha Phillips, Shelly Prange, Katherine Skrade, Ekaterina Vasileff & Abby Zitelman.

Nursing: Sue Mussatt, RN

Medical Schedulers: Shanae Canton & Lisa Geiger

Patient Service Representatives: Shadaryl Bassett, Marsha Greene, Loretta Hubbard, Robin Johnson & Shiloh Webb

Frederick Fraunfelder

Professor and ophthalmology department chair Dr. Frederick Fraunfelder is a visionary.

Having assembled a diverse faculty of world class clinicians and researchers, Fraunfelder now aspires to build a world-class state-of-the-art eye institute at the University of Missouri. The facility is intended to better serve mid-Missouri residents and become a destination center of excellence for eye care.

A cornea specialist by training, Fraunfelder has expertise in external disease, ocular oncology and refractive surgery. He is one of the few physicians in Missouri to perform two specialized eye surgeries, DMEK and DSEK. He has also developed a corneal cryopreservation and storage system for corneal tissue for transplant surgery in conjunction with the MU Department of Mechanical and Aerospace Engineering.

Fraunfelder has served fellowships at the World Health Organization in Sweden and at the U.S. Food and Drug Administration. He has published more than 125 articles, chapters and books, including the recently revised edition of the book "Drug-Induced Ocular Side Effects." Fraunfelder is board certified by the American Board of Ophthalmology and is a member of the prestigious American Ophthalmological Society.

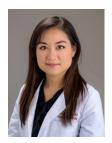
Dr. Frederick Fraunfelder is the Roy E. Mason and Elizabeth Patee Mason Distinguished Professor and Chair of Ophthalmology at the MU School of Medicine. He also serves as the clinic medical director of the Mason Eye Institute at MU Health Care.







Mohannad Al-Samarraie, MDAssistant Professor of Clinical Ophthalmology
Pediatric Specialist



Jella Angela An, MD, FRCSCAssistant Professor of Clinical
Ophthalmology
Glaucoma Specialist



Raneat Cohen, OD, FAAO Assistant Professional Practice Professor of Ophthalmology Optometrist



Taia D. Cordel, ODAssistant Professional Practice
Professor and Clinical Instructor
Optometrist



John W. Cowden, MDProfessor Emeritus
External Ocular Disease, Cornea,
Cataract and Refractive Surgery



Geetha K. Davis, MDAssistant Professor of Clinical Ophthalmology
Director of Residency Program



Ahmed Elkeeb, MDAssistant Professor of Clinical Ophthalmology
Vitreoretinal Specialist



Cornea Specialist

Frederick W. Fraunfelder, MD, MBA

Chairman and Roy E. Mason and Elizabeth Patee Mason Distinguished Professor of Ophthalmology



Anthony P. Grillo, MD
Assistant Professor of Clinical
Ophthalmology
Cornea Specialist



Dean P. Hainsworth, MDProfessor of Clinical
Ophthalmology
Vitreoretinal Service Chief,
Director of Clinical Research and
Medical Director, Clinical Research
Center



Nathan Heseman, MD

Adjunct Asst. Professor

Harry S. Truman Veteran's Hospital
Chief of Eye Services

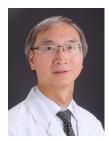
Comprehensive



John Steven Jarstad, MD, FAAO, FRSM(UK) Associate Professor of Clinical Ophthalmology Director of Cataract & Refractive Surgery



Bokkwan Jun, MD, PhDAssistant Professor of Clinical Ophthalmology
Neuro-ophthalmology



Don Liu, MDProfessor of Clinical
Ophthalmology
Oculoplastics, Orbital and
Lacrimal Surgery



Carisa K. Petris, MD, PhD
Assistant Professor of Clinical
Ophthalmology
Oculoplastics, Orbital and Lacrimal
Surgery



Jason T. Rodier, MDAssistant Professor of Clinical Ophthalmology
Comprehensive



Kara Rowden, ODClinical Instructor Professional Practice of Ophthalmology
Optometrist



Dan Schoenleber, MD MD Adjunct Associate Clinical Professor of Ophthalmology

https://medicine.missouri.edu/departments/ophthalmology/

clinical



Krishna Shanmugam, MDAssistant Professor of Clinical Ophthalmology
Glaucoma/Cornea



Kelli Y. Shaon, ODAssistant Professional Practice Professor of Ophthalmology
Optometrist



Theodore E. Wills, MDAssistant Professor of Clinical Ophthalmology
General Ophthalmology



Our Mission:
Restoring
vision through
education,
innovation,
and patientcentered care.



A Care in the World

The University of Missouri is a destination for world-class health care.

MU's Health Care System is a comprehensive academic health center that includes the university's School of Medicine, School of Health Professions and Sinclair School of Nursing, along with five hospitals: Ellis Fischel Cancer Center, the Missouri Orthopaedic Institute, the Missouri Psychiatric Center, Women's and Children's Hospital and University Hospital. MU Health Care also maintains close affiliations with hospitals across the state.

The MU Health System engages in numerous collaborations including the Wallace H. Coulter Translational Partnership to support research projects between biomedical engineers and clinicians. In conjunction with Truman Veterans Hospital, the medical school operates one of the world's best biomolecular imaging centers. And a strategic partnership

with Cerner Corporation advances next-generation health care technology.

The Health Care System's "Find a Provider" service puts patients in touch with one of nearly 700 providers in the University Physicians medical group. Trained in nearly 70 specialties and subspecialties, many of the physicians also serve as faculty members at MU's School of Medicine. Additional practitioners are located at clinics and hospitals throughout Missouri.

MU's world-class Health Care System provides exemplary patient-centered care and conducts groundbreaking medical research to improve well-being for citizens of the state and beyond.

Geetha Davis

University of Missouri clinician and educator Dr. Geetha Davis helps people see the world better.

More than 20 million people in the United States are affected by cataracts: clouding of the lens in the eye leading to vision loss. While symptoms of early cataracts may be improved with new eyeglasses, brighter lighting or magnifying lenses, surgery is the only effective long-term treatment. Davis, who graduated from medical school with honors, performs surgery that restores patients' lost vision.

In addition to surgery, Davis' work in the clinic includes diagnosis and treatment of a variety of eye diseases. She has particular expertise with adult eye conditions. This includes cataracts, dry eye, macular degeneration and glaucoma.

Davis also plays a key role as an educator, leading MU's ophthalmology residency program. One of the premier ophthalmic surgery training programs in the nation, the university's program attracts outstanding residents from around the globe every year — training them to provide quality eye care and meet the needs of patients both now and in the future. Davis serves as program director.

Dr. Geetha Davis is an assistant professor of clinical ophthalmology in the MU School of Medicine.



The Ophthalmology residency program at the University of Missouri School of Medicine is proud to provide an exceptional educational program. We have a deep-seated and verifiable tradition of generating ophthalmologists who are equipped to succeed in any aspect of ophthalmology, be it academic, research, or private practice. Residents are given the opportunity to work alongside an array of sub-specialists who are approachable and knowledgeable. With internationally recognized faculty, state-of-the-art facilities, high volume surgical exposure, extensive research space, and a large diverse patient population, our program graduates residents with a substantial foundation in surgical and comprehensive ophthalmology as well as a broad clinical experience.

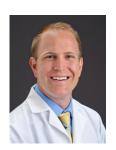
The program, under the leadership of Dr. Geetha Davis, is a three year ACGME accredited program. All residents are required to complete a one year internship in an ACGME approved program prior to the start

of residency. With the recent increase in faculty, the program has been approved to accept four candidates per year starting 2018. Residents are encouraged to participate in basic and/or clinical research as well as present at national and regional meetings. All residents present a research project at our annual resident and alumni day conference. Our training facilities include the Harry S. Truman Memorial VA hospital, which is located in close proximity to our main training site.

Since 1959, the program has graduated more than 170 residents who have obtained prestigious fellowships, full-time academic appointments and successful private practice opportunities. Our goal is to develop ophthalmologists who can provide quality eye care and meet the needs of patients both now and in the future, and who can contribute to the field of ophthalmology through participation in research.

RESIDENTS

PGY IV



Ben Buckner, MD



Mack Savage, MD



Austin Strohbehn, MD





Lindsey McDaniel, MD



Trevor Rosenlof, MD



Samuel Thomsen, MD

PGY II



Ethan Crider, MD



Ryan Mercer, MD



Salman Sarwar, MD

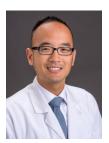
In addition to our outstanding residency program, The University of Missouri, School of Medicine Department of Ophthalmology is proud to offer a one year fellowship in cornea, external disease, and refractive surgery. The experience is directed under the leadership of Dr. Frederick (Rick) W. Fraunfelder MD, MBA, and will encompass a broad exposure to clinical and surgical management of corneal and anterior segment disease. The fellow will have a robust surgical experience including penetrating keratoplasties, endothelial keratoplasties (DMEK/DSAEK), ocular surface tumor procedures, cataract extractions, as well as a variety of trauma, burn, and anterior segment reconstruction procedures. The clinical experience will include all aspects of the medical management of cornea and external disease as well as good exposure to refractive surgery for which the fellow will manage all aspects of pre and post-operative care.

With our recent growth, The University of Missouri, School of Medicine, Department of Ophthalmology

is excited to offer a new two year fellowship in retina and vitreous surgery beginning 2017. The experience is directed by Dr. Dean Hainsworth, Surgical Retina and Vitreous Fellowship Director as well as Dr. Ahmed Elkeeb, Retina and Vitreous Surgical Specialist. The fellowship is anticipated to have numerous opportunities for surgical and clinical exposure. Including diabetic vitreous hemorrhage, retinal detachment, epiretinal membrane, macular hole, proliferative vitreoretinopathy, endophthalmitis, intraocular foreign body removal and retrieval of lens following complicated cataract surgery.

The fellows will work closely with residents in clinic as well as staff resident surgery intermittently. Research opportunities are abound and it is expected that the fellows will produce several peer reviewed articles and/ or book chapters. All fellows present a research project at our annual alumni day research conference. It is our ambition to produce fellows who can independently provide exceptional care to patients while preparing for their future careers in ophthalmology.

FELLOWS



Filbert Nguyen, MDCornea Fellowship



Erica Ballard, MDRetina Fellowship

Krishna Sharma

University of Missouri investigator Dr. Krishna Sharma is renowned for advancing cataract research.

For more than two decades, Sharma has examined the mechanisms involved in the development of cataracts. The lens of the eye is primarily composed of proteins called crystallins, which accumulate and clump together to form cataracts in the aging eye. By analyzing strings of amino acids, Sharma has narrowed the process that causes proteins to clump — as well as peptides that have the potential to slow down the process. His work could lead to new treatments that delay cataract formation.

Sharma, who has authored more than 70 peer-reviewed articles, is an academic editor for the journal *PLOS ONE*. From 2011 - 2014 he served as a member of the National Eye Advisory Council and is currently a Fellow of the Association for Research in Vision and Ophthalmology.

For his exceptional work, Sharma has been recognized with numerous honors including the National Foundation for Eye Research's Cataract Research Award. He was also named a Fellow of the American Association for the Advancement of Science for his research contributions to the understanding of proteins in the eye lens.

Dr. Krishna Sharma is a professor of ophthalmology, serves as the director of research for the department of ophthalmology and is the recipient of the Beryl Ortwerth Endowed Professorship in the MU School of Medicine. He also has a joint appointment in biochemistry, an interdisciplinary unit of the medical school and the College of Agriculture, Food and Natural Resources.







Martin L. Katz, PhD
Professor of Ophthalmology
Director of the Neurodegenerative
Diseases Research Laboratory



Rajiv R. Mohan, PhD
Professor of Ophthalmology and
Molecular Medicine
Director, Ophthalmology Resident
Research
Director, One-health One-medicine

Vision Research Program



Santhosh Puttur, PhD Associate Professor of Research



Lixing W. Reneker, PhDAssociate Professor,
Ophthalmology and Biochemistry



Krishna Sharma, PhD, FARVOProfessor of Ophthalmology
Departments of Ophthalmology
and Biochemistry
Director of Research, Department
of Ophthalmology



Rebecca Whiting, PhDAssistant Professor of Research

See gratitude

Mason Eye Institute appreciates all donors and wishes to recognize some of the past year's most generous donors:

The late Dr. Beryl J. Ortwerth, alumnus and former Professor and Director of Research at Mason Eye Institute for the gift of his estate. He established the Beryl J. Ortwerth Distinguished Professorship in Ophthalmology for the Director of Research. Krishna Sharma, PhD was formally appointed to this Professorship and funds will be used to further enhance the innovative research conducted at Mason Eye Institute.

Rita Plowman, friend of Dr. Fraunfelder and loyal supporter of Mason Eye Institute for her generous gift. With these funds, we were able to make much-needed updates to Mason Eye Institute patient lobby and waiting rooms, purchase equipment needed for the resident consult service, and also contribute to the Edward & Rita Plowman Medical School Endowment.

George Hodgman, NY Times bestselling author of *Bettyville* donated in honor of his mother, the late Betty Hodgman, to help establish the John W. Cowden, MD Visiting Professorship.

If you are interested in donating to Mason Eye Institute, contact Linda Davis davislg@health.missouri.edu



ANNUAL NAMED LECTURE VISITING PROFESSOR SERIES

John Aure Buesseler, MD Visiting Professorship

February 12, 2016 Nelson Sabates, MD February 17, 2017 Matthew Giegengack, MD

John W. Cowden MD Visiting Professorship

September 30, 2016 Frederick T. Fraunfelder, MD October 20, 2017 James C. Fleming MD, FACS

Robert P. Burns MD and Lynette Feeney-Burns, PhD Visiting Professorship

November 11, 2016 Craig M. Creven, MD September 8, 2017 Tamara Fountain, MD



A Non-Ophthalmologist's View of Totality Solar Eclipse 2017

Last August, our home city of Columbia, Missouri got a front row seat to the total solar eclipse and Mason Eye Institute was at the center of it all. My first awareness of the solar eclipse was nearly a year prior to the astronomical occurrence when our marketing department inquired about sponsoring an event the city was planning. After quickly googling "solar eclipse 2017", I found that the first entry in the search was actually a University of Missouri website. It appears our Department of Physics and Astronomy Professor Angela Speck, had gotten the jump on us as their website already featured links to purchase t-shirts and eclipse glasses as well as a countdown to totality which detailed the days, minutes, hours, and seconds until the big event.

Totality means "the whole of something" but in astronomical terms when describing a solar eclipse, it literally means "the duration of total obscuration of the sun during an eclipse." In preparing for the event, my department chair accused me of "Y2King" the whole thing as in the weeks leading up to the event I would pepper him with "what ifs" and worse case scenarios. I even contacted the health system's emergency planning department to make certain disaster planning was underway for the number of people expected to visit our city. Despite my anxiety, I managed to help plan our event and order promotional materials like eclipse glasses. Thanks to the Amazon "fake eclipse glasses scare", our logo eclipse glasses became very popular and we were soon in short supply when the day of the event rolled around.

Held at Columbia's Cosmo Park, which seems to be an aptly named location but as locals know it is short for Cosmopolitan, the city event had a fair like atmosphere complete with offerings of kettle corn and barbequed meats, a beer tent, and music. My coworkers and I set up a tent featuring Mason Eye Institute with our logo giveaway items of eclipse glasses, croakies, and literature about our services. We encountered spectators from far and wide, ranging from entire families clad in matching t-shirts made for the occasion to believers in "the end of days" handing out pamphlets. As the time of the eclipse drew nearer, people started to gather where they could find shade and have the best-unobstructed view.

While the partial eclipse was viewable for several minutes, it soon came time for the minute and a half that was to be totality. We moved out from under our tent into the open area of the park. As I put on my Mason Eye Institute eclipse glasses, I was struck by how surreal it was to be in a wide-open space with a few of my coworkers and thousands of strangers witnessing this natural event accompanied by music from a concert stage sound system. My thoughts were interrupted by a countdown that emanated from the crowd followed by a hushed silence and then sudden darkness. Then, the growing rumble of clapping which boisterous shouts, whistles and cheers soon overtook. Witnessing the brilliance of a total solar eclipse, all the anxiety I had been feeling dissipated into an overwhelming sense of calmness and belonging. At that moment, I knew I was exactly where I was supposed to be. Today, when I think of my eclipse experience it reminds me why I work at Mason Eye Institute...to be a part of something bigger than myself and surrounded by brilliance.

Epilogue:

To my great relief the aftermath was much like that of Y2K. All the eclipse hype was quickly forgotten as the moon unceremoniously receded back to its rightful place in the sky. We saw a few patients with concerns they had stared a bit too long or at the wrong moment and wanted clinical reassurance, but thankfully no eclipse related injuries. Mason Eye Institute was featured in more than 105 print, television, and radio articles covering the total solar eclipse.

Special thanks to Susan Washington and Donna Farris of MU Print & Mail Services for actualizing my vision into this publication. My sincere gratitude to Colleen Devlin and Rebecca Calvin of Mizzou Advantage for their creativity and generosity of expertise.

Jennifer Tisone, MBA has been the Manager of the Department & Ophthalmology Practice since February 2015.



One Hospital Drive Columbia, MO 65212

Faculty of the Mason Eye Institute regularly publish in high impact journals and ophthalmology publications. Here is a sampling of recent publications:

Inadvertent Cyclodialysis Cleft and Hypotony Following Ab-Interno Trabeculotomy Using the Trabectome Device Requiring Surgical Repair. Berk, Thomas A. MD, **An, Jella A. MD**, Ahmed, Iqbal Ike K. MD. Journal of Glaucoma 2017 Aug:26(8):742-746.

Assessing progression of resident proficiency during ophthalmology residency training: utility of serial clinical skill evaluations.

Grace L. Paley, MD, PhD, Thomas S. Shute, MD, Geetha K. Davis, MD, Susan M. Culican, MD, PhD.

Journal of Medical Education and Training Vol 1:4 September 9, 2017.

Atypical optic neuritis after inactivated influenza vaccination. Jun B, **Fraunfelder FW**.

Journal of Neuro-ophthalmology 2017 Aug;41:1-4.

Cornea transplant failure associated with smoking. **Fraunfelder FW**, Raju M, Strohbehn A. Eye Care and Vision 2017 Jul:1(2):1-5.

Immediate Postoperative Intraocular Pressure Adjustment Reduces Risk of Cystoid Macular Edema after Uncomplicated Micro Incision Coaxial Phacoemulsification Cataract Surgery.

Jarstad JS, Jarstad, AR, Chung GW, Tester RA, Day LE. Korean Journal of Ophthalmology: KJO. 2017;31(1):39-43.

Canine neuronal ceroid lipofuscinoses: Promising models for preclinical testing of therapeutic interventions.

Katz ML, Rustad E, Robinson GO, Whiting REH, Student JT, Coates JR, Narfstrom KN.

Neurobiology of Disease. 2017 August:30(108):277-287.

Extraneuronal pathology in a canine model of CLN2 neuronal ceroid lipofuscinosis after intracerebroventricular gene therapy that delays neurological disease progression.

Katz ML, Johnson GC, Leach SB, Williamson BG, Coates JR, Whiting REH, Vansteenkiste DP, Whitney, MS.

Gene Therapy 2017:24:215-223.

Homozygous PPT1 Splice Donor Mutation in a Cane Corso Dog With Neuronal Ceroid Lipofuscinosis.

Kolicheski A, Heller HLB, Arnold S, Schnabel RD, Taylor JF, Knox CA, Mhlanga-Mutangadura T, O'Brien DP, Johnson GS, Kreyfus J, **Katz ML**. JVIM, 2017 January/February:31:(1)149.

Arteriovenous malformation of the eyelid: Surgical management and histologic study.

Lo C, Petris Ć, Haberman I, Patel P, Charles NC. Ophthal Plast Reconstr Surg. 2017:33(3S Suppl 1):S138-140.

Low-cost 3D printing orbital implant templates in secondary orbital reconstructions.

Callahan AB, Campbell AA, **Petris C**, Kazim M. Ophthal Plast Reconstr Surg. 2017:33(5):376-380.

Fibroblast Growth Factor (Receptor 2 (FGFR2) Is Required for Meibomian Gland Homeostasis in the Adult Mouse. **Reneker, LW**, Wang, L, Irlmeier RT, Huang AJ. IOVS, 2017 May:58(5)2638.

Lens Endogenous Peptide α A66-80 Generates Hydrogen Peroxide and Induces Cell Apoptosis.

Murugesan Raju, **Puttur Santhoshkumar**, **K. Krishna Sharma**. Aging and Disease, 2017:8(1): 57-70.

Cell-penetrating Chaperone Peptide Prevents Protein Aggregation and Protects Against Cell Apoptosis.

Murugesan Raju, Puttur Santhoshkumar, and K. Krishna Sharma. Adv. Biosys. 2017, 170095

Early-onset progressive retinal atrophy associated with an IQCB1 variant in African Black-Footed Cats (Felis nigripes).

Oh A, Pearce J, Gandolfi B, Creighton E, Suedmeyer W, Selig M, Bosiack A, Castaner L, **Whiting R**, Belknap E, and Lyons L.

Nature Scientific Reports. 2017:7:43918.