THE VISION RESEARCH CENTER OF KANSAS CITY

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Vision Research Center, University of Missouri - Kansas City

BACKGROUND AND OVERVIEW

The Vision Research Center was founded as and is a well established collaboration of several of UMKC schools and Kansas City Medical Centers and thus offers an unprecedented interdisciplinary synergy with a unified goal: to better diagnose, prevent, and treat eye disease and vision disorders through translational research in order to make a difference in the lives of tens of millions of people worldwide.

To this end, the center conducts federally and industry funded basic, translational and clinical research to develop new medical therapies and offers patient care in all subspecialties of ophthalmology. The center's nationally recognized excellence in research, patient care and medical education contribute to UMKC's strengths in the life sciences.

Past, present and future objectives of the Vision Research Center:

- Provide a direct avenue for basic and translational research in eye and related diseases
- Transfer basic science findings seamlessly into practical use with patients trough translational research
- Develop new therapy approaches urgently needed by physicians in the US and worldwide
- Provide educational excellence
- Ensure patients receive the most advanced medical treatments available
- Become national center of excellence for eye research

The Center and its Faculty

Vision Research Center faculty are academic researchers and clinician scientists from the University of Missouri Kansas City's Schools of Medicine and Pharmacy with ongoing international and national collaborations, as well as collaborators from the universities, institutes and private industry.

Basic and Translational Research
Simon H. Friedman, PhD
Thomas P Johnson, PhD
Peter Koulen, PhD
Ashim K. Mitra, PhD
Dhananjay Pal, PhD
William G. Gutheil, PhD
Simon Kaja, PhD
Chi H. Lee, PhD
Mridul Mukherji, D Phil
Salvatore Stella, PhD

Comprehensive Ophthalmology
Komal B. Desai, MD
Mahendra K. Rupani, MD
Jean R. Hausheer, MD
Timothy A. Walline, MD

Contact Lens and Low Vision
Dawn T. Bircher, OD

Cornea / Uveitis
David C. Gritz, MD, MPH

Oculoplastics and Orbital Surgery
David B. Lyon, MD

Pediatric Ophthalmology
Denise Hug, MD
Laura S. Plummer, MD
Scott E. Olitsky, MD
Merrill Stass-Isern, MD

Refractive Surgery
Jean R. Hausheer, MD
Timothy A. Walline, MD

Retina and Vitreous
Michael A. Cassell, MD
Felix N. Sabates, MD
Abraham K. Poulose, MD
Nelson R. Sabates, MD

Residency Program
Jean R. Hausheer, MD
Michael A. Cassell, MD

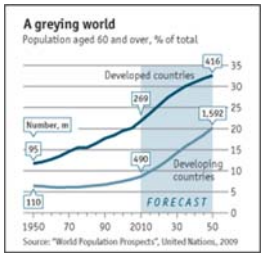
Glaucoma
Rohit Krishna, MD
Kevin P. Pikey, DO

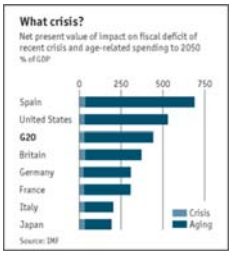
Neuro-Ophthalmology
Billi S. Wallace, MD

Ocular Oncology
Komal B. Desai, MD

Ocular Pathology
Mahendra K. Rupani, MD

The Challenge





It is estimated that over 9 million people over the age of 40 have early signs of Age-related Macular Degeneration - the most common cause of decreased vision in people over 65.
For almost 90% of these patients no effective treatment is available.

Diabetic retinopathy also affects millions of individuals and the numbers are rising rapidly due to an increase in the incidence of juvenile and type 2 diabetes.

Glaucoma, another thief of sight among otherwise healthy adults, is the most common cause of decreased vision in the African-American population. Effective treatment options for both are not available.

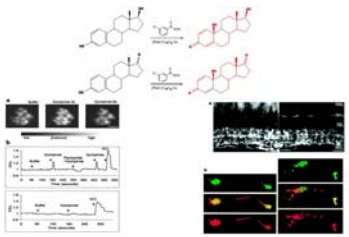
Age-related Macular Degeneration or AMD leads to a loss of central vision.
No effective treatment is available for 90% of patients suffering from this chronic disease.

Glaucoma affects over 4 million people in the U, is the second most common cause of blindness and the most common cause of vision loss in African-Americans.
Despite of advances in drug and surgical treatment options, effective long-term treatment options are not available.

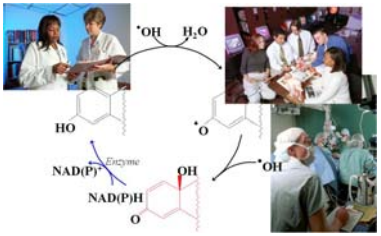
Diabetic retinopathy affects over 5 million individuals and is a disease affecting the retina and visual function in both juvenile and type 2 diabetes. Diabetic retinopathy like glaucoma can lead to blindness; effective long-term treatment options are not available.

The Answer

Basic Research



Translational Research



The Vision Research Center covers the following research areas:

Pharmaceuticals
Biologicals
Nutrition
Biologicals / Sensor Technology
Micro- / Nano-Sensor Technology
Devices
Facilities

Clinical Research

Patient Care

The Vision Research Center has ongoing clinical trials in the areas of :

Vitreomacular Traction (Macular Pucker/Macular Hole)
Diabetic Retinopathy
Visual Rehabilitation Therapy Trial
Age-Related Macular Degeneration

The Vision Research Center:

Collaboration between UMKC and Kansas City Medical Centers offers an unprecedented **interdisciplinary synergy with a unified goal**: to better diagnose, prevent, and treat eye disease and vision disorders in order to make a difference in the lives of tens of millions of people worldwide.
The Vision Research Center continues to gain national prominence through publications in various professional journals and presentations at scientific conferences by its faculty members, researchers, post-doctoral associates, and graduate students. It also provides significant opportunities for students and doctors in training at UMKC to work on innovative research studies.
Support from NIH / NEI, NIA, NCRR, NIDDK, NCI

Benefit to the region

- The Vision Research Center fosters a unique, state-of-the art infrastructure and highly skilled work-force integrating clinical and basic research, enabling collaborative research in the diagnosis and treatment of age-related macular degeneration, glaucoma, diabetic retinopathy and other ocular diseases.
- Faculty and research accomplishments of the Vision Research Center have already been recognized locally by the state of Missouri and key opinion leaders at the state level, nationally and internationally through honors, awards and successful translation and commercialization of research findings into biomedical products.
- Through this national and international recognition, the Center will be able to contribute significantly to elevating the region's life sciences as a whole to achieve national and international recognition. In addition this will also allow regional institutions to achieve national prominence and the ability to attract top investigators and increased public and private funding.
- The collaborative setup of the Center also allows for efficient interactions with a number of organizations in Kansas City including institutes, local professional schools of Pharmacy, Nursing and Medicine that have designated vision research as one of their research focus points and is actively engaged in life sciences research and formal affiliations with all major Kansas City hospitals that conduct biomedical research.
- The diseases researched and targeted by the Vision Research Center, macular degeneration, glaucoma and diabetic retinopathy, together constitute the bulk of vision loss in the United States, but more importantly also disproportionally affect minority populations experiencing disparities in ophthalmologic health care and therapy outcomes. These diseases affect a significant and increasing portion of the U.S. population and at the same time disproportionally affect minority populations and the medically indigent and underserved, a current and growing problem in the Kansas City community. With the graying of America and the baby boomer generation entering retirement age, a dramatic increase in the incidence rates is to be expected in the next decade, a national trend that is mirrored but also more prevalent in the Greater Kansas City area due to its higher percentage of minority populations experiencing health disparities. Therefore, the mission and goals of the Vision Research Center directly impact people in the region by enhancing the quality of their lives and providing access to the best health care available.
- Kansas City is already well known for its leadership and innovation in ophthalmology. The Vision Research Center builds on this basic, translational and clinical research advantage and takes part in the region's burgeoning bioscience initiative through biomedical research and education:
- The Center's investments and commitments to both infrastructure and personnel for vision research are substantial and have an excellent potential to grow the regional research capabilities and assets.
- With education of researchers and health care professionals in the areas of basic, translational and clinical research the Vision Research Center represents an excellent potential to advance science education and workforce development regionally and nationally. This is evidenced by the Vision Research Center's outstanding track record in producing a highly educated workforce and placing its graduates in high level positions that in turn attract additional opportunities for growing and creating a highly functioning workforce. This element of the Vision Research Center significantly contributes to growing the regional and national economy and providing well-paying jobs.

Commercialization Potential

Based on the Vision Research Center's previous track record in the areas of intellectual property development, collaborations with private industry and successful technology transfer, its operations produce an excellent infrastructure and potential for commercialization that can function as a regional hub for institutions and companies in the field or related areas of biomedical research. Again, this element of the Vision Research Center also significantly contributes to growing the regional and national economy and providing well-paying jobs. In the areas of technology transfer and research commercialization, the Vision Research Center have several advantages:

- Existing partnerships with private companies at multiple levels such as private practice, clinical research, instrument development, diagnostics development and drug development.
- Active collaborations and contractual agreements with companies in the pharmaceutical industry, the optics, electronics and nanotechnology fields
- Currently active federal grants (mostly from the National Institutes of Health) are set up as collaborations with companies (so called small business or SBIR grants) expanding also into cancer research and related fields
- Experience in the development of successful business models related to technology transfer and commercialization of intellectual property through federal and private collaborations and initiatives
- Proven track record and history of intellectual property development and marketing of products resulting from research activities (with companies in TX, CO, OR, WA, CA)
- History of over $40 million in NIH and other extramural funding for translational research
- Existing pilot projects with local companies in Kansas City, MO; Lawrence, KS, Prairie Village, KS under contractual agreements governing technology transfer and commercialization of intellectual property
- No comparable initiatives in the eye and vision research field in the region
- VRF continues to grow the basic and clinical research activities of the Vision Research Center with over ten new positions, most of them high-end high-skill level jobs generated in 2009 alone. With its projected growth and continued already secured funding that will come to the region the potential for additional job creation is high. Regional activities by the VRF and the Vision Research Center in technology transfer and commercialization of intellectual property subsequently have a similar potential to generate jobs directly within its research operations and in addition through potential interactions with existing or new companies in the region.