

FOUND IN TRANSLATION

BY JEANNE McADARA-BERKOWITZ, PH.D.

When Malik Kahook, M.D., joined the University of Colorado School of Medicine's Department of Ophthalmology eight years ago, Department Chair Naresh Mandava, M.D., gave him a specific charge: to build out the department's clinical research capabilities and turn it into a world-class translational research center.

"We wanted to expand on our already rich clinical capabilities by bringing in a really diverse set of leaders in ophthalmology-focused translational research," says Kahook, who serves as the department's vice chair of clinical and translational research. "Our goal is to maintain an intense focus, from the very first day an idea is generated in the research lab, on how that idea will eventually apply to patients at the bedside."

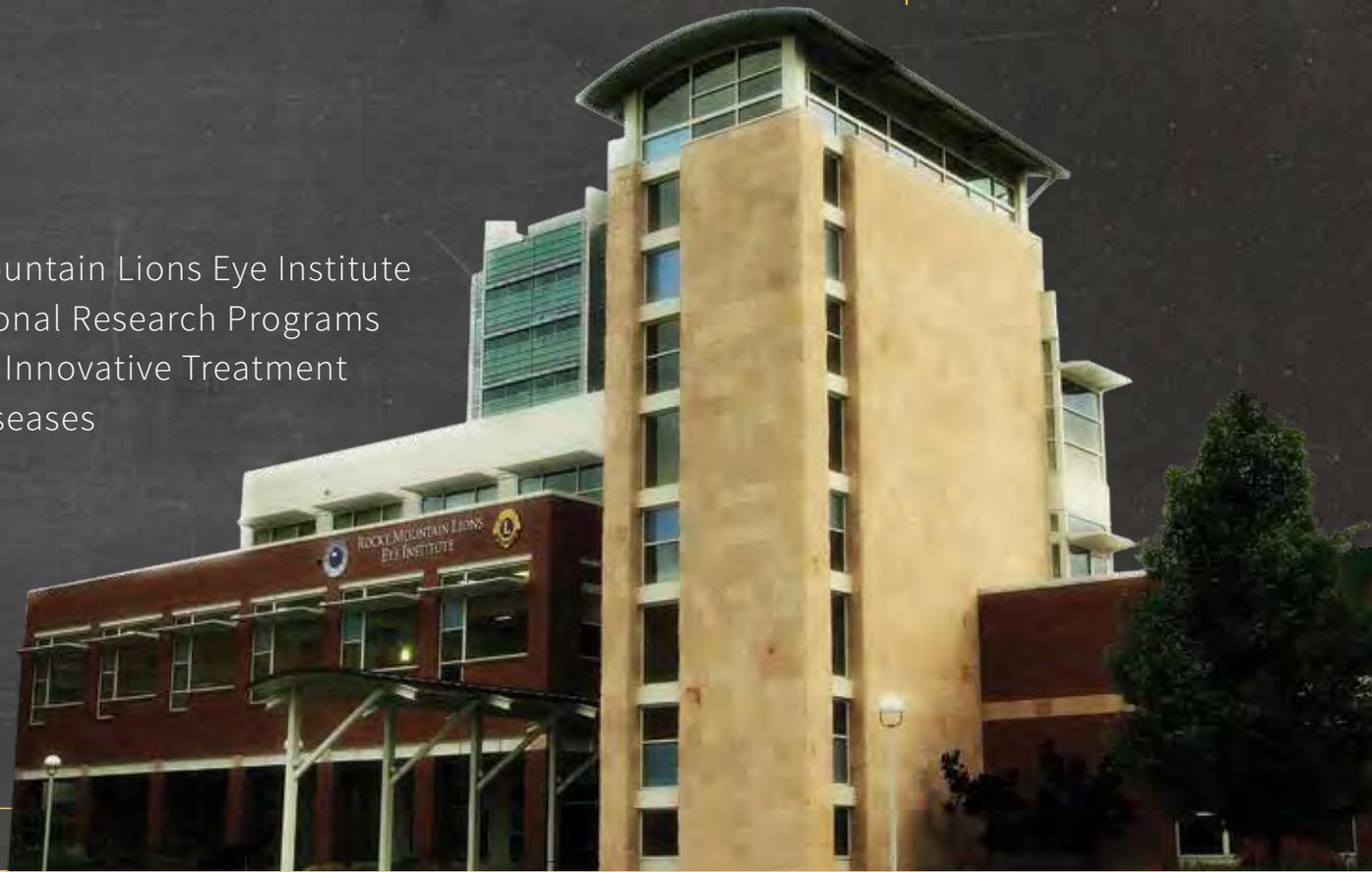
The Rocky Mountain Lions Eye Institute—the clinical center within the department—is the only academic eye center within a 500-mile radius of Denver. Every year, more than 150,000 patients visit the Institute on the Anschutz Medical Campus and its satellite centers

at the University of Colorado Hospital, Denver Veterans Affairs Medical Center, Denver Health Medical Center and The Children's Hospital to receive care from more than 50 expert faculty. The Institute also houses the Rocky Mountain Lions Eye Bank, which serves Colorado and surrounding states by collecting, housing and distributing donated tissues for transplantation.

While still in progress, Kahook's work to date has been fruitful, leading to the filing of more than 20 patents for technologies developed within the Institute, multiple commercial out-licensing agreements to develop the technologies and the realization of new funding from philanthropic organizations. Over the past four years, the Institute has secured funding to triple its physical space so that all clinical and surgical resources can be housed in the same building, and thousands more patients can be accommodated each year. In the last year, two endowed chairs have been created in the department, led by major donations from members of the Anschutz and Slater families.

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Rocky Mountain Lions Eye Institute Translational Research Programs Focus on Innovative Treatment of Eye Diseases



The underlying driver of all of this activity is, of course, the research. Some of the programs that have been established under Kahook's tenure include:

- A team focused on the application of non-linear microscopy to ocular health and disease.

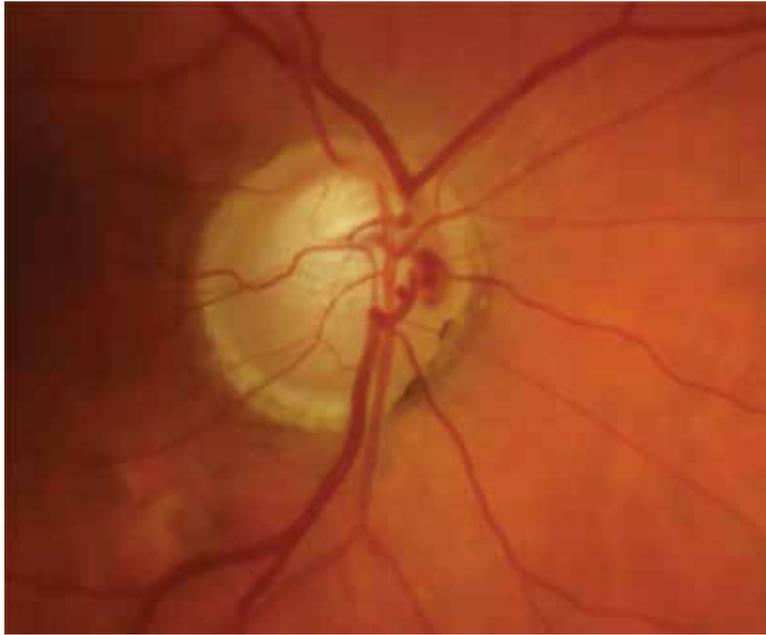
"This technology allows us to look not just at the macrostructure of the eye and its tissues, but also deep inside at specific cells' physiological function and dysfunction," says Kahook. "The group has already been able to file patents on their work and engage in collaborative projects with industry. The ultimate goal will be to take these devices into the clinic, where they'll allow us to diagnose and treat ocular diseases at an earlier stage than currently possible."

- A program devoted to research in the area of polymer science and engineering. The goal of this program is to enhance the functionality of medical devices by developing more biocompatible materials for ophthalmologic use.



Malik Y. Kahook, M.D.

The Slater Family Endowed Chair in Ophthalmology Vice Chair, Clinical & Translational Research Chief, Glaucoma Service & Director, Glaucoma Fellowship Professor of Ophthalmology University of Colorado Anschutz Medical Campus | Department of Ophthalmology



According to Kahook, “A lot of materials currently used in ophthalmological devices are basic silicone or other polymer-based materials, because these are easy to work with from a manufacturing perspective. The group here is working to develop ‘smart’ materials, meaning materials that are able to respond to changes in different stimuli like light, heat and hydration even after they’ve been incorporated into devices or implanted in the human ocular environment.”

- An initiative to use the faculty’s deep clinical and surgical experience to develop new, safe, efficacious approaches to treating blinding diseases and to enhance outcomes from cataract surgery. Examples include a device for non-invasive treatment of glaucoma, currently in early-stage clinical trials at a start-up company called OcuTherix (New Brighton, Minnesota), and a technology that stimulates failing retinal tissue in order to halt or even reverse the progression of macular degeneration and other retinopathies, currently being developed by 2C Tech Corporation (Irvine, California).

“Once we get the devices to a level where we have established pre-clinical validation of function, capability and biocompatibility, we quickly partner off-campus

with more nimble commercial enterprises, or with larger strategic partners that have the financial resources to conduct clinical trials,” says Kahook. “So far, we’ve seen a number of devices spun out of our labs here, either going to start-ups or to bigger companies like Abbot, HOYA, Glaukos, OASIS Medical and New World Medical, to name just a few.”

Kahook notes that the Institute is fortunate to have a local pool of top talent, both for forming productive academic and commercial collaborations, and for recruiting new investigators to the faculty.

“It’s been important to the department to collaborate as much as possible with local researchers on campus here, in Boulder and in Colorado Springs, and to bring them together with experts from industry,” he says. “These collaborations foster communication and innovation, and allow us to bring in new faculty such as polymer engineer Devatha Nair, who is in the process of joining the department from the laboratory of CU-Boulder Distinguished Professor Chris Bowman.”

For Kahook and his colleagues at the Institute, this is an exciting time to be performing translational research in Colorado, but he does echo the recurring call from others that lack of local venture funding presents a barrier to the future growth of Colorado’s bioscience industry.

“It’s a great topic of interest,” he says. “How do we keep more of these technologies in Colorado so we can achieve the most potential out of them before they go out into clinical use, when most of the money and big companies are outside? The technology we’re innovating in Colorado is so exciting, but we’re losing out on the downstream benefits.”

Kahook says that, for its part, the Institute is making every effort to keep technology development local. “We’re trying as hard as possible to find local partners for our work.” He laughs and adds, “Our doors are wide open, our phones are ready, and our email is waiting. We want to know who wants to partner with us—we’d love to sit down and chat.”

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