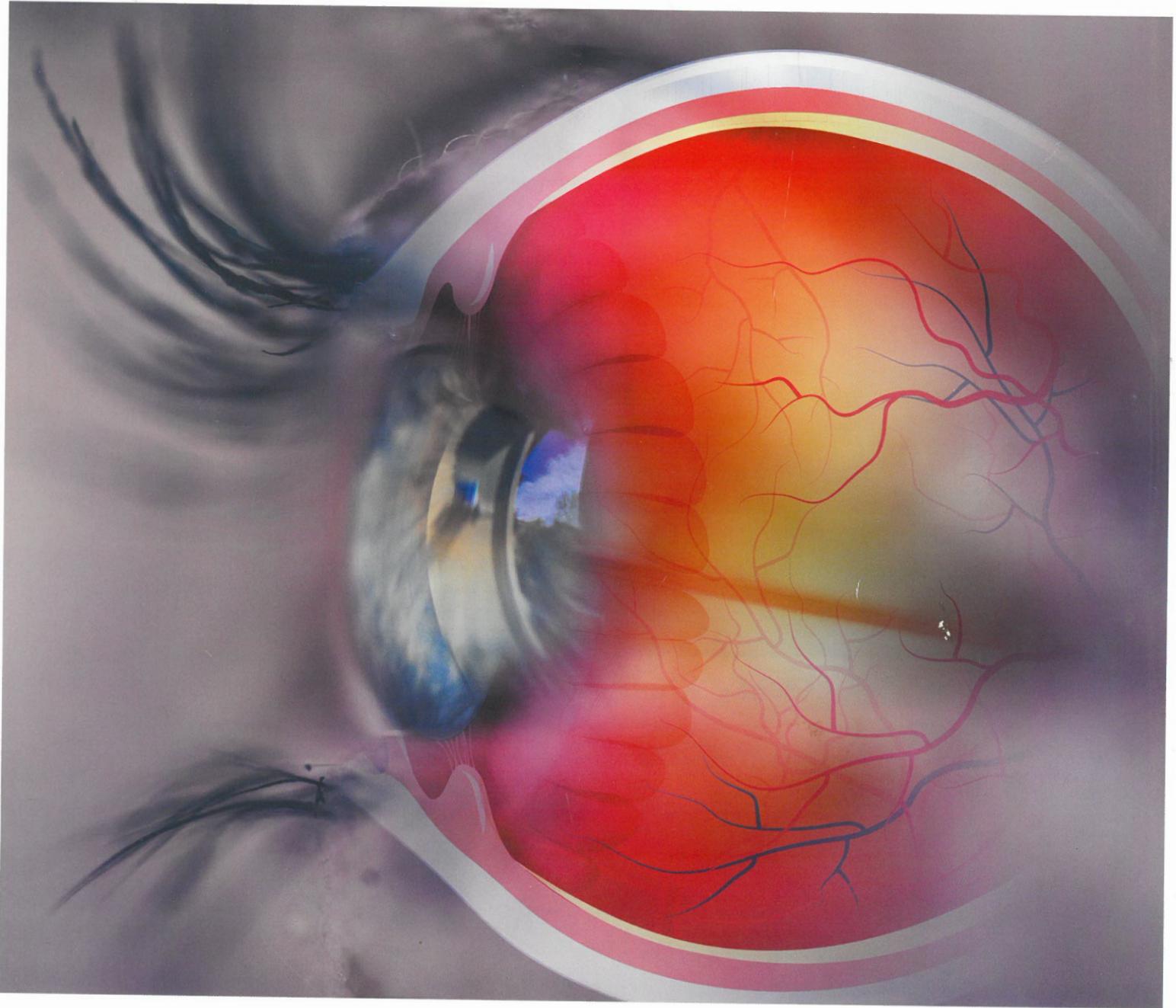




A Semiannual Publication of the August University
James & Jean Culver Vision Discovery Institute

VISION



AUGUSTA UNIVERSITY
Culver Vision
Discovery Institute

SUMMER 2017

THE BIG CONNECTION



to further the research in animal models in hopes of one day taking it to a clinical trial.

Currently, patients with diabetic retinopathy can undergo laser therapy treatments or anti-VEGF (vascular endothelial growth factor) injections into the eye. But it's not a quick—or easy—fix. "Right now, there is not a single therapy that works perfectly," said Sharma. "And patients have to return for ongoing treatments."

A key factor that plays a critical role in the pathogenesis of diabetic retinopathy is a condition that has become a buzzword in health care: inflammation. In diabetic retinopathy, high glucose levels trigger an inflammatory response in the vasculature of the eye. The resulting inflammation of the eye's blood vessels is one of the leading causes of blindness in working-age adults.

A molecule known as Interleukin-6 (IL-6) is one of the major mediators of inflammation; in fact, several studies have shown that IL-6 levels increase significantly in patients with diabetic retinopathy. Scientific studies have further shown that IL-6 has both good and bad actions on the vasculature.

Sharma was intrigued by this connection: "We are trying to inhibit only the bad actions of IL-6, which is superior to complete blockade, because important physiologic functions of IL-6 will remain intact." This novel intervention strategy represents the first attempt to investigate the effects of selective IL-blockade in diabetic retinopathy treatment.

"A drug based on this approach is under clinical trials to treat Crohn's disease [an inflammatory bowel disease] and rheumatoid arthritis," said Sharma. "In both of these, inflammation plays a big part. I thought, 'Is there a way to repurpose this drug and possibly test it in retinopathy?' I don't want to be overambitious, but I would really want to find something that's simple and helps."

An anti-inflammatory drug is showing promise in treating diabetic retinopathy

Could an experimental drug that is already in clinical trials as an anti-inflammatory therapy for autoimmune diseases also successfully treat diabetic retinopathy?

That's the question that Dr. Shruti Sharma, a researcher with the Culver Vision Discovery Institute, hopes to answer, thanks to a \$1.5 million grant from the National Eye Institute to support that research. Sharma's initial project showed promising preliminary data, and the NEI funding will allow her

FAMILY TIES

Sharma's research brings together her 15 years' experience working with endothelial cells within blood vessels, inflammation, oxidative stress and vascular dysfunction. Both of her parents are retired scientists and are glad their daughter has followed their research footsteps. "I feel so happy when I see an excitement on my Dad's face and he proudly says, 'Just work for the Nobel Prize,'" she said with a laugh.