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## NIH awards Upstate Medical's Brunken \$2.2 million for vision research

by Eric Reinhardt

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SYRACUSE, N.Y. — The National Institutes of Health (NIH) has awarded an Upstate Medical University professor a grant of \$2.2 million for his research on vision.

William Brunken will use the funding on a five-year study investigating the role of extracellular matrix (ECM) in retinal development and disease.

The NIH's National Eye Institute supports the award.

Upstate Medical announced the grant award in a news release issued last Friday.

Brunken is vice chair for research for the department of ophthalmology; director of the department's Center for Vision Research; and professor of ophthalmology, neuroscience and physiology.

More than 1,400 authors have cited Brunken for his research into vision disorders, Upstate Medical said.

"This five-year award provides great stability for our team's studies in the role of the extracellular matrix in retinal development and critically in vascular biology of the retina," Brunken said in the news release. "Vascular diseases of the retina are the leading cause of blindness in adults in the developed world. The mechanisms of vascular development, unlike other developmental processes, remain active in the adult and can result in serious pathologies. The long-term goal will be to develop matrix-based therapeutic strategies to treat vascular disease of eye."

The extracellular matrix is composed of proteins surrounding cells that provide "structural and biochemical support to the surrounding cells," according to the Upstate Medical release.

The molecules studied in the Brunken laboratory lead to a "variety" of brain and ocular defects leading to autism and mental retardation in the most severe cases and, in the eye, these disruptions could lead to impaired vision or blindness.



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Specifically, the funded studies will expand upon Brunken's previous studies focusing on laminin and laminin-related proteins of the ECM.

These proteins are an "important set of guidance cues" that direct many developmental processes and have led to insights into congenital diseases of the brain, eye, and kidney.

Those studies questioned how the deletion of various laminins can result in disruptions in retinal-vascular development and have "furthered the understanding" of how several retinal diseases could develop, such as retinopathy of prematurity in children and diabetic retinopathy and age-related macular degeneration in adults, according to the Upstate Medical news release.

"Our team will follow up on our fundamental hypothesis that laminins are critical for establishing the three-dimensional structure of the retina," said Brunken.

"Specifically, we will take a closer look at the mechanism of laminins and how they provide environmental cues that are essential to the process through which new blood vessels form from pre-existing vessels and to the formation of nervous tissue."

Brunken said that findings from the study will advance existing fundamental understanding of retinal development.

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PHOTO CAPTION: The National Institutes of Health (NIH) has awarded William Brunken, a professor and researcher at Upstate Medical University in Syracuse, a grant of \$2.2 million for his research on vision. (Photo credit: Upstate Medical University)

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