UNIVERSITY of HOUSTON | ENGINEERING

Department of Biomedical Engineering

Thursday, May 14th, 2020

10:00 AM

Defense held online via Zoom


***Ayse Mine Genc***

PhD Dissertation Defense

Dr. Muna Naash, Dr. Muayyad Al-Ubaidi, Faculty Advisors


# "Ablation of Retbindin, the Riboflavin Binding Protein, Exacerbates Retinal Degenerative Phenotypes in Mouse Models of Human Retinal Diseases"


**Abstract**

Retinal degeneration is a leading cause of incurable low vision and blindness that affects large number of people worldwide. Common to all retinal degenerative diseases is the dysfunction or death of photoreceptors which are the light sensing cells of the retina. Uncovering disease mechanisms holds the most crucial step of designing treatment strategies to slow or stop the photoreceptor degeneration. Given the importance of the field, our study focus is on a novel photoreceptor specific protein called "retbindin". Retbindin binds to riboflavin which is one of eight B vitamins and precursor of flavin cofactors that are essential for cellular energy generation, responses to oxidative stress and overall homeostasis. Since the degenerative process is associated with metabolic dysregulation and flavins are linked to metabolism, we hypothesize that retbindin, as a riboflavin binding protein, plays a direct role in retinal degenerations. In support of our hypothesis, we observed significantly increased retbindin levels in the retinas from the mouse models which represents various inherited retinal diseases. To investigate the role of this upregulation, we performed structural, functional and biochemical characterization of mice from three different retinal degenerative models with and without retbindin. We observed accelerated disease progression upon elimination of retbindin. This study demonstrate the protective role of retbindin making it a strong candidate for therapeutic interventions.


Zoom link:
https://uofh.zoom.us/j/2243153882?pwd=Tm1pNS9CVnVjSjd3THRrdjBWUFk5UT09

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