

Ergothioneine: A Diet-Driven Antioxidant and Its Protective Role in Aging Auditory Systems

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Chemistry
Seminar
on
Therapeutics for
Age-related hearing
loss (ARHL)

**Monday
September 15
at 4 pm in 126
Schrenk**

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Abstract: Age-related hearing loss (ARHL), also known as presbycusis, is one of the leading neurodegenerative disorders of the elderly, where the percentage of people affected goes up with age (more than 70% affected by the age of 75). Apart from affecting communication abilities, it contributes to other problems e.g., declines in work productivity, loneliness, depression, and the onset of dementia. ARHL has been identified as the top modifiable risk factor for dementia by the 2020 Lancet Commission on Dementia. Unfortunately, there is no FDA-approved drug to prevent, slow down, or reverse the symptoms of ARHL.

This talk will focus on therapeutics for ARHL, particularly the therapeutic potential of L-ergothioneine (EGT), a naturally occurring amino acid found in mushrooms. It possesses the antioxidant and anti-inflammatory properties, enabling it to function in multiple protective roles: free radical scavenger of reactive oxygen species (ROS), modulation of inflammatory markers, reduction of pro-apoptotic markers, and protection from mitochondrial damage, etc. In the presentation, the protective effects of EGT on ARHL in animal models will be discussed, followed by an examination of key underlying mechanisms that support the physiological findings.

About the speaker: Dr. Parveen Bazard received his master's degree in Chemical Engineering from the Indian Institute of Science (IISc), Bangalore, India. He then pursued doctoral studies in Chemical and Biomedical Engineering at the University of South Florida (USF), Tampa, Florida. His doctoral research focused on developing second-generation neural stimulation (Nanomaterials-enabled optical) techniques for applications in auditory and sensorineural prosthetic devices. After his Ph.D., Dr. Parveen worked on multiple projects related to auditory pathologies, focusing on aging auditory and sensory deficits during his tenure as a Postdoctoral Researcher and Assistant Professor (Research) at the Global Center for Hearing and Speech Research, Medical Engineering Dept., University of South Florida, Tampa, Florida. In Fall 2024, he joined as an Assistant Professor at the Chemical and Biochemical Eng. Dept., MST, Rolla, and is currently building an interdisciplinary auditory research laboratory.

Some of his research projects include drug discovery and biomedical intervention for age-related hearing loss (ARHL), identifying novel biomarkers of auditory and sensory problems for diagnosing and better characterization, and developing new biomedical imaging tools for clinical diagnoses. His research is funded by various agencies, including the National Institutes of Health (NIH) and two early-career foundation grants (American Hearing Research Foundation and American Otological Society).