Poster Abstract

Elucidation of Lipofuscin/ Melanolipofuscin Granule Composition

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Age-related macular degeneration (AMD) is a retinal degenerative disease that causes progressive loss of sharp, central vision especially among Americans age 65 and older. The United States population is estimated to be 318.9 million of which 15 million Americans are estimated to have AMD. There is no cure for AMD and few options are available to alleviate the symptoms, due to AMD pathogenesis being poorly understood.

Our work focuses on understanding AMD pathogenesis. Retinal pigment epithelium (RPE) cells are located behind the photoreceptors and serve many key functions, such as the maintaining the photoreceptors. RPE cells are subject to life-long biochemical and biophysical changes, including the accumulation of pigment granules, which could contribute to retinal degeneration.

We investigate the chemical composition of two pigment granules, RPE lipofuscin and melanolipofuscin. Understanding their chemical compositions will provide insight into the mechanisms or pathways that form them. In doing so, pigment granule accumulation could be targeted to possibly prevent or retard retinal degeneration.

The pigment granules are isolated from human donor tissue using sucrose density gradient centrifugation. Folch extraction is performed to obtain the organic soluble portion. The Folch extracts are analyzed using HPLC-ESI-MS/MS coupled with PDA and fluorescence detection.