

Researchers develop new model for earlier treatments for AMD

February 10 2017



Dr Imre Lengyel. Credit: Queen's University Belfast

An international team of researchers from Queen's University Belfast, University College London and the University of Alabama at Birmingham, USA have developed a cell culture model that could help to develop earlier treatment strategies for age-related macular degeneration (AMD).

AMD, which is the third most prevalent cause of vision loss worldwide and is twice as common as Alzheimer disease in older persons, affects the central part of the retina causing changes to central vision leading to sight loss.

The research study recently published in *Investigative Ophthalmology and Visual Science*, found that retinal pigment epithelial (RPE) cells removed directly from the eye can reproduce all the major known elements of drusen, the hallmark extracellular deposit of AMD, when the cells are grown on specific surfaces.

The cell culture model developed confirms that RPE cells in early AMD are functional and that the conditions of the so called Bruch's membrane, the layer in the eye on which RPE cells grow, is key for the formation of drusen deposits. These then increase the risk of developing later stages of AMD.

This cell culture model is the most comprehensive developed so far and will provide an insight into disease progression and the best route to early treatment before [vision loss](#) occurs.

Dr Imre Lengyel, from the Centre for Experimental (CEM) at Queen's University, who conducted the mineralomics analysis on the study, said: "We expect that this reproducible and valid model system will be important in determining what molecules in drusen and what changes in RPE [cells](#) can cause advancement to late stages of AMD."

The elderly are the fastest growing segment of the population. New drug targets to help [older persons](#) maintain good vision and independent living are eagerly sought. This research will be an important milestone for patients with [age-related macular degeneration](#), their families, and eye doctors.

Dr Christine Curcio, from the Department of Ophthalmology at University of Alabama, Birmingham, added: "Based on our experiments there is a whole new way to look at how drusen form and increase the risk of developing AMD. From this research study we now believe that drusen reduction is now a viable treatment goal."

Matthew Pilgrim, PhD student at the Institute of Ophthalmology, University College London, who worked on the research project with Dr Lengyel, said: "There is no better education for a student than to be part of an important interdisciplinary project and learn about team science in addition to advanced microanalysis. Working on a project that is important for patients is very rewarding."

Provided by Queen's University Belfast

Citation: Researchers develop new model for earlier treatments for AMD (2017, February 10) retrieved 4 February 2024 from <https://medicalxpress.com/news/2017-02-earlier-treatments-amd.html>

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