# New form of inherited blindness discovered

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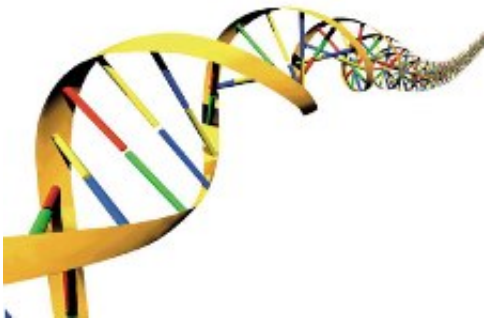

Scientists from the University of Leeds, in collaboration with researchers from the Institute of Ophthalmology in London and Ghent University in Belgium, have discovered that mutations in the gene DRAM2 cause a new type of late-onset inherited blindness.

This new insight into the condition was only made possible through collaboration between UK and European institutions. In the UK, the £1.2 million RP Genome Project funded by sight loss charities RP Fighting Blindness and Fight for Sight, brings together leading genetic ophthalmology researcher centres in Leeds, London, Manchester and Oxford.

Results published in the *American Journal of Human Genetics* describe individuals from five families with a variety of DRAM2 mutations, all of which lead to loss of central vision beginning at age 30-40. Peripheral

vision loss is also described in older individuals.

The light-sensing rear surface of the eye (the retina) relays visual information to the brain. It's a complex layered structure, with each layer of cells carrying out clearly defined functions.

DRAM2 has a role in initiating a cell-recycling process called autophagy, in which the damaged components of cells are broken down and renewed.

On discovering a link between DRAM2 mutations and inherited blindness, the authors showed that this protein is found in the retina; in the photoreceptor (light-sensitive) cells, and also at the surface of the retinal pigment epithelium (RPE) layer, where it meets the photoreceptors. RPE cells lie underneath the photoreceptors and take care of these essential cells.

"A high level of autophagy takes place in RPE due to the need for constant renewal of the photoreceptor outer segments following daily light-induced damage" says Dr Manir Ali who led the team making the initial discovery at the University of Leeds. "It is therefore likely that, in the absence of correctly functioning DRAM2, autophagy and photoreceptor renewal is reduced, leading to thinning of the photoreceptor cell layer. Our findings suggest that DRAM2 is essential for photoreceptor survival."

Dr Dolores M Conroy, Director of Research at Fight for Sight, said:

"This is the first paper resulting from our programme to improve patient diagnosis by finding novel disease-causing genes through collaboration between research institutions and in partnership with RP Fighting Blindness. Enabling specific genetic diagnosis is a high priority for research on inherited retinal disease, as identified by the James Lind

Alliance Sight Loss and Vision Priority Setting Partnership - a consultation with patients, relatives, carers and eye health professionals."

Sue Drew, Engagement Manager at RP Fighting Blindness, said:

"We welcome this first publication from the RP Genome Project and are delighted real progress is being made. We have been convinced for years that wider research collaboration and partnership working between organisations such as our own and Fight for Sight is the way forward. We are proud to be co-funding the RP Genome Project, which represents a new way of working and progressing IRD research, hopefully paving the way for further collaboration in the sector in the future."

**More information:** El-Asrag et al., Biallelic Mutations in the Autophagy Regulator DRAM2 Cause Retinal Dystrophy with Early Macular Involvement., The *American Journal of Human Genetics* (2015), dx.doi.org/10.1016/j.ajhg.2015.04.006

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