

Biomarkers facilitate early detection of glaucoma

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Researchers at Ruhr-Universität Bochum have identified new potential biomarkers that may facilitate early detection of glaucoma in patients. Moreover, they ascertained that the mutation of a certain gene in mice causes intraocular pressure elevation. This, in turn, is one of the main risk factors for glaucoma.

The team headed by Dr. Jacqueline Reinhard and Prof. Dr. Andreas Faissner from the Department of Cell Morphology and Molecular Neurobiology in Bochum, together with colleagues from the University Eye Clinic in Bochum, RWTH Aachen University, the University of Toronto and the University of Denver, has published a report on their findings. The article was released on 12 October 2018 in the online edition of the journal *Molecular Neurobiology*.

Specific and early intervention

The researchers bred mice in which the gene PTP-Meg2 (protein tyrosine phosphatase megakaryocyte 2) was mutated. As a result, the animals suffered from chronic intraocular pressure elevation. The team successfully demonstrated that, in their model, the intraocular pressure elevation was associated with a loss of optic nerve fibres and retinal cells. Using functional analyses, they observed that [retinal cells](#) were unable to function properly, either. Moreover, they made the following discovery: glial cells and certain components of the immune system showed a reaction in the animals' optic nerve and retina. As both aspects

may be relevant for neurodegeneration, specific and [early intervention](#) into these cellular mechanisms may inhibit glaucoma.

Making use of a genetic screening, the researchers subsequently identified new potential biomarkers. In future, these biomarkers may facilitate early detection of glaucoma; as a result, it will be possible to start therapy at an early stage, before the [optic nerve](#) and retina are damaged. The [glaucoma](#)-mouse model may, moreover, be used to test new therapy options. Experiments to date have shown that intraocular pressure was reduced and [nerve cells](#) were retained in the mice if they were given a drug that had been administered to treat human patients.

More information: Jacqueline Reinhard et al. Heterozygous *Meg2* Ablation Causes Intraocular Pressure Elevation and Progressive Glaucomatous Neurodegeneration, *Molecular Neurobiology* (2018). [DOI: 10.1007/s12035-018-1376-2](#)

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