Retinal disease treatment with microRNA-targeted therapy

Stanford University | Stanford, California

OVERVIEW

A team of Stanford researchers have developed a non-surgical therapeutic strategy for treating or preventing epiretinal membranes (ERMs) or other eye diseases by inhibiting microRNA (miRNA). ERMs affect about 35% of older adults and can cause distorted vision. Traditionally, this has been corrected through surgery with no non-invasive alternative. Treating or preventing ERMs with a targeted therapeutic agent administered through an eye drop or intravitreal injection instead of surgery could lower the costs and the risk to patients. This technology identifies miR-494-3p as a target that can be used for that non-invasive treatment to counteract the cellular transformation associated with ERM pathophysiology. Pilot data shows miR-494-3p is selectively expressed in epiretinal membranes and that inhibiting this miRNA potentially offers an easier, safer and less expensive option for preventing, treating or reversing this type of ophthalmologic condition.

Stage of Research
The inventors have validated miR-494-3p as the only miRNA expressed at significantly greater levels in ERM tissue compared to controls. The inventors have also begun additional studies on the effects of a locked nucleic acid inhibitor of miR-494.

HIGHLIGHTS

Inventors

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Resources

View at our website

Applications

- **Treatment or prevention of retinal disease** - miRNA targeted therapy for eye diseases associated with epiretinal membrane formation

Advantages

- **Easy, non-invasive treatment** - compared with current ERM treatment (surgery), an miRNA inhibitor is likely to be administered via eye drops, resulting in:
  - lower cost
  - lower risk for patients (surgery poses risk of cataract and rhegmatogenous retinal detachment)

Publications

- Kaidonis, G., Stary, C. M., & Leng, T. (2018). Micro-RNAs in the pathogenesis of epiretinal membrane (ERM) formation. *Investigative Ophthalmology & Visual Science*, 59(9), 5263-5263.

Related Web Links

- Leng Lab
- Stary Lab

Keywords

maculopathy, macular pucker, epiretinal membrane, cellophane retinopathy, cellophane maculopathy, ophthalmologic, eye, Eye disease, microRNA, microRNA targets, microRNA therapeutics, miRNA, ophthalmic, ophthalmic therapy, retinal diseases, retinopathy, ocular

Stanford Reference

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