

Scientists 'see' the early cellular cause of dry eye disease for the first time

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If you are one of the millions of people around the world who struggle with dry eye disease, good news is on the way. A new research discovery published in the *Journal of Leukocyte Biology* offers hope for new drugs that treat the cellular cause of the disease rather than its symptoms. That's because the research is the first to identify natural killer (NK) cells, a type of cell that provides innate immunity to the eyes, as promoting the inflammation that plays a critical role in the development of dry eye disease.

"Dry eye disease is suffered by millions of people in the U.S but still lacks effective management," said Yihe Chen, M.D., a researcher involved in the work from the Schepens Eye Research Institute at the Massachusetts Eye and Ear Infirmary of the Department of Ophthalmology at Harvard Medical School in Boston, MA. "Our study has promoted the further understanding of the pathogenesis of dry eye disease, which is fundamental to develop new treatments and thus improve quality of life for those with this disease."

To make their discovery, the scientists tested two groups of mice. The first group was normal and the second group was depleted of NK cells. When both sets of mice were induced with dry eye disease under the same conditions, the disease was less severe in the mice depleted of NK cells than the normal mice. This suggests that NK cells play a pivotal role in the development and severity of the disease, making them a target for the development of [new drugs](#).

According to the National Eye Institute within the U.S. National Institutes of Health, dry eye disease occurs when the eyes do not produce tears properly or when tears evaporate too quickly. As many as five million Americans 50 years of age and older are estimated to have dry eye disease, with the majority affected being women. Tens of millions more are believed to have similar, but less severe symptoms.

"Dry [eye disease](#) can be a very serious problem for some people," said John Wherry, Ph.D., Deputy Editor of the [Journal of Leukocyte Biology](#), "and while drops may help some, they only treat the symptoms of the disease. This research gets us closer to being able to correct the problems before they even occur in the first place."

More information: Yihe Chen, Sunil K. Chauhan, Daniel R. Saban, Zahra Sadrai, Andre Okanobo, and Reza Dana. Interferon- γ -secreting NK cells promote induction of dry eye disease. *J Leukoc Biol* June 2011 89:965-972; [doi:10.1189/jlb.1110611](https://doi.org/10.1189/jlb.1110611)

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