

New research holds promise for treatments for a range of women's health issues

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Natural lubricants play an important role in health, including a well-known effect to help prevent osteoarthritis in knee and ankle joints. However, much is still unknown about their role and function in other areas of the body. Researchers for the first time have discovered that the surface of the eye produces "lubricin," the same substance that protects the joints, and have explained its role in this sensory organ. These findings provide new hope for the millions suffering from dry eye disease and complications from contact lens wear and refractive surgery. Dry eye disease is one of the most frequent causes of patient visits to eye care practitioners and occurs predominantly in women.

In a *JAMA Ophthalmology* paper published online April 18, David Sullivan, Ph.D., of Massachusetts Eye and Ear/Schepens Eye Institute in Boston, Mass., and Tannin Schmidt, Ph.D., at the University of Calgary in Canada, examined human tissues and cells to determine whether the glycoprotein lubricin is produced by the [ocular surface](#) (the anterior segment, or front part of the eye, which includes the cornea and conjunctiva).

Their research demonstrated that ocular surface cells produce lubricin, which prevents friction between the cornea and conjunctiva, reducing shear stress (such as during eye blinking) to prevent [eye injury](#) at the ocular surface. Furthermore, they demonstrated that lubricin deficiency in the eye contributes to corneal damage.

Findings from the study also demonstrate the presence of lubricin

mRNA (the genetic material necessary to create lubricin) in a number of exocrine, urinary and [reproductive tissues](#) (salivary, bladder, cervical/vaginal & uterine), suggesting that lubricin could play a similar role throughout the body.

"These novel findings hold promise not only for treatment of conditions such as dry [eye disease](#), or complications from contact lens wear and refractive surgery," said lead author Dr. David Sullivan, who is also the Founder of the [Tear Film & Ocular Surface Society](#). "They are also encouraging for the possible treatment of postmenopausal vaginal atrophy and other disorders that occur more commonly in women, such as xerostomia and interstitial cystitis."

"This is a new and exciting area of research for my laboratory," said Dr. Tannin Schmidt, who is jointly appointed in Kinesiology and Biomedical Engineering, "I am excited to see where this discovery leads us in terms of potential new therapies as well as novel contact lens materials that help improve biocompatibility and extend the length of time you can wear your lenses."

Provided by Massachusetts Eye and Ear Infirmary

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