

Common brain receptor in eyes may link epilepsy, cataracts and antidepressants

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Researchers from the University of Medicine and Dentistry of New Jersey (UMDNJ) and Columbia University have discovered that the most common receptor for the major neurotransmitter in the brain is also present in the lens of the eye, a finding that may help explain links between cataracts, epilepsy and use of a number of widely prescribed antiepileptic and antidepressant drugs. The research appears online in *Biochemical and Biophysical Research Communications*.

“Recent studies identified associations between increased [cataracts](#) and [epilepsy](#), and showed increased cataract prevalence with use of antiepileptic drugs as well as some common antidepressants,” explained corresponding author Peter Frederikse, PhD, of the UMDNJ-New Jersey Medical School. “One common theme linking these observations is that our research showed the most prevalent receptor for the major neurotransmitter in the [brain](#) is also present in the lens.”

The research team, which included Norman Kleiman, PhD, of the Mailman School of Public Health at Columbia University, with Mohammed Farooq of the New Jersey Medical School and Rajesh Kaswala, DDS, and Chinnaswamy Kasinathan, PhD, from the New Jersey Dental School, found these glutamate [receptor proteins](#), and specifically a pivotal GluA2 subunit, are expressed in the lens and appear to be regulated in a surprisingly similar manner to the way they are in the brain. In the nervous system, glutamate and GluA receptor proteins underlie memory formation and mood regulation along with being an important factor in epilepsy, considered a primary disorder of the brain.

Consistent with this, these receptor proteins are also targets for a number of antiepileptic drugs and antidepressant medications.

“The presence of these glutamate receptors in the lens suggests they contribute to links between brain disease and cataract, as well as providing unintended secondary ‘targets’ of current drugs,” Frederikse said. “Our goal now is to use this information to parse out the potential effects of antiepileptics and antidepressants on these ‘off-target’ sites in the lens, and to determine the role glutamate receptors have in lens biology and pathology.”

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Provided by University of Medicine and Dentistry of New Jersey

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