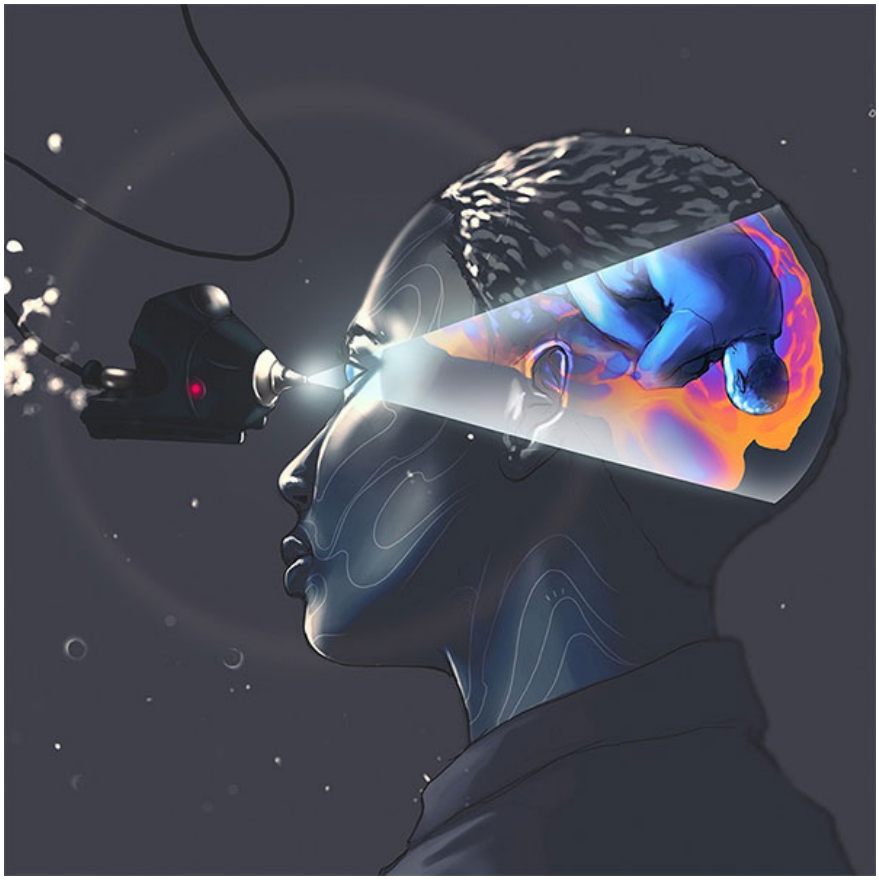
A simple eye test could predict mental illness

Genetic risk of schizophrenia linked to thinner retina, suggesting retinal scans could aid early detection and treatment.

Genetic risk of schizophrenia linked to thinner retina, suggesting retinal scans could aid early detection and treatment.

The retina is part of the central nervous system and acts as a direct extension of the brain. This anatomical connection means that changes in the brain can be reflected in the eyes. An international team of researchers from the University of Zurich and the University Psychiatric Hospital Zurich have explored this connection further.

The study focused on determining whether altered neural connectivity is linked to genetic risk factors for schizophrenia – a disorder characterized by disruptions in neural information processing.



The link between thin retina and genetic risk

Previous studies have shown that schizophrenia can cause a reduction in the volume of gray matter in the brain and a thinning of the retina. However, it is unclear whether this is a cause or a consequence of the disease. Retinal changes may also be influenced by factors such as antipsychotic medications, lifestyle, or comorbidities such as diabetes.

' *To test whether the risk of schizophrenia is influenced by the central nervous system, we analyzed data from tens of thousands of healthy people,* ' said lead author Dr Finn Rabe. ' *We then calculated a polygenic risk score for each individual* .'

The team used genetic and retinal data from the UK Biobank – a massive biomedical database with information on more than half a million people. 'The scale of the UK Biobank data has revolutionized biomedical research,' Rabe said.

The thinner the retina, the higher the risk.

The results showed that a higher genetic risk for schizophrenia was associated with a thinner retina. While the effect was small and only evident in large studies, retinal changes are easy to detect with optical coherence tomography (OCT) – a non-invasive, low-cost method that only takes a few minutes.

"Our study shows the potential for clinical applications of OCT. However, further large-scale longitudinal studies are needed to evaluate the preventive efficacy," said Rabe.

Another important finding was that gene variants associated with inflammation in the brain also contributed to changes in retinal structure, supporting the inflammation hypothesis in schizophrenia – the idea that inflammation drives the development or progression of the disease.

" *If this hypothesis is confirmed, we may be able to block inflammation with drugs, which could open up new avenues for future treatment* ."