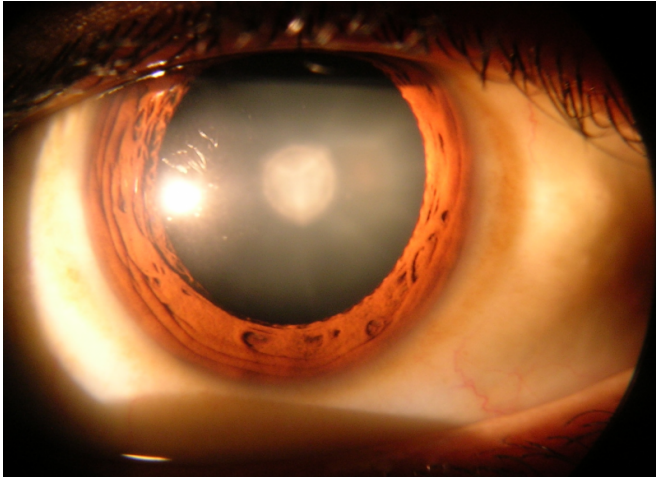


# New research may revolutionise cataract treatment

19 May 2021



Cataract in human eye. Credit: Wikipedia.

World-leading eye experts have made a breakthrough that could potentially change the way cataracts are treated—with potential for drug therapy to replace surgery.

Cataract is a clouding of the eye lens that develops over time and affects the quality of vision. It is caused by an accumulation of protein in the lens that reduces the transmission of light to the retina. Previous research led by ARU found that cataracts account for almost half of global cases of blindness.

A significantly developed cataract can only currently be treated by a [surgical procedure](#) to remove the cloudy lens and insert an artificial replacement.

A team of international scientists, led by Professor Barbara Pierscionek of Anglia Ruskin University (ARU), has published peer-reviewed research that shows the sophisticated optics of the lens develops much earlier in gestation than has previously been thought possible. They also found

how a particular protein (aquaporin) responsible for water passage in the lens disrupts the optical development, leading to cataract formation.

The scientists have spent more than a decade conducting the most [precise measurements](#) on optics of the lens at SPring-8, the world's largest and most powerful synchrotron, in Japan.

The synchrotron is a [particle accelerator](#) that produces powerful X-rays by accelerating electrons to the speed of light. The X-rays allow measurements to be taken with the highest accuracy yet on optical properties of the eye.

The project team is the first in the world to have measured how the optics in the eye lens develop. Their research was presented earlier this month at the Association for Research in Vision and Ophthalmology (ARVO) annual meeting.

Professor Pierscionek, Deputy Dean (Research and Innovation) for the Faculty of Health, Education, Medicine and Social Care and member of the Medical Technology Research Centre at ARU, said: "Cataracts are one of the main causes of vision loss and blindness worldwide, yet for many people surgery is inaccessible for various reasons.

"Our findings indicate the role of the aquaporin proteins and the crucial importance of this for the [lens](#) to work correctly and the eye to see clearly.

"Further research in this area is planned, but this discovery, together with our research on nanotechnologies that indicate [drug therapy](#) for cataract is possible, could potentially revolutionize the way [cataract](#) is treated, opening up the field for drug-based therapy rather than surgery. This would have exciting implications for public health."

**More information:** [DOI: 10.1167/iavs.62.3.23](https://doi.org/10.1167/iavs.62.3.23)

Provided by Anglia Ruskin University

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