

PRESS RELEASE

Early detection of vision loss in age-related macular degeneration (AMD)

Findings could enable new therapies and improved treatments

Bonn, July 10, 2024 - New research by the University Hospital Bonn (UKB) in cooperation with the University of Bonn has shown for the first time that certain early changes in patients with age-related macular degeneration (AMD) can lead to a measurable local loss of vision. This discovery could help to improve the treatment and monitoring of this eye disease in older patients, which otherwise slowly leads to central blindness, and to test new therapies.

AMD mainly affects elderly people. If left untreated, the disease leads to a progressive loss of central vision, which significantly impairs everyday activities such as reading or driving. Researchers around the world are intensively searching for ways to improve the early detection and treatment of this disease before major losses occur.

A research team from the UKB Eye Clinic, in cooperation with the University of Bonn and in close collaboration with basic and clinical scientists, has specifically examined patients with early forms of AMD. The researchers focused on the so-called iRORA lesions, which are very early anatomical signs of retinal damage.

"We used the microperimetry method to precisely measure the visual acuity at these affected areas of the retina," explain Julius Ameln, Dr. Marlene Saßmannshausen and Dr. Leon von der Emde, who carried out the examinations. This involves measuring the sensitivity of the retina to light stimuli in order to identify visual impairments. As the affected retinal areas are smaller than 250 micrometers, routine clinical devices reach their limits.

A high-resolution research instrument developed in Bonn, known as an adaptive optics scanning light ophthalmoscope (AOSLO), helps out. "It enables imaging of the retina with microscopic resolution and allows functional testing of small areas down to individual photoreceptors," says Dr. Wolf Harmening, head of the AOSLO laboratory at the UKB Eye Hospital and member of the Transdisciplinary Research Area (TRA) "Life & Health" at the University of Bonn.

The results were clear: the visual acuity in the areas of the lesions was markedly reduced. With the standard method, the loss was on average 7 units compared to a control region. With the precise AOSLO method, the loss was 20, which corresponds to a reduction in light sensitivity by a factor of 100.

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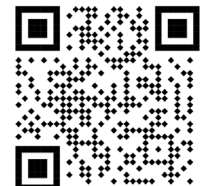
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These results illustrate that iRORA lesions already have a significant impact on vision. This early retinal damage could serve as a marker to better monitor the progression of the disease and treat it at an early stage. The results of this study are a further step towards better understanding how the late form of dry AMD develops with the formation of extensive retinal damage.

"Our investigations show that even these early lesions can contribute to a very localized but nonetheless significant deterioration in vision in our patients," explains Dr. Wolf Harmening. "This makes them a potential marker that can help to better monitor the progression of AMD and treat it at an earlier stage," adds Prof. Dr. Frank Holz, Director of the UKB Eye Clinic.

Publication: Ameln J, Saßmannshausen M, von der Emde L, Carmichael-Martins A, Holz FG, Ach T; Harmening WM (2024) Assessment of local sensitivity in incomplete retinal-pigment-epithelium and outer retinal atrophy (iRORA) lesions in intermediate age-related macular degeneration (iAMD). *BMJ Open Ophthalmology*, DOI: <https://doi.org/10.1136/bmjophth-2024-001638>

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Image material:



Caption: Researching macular degeneration together (from left), Julius Ameln, Dr. Wolf Harmening, Prof. Frank G. Holz, Dr. Marlene Saßmannshausen, Dr. Leon von der Emde, Alessandra Carmichael-Martins, Dr. Thomas Ach

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About Bonn University Hospital: The UKB treats around 500,000 patients per year, employs around 9,500 staff and has total assets of 1.8 billion euros. In addition to the 3,500 medical and dental students, 550 people are trained in numerous healthcare professions each year. The UKB is ranked first among university hospitals in NRW in the Focus Clinic List and has the second-highest case mix index (case severity) in Germany. In 2022 and 2023, the F.A.Z. Institute recognized the UKB as Germany's most desirable employer and training champion among public hospitals in Germany.