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“Quantitative Netzhaut-Phänotypisierung bei früher Altersbedingter Makuladegeneration

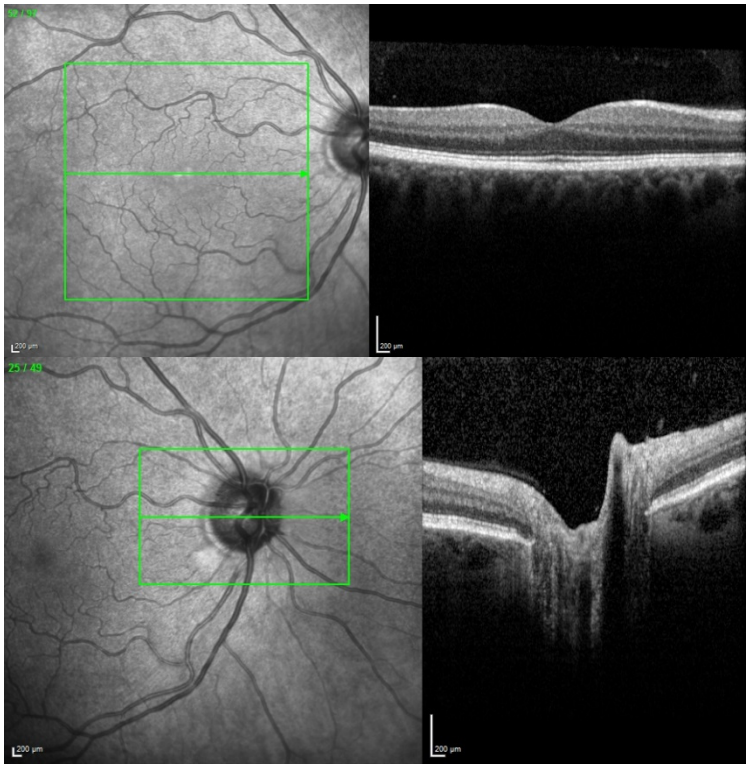
Franziska Rauscher, LIFE & IMISE

und Marcus Wagner, IMISE

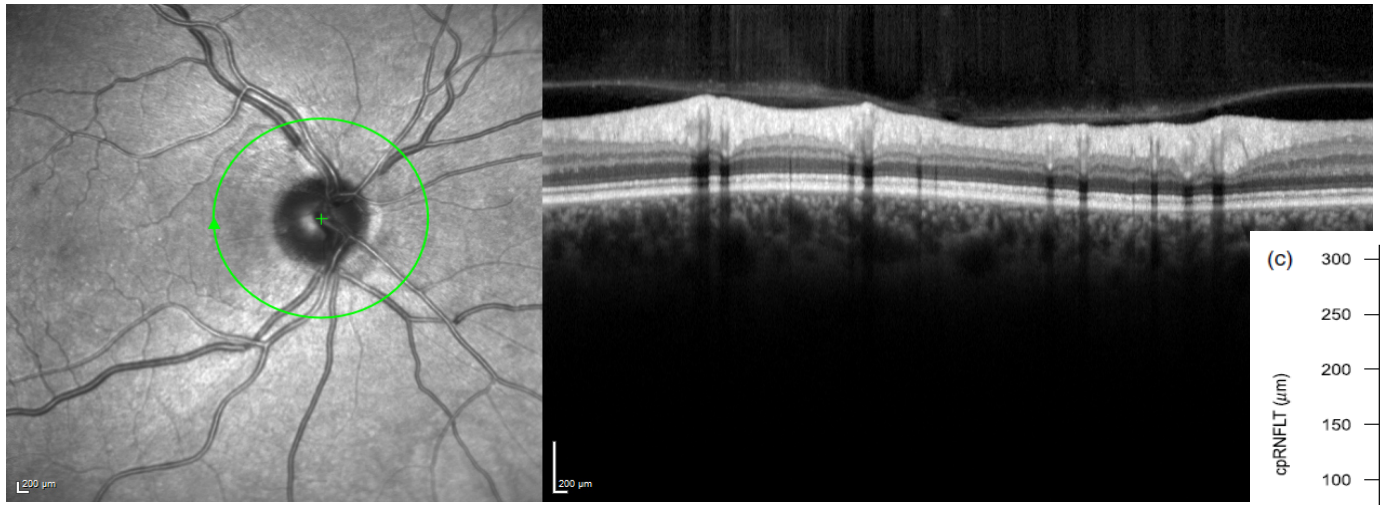
Warum gibt es eine Augenuntersuchung in einer bevölkerungsbasierten Studie

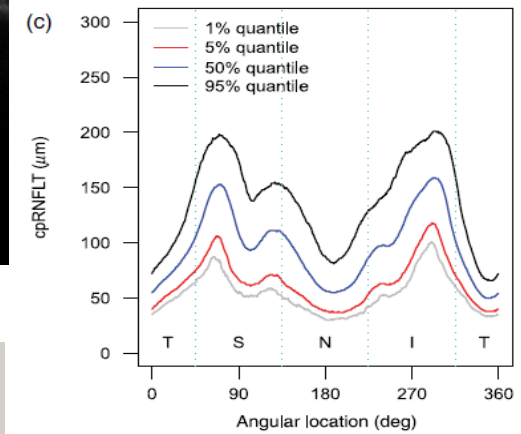
- Die Retina ist ein direkt zugänglicher Teil des zentralen Nervensystems
- Nicht-invasive Bildgebung mittels SD-OCT möglich
- Retinale Veränderungen spiegeln wider (u.a.):
  - metabolische Dysfunktion
  - Gefäßerkrankungen
  - Neurodegeneration
  - Alterungsprozesse

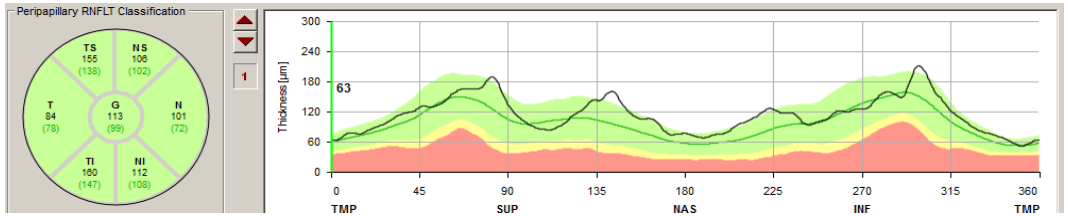
LIFE Adult Augenuntersuchung



LIFE Adult Augenuntersuchung







Publikationen (Auswahl)

- Normative Daten der retinalen Nervenfaserschicht

The Leipzig Health Atlas-An Open Platform to Present, Archive, and Share Biomedical Data, Analyses, and Models Online. Methods Inf Med. 2022

Accepted Manuscript online: 2022-08-01 Article published online: 2022-12-23

The Leipzig Health Atlas—An Open Platform to Present, Archive, and Share Biomedical Data, Analyses, and Models Online

Toralf Kirsten[1,2,3,*] Frank A. Meineke[2,*] Henry Loeffler-Wirth[4] Christoph Beger[2] Alexandr Uciteli[2] Sebastian Stäubert[2] Matthias Löbe[2,3] René Hänsel[2] Franziska G. Rauscher[2,3] Judith Schuster[2] Thomas Peschel[2] Heinrich Herre[2] Jonas Wagner[2,3] Silke Zachariae[2] Christoph Engel[2,3] Markus Scholz[2] Erhard Rahm[5] Hans Binder[4,§] Markus Loeffler[2,3,4,§] on behalf of the LHA team[#]

[1] Department of Medical Data Science, Leipzig University Medical Center, Leipzig, Germany
[2] Institute for Medical Informatics, Statistics, and Epidemiology, Leipzig University, Leipzig, Germany
[3] Interdisciplinary Centre for Bioinformatics, Leipzig University, Leipzig, Germany
[4] LIFE Research Centre for Civilization Diseases, Leipzig University, Leipzig, Germany
[5] Department of Computer Sciences, Leipzig University, Leipzig, Germany
[6] Anhalt University of Applied Sciences, Köthen, Germany

Address for correspondence Toralf Kirsten, Department of Medical Data Science, Leipzig University, Härtelstraße 16-18, 04107 Leipzig, Germany (e-mail: toralf.kirsten@medizin.uni-leipzig.de).

Methods Inf Med 2022;61:e103–e115.

Abstract

Background Clinical trials, epidemiological studies, clinical registries, and other prospective research projects, together with patient care services, are main sources of data in the medical research domain. They serve often as a basis for secondary research in evidence-based medicine, prediction models for disease, and its progression. This data are often neither sufficiently described nor accessible. Related models

Keywords
- FAIR
- data semantics
- research data

Feasibility and repeatability of ocular biometry measured with IOLMaster 700 in a large population-based study. Ophthalmic Physiol Opt. 2023

Received: 28 September 2022 | Accepted: 5 April 2023 | Published online: 21 April 2023

DOI: 10.1111/opo.13148

OPO THE COLLEGE OF OPTOMETRISTS

ORIGINAL ARTICLE

Feasibility and repeatability of ocular biometry measured with IOLMaster 700 in a large population-based study

Ralph Michael[1,2] | Kerstin Wirkner[1,3] | Christoph Engel[1,3] | Markus Loeffler[1,3] | Toralf Kirsten[1,2,3] | Franziska G. Rauscher[1,2,3]

[1]Institute for Medical Informatics, Statistics, and Epidemiology (IMISE), Leipzig University, Leipzig, Germany

[2]Medical Informatics Center – Dept. of Medical Data Science, Leipzig University Medical Centre, Leipzig, Germany

[3]Leipzig Research Centre for Civilization Diseases (LIFE), Leipzig University, Leipzig, Germany

Correspondence

Abstract

Purpose: To evaluate the feasibility and repeatability of IOLMaster 700 biometry measurements in an adult population. Furthermore, to assess the value of the Quality Indicators (QIs) provided by the device.

Method: As part of the large population-based Leipzig Research Centre for Civilization Diseases (LIFE) Adult-Study, randomly selected participants from Leipzig, Germany were evaluated with the ZEISS IOLMaster 700. Age range was 26–85 years, with 53% of participants above 70 years of age. Axial length (AL), cen-

Sex-Specific Differences in Circumpapillary Retinal Nerve Fiber Layer Thickness. Ophthalmology. 2020

Published in final edited form as:

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Sex-Specific Differences in Circumpapillary Retinal Nerve Fiber Layer Thickness

Dian Li, MSc[1,2,*], **Franziska G. Rauscher, PhD**[1,3,*], **Eun Young Choi, MD**[1,2], **Mengyu Wang, PhD**[1,2], **Neda Baniasadi, MD, PhD**[1,2], **Kerstin Wirkner, PhD**[1], **Toralf Kirsten, PhD**[1,4], **Joachim Thiery, PhD**[1,5], **Christoph Engel, PhD**[1,3], **Markus Loeffler, PhD**[1,3], **Tobias Elze, PhD**[1,2]

[1]Leipzig Research Centre for Civilization Diseases, Leipzig University, Leipzig, Germany.

[2]Schepens Eye Research Institute, Harvard Medical School, Boston, Massachusetts.

[3]Institute for Medical Informatics, Statistics, and Epidemiology, Leipzig University, Leipzig, Germany.

[4]Applied Computer Science and Biosciences, University of Applied Sciences Mittweida, Mittweida, Germany.

[5]Institute of Laboratory Medicine, Clinical Chemistry and Molecular Diagnostics, Leipzig University, Leipzig, Germany.

Abstract

Norms of Interocular Circumpapillary Retinal Nerve Fiber Layer Thickness Differences at 768 Retinal Locations. Transl Vis Sci Technol. 2020

tvst

Article

Norms of Interocular Circumpapillary Retinal Nerve Fiber Layer Thickness Differences at 768 Retinal Locations

Neda Baniasadi[1,2,*], Franziska G. Rauscher[1,3,*], Dian Li[1,2], Mengyu Wang[1,2], Eun Young Choi[1,2], Hui Wang[1,2,4], Thomas Peschel[3], Kerstin Wirkner[1,3], Toralf Kirsten[1,5], Joachim Thiery[1,6], Christoph Engel[1,3], Markus Loeffler[1,3], and Tobias Elze[1,2]

[1] Leipzig Research Centre for Civilization Diseases (LIFE), Leipzig University, Leipzig, Germany
[2] Schepens Eye Research Institute, Harvard Medical School, Boston, MA, USA
[3] Institute for Medical Informatics, Statistics, and Epidemiology, Leipzig University, Leipzig, Germany
[4] Institute for Psychology and Behavior, Jilin University of Finance and Economics, Changchun, China
[5] Applied Computer Science and Biosciences, University of Applied Sciences Mittweida, Mittweida, Germany
[6] Institute of Laboratory Medicine, Clinical Chemistry and Molecular Diagnostics, Leipzig University, Leipzig, Germany

Correspondence: Franziska Rauscher, PhD, Leipzig University, Institute for Medical Informatics, Statistics and Epidemiology, Härtelstrasse 16-18, 04107 Leipzig, Germany. e-mail: franziska.rauscher@medizin.uni-leipzig.de

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Purpose: The onset and progression of optic neuropathies like glaucoma often occurs asymmetrically between the two eyes of a patient. Interocular circumpapillary retinal nerve fiber layer thickness (cpRNFLT) differences could detect disease earlier. To apply such differences diagnostically, detailed location specific norms are necessary.

Methods: Spectral-domain optical coherence tomography cpRNFLT circle scans from the population-based Leipzig Research Centre for Civilization Diseases–Adult study were selected. At each of the 768 radial scanning locations, normative interocular cpRNFLT difference distributions were calculated based on age and interocular radius difference.

Results: A total of 8966 cpRNFLT scans of healthy eyes (4483 patients; 55% female; age

Age, ocular magnification, and circumpapillary retinal nerve fiber layer thickness. J Biomed Opt. 2017

Journal of Biomedical Optics 22(12), 121718 (December 2017)

Age, ocular magnification, and circumpapillary retinal nerve fiber layer thickness

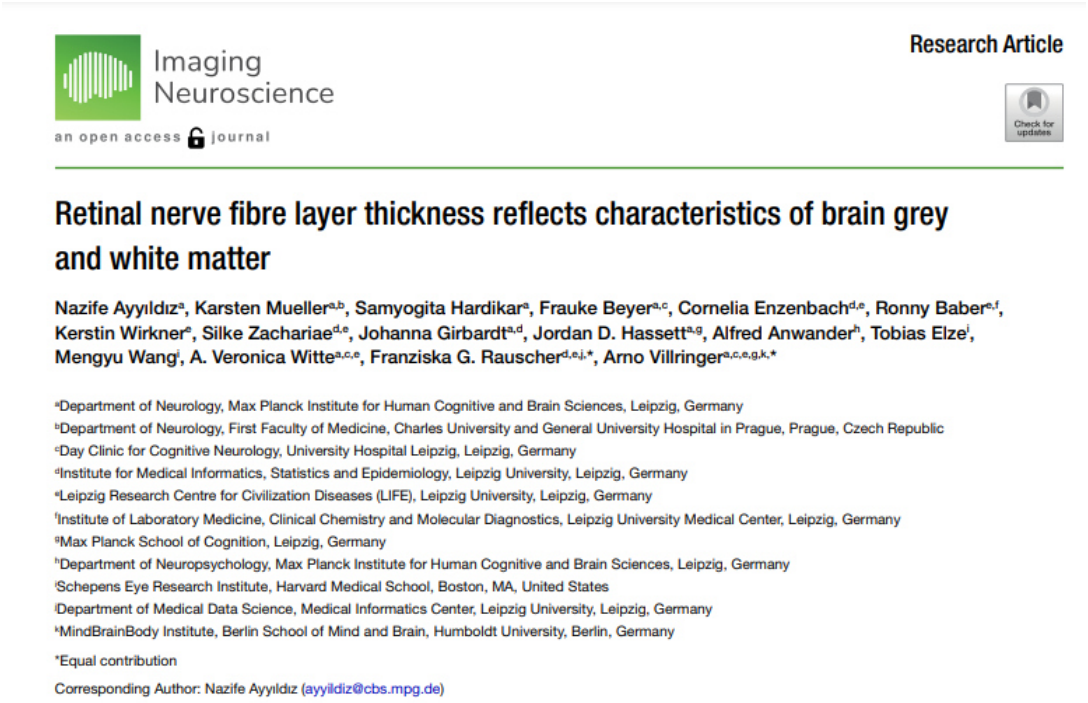
Mengyu Wang,[a,b,†] Tobias Elze,[a,b,†] Dian Li,[a,b] Neda Baniasadi,[a,b] Kerstin Wirkner,[a] Toralf Kirsten,[a] Joachim Thiery,[a,c] Markus Loeffler,[a,d] Christoph Engel,[a,d] and Franziska G. Rauscher[a,d,e,*]
[a]Leipzig University, Leipzig Research Centre for Civilization Diseases, Leipzig, Germany
[b]Schepens Eye Research Institute, Harvard Medical School, Boston, Massachusetts, United States
[c]Leipzig University, Institute of Laboratory Medicine, Clinical Chemistry and Molecular Diagnostics, Leipzig, Germany
[d]Leipzig University, Institute for Medical Informatics, Statistics and Epidemiology, Leipzig, Germany
[e]Leipzig University Hospital, Department of Ophthalmology, Leipzig, Germany

Abstract. Optical coherence tomography (OCT) manufacturers graphically present circumpapillary retinal nerve fiber layer thickness (cpRNFLT) together with normative limits to support clinicians in diagnosing ophthalmic diseases. The impact of age on cpRNFLT is typically implemented by linear models. cpRNFLT is strongly location-specific, whereas previously published norms are typically restricted to coarse sectors and based on small populations. Furthermore, OCT devices neglect impacts of lens or eye size on the diameter of the cpRNFLT scan circle so that the diameter substantially varies over different eyes. We investigate the impact of age and scan diameter reported by Spectralis spectral-domain OCT on cpRNFLT in 5646 subjects with healthy eyes. We provide cpRNFLT by age and diameter at 768 angular locations. Age/diameter were significantly related to cpRNFLT on 89%/92% of the circle, respectively (pointwise linear regression), and to shifts in cpRNFLT peak locations. For subjects from age 42.1 onward but not below, increasing age significantly decreased scan diameter ($r = -0.28$, $p < 0.001$), which suggests that pathological cpRNFLT thinning over time may be underestimated in elderly compared to younger subjects, as scan diameter decrease correlated with cpRNFLT increase. Our detailed numerical results may help to generate various correction models to improve diagnosing and monitoring optic neuropathies. [DOI: 10.1117/1.JBO.22.12.121718]

Publikationen interdiziplinär

- Gehirn und Auge
- Diabetes und Auge
- Niere und Auge
- Leber und Auge
- …..

Retinal nerve fibre layer thickness reflects characteristics of brain grey and white matter. Imaging Neurosci (Camb). 2026



Imaging Neuroscience
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Research Article

Retinal nerve fibre layer thickness reflects characteristics of brain grey and white matter

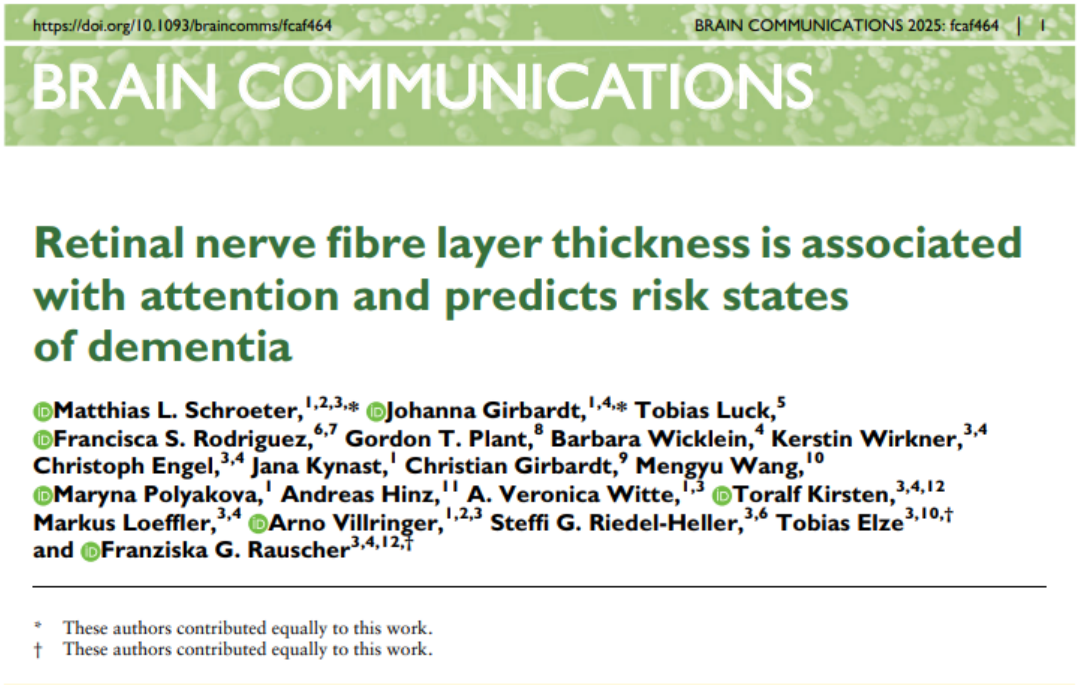
Nazife Ayyıldız[a], Karsten Mueller[a,b], Samyogita Hardikar[a], Frauke Beyer[a,c], Cornelia Enzenbach[d,e], Ronny Baber[e,f], Kerstin Wirkner[e], Silke Zachariae[d,e], Johanna Girbardt[a,d], Jordan D. Hassett[a,g], Alfred Anwander[h], Tobias Elze[i], Mengyu Wang[j], A. Veronica Witte[a,c,e], Franziska G. Rauscher[d,e,j,*], Arno Villringer[a,c,e,g,k,*]

[a]Department of Neurology, Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany
[b]Department of Neurology, First Faculty of Medicine, Charles University and General University Hospital in Prague, Prague, Czech Republic
[c]Day Clinic for Cognitive Neurology, University Hospital Leipzig, Leipzig, Germany
[d]Institute for Medical Informatics, Statistics and Epidemiology, Leipzig University, Leipzig, Germany
[e]Leipzig Research Centre for Civilization Diseases (LIFE), Leipzig University, Leipzig, Germany
[f]Institute of Laboratory Medicine, Clinical Chemistry and Molecular Diagnostics, Leipzig University Medical Center, Leipzig, Germany
[g]Max Planck School of Cognition, Leipzig, Germany
[h]Department of Neuropsychology, Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany
[i]Schepens Eye Research Institute, Harvard Medical School, Boston, MA, United States
[j]Department of Medical Data Science, Medical Informatics Center, Leipzig University, Leipzig, Germany
[k]MindBrainBody Institute, Berlin School of Mind and Brain, Humboldt University, Berlin, Germany

*Equal contribution

Corresponding Author: Nazife Ayyıldız (ayyildiz@cbs.mpg.de)

Retinal nerve fibre layer thickness is associated with attention and predicts risk states of dementia. Brain Commun. 2025



https://doi.org/10.1093/braincomms/fcaf464 BRAIN COMMUNICATIONS 2025: fcaf464 | 1

BRAIN COMMUNICATIONS

Retinal nerve fibre layer thickness is associated with attention and predicts risk states of dementia

Matthias L. Schroeter,[1,2,3,*] Johanna Girbardt,[1,4,*] Tobias Luck,[5] Francisca S. Rodriguez,[6,7] Gordon T. Plant,[8] Barbara Wicklein,[4] Kerstin Wirkner,[3,4] Christoph Engel,[3,4] Jana Kynast,[1] Christian Girbardt,[9] Mengyu Wang,[10] Maryna Polyakova,[1] Andreas Hinz,[11] A. Veronica Witte,[1,3] Toralf Kirsten,[3,4,12] Markus Loeffler,[3,4] Arno Villringer,[1,2,3] Steffi G. Riedel-Heller,[3,6] Tobias Elze[3,10,†] and Franziska G. Rauscher[3,4,12,†]

* These authors contributed equally to this work.
† These authors contributed equally to this work.

Glucose tolerance and insulin resistance/sensitivity associate with retinal layer characteristics: the LIFE-Adult-Study. Diabetologia. 2024

Diabetologia (2024) 67:928–939
https://doi.org/10.1007/s00125-024-06093-9

ARTICLE

Glucose tolerance and insulin resistance/sensitivity associate with retinal layer characteristics: the LIFE-Adult-Study

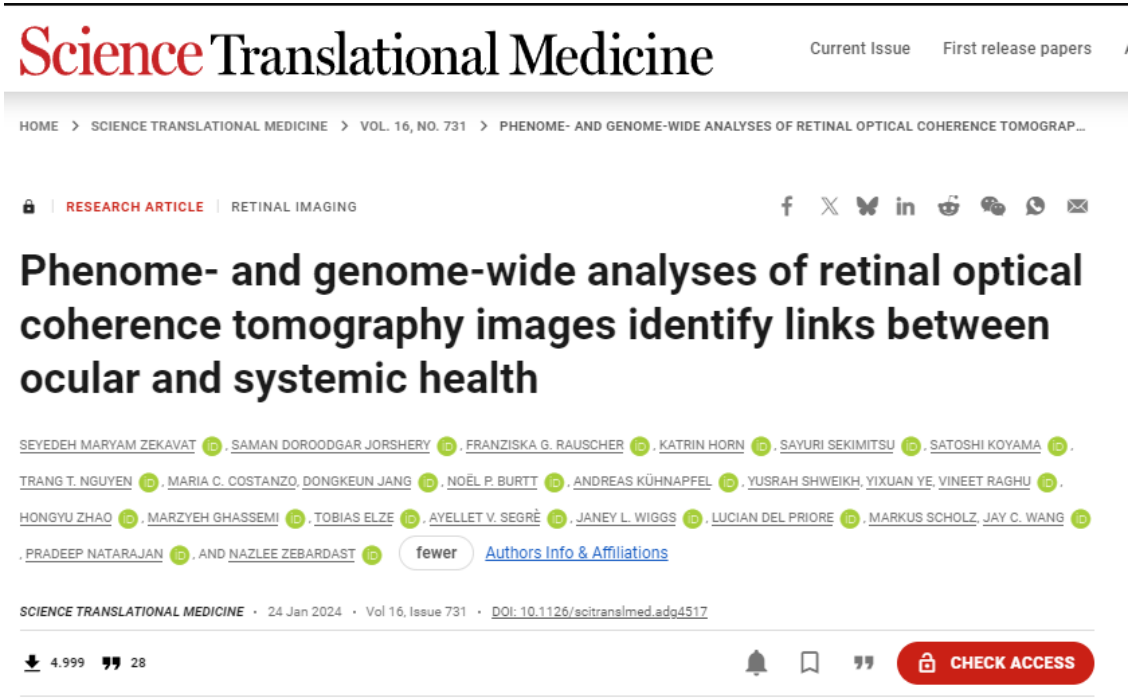
Franziska G. Rauscher[1,2,8] · Tobias Elze[1,3] · Mike Francke[2] · M. Elena Martinez-Perez[4] · Yangjiani Li[3] · Kerstin Wirkner[1,2] · Anke Tönjes[5] · Christoph Engel[1,2] · Joachim Thiery[1,6] · Matthias Blüher[5,7] · Michael Stumvoll[5] · Toralf Kirsten[1,2,8] · Markus Loeffler[1,2] · Thomas Ebert[5] · Mengyu Wang[1,3]

Received: 25 May 2023 / Accepted: 8 November 2023 / Published online: 2 March 2024

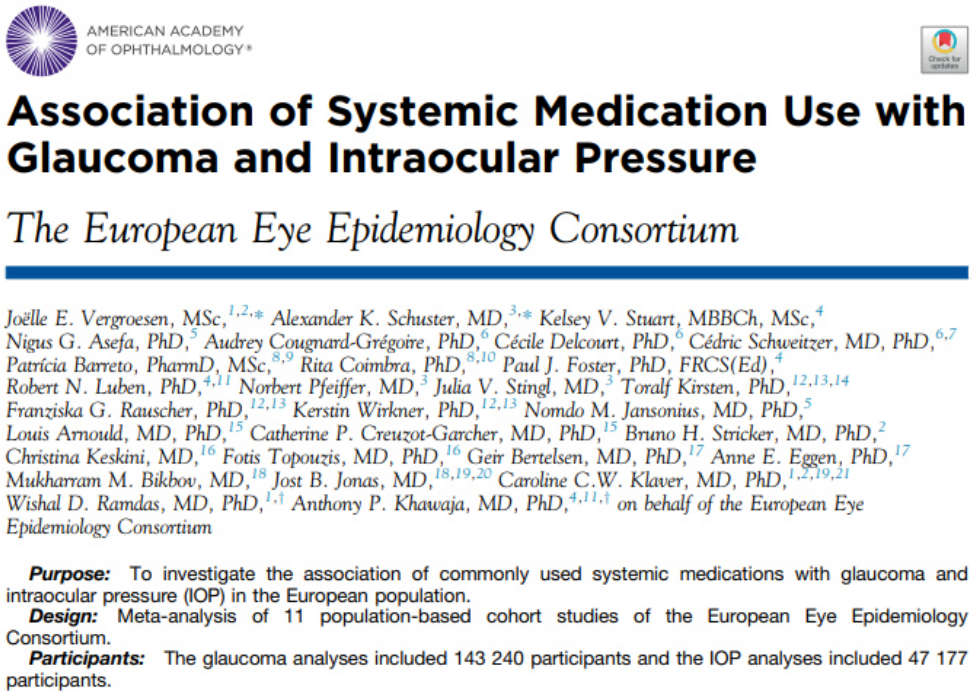
Abstract

Aims/hypothesis As the prevalence of insulin resistance and glucose intolerance is increasing throughout the world, diabetes-induced eye diseases are a global health burden. We aim to identify distinct optical bands which are closely related to insulin and glucose metabolism, using non-invasive, high-resolution spectral domain optical coherence tomography (SD-OCT) in a large, population-based dataset.

Phenome- and genome-wide analyses of retinal optical coherence tomography images identify links between ocular and systemic health. Sci Transl Med. 2024



Association of Systemic Medication Use with Glaucoma and Intraocular Pressure: The European Eye Epidemiology Consortium. Ophthalmology. 2023



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Association of Systemic Medication Use with Glaucoma and Intraocular Pressure

The European Eye Epidemiology Consortium

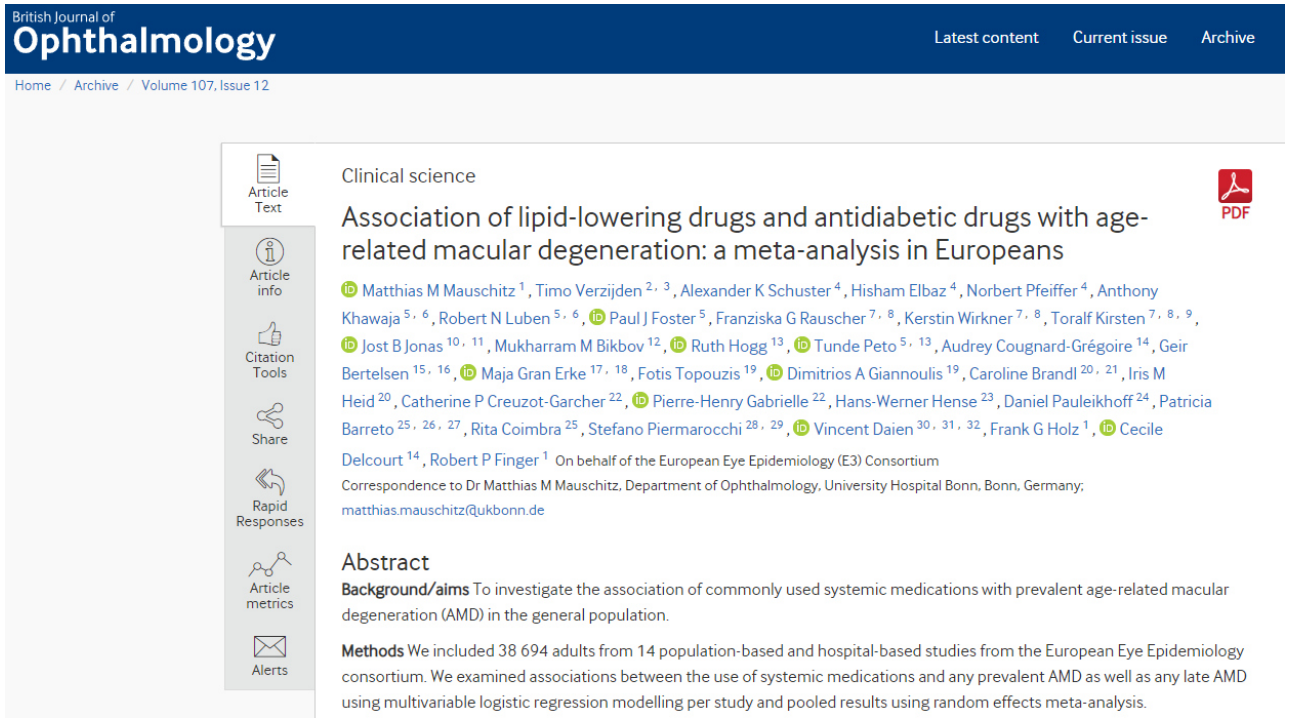
Joëlle E. Vergroesen, MSc,[1,2,] Alexander K. Schuster, MD,[3,*] Kelsey V. Stuart, MBBCh, MSc,[4] Nigus G. Asefa, PhD,[5] Audrey Cougnard-Grégoire, PhD,[6] Cécile Delcourt, PhD,[6] Cédric Schweitzer, MD, PhD,[6,7] Patrícia Barreto, PharmD, MSc,[8,9] Rita Coimbra, PhD,[8,10] Paul J. Foster, PhD, FRCS(Ed),[4] Robert N. Luben, PhD,[4,11] Norbert Pfeiffer, MD,[3] Julia V. Stingl, MD,[3] Toralf Kirsten, PhD,[12,13,14] Franziska G. Rauscher, PhD,[12,13] Kerstin Wirkner, PhD,[12,13] Nomdo M. Jansonius, MD, PhD,[5] Louis Arnould, MD, PhD,[15] Catherine P. Creuzot-Garcher, MD, PhD,[15] Bruno H. Stricker, MD, PhD,[2] Christina Keskini, MD,[16] Fotis Topouzis, MD, PhD,[16] Geir Bertelsen, MD, PhD,[17] Anne E. Eggen, PhD,[17] Mukharram M. Bikbov, MD,[18] Jost B. Jonas, MD,[18,19,20] Caroline C.W. Klaver, MD, PhD,[1,2,19,21] Wishal D. Ramdas, MD, PhD,[1,†] Anthony P. Khawaja, MD, PhD,[4,11,†] on behalf of the European Eye Epidemiology Consortium*

Purpose: To investigate the association of commonly used systemic medications with glaucoma and intraocular pressure (IOP) in the European population.

Design: Meta-analysis of 11 population-based cohort studies of the European Eye Epidemiology Consortium.

Participants: The glaucoma analyses included 143 240 participants and the IOP analyses included 47 177 participants.

Association of lipid-lowering drugs and antidiabetic drugs with age-related macular degeneration: a meta-analysis in Europeans. Br J Ophthalmol. 2023



British Journal of Ophthalmology

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Association of lipid-lowering drugs and antidiabetic drugs with age-related macular degeneration: a meta-analysis in Europeans

Matthias M Mauschitz [1], Timo Verzijden [2, 3], Alexander K Schuster [4], Hisham Elbaz [4], Norbert Pfeiffer [4], Anthony Khawaja [5, 6], Robert N Luben [5, 6], Paul J Foster [5], Franziska G Rauscher [7, 8], Kerstin Wirkner [7, 8], Toralf Kirsten [7, 8, 9], Jost B Jonas [10, 11], Mukharram M Bikbov [12], Ruth Hogg [13], Tunde Peto [5, 13], Audrey Cougnard-Grégoire [14], Geir Bertelsen [15, 16], Maja Gran Erke [17, 18], Fotis Topouzis [19], Dimitrios A Giannoulis [19], Caroline Brandl [20, 21], Iris M Heid [20], Catherine P Creuzot-Garcher [22], Pierre-Henry Gabrielle [22], Hans-Werner Hense [23], Daniel Pauleikhoff [24], Patricia Barreto [25, 26, 27], Rita Coimbra [25], Stefano Piermarocchi [28, 29], Vincent Daien [30, 31, 32], Frank G Holz [1], Cecile Delcourt [14], Robert P Finger [1] On behalf of the European Eye Epidemiology (E3) Consortium

Correspondence to Dr Matthias M Mauschitz, Department of Ophthalmology, University Hospital Bonn, Bonn, Germany; matthias.mauschitz@ukbonn.de

Abstract

Background/aims To investigate the association of commonly used systemic medications with prevalent age-related macular degeneration (AMD) in the general population.

Methods We included 38 694 adults from 14 population-based and hospital-based studies from the European Eye Epidemiology consortium. We examined associations between the use of systemic medications and any prevalent AMD as well as any late AMD using multivariable logistic regression modelling per study and pooled results using random effects meta-analysis.

Reading cognition from the eyes: association of retinal nerve fibre layer thickness with cognitive performance in a population-based study. Brain Commun. 2021


doi:10.1093/braincomms/fcab258 BRAIN COMMUNICATIONS 2021: Page 1 of 16 | 1

BRAIN COMMUNICATIONS

Reading cognition from the eyes: association of retinal nerve fibre layer thickness with cognitive performance in a population-based study

Johanna Girbardt,[1,2] Tobias Luck,[3] Jana Kynast,[2] Francisca S. Rodriguez,[4,5] Barbara Wicklein,[1] Kerstin Wirkner,[1,6] Christoph Engel,[1,6] Christian Girbardt,[7] Mengyu Wang,[8] Maryna Polyakova,[2] A. Veronica Witte,[2,6] Markus Loeffler,[1,6] Arno Villringer,[2,6,9] Steffi G. Riedel-Heller,[4,6] Matthias L. Schroeter,[2,6,9] Tobias Elze[6,8,*] and Franziska G. Rauscher[1,6,*]

* These authors contributed equally to this work.

Renal function and lipid metabolism are major predictors of circumpapillary retinal nerve fiber layer thickness-the LIFE-Adult Study. BMC Med. 2021

Rauscher *et al. BMC Medicine* (2021) 19:202
https://doi.org/10.1186/s12916-021-02064-8

BMC Medicine

RESEARCH ARTICLE Open Access

Renal function and lipid metabolism are major predictors of circumpapillary retinal nerve fiber layer thickness—the LIFE-Adult Study

Franziska G. Rauscher[1,2†], Mengyu Wang[1,3†], Mike Francke[2], Kerstin Wirkner[1,2], Anke Tönjes[4], Christoph Engel[1,2], Joachim Thiery[1,5], Peter Stenvinkel[6], Michael Stumvoll[4], Markus Loeffler[1,2], Tobias Elze[1,3†] and Thomas Ebert[4,6*†]

Abstract

Background: Circumpapillary retinal nerve fiber layer thickness (cpRNFLT) as assessed by spectral domain optical coherence tomography (SD-OCT) is a new technique used for the detection and evaluation of glaucoma and other

Systemic and Ocular Determinants of Peripapillary Retinal Nerve Fiber Layer Thickness Measurements in the European Eye Epidemiology (E3) Population. Ophthalmology. 2018

Ophthalmology
AMERICAN ACADEMY OF OPHTHALMOLOGY

ORIGINAL ARTICLE · Volume 125, Issue 10, P1526-1536, October 2018 Download Full Issue

Systemic and Ocular Determinants of Peripapillary Retinal Nerve Fiber Layer Thickness Measurements in the European Eye Epidemiology (E3) Population

Matthias M. Mauschitz, MD [1,2] · Pieter W.M. Bonnemaijer, MD [3,4] · Kersten Diers, MSc [1] · Franziska G. Rauscher, PhD [5,7] · Tobias Elze, PhD [5,6] · Christoph Engel, MD, PhD [5,7] · Markus Loeffler, MD, PhD [5,7] · Johanna Maria Colijn, MD, MSc [3,4] · M. Arfan Ikram, MD, PhD [4] · Johannes R. Vingerling, MD, PhD [3] · Katie M. Williams, MD, PhD [8] · Christopher J. Hammond, MD, PhD [8] · Catherine Creuzot-Garcher, MD, PhD [9,10] · Alain M. Bron, MD, PhD [9,10] · Rufino Silva, MD, PhD [11,12,13] · Sandrina Nunes, PhD [13] · Cécile Delcourt, PhD [14] · Audrey Cougnard-Grégoire, PhD [14] · Frank G. Holz, MD [2] · Caroline C.W. Klaver, MD, PhD [3,4] · Monique M.B. Breteler, MD, PhD [1,15] · Robert P. Finger, MD, PhD [2] on behalf of the European Eye Epidemiology (E3) Consortium

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Genome-wide association meta-analysis for early age-related macular degeneration highlights novel loci and insights for advanced disease. BMC Med Genomics. 2020

Winkler *et al. BMC Medical Genomics* (2020) 13:120
https://doi.org/10.1186/s12920-020-00760-7

BMC Medical Genomics

RESEARCH ARTICLE Open Access

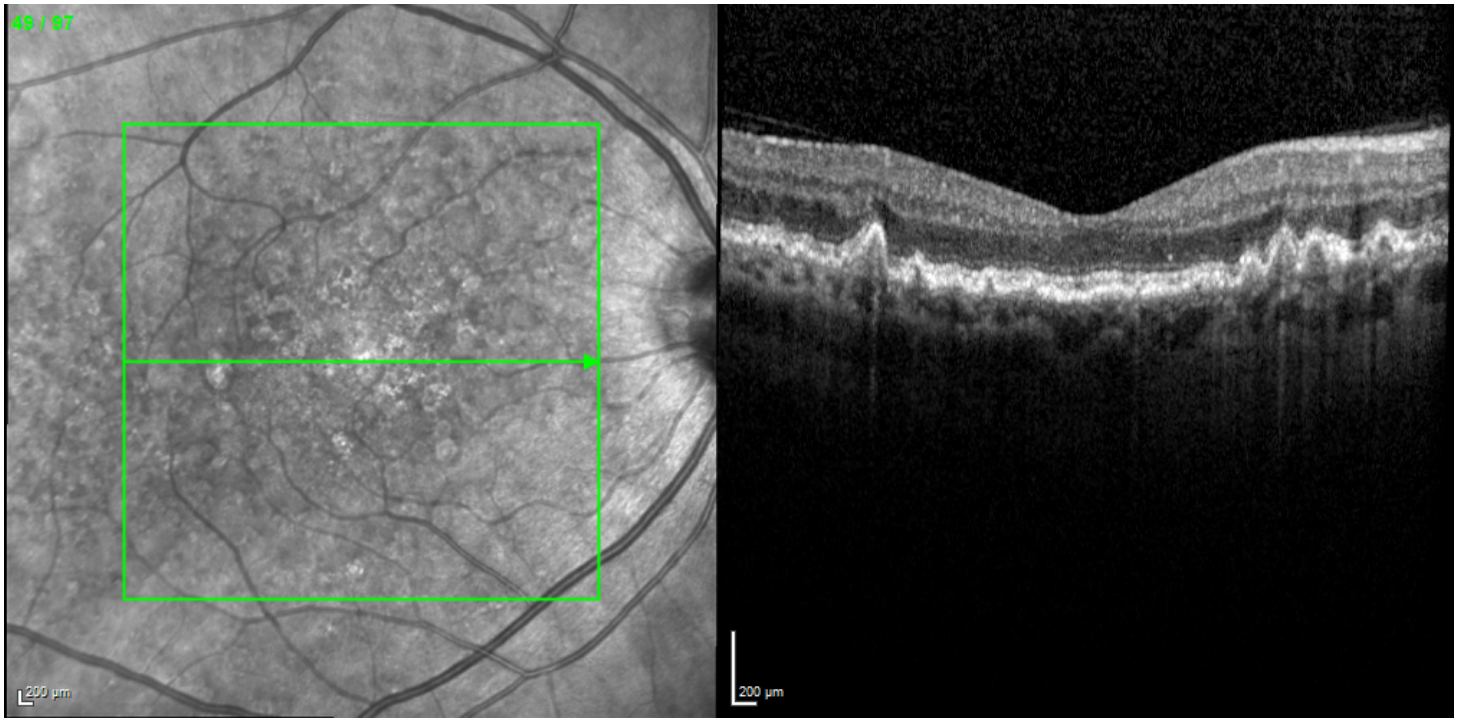
Genome-wide association meta-analysis for early age-related macular degeneration highlights novel loci and insights for advanced disease

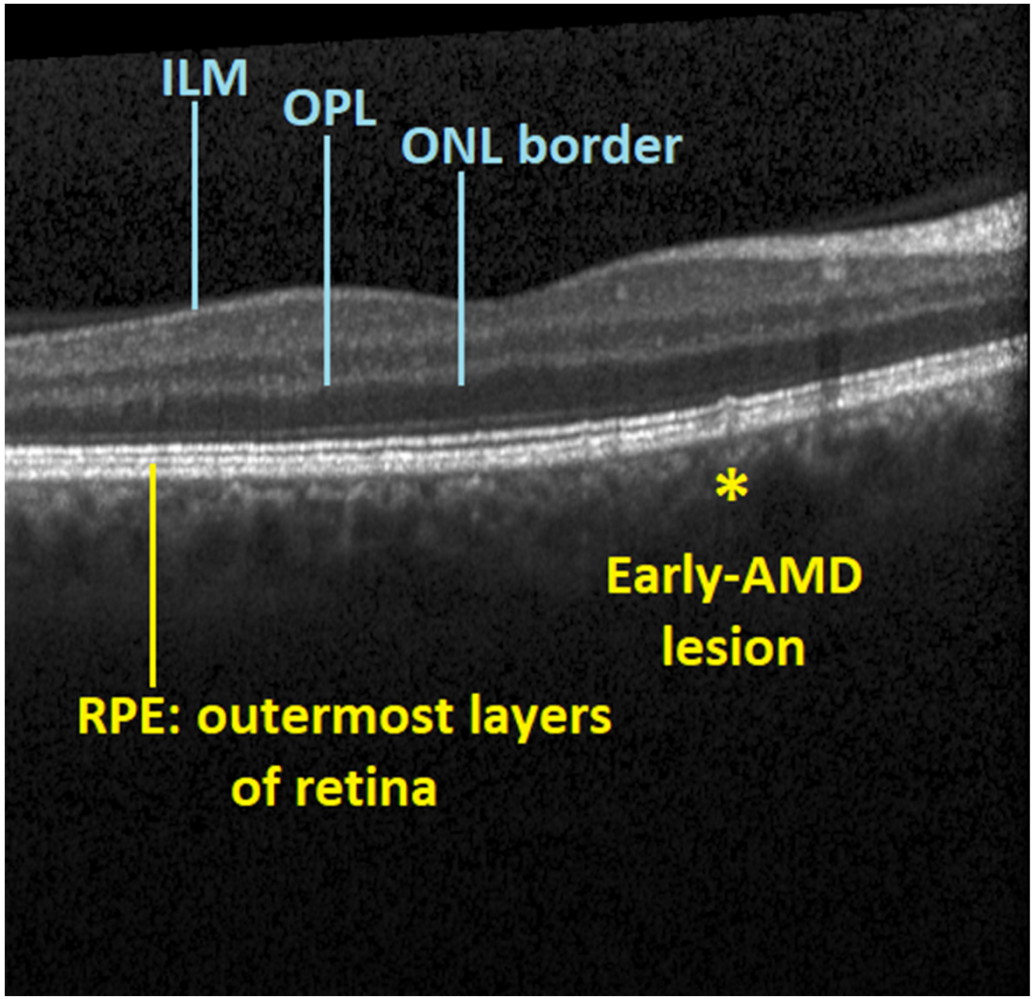
Thomas W. Winkler[1*†], Felix Grassmann[2,3,4†], Caroline Brandl[1,2,5], Christina Kiel[2], Felix Günther[1,6], Tobias Strunz[2], Lorraine Weidner[1], Martina E. Zimmermann[1], Christina A. Korb[7], Alicia Poplawski[8], Alexander K. Schuster[7], Martina Müller-Nurasyid[8,9,10,11], Annette Peters[12,13], Franziska G. Rauscher[14,15], Tobias Elze[14,16], Katrin Horn[14,15], Markus Scholz[14,15], Marisa Cañadas-Garre[17], Amy Jayne McKnight[17], Nicola Quinn[17], Ruth E. Hogg[17], Helmut Küchenhoff[6], Iris M. Heid[1†], Klaus J. Stark[1†] and Bernhard H. F. Weber[2,18†]

Abstract

Background: Advanced age-related macular degeneration (AMD) is a leading cause of blindness. While around half of the genetic contribution to advanced AMD has been uncovered, little is known about the genetic architecture of early AMD.

Früherkennung der altersabhängigen Makuladegeneration




ILM
OPL
ONL border
*
Early-AMD
lesion
RPE: outermost layers
of retina

EarlyAMDRate

Entwicklung eines OCT-Gradingsystems

Ziel

- Standardisierte Bewertung früher AMD-Läsionen.

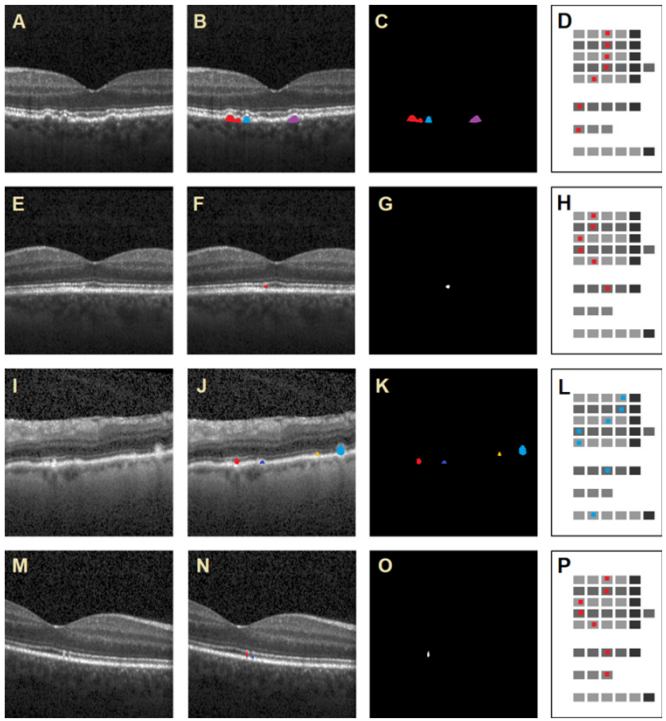
Methoden

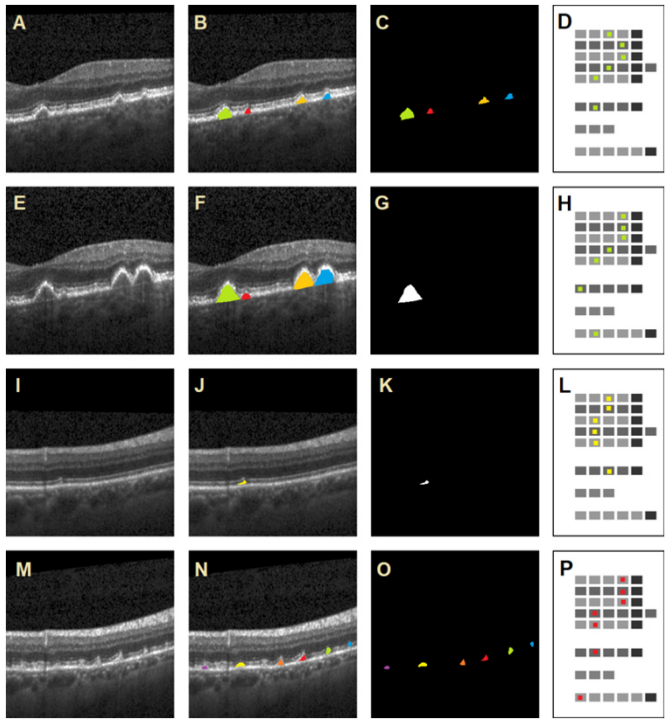
- OCT-basierte Läsionsanalyse
- standardisierte Klassifikation

Bedeutung

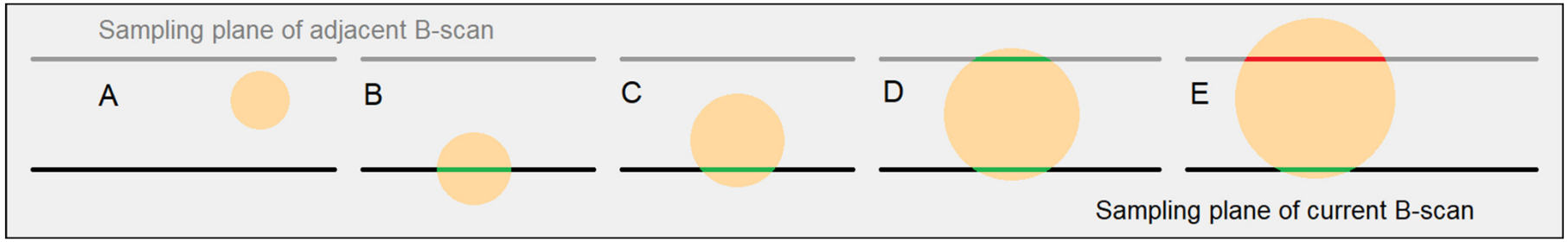
- Potenzielle Standardisierung der frühen AMD-Diagnostik.

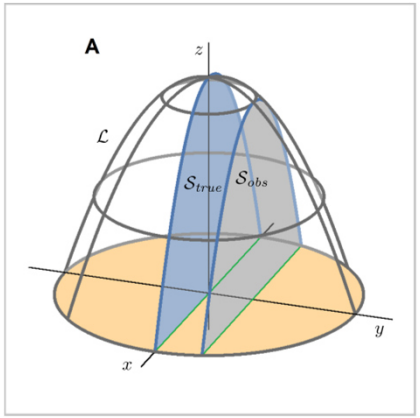
Manuelles Grading

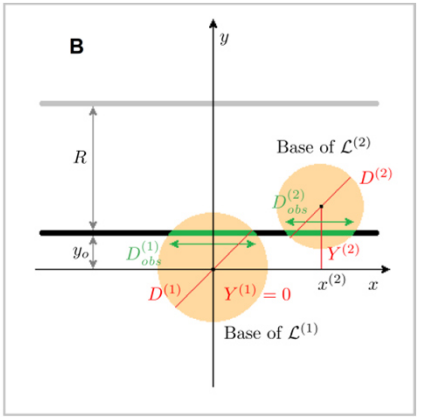




Wo schneidet der B-Scan die Druse





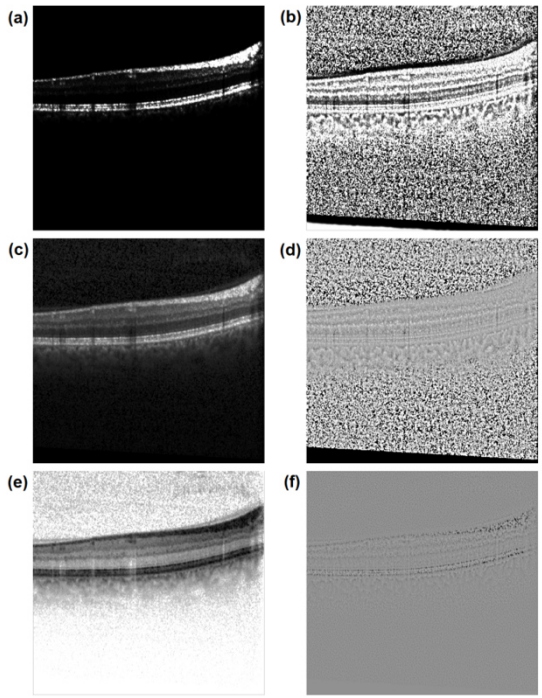


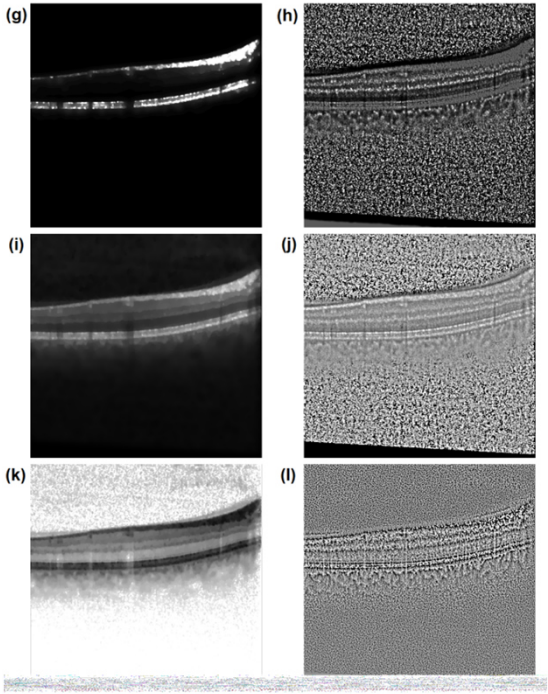
Erweiterte OCT-Analytik

- Texturanalyse
- lokale Nachbarschaftsstatistik
- hochdimensionale Bildanalyse

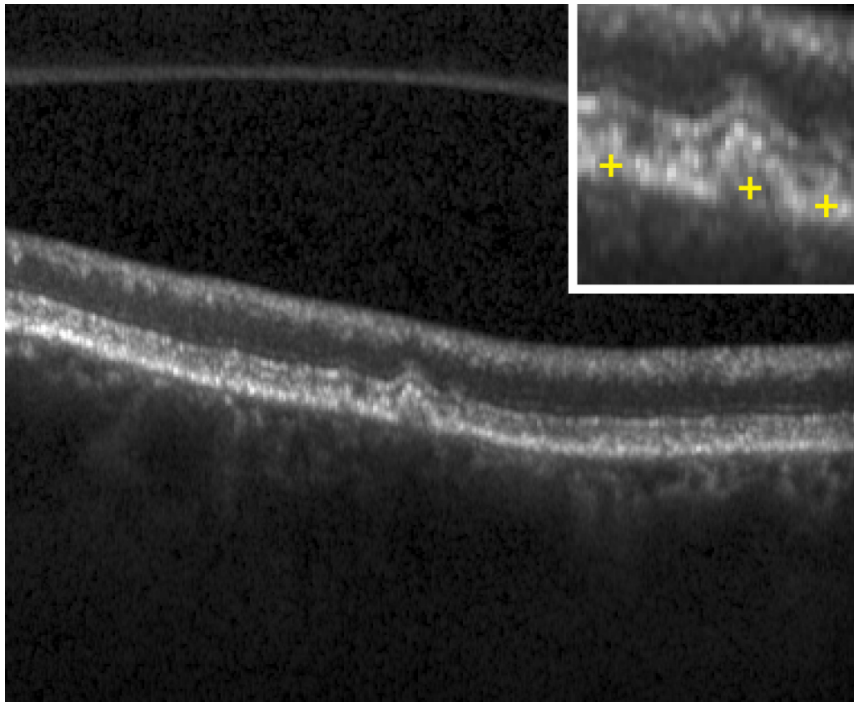
PROBLEM →Klassische Dickenmessungen erfassen frühe Veränderungen nur begrenzt

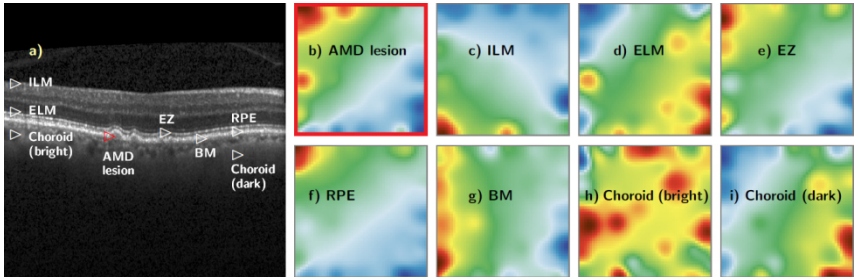
Information aus OCT Scans





Läsionen automatisch finden





Publikationen AMD

- Aktuelles Thema

A Simulation Procedure for Stereological Correction of Early AMD Lesion Sizes Observed in Single OCT-B-Scans. Transl Vis Sci Technol. 2026

tvst

Retina

A Simulation Procedure for Stereological Correction of Early AMD Lesion Sizes Observed in Single OCT-B-Scans

Marcus Wagner [1], Carla J. Leutloff [1–4], and Franziska G. Rauscher [1,5]

[1] Leipzig University, Institute for Medical Informatics, Statistics and Epidemiology (IMISE), Leipzig, Germany
[2] Experimental and Clinical Research Center, Max Delbrück Center for Molecular Medicine, Berlin, Germany
[3] Neuroscience Clinical Research Center, Charité — Universitätsmedizin Berlin, corporate member of Freie Universität Berlin and Humboldt-Universität zu Berlin, Berlin, Germany
[4] Berliner Hochschule für Technik (BHT), Berlin, Germany
[5] Leipzig University, Leipzig Research Centre for Civilization Diseases (LIFE), Leipzig, Germany

Correspondence: Franziska G. Rauscher, Leipzig University, Institute for Medical Informatics, Statistics and Epidemiology (IMISE), Härtelstrasse 16–18, Leipzig, Germany. e-mail: franziska.rauscher@medizin.uni-leipzig.de

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Keywords: age-related macular degeneration; observed lesion size; optical coherence tomography; simulation procedure; stereological correction

Purpose: Early lesions caused by age-related macular degeneration (AMD) are imaged by optical coherence tomography (OCT) in unprecedented detail. Most probably, however, the sampling plane of an OCT scan meets a given lesion noncentrally, and the observed sizes of its diameter, cross-sectional area, and volume must be stereologically corrected.

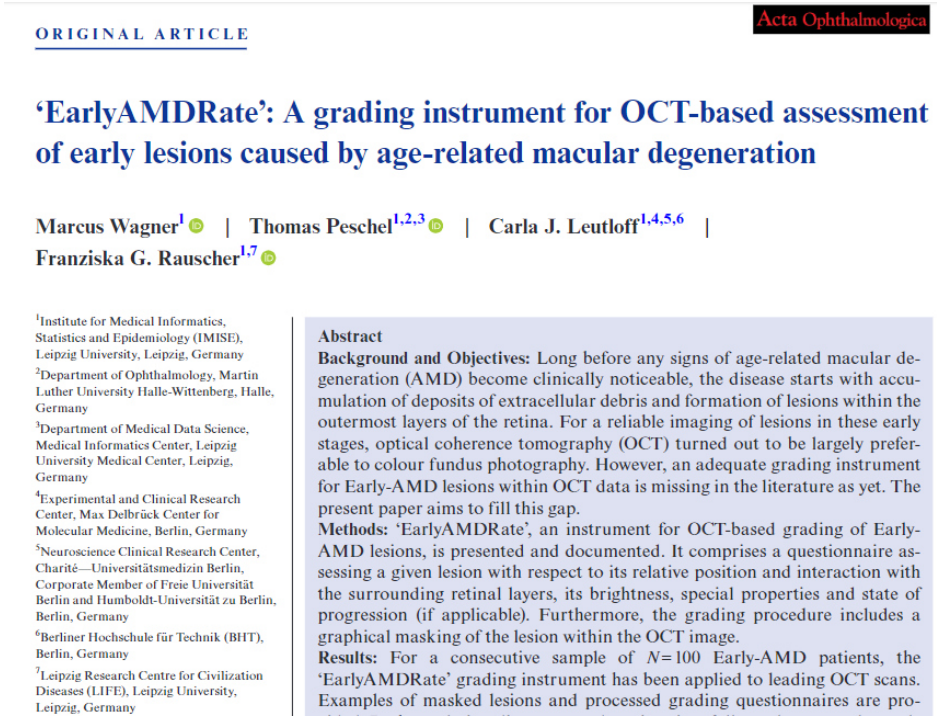
Methods: Stereological corrections are obtained by a simulation procedure, which is applied to the leading scans in a consecutive sample of 100 early AMD participants.

Results: Mean corrections for lesion diameter, cross-sectional area and volume amount to +9.1%, +32.0%, and +46.6%, respectively. After correction, AMD stage classifications with respect to the 125-µm diameter cutpoint had to be changed for seven participants.

Conclusions: Simulation results confirm that for lesions pictured and measured in OCT scans — regardless of the accuracy of OCT imaging — stereological correction of observed sizes is compelling and unavoidable.

Translational Relevance: Categorial AMD classifications based on observed OCT data must be reexamined after stereological correction.

A grading instrument for OCT-based assessment of early lesions caused by age-related macular degeneration. Acta Ophthalmol. 2025



ORIGINAL ARTICLE

Acta Ophthalmologica

'EarlyAMDRate': A grading instrument for OCT-based assessment of early lesions caused by age-related macular degeneration

Marcus Wagner[1] | Thomas Peschel[1,2,3] | Carla J. Leutloff[1,4,5,6] | Franziska G. Rauscher[1,7]

[1]Institute for Medical Informatics, Statistics and Epidemiology (IMISE), Leipzig University, Leipzig, Germany

[2]Department of Ophthalmology, Martin Luther University Halle-Wittenberg, Halle, Germany

[3]Department of Medical Data Science, Medical Informatics Center, Leipzig University Medical Center, Leipzig, Germany

[4]Experimental and Clinical Research Center, Max Delbrück Center for Molecular Medicine, Berlin, Germany

[5]Neuroscience Clinical Research Center, Charité—Universitätsmedizin Berlin, Corporate Member of Freie Universität Berlin and Humboldt-Universität zu Berlin, Berlin, Germany

[6]Berliner Hochschule für Technik (BHT), Berlin, Germany

[7]Leipzig Research Centre for Civilization Diseases (LIFE), Leipzig University, Leipzig, Germany

Abstract

Background and Objectives: Long before any signs of age-related macular degeneration (AMD) become clinically noticeable, the disease starts with accumulation of deposits of extracellular debris and formation of lesions within the outermost layers of the retina. For a reliable imaging of lesions in these early stages, optical coherence tomography (OCT) turned out to be largely preferable to colour fundus photography. However, an adequate grading instrument for Early-AMD lesions within OCT data is missing in the literature as yet. The present paper aims to fill this gap.

Methods: 'EarlyAMDRate', an instrument for OCT-based grading of Early-AMD lesions, is presented and documented. It comprises a questionnaire assessing a given lesion with respect to its relative position and interaction with the surrounding retinal layers, its brightness, special properties and state of progression (if applicable). Furthermore, the grading procedure includes a graphical masking of the lesion within the OCT image.

Results: For a consecutive sample of $N=100$ Early-AMD patients, the 'EarlyAMDRate' grading instrument has been applied to leading OCT scans. Examples of masked lesions and processed grading questionnaires are pro-

Extracting full information from OCT scans-signs of early age-related macular degeneration within inner retinal layers by local neighbourhood statistics. Part II: Results. Ophthalmic Physiol Opt. 2025

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DOI: 10.1111/opo.13393

OPO THE COLLEGE OF OPTOMETRISTS

ORIGINAL ARTICLE

Extracting full information from OCT scans—signs of early age-related macular degeneration within inner retinal layers by local neighbourhood statistics. Part II: Results

Marcus Wagner[1] | Julia Sommerer[1] | Franziska G. Rauscher[1,2]

[1]Institute for Medical Informatics Statistics and Epidemiology (IMISE), Leipzig University, Leipzig, Germany

[2]Leipzig Research Centre for Civilisation Diseases (LIFE), Leipzig University, Leipzig, Germany

Correspondence
Franziska G. Rauscher, Institute for Medical Informatics Statistics and Epidemiology (IMISE), Leipzig University, Leipzig, Germany.
Email: franziska.rauscher@medizin.uni-leipzig.de

Abstract

Background and Objectives: Associations between the occurrence of early age related macular degeneration (AMD) and alterations in retinal layer thicknesses have been reported, based on classical processing of optical coherence tomography (OCT) data by noise removal and subsequent image segmentation. However, speckle noise within OCT data itself bears a substantial part of the total information. For this reason, we designed an omics-type approach for full exploitation of OCT data, which was able to identify signs of early AMD throughout the retina as a whole.

Extracting full information from OCT scans-signs of early age-related macular degeneration within inner retinal layers by local neighbourhood statistics. Part I: Methodology. Ophthalmic Physiol Opt. 2025

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Marcus Wagner[1] | Julia Sommerer[1] | Franziska G. Rauscher[1,2]

[1]Institute for Medical Informatics, Statistics and Epidemiology (IMISE), Leipzig University, Leipzig, Germany

[2]Leipzig Research Centre for Civilization Diseases (LIFE), Leipzig University, Leipzig, Germany

Correspondence
Franziska G. Rauscher, Institute for Medical Informatics, Statistics and Epidemiology (IMISE), Leipzig University, Leipzig, Germany.
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Methods: A nested case–control study was designed with 200 early AMD cases

Development and evaluation of customized software to automatically align macula and optic disc centered scanning laser ophthalmoscope fundus images. PeerJ Comput Sci. 2025

Development and evaluation of customized software to automatically align macula and optic disc centered scanning laser ophthalmoscope fundus images

M. Elena Martinez-Perez[1], Franziska G. Rauscher[2,3,4], Pingping Zhao[5] and Tobias Elze[2,5]

[1] Instituto de Investigaciones en Matematicas Aplicadas y en Sistemas, Universidad Nacional Autonoma de Mexico, Ciudad de Mexico, Mexico
[2] Leipzig Research Centre for Civilization Diseases (LIFE), Universität Leipzig, Leipzig, Saxony, Germany
[3] Medical Informatics Center - Department of Medical Data Science, Universität Leipzig, Leipzig, Saxony, Germany
[4] Institute for Medical Informatics, Statistics, and Epidemiology, Universität Leipzig, Leipzig, Saxony, Germany
[5] Schepens Eye Research Institute, Harvard Medical School, Boston, MA, United States

Slope Chain Code-based scale-independent tortuosity measurement on retinal vessels. Exp Eye Res. 2025

Experimental Eye Research 254 (2025) 110286

Contents lists available at ScienceDirect

Experimental Eye Research

journal homepage: www.elsevier.com/locate/yexer

Research article

Slope Chain Code-based scale-independent tortuosity measurement on retinal vessels

Zian Fanti [a], Ulf-Dietrich Braumann [b,c,d,e,f], Franziska G. Rauscher [b,g,h], Thomas Ebert [i], Ernesto Bribiesca [a,1], M. Elena Martinez-Perez [a,*]

[a] Instituto de Investigaciones en Matemáticas Aplicadas y en Sistemas (IIMAS), Universidad Nacional Autónoma de México (UNAM), Apdo. 20-126, Ciudad de México 1000, México
[b] Institute for Medical Informatics, Statistics, and Epidemiology (IMISE), Leipzig University, Leipzig 04107, Germany
[c] Interdisciplinary Centre for Bioinformatics (IZBI), Leipzig University, Leipzig 04107, Germany
[d] Institute for Applied Informatics (InfAI) at the Leipzig University, Leipzig 04109, Germany
[e] Fraunhofer Institute for Cell Therapy and Immunology (IZI), Leipzig 04103, Germany
[f] Fraunhofer Center for Microelectronic and Optical Systems for Biomedicine (MEOS), Erfurt 99099, Germany
[g] Leipzig Research Centre for Civilization Diseases (LIFE), Leipzig University, Leipzig 04107, Germany
[h] Institute for Medical Data Science (MDS), Leipzig University Medical Center, Leipzig 04103, Germany
[i] Medical Department III Endocrinology, Nephrology, Rheumatology, Leipzig University Medical Center, Leipzig 04103, Germany

ARTICLE INFO

Dataset link: https://www.health-atlas.de/data_files/606?version=1

Keywords:
Extended Slope Chain Code
Tortuosity measurement

ABSTRACT

Retinal vascular tortuosity presents valuable potential as a clinical biomarker for many relevant vascular and systemic diseases. Our work exhibits twofold: first, the definition of a novel scale-invariant metric to measure retinal blood vessel tortuosity; and second, the generation of a local database, called SCALE-TORT, with the intention of providing a means to test the scale invariance property on real retinal vessels rather than on synthetic data. The proposed scale invariant tortuosity metric is based on the Extended Slope Chain Code

Vielen Dank!
Zeit für Fragen

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