SCONe

Scottish Collaborative Optometry-Ophthalmology Network e-research

📢 NEW SCONe PAPER PUBLISHED

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SCONe: a community-acquired retinal image repository enabling ocular, cardiovascular and neurodegenerative disease prediction

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Objectives: To safeguard Scotland's community-acquired retinal images (colour fundus photographs) in a secure, centrally held repository and support a variety of research including ocular, neurodegenerative and systemic disease prediction.

Design: Retinal images captured in optometry practices linked to national, routinely collected, longitudinal healthcare data.

Setting: Community optometry and the Public Health Scotland National Safe Haven. Participants Adults (mostly aged 60+) who have attended their optometrist since 2006 for an eye examination during which a retinal image was captured.

Main outcome measures: Successful retrieval of linkable colour fundus photographs from systems in use in practice and delivery to the Safe Haven for linkage and secure storage.

Results: Scottish Collaborative Optometry-Ophthalmology Network e-research (SCONe) currently contains over 367 000* retinal images matched to over 36 000 patients. Healthcare data (hospital inpatient and outpatient, general ophthalmic, death and prescribing) records were retrieved for patients with one or more images, providing demographic and healthcare information for 95% of the cohort. The linked data allow the application of condition labels or phenotypes at specific points in time, facilitating research into retinal manifestations of vascular and neural diseases. The cohort is representative of the Scottish 60+ population in terms of sex (54% female), and there is a slight over-representation of people of black, Asian and minority ethnic groups (2% vs 1%) and those living in areas of lower deprivation (30% vs 16% in lowest two categories). Early research work has begun and is focusing on ocular and neurodegenerative disease prediction.

Conclusions: The SCONe retinal image repository has been successfully established. We believe it offers enormous potential to support research into earlier detection of disease.

📰 [**Read the full paper here**](#)

*Please note that the number of images quoted in this paper is far below what SCONe currently holds, due to the lengthy nature of getting work through journal peer review.

SCONe FUNDING UPDATES

We are pleased to announce we have received funding from **The Chief Scientist Office (CSO) for Glaucoma research** and from **NHS Lothian Charity for a public engagement project on eye care accessibility and AMD.**

CSO Funding: Early detection of glaucoma in primary care using artificial intelligence aided analysis of retinal images

We are grateful to Scottish Government's Chief Scientist Office for funding this branch of our research, which makes use of the existing SCONe repository of retinal images in the National Safe Haven. The SCONe retinal images come from primary care and include photographs from the same individuals over time, providing the ideal setting to test whether AI can identify people in the general population who are at-risk of developing glaucoma.

NSH Lothian Charity Funding: Public Engagement Project around Eye Health Awareness

Thanks to funding from NHS Lothian Charity, the SCONe team is launching a new project focused on raising awareness of eye health and particularly age-related macular degeneration (AMD). This project aims to support people in understanding why regular eye tests matter, not just for vision, but for overall health, and to encourage habits that help protect eyesight as we age. AMD is one of the leading causes of vision loss in Scotland, and with an ageing population, it's affecting more people than ever. Yet, awareness of AMD and the role of eye tests in early detection and management remains low. That's why this project, led by SCONe and its Patient and Public Involvement (PPI) team, will explore what's missing in current health messaging and develop a new, more effective strategy to fill those gaps.

By highlighting the importance of both regular eye exams and AMD prevention, the project hopes to empower people to take charge of their eye health and make informed choices. Eye health often gets overlooked in public health campaigns and we're here to change that.

TAKE PART IN SCONe

Unlock the potential of retinal images captured in your practice: register your interest or request more information about the project.

We are still looking for independent optometry practices in **Fife, Tayside, Western Isles and Highlands and Islands** to participate in SCONe!

Click the link below to **fill out our online form** and a member of the SCONe team will get in touch at a time that suits you. Alternatively, you can email us at **scone@ed.ac.uk** .

Register with SCONe

If you know any optoms who may be interested in SCONe, please share our contact details with them.

ARVO ANNUAL MEETING

The SCONe team and colleagues from the University of Edinburgh presented their work at the **Association for Research in Vision and Ophthalmology (ARVO) Annual meeting** in Salt Lake City this month.

Retinal Feature Changes Over Time in AMD, Glaucoma, and Controls
Presented by: Claire Tochel

Most research on disease-associated retinal changes uses cross-sectional rather than longitudinal design. This study analyses longitudinal changes in retinal characteristics leading to age-related macular degeneration (AMD)/glaucoma diagnosis, providing further insight into disease progression and early detection.

Prediction of Optical Coherence Tomography Retinal Layer Thickness from Colour Fundus Photography in the UK Biobank
Presented by: James Porter (pictured right)

Typically imaged via optical coherence tomography (OCT), retinal layer thicknesses have been proposed as biomarkers for neurodegenerative disease. We demonstrate that these thicknesses can be estimated from the more abundant and simple colour fundus photography (CFP). Our results indicate that this technique is reliable across the left or right eye, and across different groups regardless of sex, ethnicity or overall health.
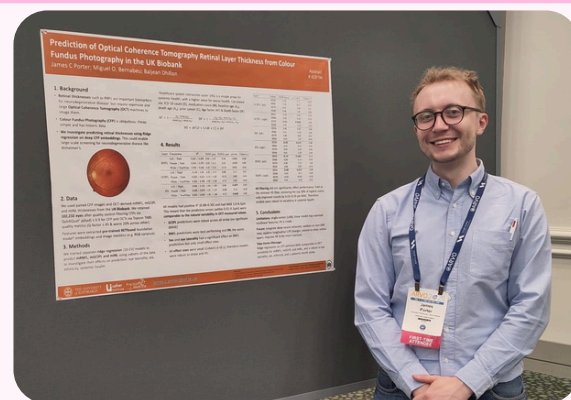
Fundus Refraction Offset (FRO) as an individualized myopia biomarker
Presented by: Fabian Yii

In clinical practice, eyes with similar levels of myopia don't necessarily have fundi that 'appear' equally myopic (some eyes may have a retinal appearance that looks more 'stretched' than others). A novel descriptor of myopia, called Fundus Refraction Offset (FRO), was developed to capture this mismatch. For an eye with a given level of ametropia (in terms of refractive error or axial length), a more negative FRO indicates that the eye has a fundus that appears more myopic than expected for that level of ametropia. Work is underway using fundus images from SCONe to see whether FRO can help us predict the risk of myopic complications.

Beyond the Dataset: Integrating Public Voices in Data Science
Presented by: Ana Paula Rubio

Public Involvement and Engagement (PI&E) in big data research is an important but often overlooked area. The Scottish Collaborative Optometry Ophthalmology Network eResearch (SCONe) project, a Scotland-wide initiative, aims to build a longitudinal primary care retinal image repository that is linked with healthcare data. The images are being used to develop AI approaches that will allow early detection of conditions such as macular degeneration, glaucoma, systemic hypertension and dementia. By prioritising public input, SCONe, hopes to ensure that public voices help to build on the initial success of the project.

The SCONe dataset was also **mentioned** during a presentation by **Siegfried Wagner** titled **Scaling UK Health Data Linkage: Implications for Oculomics**, showing that awareness of SCONe is growing.

The full posters can be viewed by clicking on the titles, or on our website under 'Presentations'.

See the poster presentations

ARTIFICIAL INTELLIGENCE TALKS & EVENTS

SCONe team members Professor Baljean Dhillon and Andrey Elizondo attended the **Harnessing AI for Better Health** event on 19th March in London as part of **The University of Edinburgh's AI Showcase**.

This event, set up by The University of Edinburgh and Edinburgh Innovations, featured presentations about the University's world-class health research and innovation made possible by AI.

THE COLLEGE OF OPTOMETRISTS

SCONe's Professor Niall Strang and Dr Tom MacGillivray attended the **College of Optometrists AI in Eyecare Summit** on 2nd April in London. The event formed the initiation of their AI Expert Advisory Group (AI-EAG) tasked to identify key issues relating to the use of AI in eye health.

A College of Optometrists survey found members are largely optimistic about AI's potential to enhance eye care over the next decade. Read more at the link below.

AI in Eyecare Summit

"EYE, EYE DOCTOR" AT EDINBURGH SCIENCE FESTIVAL

SCONe team members and colleagues from The University of Edinburgh hosted a fun and informative workshop for children aged 8+ as part of the Edinburgh Science Festival in April.

The workshop focused on **understanding the eye as a window to our health**. Through our activities, we talked about the role of an optometrist, retinal images and the importance of regular eye checks.

We invited the children to become an Optometrist for the day and they spotted the differences between images of a healthy retina and a range of diseased retinas. They were also able to take a retinal image themselves using a portable fundus camera, the epiCam, and a model head which were available thanks to **Epipole**.

Sight loss simulation glasses representing different types of sight loss were available thanks to **Optometry Scotland**. The children were able to put these on and discuss what things in their life might be different or harder with sight loss.

This event was led by Ana Paula Rubio, our Patient and Public Involvement & Engagement (PPI&E) lead.