Multispectral Fundus Analysis
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Results
The shape of the statistical distribution of the image data generally corresponded to that of the model data; the model however appears to overestimate the reflectance of the fundus in the longer wavelength region. As the absorption by Macular Pigment has no significant effect on light transport above 534nm, its distribution in the fundus was quantified: the wavelengths where both shape and distribution of image and model data matched (<553nm) were used to train a neural network which was then applied to every point in the image data. The Macular Pigment distribution thus found was in agreement with published literature data in normal subjects.

Conclusions
We have developed a method for optimising multi-spectral imaging of the fundus and a computer image analysis capable of estimating information about the structure and properties of the fundus. The technique successfully calculates the distribution of Macular Pigment in the fundus of healthy volunteers. Further improvement of the model is required to allow the deduction of other parameters from images; investigations in known pathology models are also necessary to establish if this method is of clinical use in detecting early choroidal-retinopathies, hence providing a useful screening and diagnostic test.

POTENTIAL CLINICAL IMPACT
Macular Pigment Quantity and Distribution
Age-Related Macular Degeneration Risk
Diet Supplement Efficacy
Retinal Blood Haemorrhages (Diabetic Retinopathy, etc)
Retinal Blood Ischaemia (Diabetic Macular Ischaemia, Ischaemic CRVO)
Choroidal Blood Choroidal Neovascular Membrane
Choroidal Blood Choroidal Infarcts

MACULAR PIGMENT RECOVERY
RETINAL BLOOD RECOVERY
MACULAR HAEMORRHAGE RECOVERY

FUTURE DEVELOPMENT
Equipment → Software
→ Model
→ Pathology
→ Diagnosis and Screening

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