



The past is the prologue to the future

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It is my great pleasure to celebrate the 30th Anniversary of the Royal College of Ophthalmologists with this edition of *EYE* that consists of a constellation of reviews that highlight the progress made over the last 30 years in our understanding of two chronic ocular conditions—age-related macular degeneration (AMD) and glaucoma. We have also exemplified how retinal imaging have cross-pollinated advances made in these conditions to other disease areas such as multiple sclerosis.

Over the past two decades, with the advent of intravitreal injections of anti-vascular endothelial growth factor, our Medical Retina subspecialty has mushroomed into the busiest service in Ophthalmology with an overall increase in infrastructure and trained manpower to diagnose and treat neovascular AMD and macular oedema due to retinal vascular diseases. In the United Kingdom, reports of decreasing prevalence of blindness due to neovascular AMD reflect the effectiveness of these services. Despite the excellent progress in this field, there remains an unmet need to better identify patients at risk of these diseases.

It is now 13 years since the discovery of genetic variations in complement factor H that confer greater risk for AMD. With advances in sequencing technology, we are now aware of 52 common and rare variants of genes across 34 genetic loci that are associated with AMD. However, the causal relationships, if any, between these genetic variations and disease mechanisms remain to be understood. None of the clinical trials evaluating the role of complement inhibitors in geographic atrophy have shown any clinically meaningful benefit. Therefore, we highlight the need for further research before recommending genetic testing for AMD. The same applies to glaucoma. Deep phenotyping of both AMD and glaucoma are required to understand the

genotype–phenotype correlation before genetic testing can be recommended.

Several preventive therapies in eyes with intermediate AMD have been explored over the last 3 decades based on our current understanding of disease mechanisms. The participants in the first AREDS trial have now been followed for 10 years, and the benefits of the AREDS formulation have persisted over this time. Interest in macular pigments research in AMD have waxed and waned over the years. Better imaging techniques have enabled better characterisation of macular pigment distribution in Mactel. Lessons learnt from Mactel research may provide insights into future AMD research. Laser technology has also advanced over the years. While previously fraught with complications of choroidal neovascularisation, modern day laser may indeed be a management option for intermediate AMD. An area of anticipated progress in AMD is retinal regeneration. Steel et al. have indeed provided a comprehensive review of progress made in this field and the possible future directions of this research [1].

The future looks optimistic with significant advances in retinal and optic nerve imaging guiding us through new avenues of research. While de Jong highlights years of research on the elusive drusen [2], Bird and Bok [3] have provided their perspectives as to why future research should be explored from scratch to better understand foveate retina. Both reviews highlight the need for better phenotypic stratification of disease to aid future drug discovery.

Glaucoma research has also progressed over the last 30 years. This edition highlights the fact that corneal thickness measurement only became part of our routine practice in the last 2 decades. With advancing technology, a plethora of tonometers have emerged and it is worthwhile to understand the differences between them as highlighted in this edition.

Increased intraocular pressure is not the only risk factor for glaucoma. With advancing technology in imaging, we expect to expand our knowledge on structural changes caused by different types of glaucoma, including normal tension glaucoma. Greater understanding of the disease is

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likely to aid universal use of scanning laser trabeculoplasty and will hopefully enable us to include neuroprotective agents in our glaucoma armamentarium. The reviews on different aspects of glaucoma in this edition call for better characterisation of patients with this phenotypically heterogeneous condition.

Retinal Imaging has also opened up several directions of research in other conditions. One would have never thought of macular OCT changes in multiple sclerosis. Retinal imaging has definitely led to disruptive innovations in Ophthalmology and other fields of medicine. As the eyes represent the window of the body, we expect significant advances in our field to inform state-of-the-art personalised management for many diseases outside the field of Ophthalmology.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

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