

MacularNEWS

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Tracking Macular Atrophy Outcomes with FRB!2.0

Fight Retinal Blindness (FRB!) is the flagship project of the Save Sight Registries. It was first developed 15 years ago by Professors Mark Gillies and Daniel Barthelmes to track and analyse real-world patient treatment outcomes for wet (neovascular) age-related macular degeneration (AMD). Thanks to the contributions of clinicians and their staff worldwide, we have been able to publish more than 60 manuscripts on treatment safety and effectiveness, positively impacting practice patterns globally.

Real world, or “observational” studies are of particular interest to patients because they study the outcomes of treatments after they have been released in routine clinical practice. Often they are nowhere near as good as the outcomes of clinical trials. If we can find out why we can stop many people going blind unnecessarily by using our current treatments better

We have previously studied eye injections for “wet” AMD, but this only accounts for 10% of AMD. The rest is said to be “dry” which eventually may cause loss of vision when patches of macular form in which the photoreceptors (the cells that detect light) die. Areas of atrophy slowly grow over years, eventually causing loss of central vision if the atrophy affects the centre of the macula. Loss of central vision increases the risk of falls and affects a person’s ability to perform daily tasks like reading, writing, driving and recognising faces.



Director's Message

In this issue, we discuss an upgrade to the FRB! registry, FRB!2.0, which will help evaluate the safety and effectiveness of emerging treatments for macular atrophy.

This issue also features an article on Kelly Yu, one of our PhD candidates working on therapies for macular degeneration, who has unfortunately lost funding for the second and third year of her studies.

We hope you enjoy reading about our work.

A handwritten signature in black ink, appearing to read 'Mark Gillies'.

Professor Mark Gillies

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The first treatment to slow the progressive expansion of zones of macular atrophy received FDA approval in the USA February 2023. “Pegcetacoplan” (from Apellis) is likely to be approved in Australia in the coming years. As these treatments become available, the FRB! registry will be in a key position to independently report on the safety and effectiveness of these new treatments and help identify which patients benefit most from therapy.

An upgrade to the registry, FRB! 2.0, will track and evaluate the safety and effectiveness of these emerging treatments for macular atrophy, which is detected and measured by various forms of retinal imaging. We will link these images into the FRB! system to automatically measure the area of each zone and track its rate of enlargement. This will tell us whether zones of atrophy are growing at all and, if they are, if this growth is slowed by any treatment. We are collaborating with Professor Adam Dunn and Dr Ashley Kras to apply machine learning approaches to identify patients who will most benefit from these new treatments. We plan to be ready to track patient outcomes when new treatment options for macular atrophy likely become available to Australians next year. We are grateful for an Australian Vision Research RANZCO Primer Award to Dr Hemal Mehta to support this work.

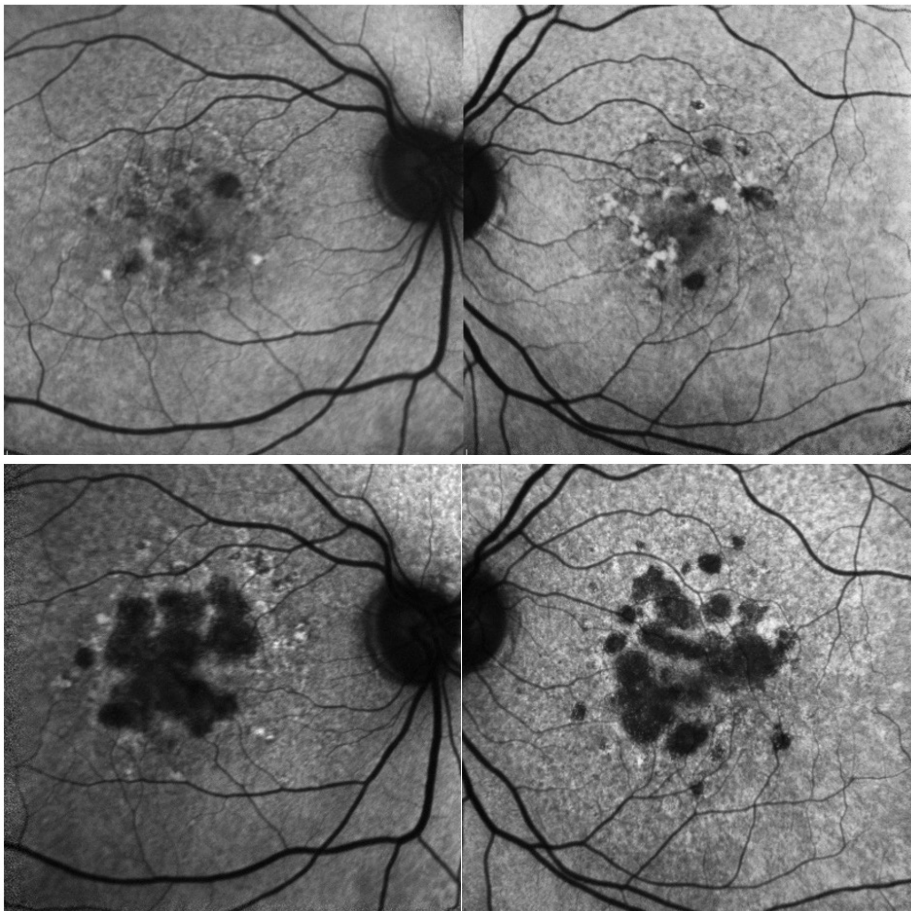


Figure 1: Progression of macular atrophy (late-stage dry AMD) on autofluorescence imaging over five years.

Top images from 2018 and bottom images from 2023.

Publication Spotlight: Three-year outcomes for CRVO patients

Central retinal vein occlusion (CRVO) is a sudden event often likened to having a stroke in the eye. A backlog of blood causes the characteristic haemorrhagic swelling in the retina, shown in the figure below, often involving the macula and reducing vision. The pathology of CRVO relates to increased levels of Vascular Endothelial Growth Factor (VEGF), making eye injections with VEGF inhibitors like ranibizumab, aflibercept and bevacizumab highly effective treatments supported by large clinical trials.



The Fight Retinal Blindness! Registry has provided valuable insights into real-world outcomes in macular degeneration, diabetic eye disease and most recently retinal vein occlusion. A recent publication, written by Dr Adrian Hunt as a PhD candidate supervised by Professor Gillies, was published in *Ophthalmology Retina* (Hunt, Nguyen et al. 2022) that describes three-year outcomes of VEGF inhibitors in CRVO and adds valuable long-term evidence to our existing published work on the topic.

We found improvements in vision were well maintained but around half of all patients with CRVO were still requiring injections at three years.

We will let you know about projects nearing completion including a similar analysis in Branch Retinal Vein Occlusion and a study comparing early the response to steroids with that of VEGF inhibitors in RVO.

Publication details

Hunt, A., V. Nguyen, S. Bhandari, T. Ponsioen, I. L. McAllister, J. Arnold, S. Young, P. H. Gabrielle, H. Mehta, L. O. Toole, S. Alforja, J. Zarranz-Ventura, D. Barthelmes and M. Gillies (2022). "Central Retinal Vein Occlusion 36-Month Outcomes with Anti-VEGF: The Fight Retinal Blindness! Registry." *Ophthalmology Retina*



Professor Mark Gillies (L) pictured with PhD Candidate Kelly Yu (R). Kelly is developing a mRNA drug to be injected into the eye to protect against macular degeneration.

As a reader of MacularNEWS, I know you understand the importance of research. The Macular Research Group includes a team of highly skilled laboratory researchers who are dedicated to improving and saving the sight of people living with eye disease. Research funding is very competitive and often unpredictable. In difficult news, we have recently been informed that Kelly Yu, one of our researchers working on mRNA-lipid nanoparticle (LNP) therapies for macular degeneration, has lost her funding for year two and three of her Ph.D. Her research focused on developing and injecting an mRNA drug into the eye to protect the macula from degeneration.

Enthusiastic, bright researchers like Kelly are helping us tackle this devastating disease. If you would like to discuss how you could help cover the costs of the remainder of this Ph.D. scholarship, please contact Narina Janian on **0437 533 725** or email **narina.janian@sydney.edu.au** for a confidential chat. You will be investing in the future of research and innovation and bring us that much closer to finding better treatments for macular disease.

If you would like to make a tax-deductible donation or discuss leaving a bequest to support macular research please visit our website **sydney.edu.au/medicine/eye**, call us on **(02) 9382 7309** or post a cheque to: Save Sight Institute, South Block, Sydney Eye Hospital, 8 Macquarie Street Sydney NSW 2000 made out to 'The University of Sydney'

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