

Researching rare sight conditions: Five minutes with Associate Professor Clare Fraser

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Ahead of World Sight Day on 8 October, we chat to Associate Professor Clare Fraser from the Save Sight Institute about her research work into rare neuro-ophthalmic diseases and its impact on the diagnosis of eye-related conditions.



Associate Professor Clare Fraser

What is your background and how did you come to work at the university?

I moved to Sydney in 2004 to complete a Masters of Medicine postgraduate degree at the University. The [Save Sight Institute](#) was well known for its vision research programs, and the connection with the Sydney Eye Hospital made it a perfect place to complete my research in optic neuritis. The team, in particular [Professor John Grigg](#) and [Professor Sasha Klistorner](#) were so welcoming and helpful and it was just such a great environment to start my research career.

Can you tell us about the work that Save Sight Institute does?

The Save Sight Institute is a clinical and research facility dedicated to preserving and restoring vision. There is a clinic which includes the largest visual electrodiagnostic service in Australia. Patients with rare and complex cases are seen by the team. In addition, we run clinical trials on the latest retinal and neuro-ophthalmic (nerve-related eye) treatments, often as part of large multi-national collaborations. Finally the Save Sight Institute has a large research team which encompasses many ophthalmic diseases from the cornea at the front, to the retina and optic nerve at the back of the eye, and all the way into the visual centers of the brain.

What is your area of research?

My particular interest is neuro-ophthalmology and I take care of visual problems that are related to the brain and nervous system. We use almost half of our brain for vision-related activities, including sight and moving the eyes. I started my research looking at optic neuritis, inflammation of the optic nerve which is often part of a condition called multiple sclerosis. Since that time, I have also been researching other optic nerve problems including optic disc drusen and we have started a large international research consortium with the University of Copenhagen to investigate this rare condition.

I have also joined forces with the Australian Sports Brain Bank and [Professor Michael Buckland](#) to investigate concussion, and how assessment of the eyes can be used to improve diagnosis, management and prognostic understanding of acute and chronic concussion related issues.

I have also been using these ophthalmic techniques to better understand more systemic health issues including obstructive sleep apnea. Finally, we have a collaboration with Macquarie University to try to determine the neurological pathophysiology of a condition called Visual Snow. These patients see their whole world like a poorly tuned analogue TV, which can be quite disruptive to their day-to-day lives.

Our focus on rare neuro-ophthalmic diseases is important not only for the diagnosis of eye-related conditions, but for the enormous impact it can have on a patient's systemic health and well-being.

How important is your research for diagnosing and managing eye related conditions?

There are very few people who specialise in neuro-ophthalmology, as it generally involves neurological (brain) and ophthalmic (eye) training. This means patients with vision loss due to neurological problems can fall between the gaps of the two specialities.

The World Health Organisation (WHO) has listed rare and orphan diseases that need to be a research priority. In the European Union, a disease is considered to be rare when the number of people affected is less than 5 per 10,000. Given that there are between 5–8,000 rare diseases, a very rough estimate would be that one out of every 15 persons worldwide could be affected by a rare or "orphan" disease. Rare diseases can include serious chronic disease, and they may be life threatening, or sight threatening. These rare diseases present a different challenge compared to the more common conditions, like heart disease.

Problems identified by the WHO include limited clinical expertise, lack of expert centres, the widely dispersed nature of the patients and lack of validated biomarkers or tests. Therefore, our focus on rare neuro-ophthalmic diseases is important not only for the diagnosis of eye-related conditions, but for the enormous impact it can have on a patient's systemic health and well-being.

What's the best piece of advice you've ever received?

Say "yes" to any opportunity that sounds like it could be fun. The weeks and years go by quicker than you can imagine, so grab every opportunity while you can, rather than waiting for what you think might be a better time.