

## Associate Professor Clare Fraser

### MBBS, MMed, FRANZCO

**Research specialisation:** Neuro-ophthalmology

**Experience:** Dr Clare Fraser is an ophthalmologist specialising in neuro-ophthalmology, strabismus and visual electrodiagnostics. She is a consultant Visiting Medical Officer at both Sydney Eye Hospital and St Vincent's Hospital, and is also in private practice in Sydney. At the University of Sydney, she holds the title of Associate Professor of Neuro-ophthalmology.

She completed ophthalmic training at Sydney Eye Hospital in 2006-2009 and went on to further Neuro-ophthalmic training at Moorfields Eye Hospital and the National Hospital for Neurology, London, England with Dr Gordon Plant for 18 months. In 2011 she completed a research fellowship at Emory Eye Centre, Atlanta, USA, with Drs Nancy Newman and Valerie Biousse.

Dr Fraser is a committee member for The Neuro-Ophthalmology Society of Australia, and is one of their Education Officers. She is also on the North American Neuro-Ophthalmology Society International Committee and the committee for the Neuro-Ophthalmology Virtual Education Library.

Dr Fraser has published over 40 articles in peer-reviewed journals, has written several book chapters including chapters on Optic Neuritis and on Pituitary Tumours. She is a reviewer for Journal of Neuro-ophthalmology, Clinical and Experimental Ophthalmology as well as the American Journal of Ophthalmology. Her research has been awarded with an Ophthalmic Institute of Australia grant, and has won several international awards including the North American Neuro-Ophthalmology Society prize for the best research presentations in 2005, 2006 and 2011.

#### **Research overview: 1. Concussion and trauma**

**1.1 Concussion:** We have created a dedicated team to research the biomechanics, diagnosis and treatment of concussion. In collaboration with Dr Adrian Cohen (adjunct senior lecturer) from HeadSafe we are measuring the impact forces through the head sustained by rugby players. These results are then being compared to measures of saccadic velocity, balance, cognitive scores and salivary biomarkers. In addition we have a strong collaboration with Biomedical Engineering and are working with a PhD student in that department to develop an objective visual test for concussion which can be used on the sporting sidelines. We are also collaborating with Castlereagh Imaging, Dr Julian Adler and AProf Stuart Grieve to assess MRI changes. Recently we have joined the Global Rugby Health Research Project looking at past player health.

**1.2 Traumatic optic neuropathy:** In collaboration with Prof Subramanian (University of Colorado) and Dr Huy Tran in Ho Chi Minh city, we are working on collecting data about traumatic optic neuropathy with a view to testing simple treatment interventions to improve long-term visual outcome.

#### **2. Compressive optic neuropathy**

**2.1. Optic disc drusen:** We are collaborating with the International Optic Disc Drusen Consortium to clearly define optic disc drusen subtypes and imaging protocols. This work will lead to future functional studies of optic disc drusen. We also plan to use optic disc drusen as a means of studying the underlying mechanisms of compressive and ischaemic optic neuropathies.

**1.2 Pituitary tumors:** We are evaluating MRI diffusion tensor imaging changes, coupled with visual measures of acuity and visual fields, structural measures from optical coherence tomography of the optic nerves and electrophysiological changes of pattern ERG and visual evoked potentials. Our aim is to define a "biomarker" for those patients at most risk of permanent visual loss from compressive pituitary tumors.

**Postgraduate supervision:** Co-supervisor for 2 PhD students, supervisor or 2 Masters students and 2 honours students. 2 Masters students and one honours student supervised to completion.



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**Research publications:** 56 peer reviewed articles, 7 book chapters, 8 published abstracts

- Fraser CL.** *Obstructive Sleep Apnea and Optic Neuropathy: Is there a link?* Current Neurology and Neuroscience Reports. Aug 2014;14(8):465-75sd
- Petzold A, Wattjes M, Costello F, Flores-Rivera J, **Fraser CL**, Fujihara K, Leavitt J, Marignier O, Paul F, Schippling S, Sindic C, Viloslada P, Plant GT. *The investigation of acute optic neuritis: a review and proposed protocol.* Nature Reviews Neurology. Aug 2014; 10(8):447-58
- Alshowaier D, Yannikas C, Garrick R, Van Der Walt A, Graham SL, **Fraser CL**, Klistorner A. *Multifocal VEP assessment of optic neuritis evolution.* Clin Neurophysiol August 2015;126(8):1617-23
- Martinez-Lapiscina EH et al; IMSVISUAL consortium. *Retinal thickness measured with optical coherence tomography and risk of disability worsening in multiple sclerosis: a cohort study.* Lancet Neurology. May 2016; 15(6):574-84
- Cuo N, McClusky P, **Fraser CL.** *Chewing gum test for giant cell arteritis.* N Eng J Med. 2016 May; 374(18): 1794-5.
- Lauschke JL, Plant GT, **Fraser CL.** *Visual snow: a thalamocortical dysrhythmia of the visual pathway?* J Clin Neurosci. Jun 2016; 28:123-7.