

Elizabeth Anne Bowman

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Skills summary

- Design, acquisition and statistical analysis of cognitive, electrophysiological, psychophysical, neuropharmacological, behavioural, and magnetic resonance imaging data using Python, R, MATLAB, FreeSurfer, FSL, SPSS, Prism and Excel on Mac OS X, Linux, Windows and High-Performance Computing (HPC) platforms.
- Laboratory management and administration, including financial budgeting and reporting, ethics application and compliance, experimental participant recruitment and management, graduate student administration and program development, data management, event planning, web management and communication outreach.
- Design and management of clinical trials in accordance with university ethics policies, and national and international Good Clinical Practice standards.
- Liaison between scientists, clinicians, surgeons, administrators and engineers on innovative multi-institute and international project collaborations, including communication with members of the public, students and patient populations of a broad range of backgrounds, ages and education levels.
- Presentation of scientific results in oral presentations, written reports and peer-reviewed publications to a variety of scientific and non-scientific audiences.
- Creative and engaging delivery of tutorials, laboratory demonstrations, and problem-based learning workshops in cognitive neuroscience, visual science, optics, and medicine.

Education

- 2013** **Doctor of Philosophy – University of Melbourne.**
Department of Optometry and Vision Sciences, Eye Movement Laboratory.
Thesis: *Longitudinal changes in neural correlates of saccadic eye movements in young people at ultra-high risk of psychosis.*
Co-supervised through the Melbourne Neuropsychiatry Centre.
- 2006** **Master of Philosophy – Australian National University.**
John Curtin School of Medical Research, Division of Neuroscience.
Thesis: *Spatial variation in the photopic multifocal electroretinogram.*

2002 Bachelor of Science with Honours – Australian National University.
Research School of Biological Sciences, Visual Sciences Group.
Thesis: *Effects of contrast, presentation frequency, pulse length and polarity of stimuli on multifocal visual evoked potentials.*

Publications

1. **Bowman EA**, Velakoulis D, Desmond P, Walterfang M. (2018) Longitudinal changes in white matter fractional anisotropy in adult-onset Niemann-Pick disease type C patients treated with miglustat. *Journal of Inherited Metabolic Disease Reports* 39, 39-43.
2. Abel LA. Walterfang M. Stainer MJ. **Bowman EA**. Velakoulis D. (2015) Longitudinal assessment of reflexive and volitional saccades in Niemann-Pick Type C disease during treatment with miglustat. *Orphanet Journal of Rare Diseases* 160(10).
3. **Bowman EA**. Velakoulis D. Abel LA. Desmond P. Fahey M. Walterfang M. (2015) Longitudinal changes in cerebellar volume in adult-onset Niemann-Pick disease type C patients treated with miglustat. *Journal of Neurology* 262(9), 2106-14.
4. Walterfang M. Abel L. Desmond P. Fahey M. **Bowman EA**. Velakoulis D. (2013) Cerebellar volume correlates with saccadic gain and ataxia in adult Niemann-Pick type C. *Molecular Genetics and Metabolism*. 108(1), 85-9.
5. Walterfang M. Patenaude B. Abel L. Kluenemann H. **Bowman EA**. Fahey M. Desmond P. Kelso W. Velakoulis D. (2013) Subcortical volumetric reductions in adult Niemann-Pick Disease Type C: A cross-sectional study. *American Journal of Neuroradiology*. 34(7), 1334-40. (Illustrations also featured on the cover of the July 2013 edition).
6. Abel L. **Bowman EA**. Velakoulis D. Fahey M. Desmond P. Macfarlane M. Looi J. Adamson C. Walterfang M. (2012) Saccadic eye movement characteristics in adult Niemann-Pick Type C disease: relationships with disease severity and brain structural measures. *PLoS ONE*. 7(11), e50947.
7. Walterfang M. MacFarlane M. Looi J. Abel LA. **Bowman EA**, Fahey M. Desmond P. Velakoulis D. (2012) Pontine-to-midbrain ratio indexes ocular-motor function and illness stage in Adult Niemann-Pick Disease Type C. *European Journal of Neurology*. 19(3), 462-7.
8. Walterfang M. Fahey M. Abel LA. Fietz M. Wood A. **Bowman EA**. Reutens D. Velakoulis D. (2011) Size and shape of the corpus callosum in adult Niemann-Pick type C reflects state and trait illness variables. *American Journal of Neuroradiology*. 32(7), 1340-6.
9. Walterfang M. Fietz M. Abel LA. **Bowman EA**. Mocellin R. Velakoulis D. (2009) Gender dimorphism in siblings with schizophrenia-like psychosis due to Niemann-Pick Disease Type C. *Journal of Inherited Metabolic Disease*. 32(S1), 221-6.
10. Abel LA. Walterfang M. Fietz M. **Bowman EA**. Velakoulis D. (2009) Saccades in adult Niemann-Pick Disease Type C reflect frontal, brainstem & biochemical deficits. *Neurology*. 72, 1083-6.

11. Levy DL. **Bowman EA.** Abel LA. Krastoshevsky O. Krause V. Mendell NR. (2008) Does performance on the standard antisaccade task meet the co-familiarity criterion for an endophenotype? *Brain & Cognition*. 68(3), 462-75.
12. Maddess T. James AC. Ruseckaite R. **Bowman EA.** (2006) Hierarchical decomposition of dichoptic multifocal visual evoked potentials. *Visual Neuroscience*. 23(5), 703-12.
13. Maddess T. James AC. **Bowman EA.** (2005) Contrast response of temporally sparse dichoptic multifocal visual evoked potentials. *Visual Neurosciences*, 22(2), 153-62.

Employment and teaching

- February 2016 - Current** **Postdoctoral Research Fellow in Decision Neuroscience Laboratory Manager**
Brain, Mind and Markets Laboratory
Department of Finance, Faculty of Business and Economics,
The University of Melbourne
Duties include:
- Experimental design, participant recruitment, cognitive testing, eye-tracking and pupillometry, and other experimental data analysis in the study of complex decision making under risk and uncertainty.
 - Clinical trials development and management, including GCP compliance.
 - Laboratory management tasks including finance and purchasing, laboratory cash management, ethics compliance and data management, and website maintenance.
- July 2015 – February 2016** **Senior Research Assistant**
Department of Optometry and Vision Sciences, University of Melbourne.
Project: *Investigations into the effects of fatigue on marksmanship and driver performance.*
Duties include:
- Piloting and recruitment of participants
 - Recording and analysis of gaze tracking and pupillometry data
 - Reporting of results to funding bodies and peer-reviewed publication of data.
- June 2012 – May 2015** **Laboratory Demonstrator – Doctor of Optometry**
Department of Optometry and Vision Sciences, University of Melbourne.
Subject:
Integrated Ophthalmic Sciences
Duties included:
- Demonstration of Gaussian optics and geometrical ray-tracing calculations.

**April 2012 –
April 2014**

Research Fellow

Melbourne Brain Centre at the Royal Melbourne Hospital
Department of Medicine, University of Melbourne
Project: *Longitudinal cortical and subcortical structural changes in adult-onset Niemann-Pick disease type C.*

**July 2006 –
October 2012**

Undergraduate Laboratory Demonstrator

Department of Optometry and Vision Sciences, University of Melbourne.

Subjects:

Human Visual Functions.

Optics: From Rainbows to Digital Imaging.

Visual Processing and Control.

Duties included:

- Demonstration of and instruction in optics, eye movement and neurobiological experiments.
- Assessment and marking of related laboratory reports.

**December 2011 –
March 2012**

Research Assistant

Eye Movement Laboratory, Department of Optometry and Vision Sciences, University of Melbourne.

Project: *Attention and optokinetic nystagmus in multiple sclerosis.*

Duties included:

- Processing and analysis of optokinetic nystagmus recordings.

**March 2011 –
September 2011**

Research Assistant

Bionic Vision Australia

Centre for Eye Research Australia

Department of Ophthalmology, University of Melbourne

Duties included:

- Characterisation of prototype retinal prostheses in experimental preclinical models using structural and functional retinal imaging methods.
- Liaison between surgical and engineering working groups.
- Drafting and submission of related ethics applications.

**January 2008 –
March 2011**

Research Assistant

Eye Movement Laboratory, Department of Optometry and Vision Sciences, University of Melbourne.

Project: *Can eye movements predict persistent problems after mild head injury in children?*

Duties included:

- Recording saccadic eye movement performance.
- Administering cognitive assessments during home visits to children with mild traumatic brain injuries.
- Drafting and submission of related ethics and funding applications.

- August 2005 – June 2006** **Research Assistant**
Visual Neurosciences Laboratory, The John Curtin School of Medical Research, Australian National University.
Project: *Dark adaptation of human rod bipolar cells measured from the b-wave of the scotopic electroretinogram.*
Duties included:
- Recording and analysis of human electroretinograms.
- February 2006 – June 2006** **Laboratory Demonstrator and Tutor**
School of Resource, Environmental & Heritage Sciences, University of Canberra.
Unit: *Concepts in Biology.*
Duties included:
- Demonstration of and instruction in biochemistry, genetics and anatomy experiments.
 - Assessment and marking of related laboratory reports and exams.
- February 2005 – June 2005** **Laboratory Demonstrator and Tutor**
School of Psychology, Australian National University.
Course: *Visual Perception and Cognition.*
Duties included:
- Demonstration of and instruction in visual neuroscience, cognition and working memory experiments.
 - Assessment and marking of related laboratory reports, essays and exams.
- February 2004 – June 2006** **Problem-Based Learning Tutor**
Medical Education Unit, Australian National University Medical School.
Blocks:
Foundation Block: DNA to Death.
Cardiorespiratory and Renal Medicine.
Endocrine and Reproductive Health.
Digestive Disease and Nutrition
Haematology, Oncology, Immunology and Infections Diseases
Human Disease and Society
Musculoskeletal and Neurosciences.
Duties included:
- Facilitation of small learning group discussion of weekly case reports.
 - Guidance and support with problem solving skills acquisition and hypothesis testing.

Volunteer work and related training

- October 2011 – February 2016** **Tutor - Global Homework Program**
The Centre – Connecting Community in North and West Melbourne.
Duties include:
- Assistance with VCE science, English and mathematics work with students from refugee, immigrant and disadvantaged backgrounds.

Training includes:

- Mental Health First Aid – ORYGEN Youth Health
- Educational Games and Activities – Centre for Multicultural Youth
- Learning Beyond The Bell – Centre for Multicultural Youth

Funding awarded

- 2017 - 2018** University of Melbourne Early Career Researcher Grant (\$20 700)
- 2012 - 2013** Actelion Pharmaceuticals Ltd investigator-initiated research grant (\$70 000 over 2 years)
- 2009** Melbourne Abroad Travelling Scholarship, The University of Melbourne. (\$1 500)
- 2009** Melbourne Neuropsychiatry Centre Research Higher Degree Award, The University of Melbourne. (\$2 500)
- July 2006 – December 2010** Department of Optometry and Vision Sciences Special Departmental Studentship, The University of Melbourne. (~\$18 975 pa)

Conference presentations

Invited oral presentations

- 2014** V3 Alliance Researcher Seminar
“Psychosis and adolescent brain development”
- 2013** Melbourne Health Research Week 2013.
Symposium: Genomics advancing translational research.
“Imaging and Niemann-Pick Disease”

Oral presentations

- 2018** Society for Experimental Finance Regional Meeting, Brisbane, Australia.
“Surveying the use of pharmacological cognitive enhancement within the Australian financial services industry”
- 2012** Biological Psychiatry Australia Annual Meeting
Melbourne, Australia.
“Subcortical changes in adult-onset Niemann-Pick disease type C relate to cognitive performance and illness-related disability.”
- 2008** Melbourne Neuropsychiatry Centre Research Forum.
Hepburn Springs, Australia.
“Eye movements and prefrontal activation in young people at Ultra-High Risk of psychosis”.

Poster Presentations

- 2018** Australasian Cognitive Neuroscience Society Meeting
Melbourne, Australia.
Differential use of pharmaceutical cognitive enhancers in the Australian financial services industry
EA Bowman, B Feng, C Murawski, P Bossaerts.
Neuroscience 2018: The 48th Annual Meeting of the Society for Neuroscience
San Diego, USA
Use of pharmaceutical cognitive enhancers in the Australian financial services industry
EA Bowman, B Feng, C Murawski, P Bossaerts.
- 2014** Biological Psychiatry Australia Annual Meeting
Melbourne, Australia.
“Longitudinal treatments effects on cerebellar and subcortical volumes in Niemann-Pick disease type C.”
EA Bowman, D Velakoulis, L Abel, P Desmond, M Fahey, M Walterfang.
- 2013** Melbourne Health Research Week 2013
Melbourne, Australia.
Longitudinal reductions in cerebellar volume in adult-onset Niemann-Pick disease type C.
EA Bowman, M Walterfang, LA Abel, D Velakoulis.
- 2011** Neuroscience 2011: The 41st Annual Meeting of the Society for Neuroscience.
Washington DC, USA.
Longitudinal changes in antisaccade-related cortical activity in young people at Ultra-High Risk of psychotic illness.
EA Bowman, LA Abel, C Bartholomeusz, R Terwilliger, B Nelson, C Pantelis, B Luna, K Velanova, PD McGorry, SJ Wood.
2nd International Conference on Medical Bionics.
Phillip Is, Australia.
Note: Not the presenting author.
Removability of a suprachoroidal retinal prosthesis.
RT Leung, DAX Nayagam, CE Williams, RK Shepherd, RA Williams, CD Luu, PJ Allen, CM Salinas-La Rosa, A Freemantle, M McPhedran, M Basa, J Yeoh, M McCombe, L Ayton, **EA Bowman**, J Villalobos.
A clinically relevant approach for long-term stimulation by active suprachoroidal implants in cats.
Note: Not the presenting author.
DAX Nayagam, PJ Allen, MN Shivdasani, J Fallon, J Yeoh, A Wise, CD Luu, A Freemantle, M McPhedran, RA Williams, M Basa, J Villalobos, **EA Bowman**, RK Shepherd, CE Williams.

- 2009** 9th World Congress of Biological Psychiatry.
Paris, France.
Volitional saccades and prefrontal cortical activation in young people at Ultra-High Risk of psychosis.
EA Bowman, LA Abel, C Bartholomeusz, B Nelson, A Yung, M Yücel, C Pantelis, B Luna, K Velanova, P McGorry, SJ Wood.
- 2008** 6th International Conference on Early Psychosis.
Melbourne, Australia.
The antisaccade task and pursuit eye movements in people at ultra-high risk of psychosis.
EA Bowman, LA Abel, C Bartholomeusz, B Nelson, AR Yung, M Yücel, C Pantelis, B Luna, PD McGorry, SJ Wood.
14th Annual Meeting of the Organisation for Human Brain Mapping.
Melbourne, Australia.
Prefrontal cortical activation in people at Ultra-High Risk of psychosis: An fMRI study of voluntary eye movements.
EA Bowman, LA Abel, C Bartholomeusz, B Nelson, A Yung, M Yücel, C Pantelis, B Luna, K Velanova, P McGorry, SJ Wood,
- 2005** 25th Annual Meeting of the Australian Neuroscience Society.
Perth, Australia.
Multifocal electroretinogram responses from the human retina: Effects of altered stimulus frequency and intensity.
EA Bowman, AC James, TD Lamb.

Professional societies

Society for Experimental Finance
Society for Neuroeconomics
Society for Neuroscience
Australasian Cognitive Neuroscience Society
Biological Psychiatry Australia
International Early Psychosis Association