

Aidan P. Murphy

Curriculum Vitae

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Section on Cognitive Neurophysiology and Imaging, Laboratory of Neuropsychology, National Institute of Mental Health, 49 Convent Dr., Bethesda, MD 20892 USA

Employment/ Education

2015 – Present **Post-Doctoral Fellow**

Section on Cognitive Neurophysiology and Imaging, NIMH, USA

Functional mapping of electrophysiological responses to visual stimuli in the pulvinar of awake macaques.

2010 – 2014 **Ph.D Neuroscience**

University of Birmingham, UK & National Institutes of Health, USA (Wellcome-NIH studentship)

Thesis: *Neural mechanisms for reducing uncertainty in 3D depth perception.* [[eTheses](#)]

2009 – 2010 **M.Res Brain Imaging & Cognitive Neuroscience**

University of Birmingham, UK

Dissertation: *The neural basis for perceiving 3D structure from motion and disparity.*

2002 – 2005 **B.Sc Psychology**

University of Leeds, UK

Dissertation: *Anxiogenic profile of AM-251, a selective cannabinoid CB1 receptor antagonist, in plus-maze-naïve and plus-maze-experienced mice.*

Publications

- Murphy AP**, Leopold DA, Humphreys GW, Welchman AE (2016). Lesions to right posterior parietal cortex impair visual depth perception from disparity but not motion cues. *Phil. Trans. R. Soc. B*, [PubMed] [R.Soc.].
- Murphy AP** (2015). Mapping functional topography in the macaque ventral visual pathway. *Journal of Neuroscience*, 35(32):11171-11173. [PubMed] [J.Neurosci.]
- Murphy AP**, Leopold DA & Welchman AE (2014). Perceptual memory drives learning of retinotopic biases for bistable stimuli. *Front. Psychol.*, 5:60. [PubMed] [Frontiers]
- Murphy AP**, Ban H & Welchman AE (2013). Integration of texture and disparity cues to surface slant in dorsal visual cortex. *Journal of Neurophysiology*, 110(1): 190-203. [PubMed] [J.Neurophysiol.]
- Patten ML & **Murphy AP** (2012). Relative Disparity Processing in the Dorsal Visual Pathway. *Journal of Neuroscience*, 32(16): 5353–5355. [PubMed] [J.Neurosci.]
- Rodgers RJ, Evans PM and **Murphy A** (2005). Anxiogenic profile of AM-251, a selective cannabinoid CB1 receptor antagonist, in plus-maze-naïve and plus-maze-experienced mice. *Behavioural Pharmacology*, 16(5 & 6): 405-413. [PubMed] [Behavioural Pharm.]

Conference Abstracts:

Murphy AP, Deng C, Leopold DA (2016). [Gordon Research Conference, 2016]

Murphy AP, Deng C, Russ BE, McMahon DBT, & Leopold DA (2014). Response reliability of pulvinar neurons to repeated presentations of natural social movies. [Society for Neuroscience Meeting 2014]

Murphy AP, Ban H & Welchman AE (2012). The integration of texture- and disparity-defined slant in the human brain. *Journal of Vision*, 12(9): article 1193. doi: [10.1167/12.9.1193](https://doi.org/10.1167/12.9.1193) [VSS 2012]

Murphy AP, Ban H & Welchman AE (2011). Decoding disparity-defined surface curvature in the human brain. *Journal of Vision*, 11(11): article 332. doi: [10.1167/11.11.332](https://doi.org/10.1167/11.11.332) [VSS 2011]

Awards & Fellowships

- Wellcome Trust/ National Institutes of Health Four-Year PhD Studentship (2010 – 2014)
- 2011 Elsevier/Vision Research Travel Award ([VSS 2011](#), Naples FL, Student Travel Award)
- Roberts Skills Fund for PhD led conference: '[3D Vision: From Input to Perception](#)' (2011)
- Roberts Skills Fund for PhD led conference: '[Multisensory Integration Meeting](#)' (2012)
- Guarantors of Brain meeting grant: '[Multisensory Integration Meeting](#)' (2012)
- Guarantors of Brain meeting grant: '[Internal Predictive Models in Humans and Robots](#)' (2013)
- Experimental Psychology Society Grindley Grant (VSS 2012, Naples FL, student travel award)
- Guarantors of Brain travel grant (VSS 2012, Naples FL)

Invited Talks

- Rank Prize Funds, 2016 – 'Neural computations underlying the integration of visual depth cues'
- University of Iowa, Dept. Neurosurgery 2015 – 'Neural mechanism for reducing perceptual uncertainty'
- NIH-OxCam 2012 Colloquium – 'Decoding texture- and disparity-defined slant in the human brain'.

Research Experience and Skills

Data collection and analysis

- **Magnetic resonance imaging (MRI)**: data collection, univariate and multivariate fMRI analysis methods (BrainVoyagerQX, Matlab, SPM, AFNI), voxel-based morphometry lesion analysis (SPM), non-human primate MR-guided electrophysiology (FSL, MRTTools, ITK-SNAP, AFNI).
- **Electrophysiology**: *in vivo* recording with acute linear multielectrode arrays, spike sorting (TDT, Plexon, WaveClus), single unit and LFP analysis (Matlab). Electrocorticography (ECoG) data analysis of LFP, ERP, and spectral analyses.
- **Psychophysics**: visual and auditory stimulus programming, staircase design, behavioural data collection and analysis (Matlab, Psychtoolbox, Psignifit, QPCS for QNX real-time OS, Python).
- **Eye tracking**: data collection and analysis (EyeLink and iView video based tracking, plus ASL and other analogue systems). Analysis of fixation behaviours and extraction of perceptual state during presentation of moving stimuli using analysis of optokinetic nystagmus eye movements.
- **Transcranial magnetic stimulation (TMS)**: delivery with stereotaxic neuronavigation (BrainSight, Matlab).

Programming and computer-aided design

- **Equipment design:** Wheatstone stereoscope and TMS laboratory design, purchasing and setup.
- **3D printing:** design of bespoke equipment solutions for 3D printing (3DS Max, Blender, SolidWorks), e.g. 3D INFITEC goggles for monkey MRI:
- **Graphical user interface (GUI) programming:** created a bespoke solution for MRI-guided electrode navigation ([ElectroNav](#))
- **3D stimulus generation:** creation and editing of 3D meshes and volumes (3DSlicer, ITK-SNAP, Meshlab), manipulation and rendering (Blender, Python, PsychToolbox).

Experience working with multiple subject populations

- Healthy humans: fMRI, TMS, psychophysics.
- Neurological patients: ECoG, MRI, VBM, and psychophysics in epileptic and stroke patients.
- Non-human primates: macaque pole training, chair training, fixation and behavioural task training. Headpost and dural recording chamber implant surgeries, drug and contrast agent administration, fMRI and electrophysiological recording procedures.
- Rodents: animal handling, drug administration and quantitative ethological behavioural analysis.

Administrative/ teaching experience

- Successful applications for funding and organizing of conferences with international guest speakers.
- Undergraduate teaching assistant (statistics workshops, visual illusions workshop, neuroanatomy).
- 'Scientists Teaching Science' – 9 week NIH teacher training course.
- Grant writing for Wellcome and NIH style grant applications.

Referees

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