

# MARCELLA MONTAGNESE

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## EDUCATION

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- **PhD in Neuroimaging**  
**King's College London (2018-2022)**  
Thesis: *The neural basis of psychosis in Parkinson's Disease: a network neuroscience approach*. Supervisors: Professor Mitul Mehta and Professor Dominic ffytche (KCL), Dr Sarah Morgan (Cambridge University)
- **MPhil in Medical Science- Computational Psychiatry**  
**University of Cambridge (2017-2018)**  
**First Class (Starred Distinction)**. Thesis: *Reinforcement learning in psychosis and NSPN: Relation to genetic risk for schizophrenia and negative symptoms*  
Supervisor: Dr Graham Murray  
Examiners: Professor Angela Roberts, Professor Michael Browning
- **BA (Hons) Psychology**  
**University of Cambridge (2014-2017)**  
**First Class (Distinction)**. Thesis: *Plasticity In The Auditory System During Sleep - EEG Experiment Investigating The Influence Of Auditory Stimuli Presentation During Sleep On The N1 ERP Responses*  
Supervisors: Dr. Tristan Bekinschtein and Dr Anat Arzi

## RESEARCH EXPERIENCE

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Research  
Internship

- **University of Cambridge, Psychiatry Department (2021-2022)**  
5% success rate: NIHR SPARC Award Internship to work on graph-theoretical and Machine Learning analyses of brain imaging data under the supervision of Professor Ed Bullmore and Dr. Sarah Morgan.

Summer Research  
Fellowships

- **University of Cambridge, Genetics Department (Jun-Aug 2016)**  
Running optogenetic testing of the role of modulatory neurons in larval *Drosophila*. Funded by the Genetics Society UK Summer Studentship Award
- **Harvard University, Psychology Department (Jul-Sep 2015)**  
Running eye-tracking and behavioural experiments on patients with Prader-Willi syndrome.  
Natural language coding for the Natural History of Song Project (NHS).

## PUBLICATIONS

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- 2022      **M Montagnese et al., (2022)** - Cognitive And Visual Processing Performance In Parkinson's Disease Patients With vs Without Visual Hallucinations: A Multilevel Meta-Analysis. *Cortex*, 146, 161-172  
<https://doi.org/10.1016/j.cortex.2021.11.001>
- 2021      **M Montagnese et al., (2021)**- A Review of Multimodal Hallucinations: Categorisation, Assessment, Theoretical Perspectives And Clinical Recommendations. *Schizophrenia Bulletin*, 47(1), 237-248  
<https://doi.org/10.1093/schbul/sbaa101>
- M Montagnese, et al (2021)**- Cognition, hallucination severity and hallucination-specific insight in neurodegenerative disorders and eye disease *Cognitive Neuropsychiatry*, 1-17  
<https://doi.org/10.1080/13546805.2021.1960812>

D Williams, **M Montagnese** - (2021) Bayesian Psychiatry and the Social Focus of Delusions. *In press in Expected Experiences: The Predictive Mind in an Uncertain World*, (eds) Cheng,T., Sato,R., Hohwy,J. -Routledge: London  
<https://doi.org/10.13140/RG.2.2.27852.23683>

J Y Wong, B A Wan, T Bland, **M Montagnese**, A McLachlan, C J O’Kane, S W Zhang, L Masuda-Nakagawa (2021)- Octopaminergic neurons have multiple targets in Drosophila larval mushroom body calyx and can modulate behavioral odor discrimination *Learning and Memory*, 28(2), pp.53-71.  
<https://doi.org/10.1101/lm.052159.120>

L Rains, (...) & **The COVID-19 Mental Health Policy Research Unit Group** (2021)- Early impacts of the COVID-19 pandemic on mental health care and on people with mental health conditions: framework synthesis of international experiences and responses. *Social psychiatry and psychiatric epidemiology*, 56(1), pp.13-24. <https://doi.org/10.1007/s00127-020-01924-7>

2020 **M Montagnese** et al., (2020)- Reinforcement learning as an intermediate phenotype in psychosis? Deficits sensitive to illness stage but not associated with polygenic risk of schizophrenia in the general population. *Schizophrenia Research*, (222), pp.389-396. <https://doi.org/10.1016/j.schres.2020.04.022>

*In Progress* **M Montagnese**, M Mehta, D ffytche, E Bullmore, S Morgan (2022)- Investigating resting state fMRI networks in Parkinson’s Disease Psychosis: regional, graph-theoretical and network-based statistics approaches

**M Montagnese**, E Bullmore, S Morgan et al. (2022)- Investigating multimodal morphometric similarity networks and transcriptomic correlates of Parkinson’s Disease Psychosis: A longitudinal cohort study

A.C. Wright, (...) **M Montagnese**, et al. (2022)- Experiencing hallucinations in daily life: The role of metacognition. *Under review in Schizophrenia Research*

#### GRANTS AND AWARDS

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2021-2022 NIHR SPARC Scheme Award for placement at the University of Cambridge - 5% success rate - (£4,000)

2022 Selected for the Alan Turing Institute Research Software Engineering course

2021 Grant to attend Oxford Machine Learning Summer School - 10% success rate

2021 King’s College London HSDTC Award for advanced coding skills

2020-2021 Grant for coding skills training (King’s College London, £320)

2020 British Neuropsychiatry Association ECHR Award (£120)

2019 British Neuroscience Association Travel Grant (£300)

2018-2022 NIHR Biomedical Research Centre (BRC) PhD Studentship (>£60,000)

2018 King’s College Cambridge Graduate Student Fund (GSF) grant (£305)

2016 Genetics Society UK- Summer Studentship Award (£1,600)

King’s College Cambridge HE Durham Fund for vacation research (£700);

Bedford fund for research on animal biology (£250);

2015 Prize for best undergraduate project presentation (Harvard University);

2014-2017 Cambridge University European Bursary (£5,400);

King’s College Cambridge Ernest Gellner’s Scholarship (£4,500)

2012-2014 St Clare’s Oxford full Academic scholarship (£56,000);

Four Principal’s Awards for academic excellence (£800)

## SKILLS

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### *Computational and Statistical*

- Python, MATLAB, R, Bash and L<sup>A</sup>T<sub>E</sub>X
- Expertise with pre-processing, harmonisation, and analysis of multimodal imaging data: resting fMRI, structural MRI, diffusion weighted imaging, EEG.
- Expertise with Freesurfer, SPM, FSL, AFNI, fMRIPrep, Docker
- Machine Learning libraries (TensorFlow, PyTorch, Scikit-learn, Numpy, Keras)
- Expertise with Partial Least Square (PLS) Analyses
- Computational modelling and Bayesian analyses
- Transcriptomic analyses (Allan Brain Atlas) and neural-receptor map analyses
- Expertise with large clinical and imaging datasets (PPMI- Parkinson's Progression Markers Initiative)
- Reproducible data analysis pipelines and Git version control
- High-performance computing using Sun Grid Engines and Slurm

### *Clinical*

- Protocol development for pharmaceutical interventions, including SOPs
- Experience with NHS Electronic Health Records and with NHS and REC ethical approval processes
- Experience with patient data collection (fMRI/MRI scanning, EEG acquisition, safety procedures, phlebotomy and lab tests, electrocardiography (ECG), neuropsychological and clinical tests administration)
- Experience with patients recruitment across multiple sites and NHS trusts

## PRESENTATION AND SYMPOSIA

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### *Conference organisation*

- Co-organiser of the Neuroimaging Seminars at the Centre for Neuroimaging Science (KCL) - 2018/2020
- Main organiser of the Wilberforce Society conference on schizophrenia - 2018
- Co-organiser of TEDx Cambridge University 2017 Conference

### *Invited Talks*

- The Brain Conference 2022 (Psychosis session)
- International Consortium on Hallucination Research (2021)
- King's College Cambridge Rising Talent Spotlight Talk (2018)
- The Genetics Society UK workshop in Edinburgh (2017)

### *Conference Talks and Poster Presentation*

- OHBM poster presentation (June 2022)
- The Brain Conference (2022)- Featured poster in Psychosis session
- Poster presentation at BNPA 2020 Conference
- Poster presentation at BNA 2019 Conference
- Poster presentation at Cambridge Neuroscience (CNS) 2018
- 'Towards an understanding of reinforcement learning in Psychosis: Relation To Genetic Risk For Schizophrenia And Negative Symptoms', oral presentation at the Fletcher's lab (Cambridge) - 2018
- 'The influence of Auditory Stimuli Presentation During Sleep on N1 ERP Component during Wakefulness', oral presentation at the Bekinschtein Lab (Cambridge) - 2017
- Public speaking in BBC ARTiculation show - 2014

## TEACHING, ACADEMIC SERVICE AND PUBLIC OUTREACH

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### *Teaching*

- Statistics and Coding instructor at King's College London (2020-2021)
- Academic Tutor in Psychology, Biology and Statistics on MyTutor online platform. One-to-one tuition to students from disadvantaged backgrounds (Government's 'Pupil Premium' initiative) (2017-2020)

- Supervisor for Psychological and Behavioural Science Tripos Part IA at Cambridge University (2017-2018). Modules: PBS1 (Introduction to Psychology) and PBS2 (Psychological Enquiry and Methods)
- Study Skills tutor for undergraduates at King's College in Cambridge (2017-2018)

*Diversity and inclusion, Public engagement*

- Neuroscience Lecture Access Scheme at KCL;
- Athena Swan committee member in the School of Clinical Medicine (Cambridge University) - (2017-2018)
- Cambridge University MyHE+ academic articles for students from unprivileged backgrounds applying to Oxbridge;
- Student Minds Cambridge College Rep for mental health support (2016-2018)

*Service users engagement*

- Involvement with Parkinson's Disease UK working groups
- 'Conversations with Experts by Experience' sessions with service users led by Dr. Hisham Ziauddeen at Cambridge University
- Mental health volunteer work in Kegalle (Sri Lanka)

TRAINING

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*Methods and Statistics*

- Research Software Engineering with Python course by the Turing Research Engineering Group (Alan Turing Institute) - Jan 2022
- Oxford Machine Learning Intensive Training Course (OxML) - Aug 2021
- NetSci Conference and Training Course - Jul 2021
- Datacamp Certificate in Python for Data Science and Machine Learning - 2021
- Network Neuroscience OHBM Educational courses - Jun 2021
- Brain Connectivity Workshop - May 2021
- FSL Course - Sep 2020
- Zurich Computational Psychiatry Workshop - Sep 2020, 2021
- Neuromatch Academy - Jul 2020
- Advanced Meta-analysis techniques - Mar 2020
- Big Data Analytics in Python, Maudsley BRC - Feb 2019

*Reproducibility & Open Science*

- Stanford Center for Reproducible Neuroscience Workshop - 2022
- Neurohackademy - 2020, 2021
- Reproducible Research Workshop, University of Cambridge - 2017

*Clinical*

- Good clinical practice for pharmacology clinical trials, BRC - June 2020
- Venepuncture & Phlebotomy training, NHS - June 2019
- AED Defibrillator, ECG and vitals course, British Red Cross & NHS - Feb 2019
- MRI Safety Training at KCL - Oct 2019,2021
- How to Conduct Clinical Research Studies, University of Cambridge - 2017

REFERENCES

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- Dr. Graham Murray, MD PhD. University Lecturer, Department of Psychiatry, Cambridge University. E-mail: [gm285@cam.ac.uk](mailto:gm285@cam.ac.uk)
- Professor Mitul Mehta, Professor of Neuroimaging and Neuropsychopharmacology, KCL, London. E-mail: [mitul.metha@kcl.ac.uk](mailto:mitul.metha@kcl.ac.uk)
- Professor Dominic ffytche, Professor of Old Age Psychiatry, KCL, London. E-mail: [dominic.ffytche@kcl.ac.uk](mailto:dominic.ffytche@kcl.ac.uk)