

Riccardo De Marco

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Professional Profile

A motivated PhD candidate (thesis submitted; viva date: May 19th) in neuroscience with significant experience in research project management and neuroimaging (PET and MRI). I have gained extensive experience in designing and conducting studies to investigate the effects of drugs on the human brain, with a specific focus on inflammation and mood disorders. I am eager to bring my expertise to a team dedicated to advancing knowledge in the drug discovery field.

Core skills and experience

- **Study management and execution:** I have organised and conducted studies to investigate the effects of drugs on the human brain, using both imaging techniques and psychological measures. I led the first PET imaging study of my institution, without a dedicated research group, requiring the development of technical skills and problem-solving abilities typically outsourced to specialists. Research experience includes **ethics application, participant recruitment, data collection, data analyses, results interpretation and results presentation.**
- **Neuroimaging techniques:** quantitative PET; MR spectroscopy.
- **Psychological techniques:** self-reported questionnaires and cognitive tasks.
- **Radiochemistry:** set up of a radiochemical laboratory, collection and analysis of radioactive human tissue.
- **Biochemistry:** analyses of blood immune markers (ELISA).
- **Communication:** strong communication skills with experience delivering presentations at scientific conferences and internal meetings, as well as writing scientific articles and reports. I gained experience in communicating complex concepts to a range of audiences, including undergraduate students, fellow PhD students, clinicians, neuroimaging experts, and individuals with diverse backgrounds and levels of expertise.

Research experience

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| Oct 2019 - present | PhD Candidate (Thesis submitted; viva date: May 19 th)
Department of Neuroscience, Brighton and Sussex Medical School, Brighton
Thesis title: Multimodal imaging of neuroinflammation in the living human brain |
| April 2019 - Sept 2019 | Research assistant
Department of Neuroscience, Brighton and Sussex Medical School, Brighton |

Imaging neuroinflammation in humans following LPS administration:

- Quantification of the TSPO PET biomarker of activated microglia
- Characterization of a novel neuroinflammatory marker through Diffusion-Weighted MR Spectroscopy.

Radiochemistry:

- Set up a radiochemistry laboratory to initiate a PET study
- Assessment of the effect of inflammation on TSPO radiotracer biodistribution and metabolism.

Psychological studies on the effect of acute inflammation in humans:

- Assessment of inflammation-induced changes in reward sensitivity through a monetary reinforcement learning task
- Implementation of psychological questionnaires to detect mood changes.

Physiological effect of LPS:

- Studied the physiological effects of systemic inflammation on circulating biomarkers and vital signs on healthy subjects.

Modulation of LPS effect with an anti-inflammatory agent

- Utilized minocycline as a targeted intervention to modulate neuroinflammation.

Data management

- Maintained meticulous records and confidential documentation in compliance with the University policy
- Accurate collection and storage of informatic data, paper-based data and human tissue samples.

Interpersonal skills and problem-solving

- Managing travel funds and consumables orders
- Gained leadership skills by coordinating a multidisciplinary team of radiographers, clinicians, researchers, and radiochemical suppliers. I Successfully organized the study calendar and managed all study sessions.
- Collaborated with clinicians (psychiatrists, ICM nurses and doctors) and image analysts from other institutions
- I Developed creative problem-solving skills by implementing alternative neuroimaging and radiochemistry techniques, in the absence of gold standard methods.
For example, analysing PET data in absence of arterial input functions or analysing radio-metabolites in absence of radio-HPLC.

Education and training

Oct 2019 - present	Doctoral degree, Neuroscience (viva date: May 19 th) Department of Neuroscience, Brighton and Sussex Medical School, Brighton
Oct 2016 - March 2019	Master's Degree, Neuroscience University of Trieste. Eight months internship at Sussex University. Project title: LPS challenge effect on microglial activation: a human TSPO PET study
Oct 2013 - Oct 2016	Bachelor's Degree, Biotechnology Insubria University

Digital skills

- Microsoft Office Suite
- GraphPad Prism
- SPSS
- MATLAB
- SPM

Languages

- English (fluent)
- Italian (native)

Scientific publications

Original research articles

- De Marco, R., Ronen, I., Branzoli, F., Amato, M.L., Asllani, I., Colasanti, A., Harrison, N.A., Cercignani, M. 2022. “*Diffusion-Weighted MR Spectroscopy (DW-MRS) is Sensitive to LPS-Induced Changes in Human Glial Morphometry: A Preliminary Study.*” *Brain, Behavior, and Immunity* 99 (January): 256–65
- De Marco, R., Barritt, A., Cercignani, M, Cabbai, G, Colasanti, A., Harrison, N.A. 2022. “*Minocycline Attenuates Effects of LPS on Reward/Punishment Motivational Reorientation.*” *Brain, Behavior, and Immunity* (accepted).

Oral communication at international meeting

- De Marco, R., Ronen, I., Branzoli, F., Amato, M.L., Asllani, I., Colasanti, A., Harrison, N.A., Cercignani, M. (2021) ‘*Diffusion-Weighted MR Spectroscopy (DW-MRS) is sensitive to LPS-induced changes in glial cytomorphology*’, *European Neuropsychopharmacology*, 53, pp. S94–S95. 34th ECNP Congress Hybrid 2-5 October 2021, Lisbon, Portugal.

Poster communications at international meetings

- De Marco, R., Arstad, E., Colasanti, A., Barritt, A., Colasanti, A., Harrison, N.A. (2019) ‘*Combined LPS challenge and TSPO PET as a method for screening novel microglial targeted immunotherapies*’. 26th Annual Meeting of the PsychoNeuroImmunology Research Society, 4-8 June 2019, Berlin, Germany
- De Marco, R., Ronen, I., Branzoli, F., Amato, M.L., Asllani, I., Colasanti, A., Harrison, N.A., Cercignani, M. (2021) ‘*Diffusion-Weighted MR Spectroscopy (DW-MRS) is sensitive to LPS-induced changes in glial cytomorphology*’, *European Neuropsychopharmacology*, 53, pp. S94–S95. 34th ECNP Congress Hybrid, 2-5 October 2021, Lisbon, Portugal
- De Marco, R., Barritt, A., Cercignani, M, Cabbai, G, Colasanti, A., Harrison, N.A. 2022. “*Minocycline Attenuates Effects of LPS on Reward/Punishment Motivational Reorientation.*” 28th Annual Meeting of the PsychoNeuroImmunology Research Society, 15-18 June 2022, Zurich, Switzerland.

References

Dr. Alessandro Colasanti, Senior Lecturer in Psychiatry (Neuroscience and Imaging), Brighton and Sussex Medical School, E: a.colasanti@bsms.ac.uk, T: +44 (0)1273 876769.

Relationship: Lead PhD supervisor

Prof. Neil Harrison, Clinical Professor in Neuroimaging, Cardiff University Brain Research Imaging Centre, E: HarrisonN4@cardiff.ac.uk, T: +44 (0)29 2087 6785

Relationship: PhD supervisor

Prof. Mara Cercignani, Head of MRI, Cardiff University Brain Research Imaging Centre, E: cercignanim@cardiff.ac.uk

Relationship: Prof. Cercignani is the former director of the Brighton imaging centre and has collaborated throughout my MSc.

Jan Bush, Head of Radiography, Clinical Imaging Sciences Centre (CISC), University of Sussex, E: J.Bush@bsms.ac.uk T: +44 (0)1273 876724.

Relationship: Jan Bush was the head of radiography when I performed my neuroimaging studies.