Dr. Casey Paquola Ph.D

Current Position title: Team Leader of the Multiscale Neuroanatomy Lab
Affiliation: Institute for Neurosciences and Medicine (INM-1), Forschungszentrum Jülich
Email: casey.paquola@gmail.com
Gender: Female

WORK EXPERIENCE

Team Leader – Forschungszentrum Jülich, Germany
1ST SEPTEMBER 2021 – PRESENT
Multiscale Neuroanatomy Lab (https://multiscale-neuroanatomy.github.io/)

Postdoctoral fellow – Forschungszentrum Jülich, Germany
1ST FEBRUARY 2021 – 31ST AUGUST 2021
Helmholtz International BigBrain Analytics Learning Laboratory (HIBALL) postdoctoral fellowship

Postdoctoral fellow – McGill University, Canada
1ST FEBRUARY 2018 – 31ST JANUARY 2021
Externally-funded postdoctoral fellowship at the Montreal Neurological Institute

EDUCATION

PhD (Medicine) – University of Sydney, Australia
1ST APRIL 2015 –5TH DECEMBER 2018
Awarded with the Peter Bancroft Prize in Medicine (highest award for a doctoral dissertation)
Dissertation title: The enduring impact of childhood maltreatment on grey matter development.

Bachelor of Science (Advanced) – University of Sydney, Australia
3RD MARCH 2011 – 26TH MARCH 2015
Awarded with 1st class Honours.
Studied abroad for one year at Maastricht University.
Specialisations in neuroscience and the history and philosophy of science.

SCIENTIFIC PUBLISHING

PEER REVIEWER

Nature, Nature Communications, Science Advances, PNAS, Biological Psychiatry, Molecular Psychiatry, eLife, NeuroImage, Neurobiology of Disease, Cerebral Cortex, Sleep, Human Brain Mapping, PLoS One, Frontiers in Neuroanatomy, Molecular Autism, Scientific Reports

PEER-REVIEWED SCIENTIFIC ARTICLES

I have contributed to 51 peer-reviewed journal articles, including 16 first author publications (>2500 citations, h=26).

First author publications

Co-first author articles are indicated with a * and the order of authors in the publications have been maintained.

1. **Paquola C,** Amunts K, Evans AC, Smallwood J & Bernhardt BC. (2022) *Closing the mechanistic gap: The value of microarchitecture in understanding human cognitive networks*. Trends in Cognitive Sciences. https://doi.org/10.1016/j.tics.2022.07.001
2. **Paquola C**, Hong SJ. (2022) *The potential of myelin-sensitive imaging: Redefining spatiotemporal patterns of myeloarchitecture*. Biological Psychiatry. https://doi.org/10.1016/j.biopsych.2022.08.031

3. Kirschner M*, **Paquola C***, Khundrakpam … Dagher A. (2022) *Schizophrenia polygenic risk during typical development reflects multiscale cortical organization.* Biological Psychiatry Global Science. https://doi.org/10.1016/j.bpsgos.2022.08.003
4. **Paquola C**, Royer J, Lewis LB, Lepage C, Glatard T, Wagstyl K, DeKraker J, Toussaint PJ, Valk S, Collins L, Khan AR, Amunts K, Evans AC, Dickscheid T & Bernhardt BC. *(2021) The BigBrainWarp toolbox for integration of BigBrain 3D histology with multimodal neuroimaging.* eLife. https://doi.org/10.7554/eLife.70119
5. Kirschner M*, **Paquola C***, Khundrakpam BS, Vainik U, Bhutani N, Santor B, Al-Sharif NB, Misic B Bernhardt BC, Evans AC & Dagher A. *(under review) Schizophrenia polygenic risk during typical development reflects multiscale cortical organization.* Preprint: https://doi.org/10.1101/2021.06.13.448243
6. **Paquola C**, Benkarim O, DeKraker J, Larivière S, Frässle S, Royer J, Tavakol S, Valk S, Bernasconi A, Bernasconi N, Khan A, Evans A, Razi A, Smallwood J & Bernhardt BC. *(2020) Convergence of cortical types and functional motifs in the mesiotemporal lobe.* eLife. https://doi.org/10.7554/eLife.60673
7. **Paquola C**, Seidlitz J, Benkarim O, Royer J, Klimes P, Bethlehem RAI, Larivière S, Vos De Wael R, Hall J, Frauscher B, Smallwood J & Bernhardt BC. *(2020) A multi-scale cortical wiring space links cellular architecture, functional dynamics and hierarchies in humans.* PloS Biology. https://doi.org/10.1371/journal.pbio.3000979
8. Bethlehem RAI*, **Paquola C***, Seidlitz J, Ronan L, Bernhardt BC, Cam-CAN Consortium & Tsvetanov K. *(2020) Dispersion of functional gradient across the lifespan.* NeuroImage. https://doi.org/10.1016/j.neuroimage.2020.117299
9. Royer J*, **Paquola C***, Larivière S, Vos de Wael R, Tavakol S, Lowe A, Benkarim O, Evans AC, Bzdok D, Smallwood J, Frauscher B & Bernhardt BC *(2020) Myeloarchitecture gradients in the human insula: Histological underpinnings and association to intrinsic functional connectivity*. NeuroImage. https://doi.org/10.1016/j.neuroimage.2020.116859
10. **Paquola C***, Bethlehem RAI*, Seidlitz J, Wagstyl K, Romero-Garcia R, Whitaker KJ, Vos De Wael R, Williams GB, NSPN Consortium, Vértes PE, Margulies DS, Bernhardt BC & Bullmore, ET. *(2020) Shifts in myeloarchitecture characterise adolescent development of cortical gradients.* eLife. https://doi.org/10.7554/eLife.50482.001
11. Lowe A*, **Paquola C***, Vos de Wael R, Girn M, Larivière S, Tavakol S, Caldairou B, Royer J, Schrader D, Bernasconi A, Bernasconi N, Spreng N & Bernhardt BC (*2019*) *Targeting Age-Related Difference in Brain and Cognition with Multimodal Imaging and Connectome Topography Profiling.* Human Brain Mapping. https://doi.org/10.1002/hbm.24767
12. **Paquola C**, Vos De Wael R, Wagstyl K, Bethlehem R, Hong SJ, Seidlitz J, Evans AC, Mišić B, Bullmore E, Margulies DS, Smallwood J & Bernhardt BC. *(2019) Microstructural and functional gradients are increasingly dissociated in transmodal cortices*. PLoS Biology. https://doi.org/10.1371/journal.pbio.3000284
13. **Paquola C,** Bennett MR & Lagopoulos J. *(2018) Structural and functional connectivity underlying grey matter covariance: Impact of developmental insult.* Brain Connectivity. https://doi.org/10.1089/brain.2018.0584
14. **Paquola C**, Bennett MR, Hatton SN, Hermens DF & Lagopoulos J. *(2017).Utility of the cumulative stress and mismatch hypotheses in understanding the neurobiological impacts of childhood abuse and recent stress in youth with emerging mental disorder.* Human Brain Mapping. https://doi.org/10.1002/hbm.23554
15. **Paquola C,** Bennett MR, Hatton SN, Hermens DF, Groote I & Lagopoulos J. *(2017). Hippocampal development in youth with a history of childhood maltreatment.* J. Psychiatr. Res. https://doi.org/10.1016/j.jpsychires.2017.03.019
16. **Paquola C**, Bennett MR & Lagopoulos J. *(2016) Understanding heterogeneity in grey matter research of adults with childhood maltreatment—A meta-analysis and review*. Neurosci. Biobehav. Rev. https://doi.org/10.1016/j.neubiorev.2016.08.011

Senior author Publications

17. Yin S, Hong SJ, DiMartino A, Milham M, Park BY, Benkarim O, Bethlehem RAI, Bernhardt BC & **Paquola C** *(under review) Shared and distinct patterns of atypical cortical morphometry in children with autism and anxiety*. Cerebral Cortex. Preprint available: https://doi.org/10.1101/2020.03.26.010272

Co-author Publications

18. Larivière S, Bayrak S, Vos de Wal R, Benkarim O, Herholz P, Cruces R, **Paquola C,** Hong SJ, Misic B, Evans AC, Valk SL & Bernhardt BC *(2023) BrainStat: A toolbox for brain-wide statistics and multimodal feature associations.* NeuroImage.
19. Morys F, Yu E, Shishikura M, **Paquola C**, Vainik U, Nave G, Koellinger P, Gan-Or Z, Dagher A. *(2023) Neuroanatomical correlates of genetic risk for obesity in children.* Translational Psychiatry.
20. Park BY, Kebets V, Larivière S, Hettwer MD, **Paquola C**, van Rooij D, Buitelaar J, Franke B, Hoogman M, Schmaal L, Veltman DJ, van den Heuvel OA, Stein DJ, Andreassen OA, Ching CRK, Turner JA, van Erp TGM, Evans AC, Dagher A, Thomopoulos SI, Thompson PM, Valk SL, Kirschner M, Bernhardt BC. *(2022) Multiscale neural gradients reflect transdiagnostic effects of major psychiatric conditions on cortical morphology*. Communications Biology.
21. Benkarim O, **Paquola C**, Park BY, Royer J, Cruces R, Vos de Wael R, Misic B, Piella G, Bernhardt BC. *(2022) A Riemannian approach to predicting brain function from the structural connectome*. NeuroImage.
22. Royer J, Rodriguez-Cruces R, Tavakol S, Larivière S, Herholz P, Li Q, Vos de Wael R, **Paquola C,** Benkarim O, Park B, Lowe AJ, Margulies D, Smallwood J, Bernasconi A, Bernasconi N, Frauscher B & Bernhardt BC *(2022) An Open MRI Dataset for Multiscale Neuroscience.* Scientific Data.
23. Oldham S, Fulcher BD, Aquino K, Arnatkevičiūtė A, **Paquola C**, Shishegar R & Fornito A. *(2022) Modelling spatial, developmental, physiological and topological constraints on human brain connectivity*. Science Advances
24. Caciagli L, **Paquola C**, He X, Vollmar C, Centeno M, Wandschneider B, Braun U, Trimmel K, Vos SB, Sidhu MK, Thompson PJ, Baendale S, Winston G, Duncan JS, Bassett DS, Koepp MJ & Bernhardt BC. *(2022) Disorganization of language and working memory systems in frontal versus temporal lobe epilepsy*. Journal of Neurology
25. Hong SJ, Mottron L, Park B, Benkarim O, Valk SL, **Paquola C**, Larivière S, Bethlehem RAI, Di Martino A, Milham MP, Gozzi, A, Yeo BTT, Smallwood J & Bernhardt BC. *(2022) A convergent structure-function substrate of cognitive imbalances in autism.* Cerebral Cortex.
26. Park B, **Paquola C**, Bethlehem RAI, Benkarim O, NSPN Consortium, Misic B, Smallwood J, Bullmore ET & Bernhardt BC. *(2022) Adolescent development of multiscale structural wiring and functional interactions in the human connectome.* PNAS
27. Larivière S, Royer J, Cruces R, **Paquola C**, …, ENIMGA Consortium for epilepsy & BC Bernhardt. *(2022) Structural network alterations in focal and generalized epilepsy assessed in a worldwide ENIGMA study follow axes of epilepsy risk gene expressionion.* Nature Communications.
28. Wang Y, Royer J, Park BY, Vos de Wael R, Larivière S, Tavakol S, Cruces R, **Paquola C**, Hong SJ, Margulies D, Smallwood J, Valk SL, Evans AC & Bernhardt BC. *(2022) Long-range functional connections mirror and link microarchitectural and cognitive hierarchies in the human brain*. Cerebral Cortex.
29. Larivière S, **Paquola C**, Park B, Royer J, Wang Y, Benkarim O, Vos de Wael R, Valk SL, Thomopoulos SI, Kirschner M, ENIGMA Consortium, Sisodiya S, McDonald CR, Thompson PM & Bernhardt BC. *(2021) The ENIGMA Toolbox: multiscale neural contextualization of multisite neuroimaging datasets.* Nature Methods.
30. Benkarim O, **Paquola C**, Park B, Hong SJ, Royer J, Vos de Wael R, Larivière S, Valk SL, Bzdok D, Mottron L & Bernhardt BC. *(2021) Connectivity alterations in autism reflect functional idiosyncrasy.* Communications Biology.
31. Arnatkevičiūtė A, Fulcher BD, Oldham S, Tiego J, **Paquola C**, Gerring Z, Aquino K, Hawi Z, Johnson B, Ball G, Klein M, Deco G, Franke B, Bellgrove M & Fornito A. *(2021) Genetic influences on hub connectivity of the human connectome.* Nature Communications
32. Tavakol S, Li Q, Royer J, Vos de Wael R, Larivière S, Lowe A, **Paquola C**, Jeffries E, Hartley T, Bernasconi A, Bernasconi A, Smallwood J, Valk S & Bernhardt BC. *(2021) Structural Connectivity Gradients of the Temporal Lobe Serve as Multiscale Axes of Brain Organization and Cortical Evolution.* Cerebral Cortex
33. Vos de Wael R, Royer J, Tavakol S, Tavakol S, Wang Y, **Paquola C**, Benkarim O, Eichert N, Larivière S, Xu T, Misic B, Smallwood J, Bohbot V, Caciagli L & Bernhardt BC. *(2021) A Structure-Function Substrate of Memory for Spatial Configurations in Medial and Lateral Temporal Cortices.* Cerebral Cortex
34. Park B, Hong SJ, Valk S, **Paquola C**, Benkarim O, Bethlehem RAI, Di Martino A, Milham MP, Gozzi, A, Yeo BTT, Smallwood J & Bernhardt BC. *(2021) Differences in subcortico-cortical interactions identified from connectome and microcircuit models in autism*. Nature Communications

35. Park B, Bethlehem RAI, **Paquola C**, Larivière S, Cruces R, Vos de Wael R, NSPN Consortiuum, Bullmore ET & Bernhardt BC. *(2021) An expanding manifold in transmodal regions characterizes adolescent reconfiguration of structural connectome organization.* eLife

36. Li Q, Tavakol S, Royer J, Larivière S, Vos De Wael R, Park B, **Paquola C**, Zeng D, Caldairou B, Bassett DS, Bernasconi A, Bernasconi N, Frauscher B, Smallwood J, Caciagli L, Li S & Bernhardt BC. *(2021) Atypical neural topographies underpin dysfunctional pattern separation in temporal lobe epilepsy.* Brain

37. Cross N, **Paquola C**, Pomores FB, Perrault AA, Jegou A, Nyguen A, Aydin U, Bernhardt BC, Grova C & Dang Vu T. *(2021) Cortical gradients of functional connectivity are robust to state-dependent changes following sleep deprivation.* NeuroImage

38. Park B, Vos de Wael R, **Paquola C**, Larivière S, Benkarim O, Royer J, Tavakol S, Cruces RR, Li Q, Valk SL, Margulies DS, Misic B, Bzdok D, Smallwood J & Bernhardt BC. *(2021) Signal diffusion along connectome gradients and inter-hub routing differentially contribute to dynamic human brain function.* NeuroImage

39. Valk SL, Xu T, Margulies DS, Kahrabian Masoleh S, **Paquola C**, Goulas A, Kochunov P, Smallwood J, Yeo BTT, & Bernhardt BC. *(2020) Shaping Brain Structure: Genetic and Phylogenetic Axes of Macro Scale Organization of Cortical Thickness.* Science Advances.

40. Kirschner M, Shafiei G, Markello R, Makowski C, Talpalaru A, Hodzic-Santor B, Devenyi G, **Paquola C**, Bernhardt BC, Lepage M, Chakravarty M, Dagher A & Misic B. *(2020) Latent clinical-anatomical dimensions of schizophrenia.* Schizophrenia Bulletin.

41. Seidlitz J, Nadig A, Liu S, Bethlehem R, Vertes P, Morgan S, Vasa F, Romero-Garcia R, Lalonde F, Clasen L, Blumenthal J, **Paquola C,** Bernhardt B, Wagstyl K, Polioudakis D, Torre-Ubieta L, Geschwind D, Han J, Lee N, Murphy D, Bullmore E & Raznahan A (*2020) Transcriptomic and Cellular Decoding of Regional Brain Vulnerability to Neurodevelopmental Disorders.* Nature Communications.

42. Vos de Wael R, Benkarim O, **Paquola C**, Lariviere S, Royer J, Tavakol S, Xu T, Hong SJ, Valk SL, Misic B, Milham MP, Margulies DS, Smallwood J & Bernhardt BC *(2020) BrainSpace: a toolbox for the analysis of macroscale gradients in neuroimaging and connectomics datasets.* Communications Biology.

43. Vázquez-Rodríguez B, Suarez L, Markello R, Shafiei G, **Paquola C**, Hagmann P, van den Heuvel MP, Bernhardt BC, Spreng RN, Misic B *(2019) Gradients of structure-function tethering across neocortex.* PNAS.

44. Hong SJ, Vos de Wael R, Larivière S, **Paquola C**, Bethlehem R, DiMartino A, Milham M, Margulies D, Smallwood J & Bernhardt BC (*2019*) Atypical functional connectome hierarchy in autism. *Nature Communications.*

45. Larivière S, Vos de Wael R, Hong SJ, **Paquola C**, Tavakol S, Lowe AJ, Schrader DV & Bernhardt, B.C. (*2020*) *Multiscale structure-function gradients in the neonatal connectome.* Cerebral Cortex.

46. Hong SJ, Hyung BS, **Paquola C** & Bernhardt BC (*2015) The superficial white matter in autism and its role in connectivity anomalies and symptom severity.* Cerebral Cortex.

47. Blanken TF, Benjamins JS, Borsboom D, Vermunt JK, **Paquola C**, Ramautar J, Dekker K, Stoffers D, Wei Y & Van Someren EJW (*2019) Insomnia disorder subtypes derived from life history and traits of affect and personality.* Lancet Psychiatry

48. Cross N, Memarian N, Duffy S, **Paquola C**, LaMonica H, D'Rozario A, Lewis SJG, Hickie IB, Grunstein RR & Naismith S. *(2018) Structural brain correlates of obstructive sleep apnoea in older adults at-risk for dementia.* European Respiratory Journal

49. O'Doherty D, Ryder W, **Paquola C**, Tickell A, Chan C, Hermens DF, Bennett MR & Lagopoulos J. *(2018). White matter integrity alterations in post-traumatic stress disorder.* Human Brain Mapping

50. Larivière S, Vos de Wael R, **Paquola C**, Hong SJ, Mišić B, Bernasconi N, Bernasconi A, Bonilha L & Bernhardt BC. *(2018) Microstructure-Informed Connectomics: Enriching Large-Scale Descriptions of Healthy and Diseased Brains.* Brain Connectivity

51. Hermens DF, Naismith SL, Chitty KM, Lee RSC, Tickell A, Duffy SL, **Paquola C**, White D, Hickie IB & Lagopoulos J. *(2015). Cluster analysis reveals abnormal hippocampal neurometabolic profiles in young people with mood disorders.* European Neuropsychopharmacology