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ACADEMIC EMPLOYMENT

- 2025 – Present **Research Scientist II**
Nathan S. Kline Institute for Psychiatric Research
Focus: Neural circuits of predictive coding and alterations in schizophrenia.
Lab: Jordan P Hamm
- 2022 – 2025 **MSCA COFUND Fellow (USAL4EXCELLENCE)**
University of Salamanca
Project: Prefrontal inputs shape prediction error coding in the auditory cortex.
Lab: Manuel S. Malmierca
- 2019 – 2022 **NIH Postdoctoral Research Fellow**
University of Michigan
Project: Central changes following cochlear synaptopathy.
Lab: Susan E. Shore

EDUCATION

- 2015 – 2019 **PhD – Neuroscience**
University of Nottingham
Thesis: The changing function of nitric oxide in the ventral cochlear nucleus during tinnitus.
Supervisors: Mark N. Wallace & Paul A. Smith
Lab: Alan R Palmer
- 2012 – 2015 **BSc (Hons; 2:1) – Neuroscience with Pharmacology**
University of Nottingham
Dissertation: Using real-time lactate biosensors to study metabolism in mouse central white matter.
Supervisor: Angus M. Brown

PUBLICATIONS *equal contribution. *corresponding author. •senior author.

Preprints

Bohorquez LH, Malmierca MS*, **Hockley A**** (2025) Auditory deviants evoke cortical state changes under anesthesia.

Published

- Hockley A**, Bohorquez LH, Malmierca MS (2025) Top-down prediction signals from the medial prefrontal cortex govern auditory cortex prediction errors. *Cell Reports*. 10.1016/j.celrep.2025.115538
- Wallace MN, Berger JI, **Hockley A**, Sumner CJ, Akeroyd MA, Palmer AR, McNaughton PA (2024) Identifying tinnitus in rodents by tracking the motion of body markers in response to the acoustic startle. *Frontiers in Neuroscience*. 10.3389/fnins.2024.1452450
- Hockley A**[†], Malmierca MS[†] (2024) Auditory processing control by the medial prefrontal cortex: A review of the rodent functional organization. *Hearing Research*. 10.1016/j.heares.2024.108954
- Hockley A**, Cassinotti LR, Selesko M, Corfas G, Shore SE (2023) Cochlear synaptopathy impairs suprathreshold tone-in-noise coding in the cochlear. *Journal of Physiology* 10.1113/JP284452
- Hockley A**, Wu C, Shore SE (2021) Olivocochlear projections contribute to superior intensity coding in cochlear nucleus small cells. *Journal of Physiology* 10.1113/JP282262
- Hockley A**, Berger JI, Palmer AR, Wallace MN (2020) Nitric oxide increases gain within the ventral cochlear nucleus of guinea pigs with tinnitus. *Eur J Neuroscience* 10.1111/ejn.14913
- Hockley A**, Berger JI, Smith PA, Palmer AR, Wallace MN (2019) Nitric oxide regulates the firing rate of neuronal subtypes in the guinea pig ventral cochlear nucleus. *Eur J Neuroscience* 10.1111/ejn.14572
- Berger JI, Owen W, Wilson CA, **Hockley A**, Coomber B, Palmer AR, Wallace MN (2018) Gap-induced reductions of evoked potentials in the auditory cortex: a possible objective marker for the presence of tinnitus in animals. *Brain Research* 10.1016/j.brainres.2017.11.026
- Chambers TW, Dale TP, **Hockley A**, Brown AM (2014) Contribution of Glycogen in supporting axon conduction in the peripheral and central nervous systems: the role of lactate. *Frontiers in Neuroscience* 10.3389/fnins.2014.00378

Book Chapters:

- Hockley A** & Shore SE (2023) Neural Mechanisms of Tinnitus. *Oxford Encyclopedia of Sensory Systems* (Oxford University Press) 10.1093/acrefore/9780190264086.013.317

Published Conference Proceedings:

- Berger JI, Coomber B, Hill S, **Hockley A**, Owen W, Alexander SPH, Palmer AR, Wallace MN (2017) Manipulating endocannabinoid signaling in an awake animal model of tinnitus. *Brain and Neuroscience Advances* 10.1177/2398212817705279
- Hockley A**, Berger JI, Smith PA, Wallace MN, Palmer AR (2017). The role of nitric oxide in modulating neuronal activity in the ventral cochlear nucleus, a possible mechanism of tinnitus generation. *Brain and Neuroscience Advances* 10.1177/2398212817705279

Other publications

- Burghard A, **Hockley A**, Koops EA, Berger JI (2025). Editorial: Bridging the Gap Between the Different Pillars of Tinnitus Research. *Frontiers in Neuroscience*. 10.3389/fnins.2025.1631559

GRANTS & AWARDS

2025	UK Neural Computation Conference Fellowship (£375)
2024	Association for Research in Otolaryngology Travel Award (\$750)
2023	Association for Research in Otolaryngology Travel Award (\$500 - declined)
2023	Alteraciones de la codificación predictiva en las enfermedades neurodegenerativas y su relación con la sordera neurosensorial y el envejecimiento (Proyectos I+D+I; associated researcher) (€180,000)
2022	MSCA COFUND (USAL4EXCELLENCE) Fellowship (PI) (€168,900)
2022	Association for Research in Otolaryngology Travel Award (\$200)
2021	Marie and Jack Shapiro Prize – Shortlisted
2021	Association for Research in Otolaryngology Virtual Travel Award (\$50)
2019	International Hearing Loss Conference Travel Award (\$600)
2018	Association for Research in Otolaryngology Travel Award (£300)
2018	Action of Hearing Loss Travel Award (£900)
2016	University of Nottingham School of Life Sciences Travel Award (£400)
2015	Action of Hearing Loss Summer Studentship (£2000)
2014	Physiological Society Summer Studentship (£2000)

CONFERENCE TALKS

Hockley A. (2024) Medial prefrontal cortex outputs contribute to prediction error generation in the auditory cortex. Society for Neuroscience (SfN) Chicago, USA.

Hockley A. (2021) Cochlear nucleus small cells use olivocochlear input to encode stimulus intensity. Association for Research in Otolaryngology (ARO) Midwinter Meeting; Online.

CONFERENCE POSTER PRESENTATIONS * equal contribution.

L.H. Bohórquez, M.S. Malmierca & **A. Hockley** (2025 – upcoming) Do auditory novel stimuli evoke cortical state changes? Spanish Society for Neuroscience (SENC) Gran Canaria, Spain.

Hockley A, Bohórquez LH, Malmierca MS. (2025) Hierarchical neural encoding of context and frequency during the oddball paradigm. UK Neural Computation. London, UK.

Hockley A, Bohórquez LH, Malmierca MS. (2024) Initiation of cortical up states by auditory deviants: a mismatch negativity generation mechanism in unconscious states. Society for Neuroscience (SfN) Chicago, USA.

Hockley A, Bohórquez LH, Malmierca MS. (2024) Medial prefrontal cortex outputs contribute to prediction error generation in the auditory cortex. Advances and Perspectives in Auditory Neuroscience (APAN) Chicago, USA.

Bohórquez LH, **Hockley A***, Malmierca MS*. (2024) Mismatch negativity changes throughout urethane anesthesia in the rat. 10th Mismatch Negativity Conference. Salamanca, Spain.

Hockley A, Bohórquez LH, Malmierca MS. (2024) Initiation of cortical up states by auditory deviants: a mismatch negativity generation mechanism in unconscious states. 10th Mismatch Negativity Conference. Salamanca, Spain.

Hockley A, Bohórquez LH, Malmierca MS. (2024) Medial prefrontal cortex outputs contribute to prediction error generation in the auditory cortex. 10th Mismatch Negativity Conference. Salamanca, Spain.

- Hockley A**, Malmierca MS. (2024) Prefrontal cortex inhibition reduces prediction error in the auditory cortex. Association for Research in Otolaryngology (ARO) Anaheim, USA.
- Selesko M, Swiderski D, Beyer L, Kramer T, Martel D, **Hockley A**, Raphael Y, Shore SE. (2023) Medial Olivocochlear Neurons May Protect Against Tinnitus. Association for Research in Otolaryngology (ARO) Orlando, USA.
- Hockley A**, Cassinotti L, Selesko M, Desai A, Corfas G, Shore SE. (2023) Cochlear Synaptopathy Impairs Suprathreshold Tone-In-Noise Coding in the Cochlear Nucleus. Association for Research in Otolaryngology (ARO) Midwinter Meeting; Orlando, USA.
- Haely J*, **Hockley A***, Cassinotti L, Corfas G, Shore SE. (2022) Loss of afferent synapses in the cochlear nucleus following cochlear synaptopathy. Midwest Auditory Research Conference; Ann Arbor, U.S.A.
- Selesko M, Wu C, **Hockley A**, Shore SE. (2022) Inducing Tinnitus in Guinea Pigs Through Long-Term Potentiation of Fusiform Cells in the Dorsal Cochlear Nucleus. Midwest Auditory Research Conference; Ann Arbor, U.S.A.
- Hockley A**, Cassinotti L, Selesko M, Corfas G, Shore SE. (2022) Effects of Cochlear Synaptopathy on Tone-In-Noise Coding in the Cochlear Nucleus. Midwest Auditory Research Conference; Ann Arbor, U.S.A.
- Hockley A**, Berger JI, Heo A, Shore SE. (2022) Modulation of the Acoustic Startle Response by Background Sound. Association for Research in Otolaryngology (ARO) Midwinter Meeting; Online.
- Hockley A**, Cassinotti L, Selesko M, Corfas G, Shore SE. (2022) Effects of Cochlear Synaptopathy on Tone-In-Noise Coding in the Cochlear Nucleus. Association for Research in Otolaryngology (ARO) Midwinter Meeting; Online.
- Selesko M, Wu C, **Hockley A**, Shore SE. (2021) Inducing Tinnitus in Guinea Pigs Through Long-Term Potentiation of Fusiform Cells in the Dorsal Cochlear Nucleus. Association for Research in Otolaryngology (ARO) Midwinter Meeting; Online.
- Hockley A**, Wu C, Shore SE (2020) Characterization of a large population of cochlear nucleus small cells. Association for Research in Otolaryngology (ARO) Midwinter Meeting, San Jose, USA.
- Selesko M, Lampen J, Weeks R, Wu C, **Hockley A**, Shore SE. (2020) Inducing tinnitus in guinea pigs through stimulus timing-dependent plasticity Association for Research in Otolaryngology (ARO) Midwinter Meeting, San Jose, USA.
- Hockley A**, Wu C, Shore SE (2019) Encoding of amplitude modulation in the presence of background noise in bushy cells of the ventral cochlear nucleus. International Hearing Loss Conference, Niagara-on-the-lake, Canada.
- Hockley A**, Berger JI, Hill SMD, Smith PA, Palmer AR and Wallace MN (2018) NO-mediated homeostatic plasticity in the guinea-pig ventral cochlear nucleus: a potential tinnitus generation mechanism. International Conference on the Biology, Chemistry and Therapeutic Applications of Nitric Oxide, Cambridge, UK.
- Hockley A**, Berger JI, Smith PA, Palmer AR and Wallace MN (2018) Nitric oxide as a modulator in the ventral cochlear nucleus: a potential tinnitus generation mechanism. Association for Research in Otolaryngology (ARO) Midwinter Meeting, San Diego, USA.
- Hockley A**, Berger JI, Hill SMD, Smith PA, Palmer AR, Wallace MN (2018) Nitric oxide in the ventral cochlear nucleus as a tinnitus generation mechanism. Basic Auditory Science Conference, Newcastle, UK.
- Berger JI, Coomber B, Hill S, **Hockley A**, Owen W, Alexander SPH, Palmer AR, Wallace MN (2017) Effects of a cannabinoid agonist in an awake model of tinnitus. Basic Auditory Science Conference, Nottingham, UK.

- Hockley A**, Berger JI, Smith PA, Palmer AR, Wallace MN (2017) Nitrgergic modulation in the ventral cochlear nucleus and its changing role in tinnitus. Basic Auditory Science Conference, Nottingham, UK.
- Berger JI, Coomber B, Hill S, **Hockley A**, Owen W, Alexander SPH, Palmer AR, Wallace MN (2017) Manipulating endocannabinoid signaling in an awake animal model of tinnitus. British Neuroscience Association (BNA) Festival of Neuroscience, Birmingham, UK.
- Hockley A**, Berger JI, Smith PA, Wallace MN and Palmer AR (2017) The role of nitric oxide in modulating neuronal activity in the ventral cochlear nucleus, a possible mechanism of tinnitus generation. British Neuroscience Association (BNA) Festival of Neuroscience, Birmingham, UK.
- Hockley A**, Berger JI, Smith PA, Wallace MN and Palmer AR (2016) The role of nitric oxide in modulating neuronal activity in the ventral cochlear nucleus. Society for Neuroscience (SFN), San Diego, USA.
- Hockley A**, Berger JI, Smith PA, Wallace MN and Palmer AR (2016) The role of nitric oxide in modulating neuronal activity in the ventral cochlear nucleus. Advances and Perspectives in Auditory Neuroscience (APAN) San Diego, USA.

TEACHING ROLES

Introduction to MATLAB for Biological Sciences 2024 – organised and taught
Various undergraduate lab demonstrations

SUPERVISION ROLES

2024 – pres Laura H Bohórquez (PhD – University of Salamanca)
2023 – 2024 Yoan Reynaldo Torres Cruz (MSc – University of Salamanca)
2021 – 2022 Joshua Cho (BSc – University of Michigan)
2020 – 2022 Jenny Haely (BSc – University of Michigan)
2019 – 2020 Avery Heo (BSc – University of Michigan)

REVIEWING / EDITOR ROLES

Research Topic Editor – Bridging the Gap Between the Different Pillars of Tinnitus Research (Frontiers in Neuroscience, 2024)
Review Editor – Frontiers in Systems Neuroscience (2023-present)

Since 2019 I have reviewed for the following journals: **Journal of Neuroscience, European Journal of Neuroscience, Hearing Research, Neuroscience, Cerebral Cortex, PLOS One, Open Biology, Aging Cell, Frontiers in Neuroscience, Frontiers in Neural Circuits, Frontiers in Cellular Neuroscience, Frontiers in Synaptic Neuroscience.**

CONFERENCE ORGANISATION ROLES

10th Mismatch Negativity Conference – Salamanca Sep 2024 – Local organizing committee
Tinnitus Research Initiative – Nottingham March 2016 – Local organizing committee

PROFESSIONAL AFFILIATIONS

2024 – pres Society for Neuroscience
2018 – pres Association for Research in Otolaryngology
2016 – 2018 British Society of Audiology

