Allison M. Barry, PhD

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Nationality: Canadian

Current positions

2023 - **Postdoctoral Neuroscientist**
Department of Pharmacology (Prof Manuela Schmidt)
University of Vienna; AT

2023 - **Contractor (Bioinformatics)**
Department of Neuroscience (Prof Theodore Price)
Center for Advanced Pain Studies
NIH Precision Human Pain Network
University of Texas at Dallas; USA

Education

2017-2022 **DPhil. (PhD), Ion Channels in Health and Disease**
University of Oxford, Nuffield Department of Clinical Neurosciences
Oxford, UK
- Thesis: Exploring the molecular underpinnings of neuropathic pain in primary afferents
- Advisors: Prof. David Bennett, Dr. Georgios Baskozos, Prof Stephen Tucker

2015-2017 **MSc., Neurosciences**
IMPRS, Max-Planck-Institut Für Experimentelle Medizin
Göttingen, DE
- Thesis: Modulation of TRPV1 with interaction partners
- Advisor: Prof. Manuela Schmidt

2011-2015 **BSc., Neuroscience, First Class Honours**
Dalhousie University
Halifax, CA
- Thesis Advisor: Prof. Victor Rafuse, Department of Medical Neurosciences

Prior professional experience

2023 - **Academic Visitor**
University of Oxford, NDCN (Prof David Bennett)
Oxford, UK

2022-2023 **Postdoctoral Neuroscientist**
University of Oxford, NDCN (Prof David Bennett)
PAINSTORM, Partnership for Assessment and Investigation of Neuropathic Pain: Studies Tracking Outcomes, Risks and Mechanisms
Oxford, UK

2017-2018 **wiss. Mitarbeiter*innen**
Max-Planck-Institut Für Experimentelle Medizin
Göttingen, DE

2012-2016 **Research Assistant**
Dalhousie University, Dept Psychology and Neuroscience
Halifax, CA

Grant History

2017-2022 Lead Applicant. Wellcome Trust. Four-Year PhD Studentship in Basic Science + supplementary Costs. University of Oxford, UK. Grant ID: 215145/Z/18/Z. **188014 GBP**

2015-2016 Project Lead. NSERC. Characterizing Synaptopodin-2 during skeletal myogenesis using embryonic stem cell derived muscle. Dalhousie University, CA. Grant ID: 581929. **4500 CAD**

2014-2015 Project Lead. NSERC. Analysis of visual system neurons in Drosophila. Dalhousie University, CA. Grant ID: 560615. **4500 CAD**

2013-2014 Project Lead. NSERC. Neurons of the fly's visual system. Dalhousie University, CA. Grant ID: 540051 . **4500 CAD**

Selected Awards

Honours

2025 Original Research selected as Editor’s Choice (PAIN)
2025 NIH Precision Human Pain Network Viewpoint selected Featured Article (Neuron)
2023 Original Research selected as Editor’s Choice (PAIN)
2022 Abstract selected for presentation, NeuPSIG Symposium, IASP World Congress
2021 Abstract selected for presentation, IASP Euro Pain School

Scholarships/Fellowships

2017-2022 Medical Sciences DTC Doctoral Scholarship, Green Templeton. **60560 GBP**
2015-2017 MSc Stipend; International Max Planck Research School, Göttingen. **14400 EUR**
2015 Dalhousie in-course Scholarship, Dalhousie University
2014 Dr. M.G. Hickman Memorial Scholarship, Dalhousie University
2013 Marjorie F Ellis Scholarship, Dalhousie University
2012 Dalhousie Entrance Scholarship, Dalhousie University

Student Supervision

BSc	Na Zhao (University of Oxford, 2021-2024)
	Anna Klishina (University of Oxford, 2019)
MSc	Maximilian Mayrhauser (University of Vienna, 2023-2024) Thesis: Benchmarking data-independent acquisition mass spectrometry analyses for metaproteomic data (co-supervised with Manuela Schmidt)
PhD	Marisol Mancilla Moreno (University of Texas at Dallas, 2022 - present) Thesis: Genomic and transcriptomic divergence in dorsal root ganglia (co-supervised with Ted Price)

Teaching

2024-2025 **Seminar Series**
Bioinformatics for Biologists (postgraduate + postdoctoral audience).
Dept of Pharmacology, University of Vienna; AT
Organized, planned, and administered a seminar series for biologists looking to analyze omics data. Topics centered around version controlling, R basics, resource development, and debugging

2022 **Seminar Speaker**
Introduction to „omics“ (postgraduate seminar series).
Dept Clinical Neurosciences, University of Oxford, UK
Responsibility include helping design seminar series, developing and giving lecture material

2014-2015 **Laboratory Teaching Assistant**
Genetics and Molecular Biology (5x 20 undergraduate students).
Dalhousie University; Dept Biology. CA.
Responsibilities included building + presenting introductory lecture materials, leading discussions, supervising laboratory work for 2 year undergraduate students, grading assignments, and meeting with students individually

2014-2016 **Tutor (private)**
Genetics and Molecular Biology, Molecular Neuroscience
Student mentorship and one-on-one teaching across undergraduate neuroscience and biology courses for students at Dalhousie University in BSc Neuroscience, Biology, and Biochemistry programs

Society Membership

2024- Peripheral Nerve Society
2019- International Association for the Study of Pain

Scientific Community Contributions

ongoing	Peer Reviewer, eg. PAIN; Nat Neuro, JPNS, Eur J Pain, Bioinformatics Advances
ongoing	Mentor, Disabled in STEM (https://disabledinstem.wordpress.com/)
ongoing	Database management for FAIR omics data, https://livedataoxford.shinyapps.io/drg-directory/
ongoing	Outreach, registered "Skype a Scientist"
2018-2020	Outreach, Oxford Hands on Science committee member (http://oxhos.org/)
2018	Outreach, Oxford Brain Challenge Organizer, St. Hilda's College (Oxford, UK)

Presentations

2025 Applying ML algorithms for the study of neuropathic pain (Workshop). NeuPSIG, *forthcoming Sept 2025* (Berlin, DE)

AI in Exploratory Human Research. IASP Seminar Series, *forthcoming 2025* (online)

2024 Predicting "pain genes": multi-modal data integration using probabilistic classifiers and interaction networks. Canadian Neuroscience Society (CNS) Seminar Series, 2024 (online)

Machine Learning and AI in Basic and Clinical Pain Research: A Primer on Big Data Methods (Masterclass). IASP World Congress, 2024 (Amsterdam, NL)

Deep RNA-seq of male and female murine sensory neuron subtypes after nerve injury. Pathway to Publication and Impact, IASP Early Career Researcher Webinar, 2024 (online)

2023 Predicting "pain genes". Mathematical Biology Series, Open University, 2023 (London, UK)

"Omics" databases for data integration in pain. Advanced Pain Discovery Platform Conference, 2023 (Nottingham, UK)

2022 Deep sequencing of murine DRG subpopulations after nerve injury. NeuPSIG Symposium, IASP World Congress, 2022 (Toronto, CA)

Aggregating sequencing data in pain research. GW4 3Rs Symposium, 2022 (Bath, UK)

Exploring the molecular underpinnings of neuropathic pain in primary afferent subtypes. Thomas Willis Day, 2022 (Oxford, UK)

2021 Exploring the molecular underpinnings of neuropathic pain in primary afferent subtypes. IASP Euro Pain School, 2021 (online)

Aggregating sequencing data in pain research. Oxford NC3Rs Symposium, 2021 (Oxford, UK)

Conference Abstracts

2025 **Allison Barry**, Stephanie Shiers, Chris Hsu, Michael MacCoss, Theodore Price. Human DRG spatial proteomics in diabetic peripheral neuropathy. NeuPSIG, 2025 (Berlin, DE)

Allison Barry, Julia Sondermann, Feng Xian, Thomas Haberl, David Gomez-Varela, Fritz Benseler, Noa Lipstein, Nils Brose, Manuela Schmidt. Proximity labelling reveals the compartmental proteome of murine sensory neurons. NeuPSIG, 2025 (Berlin, DE)

Úrzula Franco-Enzástiga, **Allison Barry**, Theodore Price. Chromatin Remodeling In Human Dorsal Root Ganglia: Insights Into Painful Diabetic Neuropathy. Peripheral Nerve Society, 2025 (Edinburgh, UK)

Mosab Ali Awadelkareem, Pravallika Manjappa, **Allison Barry**, Hyoungseok Ju, Lucy McDermott, Robyn McAdam, Iain Chessell, John Linley, Rebecca Jarvis, David Bennett. SARM1 inhibitors prevent axon degeneration in human cellular models of vincristine-induced. Peripheral Nerve Society, 2025 (Edinburgh, UK)

Allison Barry, Julia Sondermann, Joseph Lesnak, Feng Xian, Úrzula Franco-Enzástiga, Jayden O'Brien, David Gomez Varela, Morgan Schackmuth, Stephanie Shiers, Theodore Price, Manuela Schmidt. Multi-omic integration with human DRG proteomics highlights TNFα signalling as a relevant sexually dimorphic pathway. Peripheral Nerve Society, 2025 (Edinburgh, UK)

Shuaiwei Wang, **Allison Barry**, Naomi Young, Yoon Kyung Lee, Sang Wook Shim, Xinying Wang, Hyoung Cheol Kim, Raphael Gonzalez-Cano, Laura Stirling-Barros, Michael Costigan, Georgios Baskozos, David LH Bennett, Simon Rinaldi, Seog Bae Oh, Alexander J Davies. NKG2D receptor ligands are cell surface biomarkers for injured murine and human nociceptive neurons. Cell Symposia: Neuro-immune axis: Charting the periphery, *forthcoming Sept 2025* (New York, USA)

2024 **Allison Barry**, Julia Sondermann, Feng Xian, Morgan Schackmuth, Stephanie Shiers, Theodore Price, Manuela Schmidt. Toward Defining the Human DRG Proteome in Females and Males. IASP World Congress, 2024 (Amsterdam, NL)

2023 **Allison Barry**, Na Zhao, David Bennett, Georgios Baskozos. Predicting “pain genes”: multi-modal data integration using probabilistic classifiers and interaction networks. Advanced Pain Discovery Platform Congress, 2023 (Nottingham, UK)

Na Zhao, David Bennett, Georgios Baskozos, **Allison Barry**. Pain RNAseq Hub: A Shiny-Based Database for Interactive Visualisation and Network Analyses of RNA-seq data in Neuropathic Pain. NeuPSIG, 2023 (Lisbon, PG)

2022 **Allison Barry,** Na Zhao, David Bennett, Georgios Baskozos. Deep Sequencing of Murine DRG Subpopulations after Nerve Injury. IASP World Congress, 2022 (Toronto, CA)

2019 **Allison Barry**, Steven Middleton, David Bennett. Exploring the nociceptor transcriptome after nerve injury. Thomas Willis Day, 2019 (Oxford, UK)

Allison Barry, Steven Middleton, David Bennett. Exploring primary afferent transcriptome changes in neuropathic pain. OXION: Ion Channels and Disease Initiative Day, 2019 (Oxford, UK)

Selected preprints/*in prep*

Sondermann JS*, **Barry AM***, Xian F, Haberl T, Gomez-Varela D, Benseler F, Lipstein N, Brose N, Schmidt M (2025). Proximity labelling reveals the compartmental proteome of murine sensory neurons. *in review (Cell Reports).* https://doi.org/10.1101/2025.06.13.659475 ***shared first authorship**

Arendt-Tranholm A, Sankaranarayanan I, Payne C, Mancilla Moreno M, Mazhar K, Yap N, Chiu AP, **Barry AM**, Patel PP, Inturi NN, Tavares Ferreira T, Amin A, Karandikar M, Jarvik JG, Turner JA, Hofstetter CP, Curatolo M, Price TJ (2025). Single-cell characterization of the human C2 dorsal root ganglion recovered from C1-2 arthrodesis surgery: implications for neck pain. *in review (Brain)*. doi: https://doi.org/10.1101/2025.03.24.645122

Wang S, **Barry AM**, Young N, Lee YK, Shim SW, Wang X, Kim HC, Gonzalez-Cano R, Stirling-Barros L, Costigan M, Baskozos G, Bennett DLH, Rinaldi S, Bae Oh S, Davies AJ. NKG2D receptor ligands are cell surface biomarkers for injured murine and human nociceptive neurons. *in review (J Neuroinflammation).*

Journal Publications
supervised students underlined

Copits BA, Curatolo M, Dougherty PM, Gereau IV RW, Luo W, Martone M, Olausson H, Price TJ, Renthal W, Woolf CJ, Zhao G**, NIH PRECISION Human Pain Network** (2025). Human pain neuroscience and the next generation of pain therapeutics. Neuron. 113(9). p1304-1306. https://doi.org/10.1016/j.neuron.2025.04.005. **Featured Article.**

Barry AM, Sondermann JS, Lesnak JB, Xian F, Franco-Enzastiga U, O'Brien JA, Schackmuth MK, Shiers S, Varela D, Price TJ, Schmidt M (2025). Multi-omic integration with human DRG proteomics highlights TNFa signalling as a relevant sexually dimorphic pathway. PAIN ():10.1097/j.pain.0000000000003656, May 20, 2025. **Editor's choice.**

Xian F, Brenek M, Krisp C, Aguanno D, Urbauer E, Srikumar T, Ravi Kumar RK, Liu Q, **Barry AM**, Ma B, Krieger J, Haller D, Schmidt M, Gomez Varela D (2025). Ultra-sensitivity

metaproteomics redefines the gut “dark metaproteome”, uncovering host-microbiome interactions and drug targets in intestinal inflammatory diseases. Nat Comm. *in press* https://doi.org/10.1101/2024.04.22.590295

Zhao N, Bennett DL, Baskozos G, **Barry AM** (2024). Predicting “pain genes”: multi-modal data integration using probabilistic classifiers and interaction networks. Bioinformatics Advances, https://doi.org/10.1093/bioadv/vbae156

Lacagnina MJ, Willcox KF, Boukelmoune N, Bavencoffe A, Sankaranarayanan I, Barratt DT, Zuberi YA, Dayani D, Chavez MV, Lu JT, Farinotti AB, Shiers S, **Barry AM**, Mwirigi JM, Tavares-Ferreira D, Funk GA, Cervantes AM, Svensson CI, Walters ET, Hutchinson MR, Heijnen CJ, Price TJ, Fiore NT, Grace PM (2024). B cells drive neuropathic pain–related behaviors in mice through IgG–Fc gamma receptor signaling. Sci Transl Med. 2024. 16(766) DOI: 10.1126/scitranslmed.adj1277

Farah A, Patel R, Poplawski P, Wastie BJ, Tseng M, **Barry AM**, Daifallah O, Dubb A, Paul I, Cheng HL, Feroz F, Su Y, Chan M, Zeilhofer HU, Price T, Bennett DL, Bannister K, Dawes JM (2024). A role for leucine-rich, glioma inactivated 1 in regulating pain sensitivity. Brain. 2024. Sep 20:awae302. doi: 10.1093/brain/awae302. PMID: 39301592.

Cooper AH, **Barry AM**, Chrysostomidou P, Lolignier R, Titterton HF, Bennett DL, Weir GA (2024). Peripheral nerve injury results in a biased loss of sensory neuron sub-populations. PAIN. 10.1097/j.pain.0000000000003321

Barry AM, Zhao N, Yang X, Bennett DL, Baskozos G (2022). Deep RNA-seq of male and female murine sensory neuron subtypes after nerve injury. PAIN. 2023. 164(10):2196-2215. **Editor’s choice.**

Middleton SJ, Perini I, Themistocleous AC, Weir GA, McCann K, **Barry AM**, Marshall A, Lee M, Mayo LM, Bohic M, Baskozos G, Morrison I, Löken LS, McIntyre S, Nagi SS, Staud R, Sehlstedt I, Johnson RD, Wessberg J, Wood JN, Woods CG, Moqrich A, Olausson H, Bennett DL (2022). Nav1.7 is required for normal C-low threshold mechanoreceptor function in humans and mice. Brain. Oct 21;145(10):3637-3653. doi: 10.1093/brain/awab482. PMID: 34957475; PMCID: PMC9586547.

Middleton SJ*, **Barry AM***, Comini M, Li Y, Ray PR, Shiers S, Themistocleous AC, Uhelski ML, Yang X, Dougherty PM, Price TJ, Bennett DL (2021). Studying human nociceptors: from fundamentals to clinic. Brain. 144(5):1312–1335. https://doi.org/10.1093/brain/awab048 ***shared first authorship**

Sondermann JR, **Barry AM**, Jahn O, Michel N, Abdelaziz R, Kügler S, Gomez-Varela D, Schmidt M. Vti1b promotes TRPV1 sensitization during inflammatory pain. PAIN. 2019. Feb;160(2):508-527. doi: 10.1097/j.pain.0000000000001418. PMID: 30335684.

Barry AM, Sondermann JR, Sondermann J-H, Gomez-Varela D, Schmidt M (2018) Region-resolved quantitative proteome profiling reveals molecular dynamics associated with chronic pain in the PNS and spinal cord. Frontiers in Molecular Neuroscience 11 (August): 259.

Gomez-Varela D, **Barry AM**, Schmidt M (2019). Proteome-based systems biology in chronic pain. J Proteomics. Jan 6;190:1-11. doi: 10.1016/j.jprot.2018.04.004.

Other Publications (eg. protocols, datasets)

Barry A, Schmidt M, Price TK (2025). Bulk proteomics of naive human dorsal root ganglion (Version 1) [Dataset]. SPARC Portal. https://doi.org/10.26275/Z7UY-KUIF

Barry A, Price TJ, Schmidt M (2024). Bulk Proteomics (DIA-MS) of Human Dorsal Root Ganglion v1. https://doi.org/10.17504/protocols.io.j8nlk8j56l5r/v1

Barry AM (2022). Exploring the molecular underpinnings of neuropathic pain in primary afferent subtypes. (Doctoral dissertation, University of Oxford)