

Manal Adam, PhD

Email: Manal.Adam@UCSF.edu

RESEARCH EXPERIENCE

Harvard Medical School / University of California, San Francisco

Aug 2019 - Present

Postdoctoral Research Fellow. Advisor: Corey Harwell

Harvard Medical School, Department of Neurobiology, Aug 2019 - Jul 2021

University of California, San Francisco, Jul 2021 - Present

- Developed a research program defining how regulatory state is translated into stable forebrain fate decisions, with emphasis on cortical neurogenesis, gliogenesis, and neurodevelopmental disease risk.
- Established a lineage- and stage-resolved enhancer framework for PRDM16-dependent cortical neurogenesis by sorting radial glia, intermediate progenitors, newborn neurons, and cortical plate neurons from PRDM16-intact and PRDM16-deficient cortices at E13 and E15, defining how enhancer repertoires, chromatin accessibility, and transcriptional output shift across progenitor competence, fate transitions, and cortical neuron subtype production.
- Build a PRDM16 BioID proximity-labeling platform to move from enhancer maps to mechanism by identifying candidate cofactors and protein complexes that may influence PRDM16 binding, chromatin accessibility, and enhancer selection during cortical development.
- Initiated and advanced a glial-focused program testing how H3K36me3-associated chromatin regulation and RNA processing coordinate glial identity, maturation, and developmental timing.
- Engineering a targeted epigenome-editing strategy centered on a SETD2 SET-domain-dCas9 fusion to directly test chromatin-state-to-function relationships, enabling locus-directed H3K36me3 manipulation at candidate genes and regulatory elements.
- Applying CRISPR/dCas9-based perturbation and cross-species integration to prioritize enhancers, noncoding regions, transcriptional regulators, and chromatin mechanisms relevant to neurodevelopmental disease.
- Developed computational and integrative analysis workflows across PRDM16 and SETD2 projects, leveraging ATAC-seq, CUT&RUN, single-nucleus RNA-seq, long-read snlso-seq, transcriptomic, and proximity-labeling proteomic datasets to define enhancer programs, chromatin-state transitions, isoform-level regulation, candidate regulatory complexes, and developmental cell-state changes in the forebrain.
- Collaborated with multidisciplinary teams on studies of astrocyte specification, septal cell diversity, human radial glia biology, and cortical development, bringing regulatory-genomics and computational expertise to shared projects.
- Mentored trainees in experimental design, molecular biology, genomic analysis, data interpretation, and scientific communication.

MRC Centre for Neuropsychiatric Genetics and Genomics, Cardiff University

2015 - 2019

Doctoral Researcher. Advisors: Anthony R. Isles, Trevor Humby

- Developed an integrated model of EHMT1/GLP haploinsufficiency as a syndromic neurodevelopmental disorder mechanism, linking chromatin regulation to cellular, behavioral, and transcriptomic phenotypes.
- Used an Ehmt1 haploinsufficiency mouse model to connect epigenetic gene dosage with circuit-relevant phenotypes, including sensorimotor gating, learning and memory, anxiety-related behavior, locomotor activity, and information processing.
- Combined in vivo neurogenesis assays, BrdU labeling, immunohistochemistry, and primary hippocampal cultures to assess how EHMT1 dosage affects proliferation, survival, and cellular identity in hippocampal development.

- Performed RNA-seq, differential expression analysis, and gene set enrichment to identify molecular pathways associated with EHMT1 deficiency and prioritize convergent neurodevelopmental disease mechanisms.
- Positioned EHMT1/GLP as a chromatin regulator whose dosage links epigenetic state to cell fate decisions, circuit function, and disease-relevant behavioral phenotypes.

King's College London, Institute of Psychiatry, Psychology and Neuroscience

2014 - 2015

MSc Dissertation Researcher. Advisor: Robert Hindges

- Investigated how Teneurin-3 (Ten-m3), a conserved attraction/adhesion cue, contributes to hippocampal and visual system development.
- Identified and quantified graded Ten-m3 expression patterns across retina and hippocampus, linking molecular patterning signatures to topographic circuit organization.
- Used Ten-m3 gene-trap/loss-of-function models and Thy1-GFP reporter mouse lines to examine how loss of an attraction cue affects developing retinal and hippocampal circuitry.
- Combined in situ hybridization, immunohistochemistry, whole-mount retinal preparations, reporter-gene visualization, and MATLAB-assisted quantitative image analysis to characterize retinal gradients, CA1 organization, and circuit-patterning phenotypes.

EDUCATION

Cardiff University

2015 - 2019

PhD in Medicine, MRC Centre for Neuropsychiatric Genetics and Genomics

King's College London

2014 - 2015

MSc Neuroscience in Developmental Neurobiology - Distinction

Bournemouth University

2011 - 2014

BSc Biological Sciences - First Class Honours

PUBLICATIONS AND PREPRINTS

* denotes co-first authorship.

Peer-reviewed publications

1. Mukhtar T, Siebert CV, Wang Y, Pebworth MP, White ML, Wu T, Huang TL, Zuo G, Ross J, Baltazar J, Upadhyay V, Shankar M, Zhou L, Lombardi-Coronel I, Mandala I, **Adam MA**, Wang S, Bi Q, Hoekman MFM, Li J, Kriegstein AR. alpha7 nicotinic acetylcholine receptors regulate radial glia fate in the developing human cortex. *Nature Communications*. 2025;16:5925. doi:10.1038/s41467-025-61167-5.
2. Xie Y, Reid CM, Turrero Garcia M, Dale-Huang F, Granados AA, Lu Y, Li J, Hanson SM, Mancina Leon WR, Liu J, **Adam M**, Mosto O, Pisco AO, Zhang Y, Alvarez-Buylla A, Harwell CC. Astrocyte specification in the mouse septum is shaped by both developmental origin and local signals. *Nature Neuroscience*. 2025;28:1676-1687. doi:10.1038/s41593-025-02007-z.
3. Mukhtar T*, Breda J*, **Adam MA***, Boareto M*, Grobecker P*, Karimaddini Z, Grison A, Eschbach K, Chandrasekhar R, Vermeul S, Okoniewski M, Pachkov M, Harwell CC, Atanasoski S, Beisel C, Iber D, van Nimwegen E, Taylor V. Temporal and sequential transcriptional dynamics define lineage shifts in corticogenesis. *EMBO Journal*. 2022;41(24):e111132. doi:10.15252/embj.2022111132. PMCID: PMC9753470.
4. Xie Y, Kuan AT, Wang W, Herbert ZT, Mosto O, Olukoya O, **Adam M**, Vu S, Kim M, Tran D, Gomez N, Charpentier C, Sorour I, Lacey TE, Tolstorukov MY, Sabatini BL, Lee WA, Harwell CC. Astrocyte-neuron crosstalk through Hedgehog signaling mediates cortical synapse development. *Cell Reports*. 2022;38(8):110416. doi:10.1016/j.celrep.2022.110416. PMID: 35196485; PMCID: PMC8962654.

- Turrero Garcia M, Stegmann SK, Lacey TE, Reid CM, Hrvatin S, Weinreb C, **Adam MA**, Nagy MA, Harwell CC. Transcriptional profiling of sequentially generated septal neuron fates. eLife. 2021;10:e71545. doi:10.7554/eLife.71545.
- Adam M**, Harwell C. Epigenetic regulation of cortical neurogenesis: orchestrating fate switches at the right time and place. Current Opinion in Neurobiology. 2020;63:146-153. doi:10.1016/j.conb.2020.03.012.
- Turrero Garcia M, Baizabal JM, Tran DN, Peixoto R, Wang W, Xie Y, **Adam MA**, English LA, Reid CM, Brito SI, Booker MA, Tolstorukov MY, Harwell CC. Transcriptional regulation of MGE progenitor proliferation by PRDM16 controls cortical GABAergic interneuron production. Development. 2020;147(22):dev187526. doi:10.1242/dev.187526. PMID: PMC7687860.
- Davis BA, David F, O'Regan C, **Adam MA**, Harwood AJ, Crunelli V, Isles AR. Impairments in sensory-motor gating and information processing in a mouse model of Ehmt1 haploinsufficiency. Brain and Neuroscience Advances. 2020;4:2398212820928647. doi:10.1177/2398212820928647.
- Adam MA**, Isles AR. EHMT1/GLP: biochemical function and association with brain disorders. Epigenomes. 2017;1(3):15. doi:10.3390/epigenomes1030015.

Preprints

- Reid CM, Ren Y, Simon R, Xie Y, Turrero Garcia M, Tran D, Vu S, Liu J, **Adam MA**, Hanson SM, Pisco AO, Harwell CC. Multimodal classification of neurons in the lateral septum. bioRxiv. 2024. doi:10.1101/2024.02.15.580381.

GRANTS, FELLOWSHIPS, AND AWARDS

Alice and Joseph Brooks Fund Postdoctoral Fellowship	2020 - 2021
Dean's Postdoctoral Fellowship, Harvard Medical School DICP	2019 - 2020
NMHRI Travel Grant, British Neuroscience Association	2017
Early Career Researcher Travel Grant	2017
Guarantors of Brain Travel Grant	2017
Royal Society of Biology Top Student Award	2014

TEACHING AND MENTORSHIP EXPERIENCE

Postdoctoral Mentor, San Francisco State University MSc Thesis Student Designed and supervised an MSc thesis project; mentored experimental planning, data interpretation, and thesis development.	2023 - 2024
Lab Demonstrator, Cardiff University Organized and led laboratory practicals for undergraduate bioscience students; supported experimental design, technique development, and data interpretation.	2016 - 2019
Instructor, Student Selected Components Module, Cardiff University Designed and taught an undergraduate medical student module on epigenetics and Kleefstra syndrome.	2017 - 2018
Research Supervisor, Fourth-Year Medical Student Placement, Cardiff University Supervised a four-month laboratory research project from experimental planning through analysis and presentation.	2016 - 2017

Undergraduate Tutor, King's College London	2014 - 2015
Biological Sciences Demonstrator, Bournemouth University	2013 - 2014
Teaching Assistant, St Alban's Preparatory School	2011 - 2012

CONFERENCES AND PRESENTATIONS

Society for Neuroscience Annual Meeting	2017
<i>Poster: Age-related impairment in sensorimotor gating in an Ehmt1 haploinsufficient mouse model.</i>	
British Neuroscience Association Meeting	2017
<i>Poster: Molecular and behavioral characterization of Ehmt1 haploinsufficiency.</i>	
Speaking of Science Conference	2017
<i>Oral presentation: Deciphering Neurodevelopmental Disorders.</i>	
MRC CNDD Annual Symposium	2017
<i>Poster: Age-dependent impairment in a novel Ehmt1 mouse model.</i>	

SERVICE, LEADERSHIP, AND OUTREACH

Committee Member, UCSF Neuroscience Program DEI Committee	2021 - 2023
Committee Member, Anti-Racism Education Task Force, Harvard Medical School	2020 - 2021
Programming Co-Chair, Intersections Science Fellows Symposium	2020 - 2021
Co-led program development for a national science fellows symposium and coordinated speakers, panelists, fellows, and mentors.	
Volunteer Speaker, Science in Health	2016 - 2019
Delivered science outreach presentations for school audiences.	
Organizing Committee Member, Speaking of Science	2016 - 2017
Contributed to publicity, abstract review, conference programming, sponsorship, and design of logo and publicity materials.	
Departmental Postgraduate Representative, King's College London	2014 - 2015
Represented postgraduate students in departmental and school-wide meetings on teaching, research, and community affairs.	
Youth Action Team Lead, VInspired Community Outreach	2011 - 2015
University Student Representative, Bournemouth University	2011 - 2014

PROFESSIONAL MEMBERSHIPS

Society for Neuroscience; British Neuroscience Association; Federation of European Neuroscience Societies; Royal Society of Biology.