Matt Colligan

PhD Student, Centre for Discovery Brain Sciences, University of Edinburgh

matt.colligan@ed.ac.uk

Education/Qualifications

2018 – 2022 ▸ **BBSRC-funded EASTBIO PhD Studentship**
Duguid Lab, The University of Edinburgh
Thalamocortical control of skilled motor movement

2016 – 2017 ▸ **MSc by Research in Integrative Neuroscience**
The University of Edinburgh
attained Distinction

2012 – 2015 ▸ **BSc Biology & Associateship of the Royal College of Science (ARCS)**
Imperial College London
attained Upper Second Class Honours

2010 – 2012 ▸ **A levels**
Blackpool Sixth Form College
A Mathematics, A Chemistry, B Biology*

Research Experience

2017 – 2018 ▸ **Research Assistant, Duguid Lab**
Centre for Discovery Brain Sciences, The University of Edinburgh
Thalamocortical control of skilled motor movement.
To assess the role of thalamocortical projections in the execution of skilled motor movement, I am incorporating a head-fixed lever-push task with recordings of population level neuron dynamics in mice. GCaMP Ca^{2+} indicator is virally expressed in motor thalamus and neuron activity is imaged via implanted GRIN lens microendoscopes, using 1-photon miniscope and 2-photon imaging. Retrograde tracer injections into layer 5 motor cortex allow for identification of motor thalamic projection neurons.

▸ **Research Technician, Theil Lab (part time)**
Centre for Discovery Brain Sciences, The University of Edinburgh
Rescue of Inpp5e mutant phenotypes by compound mutation of Gli3.
I used immunohistochemical techniques to analyse defects in cortical patterning in *Inpp5e* mutant mice, and the co-regulatory effects of Gli3 and Inpp5e proteins in cortical developmental signalling pathways.

2017 ▸ **Two projects during MSc by Research in Integrative Neuroscience**
Investigating the role of medial entorhinal cortex layer 2 stellate cells in mouse navigation memory supervised by Dr Emma Wood.

A possible mechanism for repression of GABAergic fate in cortical progenitors by the transcription factor Pax6 supervised by Prof David Price.

Research Experience (continued)

2015 ▸ **Final year project during BSc Biology**
Mimicking a Wolbachia infection in Anopheles gambiae mosquitoes through transgenic expression of Wolbachia surface protein supervised by Dr Tony Nolan.

Skills

Laboratory
- *In vivo* 2-photon & miniscope microscopy in awake, behaving mice
- Microsurgery: GRIN lens endoscope implantation, stereotactic injection, headplate implantation for head-fixation, transcardial perfusion
- Virus mediated gene transfer for calcium indicator expression and neural circuit tracing
- Mouse behavioural training of head-fixed and freely moving tasks
- Molecular techniques such as immunohistochemistry, *in situ* hybridisation, qRT-PCR
- Mouse brain primary tissue culture

Technology ▸ MATLAB, BASH, Linux/Unix, ImageJ/FIJI, Arduino, circuit design and construction, Adobe Photoshop

Voluntary Experience

▸ Represented Edinburgh Neuroscience and the Royal College of Biology running a stall at a mini science festival event, primarily engaging with children to discuss neuroscience

▸ Summer research assistant placement working with marine and forest ecologists in rural Indonesia with registered charity Operation Wallacea, summer 2013

References

Prof Ian Duguid
The Centre for Discovery Brain Sciences
The University of Edinburgh
Ian.Duguid@ed.ac.uk

Dr Thomas Theil
The Centre for Discovery Brain Sciences
The University of Edinburgh
Thomas.Theil@ed.ac.uk