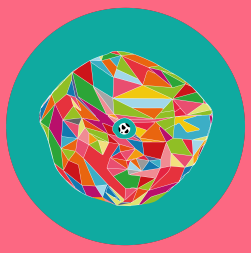
DR. ALEXANDER SHAKEEL BATES

I am a neuroscientist and programmer on open-source projects. I work on insect brains. I am interested in how neurons wire together, and how they work together to build complex, innate behaviours. D.O.B. **23/09/1993**.

total_cites	h_index	i10_index
1990	17	17



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PROFESSIONAL RESEARCH

present | 01/10/2020

Postdoctoral Fellow in Neurobiology

Harvard Medical School — Boston, US

- Member of the laboratory of Prof. Rachel Wilson
- Working on navigational circuitry, using calcium imaging, neurophysiology and behavioural studies involving virtual reality with *D. melanogaster*

present | 01/10/2020

Visiting Scientist

Dept. Zoology, University of Cambridge — remote

- Neuroinformatics work with the Drosophila Connectomics Group
- Developed R tools for neuroanatomy and connectomics

GRANTS

01/06/2025 | 01/06/2022

Sir Henry Wellcome Fellowship

Wellcome Trust & University of Oxford — UK

- 30,000 GBP towards my current research
- Collaboration between groups of Rachel Wilson, Wei Lee, Scott Waddell and Shaul Druckmann

01/06/2022 | 01/04/2021

EMBO fellow

European Molecular Biology Organization — Europe

2021

Life Science Research Foundation Fellowship

Life Science Research Foundation — US

- Did not pursue

2021

Human Frontiers Fellowship

International Human Frontier Science Program — International

- Did not pursue

Media

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researchgate
GQQ-6852-2022

Software

- natverse - co-author
- neuromorphr - author
- neuronbridger - author
- neuprintr - author
- hemibrainr - author
- mouselightr - author
- insectbrainr - author

30/09/2019 | 01/08/2015 **Herchel Smith PhD Scholarship**
Herchel Smith Foundation — Cambridge, UK

01/08/2018 | 01/08/2016 **Boehringer Ingelheim PhD Scholarship**
Boehringer Ingelheim Foundation — European

EDUCATION

30/09/2020 | 01/09/2015 **Neuroscience PhD**
MRC LMB, University of Cambridge — Cambridge, UK

- PhD student with Dr. Greg Jefferis
- Thesis: The lateral horn, a brain region in the fly, primes innate olfactory behaviours by combining patterns of second-order olfactory projection neuron activity. In my work, I developed tools and analyses, and reconstructed neural networks from electron microscopy data, in order to better understand this brain region and how memory systems interact with it
- Neuroinformatics, data science, R programming
- Awards: Honorary Vice Chancellor's Award, MRC LMB Max Perutz Prize 2019, Winner of the British Neuroscience Association Postgraduate Prize 2020

01/07/2015 | 01/09/2012 **Neuroscience BSc**
University College London — London, UK

- 1st class degree with honours
- Modules taken listed on linkedIn
- Awards: Burnstock Sessional Prize in Neuroscience BSc (ranked first in year) (2012–2013) (2013-2014) (2014-2015), Dean's list for the Faculty of Life Sciences (2013-2014) (2014-2015), Rob Clarke Award from the Society of Physiology

01/09/2012 | 01/09/2010 **A levels**
Woodbridge High School — London, UK

- 6 A*s at A-level, comprising: Physics, Chemistry, Mathematics, English Literature, Philosophy and Russian, and in a history related EPQ (level 3) project

31/08/2010 | 01/09/2008 **GCSEs**
Woodbridge High School — London, UK

- 13 A*s: English Literature, English Language, Mathematics, Statistics, Core Science, Additional Science, History, Philosophy, Geography, French, Italian, Russian and Expressive Arts. Jack Petchey Achievement Award

REVIEWS

	title	author	journal	year	cites
1	Systems neuroscience: Auditory processing at synaptic resolution	AS Bates, G Jefferis	Current Biology	2022	1
6	Neuronal cell types in the fly: single-cell anatomy meets single-cell genomics	AS Bates, J Janssens, GS Jefferis, S Aerts	Current opinion in neurobiology	2019	59

Skills

R
python
MATLAB
github
git
markdown
Illustrator
InDesign
communication
text editing
journalistic writing
creative writing
open access

Peer Reviews

journal	reviews
PLoS Computational Biology	3
eLife	3
Nature Communications	

Referees

PhD Supervisor: Dr. Gregory Jefferis, MRC Laboratory of Molecular Biology, Cambridge, jefferis@mrc-lmb.cam.ac.uk

Current Supervisor: Prof. Rachel Wilson, Harvard Medical School, Rachel_Wilson@hms.harvard.edu

BSc Tutor at UCL: Dr. Marco Beato, UCL Neuroscience, Physiology and Pharmacology, m.beato@ucl.ac.uk

Supervisee: Serene Dhawan, Princeton, PhD student, serenedhawan@gmail.com

PAPERS

	title	author	journal	year	cites
2	Information flow, cell types and stereotypy in a full olfactory connectome	P Schlegel, **AS Bates**, T Stürner, SR Jagannathan, N Drummond, J Hsu, ...	Elife	2021	89
3	Complete connectomic reconstruction of olfactory projection neurons in the fly brain	**AS Bates**, P Schlegel, RJV Roberts, N Drummond, IFM Tamimi, ...	Current Biology	2020	140
4	Neurotransmitter Classification from Electron Microscopy Images at Synaptic Sites in Drosophila Melanogaster	N Eckstein, **AS Bates**, A Champion, M Du, Y Yin, P Schlegel, AKY Lu, ...	bioRxiv	2020	65
5	The natverse, a versatile toolbox for combining and analysing neuroanatomical data	**AS Bates**, JD Manton, SR Jagannathan, M Costa, P Schlegel, T Rohlfing, ...	Elife	2020	135
7	Functional and anatomical specificity in a higher olfactory centre	S Frechter, **AS Bates**, S Tootoonian, MJ Dolan, J Manton, AR Jamasb, ...	Elife	2019	84
8	Whole-brain annotation and multi-connectome cell typing quantifies circuit stereotypy in Drosophila	P Schlegel, Y Yin, **AS Bates**, S Dorkenwald, K Eichler, P Brooks, DS Han, ...	bioRxiv	2023	19
9	Discriminative attribution from paired images	N Eckstein, H Bukhari, **AS Bates**, GSXE Jefferis, J Funke	European Conference on Computer Vision	2022	4
10	BAcTrace, a tool for retrograde tracing of neuronal circuits in Drosophila	S Cachero, M Gkantia, **AS Bates**, S Frechter, L Blackie, A McCarthy, ...	Nature methods	2020	25
11	Neurogenetic dissection of the Drosophila lateral horn reveals major outputs, diverse behavioural functions, and interactions with the mushroom body	MJ Dolan, S Frechter, **AS Bates**, C Dan, P Huoviala, RJ Roberts, ...	Elife	2019	124
12	Communication from learned to innate olfactory processing centers is required for memory retrieval in Drosophila	MJ Dolan, G Belliart-Guérin, **AS Bates**, S Frechter, A Lampin-Saint-Amaux, ...	Neuron	2018	93
13	Automated reconstruction of a serial-section EM Drosophila brain with flood-filling networks and local realignment	PH Li, LF Lindsey, M Januszewski, Z Zheng, **AS Bates**, I Taisz, M Tyka, ...	bioRxiv	2019	85
14	Network Statistics of the Whole-Brain Connectome of Drosophila	A Lin, R Yang, S Dorkenwald, A Matsliah, AR Sterling, P Schlegel, S Yu, ...	bioRxiv	2023	0
15	Neuronal wiring diagram of an adult brain	S Dorkenwald, A Matsliah, AR Sterling, P Schlegel, SC Yu, CE McKellar, ...	bioRxiv	2023	26

This table shows all of my work, searchable on pubmed. Author list displays firt six. My name in bold, underlining indicates first (co)authorship. Get in contact for information on recents projects.

℞ Most of my work has first been published on bioRxiv

∂ Much of my work comes with open source R code

	title	author	journal	year	cites
16	A leaky integrate-and-fire computational model based on the connectome of the entire adult Drosophila brain reveals insights into sensorimotor processing	PK Shiu, GR Sterne, N Spiller, R Franconville, A Sandoval, J Zhou, ...	bioRxiv	2023	4
17	The connectome of the adult Drosophila mushroom body provides insights into function	F Li, JW Lindsey, EC Marin, N Otto, M Dreher, G Dempsey, I Stark, ...	Elife	2020	221
18	A connectome and analysis of the adult Drosophila central brain	LK Scheffer, CS Xu, M Januszewski, Z Lu, S Takemura, KJ Hayworth, ...	Elife	2020	648
19	Connectomics analysis reveals first-, second-, and third-order thermosensory and hygrosensory neurons in the adult Drosophila brain	EC Marin, L Büld, M Theiss, T Sarkissian, RJV Roberts, R Turnbull, ...	Current Biology	2020	75
20	Input connectivity reveals additional heterogeneity of dopaminergic reinforcement in Drosophila	N Otto, MW Pleijzier, IC Morgan, AJ Edmondson-Stait, KJ Heinz, I Stark, ...	Current Biology	2020	50
21	Neural circuit basis of aversive odour processing in Drosophila from sensory input to descending output	P Huoviala, MJ Dolan, FM Love, P Myers, S Frechter, S Namiki, ...	bioRxiv	2018	40
22	Combinatorial encoding of odors in the mosquito antennal lobe	P Singh, S Goyal, S Gupta, S Garg, A Tiwari, V Rajput, **AS Bates**, ...	Nature Communications	2023	3

SELECTED TALKS

2019 — **ECRO meeting**
European Chemoreception Research Organization — Trieste, Italy

2018 — **Boehringer Ingelheim Meeting**
Boehringer Ingelheim Fonds — Hirschegg, Austria

2017 — **MPI Connectomics meeting**
Max Planck Institute — Berlin, Germany

2017 — **ECRO meeting**
European Chemoreception Research Organization — Cambridge, UK

2017 — **Boehringer Ingelheim Meeting**
Boehringer Ingelheim Fonds — Hirschegg, Austria

2016 — **Brains and Roses**
Schaeffer and Datta group organised — Montserrat, Catalonia

SELECTED POSTERS

2023 — **HHMI Investigators' Meeting**
HHMI HQ — Chevy Chase

2019 — **UK Neural Computation**
University of Nottingham — Nottingham, UK

2017 — **Boehringer Ingelheim Fonds communication workshop**
Boehringer Ingelheim Foundation — Mainz, Germany

2016 — **Maggot Meeting**
Janelia Research Campus — Ashburn, US

2016 — **High-resolution circuit reconstruction meeting**
Janelia Research Campus — Ashburn, US

2016 — **LMB GSA Symposium**
MRC LMB, University of Cambridge — Cambridge, UK

LEADERSHIP

01/10/2019 | 01/01/2016 — **President of BlueSci**
University College London — London, UK
- Lead BlueSci, the University of Cambridge's science media society, throguh 15 issues of the magazine

2018 — **Mentored summer student**
MRC LMB, University of Cambridge — Cambridge, UK

01/05/2018 | 01/09/2017 — **Mentored undergraduate student**
Dept. Zoology, University of Cambridge — Cambridge, UK
- Student won best thesis in year award and two authorships

2017 — **Mentored summer student**
MRC LMB, University of Cambridge — Cambridge, UK

2017 — **LMB graduate symposium lead organiser**
MRC LMB, University of Cambridge — Cambridge, UK

2016 — **LMB graduate symposium organiser**
MRC LMB, University of Cambridge — Cambridge, UK

01/10/2015 | 01/10/2014 — **President of the UCLU Writer's Society**
University College London — London, UK

01/10/2015 | 01/10/2014

Science Editor, Pi Magazine

University College London — London, UK

2014

UCL iGEM 2014 Advisor

University College London — London, UK

- Project planning, oversight, team slection and management
- Gold medallist

OTHER

2019

Visiting Scholar

Janelia Research Campus — Ashburn, US

- Worked in FlyEM, Dr. Gerry Rubin's Group
- Worked on the hemibrain connectome

2018

Paris Spring School in Neuroscience Techniques

Paris Descartes University — Paris, France

- A course in Optical Imaging and Electrophysiological Recording in Neuroscience

2016

Visiting Scholar

Janelia Research Campus — Ashburn, US

- Worked with Dr. Albert Cardona's Group
- Worked on the L1 larval connectome

2015

University of Queensland Winter Scholarship

University of Queensland — Brisbane, Australia

- Worked on tectal activity in zebrafish larvae, light sheet imaging, Dr. Ethan Scott's Group

2014

Amgen Scholarship

Dept. Zoology, University of Cambridge — Cambridge, UK

- Worked on neuronal structural plasticity in D. melanogaster larvae, Dr. Landgraf's group

2013

UCL iGEM 2013 team member

University College London — London, UK

- Team member, cloning, cell culture, project planning
- Gold medallist

2013

Summer student in the biomolecular modelling laboratory

Cancer Research UK, London Research Institute — London, UK

- Student Placement with Dr. Tammy Cheng, python programming

*Made with the R package **pagedown** and **datadrivencv**.*

Code available on GitHub.

Last updated on 2023-11-27.