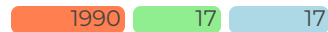


# DR. ALEXANDER SHAKEEL BATES

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



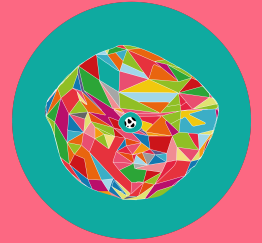
## PROFESSIONAL RESEARCH

- 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



📄 download this resume

### Media

✉ [alexander\\_bates@hms.harvard.edu](mailto:alexander_bates@hms.harvard.edu)  
🐦 [as\\_bates](https://twitter.com/as_bates)  
🔗 [alexanderbates](https://alexanderbates.github.io/asbates.com)  
[asbates.com](https://asbates.com)  
in [linkedIn](#)  
🔍 [google scholar](#)  
📄 0000-0002-1195-0445  
R<sup>®</sup> [researchgate](#)  
P [GQQ-6852-2022](#)

### Software

🏠 [natverse](#) - co-author  
✂ [neuromorphr](#) - author  
✂ [neuronbridger](#) - author  
✂ [neuprintr](#) - author  
✂ [hemibrainr](#) - author  
✂ [mouselightr](#) - author  
✂ [insectbrainr](#) - author

30/09/2019	●	Herchel Smith PhD Scholarship	
01/08/2015		Herchel Smith Foundation	📍 Cambridge, UK
01/08/2018	●	Boehringer Ingelheim PhD Scholarship	
01/08/2016		Boehringer Ingelheim Foundation	📍 European

## EDUCATION

30/09/2020	●	Neuroscience PhD	
01/09/2015		MRC LMB, University of Cambridge	📍 Cambridge, UK
		<ul style="list-style-type: none"> <li>• PhD student with <a href="#">Dr. Greg Jefferis</a></li> <li>• <b>Thesis:</b> 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</li> <li>• Neuroinformatics, data science, R programming</li> <li>• <b>Awards:</b> <a href="#">Honorary Vice Chancellor's Award</a>, <a href="#">MRC LMB Max Perutz Prize 2019</a>, Winner of the <a href="#">British Neuroscience Association Postgraduate Prize 2020</a></li> </ul>	
01/07/2015	●	Neuroscience BSc	
01/09/2012		University College London	📍 London, UK
		<ul style="list-style-type: none"> <li>• 1st class degree with honours</li> <li>• Modules taken listed on <a href="#">LinkedIn</a></li> <li>• <b>Awards:</b> <a href="#">Burnstock Sessional Prize in Neuroscience BSc</a> (ranked first in year) (2012–2013) (2013–2014) (2014–2015), Dean's list for the Faculty of Life Sciences (2013–2014) (2014–2015), <a href="#">Rob Clarke Award</a> from the Society of Physiology</li> </ul>	
01/09/2012	●	A levels	
01/09/2010		Woodbridge High School	📍 London, UK
		<ul style="list-style-type: none"> <li>• 6 A*s at A-level, comprising: Physics, Chemistry, Mathematics, English Literature, Philosophy and Russian, and in a history related EPQ (level 3) project</li> </ul>	
31/08/2010	●	GCSEs	
01/09/2008		Woodbridge High School	📍 London, UK
		<ul style="list-style-type: none"> <li>• 13 A*s: English Literature, English Language, Mathematics, Statistics, Core Science, Additional Science, History, Philosophy, Geography, French, Italian, Russian and Expressive Arts. <a href="#">Jack Petchey Achievement Award</a></li> </ul>	

## REVIEWS

	title	author	journal	year	cites
1	<a href="#">Systems neuroscience: Auditory processing at synaptic resolution</a>	<a href="#">AS Bates</a> , G Jefferis	Current Biology	2022	1
6	<a href="#">Neuronal cell types in the fly: single-cell anatomy meets single-cell genomics</a>	<a href="#">AS Bates</a> , 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](mailto:jefferis@mrc-lmb.cam.ac.uk)  
 Current Supervisor:  
 Prof. Rachel Wilson,  
 Harvard Medical  
 School,  
[Rachel.Wilson@hms.harvard.edu](mailto:Rachel.Wilson@hms.harvard.edu)  
 BSc Tutor at UCL:  
 Dr. Marco Beato, UCL  
 Neuroscience,  
 Physiology and  
 Pharmacology,  
[m.beato@ucl.ac.uk](mailto:m.beato@ucl.ac.uk)  
 Supervisee: Serene  
 Dhawan, Princeton,  
 PhD student,  
[serenedhawan@gmail.com](mailto:serenedhawan@gmail.com)

## PAPERS

	title	author	journal	year	cites
2	Information flow, cell types and stereotypy in a full olfactory connectome	P Schlegel, <b>AS Bates</b> , T Stürner, SR Jagannathan, N Drummond, J Hsu, ...	Elife	2021	89
3	Complete connectomic reconstruction of olfactory projection neurons in the fly brain	<b>AS Bates</b> , 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, <b>AS Bates</b> , 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	<b>AS Bates</b> , 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, <b>AS Bates</b> , 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, <b>AS Bates</b> , S Dorkenwald, K Eichler, P Brooks, DS Han, ...	bioRxiv	2023	19
9	Discriminative attribution from paired images	N Eckstein, H Bukhari, <b>AS Bates</b> , 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, <b>AS Bates</b> , 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, <b>AS Bates</b> , C Dan, P Huovalia, 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, <b>AS Bates</b> , 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, <b>AS Bates</b> , 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 first six. My name in bold, underlining indicates first (co)authorship. Get in contact for information on recents projects.

Rx Most of my work has first been published on bioRxiv

g 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 <i>Drosophila</i> 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 <i>Drosophila</i> 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 <i>Drosophila</i> 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 <i>Drosophila</i> 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 <i>Drosophila</i>	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 <i>Drosophila</i> 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	● <b>ECRO meeting</b> European Chemoreception Research Organization	📍 Trieste, Italy
2018	● <b>Boehringer Ingelheim Meeting</b> Boehringer Ingelheim Fonds	📍 Hirschegg, Austria
2017	● <b>MPI Connectomics meeting</b> Max Planck Institute	📍 Berlin, Germany
2017	● <b>ECRO meeting</b> European Chemoreception Research Organization	📍 Cambridge, UK
2017	● <b>Boehringer Ingelheim Meeting</b> Boehringer Ingelheim Fonds	📍 Hirschegg, Austria
2016	● <b>Brains and Roses</b> 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, through 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
  - **UCL iGEM 2014 Advisor**  
University College London  
📍 London, UK
    - Project planning, oversight, team selection 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.