

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. Alive since **23/09/1993**.

total_cites h_index i10_index

866 13 15



PROFESSIONAL RESEARCH

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

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*



GRANTS

present
|
01/04/2021



EMBO fellow

European Molecular Biology Organization

📍 Europe

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

2021



Life Science Research Foundation Fellowship

Life Science Research Foundation

📍 US

- Gratefully declined

2021

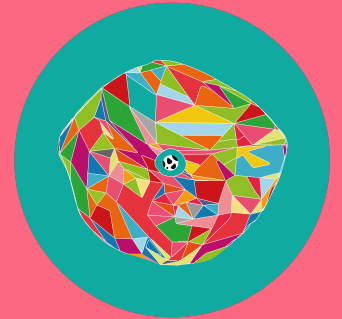


Human Frontiers Fellowship

International Human Frontier Science Program

📍 International

- Gratefully declined



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MEDIA



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👤 [alexanderbates](#)

🔗 [asbates.com](#)

in [linkedin](#)

🔍 [google scholar](#)

🆔 0000-0002-1195-0445

📊 [researchgate](#)

SOFTWARE

🔧 [natverse](#) - a toolscape for neuroinformatics, co-author

✂️ [neuromorphr](#) - author

✂️ [neuronbrdger](#) - author

✂️ [neuprintr](#) - author

✂️ [hemibrainr](#) - author

✂️ [mouselightr](#) - author

✂️ [insectbrainr](#) - author

- 30/09/2019 ● **Herchel Smith PhD Scholarship**
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 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
- 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** (best thesis), Winner of the **British Neuroscience Association Postgraduate Prize 2020** (best thesis)
- 01/07/2015 ● **Neuroscience BSc**
 |
 01/09/2012 **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 ● **A levels**
 |
 01/09/2010 **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 ● **GCSEs**
 |
 01/09/2008 **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**

SKILLS-

📊 R
 🐍 python
 📐 MATLAB
 📁 github
 🔑 git
 📄 markdown
 🎨 Illustrator
 🖨 InDesign
 🗣 communication
 ✍ text editing
 📰 journalistic writing
 ✍ creative writing
 @ open access



LEADERSHIP

01/10/2019 01/01/2016	President of BlueSci University College London <div> • Lead BlueSci, the University of Cambridge's science media society, through 15 issues of the magazine </div>	London, UK
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 <div> • Student won best thesis in year award and two authorships </div>	Cambridge, UK
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 <div> • Project planning, oversight, team selection and management • Gold medallist </div>	London, UK



PUBLICATIONS

	title	author	journal	year	cites	position	IF
1	Discriminative Attribution from Counterfactuals	N Eckstein, AS Bates , GSXE Jefferis, J Funke	arXiv preprint arXiv:	2021	0	2	0.000
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	13	1	7.616
3	Information flow, cell types and stereotypy in a full olfactory connectome	S Philipp, AS Bates , S Tomke, SR Jagannathan, N Drummond, J Hsu, ...	eLife	2021	0	1	7.616
4	The connectome of the adult						

This table shows all of my work, searchable on [pubmed](#). Position is my place in the author list, capping at 6. IF is the journal's impact factor. Get in contact for information on recent projects.

Most of my work has first been published on [bioRxiv](#)

Much of my work comes with open source R code

	Drosophila mushroom body provides insights into function	F Li, JW Lindsey, EC Marin, N Otto, M Dreher, G Dempsey, I Stark, ...	Elife	2020	68	6	7.616
5	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	9	3	26.919
6	A connectome and analysis of the adult Drosophila central brain	LK Scheffer, CS Xu, M Januszekowski, Z Lu, S Takemura, KJ Hayworth, ...	Elife	2020	216	6	7.616
7	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	37	6	9.251
8	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	24	6	9.251
9	Complete connectomic reconstruction of olfactory projection neurons in the fly brain	AS Bates, P Schlegel, RJV Roberts, N Drummond, IFM Tamimi, ...	Current Biology	2020	70	1	9.251
10	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	71	1	7.616
12	A connectome and analysis of the adult Drosophila central brain	JA Horne, M Costa, H Otsuna, CS Xu, JT Rymer, EM Joyce, A Shinomiya, ...	eLife	2020	0	6	7.616
14	Neurotransmitter classification from electron microscopy images at synaptic sites in Drosophila	N Eckstein, AS Bates, M Du, V Hartenstein, GSXE Jefferis, J Funke	bioRxiv	2020	13	2	0.000
15	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	2020	26	6	0.000


16	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 34 1 6.541
17	Functional and anatomical specificity in a higher olfactory centre	S Frechter, AS Bates, S Tootoonian, MJ Dolan, J Manton, AR Jamasb, ...	Elife 2019 60 2 7.616
18	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 76 3 7.616
19	Neurogenetic dissection of the lateral horn reveals major outputs, diverse behavioural functions, and interactions with the mushroom body. Elife 8	MJ Dolan, S Frechter, AS Bates, C Dan, P Huoviala, RJ Roberts, ...	Elife 2019 2 3 7.616
20	Functional and anatomical specificity in a higher olfactory centre	J Manton, G Jefferis, S Frechter, AS Bates, AR Jamasb, J Kohl, MJ Dolan, ...	Elife 2019 0 4 7.616
21	The natverse: a versatile computational toolbox to combine and analyse neuroanatomical data	JD Manton, AS Bates, SR Jagannathan, M Costa, P Schlegel, T Rohlfing, ...	bioRxiv 2019 5 2 0.000
23	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 63 5 0.000
24	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 59 3 14.318
26	Communication from learned to innate olfactory processing centers is required for memory retrieval in Drosophila	MJ Dolan, G Belliart-Guerin, AS Bates, Y Aso, S Frechter, RJV Roberts, ...	bioRxiv 2017 8 3 0.000



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

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



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**




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, The Francis Crick Institute, serenedhawan@gmail.com

- 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 2022-03-
06.