

# 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**.

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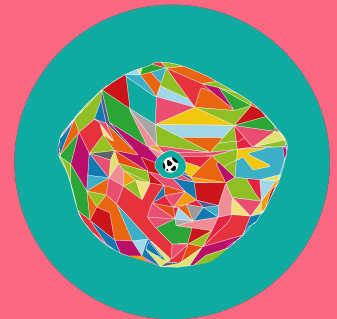
## PROFESSIONAL RESEARCH

- 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 📍 European
- 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
    - Postdoctoral fellowship, gratefully declined
- 2021
- **Human Frontiers Fellowship**  
International Human Frontier Science Program 📍 International
    - Postdoctoral fellowship, gratefully declined
- 30/09/2019  
|  
01/08/2015
- **Herchel Smith Scholarship**  
Herchel Smith Foundation 📍 Cambridge, UK



📄 [download this resume](#)

## MEDIA

✉ email  
🐦 [as\\_bates](#)  
👤 [alexanderbates](#)  
🌐 [asbates.com](#)  
in [linkedin](#)  
👤 [google scholar](#)  
👤 [orcid](#)  
🏠 [researchgate](#)

## SOFTWARE

📦 [natverse](#) - a toolscape for neuroinformatics, co-author  
📦 [neuromorphr](#) - author  
📦 [neuronbridger](#) - author  
📦 [hemibrainr](#) - author  
📦 [mouselightr](#) - author  
📦 [insectbrainr](#) - author



## EDUCATION

30/09/2020  
|  
01/09/2015

### Neuroscience PhD

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

01/07/2015  
|  
01/09/2012

### Neuroscience BSc

University College London

📍 London, UK

- 1st class degree with honours
- Modules taken listed on [linkedin](#)

01/09/2012  
|  
01/09/2010

### A levels

Woodbridge High School

📍 London, UK

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

31/09/2010  
|  
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](#)



## AWARDS

2020

### BNA Postgraduate Prize

British Neuroscience Association

📍 UK

- [A best neuroscience thesis](#)

2020

### Max Perutz Prize

MRC LMB, University of Cambridge

📍 Cambridge, UK

- [A best thesis at the MRC LMB](#)

01/08/2018  
|  
01/08/2016

### Boehringer Ingelheim Scholarship

Boehringer Ingelheim Foundation

📍 European

2015

### Rob Clarke Award

Society of Physiology

📍 London, UK

## SKILLS

R

python

matlab

Git

GitHub

Markdown

Illustrator







InDesign

text editing







communication

journalistic writing


creative writing


- 2015 ● **Honorary Vice Chancellor's Award**  
University of Cambridge  Cambridge, UK
- 2015 ● **Burnstock Prize**  
University College London  London, UK  
• Highest grade in Neuroscience BSc course, 3rd year
- 2014 ● **Burnstock Prize**  
University College London  London, UK  
• Highest grade in Neuroscience BSc course, 2nd year
- 2014 ● **Dean's list**  
University College London  London, UK  
• Dean's list for the Faculty of Life Sciences, awarded based on undergraduate grades
- 2013 ● **Burnstock Prize**  
University College London  London, UK  
• Highest grade in Neuroscience BSc course, 1st year
- 2013 ● **Dean's list**  
University College London  London, UK  
• Dean's list for the Faculty of Life Sciences, awarded based on undergraduate grades


## 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

## 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

01/10/2015	● President of the UCLU Writer's Society	
01/10/2014	University College London	📍 London, UK
01/10/2015	● Science Editor, Pi Magazine	
01/10/2014	University College London	📍 London, UK
2014	● UCL iGEM Advisor	
	University College London	📍 London, UK
	<ul style="list-style-type: none"> <li>• Project planning, oversight, team selection and management</li> <li>• Gold medallist</li> </ul>	



## PUBLICATIONS

	title	author	journal	cites	year	position	IF
1	Information flow, cell types and stereotypy in a full olfactory connectome	P Schlegel, AS Bates, T Stürner, SR Jagannathan, N Drummond, J Hsu, ...	Elife	21	2021	1	7.616
3	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	36	2020	6	7.616
4	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	5	2020	3	26.919
5	A connectome and analysis of the adult Drosophila central brain	LK Scheffer, CS Xu, M Januszewski, Z Lu, S Takemura, KJ Hayworth, ...	Elife	96	2020	6	7.616
6	Connectomics analysis reveals first-, second-, and third-order thermosensory and hygosensory neurons in the adult Drosophila brain	EC Marin, L Büld, M Theiss, T Sarkissian, RJV Roberts, R Turnbull, ...	Current Biology	32	2020	6	9.251
7	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	17	2020	6	9.251
8	Complete connectomic reconstruction of olfactory projection neurons in the fly brain	AS Bates, P Schlegel, RJV Roberts, N Drummond, IFM Tamimi, ...	Current Biology	46	2020	1	9.251
9	The natverse, a versatile toolbox for combining and analysing neuroanatomical data	AS Bates, JD Manton, SR Jagannathan, M Costa, P Schlegel, T Rohlffing, ...	Elife	56	2020	1	7.616
11	Neurotransmitter classification from electron microscopy images at synaptic sites in Drosophila	N Eckstein, AS Bates, M Du, V Hartenstein, GSXE Jefferis, J Funke	bioRxiv	6	2020	2	0.0001

This table shows all of my work, searchable on [pubmed](#). Get in contact for information on recent projects

12	Neural circuit basis of aversive odour processing in <i>Drosophila</i> from sensory input to descending output.	P Huoviala, MJ Dolan, F Love, P Myers, S Frechter, S Namiki, ...	bioRxiv 24	2020	6	0.000
13	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	28	2019	1   6.54
14	Functional and anatomical specificity in a higher olfactory centre	S Frechter, AS Bates, S Tootoonian, MJ Dolan, J Manton, AR Jamasb, ...	Elife	54	2019	2   7.616
15	Neurogenetic dissection of the <i>Drosophila</i> 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	62	2019	3   7.616
16	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	3	2019	3   7.616
18	Automated reconstruction of a serial-section EM <i>Drosophila</i> brain with flood-filling networks and local realignment	PH Li, LF Lindsey, M Januszewski, Z Zheng, AS Bates, I Taisz, M Tyka, ...	bioRxiv	44	2019	5   0.000
19	Communication from learned to innate olfactory processing centers is required for memory retrieval in <i>Drosophila</i>	MJ Dolan, G Belliart-Guérin, AS Bates, S Frechter, A Lampin-Saint-Amaux, ...	Neuron	56	2018	3   14.318



## 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

- 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**  
Cambridge, UK  Cambridge, UK  
• 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

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 2021-07-18.