

# NINGYU ZHANG

Phone: +8613301931691 | Email: n\_zhang@g.harvard.edu

Address: A1312, Biological Research Building, 320 Yue Yang Road, Shanghai, China, 200031

## EDUCATION

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June, 2021                      **University College London, UK**

- Doctor of Philosophy in Behavioural Neuroscience

June, 2016                      **Harvard University, USA**

- Visiting Graduate Scholar in Neuroscience (*GPA 4.0/4.0*)

November, 2015              **Imperial College London, UK**

- Master of Research in Experimental Neuroscience (*Distinction*)

August, 2014                  **University College London, UK**

- Bachelor in Psychology (*Hons*)

July, 2011                      **University College London, UK**

- Undergraduate Preparatory Certificates for Science and Engineering (*Distinction*)

## RESEARCH EXPERIENCES

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2021 -    **Postdoctoral Researcher, Institute of Neuroscience, CAS, Shanghai, China**

- *Value-based decision-making in the mammalian brain: neural circuits, computation, and modulation.*
- Supervised by Dr. Ning-long Xu

2016 - 2021    **Ph.D. Thesis, Institute of Behavioural Neuroscience, UCL, UK**

- *A tale of two direction codes in rat retrosplenial cortex: uncovering the neural basis of spatial orientation in complex space.*
- Supervised by Prof. Kate Jeffery.

2016    **Summer Research Internship, RIKEN Brain Science Institute, Japan**

- *In vivo modifications of functional connectivity in mice visual cortex by optic stimulation*
- Supervised by Dr. Andrea Benucci.

2015    **Graduate Rotation, Institute of Cognitive Neuroscience, UCL, UK**

- *The role of wakeful rest in episodic memory generalization.*
- Supervised by Prof. Neil Burgess & Dr. Aidan Horner.

2015    **Graduate Rotation, Imperial College London, UK**

1. *Brain volume abnormalities correlate with neuropsychological impairments in Alzheimer's dementia: a voxel based morphometric study using MRI.*

- Supervised by Dr. Robert Leech.
- 2. *Amyloid precursor protein modulates  $\beta$ -catenin distribution and Wnt signalling pathway: evidence in cell lines, transgenic mice model and human patients of Alzheimer's disease.*
- Supervised by Dr. Magdalena Sastre.

#### 2014 Summer Research Internship, Institute of Neuroscience, CAS, Shanghai, China

- *A toxin-induced mouse model of Parkinson's disease.*
- Supervised by Prof. Mu-Ming Poo

#### 2013 - 2014 Undergraduate Dissertation, Institute of Behavioural Neuroscience, UCL, UK

- *Spatial learning by mice in a hexagonal maze: a behavioural study.*
- Supervised by Prof. Kate Jeffery

### AWARDS & FUNDING

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- 2021 International Postdoctoral Exchange Fellowship Program (Talent-Introduction in China) (~\$94,000 for 2 years)
- 2019 UCL Studentship for postgraduate work (£16,200, 1-year stipend in Completing Research Status)
- 2017 UCL Sully Scholarship for academic excellence in Ph.D. Year 2 (£750, the best departmental upgrade)
- 2016 China Scholarship Council Research Excellence Scholarship for Ph.D. study (~£115,000, top 4% applicants worldwide for a 3-year full scholarship)
- 2016 RIKEN Brain Science Institute Summer Program Fellowship (\$2,000, travel allowance)

### PEER-REVIEWED PUBLICATIONS

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- Xu, N.L. & **Zhang, N.** Neural circuit mechanisms of cognitive modulation in perceptual decision-making. (*In preparation*)
- **Zhang, N.** & Jeffery, K. Features dissociating egocentric from allocentric directional coding in simple and complex spaces. (*In preparation*)
- **Zhang, N.** & Xu, N.L. Reshaping sensory representations by task-specific brain states: toward cortical circuit mechanisms. (*Under review*)
- **Zhang, N.**, Grieves, R. & Jeffery, K. Environment symmetry drives a multidirectional code in rat retrosplenial cortex. (*Under review*)
- **Zhang, N.**, Grieves, R. & Jeffery, K. (2021). Environment symmetry drives a multidirectional code in rat retrosplenial cortex. *bioRxiv*: 10.1101/2021.08.22.457261.
- Lomi, E., Mathiasen, M., Cheng, H., **Zhang, N.**, Aggleton, J.P., Mitchell, A.S., & Jeffery, K. (2021). Evidence for two distinct retrosplenial cortex subcircuits. *Neurobiology of Learning and Memory*, 185.
- **Zhang, N.** & Jeffery, K. (2019). Retrosplenial 'bi-directional' cells become tetra-directional in a fourfold-symmetric environment. *Society for Neuroscience Abstracts* 45: 694.26.

- **Zhang, N.**, Parr, C. J., Birch, A. M., Goldfinger, M. H., & Sastre, M. (2018). The amyloid precursor protein binds to  $\beta$ -catenin and modulates its cellular distribution. *Neuroscience Letters*, 685, 190-195.
- Mitchell, A. S., Czajkowski, R., **Zhang, N.**, Jeffery, K., & Nelson, A. J. (2018). Retrosplenial cortex and its role in spatial cognition. *Brain and Neuroscience Advances*, 2: 1-13.
- Wilson, J. J., Harding, E., Fortier, M., James, B., Donnett, M., Kerslake, A., O’Leary, A., **Zhang, N.**, & Jeffery, K. (2015). Spatial learning by mice in three dimensions. *Behavioural Brain Research*, 289, 125-132.

## SCIENTIFIC COMMUNICATION

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### Poster presentations

- Zhang, N., Jeffery, K. Retrosplenial 'bi-directional' cells become tetra-directional in a fourfold-symmetric environment. Program No. 694.26. 2019 Neuroscience Meeting Planner. Chicago, IL: Society for Neuroscience, 2019.
- Zhang, N., Jeffery, K. Stay oriented: visual landmarks as dominant directional cues in the rat brain. Poster presented at the 10<sup>th</sup> Royal Institute of Navigation Conference, Egham, UK, 2019.
- Zhang, N., Jeffery, K. Bi-directional firing pattern in rat retrosplenial cortex is specific to environmental setting. Poster presented at the 2<sup>nd</sup> Interdisciplinary Navigation Symposium, Montréal, Canada, 2018.

### Selected talks

- An environment-dependent directional code in retrosplenial cortex. Talk presentation at University Paris Descartes, Paris, France, 2019.
- An environment-dependent directional code in retrosplenial cortex. Talk presentation at the Department of Neurobiology, Harvard Medical School, Boston, MA, USA, 2019.
- How does the brain’s ‘compass’ work in environments with different structures? Talk presentation at the 6th European Neuroscience Conference by Doctoral Students, London, UK, 2019.
- The neural basis of the sense of direction in rat retrosplenial cortex. Talk presentation at the Institute of Neuroscience, Chinese Academy of Science, Shanghai, China, 2019.

## ACADEMIC SERVICE

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### Contributions to peer review

2018 –

Assisting the review of submitted manuscripts for *eLife*, *Neuron*, *Nature Communications*, *Nature Neuroscience*, with Prof. Kate Jeffery and Dr. Ning-long Xu.

### Teaching

2020 –

- Teaching fellow for undergraduate and A-level modules, designed and delivered online seminars including *Introduction to Cognitive Sciences*, *Developmental Psychology*, with Dr. Dénes Szűcs at Cambridge University, UK.
- Teaching fellow for UK Extended Project Qualifications.