

Qiuyang Wang

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EDUCATION

- M.S. in Applied Math** **Columbia University in the city of New York, U.S.** 2021.9-2023.5
· **Math:** Modern Algebra, Modern Analysis, Numerical Algebra and Optimization, PDEs
- B.S. in Chemistry (Honors Degree)** **Wuhan University, China (GPA 3.81/4.0)** 2017.9-2021.6
· **Math:** Theory of ODEs, Functions of Complex Variables, Statistics, Probability Theory, Calculus, Linear Algebra
· **Computer Science:** Data Structure, Machine Learning, C Programming
· **Chemistry and Biology:** Neurobiology, Physical Chemistry, Organic Chemistry, Analytical Chemistry, Molecular Modeling
- Visiting Student in Columbia College **Columbia University in the city of New York, U.S.** 2020.1-2020.5
· **Math:** Theoretical Neuroscience, Numerical Math, Theory of PDEs, Analysis and Optimization

RESEARCH EXPERIENCE

- Coarse-grained method for IF network and its spatial dynamic behavior** 2020.9-2021.5
Advisor: Jiwei Zhang (School of Math and Statistics, Wuhan University) Research Assistant
Duties included:
· Mechanically studied a new coarse-grained framework based on flow method for integrate-and-fire (IF) network to avoid *the curse of dimensionality*.
· Rebuilt and improved a spatially ordered IF network model that matches the experimental result about neural variability.
· Modelled the CaMKII pathway in neurons to show its on/off property in Long-Term Potentiation (LTP).
- Place cells generation via auto-encoder model with a strong history effect** 2020.5- 2020.9
Advisor: Stefano Fusi (Centre of Theoretical Neuroscience, Columbia University) Research Assistant
Duties included:
· Simulated the memory performance of a Hopfield network with cascade synapses model to solve the *catastrophic forgetting* problem.
· Built an auto-encoder model which can naturally generate place cells in hippocampus, and implemented the cascade synapses model above to strengthen the history effect.
- A novel antimicrobial treatment and a non-systematic drug delivery method** 2018.6 - 2019.6
Advisor: Xianzheng Zhang (College of Chemistry and Molecular Science, Wuhan University) Research Assistant
Duties included:
· Developed a novel anti-bacterial method combining photodynamic therapy and chimeric peptides.
· Tested the idea about non-systematic drug delivery strategy to central neural system through axoplasmic transport.

PUBLICATIONS

1. Ai-Nv Zhang[†], Wei Wu[†], Chi Zhang, **Qiu-yang Wang**, Ze-Nan Zhuang, Han Cheng, and Xian-Zheng Zhang* *A Versatile Bacterial Membrane-Binding Chimeric Peptide with Enhanced Photodynamic Antimicrobial Activity* **2019** Journal of Materials Chemistry B, 7, 1087-1095.

SKILLS

Programming: python (most proficient), MATLAB, C, L^AT_EX
Statistics: pandas(python), R
Research Tools: Spiking Neural Network, pytorch, Machine Learning
Experimental skills: Material Synthesis, Tumor Transplantation, Confocal Laser-Scanning Microscopy, Fluorescence Imaging

HONORS

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| WHU Outstanding Scholarship for Visiting Student | 2020 |
| Honor Scholarship for Hongyi College | 2019 |
| Outstanding Student Scholarship (grade 2) | 2019 |
| 2 nd Prize for Drama Competition in School of Sciences | 2018 |