Huawen Zhong

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EDUCATION

King Abdullah University of Science and Technology, Thuwal, Saudi Arabia 09.2020 - present
- Doctor of Philosophy in **Bioinformatic and machine learning**
- GPA: 4.0/4.0, Supervisor: Professor Manuel Aranda and Professor Xin Gao

Wellcome Sanger Institute, Cambridge, UK 10.2024 – 08.2025
- Visiting Ph.D. student
- Supervisor: Professor Mohammed Lotfollahi and Professor Arnau Sebé-Pedrós

Sun Yat-sen University (SYSU), Guangzhou, China 09.2017 - 06.2020
- Master of Science in **Bioinformatics**
- GPA: 3.81/4.0, Supervisor: Associate Professor Miao He

South China Normal University (SCNU), Guangzhou, China 09.2013 - 06.2017
- Bachelor of Science in **Biological science**
- Overall GPA: 87.1/100 Ranking: 1/60
- Double Major: Chinese Language and Literature

PUBLICATIONS

*Equal contribution. #Co-correspinding author

[1] **H. Zhong***#, W. Han*, D. Cabrero, J. Tegner, X. Gao, G. Cui# and M. Aranda#. "Benchmarking cross-species scRNA-seq data integration methods: towards a cell type tree of life." *Nucleic Acids Research,* 2025.

[2] **H. Zhong**, G. Cui and M. Aranda#. "Single-cell profiling comparison reveals the evolutionary consequences of symbiosis between cnidarian and dinoflagellate algae." *Submitted*, 2025.

[3] **H. Zhong,** W. Han, D. Cabrero, J. Tegner, X. Gao and M. Aranda. "Unify: Deciphering Cellular Evolution with Universal Multimodal Embeddings." *Submitted,* 2025.

[4] W. Han*, N. Chen*, X. Xu*, A. Sahil, J. Zhou, Z. Li, **H. Zhong**, E. Gao, R. Zhang, Y. Wang, S. Sun, P. Cheung and X. Gao. "Predicting the antigenic evolution of SARS-COV-2 with deep learning." *Nature Communications*, 2023.

[5] G. Cui, M. Konciute, L. Ling, L. Esau, J. Raina, B. Han, O. Salazar, J. Presenell, N.Radecker, **H. Zhong**, J. Menzies, P. Cleves, Y. Liew, C. Krediet, V. Sawiccy, M. Cziesielski, P. Guagliardo, J. Bougoure. M. Pernice, H. Hirt, C. Voolstra, V. Weis, J. Pringle and M. Aranda#. "Molecular insights into the Darwin paradox of coral reefs from the sea anemone Aiptasia." *Science Advances*, 2023.

[6] G. Cui, J. Mi, A. Moret, J. Menzies, **H. Zhong**, A. Li, S. Hung, S. Al-Babili, and M. Aranda#. "A carbon-nitrogen negative feedback loop underlies the repeated evolution of cnidarian–Symbiodiniaceae symbioses." *Nature Communications*, 2023.

[7] M. Barreto, S. Roach, **H. Zhong**, and M. Aranda. "Assessing the feasibility of assisted migration of corals in the Red Sea." *Frontiers in Marine Science*, 2023.

[8] W. Han, Y. Cheng, J. Chen, **H. Zhong**, Z. Hu, S. Chen, L. Zong, L. Hong, T. Chan, I. King, X. Gao and Y. Li. "Self-supervised contrastive learning for integrative single cell RNA-seq data analysis." *Briefings in Bioinformatics*, 2022.

SOFTWARE COPYRIGHT

[1] Miao He, **Huawen Zhong**, Wei Qiang, PPI Network Comparison Software for Rice in Flowering, Milking and Fruiting Stages V1.0, Registration Number: 2019SR0470545

[2] Miao He, **Huawen Zhong**, Wei Qiang, Software for Extracting Multi-stage PPIN Functional Modules from Arabidopsis Development Based on Deep Learning V1.0, Registration Number: 2019SR0473478

[3] Miao He, Wei Qiang, **Huawen Zhong**, Software for Extracting PPIN Key Proteins from Rice Glumous Flower Basedon Sparse Representation V1.0, Registration Number: 2019SR0470434

[4] Miao He, Jiajie Zhang, **Huawen Zhong**, Software for Microarray-chip-data based Rice Glumous Flower Development PPI Network and Its Topology Feature Analysis V1.0, Registration Number: 2017SR713453

RESEARCH EXPERIENCE

A foundation model for cross-species single cell RNA-seq data 10.2024 - present
Supervisor: Professor Mohammed Lotfollahi and Professor Arnau Sebé-Pedrós
- Develop a foundation model toward the cell type tree of life.

Benchmarking cross-species scRNA-seq data integration methods: towards a cell type tree of life 01.2023 - 06.2024
Supervisor: Professor Manuel Aranda and Professor Xin Gao
- Systematically benchmark the single cell integration methods' performance in cross-species settings

Single-cell profiling comparison reveals the evolutionary consequences of symbiosis between cnidarian and dinoflagellate algae 01.2021 - 12.2022
Supervisor: Professor Manuel Aranda
- Construct the single-cell atlas of sea anemone *Aiptasia diaphana* and hard coral *Acropora hemprechii*
- Conduct an evolutionary comparison of endosymbiotic cells across different cnidarian species

Multi-stage Molecular Genetic Network Comparison of Arabidopsis Flower Development and Discovery of Key Protein Complexes 10.2018 - 06.2020
Graduation Thesis, Supervisor: Associate Professor Miao He
- Construct a multi-stage protein interaction network for Arabidopsis flower
- Improve the existing protein network comparison methods and apply them to the multi-stage protein interaction network
- Discover key protein complexes that affect Arabidopsis flower development

TALKS & POSTER

Cell atlas of the sea anemone *Exaiptasia diaphana* in response to symbiosis
Talk in *5TH Asia-Pacific Coral Reef Symposium*, Singapore, June 2023

RNA modification in cnidarian-dinoflagellate symbiosis
Talk in *KAUST-Oxford Nanopore Seminar Day*, Saudi Arabia, March 2023

Galaxy: Unveiling Evolutionary Insights through Universal Single-Cell Embeddings
Poster in *33rd conference on Intelligent Systems For Molecular Biology*, United Kingdom, July 2025

TEACHING

Substitute Biology Teacher, Guangzhou Xintang Middle School 11.2016 - 02.2017
- Taught biology to two classes of senior one student two periods a week

Trainee Biology Teacher, Zhanjiang No. 4 Middle School 09.2016 - 11.2016
- Managed a class of over 50 students, taught biology to four classes four periods a week

Science Teacher, Guangzhou Longtan Primary School 10. 2015 - 12.2015
- Popularized basic zoology and botany knowledge in creative manners among primary school students one period a week

Trainee Biology Teacher, Guangzhou No.41 Middle School 02.2014 - 07.2014
- Assisted in teaching activities and provided individualized teaching in office hours for senior high school students

Volunteer Teacher, Yunfu Yunan Middle School 08.2014
- Held interest-oriented class on biology to broaden students' horizon five periods a week

Volunteer Teacher, Guangzhou Lingtang Primary School 07.2013
- Developed students' interest in biology by teaching the interest-oriented class four periods a week

ACADEMIC SERVICE

Served as NeurIPS 2024, 2025 reviewer.
Served as ICLR 2025 reviewer.
Served as ICML 2025 reviewer.
Served as Transactions on Machine Learning Research (TMLR) reviewer.

HONORS & AWARDS

Scholarship

BESE Division Student Achievement Award for Best Research Publication, KAUST	05.2025
BESE Dean's Travel Award for Spring 2025, KAUST	04.2025
Top reviewer of NeurIPS 2024 (top 8% of reward of all reviewers)	12.2024
Fully-funded Ph.D. Fellowship, KAUST	09.2020 – present
First-class Scholarship, SYSU (three consecutive years, top 1%)	10. 2017 - 10.2019
First-class Scholarship, SCNU (two consecutive years, top 1%)	10.2015 - 10.2016
Ye Shengtao Scholarship, SCNU (top 1%)	10.2016
National Merit Scholarship, Ministry of Education of P.R.China (top 1%)	11.2015
Third-class Scholarship, SCNU (top 10%)	10.2014

Activities:

First Place in the 8th Biochemistry Experiment Skills Competition for Guangdong College Students	06.2015
Third Place in the Experiment Design Competition, School of Life Sciences, SCNU	04.2015
Second Place and Third Place in the Biochemistry Experiment Skills Competition, SCNU	2015, 2016

Others:

Outstanding Graduates, SCNU (at the rate of 1%)	06.2017
Seventh Place in Women's Wushu Group A (Nanquan), Guangdong Provincial Universities Games	05.2015
Eighth Place in Women's Group A (Nanquan), Wushu Routine Championship for Guangdong University Students	11.2014