Hongjiang Liu

greysea.wm@gmail.com
https://cv.greysea.cc

EDUCATION

B.S. Biological Science (Poling Class) *2023*
Nankai University, Advisor: Prof. Xinglu Huang
Poling Honors Degree *2023*
Nankai University

WORK EXPERIENCES

Visiting Student *2021-2022*
Institute for Human Genetics
*University of California, San Francisco (**UCSF**)*
Advisor: Prof. Yin Shen

Intern *2021*
National Engineering Lab for Neuromodulation
Tsinghua University

TECHNICAL SKILLS

Languages	R, Python, Shell, HTML, CSS, Markdown, LaTeX, etc.
Software	Ai, VSCode, RStudio, Nginx, IGV, PyMOL, ImageJ, Zotero, Conda, Benchling, etc.
Wet Lab	Molecular Clone, Cell Culture, ATAC-seq, Smart-seq2, mRNA Display, Mutagenesis, Lentivirus, CRISPR Screen, etc.

PUBLICATIONS

[1] Sun W, Wang N, **Liu H**, Yu B, Jin L, Ren X, Shen Y, Wang L. Genetically Encoded Chemical Cross-linking of RNA in vivo. ***Nat Chem*** 2023;15(1):21–32.
- Designed the end-to-end analysis pipeline for GECX-RNA with immunoprecipitation sequencing (GRIP-seq), covering the entire process from raw sequencing data to RNA m6A sites with single-nucleotide resolution. **https://github.com/Shall-We-Dance/GRIP-seq**
- Uploaded the sequencing data to NCBI SRA under the accession number PRJNA797913.
- Computed minimum free energy (MFE) of RNA secondary structure for evaluation purposes.
- My main contributions included Fig.6, Extended Data Fig. 3, Fig.S7, Table S2, Table S3 and the writing of the methods section detailing the data analysis for GRIP-seq.

[2] Yang X, Wen J, Yang H, Jones IR, Zhu X, Liu W, Li B, Clelland CD, Luo W, Wong MY, Ren X, Cui X, Song M, **Liu H**, Chen C, Eng N, Ravichandran M, Sun Y, Lee D, Van Buren E, Jiang MZ, Chan CSY, Ye CJ, Perera RM, Gan L, Li Y, Shen Y. Functional characterization of Alzheimer's disease genetic variants in microglia. ***Nat Genet*** 2023;1–10.
- Performed computational analysis.My main contributions included RNA-seq data process, Extended Data Fig. 2 and the writing of the methods section.

[3] Yang, J, Chung, C, Koach, J, **Liu H**, Navalkar A, Zhao Q, Yang X, He L, Mittag T, Shen Y, Weiss WA, Shu X. Phase separation of Myc differentially modulates the transcriptome. ***bioRxiv*** 2022.06.28.498043; [Preprint]
- Processed and analyzed all RNA-seq data in this study.
- My main contributions included Fig. 7, Fig. S12, Fig. S13 and the writing of the methods section.

[4] Wei Y, Wu J, Wu Y, **Liu H**, Meng F, Liu Q, Midgley AC, Zhang X, Qi T, Kang H, Chen R, Kong D, Zhuang J, Yan X, Huang X. Prediction and Design of Nanozymes using Explainable Machine Learning. ***Advanced Materials*** 2022;34(27):2201736.
- Collected and organized data by grouping various factors.
- Conducted initial statistical analysis to substantiate the hypothesis.
- Contributed to the design of this neural network.

[5] Sun Z, Liu Q, Wang X, Wu J, Hu X, Liu M, Zhang X, Wei Y, Liu Z, **Liu H**, Chen R, Wang F, Midgley AC, Li A, Yan X, Wang Y, Zhuang J, Huang X. Bioorthogonal catalytic nanozyme-mediated lysosomal membrane leakage for targeted drug delivery. ***Theranostics*** 2022;12(3):1132–47.
- Conducted molecular cloning for ferritin synthesis.
- Illustrated the schemes, including Scheme 1, Fig. 1c, Fig. 4c, Fig. 6a.

RESEARCH INTERESTS

Genomics & Epigenomics, Bioinformatics, Development and Application of Sequencing Techniques

SELECTED RESEARCH EXPERIENCES

End-to-End Design of GRIP-seq: A Novel Sequencing Technique for Detecting RNA m6A Sites with Single-nucleotide Resolution Using Unnatural Amino Acids
PI: Prof. Yin Shen & Prof. Lei Wang *Dec. 2021 – Jul. 2022*
Institute for Human Genetics, UCSF *available on my GitHub repository*

The Analysis of Multiple Sequencing Libraries: scRNA-seq, ATAC-seq, RNA-seq, ChIP-seq, CLIP-seq, Hi-C, CRISPR, etc.
PI: Prof. Yin Shen *Oct. 2021 – Jul. 2022*
Institute for Human Genetics, UCSF

Evaluation of AlphaFold2 Algorithms and Improvements for Enhanced Predictions
National Engineering Lab for Neuromodulation *Jul. 2021 –Sept. 2021*
Tsinghua University *available on my GitHub repository*

Analyzing Nanodrug Delivery Efficiency in Tumors Using Machine Learning
PI: Prof. Xinglu Huang *Sept. 2020 – Jun. 2021*
State Key Laboratory of Medicinal Chemical Biology, Nankai University

AWARDS

Poling Honors Degree, Nankai University
Distinguished Undergraduate Thesis, Nankai University
Scholarship of Academic Progress, Nankai University
Third Prize in Innovative Scientific Research for Undergraduates of Nankai University

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