Yanru Cui, Ph.D.

Gender: Female

Place of Origin: HanZhong, Shannxi Province

Postdoc of Biomedical Engineering | Cornell University

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Areas of Expertise

Molecular and Cell Biology | Drug & Gene Delivery| Gene editing | Cell-based assays| Genomic screening | Cancer biology

Professional Experience

Postdoc of Biomedical Engineering | Cornell University, Ithaca, NY, USA **05|2024 -Present**

Principle Investigator: Professors Shaoyi Jiang

- In Vivo Nucleic Acid Delivery of Multicomponent Gene Editing Tools for Cancer Therapy.
- 3D Hydrogel Culture of Hematopoietic Stem Cells for Sickle Cell Disease Treatment.

Postdoc of Molecular Biology and Genetics | Cornell University, Ithaca, NY, USA **10|2021 -05|2024**

Principle Investigator: Professors Ailong Ke

- Performed gene editing using novel CRISPR editors to induce death of targeted cancer cells carrying specific mutations.
- Developed several genetically modified CRISPR editors with improved precision, and assessed their biochemical, in vitro, and intracellular activity.
- Designed and developed gene delivery strategies for in vivo delivery of multi-protein CRISPR systems.

Education

Center for Excellence in Molecular Cell Science, University of Chinese Academy of Sciences & Shanghai Institute for Advanced Immunochemical Studies (SIAIS), ShanghaiTech University, Shanghai, China 09|2016 - 06|2021

Ph.D. of Biochemistry and Molecular Biology

Mentors: Professors Biao Jiang and Jia Liu

- Discovered novel CRISPR/Cas9 inhibitors including G8PPD, one of the peptides from the inoviridae bacteriophage major coat protein G8P which disrupts Cas9 and sgRNA assembly, improving genome and base-editing specificity in human cells.
- Developed a cell-based screening platform to identify small-molecule off-switches that can inhibit the cellular activity of CRISPR-Cas9, and discovered an FDA-approved anticancer drug that improves the specificity of CRISPR-Cas9-based genome and base editing in human cells.
- Performed CRISPR genomic screening to discover synergistic mutations responsible for tumorigenesis in breast cancer cell.
- Received one national award and one Chinse Academy of Sciences Award.

Nanjing Normal University, Nanjing, Jiangsu, China 09|2012-06|2016

Bachelor of Biological Engineering (Biopharmaceuticals)

Advisor: Professor Zhao Zhang

Awards and Honors

- 2021, Outstanding Graduate in Shanghai
- 2021, Outstanding Graduate Award, ShanghaiTech University
- 2020, Outstanding student, ShanghaiTech University
- 2020, ShanghaiTech University Class A Postgraduate Academic Scholarship, ShanghaiTech University
- 2018, Outstanding student, University of Chinese Academy of Sciences

Publications

Publications (#, co-first author; *, corresponding author)

1. Shensuo Li, Yuzhong Peng, Minjun Chen, Yankun Zhao, Yi Xiong, Jianfeng Li, Peng Luo, Haitao Wang, Fei Zhao, Qi Zhao, **Yanru Cui**, Sujun Chen*, Jian-Guo Zhou* & Shixiang Wang*. Facilitating integrative and personalized oncology omics analysis with UCSCXenaShiny. *Communications Biology* 7, 1200 (2024). https://www.nature.com/articles/s42003-024-06891-2
2. Chunyi Hu#, Sam PB van Beljouw#, Ki Hyun Nam, Gabriel Schuler, Fran Ding, **Yanru Cui,** Alicia Rodríguez-Molina, Anna C Haagsma, Menno Valk, Martin Pabst, Stan JJ Brouns*, Ailong Ke*. Craspase is a CRISPR RNA-guided, RNA-activated protease. *Science* 377,1278-1285 (2022). https://www.science.org/doi/10.1126/science.add5064.
3. **Yan-ru Cui#**, Shao-jie Wang#, Tiancheng Ma, Peihong Yu, Jun Chen, Taijie Guo, Genyi Meng, Biao Jiang, Jiajia Dong* & Jia Liu*. KPT330 improves Cas9 precision genome- and base-editing by selectively regulating mRNA nuclear export. *Communication Biology* 5, 237 (2022). https://doi.org/10.1038/s42003-022-03188-0.
4. Kun Jia#, **Yan-ru Cui#**, Shisheng Huang, Peihong Yu, Zhengxing Lian, Peixiang Ma* & Jia Liu*. Phage Peptides Mediate Precision Base Editing with Focused Targeting Window. *Nature Communications* 13, 1662 (2022). https://doi.org/10.1038/s41467-022-29365-7.
5. **Yan-ru Cui#**, Shao-jie Wang#, Jun Chen, Jie Li, Wenzhang Chen, Shuyue Wang, Bing Meng, Wei Zhu, Zhuhong Zhang, Bei Yang, Biao Jiang, Guang Yang, Peixiang Ma* & Jia Liu*. Allosteric inhibition of CRISPR-Cas9 by bacteriophage-derived peptides. *Genome Biology* 21, 51 (2020). https://doi.org/10.1186/s13059-020-01956-x.
6. Jian Chen#, Yi-feng Yang#, Yu Yang, Peng Zou, Jun Chen, Yongquan He, Sai-lan Shui, **Yan-ru Cui,** Ru Bai, Ya-jun Liang, Yunwen Hu, Biao Jiang, Lu Lu, Xiaoyan Zhang*, Jia Liu* & Jianqing Xu*. AXL promotes Zika virus infection in astrocytes by antagonizing type I interferon signaling. *Nature Microbiology* 3, 302–309 (2018). https://doi.org/10.1038/s41564-017-0092-4.

Other professional activities

Participated Grants

- National Science Foundation of China (81430030 to J.X.)
- National Natural Science Foundation of China (31600686 to J.L. and 31500632 and U19A2011 to P.M.)
- Chinese Academy of Sciences (XDB200203)

Teaching Experience

- 03.2019-07.2019 Graduate Teaching Assistant, Cell biology, School of Life Science and Technology, ShanghaiTech University, Shanghai, China

Review Experience

- Reviewer for Journal of Zhejiang University-SCIENCE B