

Jiaze Liu

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Wuhan University, Wuhan, 430072, China

Education

Wuhan University, Wuhan, China **Sept. 2020-Present**
Hongyi Honor Class, College of Life Science
Major: Biological Science Cumulative GPA: **3.92/4.00 (1/38)** TOEFL: 106 (out of 120)

Research Experiences

Undergraduate Researcher, Lab of Prof. Yanxun Yu **July 2021-Present**
Medical Research Institute, Wuhan University, Wuhan, China

Exploring the neuronal circuit for ethanol sensing in *Caenorhabditis Elegans*

- Generated a few transgenic *C. elegans* strains deficient in various neurons by the expression of Caspase or miniSOG, and characterized ethanol sensing behavior in those strains, to find out the neuron responsible for ethanol sensing
- Constructed 6 strains that express ChR-2 or gtACR-2 within specific neuron, to use optogenetics to manipulate neuronal activity, and verify the conclusion that certain neuron does plays a role in ethanol sensing.
- Constructed 2 strains that express HisCl in different neuron, and performed behavior essay with these strains, and used chemical genetics to verify the role that certain neuron plays in ethanol sensing.
- Generated two chromosomal knockout strain using CRISPR/Cas9 system that is deficient in two genes that has putative function in ethanol sensing, and performed behavior essay on these strains. To finds out the molecular basis behind ethanol sensing
- Constructed 8 transgenic strains that express Cmk in certain neuron, for phenotypic rescue that aims to find out the neuron in which calcium related cell signaling leads to ethanol chemosensation.
- Currently crossing 6 of the 8 strains with another strain that express Gcamp, to be prepared to be used for calcium imaging.
- Currently trying to obtain one strain that express ChR2 in neuron ASER solely and one strain that co-expresses ChR2 and R-Geco in the same neuron, to use calcium imaging to characterize the response of ChR2 towards blue light, to find out the optimal condition when doing optogenetic experiments.
- Characterized the influence of temperature on IAA sensing in wild type *C. elegans* strain

Exploring the genetic basis of ferroptosis

March 2022- Jun 2022

- Aided in the screening of genes that may participate in the ferroptosis pathway using CRISPR/Cas9
- Constructed some of the plasmids that are used for the expression of shRNA, to knockdown the genes that was obtained using a CRISPR-Cas9 knockout screen that may play a part in ferroptosis, to verify the conclusion
- Prepared lentivirus of shRNA to perform knockdown of genes
- Participated in minor tasks such as cell counting using hemocytometer, to seed cells with shRNA of target genes in the 96-well plate; or to prepare other cell strains to be tested with the same gene (for example, detecting mycoplasma)

iGEM Competition, Lab of Prof. Zhixiong Xie

April 2021-October 2021

College of Life Science, Wuhan University, Wuhan, China

Using synthetic biology to provide a cure to acne

- Using directed evolution to decrease leaky expression and increase sensitivity of a fatty acid sensitive promoter

Deleted: ● Obtained one strain that express ChR2 in neuron ASER solely and one strain that co-expresses ChR2 and R-Geco in the same neuron, to use calcium imaging to characterize the response of ChR2 towards blue light, to find out the optimal condition when doing optogenetic experiments. For the same reason, also planning on co-expressing gtACR2 and G-camp6s in neuron ASER.†

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Honors & Awards

- Merit student (for top 10% of students) Sept. 2021
- Top 10 students of Wuhan University (for 10 out of entire undergraduate students, won this award as a member of iGEM team) May. 2021
- First class of Study Scholarship of Hongyi Honor College (for top 5% of students) Sept. 2021
- First class of Study Scholarship of Wuhan University (for top 5% of students) Sept. 2021
- Gold Award for iGEM 2021 competition Oct. 2021
- Best Measurement Nomination for iGEM 2021 competition Oct. 2021

Skills

- Proficient in Molecular cloning; Experiments concerning C. elegans such as transgenic C. elegans construction, behavior assay, crossing, calcium imaging with microfluidic chips; in vitro biochemical assays, cell culturing; etc.
- Computer skills: C, HTML, CSS; etc.

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