Jian Huang

Education

Huazhong University of Science and Technology, *Wuhan, Hubei province*
Graduated June 2016, B.S. in Applied Chemistry
GPA: 3.75, Major GPA: 4.00
Outstanding Graduate, Merit Student

University of Chinese Academy of Sciences, *Beijing*
Graduated June 2019, M.S. in Biochemistry and Molecular Biology
GPA: 3.49

University of Massachusetts, Amherst, MA
Started at 2021, graduate student in Department of Chemistry
CBI fellowship

Research Experience

2021-present: University of Massachusetts, Amherst, MA, U.S., Ph.D. Study

- Activation of TMEM16F by inner gate charged mutations and mechanisms of lipid and ion permeation
  - Using atomistic simulations of inner gate charged mutants, we succeeded in finding the open status of TMEM16F, which had been always elusive in cryo-EM studies
  - The predicted open state turned out to be permeable to lipids and ions, which further provides insights about the ion and lipid pathways
- Heat activation mechanism of TRPV4 (*ongoing*)
  - Aim1: Reveal the thermos-sensor of TRPV4 through comparison and contrast of dynamic properties under different temperature atomistic simulations and experimental validations
  - Aim2: Determine the coupling routes between the thermos-sensor and the pore domain

2016-2019: Institute of Biophysics, Chinese Academy of Sciences, Master's Study

- Screening for suitable reductants for CO2-reducing enzyme system
  - Organic synthesis of 1,3-Dimethyl-2-phenylbenzimidazoline (BIH) and BIH derivatives as the potential reductants with self-design and optimized routes
  - Analysis of reductive ability of BIH and BIH derivatives in CO2-reducing enzyme system
- Scission of carbon-halide bond by a genetically engineered fluorescent protein catalyst coupled with a metal complex
  - Construction of protein mutant plasmids with different cysteine sites by PCR
  - Expression of protein mutants and purification by Ni-NTA chromatography
  - Synthesis of bipyridine and terpyridine ligands by organic synthesis with self-designed and optimized routes
  - Coupling protein mutants with bipyridine and terpyridine and characterization with MS and NMR
  - Blue-light induced aryl halides dehalogenation by protein-ligand catalyst and different metal ions with different valance states
- Ultrafast femtosecond transient absorption spectrum for studying electron transfer within protein
  - Choosing protein samples which could reach chromophore's triple state easily upon light excitation
  - Site-specific mutation around the chromophore to create the possibility of electron transfer
  - Femtosecond transient absorption spectrum analysis of the electron transfer process
  - Modeling and computational dynamic simulation of the electron transfer process

Honors and Awards

CBI fellowship (UMass) *2022*

National Scholarship *2015*

Presentation of learning experience and research project by Merit Students and competition for votes to rank top 10 among other Merit Students

Merit Student and First-Class Scholarship *2015*

GPA reaches top 10 among all students without failing in any discipline

Merit StudentScholarship *2014*

Scholarship of Academic Excellence *2013*

GPA of the school year reaches top 10 among all students

Individual Scholarship *2013*

Prominent performance in attending class and college activities and acquiring honors

Publications

Huang J, Jia Z, Chen J. Activation of TMEM16F by Inner Gate Charge Mutations and Mechanisms of Lipid and Ion Permeation. Submitted.

Xue T, Wu W, Guo N, Wu C, **Huang J**, Lai L, Liu H, Li Y, Wang T, Wang Y. Single point mutations can potentially enhance infectivity of SARS-CoV-2 revealed by in silico affinity maturation and SPR assay. RSC Adv. 2021 May 10;11(24):14737-14745.

Fu Y, **Huang J**, Wu Y, Liu X, Zhong F, Wang J. Biocatalytic Cross-Coupling of Aryl Halides with a Genetically Engineered Photosensitizer Artificial Dehalogenase. J Am Chem Soc. 2021 Jan 20;143(2):617-62

Skills

Analytical Chemistry

- Proficient in infrared, mass, proton nuclear magnetic resonance, and ultraviolet-visible spectroscopy, gas chromatography
- High proficiency in high performance liquid chromatography-mass spectroscopy (HPLC-MS), in charge of Waters LC-MS in laboratory

Organic Chemistry

- Proficient in synthetic route design of organic compounds, basic purification skills, silica gel chromatography
- Proficient in characterization of organic compound by MS, NMR

Biochemistry

- Proficient in molecular cloning, cell culture
- Proficient in protein purification, quantification, crystallization and characterization

Computer Software

- High proficiency in Python, PyMol, VMD
- Proficiency in CHARMM, Gromacs