

Weishu ZHAO

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EDUCATION

Institution & Location	Major/Field of Study	Degree&Year
Shanghai Jiao Tong University, Shanghai, PRC	Bioengineering	B.E., 2007.09-2011.06
Shanghai Jiao Tong University, Shanghai, PRC	Marine Microbiology	Ph.D., 2011.09-2017.06

WORK EXPERIENCE

Institution & Location	Major/Field of Study	Position&Year
University of Rhode Island, RI, USA	Metabolic modeling	Postdoc, 2017.09-2020.11
Shanghai Jiao Tong University, Shanghai, PRC	Marine Microbiology	Assistant Prof., 2020.11-

RESEARCH EXPERIENCE

International Center for Deep Life Investigation, Shanghai Jiao Tong University (Shanghai, PRC)

Assistant Prof. (Nov. 2020 - present)

Research interests:

- Metabolic mechanism of cross-stress adaptation in deep-sea poly-extremophiles;
- The upper limits of temperature and hydrostatic pressure for life or living community, and their metabolic limitations;
- Evolution of energetic process from anaerobic to aerobic;
- New isolations of extremophiles from deep-sea.

Laboratory of computational molecular ecology, University of Rhode Island (RI, USA)

Postdoc fellow with Prof. Ying Zhang (Sep. 2017 – Nov. 2020)

Research:

- Genome scale metabolic network reconstruction of hyperthermophilic archaea strains *Thermococcus eurythermalis* and *Pyrococcus furiosus* to study the unique metabolic organization and pathway robustness in such hyperthermophilic archaea strains;
- Genome scale metabolic modeling a hyperthermophilic bacterial bioengineering strain *Caldicellulosiruptor bescii* to guide the engineering processes in bio-products industry;
- Metabolic interactions in an uncultured archaeal host-symbiont association, the Altiarchaeum-Huberiarchaeum system;
- Metabolic network comparison of the methanogens.

Laboratory of Microbiological Oceanography, Shanghai Jiao Tong University (Shanghai, PRC)

PhD student with Prof. Xiao Xiang (Sep. 2011 – Jun. 2017)

Dissertation: Study on adaptation to Environmental fluctuation based on hyperthermophilic archaeon *Thermococcales* from deep sea hydrothermal vent

Research:

- Isolation, characterization and physiological analysis of hyperthermophilic and piezophilic archaea order *Thermococcales*;
- Genome analysis of a *Thermococcales* strain *Thermococcus eurythermalis*;
- Global quantitative proteomic analysis under multiple extreme conditions of the *Thermococcus eurythermalis*;
- Adaptive laboratory evolution of the *Thermococcus eurythermalis* under highest boundary temperature;
- Omics analysis of the obligate piezophilic archaea strain *Pyrococcus yayanosii* CH1 and its facultative piezophilic mutants.

Intern with Prof. Xiao Xiang (2010)

Research:

- Diversity of microbiological community of deep-sea hydrothermal vent of Guaymas Basin

School of Pharmacy, Shanghai Jiao Tong University (Shanghai, PRC)

Intern with Prof. Xiuping Qian (2009 - 2010)

Research:

- Study on the relationship between plant endophyte and active components of the drug herb *Houttuynia cordata*

The 22th Around-world Researching Cruise of “Dayang Yi Hao” (Southwest Indian Ocean)

Expeditioner (Dec. 2010), sampling water, sediments and rocks, general geochemical tests and daily work of cruise

PUBLICATIONS

(i) Journal publications

Zhao, W., Zeng, X., Xiao, X. *Thermococcus eurythermalis* sp. nov., a conditional piezophilic, hyperthermophilic archaeon with a wide temperature range for growth, isolated from an oil-immersed chimney in the Guaymas Basin. (2015). *International Journal of Systematic and Evolutionary Microbiology*, Volumn 65 (1), pg 30-35.

Zhao, W. Xiao, X. Complete genome sequence of *Thermococcus eurythermalis* A501, a conditional piezophilic hyperthermophilic archaeon with a wide temperature range, isolated from an oil-immersed deep-sea hydrothermal chimney on Guaymas Basin. (2015). *Journal of Biotechnology*, Volumn 193, pg 14-15.

Zhao, W. Xiao, X. Life in multi-extreme environment: *Thermococcales* living in deep sea hydrothermal vents. (2017). *Scientia Sinica Vitae*, Volumn 7 (5), pg 470-481.

Zhao, W., Xiao, X. Life in multi-extreme environment: cross-stress response in *Thermococcales*. (2017). Kallmeyer, J. (Ed.), *Life at Vents and Seeps*. De Gruyter. pg 307–330, ISBN (Online): 9783110493672. DOI (Chapter): <https://doi.org/10.1515/9783110493672-011>.

Zhao, W., Ma, X., Liu, X., Jian, H., Zhang, Y., Xiao, X. Cross-stress adaptation in a piezophilic and hyperthermophilic archaeon from deep sea hydrothermal vent (2020). *Frontiers in Microbiology*, doi: 10.3389/fmicb.2020.02081.

(iii) Conference abstracts

- Zhao, W.**, Dufault-Thompson., K., Ma, X., Liu, X., Wang, J., Xiao, X., Zhang, Y. A Genome-Scale Metabolic Model of *Thermococcus eurythermalis* Provides Mechanistic Understanding of Compatible Solutes Production in Extremophilic Archaea. (2019). *The Gordon Research Conferences on Applied and Environmental Microbiology*, MA, USA. Poster presentation.
- Zhao, W.**, Jian, H., Ma, X., Zhang, Y., Li, J. and Xiao, X. Common and distinct: strategy of multiple Stresses adaptation in a wide-growth-range Archaeon. (2016). *The 11th International Congress on Extremophiles*, Kyoto, Japan. Poster presentation. Travel Award & Poster Award.
- Zhao, W.** and Xiao, X. ITRAQ-based quantitative proteomic and genomic analyses of a hyperthermophilic archaeon *Thermococcus eurythermalis* A501. (2015). *The 4th International Marine Microbiology Conference*, Qingdao, China. Oral presentation.
- Zhao, W.** and Xiao, X. Poly-extreme adaptation in *Thermococcales* from deep sea hydrothermal vent. (2015). *The 5th Youth Forum in Synthetic Biology*, Shanghai, China. Oral presentation.
- Zhao, W.**, Zeng, X. and Xiao, X. Physiology and complete genome of *Thermococcus sp.* A501. (2014). *The 10th International Congress on Extremophiles*, St. Petersburg, Russia. Poster presentation.
- Zhao, W.** and Xiao, X. Genomic and comparative genomic analysis of hyperthermophilic *Thermococcales*. (2014). *The 6th Chinese Microbial Genetics Conference*, Chongqing, China. Oral presentation.
- Ma, X., **Zhao, W.**, Leng, H., Gu, J., Xiao, X. Adaptive laboratory evolution of a hyperthermophilic archaeon *Thermococcus eurythermalis* A501 provides insights into cross stress adaptation. (2016). *The 11th International Congress on Extremophiles*, Kyoto, Japan. Poster presentation.