

CURRICULUM VITAE

XIN WANG, Ph.D.

Email: xwang@tamu.edu

Phone: (808)366-7337

RESEARCH INTERESTS

Microbiome, Metabolic Engineering. Exploring cellular regulatory mechanisms on carbon fluxes; Dissecting electron transfer process in microbes and microbiome; Applying synthetic and systems biology approaches to guide microbial engineering.

EDUCATION

- 2013 **Ph.D. in Microbiology, University of Hawai'i at Mānoa**
 Dissertation: The dynamics of planktonic fungi in the west Pacific & Utilization of invasive algal biomass for bioethanol production
 Advisor: Dr. David G. Wang
- 2008 **M.S. in Marine Biology, Third Institute of Oceanography, China**
 Thesis: Characterization of endosymbiont from deep sea hydrothermal vent tubeworm
 Advisor: Prof. Xun Xu (Member of Chinese Academy of Engineering)
- 2005 **B.S. in Biology, Xiamen University, China**

RESEARCH EXPERIENCE

Postdoctoral Research Associate, Texas A&M University, College Station, TX 77843

Advisor: Joshua S. Yuan, 2013.9-present

Metabolic engineering of Synechococcus elongatus for terpene hydrocarbon production

- Established highly efficient limonene-producing *S. elongatus* lines
- Created various *S. elongatus* mutants to manipulate terpene flux and redirect carbon flux
- Proteomics study on terpene pathway regulations in *S. elongatus*

Post-translational modification of proteins

- LC-MS/MS site specific modification detection

Research/Teaching Assistant, University of Hawai'i at Mānoa, Honolulu, HI 96822

Advisor: David G. Wang, 2009-2013

Utilization of biomass from invasive macroalgae for bioethanol production

- Explored treatment methods to maximize the algal biomass hydrolysis efficiency

Distribution and diversity of planktonic fungi in the west Pacific

- Large range sampling in the west Pacific warm pool
- Conducted microbial diversity and abundance analysis to explore the role of planktonic fungi in the biochemical cycle of the open ocean

Summer Intern, J. Craig Venter Institute, San Diego, CA

Advisor: Andrew E. Allen & Chris Dupont, 2011.5-2011.8

Nitrogen metabolism study in the pennate diatom Phaeodactylum tricornutum

CURRICULUM VITAE

- Constructed glutamine synthase II (GSII) deficient RNAi cell line in diatom *Phaeodactylum tricornutum*
- Constructed entry vector for *Phaeodactylum tricornutum* transformation
- Established method for chloroplast extraction from *Phaeodactylum tricornutum* cells

Research Assistant, Key Laboratory of Marine Biogenetic Resources, 3rd Institute of Oceanography, Xiamen, China

Advisor: Xun Xu, 2005-2007

Physiology of deep-sea tubeworm/symbionts, and functional genomics study of marine microbes

- Identified symbiotic ϵ -proteobacteria of a small hydrothermal vent tubeworm
- Constructed cosmid library using genomic DNA of tubeworm symbionts
- Cloned and characterized a thermostable superoxide dismutase from the thermophilic bacterium *Rhodothermus* sp. XMH10

PUBLICATIONS

1. Wang Z*, Kurra Y*, **Wang X***, Zeng Y, Lee YJ, Sharma V, Lin H, Dai SY & Liu WR. (2017) A versatile approach to site-specifically install lysine acylations in proteins. *Angew. Chem. Int. Ed.* doi:10.1002/anie.201611415 (*Co-first author).
2. **Wang X**, Liu W, Xin C, Zheng Y, Cheng Y, Sun S, Li R, Zhu XG, Dai SY, Rentzepis PM & Yuan JS. (2016) Enhanced limonene production in cyanobacteria reveals photosynthesis limitations. *Proc. Natl. Acad. Sci. U.S.A.* doi: 10.1073/pnas.1613340113.
3. Li R, Chen J, Cesario TC, **Wang X**, Yuan JS & Rentzepis PM. (2016) Synergistic reaction of silver nitrate, silver nanoparticles, and methylene blue against bacteria. *Proc. Natl. Acad. Sci. U.S.A.* 113(48):13612.
4. Wang Z*, Zeng Y*, Kurra Y*, **Wang X**, Tharp JM, Vatansever EC, Hsu WW, Dai SY, Fang X & Liu WR. (2016) A genetically encoded allysine for the synthesis of proteins with site-specific lysine dimethylation. *Angew. Chem. Int. Ed.* DOI: 10.1002/anie.201609452. (*Co-first author)
5. Li Q, **Wang X**, Liu X, Jiao N & Wang G. (2016) Diversity of parasitic fungi associated with phytoplankton in Hawaiian waters. *Mar. Biol. Res.* 12: 294.
6. **Wang X**, Ort DR & Yuan JS. (2015) Photosynthetic terpene hydrocarbon production for fuels and chemicals. *Plant Biotechnol. J.* 13(2): 137.
7. **Wang X**, Singh P, Gao Z, Zhang X, Johnson ZI & Wang G. (2014) Distribution and diversity of planktonic fungi in the west Pacific warm pool. *PLoS ONE* 9(7): e101523.
8. Li Q, **Wang X**, Liu X, Jiao N & Wang G. (2013) Abundance and novel lineages of Thraustochytrids in Hawaiian waters. *Microb. Ecol.* 66: 823
9. **Wang X**, Liu X, Kono S & Wang G. (2013) The ecological perspective of microbial communities in two pairs of competitive Hawaiian native and invasive macroalgae. *Microb. Ecol.* 65: 361.
10. Singh P, **Wang X**, Leng K & Wang G. (2012) Diversity and ecology of marine-derived fungi. In *Marine Fungi and Fungal like organisms*. (Eds. E.B. Gareth Jones and K.L. Pang) 383.
11. Wang G, **Wang X**, Liu X & Li Q. (2012) Diversity and biogeochemical function of planktonic

CURRICULUM VITAE

fungi in the ocean. In *Biology of Marine Fungi: Progress in Molecular and Subcellular Biology* 53:71.

12. **Wang X**, Liu X & Wang G. (2011) Two-stage hydrolysis of invasive algal feedstock for ethanol fermentation. *J. Integr. Plant Biol.* 53: 246.
13. Gao Z*, **Wang X***, Hannides AK, Sansone FJ & Wang G. (2011) Impact of redox-stratification on the diversity and distribution of bacterial communities in sandy reef sediments in a microcosm. *Chinese J. Oceanol. Limnol.* 29: 1209. (*Co-first author)
14. Wu C, **Wang X** & Shao Z. (2010) Diversity of oil-degrading bacteria isolated from the Indian Ocean sea surface. *Acta Microbiol. Sin.* 50: 1218.
15. **Wang X***, Yang H*, Ruan L, Liu X, Li F & Xu X. (2008) Cloning and characterization of a thermostable superoxide dismutase from the thermophilic bacterium *Rhodothermus* sp. XMH10. *J. Ind. Microbiol. Biotechnol.* 35:133. (*Co-first author)
16. Ruan L, Bian X, **Wang X**, Yan X, Li F & Xu X. (2008) Molecular characteristics of the tubeworm, *Ridgeia piscesae*, from the deep-sea hydrothermal vent. *Extremophiles* 12: 735.

TALKS AND POSTERS

- **2016 Plant Biology (American Society of Plant Biologists) (oral)** 2016
Austin, TX
Wang X, Liu W, Xin C, Zheng Y, Rentzepis P, Zhu XG, Dai SY, Yuan JS. Exploring a photosynthetic carbon sink to enhance limonene production in cyanobacteria
- **2015 Gordon Research Conference-Plant metabolic engineering: Harnessing Plant Metabolism for the Bio-Based Economy** 2015
Waterville Valley, NH
Zhao C, Kim Y, Zeng Y, **Wang X**, Dai SY, Yuan JS. Enhancing terpene yield by synthetic organelle to compartment storage with biosynthesis
- **2014 Gordon Research Conference-Photosynthesis: From Evolution of Fundamental Mechanisms to Radical Re-Engineering** 2014
West Dover, VT
Wang X, Zhao C, Xie S, Zhang Y, Huang K, Dai SY, Yuan JS. Evaluating terpene production as a 'non-native' photosynthate sink in cyanobacteria
- **The 4th International Conference on Algal Biomass, Biofuels & Bioproducts** 2014
Santa Fe, NM
Wang X, Xie S, Zhang Y, He Z, Zhao C, Syrenne RD, Dai SY, Yuan JS. Reverse engineering microalgae MEP genes for photosynthetic terpene production
- **Proceedings of Asian Mycological Congress 2013 and the 13th International Marine and Freshwater Mycology Symposium** 2013
Beijing, China
Wang X, Johnson Z, Liu X, Wang G. Distribution and diversity of planktonic fungi in the West Pacific
- **13th International Symposium on Microbial Ecology** 2010
Seattle, WA

CURRICULUM VITAE

Wang G, Li Q, **Wang X**, Johnson Z, and Jiao NZ. Functional ecology and novel diversity of Mycoplankton in the ocean.

TEACHING & MENTORING EXPERIENCE

Biotechnology for Biofuels and Bioproducts, Texas A&M University, guest lecturer, 2014/2015

Immunology (MICR461 lab), UH Manoa, Fall 2012

Molecular Cell Biology (BIOL275 lab), UH Manoa, Spring and Summer 2012

Introduction to Microbiology (MICR140 lab), UH Manoa, Fall 2010, 2011

Mentor of UH Manoa undergraduate research:

Tony Lam (currently a Ph.D. student in computational biology at Indiana University)

Roxanne Winfree

RESEARCH AND OTHER SUPPORT

Texas A&M AgriLife Research Bioenergy/Bioproducts Seed Grant (2016-2017)

Co-PI and lead scientist ~\$150,000

PROFESSIONAL ACTIVITY

Membership, Hawaii Branch of American Society for Microbiology (HBASM) 2011-2013

Invited Peer Reviewer for Journals:

ISME Journal • Applied Microbiology and Biotechnology • Microbial Biotechnology • Fuel • International Journal of Hydrogen Energy • Microbial Ecology • Fish and Shellfish Immunology • International Journal of Biological Macromolecules • Environmental Science and Pollution Research • Journal of Bioscience and Bioengineering • Journal of Marine Science and Engineering • Journal of Visualized Experiments • Journal of Venomous Animals and Toxins including Tropical Diseases