

Department: School of Biotechnology

Professional field: Biology

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Profile

Dr. Qin Liu received her PhD degree in Biochemical Engineering from East China University of Science and Technology (ECUST, Shanghai) in 2005, and appointed an Assistant Professor in the same year. Dr. Liu was promoted to Associate Professor in 2007, Full Professor in 2012, and Director of Shanghai E-Hua Biotechnology Institute in 2016. Dr. Liu also received the prestigious award “Excellent Young Scholars in China” in 2016.

Research Field

Dr. Liu's research interests have been using molecular, cellular, and genetic approaches to resolve the key virulence factors of marine pathogenic bacteria, such as *Edwardsiella tarda* and *Vibrio anguillarum*. Her lab elucidates the bacterial interactions with host inflammasome, MAPK pathway, NF- κ B pathway, intracellular membrane trafficking, and host endocytosis. They reported for the first time that pathogenic bacteria utilize a bacterial T6SS effector, EvpP to prevent host NLRP3 inflammasome signaling and evade host immune defenses (Cell host Microbe, 2017). In collaboration with Dr. Gabriel at the University of Michigan, she also identified the critical roles of pannixin 1 in noncanonical inflammasome activation (Immunity, 2015). Based on her data on bacterial virulence mechanism, Dr. Liu developed naturally avirulent and artificially attenuated live bacterial vaccines, as well as designing innovative multi-valence recombinant bacterial vaccines. Her works have led to the publications of more than 60 high impact papers in peer-reviewed journals.

Research results and selected published papers

1. Shouwen Chen#, Dahai Yang, Ying Wen, Zhiwei Jiang, Lingzhi Zhang, Jiatiao Jiang, Yaozhen Chen, Tianjian Hu, Qiyao Wang, Yuanxing Zhang, Qin Liu*. Hemolysin Liberates Bacterial Outer Membrane Vesicles for Cytosolic Lipopolysaccharide Sensing. PLoS Pathogens, 2018, 14(8): e1007240.
2. Dahai Yang#, Xin Zheng, Shouwen Chen, Zhuang Wang, Wenting Xu, Jinchao Tan, Tianjian Hu, Mingyu Hou, Wenhui Wang, Zhaoyan Gu, Qiyao Wang, Ruilin Zhang, Yuanxing Zhang, Qin Liu*. Innate sensing of cytosolic LPS through Casp2 pyrin domain mediates non-canonical inflammasome activation in zebrafish. Nature Communications, 2018, 9:3052.
3. Hao Chen#, Dahai Yang, Fajun Han, Jinchao Tan, Lingzhi Zhang, Jingfan Xiao, Yuanxing Zhang, Qin Liu*. The Bacterial T6SS Effector EvpP Prevents NLRP3 Inflammasome Activation by Inhibiting the Ca²⁺-Dependent MAPK-Jnk Pathway. Cell Host Microbe, 2017, 21(1): 47-58.
4. Dahai Yang#, Xiaohong Liu#, Wenting Xu, Zhaoyan Gu, Cuiting Yang, Lingzhi Zhang, Jinchao Tan, Xin Zheng, Zhuang Wang, Shu Quan, Yuanxing Zhang, Qin Liu*. The *Edwardsiella piscicida* thioredoxin-like protein inhibits ASK1-MAPKs signaling cascades to promote pathogenesis during infection. PLoS Pathogens 2019, 15(7): e1007917
5. Mingyu Hou#, Ran Chen, Dahai Yang, Gabriel Núñez, Zhuang Wang, Qiyao Wang, Yuanxing Zhang, Qin Liu*. Identification and functional characterization of EshH, a new effector of the type III secretion system of *Edwardsiella piscicida*. Cellular Microbiology 2017, 19(1): e12638.