

Chunyi Zhou, M.D., Ph.D.

University of Nebraska Medical Center

CURRENT POSITION

CPEP Clinical Microbiology Fellow

July 2023 – Present

University of Nebraska Medical Center, Omaha, NE

EDUCATION

Doctor of Philosophy in Microbiology

December 2019

University of Nebraska Medical Center

Omaha, NE

Bachelor of Medicine in Clinical Medicine (M.D. Equivalent)

July 2014

Xinxiang Medical University

Xinxiang, Henan, China

RESEARCH EXPERIENCE

Postdoctoral Fellow

February 2020 – June 2023

New York University Grossman School of Medicine, New York, NY

I studied community-associated methicillin-resistant *S. aureus* (CA-MRSA) gastrointestinal (GI) tract colonization mechanisms using comparative genomics and various mouse models. I led or involved in several projects, including:

- The determination and characterization of genes important for CA-MRSA GI tract colonization using experimental *in vivo* evolution.
- The evaluation of the contribution of gut microbiota to CA-MRSA colonization resistance.
- The identification of specific CA-MRSA toxins that enhance GI tract colonization.

- The generation of transposon libraries in a community-associated MRSA strain and a hospital-associated MRSA strain.
- The investigation of mechanisms of a sex bias in mouse susceptibility to CA-MRSA GI tract colonization.
- The collection and processing of bacterial and fungal clinical isolates for the NYU Antimicrobial-Resistant Pathogens Program.

Research Associate**September 2019 – January 2020**

University of Nebraska Medical Center, Omaha, NE

The continuation of my research project on acid response mechanisms in *S. aureus* was focused on lactic acid resistance mechanisms, which led to:

- The identification of the crucial role of lactate catabolism during *S. aureus* growth under lactic acid stress.
- The publication of a review paper on the acid response network of *S. aureus* in *Current Opinion in Microbiology*, 2020, with a graph featuring the issue cover.

Graduate Assistant/Ph.D. Candidate**August 2014 – August 2019**

University of Nebraska Medical Center, Omaha, NE

Using a combination of bacterial molecular cloning techniques, biomedical assays, and animal models, I investigated in multiple aspects of *S. aureus* metabolism and transcriptional regulation. Research highlights included:

- The characterization of the role of urease in *S. aureus* survival and virulence under acid stress. Published in *PLOS Pathogens*, 2019.
- The identification of *S. aureus* metabolism characteristics with an integrated computational and experimental study. Published in *NPJ Systems Biology and Applications*, 2020.
- The identification of transcriptional regulation of *icaADBC* by IcaR and TcaR in *Staphylococcus epidermidis*. Published in *Journal of Bacteriology*, 2019.

- The study and application of Nitrogen-Based NMR in bacterial metabolism study. Published in Analytical Chemistry, 2018.
- The whole genome sequencing of *S. aureus* JE2 and the comparison of different strains in virulence during systemic bacteremia. Manuscript in preparation.
- The characterization of the *in vitro* and *in vivo* function of *S. aureus* nickel transporters. Manuscript in preparation.

TEACHING EXPERIENCE

Instructor

Essentials of Staphylococcal Genetics Workshop, UNMC July 2019
I facilitated experimental demonstration and teaching at the workshop.

TRAINEES

- Lee Anna Lui, Summer Research Intern, UNMC June 2019 – August 2019
 - Now Medical Student, Albert Einstein School of Medicine
- Miranda Pawline, Research Associate, NYU Grossman School of Medicine March 2020 – January 2022
- Alannah Lejeune, PhD Student, NYU Grossman School of Medicine August 2020 – Present
- Sabrina Morales, Research Associate, NYU Grossman School of Medicine July 2022 – Present

HONORS AND AWARDS

- Selected Speaker, American Society for Microbiology General Meeting, Boston, MA June 2016
- Best Presentation by a Pathology and Microbiology Graduate Student at The Midwest Student Biomedical Research Forum, UNMC May 2017
- Travel Award and Selected Speaker, Wind River Conference on Prokaryotic Biology, Estes Park, CO June 2017

- UNMC Graduate Studies Research Assistantship and Fellowship
July 2018 - August 2019
- Moderator, International Conference on Gram-Positive Pathogens, Omaha, NE
October 2022

SOCIETIES

American Society for Microbiology 2016 - Present

PUBLICATIONS

- **Zhou C**, Fey PD. The acid response network of *Staphylococcus aureus*. Current Opinion in Microbiology. 2020;55, 67-73.
- **Zhou C**, Bhinderwala F, Lehman MK, Thomas VC, Chaudhari SS, Yamada KJ, et al. Urease is an essential component of the acid response network of *Staphylococcus aureus* and is required for a persistent murine kidney infection. PLOS Pathogens. 2019;15(1):e1007538.
- Bhinderwala F, Lonergan S, Woods J, **Zhou C**, Fey PD, Powers R. Expanding the coverage of the metabolome with nitrogen-Based NMR. Analytical chemistry. 2018;90(7):4521-8.
- Hoang T-M, **Zhou C**, Lindgren JK, Galac MR, Corey B, Endres JE, et al. Transcriptional regulation of icaADBC by both IcaR and TcaR in *Staphylococcus epidermidis*. Journal of Bacteriology. 2019:JB.00524-18.
- Islam MM, Thomas VC, Van Beek M, Ahn JS, Alqarzaee AA, **Zhou C**, Fey PD, Bayles KW, Saha R. An integrated computational and experimental study to elucidate *Staphylococcus aureus* metabolism. NPJ Systems Biology and Applications. 2020; 6(1), 1-13.
- Podkowik M, Perault A, Prutzel G, Pountain A, Kim J, Dumont A, Zwack E, Ulrich RJ, Karagounis T, **Zhou C**, Haag AF, et al. Quorum-sensing agr system of *Staphylococcus aureus* primes gene expression for protection from lethal oxidative stress. bioRxiv 2023.06.08.544038

CONFERENCES ATTENDED

Oral presentations

- Midwest Student Biomedical Research Forum, Omaha, NE March 2016
- American Society for Microbiology General Meeting, Boston, MA June 2016
- Center for Staphylococcal Research Work in Progress Meeting, Nebraska City, NE August 2016
- Midwest Student Biomedical Research Forum, Omaha, NE March 2017
- Wind River Conference on Prokaryotic Biology, Estes Park, CO June 2017

Poster presentations

- International Conference on Gram-Positive Pathogens, Omaha, NE
October 2016
- International Symposium on Staphylococci and Staphylococcal Infections, Copenhagen, Denmark
August 2018
- Midwest Microbial Pathogenesis Conference, Iowa City, IA September 2018
- International Conference on Gram-Positive Pathogens, Omaha, NE
October 2018
- Microbial Pathogenesis and Host Response Meeting, Cold Spring Harbor, NY
September 2019
- International Conference on Gram-Positive Pathogens, Omaha, NE
October 2022

Other

- NYC ASM Fall Meeting, New York, NY October 2022
- NYC ASM Spring Meeting, New York, NY June 2023