

MENGYANG ZHANG

Ph.D. Candidate

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PROFESSIONAL

- 2018-Present* Special Volunteer
National Institutes of Health
Laboratory of Host-Pathogen Dynamics, National Heart, Lung, and Blood Institute
- 2018-Present* Graduate Research Assistant
George Washington University
Department of Civil and Environmental Engineering

EDUCATION

- 2018-present* **George Washington University, USA**
Ph.D. in Environmental Engineering
• Advisor: Danmeng Shuai
- 2018-present* **National Institutes of Health, USA**
GPP graduate student in National Heart Lung and Blood Institute
• Advisor: Nihal Altan-Bonnet
- 2017* **Tsinghua University, P. R. China**
M.E. in Environmental Engineering
• Advisor: Xihui Zhang
- 2014* **Hunan University, P. R. China**
B.E. in Civil Engineering

RESEARCH INTERESTS

- **Emerging Pathogenic Unit of Vesicle-Cloaked Virus Clusters**
- **Persistence and Disinfection of Viruses in Environment:** Enteric viruses including rotavirus, norovirus, poliovirus. Respiratory virus including adenovirus, murine hepatitis virus and SARS-CoV-2.

HONORS AND AWARDS

Fellowship for Students and Junior Researchers (\$700), Fluids and Health Conference, 2019.

Second-class of Integrated Scholarship, Tsinghua University, P. R. China, 2016.

Third-class of Integrated Scholarship, Tsinghua University, P. R. China, 2015.

Bronze Prize of the Best Paper Award, The National Water Technological Innovation Exhibition for College & University Students, P. R. China, 2015.

Outstanding Graduates of Hunan Province (1%) and Hunan University (2%), Hunan University, P. R. China, 2014.

National Scholarship (2%), National Encouragement Scholarship (twice) (5%), Hunan University, P. R. China, 2011-2013.

REFEREED JOURNAL PUBLICATIONS

Published

4. **Zhang, M.**, Ghosh, S., Kumar, M., Santiana, M., Bleck, C. K. E., Chaimongkol, N., Altan-Bonnet, N.,* Shuai, D.* Emerging Pathogenic Unit of Vesicle-Cloaked Murine Norovirus Clusters is Resistant to Environmental Stresses and Disinfection. *Environmental Science & Technology* 2021, <https://doi.org/10.1021/acs.est.1c01763>
3. Kerviel, A., **Zhang, M.**, Altan-Bonnet, N.* A new infectious unit: extracellular vesicles carrying virus populations. *Annual Review of Cell and Developmental Biology* 2021, <https://doi.org/10.1146/annurev-cellbio-040621-032416>
2. Shen, H.,# Zhou, Z.,# Wang, H.,# **Zhang, M.**, Han, M., Durkin, D. P., Shuai, D.,* Shen, Y.* Development of Electrospun Nanofibrous Filters for Controlling Coronavirus Aerosols. *Environmental Science & Technology Letters* 2021, <https://doi.org/10.1021/acs.estlett.1c00337>.
1. Zhang, C., **Zhang, M.**, Li, Y.,* Shuai, D. Visible-light-driven photocatalytic disinfection of human adenovirus by a novel heterostructure of oxygen-doped graphitic carbon nitride and hydrothermal carbonation carbon. *Applied Catalysis B: Environmental* 2019, <https://doi.org/10.1016/j.apcatb.2019.02.009>

Submission

2. Ghosh, S., Kumar, M., Santiana, M., Mishra, A., **Zhang, M.**, Chibly, A.M., Nakamura, H., Tanaka, T., Parra, G., Henderson, W., Voss, O., Chiorini, J.A., Hoffman, P.M., Altan-Bonnet, N.* Enteric viruses replicate in salivary glands and transmit through saliva. Submitted to *Nature*.
1. Shen, H.,# Zhou, Z.,# Wang, H.,# **Zhang, M.**, Han, M., Shen, Y.,* Shuai, D.* Photosensitized Electrospun Nanofibrous Filters for Capturing and Killing Airborne Coronaviruses under Visible Light Irradiation. Under review *Environmental Science & Technology*.

Manuscript preparation

2. **Zhang, M.**, Ghosh, S., Santiana, M., Li, M., Altan-Bonnet, N.,* Shuai, D.* Vesicle-Cloaked Rotavirus Clusters are Environmentally Persistent in Natural Water and Wastewater and Resistant to Disinfection: an *In Vivo* Study.
1. **Zhang, M.**, Shen, Y., Altan-Bonnet, N.,* Shuai, D.* Social Life of Human Pathogenic Viruses in Complex Microbial Communities: Environmental Implication on Virus Infectivity, Persistence, and Disinfection.

CONFERENCE PRESENTATIONS

8. **Zhang, M.**, Ghosh, S., Kumar, M., Santiana, M., Bleck, C. K. E., Chaimongkol, N., Altan-Bonnet, N., Shuai, D. Emerging Pathogenic Unit of Vesicle-Cloaked Murine Norovirus Clusters is Resistant to Environmental Stresses and Disinfection, 10th Annual Meeting International Society for Extracellular Vesicles (ISEV) 2021, USA, 05/2021. ORAL
7. **Zhang, M.**, Ghosh, S., Kumar, M., Santiana, M., Chaimongkol, N., Altan-Bonnet, N., Shuai, D. Emerging Pathogenic Unit of Vesicle-Cloaked Murine Norovirus Clusters are Resistant to Environmental Stresses and Disinfection, American Chemical Society (ACS) spring 2021, USA, 04/2021. ORAL
6. **Zhang, M.**, Ghosh, S., Santiana, M., Altan-Bonnet, N., Shuai, D. Vesicle-Cloaked Virus Clusters as Emerging Waterborne Pathogens: Persistence in Water and Wastewater, Fluids and Health Conference, Corsica, France, 07/2019. ORAL

5. **Zhang, M.**, Ghosh, S., Kumar, M., Santiana, M., Chaimongkol, N., Altan-Bonnet, N., Shuai, D. Emerging Pathogenic Unit of Vesicle-Cloaked Murine Norovirus Clusters are Resistant to Environmental Stresses and Disinfection, 17th Annual NIH Graduate Student Research Symposium, USA, 02/2021. POSTER
4. **Zhang, M.**, Ghosh, S., Santiana, M., Altan-Bonnet, N., Shuai, D. Extracellular Vesicles Containing Virus Clusters are Persistent in Water System, 16th Annual NIH Graduate Student Research Symposium, MD, USA, 02/2020. POSTER
3. **Zhang, M.**, Ghosh, S., Santiana, M., Altan-Bonnet, N., Shuai, D. Extracellular Vesicles Containing Virus Clusters are Persistent in Water System, American Society for Exosomes and Microvesicles (ASEMV), Potomac, MD, USA, 06/2019. POSTER
2. **Zhang, M.**, Ghosh, S., Santiana, M., Altan-Bonnet, N., Shuai, D. Vesicle-Cloaked Virus Clusters as Emerging Waterborne Pathogens: Persistence in Water and Wastewater, Association of Environmental Engineering and Science Professors (AEESP) conference, Tempe, AZ, USA, 05/2019. POSTER
1. **Zhang, M.**, Zhang, Z., Fan, X., Zhang, X. An integrated process of in-situ ozonation and ceramic UF membrane for N-nitrosodimethylamine removal in drinking water treatment, The 5th International Water Association (IWA) Regional Conference on Membrane Technology, Kunming, China, 08/2016. POSTER

APPLICABLE SKILLS

- Highly experienced working with enteric viruses, coronavirus, and adenovirus *in vitro*
- Highly experienced working with enteric viruses *in vivo* (mice model)
- Highly experienced working with extracellular vesicles *in vitro* & *in vivo*
- TEM & Immuno-TEM for viruses/viral vesicles
- Quantification approaches for virus/protein titration: TCID₅₀, MPN, RT-qPCR, ddPCR, ICC-RT-qPCR, Western Blot, ELISA
- Immunofluorescence & confocal microscopy
- Nanoparticle tracking analysis
- Bioinformatics
- LC-MS/MS

PROFESSIONAL SERVICE

Journal reviewer

- Journal of Hazardous Materials
- Environmental Science & Technology

REFERENCES

Danmeng Shuai, Associate Professor

Department of Civil and Environmental Engineering

The George Washington University

202-994-0506, danmengshuai@gwu.edu

Nihal Altan-Bonnet, Senior Investigator

Head, Laboratory of Host-Pathogen Dynamics

National Heart Lung and Blood Institute

National Institutes of Health

301-435-0817, nihal.altan-bonnet@nih.gov

Yun Shen, Assistant Professor

Department of Chemical and Environmental Engineering

University of California, Riverside

217-898-1087, yun.shen@ucr.edu

Xihui Zhang, Professor

Graduate School at Shenzhen;

Tsinghua-UC Berkeley Shenzhen Institute

Tsinghua University

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