Stanford

Sheena Conforti

Postdoctoral Scholar, Civil and Environmental Engineering

Bio

BIO

Sheena Conforti is a Postdoctoral Scholar in the Department of Civil and Environmental Engineering at Stanford University, where her research focuses on wastewater-based epidemiology (WBE) to monitor infectious diseases at the population level. Her work integrates environmental and clinical data to better understand how pathogens and antimicrobial resistance spread across communities.

At Stanford, she contributes to WastewaterSCAN, whose mission is to leverage wastewater monitoring and advanced molecular tools to detect and track pathogens across populations. Within this framework, she studies the transmission dynamics of respiratory viruses as well as emerging and re-emerging pathogens, including dengue and HIV, with ongoing collaborations in South Africa. She also works closely with the Stanford Medicine Division of Infectious Diseases and Geographic Medicine to bridge clinical and environmental surveillance of antimicrobial resistance (AMR) within a One Health framework.

Prior to joining Stanford, she was a postdoctoral researcher at Eawag, the Swiss Federal Institute of Aquatic Science and Technology, where she worked on wastewater and drinking water surveillance of antimicrobial resistance.

PROFESSIONAL EDUCATION

- Bachelor of Science, University of Zurich (2017)
- Doctor of Science, ETH Zurich (2024)
- Master of Science, Universiteit Gent (2020)
- PhD, ETH Zurich, Department of Biosystems Science and Engineering , Antimicrobial resistance, molecular assays, genomics, and phylodynamics (2024)
- MSc, Ghent University (European interuniversity program) , International master of science in marine biological resources, applied ecology and conservation (2020)
- BSc, University of Zurich , Biology (2017)

STANFORD ADVISORS

- Alexandria Boehm, Postdoctoral Faculty Sponsor

COMMUNITY AND INTERNATIONAL WORK

- Wastewater surveillance of HIV in South Africa, South Africa
- Drinking water quality monitoring in Belize, Belize

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

My research focuses on wastewater-based epidemiology (WBE) as a tool for population-level surveillance of infectious diseases and antimicrobial resistance (AMR). At Stanford, I work within WastewaterSCAN to detect and monitor pathogens in wastewater using molecular and sequencing-based approaches. My work includes studying respiratory viruses and emerging and re-emerging pathogens such as dengue and HIV, with ongoing field collaborations in South Africa.

A key component of my research is integrating environmental surveillance with clinical datasets in collaboration with the Stanford Medicine Division of Infectious Diseases and Geographic Medicine. This work aims to bridge clinical and environmental AMR surveillance within a One Health framework and improve understanding of pathogen transmission across human populations.

Prior to Stanford, my work at Eawag focused on wastewater and drinking water surveillance of antimicrobial resistance. I combined culture-based methods and whole-genome sequencing to study transmission dynamics of resistant bacteria across environmental, clinical, livestock, and wildlife reservoirs. I also contributed to drinking water monitoring in low-resource settings using Escherichia coli as an indicator of fecal contamination, analyzing data from large-scale surveys such as UNICEF's Multiple Indicator Cluster Surveys (MICS), and developing scalable molecular tools for water quality assessment.

Publications

PUBLICATIONS

- **Enterovirus D68 in United States wastewater: a longitudinal surveillance study integrating climatic, demographic, and clinical data.** *Lancet regional health. Americas*
  Conforti, S., Zulli, A., Boehm, A. B.
  2026; 57: 101446
- **From clinics to sewers: leveraging environmental surveillance and whole genome sequencing to inform transmission of ESBL-Escherichia coli in Switzerland.** *Applied and environmental microbiology*
  Conforti, S., du Plessis, L., Bagutti, C., Becker, J., Brugger, S. D., Cusini, A., Egli, A., Gaia, V., Greub, G., Guler, C., Huisman, J. S., Kocher, C., Kouyos, et al
  2026: e0184825
- **Strengthening Policy Relevance of Wastewater-Based Surveillance for Antimicrobial Resistance.** *Environmental science & technology*
  Conforti, S., Pruden, A., Acosta, N., Anderson, C., Buergmann, H., Calabria De Araujo, J., Cristobal, J. R., Drigo, B., Ellison, C., Francis, Z., Frigon, D., Gaenzle, M., Vierheilig, et al
  2025; 59 (5): 2339-2343
- **Monitoring ESBL-Escherichia coli in Swiss wastewater between November 2021 and November 2022: insights into population carriage.** *mSphere*
  Conforti, S., Holschneider, A., Sylvestre, É., Julian, T. R.
  2024; 9 (5): e0076023
- **High-Throughput Multiplex Detection of Antibiotic-Resistant Genes and Virulence Factors in Escherichia coli Using Digital Multiplex Ligation Assay.** *The Journal of molecular diagnostics : JMD*
  Conforti, S., Rossi Orts, P., Tamminen, M., Julian, T. R.
  2025; 27 (6): 511-524
- **Monitoring an Emergent Pathogen at Low Incidence in Wastewater Using qPCR: Mpox in Switzerland.** *Food and environmental virology*
  Julian, T. R., Devaux, A. J., Brülisauer, L., Conforti, S., Rusch, J. C., Gan, C., Bagutti, C., Stadler, T., Kohn, T., Ort, C.
  2024; 16 (3): 269-279

- **Potential crypticity within two decapod (Crustacea) genera: Galathea Fabricius, 1793 and Eualus Thallwitz, 1891 suggested by integrative taxonomic approach** *MEDITERRANEAN MARINE SCIENCE*
  conforti, S., Costantini, F.
  2022; 23 (3): 499-+
- **Comparative effects of the parasiticide ivermectin on survival and reproduction of adult sepsid flies.** *Ecotoxicology and environmental safety*
  Conforti, S., Dietrich, J., Kuhn, T., Koppenhagen, N. v., Baur, J., Rohner, P. T., Blanckenhorn, W. U., Schäfer, M. A.
  2018; 163: 215-222