Project Summary

Funding Agency: U.S. Centers for Disease Control and Prevention (CDC) through the Southern Nevada Health District (SNHD)

Project Name: Southern Nevada Wastewater Surveillance Program for High-Risk and Underserved Populations

Project Partner: University of Nevada Las Vegas (PI: Dr. Edwin Oh)

Project Start/End Dates: 9/1/2021 – 5/31/2024

Journal Publications:

19. Harrington, A., Vo, V., Moshi, M., Chang, C., Baker, H., Ghani, N., Itorralba, J.Y., Papp, K., Gerrity, D., Moser, D., Oh, E., **2024**. Urban runoff surveillance at high-density sites for unsheltered homelessness leads to the identification of novel mutations in the SARS-CoV-2 spike gene. Environ. Sci. Technol. Letters. In press. https://doi.org/10.1021/acs.estlett.3c00938
18. Gerrity, D., Crank, K., Oh, E.C., Quinones, O., Trenholm, R.A., Vanderford, B.J., **2024**. Wastewater surveillance of illicit drugs in Southern Nevada: Sucralose normalization to translate data for potential public health action. Sci. Tot. Environ. 908, 168369. https://doi.org/10.1016/j.scitotenv.2023.168369
17. Crank, K., Papp, K., Barber, C., Wang, P., Bivins, A., Gerrity, D., **2023.** Correspondence to "The Environmental Microbiology Minimum Information (EMMI) Guidelines: qPCR and dPCR Quality and Reporting for Environmental Microbiology". Environ. Sci. Technol. 57(48), 20448-20449. https://doi.org/10.1021/acs.est.3c07968
16. Mehrotra, A., Munakata, N., Maal-Bared, R., Gerrity, D., Sabater, J., Bessler, S., **2023**. Comment: Wastewater-based surveillance does not belong in a regulatory framework designed to protect waters that receive treated wastewater. Int. J. Environ. Res. Public Health. 20, 6636. https://doi.org/10.3390/ijerph20176636.
15. Barber, C., Crank, K., Papp, K., Innes, G.K., Schmitz, B.W., Chavez, J., Rossi, A., Gerrity, D., **2023**. Community-scale wastewater surveillance of *Candida auris* during an ongoing outbreak in Southern Nevada. Environ. Sci. Technol. 57(4), 1755-1763. https://doi.org/10.1021/acs.est.2c07763.
14. Rossi, A., Chavez, J., Iverson, T., Hergert, J., Oakeson, K., LaCross, N., Njoku, C., Gorzalski, A., Gerrity, D., **2023**. Candida auris discovery through community wastewater surveillance during healthcare outbreak, Nevada, USA, 2022. Emerg. Infect. Dis. 29(2), 422-425. https://doi.org/10.3201/eid2902.221523.
13. Vo, V., Harrington, A., Afzal, S., Papp, K., Chang, C., Baker, H., Perseveranda, A., Buttery, E., Picker, M.A., Lockett, C., Gerrity, D., Kan, H., Oh, E.C., **2023**. Identification of a rare SARS-CoV-2 XL hybrid variant in wastewater and the subsequent discovery of two infected individuals in Nevada. Sci. Tot. Environ. 858, 160024. https://doi.org/10.1016/j.scitotenv.2022.160024.
12. Vo, V., Harrington, Chang, C., Baker, H., Moshi, M., Ghani, N., Itorralba, J.Y., Tillett, R.L., Dahlmann, E., Basazinew, N., Gu, R., Familara, T., Boss, S., Vanderford, F., Ghani, M., Tang, A., Matthews, A., Papp, K., Khan, E., Koutras, C., Kan, H., Lockett, C., Gerrity, D., Oh. E.C.,

2023. Identification and genome sequencing of an influenza H3N2 variant in wastewater from elementary schools during a surge of influenza A cases in Las Vegas, Nevada. Sci. Tot. Environ. 872, 162058. https://doi.org/10.1016/j.scitotenv.2023.162058.

11. Vo, V., Tillett, R.L., Papp, K., Chang, C., Harrington, A., Moshi, M., Oh. E.C., Gerrity, D., **2023**. Impact of tourism on wastewater-based epidemiology and detection of the SARS-CoV-2 Omicron BA.1 variant of concern in Las Vegas. JAMA Open Network. http://doi.org/10.1001/jamanetworkopen.2023.0550.
10. Ahmed, W., et al., **2022**. Minimizing errors in RT-PCR detection and quantification of SARS-CoV-2 RNA for wastewater surveillance. Sci. Tot. Environ. 805, 149877. https://doi.org/10.1016/j.scitotenv.2021.149877.
9. Gerrity, D., Papp, K., Pecson, B.M., **2022**. Pathogen peak 'averaging' in potable reuse systems: Lessons learned from wastewater surveillance of SARS-CoV-2. ACS ES&T Water. 2(11), 1863-1870. https://doi.org/10.1021/acsestwater.1c00378.
8. Harrington, A., Vo, V., Papp, K., Tillett, R.L., Chang, C., Baker, H., Shen, S., Amei, A., Lockett, C., Gerrity, D., Oh, E., **2022**. Urban monitoring of antimicrobial resistance during a COVID-19 surge through wastewater surveillance at a treatment plant and homeless shelter. Sci. Tot. Environ. 853, 158577. https://doi.org/10.1016/j.scitotenv.2022.158577.
7. Li, L., Mazurowski, L., Dewan, A., Carine, M., Haak, L., Guarin, T.C., Dastjerdi, N.G., Gerrity, D., Mentzer, C., Pagilla, K.R., **2022**. Longitudinal monitoring of SARS-CoV-2 in wastewater using viral genetic markers and the estimation of unconfirmed COVID-19 cases. Sci. Tot. Environ. 817, 152958. https://doi.org/10.1016/j.scitotenv.2022.152958.
6. Vo, V., Tillett, R. L., Papp, K., Shen, S., Gu, R., Gorzalski, A., Siao, D., Markland, R., Chang, C., Baker, H., Chen, J., Schiller, M., Betancourt, W. Q., Buttery, E., Pandori, M., Picker, M., Gerrity, D., Oh, E.C., **2022**. Use of wastewater surveillance for early detection of Alpha and Epsilon SARS-CoV-2 variants of concern and estimation of overall COVID-19 infection burden. Sci. Tot. Environ. 835, 155410. https://doi.org/10.1016/j.scitotenv.2022.155410.
5. Vo, V., Tillett, R.L., Chang, C., Gerrity, D., Betancourt, W.Q., Oh, E.C., **2022**. SARS-CoV-2 variant detection at a university dormitory using wastewater genomic tools. Sci. Tot. Environ. 805, 149930. https://doi.org/10.1016/j.scitotenv.2021.149930.
4. Gerrity, D., Papp, K., Stoker, M., Sims, A., Frehner, W., **2021**. Early-pandemic wastewater surveillance of SARS-CoV-2 in Southern Nevada: Methodology, occurrence, and incidence/prevalence considerations. Water Res. X 10, 100086. https://doi.org/10.1016/j.wroa.2020.100086.
3. McClary-Gutierrez, J.S., Mattioli, M.C., Marcenac, P., Silverman, A.I., Boehm, A.B., Bibby, K., Balliet, M., de los Reyes III, F.L., Gerrity, D., Griffith, J.F., Holden, P.A., Katehis, D., Kester, G., LaCross, N., Lipp, E.K., Meiman, J., Noble, R.T., Brossard, D., McLellan, S.L., **2021**. SARS-CoV-2 wastewater surveillance for public health action. Emerg. Infect. Dis. 27(9), e1-e9. https://doi.org/10.3201/eid2709.210753.
2. Bivins, A., et al., **2020**. Wastewater-based epidemiology: Global collaborative to maximize contributions in the fight against COVID-19. Environ. Sci. Technol. Viewpoint. https://doi.org/10.1021/acs.est.0c02388.

1. Pecson, B., Gerrity, D., Bibby, K., Drewes, J.E., Gerba, C., Gersberg, R., Gonzalez, R., Haas, C.N., Hamilton, K.A., Nelson, K.L., Olivieri, A., Rock, C., Rose, J., Sobsey, M., **2020**. Will SARS-CoV-2 reset public health requirements in the water industry? Integrating lessons of the past and emerging research. Environ. Sci. Water Res. Technol. Editorial Perspectives. https://doi.org/10.1039/D0EW90031A.

Podcasts:

3. Gerrity, D., Mack, B., Oh, E., Story, L., Zuelke, C., **2022**. AH HA! How the pandemic led to new insights for wastewater surveillance. Water Smarts Podcast. https://watersmarts.buzzsprout.com/1568941/10506941-ah-ha-how-the-pandemic-led-to-new-insights-for-wastewater-surveillance.
2. Gerrity, D., Mehrotra, A., **2022**. Sewer Signals Podcast. Water Environment Federation. https://nwbe.org/?page_id=465#episode-3.
1. Gerrity, D., Mack, B., Papp, K., Story, L., Zuelke, C., **2021**. Poops don't lie: Tracking a pandemic using wastewater. Water Smarts Podcast. https://watersmarts.buzzsprout.com/1568941/8125328-poops-don-t-lie-tracking-a-pandemic-using-wastewater.