

Medini K. Annavajhala, MS, PhD

Curriculum Vitae

Academic Appointments and Other Work Experience

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|-------------------|---|----------------|
| 06/2021 – Present | Infectious Diseases Division, Columbia University <i>Associate Research Scientist</i> | New York, NY |
| 12/2018 – 05/2021 | Infectious Diseases Division, Columbia University <i>Postdoctoral Research Fellow</i> | New York, NY |
| 06/2017 – 11/2018 | Infectious Diseases Division, Columbia University <i>Postdoctoral Research Scientist</i> | New York, NY |
| 08/2012 – 05/2017 | Dept. of Earth and Environ. Eng., Columbia University <i>Graduate Research Assistant</i> | New York, NY |
| 09/2016 – 12/2016 | Dept. of Earth and Environ. Eng., Columbia University <i>Teaching Assistant</i> | New York, NY |
| 08/2011 – 05/2012 | Dept. of Biological Sciences, Carnegie Mellon University <i>Teaching Assistant</i> | Pittsburgh, PA |
| 10/2010 – 05/2012 | Dept. of Chemistry, Carnegie Mellon University <i>Undergraduate Research Assistant</i> | Pittsburgh, PA |
| 06/2010 – 08/2010 | Proctor & Gamble, Home Care Research & Development <i>Products Research Intern</i> | Cincinnati, OH |

Education

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|-------------------|--|----------------|
| 08/2012 – 05/2017 | Columbia University, School of Engineering and Applied Sciences MS, May 2014; PhD, May 2017 <i>Sponsor: Dr. Kartik Chandran</i> <i>Thesis: "Meta-omics-derived structure, function, and activity of mixed microbial communities driving biological nutrient removal and recovery"</i> | New York, NY |
| 08/2008 – 12/2011 | Carnegie Mellon University, Mellon College of Science BS, December 2011 | Pittsburgh, PA |

Gaps in training (12/2011–5/2012): After early graduation, I was a Teaching Assistant for Experimental Biochemistry and continued research in the Collins Laboratory at Carnegie Mellon.

Professional Organizations and Societies

Memberships

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| 2019 – Present | Member, Association for Clinical and Translational Science (ACTS) |
| 2018 – Present | Member, American Society of Microbiology (ASM) |
| 2016 – Present | Member, American Association for the Advancement of Science (AAAS) |
| 2016 – Present | Member, Water Environment Federation (WEF) |
| 2016 – Present | Member, NY Water Environment Association (NYWEA) |

Ad hoc Reviewer

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| 2020, 2021, 2022 | <i>Antimicrobial Agents & Chemotherapy</i> |
| 2019 | <i>mSphere, Journal of Global Antimicrobial Resistance</i> |
| 2017 | <i>Environmental Science & Technology</i> |
| 2016 | <i>Chemical Engineering Journal</i> |

Fellowship and Grant Support

Current Support

NIH/NIAID K99AI163348-01A1 (PI: Annavajhala) 08/08/2022 – 07/31/2024
“Operationalizing wastewater-based surveillance of multidrug-resistant bacteria”
Total award amount (including indirect costs): \$251,300
Role: Principal Investigator

NIH/NIDA U01DA 053949-01 (MPI: Uhlemann, Chandran) 01/01/2021 – 12/31/2023
“Optimizing SARS-CoV-2 wastewater-based surveillance in urban + university campus settings.”
Total award amount (including indirect costs): \$2,448,262
Role: Co-Investigator

Past Support

CTSA/Irving Institute TRANSFORM TL1TR001875 (PI: Annavajhala) 12/01/2018 – 11/30/2020
“Microbial metagenomic pathways contributing to chronic inflammation in patients with HIV.”
Total direct cost: \$123,220
Role: Postdoctoral Fellow

Teaching Experience and Responsibilities

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|-------------------|---|----------------|
| 06/2017 – 06/2019 | Microbiome Working Group Research seminar series <i>Organized monthly educational conferences on topics of microbiome research at Columbia University Medical Center</i> | New York, NY |
| 09/2016 – 12/2016 | Dept. of Earth and Environ. Eng., Columbia University <i>Teaching Assistant, Aquatic Chemistry</i> | New York, NY |
| 01/2012 – 05/2012 | Dept. of Biological Sciences, Carnegie Mellon University <i>Teaching Assistant, Experimental Techniques in Molecular Biology</i> | Pittsburgh, PA |
| 09/2011 – 12/2011 | Dept. of Biological Sciences, Carnegie Mellon University <i>Teaching Assistant, Experimental Biochemistry</i> | Pittsburgh, PA |
| 08/2010 – 12/2010 | Dept. of Philosophy, Carnegie Mellon University <i>Teaching Assistant, Ethical Judgments in Professional Life</i> | Pittsburgh, PA |

Public Health Activities

- 04/2019 *Supervisory Scientist*, Blueprint Earth Mojave National Preserve, CA
- I was selected by the non-profit organization Blueprint Earth to serve as a Supervisory Scientist in Hydrology for a 5-day field expedition in the Mojave National Preserve. The mission of Blueprint Earth is to catalog unique ecosystems through a combination of atmospheric, geological, hydrological, zoological, and botanical testing in order to better understand complex systems-level interactions in the natural environment. In my role, I designed a protocol for sampling, culturing, and sequencing of bacteria in water sources around the study area. I helped supervise the 12 undergraduate and post-undergraduate students during the trip, helping provide them with hands-on experience in field research.*
- 05/2014 – 08/2015 *Water Programs Officer*, FACE Africa Rivercess, Liberia; New York, NY
- In my role on the Executive Board of the grassroots non-profit organization FACE Africa, I aided in the planning and implementation of clean drinking water and sanitation facilities in Rivercess County, Liberia through remote and in-person field work. My responsibilities included selection of project sites based on local public health need and engineering considerations; aiding in oversight of project implementation by local teams; management and reporting to governmental agencies and donors of up to \$100,000 grants; and setup of standardized monitoring & evaluation practices.*

Publications

A complete list of publications in My NCBI Bibliography can be found at:

<https://www.ncbi.nlm.nih.gov/myncbi/medini.annavajhala.1/bibliography/public/>

A. Original, Peer-Reviewed Research Publications

1. St. John A, Perault A, Giacometti S, Sommerfield A, DuMont A, Lacey K, Zheng X, Sproch J, Petzold C, Dancel-Manning K, Gonzalez S, Liang F-X, **Annavaajhala MK**, Beckford C, Zeitouni N, van Bakel H, Shopsin B, Uhlemann A-C, Pironti A, Torres V. Capsular polysaccharide is essential for the virulence of the antimicrobial-resistant pathogen *Enterobacter hormaechei*. *mBio* 2022. In Press.
2. Iketani S, Mohri H, Culbertson B, Hong SJ, Duan Y, Luck MI, **Annavaajhala MK**, Guo Y, Sheng Z, Uhlemann AC, Goff SP, Sabo Y, Yang H, Chavez A, Ho DD. Multiple pathways for SARS-CoV-2 resistance to nirmatrelvir. *Nature* 2022.
3. **Annavaajhala MK**, Kelly N, Geng W, Ferguson S, Giddins MJ, Grohs E, Hill-Ricciuti A, Green D, Saiman L, Uhlemann A-C. Genomic and epidemiological features of two dominant methicillin-susceptible *Staphylococcus aureus* clones from a neonatal intensive care unit surveillance effort. *mSphere* 2022; 7(6):e0040922. PMC9769867
4. Gomez-Simmonds A, **Annavaajhala MK**, Nunez MP, Macesic N, Park H, Uhlemann A-C. Intestinal dysbiosis and risk of posttransplant *Clostridioides difficile* infection in a longitudinal cohort of liver transplant recipients. *mSphere* 2022; 7(5):e0036122. PMC9599498
5. Bowen A, Zucker J, Shen Y, Huang S, Yan Q, **Annavaajhala MK**, Uhlemann A-C, Kuhn L,

- Sobieszczyk M, Castor D. Reduction in risk of death among patients admitted with COVID-19 between first and second epidemic waves in New York City. *Open Forum Infect. Dis.* 2022; 9(9):ofac436. PMC9452151
6. Liu L, Meyers K, Purpura LJ, Nguyen N, Mohri H, Chang JY, **Annavajhala MK**, Lopez III L, Lee SW, Shah J, Lane B Cantos A, Tukur SA, Guo Y, Ford K, Chiu Y-T, Sheng Z, Choesang T, Castor D, Wang M, Pili C, Van Joy MN, Wallach A, Horton J, Chen Z, Rosenthal S, McLaren S, Jiang B, Wang F, Lu HH, Uhlemann A-C, Ho DD, Yin MT. Development and performance of a point-of-care rapid antigen test for detection of SARS-CoV-2 variants. *J. Clin. Virol. Plus.* 2022; 2(3):100080. PMC9067019
 7. Rodino KG, Peaper DR, Kelly BJ, Bushman F, Marques A, Adhikari H, Tu ZJ, Marrero Rolon R, Westblade LF, Green DA, Berry GJ, Wu F, **Annavajhala MK**, Uhlemann A-C, Parikh BA, McMillen T, Jani K, Babady NE, Hahn AM, Koch RT, Grubaugh ND, Yale SARS-CoV-2 Genomic Surveillance Initiative, Rhoads DD. Partial ORF1ab Gene Target Failure with Omicron BA.2.12.1. *J. Clin. Microbiol.* 2022; e00600-22. PMC9199403
 8. Gomez-Simmonds A, **Annavajhala MK**, Tang N, Rozenberg FD, Ahmad M, Park H, Lopatkin AJ, Uhlemann A-C. Population structure of *bla*_{KPC}-harbouring IncN plasmids at a New York City medical center and evidence for multi-species horizontal transmission. *J. Antimicrob. Chemother.* 2022; 77(7):1873-1882. PMC9633718.
 9. Wong Fok Lung T, Charytonowicz D, Beaumont KG, Shah SS, Sridhar SH, Gorrie CL, Mu A, Hofstaedter CE, Varisco D, McConville TH, Drikic M, Fowler B, Urso A, Shi W, Fucich D, **Annavajhala MK**, Khan IN, Oussenko I, Francoeur N, Smith ML, Stockwell BR, Lewis IA, Hachani A, Baskota SU, Uhlemann A-C, Ahn D, Ernst RK, Howden BP, Sebra R, Prince A. *Klebsiella pneumoniae* induces host metabolic stress that promotes tolerance to pulmonary infection. *Cell Metab.* 2022; 34(5):761-774. PMC9081115
 10. Miller EH*, **Annavajhala MK***, Chong AM, Park H, Nobel YR, Soroush A, Blackett JW, Krigel A, Phipps MM, Freedberg DE, Zucker J, Sano ED, Uhlemann A-C, Abrams JA. Oral Microbiome Alterations and SARS-CoV-2 Saliva Viral Load in Patients with COVID-19. *Microbiol. Spectr.* 2021; 9(2):e0005521. PMC8515944 *contributed equally
 11. Rubin LG, Beachy J, Matz T, Balamohan A, Jendresky L, Zembera J, **Annavajhala MK**, Uhlemann A-C. Prolonged outbreak of clonal, mupirocin-resistant methicillin-resistant *Staphylococcus aureus* in a neonatal intensive care unit: association with personnel and a possible environmental reservoir, analyzed using whole genome sequencing. *Am. J. Infect. Control* 2021; 50(6):680-685.
 12. **Annavajhala MK***, Mohri H*, Wang P, Nair M, Zucker JE, Sheng Z, Gomez-Simmonds A, Kelley AL, Tagliavia M, Bedford T, Ho DD, Uhlemann A-C. Emergence and expansion of SARS-CoV-2 B.1.526 after identification in New York. *Nature* 2021; 597(7878):703-708. PMC8481122 *contributed equally
 13. Purpura LJ, Chang M, **Annavajhala MK**, Mohri H, Liu L, Shah J, Cantos A, Medrano N, Laracy J, Scully B, Miko BA, Pereira MR, Tsuji M, Ho DD, Uhlemann A-C, Yin MT. Prolonged severe acute respiratory syndrome coronavirus 2 persistence, attenuated immunologic response, and viral evolution in a solid organ transplant patient. *Am. J. Transplant.* 2022; 22(2):649-653. PMC8813887
 14. Grohs E, Hill-Ricciuti A, Kelly N, Messina M, Green DA, Geng W, **Annavajhala MK**, Zachariah P, Mathema B, Uhlemann A-C, Saiman L. *Spa* typing of *Staphylococcus aureus* in a neonatal intensive care unit during routine surveillance. *J. Pediatric Infect. Dis. Soc.* 2021; 10(7):766-773. PMC8370566

15. Ahn D, Bhushan G, McConville TH, **Annavaiah MK**, Soni RK, Wong Fok Lung T, Hofstaedter CE, Shah SS, Chong AM, Castano VG, Ernst RK, Uhlemann A-C, Prince A. An acquired acyltransferase promotes *Klebsiella pneumoniae* ST258 respiratory infection. *Cell Rep.* 2021; 35(9): 109196. PMC8283688
16. Tomlinson KL, Wong Fok Lung T, Dach F, **Annavaiah MK**, Gabryszewski SJ, Groves RA, Drikic M, Francoeur NJ, Sridhar SH, Smith ML, Khanal S, Britto CJ, Sebra R, Lewis I, Uhlemann A-C, Kahl BC, Prince AS, Riquelme SA. *Staphylococcus aureus* induces an itaconate-dominated immunometabolic response that drives biofilm formation. *Nat. Commun.* 2021; 12(1): 1399. PMC7930111
17. **Annavaiah MK**, May M, Compres G, Freedberg DE, Graham R, Korem T, Stump S, Uhlemann A-C, Abrams JA. Relationship of the Esophageal Microbiome and Tissue Gene Expression and Links to the Oral Microbiome: A Randomized Clinical Trial. *Clin. Transl. Gastroenterol.* 2020; 11(12): e00235. PMC7721221
18. Kuo SZ, Dettmer K, **Annavaiah MK**, Chong DH, Uhlemann A-C, Abrams JA, Oefner PJ, Freedberg DE. Associations between urinary 3-indoxyl sulfate, a gut microbiome-derived biomarker, and patient outcomes after intensive care unit admission. *J. Crit. Care* 2021; 63:15-21. PMC8084995
19. Miller EH, Zucker J, Castor D, **Annavaiah MK**, Sepulveda JL, Green DA, Whittier S, Scherer M, Medrano N, Sobieszczyk ME, Yin MT, Kuhn L, Uhlemann A-C. Pre-test symptom duration and cycle threshold values for SARS-CoV-2 reverse transcription-PCR (RT-PCR) predict COVID-19 mortality. *Open Forum Infect. Dis.* 2021; 8(2):ofab003. PMC7798567
20. Agrawal S, Weissbrodt DG, **Annavaiah MK**, Jensen MM, Carvajal Arroyo JM, Wells G, Chandran K, Vlaeminck SE, Terada A, Smets BF, Lackner S. Time to act – assessing variations in qPCR analyses in biological nitrogen removal with examples from partial nitrification/anammox systems. *Water Res.* 2021; 190:116604. PMID: 33279744
21. Gomez-Simmonds A, **Annavaiah MK**, McConville T, Dietz D, Shoucri S, Laracy J, Rozenberg F, Nelson B, Greendyke W, Furuya EY, Whittier Susan, Uhlemann A-C. Carbapenemase-producing Enterobacterales causing secondary infections during the COVID-19 crisis at a New York City hospital. *J. Antimicrob. Chemother.* 2021; 76(2):380-384. PMC7717307
22. McConville TH, **Annavaiah MK**, Giddins MJ, Macesic N, Herrera CM, Rozenberg FD, Bhushan GL, Ahn D, Mancia F, Trent MS, Uhlemann A-C. CrrB positively regulates high-level polymyxin-resistance and virulence in *Klebsiella pneumoniae*. *Cell Rep.* 2020; 33(4):108313. PMC7656232
23. Kundu S, Shen L, Somasundar Y, **Annavaiah MK**, Ryabov A, Collins T. TAML- and Buffer-Catalyzed Oxidation of Picric Acid by H₂O₂: Products, Kinetics, DFT and the Mechanism of the Dual Catalysis. *Inorg. Chem.* 2020; 59(18):13223-13232. PMID: 32878435
24. Papapanou PN, Park H, Cheng B, Kokaras A, Paster B, Burkett S, Watson CW-M, **Annavaiah MK**, Uhlemann A-C, Noble JM. Subgingival microbiome and clinical periodontal status in an elderly cohort: The WHICAP ancillary study of oral health. *J. Periodontol.* 2020; 91(S1):S56-S67. PMC8324315
25. **Annavaiah MK**, Khan SD, Sullivan SB, Shah J, Pass L, Kister K, Kunen H, Chiang V, Monnot G, Ricupero CT, Mazur R, Gordon P, de Jong A, Wadhwa S, Yin MT, Demmer RT, Uhlemann A-C. Oral and gut microbial diversity and immune regulation in patients with HIV on antiretroviral therapy. *mSphere* 2020; 5(1):e00798-19. PMC7002309

26. **Annavajhala MK**, Gomez-Simmonds A, Macesic N, Sullivan SB, Kress A, Khan SD, Giddins MJ, Stump S, Kim GI, Narain R, Verna EC, Uhlemann A-C. Colonizing multidrug-resistant bacteria and the longitudinal evolution of the intestinal microbiome after liver transplantation. *Nat. Commun.* 2019; 10(1):4715. PMC6797753
27. LaCarpia F, Wojczyk B, **Annavajhala MK**, Rebbaa A, Culp-Hill R, D'Alessandro A, Freedberg D, Uhlemann A-C, Hod E. Transfusional iron overload and intravenous iron infusions modify the mouse gut microbiota similarly to dietary iron. *NPJ Biofilms Microbiomes* 2019; 5(1):26. PMC6760189
28. Macesic N, Nelson B, McConville TH, Giddins MJ, Green DA, Stump S, Gomez-Simmonds A, **Annavajhala MK**, Uhlemann A-C. Emergence of polymyxin resistance in clinical *Klebsiella pneumoniae* through diverse genetic adaptations: a genomic, retrospective cohort study. *Clin. Inf. Dis.* 2020; 70(10):2084-2091. PMC7201408
29. Macesic N, Khan S, Giddins MJ, Freedberg D, Whittier S, Green D, Furuya EY, Verna EC, **Annavajhala MK**, Gomez-Simmonds A, Uhlemann A-C. *Escherichia coli* harboring *mcr-1* in a cluster of liver transplant recipients: detection through active surveillance and whole genome sequencing. *Antimicrob. Agents Chemother.* 2019; 63(6):e02680-18. PMC6535534
30. Gabryszewski SJ, Wong Fok Lung T, **Annavajhala MK**, Tomlinson KL, Riquelme SA, Khan IN, Noguera LP, Wickersham M, Zhao A, Mulenios AM, Peaper D, Koff JL, Uhlemann AC, Prince A. Metabolic adaptation supports persistent methicillin-resistant *Staphylococcus aureus* pulmonary infection. *Am. J. Respir. Cell Mol. Biol.* 2019; 61(2):185-197. PMC6670030
31. Brotto AC*, **Annavajhala MK***, Chandran K. Metatranscriptomic investigation of adaptation in NO and N₂O production from a lab-scale nitrification process upon repeated exposure to anoxic-aerobic cycling. *Front. Microbiol.* 2018; 9:3012. PMC6291752 *contributed equally
32. **Annavajhala MK**, Kapoor V, Santo-Domingo J, Chandran K. Structural and functional interrogation of selected biological nitrogen removal systems in the United States, Denmark, and Singapore using shotgun metagenomics. *Front. Microbiol.* 2018; 9:2544. PMC6212598
33. Gomez-Simmonds A, Stump S, Giddins MJ, **Annavajhala MK**, Uhlemann AC. Clonal background, resistance gene profile, and porin gene mutations modulate *in vitro* susceptibility to imipenem/relebactam in diverse Enterobacteriaceae. *Antimicrob. Agents Chemother.* 2018; 62(8):e00573-18. PMC6105792
34. Freedberg DE, Zhou MJ, Cohen ME, **Annavajhala MK**, Khan S, Moscoso DI, Brooks C, Whittier S, Chong DH, Uhlemann AC, Abrams JA. Pathogen colonization of the gastrointestinal microbiome at intensive care unit admission and risk for subsequent death or infection. *Intensive Care Med.* 2018; 44(8):1203-1211. PMC6309661
35. Gomez-Simmonds A*, **Annavajhala MK***, Wang Z*, Macesic N, Hu Yue, Giddins MJ, O'Malley A, Toussaint NC, Whittier S, Torres VJ, Uhlemann A-C. Genomic and geographic context for the evolution of high-risk carbapenem-resistant *Enterobacter cloacae* complex clones ST171 and ST78. *mBio* 2018; 9(3):e00542-18. PMC5974468 *contributed equally
36. **Annavajhala MK**, Kapoor V, Santo-Domingo J, Chandran K. Comammox Functionality Identified in Diverse Engineered Biological Wastewater Treatment Systems. *Environ. Sci. Technol. Lett.* 2018; 5(2):110-116. PMC6650159
37. Giddins MJ, Macesic N, **Annavajhala MK**, Stump S, Khan S, McConville TH, Gomez-Simmonds A, Uhlemann A-C. Successive emergence of ceftazidime-avibactam resistance through distinct genomic adaptations in *bla*_{KPC-2}-harboring *Klebsiella pneumoniae* ST307.

Antimicrob. Agents Chemother. 2018; 62(3):e02101-17. PMC5826117

38. Kundu S, **Annavaiah MK**, Kurnikov IV, Ryabov AD, Collins TJ. Experimental and Theoretical Evidence for Multiple FeIV Reactive Intermediates in TAML Activator Catalysis: Rationalizing a Counterintuitive Reactivity Order. *Chem. Eur. J.* 2012; 18(33):10244-10249. PMID: 22829473

B. Case Reports

1. DiFranza LT, **Annavaiah MK**, Uhlemann A-C, Green D. The Brief Case: A Maggot Mystery: *Ignatzschineria* larvae sepsis secondary to an infested wound. *J Clin Microbiol* 2020; 59(3):e02279-20. PMC8106707

C. Pre-prints

1. Bowen A, Zucker J, Shen Y, Huang S, Yan Q, **Annavaiah MK**, Uhlemann A-C, Kuhn L, Sobieszczyk M, Castor D. Reduction in risk of death among patients admitted with COVID-19 between first and second epidemic waves in New York City. *medRxiv* 2022. PMC8978950
2. Park M-R, **Annavaiah MK**, Chandran K. Meta-azotomics of engineered wastewater treatment processes reveals differential contributions of established and novel models of N-cycling. *bioRxiv* 2020. <https://doi.org/10.1101/2020.08.25.229054>

D. Reviews

1. **Annavaiah MK**, Gomez-Simmonds A, Uhlemann A-C. Multidrug-Resistant Enterobacter cloacae Complex Emerging as a Global, Diversifying Threat. *Front. Microbiol.* 2019; 10:44. PMC6365427

E. Oral Presentations

1. **Annavaiah MK**, Park H, Gomez-Simmonds A, Macesic N, Khan SD, Rozenberg FD, Giddins MJ, Stump S, Uhlemann A-C. Gut microbiome signatures associated with colonization by high-risk multidrug-resistant *Klebsiella pneumoniae* and *Escherichia coli* clones after liver transplantation. ASM Microbe 2020 ***Moved online due to COVID-19**
2. **Annavaiah MK**, Shah J, Weidler J, Kister K, Demmer RT, Wadhwa S, Yin MT, Uhlemann A-C. Periodontal disease and the oral microbiome in antiretroviral-treated patients with HIV. ACTS 2020 ***Conference cancelled due to COVID-19**
3. **Annavaiah MK**, Gomez-Simmonds A, Macesic N, Sullivan SB, Khan SD, Giddins MJ, Stump S, Verna EC, Uhlemann A-C. Microbial signatures of colonization by multidrug-resistant organisms (MDRO) in liver transplant recipients. ASM Microbe 2019; San Francisco, CA.
4. Verna E, **Annavaiah MK**, Nenad M, Brown R, Sullivan S, Korakani G, Giddins M, Khan S, Gomez-Simmonds A, Uhlemann A-C. Intestinal Microbiome Diversity is Associated with Liver Disease Etiology and Predicts Post-Liver Transplant Mortality. ATC 2018; Seattle, WA.
5. Zhou MJ, Cohen ME, **Annavaiah MK**, Moscoso D, Brooks C, Whittier S, Chong DH, Uhlemann A-C, Abrams JA, Freedberg DE. Gastrointestinal Bacterial Pathogen Colonization and Risk for Subsequent Infection in the Intensive Care Unit. DDW 2018; Washington, D.C.
6. Verna EC, Macesic N, **Annavaiah MK**, Giddins MJ, Stump S, Brown RS, Gomez-

Simmonds A, Uhlemann A-C. Dynamic adaptations of intestinal microbiota after liver transplantation. AASLD 2017; Washington, D.C.

7. **Annavaiah MK**, Kapoor V, Santo-Domingo J, Chandran K. Comammox functionality is ubiquitous in engineered biological wastewater treatment systems. WEFTEC 2017; Chicago, IL. * *Conference Featured Presentation/Speaker*
8. **Annavaiah MK**, Fanyin-Martin A, Taher E, Elk M, Kapoor V, Santo-Domingo J, Chandran K. Metagenomics of Anaerobic Food Waste Fermentation. WEFTEC 2017; Chicago, IL.
9. Park MR, **Annavaiah MK**, Park H, Chandran K. Nationwide survey of microbial structure, function and metabolic pathways driven by wastewater treatment plant operating conditions and designs revealed using metagenomic and metatranscriptomic approaches. WEFTEC 2017; Chicago, IL.
10. **Annavaiah MK**, Li Z, Chandran K. Metagenomics of a Mainstream Biofilm-Based Deammonification Process with and without Bioaugmentation from a Sidestream Deammonification System. AEESP Late-Breaking Session, WEFTEC 2016; New Orleans, LA.
11. Brotto AC, **Annavaiah MK**, Chandran K. Effect of Long-Term Anoxic-Aerobic Cycling on Nitrous Oxide Emissions through a Combined Metagenomics and Metatranscriptomics Approach. WEF/IWA Nutrient Removal & Recovery 2016; Denver, CO.

F. Poster Presentations

1. Baldwin-Hunter BL, Rozenberg FD, **Annavaiah MK**, Park H, Dimango E, Keating C, Uhlemann A-C, Abrams JA. Alterations in gut microbiome in adults with cystic fibrosis associate with presence of colon adenomas and short chain fatty acid levels. AGA 2021
2. Gomez-Simmonds A, **Annavaiah MK**, McConville TH, Dietz DE, Shoucri SM, Laracy JC, Nelson B, Whittier S, Uhlemann A-C. Cluster of carbapenemase-producing Enterobacterales secondary infections during the COVID-19 crisis at a New York City hospital. IDWeek 2020
3. Rubin, LG, Beachy J, Uhlemann, A-C, **Annavaiah MK**, Balamohan A, Jendresky L. Prolonged Outbreak of Clonal, Mupirocin-resistant Methicillin-resistant Staphylococcus aureus (MRSA) in a Neonatal Intensive Care Unit (NICU): association with Personnel and Possible Environmental Reservoir, analyzed using Whole Genome Sequencing (WGS). PAS 2020.
4. Ahn D, Bhushan G, McConville TH, **Annavaiah MK**, Uhlemann A-C, Prince AS. Enhanced bioenergetics by a novel acyltransferase promotes persistence of carbapenem-resistant K. pneumoniae in the airway. AJRCCM 2020.
5. Wong T, Shi W, Urso A, **Annavaiah MK**, Uhlemann A-C, Prince AS. Carbapenemase-producing *Klebsiella pneumoniae* ST258 activates the T6SS in response to the host metabolite itaconate to promote bacterial adaptation to the lung. AJRCCM 2020.
6. Yoo K, **Annavaiah MK**, Kapoor V, Santo-Domingo J, Chandran, K. Mining antibiotic resistance genes and potential human pathogens in biological nitrogen removal processes nationwide using shot-gun metagenomic analysis. WEFTEC 2019; Chicago, IL.
7. **Annavaiah MK**, Gomez-Simmonds A, Macesic N, Sullivan SB, Kress A, Khan SD, Giddins MJ, Stump S, Verna EC, Uhlemann A-C. Drug Class-Specific Relationship between Antibiotic Exposure and the Gut Microbiota in a High-Risk Liver Transplant Cohort. ASM Microbe 2019; San Francisco, CA. * *Selected for Outstanding Abstract Award and Rapid-*

Fire Poster Talk

8. Rojas R, Macesic N, Tolari G, Guzman A, **Annavajhala MK**, Uhlemann A-C. Emergence of diverse carbapenem-resistant Enterobacteriaceae (CRE) in the Dominican Republic. ID Week 2018; San Francisco, CA.
9. **Annavajhala MK**, Saidu R, Tergas A, Kuhn L, Denny L, Uhlemann AC. Distinct cervical microbial diversity and community structure by human papilloma-virus and cervical disease status in HIV-positive women in South Africa. Microbiome in HIV 2018; Rockville, MD.
10. **Annavajhala MK**, Geng W, Hill-Ricciuti A, Ferguson S, Stump S, Giddins MJ, Messina M, Zachariah P, Green D, Whittier S, Saiman L, Uhlemann AC. Hybrid Sequencing and Assembly Reveals Genomic Diversity of Methicillin-susceptible *Staphylococcus aureus* (MSSA) from a Neonatal Intensive Care Unit (NICU) Surveillance Effort. ASM Rapid Applied Microbial Next Generation Sequencing and Bioinformatic Pipelines 2018; Tysons, VA.
11. May M, **Annavajhala MK**, Compres G, Freedberg DE, Graham R, Uhlemann AC, Abrams JA. A Randomized Controlled Trial to Assess the Effects of an Antimicrobial Mouthwash on the Oral and Esophageal Microbiome. DDW 2018; Washington, DC.

G. Thesis

1. **Annavajhala MK**. Meta-omics-derived structure, function, and activity of mixed microbial communities driving biological nutrient removal and recovery. Columbia University, New York, NY, 2017.

Invited Presentations

A. Seminars

1. "Activism in the STEM Workplace." BioMediGirls Annual Advocacy Summit 2020; online.
2. "The Human Microbiome: Health, Illness, and Prevention." Bloomingdale Aging in Place, 2019; New York, NY.
3. "Genomics of methicillin-susceptible *Staphylococcus aureus* (MSSA) from a neonatal intensive care unit (NICU)." Pediatric Infectious Diseases Division Conference Rounds, Columbia University Medical Center, 2019; New York, NY.
4. "Microbiome 101." Microbiome Working Group Seminar Series, Columbia University Medical Center, 2017; New York, NY.
5. "Using Molecular Techniques and Next-Generation Sequencing to Understand and Optimize Wastewater Treatment Processes." Hot Topics in Water and Wastewater, NJAES Office of Continuing Professional Education, Rutgers University, 2015; Belvedere, NJ.
6. "Meta-Omics of the Engineered Water Cycle." Ion Torrent World Tour, 2015; New York, NY.

Trainings and Workshops

Exposome Bootcamp, Columbia University Mailman School of Public Health, July 2020

Machine Learning Bootcamp, Columbia University Mailman School of Public Health, June 2019

Introduction to Python, Foundations for Research Computing, Columbia University, August 2019