

Medini K. Annavajhala, MS, PhD

Curriculum Vitae

Academic Appointments and Other Work Experience

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

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.

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| 2019 | Biotech without Borders Workshop Instructor | New York, NY |
| | <i>“Genomics in the human body: host genetics and the gut microbiome”: Created and taught a 2.5-hour workshop open to the public at the community biotech lab, covering whole-exome data analysis to identify potentially pathogenic variants and metagenomics of the gut microbiome.</i> | |
| 2009 – 2011 | AmeriCorps Scholar in Service | Pittsburgh, PA |
| | <i>Selected as the Community Service Intern at Carnegie Mellon University through AmeriCorps. I networked with local non-profit organizations and organized targeted local service experiences for all campus student groups.</i> | |
| 2010 – 2012 | Biology Outreach Programs | Pittsburgh, PA |
| | <i>Introduced local high school students to biology laboratory practices through the Carnegie Mellon University Department of Biological Sciences.</i> | |

Professional Organizations and Societies

Memberships

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

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

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 Pittsburgh, PA
Teaching Assistant, Ethical Judgments in Professional Life

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. Liu L, Meyers K, Purpura LJ, Nguyen N, Mohri H, Chang JY, **Annavaiah 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
2. 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, **Annavaiah 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
3. Gomez-Simmonds A, **Annavaiah 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; dkac114.

4. Lung TW, 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, **Annavaiah 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
5. Miller EH*, **Annavaiah 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
6. Rubin LG, Beachy J, Matz T, Balamohan A, Jendresky L, Zembera J, **Annavaiah 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.
7. **Annavaiah 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
8. Purpura LJ, Chang M, **Annavaiah 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
9. Grohs E, Hill-Ricciuti A, Kelly N, Messina M, Green DA, Geng W, **Annavaiah 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
10. 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
11. 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
12. **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
13. 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

14. Miller EH, Zucker J, Castor D, **Annavajhala 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
15. Agrawal S, Weissbrodt DG, **Annavajhala 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
16. Gomez-Simmonds A, **Annavajhala 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
17. McConville TH, **Annavajhala MK**, Giddins MJ, Macesic N, Herrera CM, Rozenberg FD, Bhushan GL, Ahn D, Mancina 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
18. Kundu S, Shen L, Somasundar Y, **Annavajhala 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
19. Papapanou PN, Park H, Cheng B, Kokaras A, Paster B, Burkett S, Watson CW-M, **Annavajhala 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
20. **Annavajhala 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
21. **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
22. 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
23. 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
24. 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
25. Gabryszewski SJ, Wong Fok Lung T, **Annavaiah MK**, Tomlinson KL, Riquelme SA, Khan IN, Noguera LP, Wickersham M, Zhao A, Mulenos 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
 26. Brotto AC*, **Annavaiah 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
 27. **Annavaiah 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
 28. Gomez-Simmonds A, Stump S, Giddins MJ, **Annavaiah 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
 29. Freedberg DE, Zhou MJ, Cohen ME, **Annavaiah 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
 30. Gomez-Simmonds A*, **Annavaiah 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
 31. **Annavaiah 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
 32. Giddins MJ, Macesic N, **Annavaiah 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
 33. 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.

2. Park M-R, **Annavajhala 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. **Annavajhala 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. **Annavajhala 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. **Annavajhala 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. **Annavajhala 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, **Annavajhala 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, **Annavajhala MK**, Moscosco 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, **Annavajhala 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. **Annavajhala 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. **Annavajhala 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, **Annavajhala 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. **Annavajhala 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, **Annavaiahala 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, **Annavaiahala 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, **Annavaiahala 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, **Annavaiahala 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, **Annavaiahala 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, **Annavaiahala 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, **Annavaiahala 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. **Annavaiahala 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, **Annavaiahala MK**, Uhlemann A-C. Emergence of diverse carbapenem-resistant Enterobacteriaceae (CRE) in the Dominican Republic. ID Week 2018; San Francisco, CA.
9. **Annavaiahala 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. **Annavaiahala 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, **Annavaiahala 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