

SUSAN K. DE LONG

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I. EDUCATION

- 9/02-8/09 The University of Texas at Austin
Ph.D. Civil (Environmental) Engineering (August 2009)
M.S.E. Environmental and Water Resources Engineering (August 2005)
- 9/95-5/99 University of California at Berkeley
B.A. Molecular and Cell Biology, B.A. Environmental Science (May 1999)

II. APPOINTMENTS

- 7/18-present Associate Professor
Colorado State University; Fort Collins, Colorado
Department of Civil and Environmental Engineering, School of Biomedical Engineering
(joint since 2013), Department of Chemical and Biological Engineering (joint since 2017)
- 8/09-7/18* Assistant Professor
Colorado State University; Fort Collins, Colorado
Department of Civil and Environmental Engineering, School of Biomedical Engineering
joint since 2013, Department of Chemical and Biological Engineering joint since 2017
*3 clock stops
- 9/02-8/09 National Science Foundation Graduate Research Fellow and Graduate Research Assistant
Advisors: Professors Kerry A. Kinney, Ph.D. and Mary Jo Kirisits, Ph.D.
The University of Texas at Austin
Department of Civil, Architectural and Environmental Engineering
- 9/08-5/09 Teaching Assistant: Environmental Microbiology
The University of Texas at Austin
Department of Civil, Architectural, and Environmental Engineering
- 7/01-6/02 Research Associate III
Chiron Corporation, Emeryville, California
- 6/99 to 7/01 Laboratory Technician
University of California at Berkeley
Department of Molecular and Cell Biology
- 1/97-5/97 Undergraduate Student Instructor: Biology Laboratory
University of California at Berkeley

III. FUNDED RESEARCH

Externally-Funded Projects as PI (\$2.19M TOTAL)

1. De Long, S.K. (PI), "A Review of Molecular Biology Tools for Wastewater Treatment for the Oil and Gas Industry: Current Methods and a Vision for Future Possibilities", Sponsored by PERF, \$50,000 (6/1/2022 – 8/30/2022)

2. De Long, S.K. (PI), "Characterizing microbiomes associated with emerging contaminant impacts and attenuation", Sponsored by Jacobs Consulting, \$150,000 (Jan 2022 – Dec 2023).
3. De Long, S.K. (PI), Wilusz, C. (PI), Snow, C. (PI), Wilson, B. (Co-PI), Mizia, J., Cordery, Susanne, "Transformative pandemic response infrastructure: an integrated device for automated wastewater sampling and simultaneous molecular capture of infectious agents", Sponsored by Anschutz Foundation, \$200,000 (Sept 2021 – Aug 2023). **This is a multi-PI project; De Long, Wilusz, and Snow contribute equally to this project.*
4. De Long, S. K. (PI), Chan, S. H. J. (CoPI), Reardon, K. F. (coPI), Quinn, J. C. (CoPI), Chan, J. J. (CoPI), "Electro-Enhanced Conversion of Wet Waste to Products Beyond Methane," Sponsored by DOE-US Department of Energy, \$239,000 to De Long. (November 1, 2019 - October 31, 2024).
5. De Long, S.K. (PI), Wilusz, C. (PI), Arabi, M. (Co-PI) "COVID-19: Wastewater Testing for State of Colorado", Sponsored by the Colorado Department of Public Health and Environment, \$490,000 (July 30, 2020 – Sept 30, 2021). **This is a multi-PI project; De Long and Wilusz contributed equally to this project.*
6. De Long, S. K. (PI), "Review of Detection and Quantification for SARs-CoV-2 in Wastewater," Sponsored by Chevron Corporation, \$1,882.31. (October 15, 2020 - December 31, 2020).
7. De Long, S.K. (PI), Prenni, J., Sharp, J., "FASt biomarker development: metagenomic-enabled rapid development of multiple biomarkers for TORc biodegradation through Functional gene Amplicon Sequencing tests", Sponsored by the National Science Foundation, \$330,000. (Aug 1, 2020 – July 31, 2023)
8. De Long, S. K. (PI), Sale, T. C. (Co-PI), "Microbial Analysis of Sugar Creek Cryocore and NSZD Rate Determination," Sponsored by Remediation Management Services Company, Domestic Commercial, \$50,000.00. (October 24, 2018 - April 30, 2019).
9. (Oct 2018 – June 2019) Food Waste to Bioplastics Precursors via Genetic Engineering of Waste Conversion Microbiomes, Reardon, K.F. (Co-PI), Chou, K (Co-PI), Colorado Energy Research Collaboratory, \$50,000.
10. (Sept 17 – Mar 18). Cryogenic Coring at Sugar Creek. Sale, T. (Co-PI). BP, \$50,000.
11. (Jan 2017 – Jan 2019) Bioelectrochemical Production of Graphene Oxide, Henry, C.S. (Co-PI), BEGO Advanced Materials Technologies, \$86,086.
12. (July 2017 - Sept 2017) Microbial Characterizations at the Holly Site, CGRS, \$24,267.
13. (July 2016 - Dec 2016) Microbial Characterizations at Carlos Conoco Site, CGRS, \$15,215.
14. (June 2016 - Sept 2016) Initial Microbial Characterizations at Former Heart's Jiffy Stop Site, CGRS, \$5,000.
15. (Aug 2016 – Dec 2016) Bioelectrochemical Production of Graphene Oxide, BEGO Advanced Materials Technologies, \$30,000.
16. (Sept 2014-Aug 2018) Developing a Novel Metatranscriptomic Approach for Identifying Biomarkers Directly from Mixed Microbial Communities, National Science Foundation, \$278,467.

17. (July 2013 – June 2015) Advancing Multi-stage Anaerobic Digestion Technologies through Improved Hydrolysis Processes, Sharvelle, S.E. (Co-PI), Environmental Research and Education Foundation, \$118,272.
18. (Jan 2014 – Dec 2014) Optimizing Biogas Production from Organic Waste through RNA/DNA-molecular Testing, California Energy Commission: Energy Innovations Small Grant (EISG) Program, Summers, M. (PI at Summers Consulting), Williams, D. (Co-PI), Yazdani, R. (Co-PI) \$18,821 to De Long (\$95,000 total).
19. (April 2011) Molecular Biology Tools for Hydrocarbon Remediation. University Consortium for Field-Focused Groundwater Contamination Research. \$41,519.

Externally-Funded Projects as Co-PI (\$11.4 M TOTAL)

1. Karp, E.M. (NREL PI), Sharvelle, S. (CSU PI), De Long, S.K. (co-PI), Sanchez, V. (Co-PI), Vardon, D. (Co-PI), “ReSOURCE: The Carbon Negative Biorefinery of the Future” Sponsored by ARPA-E, \$3.5M, \$1.5 M to CSU (Oct 2022 – Sept 2025).
2. De Long, S.K. (CoPI), Wilusz, C. (PI) “COVID-19: Wastewater Testing for State of Colorado”, Sponsored by the Colorado Department of Public Health and Environment, \$1,000,000 (August 1, 2021 – Sept 30, 2023).
3. Prenni, Jessica E (PI), Wilkins, Michael J (Co-PI), De Long, Susan K (Co-PI), Wrighton, Kelly C (Co-PI), Broeckling, Corey D (Co-PI), MRI: Acquisition of an ultrahigh resolution mass spectrometry system to enable metaproteomics experiments to support microbiome research. Sponsored by the National Science Foundation. \$1,167,240.
4. Wilusz, C. J. (PI), De Long, S. K. (CoPI), "COVID-19: Wastewater Testing for Larimer County," Sponsored by Larimer County, State of Colorado Local Government, \$62,272. (October 26, 2020 - October 25, 2021).
5. Chan, S. H. J. (CoPI), Reardon, K. F. (PI), Quinn, J. C. (CoPI), Chan, J. J. (CoPI), De Long, S. K. (CoPI), "Electro-Enhanced Conversion of Wet Waste to Products Beyond Methane," Sponsored by DOE-US Department of Energy, \$3,817,536.12. (November 1, 2019 - October 31, 2024). *De Long PI for \$239K.*
6. Scalia IV, J. (CoPI), Sale, T. C. (PI), De Long, S. K. (CoPI), Scalia IV, J. (CoPI), "Advancing NSZD and OBB Remedies," Sponsored by Chevron Corporation, \$225,000.00. (February 1, 2019 - January 31, 2020).
7. Blotevogel, J. (PI), De Long, S. K. (CoPI), Sale, T. C. (CoPI), "Bioelectrochemical Perchlorate Reduction Treatability Study," Sponsored by Ramboll, \$249,999.98. (April 1, 2018 - December 31, 2018).
8. Blotevogel, J. (CoPI), Ronayne, M. J., De Long, S. K. (CoPI), Sale, T. C. (PI), "Chevron 2018 TDI Proposal," Sponsored by Chevron Corporation, Domestic Commercial, \$200,000.00. (January 1, 2018 - March 31, 2019).
9. Ronayne, M. J., De Long, S. K. (CoPI), Sale, T. C. (PI), "TDI NSZD Remedies, Sediments, and Heavy Hydrocarbon Soils.," Sponsored by Chevron Corporation, Domestic Commercial, \$200,000.00. (January 1, 2017 - March 31, 2019).

10. (Sept 2018 – June 2019) Multi-Omics Analysis of Advanced Anaerobic Digestion Processes for Production of High-Value Biofuels, Reardon, K.F. (Co- PI), Sharvelle, S. (PI), Decker, S. (Co-PI), Colorado Energy Research Collaboratory, \$49,950.
11. (August 2016 – July 19) Evaluating the Impacts of WASSTRIP and Centrate through a Struvite Crystallization Phosphorus Recovery Process on Kruger’s AnitaMox Process for Deammonification, Carlson, K.H. (PI), Denver Metro Water Reclamation District, \$58,000 (Service Contract).
12. (Aug 2016 – July 19) Analyzing Anammox Bacterial Populations. Carlson, K.H. (PI), Greeley Water Reclamation Facility, \$10,000 (Service Contract).
13. (Jan 2013 – Jan 2017) Technology Development Initiative 2016: Natural Source Zone Depletion (NSZD), Long-Term Monitoring, and Sheens/ Sediments, Sale, T.C. (PI), Chevron Corporation, \$800,000.
14. (Jan 2013-Mar 2015) 2013 Technology Development Initiative: LNAPL Critical Processes, Zimbron, J.A. (PI), Sale, T.C. (Co-PI), Chevron Corporation, \$225,000.
15. (Jan 2013-Mar 2015) 2013 Technology Development Initiative: LNAPL Critical Processes, Sale, T.C. (PI), Zimbron, J.A. (Co-PI), Chevron Corporation, \$100,000.
16. (August 2011 – July 2012) Determine the Biological Efficacy of Graywater Reuse, Roesner, L.A. (PI), Sharvelle, S.E. (Co-PI), Colorado State University Research Foundation (CSURF), \$54,056.

Internally-Funded Awards (\$1.14M TOTAL)

1. (August 2021- May 2022) CSU COVID Wastewater testing. **De Long, S.K. (PI)**, Wilusz, Carol (Co-PI), \$303,423.
2. (June 2021- August 2021) CSU COVID Wastewater testing. **De Long, S.K. (PI)**, Wilusz, Carol (Co-PI), \$97,090.
3. (June 2020- May 2021) CSU COVID Wastewater testing. **De Long, S.K. (PI)**, Wilusz, Carol (Co-PI), \$321,501.
4. (July 2020- June 2023) Enabling Recovery of High Value Products from Manure: Advanced Anaerobic Digestion at Low pH, **De Long, S.K. (PI)**, Sharvelle, S.E. (Co-PI), Ippolito, Jim (Co-PI) Agriculture Experiment Station, \$90,000.
5. (July 2017 – May 2017) Biotreatment of Pharmaceuticals and Personal Care Products during Water Treatment for Reuse: Ensuring Human Safety at the Food-Water Nexus, **De Long, S.K. (PI)**, Rossmassler, K. (Co-PI), Corey Broeckling, C.D. (Co-PI), and Prenni, J. (Co-PI), CSU Water Center Research Team, \$24,680.
6. (Jan 2017-Aug 2017) Development of a Techno-economic Analysis of Alternatives for Rewiring Anaerobic Digestion, **De Long, S.K. (PI)**, Quinn, J. (Co-PI), Energy Institute, \$2,500.
7. (July 2016 – May 2017) Implementing Intensive Writing in Civil and Environmental Engineering, **De Long, S.K. (PI)**, Atadero, R. A. (Co-PI), Provost's Office, \$21,400.

8. (July 2017- June 2020) Rewiring Anaerobic Digestion: Developing New Technologies for Production of Biofuel Intermediates and High-Value Chemicals from Cellulosic Wastes, **De Long, S.K. (PI)**, Sharvelle, S.E. (Co-PI), Peebles, C.A. (Co-PI), Agriculture Experiment Station, \$90,000.
9. (July 2015 - June 2017) Anaerobic Digestion with Aerobic Composting: Removal of Emerging Contaminants from Animal Wastes and Reuse Water, **De Long, S.K. (PI)**, Sharvelle, S.E. (Co-PI), Agriculture Experiment Station, \$60,000.
10. (July 2012 - June 2015) Development of Low Water-Usage Co-digestion Processes for Economical Bioenergy Generation from Agricultural and Municipal Wastes in Colorado, **De Long, S.K. (PI)**, Sharvelle, S.E. (Co-PI), Agriculture Experiment Station, \$85,000.
11. (July 2011 - June 2012) Optimization of Low Water Usage Hydrolysis Processes for Bioenergy Generation from Agricultural Waste Materials in Arid Regions, **De Long, S.K. (PI)**, Sharvelle, S.E. (Co-PI), Agriculture Experiment Station, \$30,000.
12. (July 2011 – May 2012) Food, Energy and Waste Global Challenges Research Team, **De Long, S.K. (PI)**, Bradley, T.H. (Co-PI), Colorado State University School of Global and Environmental Sustainability, \$15,000.

IV. HONORS AND AWARDS

- 2022 Oliver P. Pennock Distinguished Service Award, Colorado State University
- 2021 Faculty Award for Excellence in Service, Civil & Environmental Eng, Colorado State University
- 2019 Faculty Award for Excellence in Service, Civil & Environmental Eng, Colorado State University
- 2007 American Society of Microbiology 107th General Meeting Student Travel Grant recipient
- 2006 Environmental Research and Education Foundation Scholarship
- 2006 The University of Texas at Austin Continuing Fellowship
- 2003 National Science Foundation Graduate Research Fellowship
- 2002 Thrust Fellowship (The University of Texas at Austin)
- 1999 Sigma Xi Research Scholarship (University of California at Berkeley)

V. SYNERGISTIC ACTIVITIES

- 7/15-present Microbiomes Systems Network Co-Founder and Network Steering Committee Member (Colorado State University)
- 9/15-present Member of the University Consortium for Field-Focused Groundwater Contamination Research
- Collaborating with industry partners to develop site characterizations and remediation technologies.
 - Participation in bi-annual research and focus meetings
- 3/14, 5/14 Invited Short Course Presenter, Environmental Research and Education Foundation: Anaerobic Digestion Applications for Municipal Solid Waste Part I & II
- 1/15-present Creator and Developer for WiSER: Writing in Science and Engineering to Publish Research
- Developed an online graduate level writing course/resources (available on Canvas) focused on preparation of journal articles.
 - Course includes 14 video recorded lectures, reading and writing assignments, and other writing resources
- 9/09-12/14 Faculty participant of Alliances for Graduate Education and the Professoriate (AGEP)

- Recruiting underrepresented minority graduate students into the department of Civil and Environmental Engineering with the goal of increasing the number of minority students that ultimately become professors.

9/09-9/10 Faculty participant in Women In Science Devoted to Outreach and Mentoring (WISDOM)

- Mentoring middle-school aged girls to encourage these students to pursue careers in math, science and engineering.

1/04-5/08 Mentor for undergraduate engineering students (UT Austin): Graduate Students Linked with Undergraduates in Engineering (GLUE) Program

- Supervised and mentored 4 female undergraduate students completing laboratory research projects to expose students to academic research.

VI. PROFESSIONAL ACTIVITIES, MEMBERSHIP, AND REGISTRATION

Associate Editor for Biodegradation (2019 – present)

Referee for: *Science, Environmental Science and Technology, Microbial Ecology, Environmental Microbiology and Environmental Microbiology Reports, Journal of Environmental Engineering, Chemosphere, ISME, Biodegradation, Environmental Engineering Science, Journal of the Air and Waste Management Association, Water Research, Waste Management*

2008 Engineer in Training (E.I.T.), Texas
 2008-present Water Environment Federation
 2007-present Association of Environmental Engineering and Science Professors
 2006-present American Water Works Association
 2006-present Air and Waste Management Association
 2005-present American Chemical Society
 2003-present American Society of Microbiology
 1999-present Sigma Xi

VII. PEER-REVIEWED PUBLICATIONS

*Graduate students, post docs advised are underlined. Undergraduate researchers advised marked with *. Graduate students I served as a committee member for marked with **.*

1. Rossmassler K, Challacombe JF, **De Long, S.K.**. Pulling needles out of a haystack: Subtractive Community Metatranscriptomics retrieves anaerobic o-xylene degradation pathway genes out of a mixed microbial culture. *J Microbiol Methods*. 2022 Jun; 197:106481. doi: 10.1016/j.mimet.2022.106481.
2. O.K. Bojan, M. Irianni-Renno, A.J. Hanson, H. Chen, R.B. Young, **S.K. De Long**, T. Borch, T.C. Sale, A.M. McKenna, J. Blotvogel, Discovery of Oxygenated Hydrocarbon Biodegradation Products at a Late-Stage Petroleum Release Site, *Energy & Fuels* 35(20) (2021) 16713-16723.
3. M. Irianni-Renno, T.C. Sale, **S.K. De Long**, Advanced methods for RNA recovery from petroleum impacted soils, *MethodsX* 8 (2021).
4. S. Harris-Lovett, K.L. Nelson, P. Beamer, H.N. Bischel, A. Bivins, A. Bruder, C. Butler, T.D. Camenisch, **S.K. De Long**, S. Karthikeyan, D.A. Larsen, K. Meierdiercks, P.J. Mouser, S. Pagsuyoin, S.M. Prasek, T.S. Radniecki, J.L. Ram, D.K. Roper, H. Safford, S.P. Sherchan, W. Shuster, T. Stalder, R.T. Wheeler, K.S. Korfmacher, Wastewater Surveillance for SARS-CoV-2 on College Campuses: Initial Efforts, Lessons Learned, and Research Needs, *International Journal of Environmental Research and Public Health* 18(9) (2021).

5. J.L. Baker, S.K. Venayagamoorthy, **S.K. De Long**, Random packing material in disinfection contactors: Effects on baffling and energy loss, *AWWA Water Science* 3(4) (2021) e1231.
6. Rico, J. L., Reardon, K. F., **De Long, S. K.** (2021) Inoculum microbiome composition impacts fatty acid product profile from cellulosic feedstock. *Bioresource Technology* 323,124532. doi.org/10.1016/j.biortech.2020.124532
7. Baker, J.L., **De Long, S.K.**, Venayagamoorthy, S.K. (2020) Random packing material in disinfection contactors: Effects of final drinking water quality. *AWWA Water Science*. doi:10.1002/aws2.1187
8. Rossmassler, K., Snow, C. D., Taggart, D., Brown, C., **De Long, S. K.** (2019) Advancing biomarkers for anaerobic o-xylene biodegradation via metagenomic analysis of a methanogenic consortium. *Applied Microbiology and Biotechnology* 103:4177-4192. doi:10.1007/s00253-019-09762-7
9. Rossmassler, K., Kim, S., Broeckling, C. D., Galloway, S., Prenni, J. E., **De Long, S. K.** (2019) Impact of primary carbon sources on microbiome shaping and biotransformation of pharmaceuticals and personal care products. *Biodegradation*. 30(2), 127-145. 10.1007/s10532-019-09871-0
10. Reyes, V.C., Tseng, N., Gedalanga, P.B., Van Nostrand, J.D., Keely, S.P., **De Long, S.K.**, Zhou, J., Mahendra, S. (2018) Differential sensitivity of wetland derived nitrogen cycling microorganisms to copper nanoparticles. *ACS Sustainable Chem. Eng.* **6**(9): 11642-11652. doi: 10.1021/acssuschemeng.8b01868
11. Yazdani, R., Shim, K., Chen, Z., Cheung, C., Summers, M., Williams, D. Seiser, R., **De Long, S.K.** (2018) Ambient temperature co-digestion of low-solids municipal and industrial waste mixtures: Insights from molecular analyses. *J. Air & Waste Manag. Assoc.* **21**:1-11. doi: 10.1080/10962247.2018.1479667.
12. Chignell J.F., **De Long S.K.**, Reardon K.F. (2018). Meta-proteomic analysis of protein expression distinctive to electricity-generating biofilm communities in air-cathode microbial fuel cells. *Biotechnology for Biofuels* **11**. doi:10.1186/s13068-018-1111-2.
13. Kim, S., Rossmassler, K., Broeckling, C.D., *Galloway, S., Prenni, J. and **De Long, S.K.** (2017) Impact of inoculum sources on biotransformation of pharmaceuticals and personal care products. *Water Res.***125**: 227-236.
14. Chignell, J.F., Park, S., Lacerda, C.M.R., **De Long, S.K.**, Reardon, K.F. (2017) Label-free proteomics of a defined, binary co-culture reveals diversity of competitive responses between members of a model soil microbial system. *Microbial Ecol.* **75**:701-719. doi: 10.1007/s00248-017-1072-1.
15. Wilson, L.P., Sharvelle, S.E., **De Long, S.K.** 2016. Enhanced anaerobic digestion performance via combined solids- and leachate-based hydrolysis reactor inoculation. *Bioresour. Technol.*, **220**, 94-103.
16. Ekeren, K.M., Hodgson, B., Sharvelle, S.E., **De Long, S.K.** (2016) Investigation of pathogen disinfection and regrowth in a simple graywater recycling system for toilet flushing. *Desal. Water Treat.* **57**(54), 26174-26186.
17. Irianni-Renno, M., Akhbari, D., Olson, M.R.**., Byrne, A.P., Lefevre, E., Zimbron, J., Lyverse, M., Sale, T.C., **De Long, S.K.** (2016) Comparison of bacterial and archaeal communities in depth-resolved zones in an LNAPL body. *Appl. Microbiol. Biotechnol.* **100**(7):3347-60.
18. Keely, S.P., Brinkman, N.E., Zimmerman, B.D., Wendell, D., Ekeren, K.M., **De Long, S.K.**, Sharvelle, S., Garland, J.L. (2015) Characterization of the relative importance of human- and infrastructure-associated bacteria in grey water: a case study. *J. Appl. Microbiol.* **119**, 289-301.

19. Zeman, N.R., Irianni Renno, M., Olson, M.R.***, Wilson, L.P., Sale, T.C., **De Long, S.K.** (2014) Temperature impacts on anaerobic biotransformation of LNAPL and concurrent shifts in microbial community structure. *Biodegradation*. **25**, 569-585.
20. Wilson, L.P., Loetscher, L.H.***, Sharvelle, S.E., **De Long, S.K.** (2013) Microbial community acclimation enhances waste hydrolysis rates under elevated ammonia and salinity conditions. *Bioresour. Technol.* **146**, 15-22.
21. Lefèvre, E., Pereyra, L.P., Hiibel, S.R., Perrault, E.M., **De Long, S.K.**, Reardon, K.F., Pruden, A. (2013) Molecular assessment of the sensitivity of sulfate-reducing microbial communities remediating mine drainage to aerobic stress. *Water Res.* **47**, 5316-25.
22. Ledeker, B.M., **De Long, S.K.** (2013) The effect of multiple primer-template mismatches on quantitative PCR accuracy and development of a multi-primer set assay for accurate quantification of *pcrA* sequence variants. *J. Microbiol. Methods.* **3**, 224-31.
23. **De Long, S.K.**, Li, X., Bae, S., Brown, J.C., Raskin, L., Kinney, K.A., Kirisits, M.J. (2012) Quantification of genes and gene transcripts for microbial perchlorate reduction in fixed-bed bioreactors. *J. Appl. Microbiol.* **112**, 579-592.
24. London, M.R., **De Long, S.K.**, Strahota, M.D., Katz, L.E. and Speitel, G.E. (2011) Autohydrogenotrophic perchlorate reduction kinetics of a microbial consortium in the presence and absence of nitrate. *Water Res* **45**, 6593-6601.
25. Fagerstone, K.D.***, Quinn, J.C., Bradley, T.H., **De Long, S.K.**, Marchese, A.J. (2011) Quantification of direct nitrous oxide emissions from microalgae cultivation. *Environ. Sci. Technol.* **45**, 9449-9456.
26. **De Long, S.K.**, Kinney, K.A., Kirisits, M.J. (2010) qPCR assays to quantify genes and gene expression associated with microbial perchlorate reduction. *J. Microbiol. Methods* **83**, 270-4.
27. Starkey, M., Hickman, J. H., Ma, L. Y., Zhang, N., **De Long, S.**, Hinz, A., Palacios, S., Manoil, C., Kirisits, M.J., Starner, T. D. , Wozniak, D. J. , Harwood, C. S. and Parsek, M. R. (2009) *Pseudomonas aeruginosa* rugose small-colony variants have adaptations that likely promote persistence in the cystic fibrosis lung. *J. Bacteriol.* 191:3492-3503.
28. **De Long, S.K.**, Kinney, K.A., Kirisits, M.J. (2008) A targeted method to sequence prokaryotic biodegradation genes: prokaryotic SSH PCR cDNA subtraction. *Appl. Environ. Microbiol.* **74**(1):225-232.
29. Teitzel, G.M., Geddie, A., **De Long, S.K.**, Kirisits, M.J., Whiteley, M., Parsek, M.R. (2006) Survival and growth in the presence of elevated copper: transcriptional profiling of copper-stressed *Pseudomonas aeruginosa*. *J. Bacteriol.* **188**(20):7242-7256.
30. Fanton, C.P., Rowe, M.W., Moler, E.J, Ison-Dugenny, M., **De Long, S.K.**, Rendahl, K., Shao, Y., Slabiak, T., Gesner, T.G., MacKichan, M.L. (2006) Development of a screening assay for surrogate markers of Chk1 inhibitor-induced cell cycle release. *J. Biomol. Screen.* **11**(7):792-806.
31. Holmes, L.E., Campbell, S.G., **De Long, S.K.**, Sachs, A.B., Ashe, M.P. (2004) Loss of translational control in yeast compromised for the major mRNA decay pathway. *Mol Cell Biol.* Apr;24(7):2998-3010.
32. Ashe, M.P., Slaven, J.W., **De Long, S.K.**, Ibrahim, S., Sachs, A.B. (2001) A novel eIF2B-dependent mechanism of translational control in yeast as a response to fusel alcohols. *EMBO J.* Nov 15;20(22):6464-6474.

33. Ashe, M.P., Slaven, J.W., **De Long, S.K.**, Ibrahim, S. and Sachs, A.B. (2001) Fusel alcohols inhibit translation via a novel eIF2B-dependent control mechanism. *Yeast* 18, S74-S74.
34. Ashe, M.P., **De Long, S.K.**, Sachs, A.B. (2000) Glucose depletion rapidly inhibits translation initiation in yeast. *Mol Biol Cell*. Mar;11(3):833-848.

VIII. CONFERENCE PRESENTATIONS AND OTHER PUBLICATIONS

A. Technical Reports

M. Olson, W. Clayton, T. Sale, R. Johnson, **S.K. De Long**, M. Irianni-Renno, and R. Rogers. (2017) Evaluating Long-Term Impacts of Soil Mixing Source-Zone Treatment using Cryogenic Core Collection. ESTCP. Report no.: ER-201587.

S.K. De Long, S.E. Sharvelle, L. Paige Wilson, and L. Loetscher. (2017) Advancing Multi-stage Anaerobic Digestion Technologies through Improved Hydrolysis Processes. Environmental Research and Education Foundation. Final project report. (<https://erefdn.org/advancing-multi-stage-anaerobic-digestion-technologies-through-improved-hydrolysis-processes/>)

Summers, M.D., Williams, D.W., Yazdani, R., **De Long, S.K.** (2015) Optimizing Biogas Production from Organic Waste through RNA/DNA Molecular Testing. Energy Innovations Small Grant Natural Gas Program (EISG) Grant #: 13-05G.

Kirisits, M., Kinney, K., Bae, S. and **De Long, S.K.** (2013) Prokaryotic cDNA Subtraction: A Method to Rapidly Identify Functional Gene Biomarkers. Final Report – Phase II. SERDP Project ER-1563.

Kirisits, M., Kinney, K., Bae, S. and **De Long, S.K.** (2008) Prokaryotic cDNA Subtraction: A Method to Rapidly Identify Functional Gene Biomarkers. Final Report. SERDP Project ER-1563.

B. Invited Talks and Webinars

De Long, S.K. Towards Enhancing Biological Removal of Pharmaceuticals and Personal Care Products in Wastewater Treatment Systems, The Global Centre of Environmental Remediation, University of Newcastle, Callaghan, Australia, October 14, 2022.

De Long, S.K., Carol Wilusz, Phil Fox, Jim Huang, Joshua Goldman, Mazdak Arabi and Heather Pidcoke., Monitoring and Preventing COVID-19 Outbreaks: A Comparison of Sewershed-Level and Building-Level Monitoring, AGU Hydrology Days, Fort Collins, CO, April 27, 2022

De Long, S.K., and Wilusz, C. Wastewater-based monitoring of SARS-CoV-2 infections in small and large populations. Front Line Genomics, Webinar, April, 2021.

De Long, S.K., Wilusz, C., Pidcoke, H. The Predictive Power of Poop: COVID19 Wastewater Surveillance to Inform Public Health Decisions in Colorado. GenomeWeb Webinar. March, 2021.

De Long, S. K.*, Ferrell, R., Burnham, C.-A., Babady, E., Karp, C., Tenover, F., Wriely, L., ASM Virtual Symposium; Microbial Science Research in the Post-COVID Environment, "Investing in Public Health Infrastructure," American Society of Microbiology, Virtual, CO, United States. (November 10, 2020).

*Panel

De Long, S. K., Wilusz, C. J., De Long, S., Rocky Mountain Water Environment Association Biosolids and the 2020 Points of Concern, "Predicting and Preventing COVID-19 Outbreaks with Wastewater Monitoring," Rocky Mountain Water Environment Association, Fort Collins, CO, United States. (November 12, 2020).

De Long, S. K., Wilusz, C. J., De Long, S., Fort Collins Chamber of Commerce Briefing, "Monitoring the Sewer System for SARS-CoV-2," Fort Collins Chamber of Commerce, Fort Collins, CO, United States. (October 29, 2020).

De Long, S. K., Innovating Minds, "COVID-19 Impacts Perspectives from Women in Science: Wastewater epidemiology," Women in Science Network, Fort Collins, CO, United States. (September 29, 2020).

De Long, S. K., Honors student Fireside chat, "Predicting COVID Outbreaks by Monitoring the Sewer System for the Virus," Colorado State University, Fort Collins, CO, United States. (September 23, 2020).

De Long, S.K. From (bio)markers to maps: How meta-omics may change our view of microbial pathways in the subsurface, Chemours Technology Forum, *virtual*, May 20, 2020

De Long, S.K. Meta-omics of monitoring: How microbial pathway data will inform novel monitoring tools, University Consortium for Field-Focused Groundwater Contamination Research, Annual Progress Meeting, *virtual*, June, 2020

De Long, S.K. Texas A&M University, Towards Enhancing Biological Removal of Pharmaceuticals and Personal Care Products in Wastewater Treatment Systems, April 1, 2019

De Long, S.K. Fates and Rates: What can meta-omics tell us about subsurface microbial processes? University Consortium for Field-Focused Groundwater Contamination Research, Fall Focus Meeting, Fort Collins, CO, Oct 16 – 17, 2019

De Long, S.K. "Meta-omics Tools for Resolving Microbial Processes: Opportunities and Challenges for Site Remediation", Science Advisory Board for Contaminated Sites in British Columbia, Workshop, Vancouver, BC, Sept. 27, 2017

De Long, S.K. "Towards Enhancing Biological Removal of Pharmaceuticals and Personal Care Products in Wastewater Treatment Systems", University of Wyoming, Department of Chemical Engineering, Sept. 18, 2017.

De Long, S.K. "Molecular Biology Tools for Identification and Quantification of Perchlorate-Reduction Genes in Biotreatment Applications" Virginia Tech University, Blacksburg, Virginia, Oct. 22, 2010.

De Long, S.K. "Molecular Biology Tools for Environmental Applications: Biological Perchlorate Treatment" NIST, Boulder, Colorado, April 2, 2010.

De Long, S.K. "Development of Molecular Biology Tools for Biological Perchlorate Treatment" Stanford University, Palo Alto, California, May 23, 2008.

C. Conference Presentations

Rico-Reyes, Jorge, Reardon, K., F., **De Long, S.K.**, Rewired Anaerobic Digestion: Developing More Sustainable Chemical Factories, AGU Hydrology Days, Fort Collins, CO, April 27, 2022 (**Awarded 1st place**, student showcase, oral presentation).

De Long, S.K., Reardon, K.F., Rico, J.L. "Composition of inoculum microbiome impacts fatty acids produced from cellulose" 43rd Symposium on Biomaterials, Fuels and Chemicals, April 26-28th, 2021.

Carol Wilusz, Phil Fox, Laura Bankers, Shannon R. Matzinger, Brian Erly, Joshua Goldmann-Torres, Mazdak Arabi, Susan De Long, Wastewater-based detection and characterization of SARS-CoV-2 circulating in Colorado, 21st Annual Rocky Mountain Virology Meeting, Pingree Park, Colorado, Oct 1-3, 2021.

De Long, S.K., Wilusz, Carol, Pidcoke, H. Preventing Outbreaks with Building-Level Monitoring. SARS-CoV-2 Wastewater Surveillance Research Coordination Network Fall Meeting 2021, virtual, November 3, 2021.

Carol Wilusz, **Susan De Long**, Rose Nash, Sarah Kane. Development and Deployment of COVID19 Wastewater Monitoring Strategies for Colorado State University and State of Colorado. 15th Annual Sequencing, Finishing, and Analysis in the Future Meeting, virtual, December 1-3, 2020.

McQuarrie, J., **De Long, S. K.**, Erly, B., Graham, J., Icenogle, B., Rocky Mountain Water Conference, "Front Range Collaborative," Rocky Mountain Water Association, Denver, CO, United States. (October 29, 2020).

Erly, B., Goldman-Torres, J., Werth, L., Nash, R., **De Long, S. K.**, Wilusz, C. J., Rocky Mountain Water Conference, "The Formation of the Front Range Collaborative," Rocky Mountain Water Association, Denver, CO, United States. (October 28, 2020).

Hanson, A., Lamson, C., **De Long, S. K.**, Blotvogel, J. (2019). Bioelectrochemical reduction of perchlorate in contaminated groundwater. 257th ACS National Meeting & Exposition, Orlando, FL, March 31 – April 4, 2019.

Rossmassler, K., **De Long, S.K.** Use of Metagenomic and Metatranscriptomic Approaches to Elucidate Microbial Processes *in Situ*. Battelle 5th International Symposium on Bioremediation and Sustainable Environmental Technologies, Baltimore, MD, April, 2019.

Hansen, A., Lamson, C., Young, R., Ritchie, C., Warner, S., Sale, T., **De Long, S.**, Blotvogel, J. Sustainable remediation of perchlorate in groundwater via bioelectrochemical treatment. Remediation Technology Summit, Denver, CO, February 2019.

De Long, S.K., Kim, S., Rossmassler, K., Broeckling, C.D., Galloway, S., and Prenni, J. Impact of inoculum sources and primary carbon sources on removal of pharmaceuticals and personal care products in biotreatment systems. Emerging Contaminants Summit, Denver, CO, March 2018.

Kim, S., **De Long, S.K.**, Rossmassler, K., Microbial Community Composition Impact from Different Inoculum Sources on Biotransformation of Pharmaceuticals and Personal Care Products. International Environmental Engineering Conferences & Annual Meeting of the Korean Society of Engineers, Innovative Technologies and Climate Change Adaptation, Jeju, Jeju, Korea, November 2017

Rossmassler, K., **De Long, S.K.** Meta-omics enabled approaches for identifying biomarkers directly from mixed microbial communities. Battelle 4th International Symposium on Bioremediation and Sustainable Environmental Technologies, Miami, FL, May, 2017.

De Long, S.K., Sharvelle, S.E., Wilson, L.P., Lucas Loetscher. Advancing multi-stage anaerobic digestion technologies through improved hydrolysis processes. Global Waste Management Symposium, Palm Springs, CA, Jan 31-Feb 2, 2016.

De Long, S.K., Wilson, L.P., Sharvelle, S.E. Advancing multi-stage anaerobic digestion technologies through improved hydrolysis processes. Environmental Research and Education Foundation Regional Summit, San Jose, CA, July 16-17, 2015.

Ekeren, K.M., Sharvelle, S.E., **De Long, S.K.** Disinfection and regrowth of model pathogens in a graywater reuse treatment system. 19th Annual Water Reuse & Desalination Research Conference, Huntington Beach, CA, May 4-5, 2015.

Brian D. Zimmerman, B.D., Brinkman, N.E., Keely, S.P., Wiles, K.M., **De Long, S.K.**, Sharvelle, S.E., Garland, J.L. Next generation sequencing reveals potential surrogates for performance monitoring of graywater recycling systems. 19th Annual Water Reuse & Desalination Research Conference, Huntington Beach, CA, May 4-5, 2015.

Griffin, L.P., Sharvelle, S.E., **De Long, S.K.** “Advancing Multi-stage Anaerobic Digestion Technologies through Improved Hydrolysis Seeding Methods.” Platform Presentation, Global Waste Management Symposium, Orlando, Florida, June, 2014.

Griffin, L.P., Sharvelle, S.E., **De Long, S.K.** “The Impact of Process Conditions on Hydrolysis Efficiency and Methane Generation” Platform Presentation, Global Waste Management Symposium, Phoenix, Arizona, October, 2012.

Irianni Renno, M., **De Long, S.K.**, Zeman, N.R., Sale, T. “Microbially Mediated Depletion of Benzene in NAPL Impacted Soils” Platform Presentation, University Consortium for Field-Focused Groundwater Contamination Research, University of Guelph, Ontario, June, 2012.

Griffin, L.P., Sharvelle, S.E., **De Long, S.K.** “Anaerobic Digestion of Organic Wastes: The Impact of Process Conditions on Hydrolysis Efficiency and Methane Generation” Oral presentation, International Biomass Conference and Expo, Denver, CO, April, 2012.

Griffin, L.P., Sharvelle, S.E., **De Long, S.K.** “Anaerobic Digestion of Organic Solid Wastes: The Impact of Process Conditions” Oral presentation, Environmental Research and Education Foundation, Regional Summit, Austin, Texas, March, 2012.

Griffin, L.P., **De Long, S.K.**, Sharvelle, S.E. “The Impact of Operating Conditions on Hydrolysis Efficiency and Methane Generation for Anaerobic Digestion of Manure and Food Waste” Biocycle Global, San Diego, CA, April, 2011.

De Long, S.K., K.A. Kinney, M.J. Kirisits. “Quantitative PCR Assays for Biological Perchlorate Treatment” Platform Presentation, American Water Works Association Annual Conference and Exposition, San Diego, California, June 2009.

De Long, S.K., M.J. Kirisits, K.A. Kinney. “Perchlorate-Reducing Gene Targets for Bioremediation Applications” Platform Presentation, Battelle Remediation of Chlorinated and Recalcitrant Compounds Conference, Monterey, California, May 2008.

Kirisits, M.J., **S.K. De Long**, K.A. Kinney, S.A. Desai, J.C. Brown. “Characterizing the Microbial Community in a Bioreactor Treating Perchlorate-Contaminated Groundwater” Platform Presentation, AWWA Inorganic Contaminants Workshop, Albuquerque, New Mexico, January 2008.

De Long, S.K., M.J. Kirisits, K.A. Kinney. “Development of a Targeted Method to Identify Prokaryotic Biodegradation Genes” Platform Presentation, Battelle Remediation of Chlorinated and Recalcitrant Compounds Conference, Monterey, California, May 2006.

De Long, S.K., M.J. Kirisits, K.A. Kinney. “Applying Molecular Tools to Water Treatment Processes: An Efficient Method to Obtain Key Gene Sequences” Platform Presentation, Water Environment Association of Texas Conference, Austin, Texas, April 2006.

D. Conference Proceedings and Posters

Rico-Reyes, Jorge, Reardon, K., F., Wrighton, K., Daily, R., **De Long, S.K.**, *Microbiome Analysis of Iodoform Effects on Advanced Anaerobic Digestion Processes for Production of Fatty Acids*. Front Range Microbiome Symposium, Fort Collins, CO, April 2022.

Sachdeva, N., Challacombe, J., Chaparro, J., Prenni, J., **De Long, S.K.** *Investigating the role of prokaryotic CYP450 in TORCs biodegradation using multi-omics tools: A proof of concept study*, Front Range Microbiome Symposium, Fort Collins, CO, April 2022

Sachdeva, N., Challacombe, J., Chaparro, J., Prenni, J., **De Long, S.K.** *Investigating the role of prokaryotic CYP450 in TORCs biodegradation using multi-omics tools*. Front Range Microbiome Symposium, Fort Collins, CO, April 2022

Warner, S., Ritchie, C.J., Redfern, L.K., Blotevogel, J., Hanson, A., Lamson, C., **De Long, S.K.**, Gonzalez, J.M., Batista, J. *Electrochemical and Corrosion-Induced Hydrogen Generation to Stimulate Bioremediation of Perchlorate in Groundwater*. Battelle Fifth International Symposium on Bioremediation and Sustainable Environmental Technologies, Baltimore, MD, April, 2019.

Kitty J. Brown, Karen E. Rossmassler, Lisa M. Wolfe, Parker J. Muck, Jean F. Challacombe, Jessica E. Prenni, **Susan K. De Long**, Corey D. Broeckling (2019). *Keeping it Clean: Metaproteomic Characterization of a Microbiome Capable of Degrading Personal Care Product and Pharmaceutical Contaminants found in Water*. American Society for Mass Spectrometry, Atlanta GA, June 2019.

Rossmassler, Karen; Kim, Sunah; Broeckling, Corey; Galloway, Sarah; Prenni, Jessica; Challacombe, Jean; **De Long, Susan K.** *Impact of Inoculum Source and Primary Carbon Source on Biodegradation of Pharmaceuticals and Personal Care Products: The Role of Microbial Community Composition*. ASM Microbe, San Francisco, CA, June, 2019.

Maria Irianni Renno, Tom Sale and **Susan K. De Long**. *A comparative analysis of in situ microbial communities at two LNAPL-impacted site locations showing contrasting benzene degradation profiles*. ASM Microbe, San Francisco, CA, June, 2019.

Jorge L. Rico, Victoria Larson, Lisa M. Wolfe, **Susan K. De Long**. *Impacts of composting conditions on microbial community structure and emerging contaminants removal*. 1st Annual Front Range Microbiome Symposium, Fort Collins, CO, April, 2019.

Rossmassler, K., **De Long, S.K.** *Utilizing Comparative Metatranscriptomics to Discover Biomarkers for Anaerobic o-xylene Biodegradation*. ASM Microbe, Atlanta, GA, June, 2018.

Rossmassler, K., **De Long, S.K.** *Meta-omic-enabled biomarker identification: Biodegradation of o-xylene by a methanogenic consortium*. 3rd Annual Front Range Computational & Systems Biology Symposium: Microbiome. Colorado State University, Fort Collins, CO, June, 2017.

Wolfe, L., Larson, V., Broeckling, C.D., Prenni, J., **De Long, S.K.** *Measuring emerging contaminant degradation in anaerobic digestion or composting systems by liquid-liquid extraction and LC-QQQ-MS*. 65th American Society for Mass Spectrometry Conference on Mass Spectrometry and Allied Topics. Indianapolis, IN, June, 2017.

Rossmassler, K., **De Long, S.K.** *Meta-omic-enabled biomarker identification: biodegradation of o-xylene by a methanogenic consortium*. ASM Microbe, New Orleans, LA, June, 2017.

Bezold, Z.E., Irianni Renno, M., Blotevogel, J., Sale, T., **De Long, S.K.** Evidence for key role of *Pseudomonas stutzeri* in biodegradation of nitro- and chloroaromatic compounds in anoxic zones. Poster, American Society of Microbiology General Meeting, New Orleans, LA, May 2015.

Irianni Renno, M., Byrne, A., Akhbari, D., Sale, T.S., **De Long, S.K.** Characterization of Microbial Communities Mediating Anaerobic Biodegradation of Petroleum Hydrocarbons along a Depth Transect in LNAPL Zones. Poster, American Society of Microbiology General Meeting, Denver, CO, May 2013.

Wiles, K.M., Sharvelle, S.E., **De Long, S.K.** Investigation of Pathogen Disinfection and Regrowth in a Graywater Reuse Treatment System for Toilet Flushing. Poster, American Society of Microbiology General Meeting, Denver, CO, May 2013.

Wiles, K.M., Sharvelle, S.E., **De Long, S.K.** Development of a Low Cost Graywater Treatment System: Disinfection and Regrowth at the Demonstration Scale. 10th Annual Rocky Mountain Section of the American Water Works Association, Student Research Conference, Golden, CO, May 2013. BEST ORAL PRESENTATION AWARD.

Wilson, L.P., Loetscher, L.H., Sharvelle, S.E., **De Long, S.K.** Microbial community acclimation enhances waste hydrolysis rates under elevated ammonia and salinity conditions. Poster, American Society of Microbiology General Meeting, Denver, CO, May 2013.

Irianni Renno, M., Akhbari, D., Byrne, A., Sale, T.S., **De Long, S.K.** Characterization of Microbial Communities Mediating Anaerobic Biodegradation of Petroleum Hydrocarbons along a Depth Transect in NAPL Zones. Hydrology Days, Fort Collins, CO, 2013.

Vadheim, B., Griffin, L.P., **De Long, S.K.** Anaerobic Digestion of Crop Residues: Characterization and Impact Analysis of Hydrolysis Rates. Colorado Center for Biorefining and Biofuels. Aug 2012.

Keely, S.P., Brinkman, N.E., Wiles, K., Hodgson, B., **De Long, S.K.**, Sharvelle, S.E., Garland, J.L. Identification and Characterization of Graywater Microbial Communities by High Throughput Pyrosequencing. Water Reuse Symposium, Hollywood, FL, Sept 2012.

Ledeker, B.M. and **De Long, S.K.** Determining the Effect of Mismatches on Quantitative PCR Accuracy and Developing Guidance for Designing Primers to Target Genes with Sequence Variations. Poster, American Society of Microbiology General Meeting, San Francisco, CA, May 2012.

Lefevre, E., Pereyra, L.P., **De Long, S.K.**, Pruden, A., and Reardon, K.F., "Response of a sulfate-reducing bioreactor microbial community to an aerobic stress event: A functional gene-based approach." Microbial Communities as Drivers of Ecosystem Complexity, Keystone Symposia, Breckenridge, CO, March, 2011.

Zeman, N.R., **De Long, S.K.**, Sale, T.C. "Thermally Enhanced Bioremediation of Hydrocarbon Impacted Subsurface". Hydrology Days, Colorado State University, Fort Collins, CO, 2011.

De Long, S.K., B.A. Afshar, A.E. O'Neil, K.A. Kinney, and M.J. Kirisits. "Gene Targets for Bioreactors Treating Perchlorate-Contaminated Water" Poster Presentation, International Water Association Young Water Professionals Conference, Berkeley, California, July 2008.

Kirisits, M. J., **S. K. De Long**, K. A. Kinney, S.A. Desai, and J. C. Brown. (2008) "Characterizing the Microbial Community for a Bioreactor Treating Perchlorate-Contaminated Groundwater" *Proceedings of the Inorganic Contaminants Workshop*. Albuquerque, New Mexico.

De Long, S.K., K.A. Kinney, M.J. Kirisits. “Optimization of Suppression PCR for Suppressive Subtractive Hybridization (SSH) PCR cDNA Subtraction” Poster, American Society of Microbiology General Meeting, Toronto, Ontario, Canada, May 2007.

De Long, S.K., M.J. Kirisits, K.A. Kinney. “Development of a Method to Efficiently Determine Gene Sequences Relevant to Pollutant Biodegradation” Poster, American Society of Microbiology General Meeting, New Orleans, Louisiana, May 2004.

E. Thesis and Dissertation

De Long, S.K. (2009) “Molecular Biology Tools for Identification and Quantification of Perchlorate-Reduction Genes in Biotreatment Applications” Doctoral Dissertation, Department of Civil, Architectural, and Environmental Engineering, University of Texas at Austin.

De Long, S.K. (2005) “Development of a Method to Efficiently Determine Prokaryotic Gene Sequences Relevant to Pollutant Biodegradation” Master’s Thesis, Department of Civil, Architectural, and Environmental Engineering, University of Texas at Austin.

F. Media Coverage

Source (Jan 21, 2022) Team of Colorado State University Researchers taking wastewater epidemiology to next level. <https://engr.source.colostate.edu/team-of-colorado-state-university-researchers-taking-wastewater-epidemiology-to-next-level/>

Source (Nov 17, 2021) 7 CSU pandemic resilience projects to receive more than \$1.4M. <https://source.colostate.edu/7-csu-pandemic-resilience-projects-to-receive-more-than-1-4m/>

Source (June 17, 2021) Wastewater team proud to be part of CSU’s pandemic response. <https://engr.source.colostate.edu/wastewater-team-proud-to-be-part-of-csus-pandemic-response/>

Source (Aug 2, 2021) ‘The real thing’: Undergraduates experience interdisciplinary research firsthand as part of DOE-funded project. <https://engr.source.colostate.edu/the-real-thing-undergraduates-experience-interdisciplinary-research-firsthand-as-part-of-doe-funded-project/>

CBS Denver (TV). (Nov 30, 2021) COVID In Colorado: State Health Experts Using Wastewater To Detect Omicron Variant. <https://denver.cbslocal.com/2021/11/30/colorado-wastewater-omicron-covid/>

CBS Denver (TV). (Aug 12, 2020) Colorado State University Wastewater Testing for State: denver.cbslocal.com/live/cbsn-denver/video/6376851-20200813014242-colorado-state-university-fort-collins-wastewater-outbreak-coronavirus-covid-19-pandemic/

CBS Denver (TV) (Oct 7, 2020). CSU Moves Quarantined Students Off Campus As Wastewater Testing Continues. <https://denver.cbslocal.com/2020/10/07/csu-quarantine-wastewater-testing/>

Denver channel (TV) Colorado health officials, scientists expand coronavirus wastewater tracking pilot project (Aug 12, 2020) <https://www.thedenverchannel.com/news/coronavirus/colorado-health-officials-scientists-expand-coronavirus-wastewater-tracking-pilot-project>

Univision (TV) (Aug 18, 2020) En Colorado estudian las aguas residuales para identificar brotes de coronavirus. Te explicamos. <https://www.univision.com/shows/primer-impacto/en-colorado-estudian-las-aguas-residuales-para-identificar-brotes-de-coronavirus-te-explicamos-video>

KUNC (Radio). (July 28, 2020) In Colorado, Your Stool is a Tool in the Fight Against Coronavirus. <https://www.kunc.org/post/colorado-your-stool-tool-fight-against-coronavirus#stream/0>

NPR (Radio). (Oct 26, 2020) Colleges Turn To Wastewater Testing in an Effort to Flush out the Coronavirus. <https://www.npr.org/2020/10/26/925831847/colleges-turn-to-wastewater-testing-in-an-effort-to-flush-out-the-coronavirus>

Coloradoan (Newspaper) (Oct 12, 2020) CSU researchers involved in 44 COVID-19 projects, including 4 potential vaccines. <https://www.coloradoan.com/story/news/local/2020/10/04/covid-colorado-state-university-csu-researchers-updates-vaccine-coronavirus/5882100002/>

Collegian (Newspaper) (Sept 16, 2020) The science behind the on-campus wastewater testing at CSU. <https://collegian.com/2020/09/category-news-the-science-behind-the-on-campus-wastewater-testing-at-csu/>

Source (July 27, 2020) CSU partners with state of Colorado on wastewater surveillance project to track spread of COVID-19. <https://enr.source.colostate.edu/csu-partners-with-state-of-colorado-on-wastewater-surveillance-project-to-track-spread-of-covid-19/>

Source (Oct 5, 2020) Targeted Testing: A team of CSU scientists work to curb the spread of COVID-19. (https://source.colostate.edu/csu-scientists-work-to-curb-the-spread-of-covid-19-with-targeted-testing/?utm_source=newsletter&utm_medium=Email&utm_content=topStory&utm_campaign=m1005-20)