

CURRICULUM VITAE

Name: Michael Jay Sadowsky

Present Title: Director BioTechnology Institute and Distinguished McKnight University Professor

Department of Soil, Water, and Climate, and BioTechnology Institute,
and Director of Graduate Studies Microbial Ecology Graduate Program

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Education:

Ph.D., 1983. University of Hawaii, Honolulu, Hawaii. Major: Microbiology

M.S., 1979. University of Wisconsin-Oshkosh, Wisconsin. Major: Microbiology

B.S., 1977. University of Wisconsin-Madison, Wisconsin. Major: Bacteriology

Professional Experience:

Director BioTechnology Institute, University of Minnesota, St. Paul, Minnesota, 2009 - present.

Co-Director, Microbial and Plant Genomics Institute, University of Minnesota, 2006-2009.

Distinguished McKnight University Professor: Department of Soil, Water, & Climate, and BioTechnology Institute, University of Minnesota, St. Paul, Minnesota, 04/04 - present.

Professor: Department of Soil, Water, and Climate and Department of Microbiology
University of Minnesota, St. Paul, Minnesota, 07/96 – 04/04.

Associate Professor: Departments of Soil Science and Microbiology
University of Minnesota, St. Paul, Minnesota, 07/93 - 6/96.

Assistant Professor: Departments of Soil Science and Microbiology

University of Minnesota, St. Paul, Minnesota, 06/89 - 6/93.

Microbiologist: U.S. Department of Agriculture-ARS; Beltsville, Maryland, 01/86 - 05/89.

Research Molecular Biologist: Allied Corporation; Syracuse, New York, 04/85 - 12/85.

Current Research Studies:

Use of DNA technologies to determine sources of fecal pollutants in the environment.

Biochemistry, genetics, and genomics of microorganisms degrading pesticides

Use of fecal transplantation and bile acid analogs to cure human diseases

Awards and Honors:

2009	CFANS Distinguished Graduate Teaching Award
2008	CFANS Distinguished Diversity and Inclusion Award
2008	Fellow, American Association for the Advancement of Science
2006	Time Magazine Innovator Article
2004	Distinguished McKnight Professorship
1999	Fellow, American Academy of Microbiology
1991-1992	Bush Foundation Excellence in Teaching Program.
1990	Young Investigator Award, American Society for Microbiology.
1988	Patent Award, U.S. Department of Agriculture.

Professional Activities:

Editor-in-Chief – Microbiology Spectrum ASM's new journal

Main-Organizer 2013 North American Symbiotic Nitrogen Fixation Conference, Minnesota

Speaker – American Society for Microbiology Branch Lectureship Program 2008-2010

Editor – The Fecal Bacteria, ASM Press, Washington DC. Released in 2010.

Co-Editor: American Society for Microbiology Book – Microbial Source Tracking. ASM Press, Washington DC Released in 2007.

Student Mentor – ASM 2012

Minority Mentor – ASM 2012

Regional Coordinator for ASM Branch Activities and Student Chapters, 2004-present

Editor, Molecular Plant-Microbe Interactions 2010-present

Editor, Applied and Environmental Microbiology 1999-2003

Associate Editor, Symbiosis 1997 - present

Associate Editor - Microbe and Environments 2000 – present

Editorial Board, Appl. Environmental Microbiology – 1989-1999, 2005-present

Co-Organizer of Genomics of α -Proteobacterium Symposium 2005. Blacksburg, VA

Organizer of: Tracking Sources and Sinks of Microorganisms in the Environment Session – 102nd

General Meeting American Society for Microbiology. 2001. Salt Lake City, UT

Organizer: U.S.-Japan NSF-JSPS Symposium “Symbioses Between Plants and Microbe for Sustainable Agriculture and Bioremediation, St. Paul, MN..

Organizer: *Bradyrhizobium japonicum* Genome Annotation Workshop, Minneapolis, MN

Patents Held:

(1) A Mu-dI(Kan,lac) vector system for analysis of symbiotic genes in *Rhizobium*; Patent awarded in Canada and U.S. through Allelix Inc.; (2) U.S. patent 6,265,201: "Improved enzyme for atrazine biodegradation"; (3) U.S. patent 6,284,522: "Isolated and purified DNA molecule and protein for the degradation of triazine compounds"; (4) U.S. patent 6,369,299 “Atrazine-degrading plants”; Submitted by University of Minnesota and Novartis (Syngenta) Crop Protection. (5) U.S. patent 6,825,001, November 30, 2004, “DNA molecules and protein displaying improved triazine compound degrading ability”. (6) U.S. provisional patent application – filed September 11, 2009- “Methods, compositions and devices utilizing thermostable cyanuric acid hydrolase”, (7) U.S. Patent US-2013-0112608-A1 “Methods, compositions and devices utilizing structurally stable cyanuric acid hydrolase”, (8) U.S. provisional patent application – filed February 22, 2011 and International application No. PCT/US/2012/026031 and WO/2012/116013, “Silica encapsulated biomaterials”, (9) US Application No.: 14/003,411 Compositions and methods for transplantation of colon microbiota - filed 05 September 2013, and (10) U.S. serial no. 61/782,222, Freeze dried fecal microbiota for use in fecal microbial transplantation. Provisional application filed - March 14, 2013, (10) Methods for Treating Autism Spectrum Disorder and Associated Symptoms, J Adam et al. US Patent App. 15/161,654

Refereed Publications: 1983-2017 (318 refereed publications)

1. **Burghardt LT, Epstein B, Guhlin J, Nelson MS, Taylor MR, Young ND, Sadowsky MJ, Tiffin P. 2018.** Select and resequence reveals relative fitness of bacteria in symbiotic and free-living environments. Proc Natl Acad Sci (USA). 115(10):2425-2430. doi: 10.1073/pnas.1714246115
2. **Staley C, Kaiser T, Lobos A, Ahmed W, Harwood VJ, Brown CM, Sadowsky MJ. 2018.** Application of SourceTracker for Accurate Identification of Fecal Pollution in Recreational Freshwater: A Double-Blinded Study. Environ Sci Technol. 2018 Mar 5. doi: 10.1021/acs.est.7b05401.
3. **Eom T, Kim YS, Choi CH, Sadowsky MJ, Unno T. 2018.** Current understanding of microbiota- and dietary-therapies for treating inflammatory bowel disease. J Microbiol. 56(3):189-198. doi: 10.1007/s12275-018-8049-8.
4. **Smillie CS, Sauk J, Gevers D, Friedman J, Sung J, Youngster I, Hohmann EL, Staley C, Khoruts A, Sadowsky MJ, Allegretti JR, Smith MB, Xavier RJ, Alm EJ. 2018.** Strain Tracking Reveals the Determinants of Bacterial Engraftment in the Human Gut Following

Fecal Microbiota Transplantation. *Cell Host Microbe*. 23(2):229-240.e5. doi: 10.1016/j.chom.2018.01.003.

5. **Abd El-Rahim, WM, Moawad H, Abdel Azeiz AZ, Sadowsky MJ.** 2017. Optimization of conditions for decolorization of azo-based textile dyes by multiple fungal species. *J Biotechnol*. 260:11-17.
6. **Tomasek A, Staley C, Wang P, Kaiser T, Lurndahl N, Kozarek JL, Hondzo M, Sadowsky MJ.** 2017. Increased Denitrification Rates Associated with Shifts in Prokaryotic Community Composition Caused by Varying Hydrologic Connectivity. *Front Microbiol*. 8:2304. doi: 10.3389/fmicb.2017.02304.
7. **Hwang N, Eom T, Gupta SK, Jeong SY, Jeong DY, Kim YS, Lee JH, Sadowsky MJ, Unno T.** 2017. Genes and Gut Bacteria Involved in Luminal Butyrate Reduction Caused by Diet and Loperamide. *Genes* 8(12). pii: E350. doi: 10.3390/genes8120350.
8. **Staley C, Khoruts A, Sadowsky MJ.** 2017. Contemporary Applications of Fecal Microbiota Transplantation to Treat Intestinal Diseases in Humans. *Arch Med Res*. S0188-4409(17)30235-7. doi: 10.1016/j.arcmed.2017.11.006.
9. **Burch TR, Sadowsky MJ, LaPara TM.** 2017. Effect of Different Treatment Technologies on the Fate of Antibiotic Resistance Genes and Class 1 Integrons when Residual Municipal Wastewater Solids are Applied to Soil. *Environ Sci Technol*. 19;51(24):14225-14232. doi: 10.1021/acs.est.7b04760.
10. **Johnson JR, Johnston BD, Delavari P, Thuras P, Clabots C, Sadowsky MJ.** 2017. Phylogenetic Backgrounds and Virulence-Associated Traits of *Escherichia coli* Isolates from Surface Waters and Diverse Animals in Minnesota and Wisconsin. *Appl Environ Microbiol*. 83(24). pii: e01329-17. doi: 10.1128/AEM.01329-17
11. **Burghardt LT, Guhlin J, Chun CL, Liu J, Sadowsky MJ, Stupar RM, Young ND, Tiffin P.** 2017. Transcriptomic basis of genome by genome variation in a legume-rhizobia mutualism. *Mol Ecol*. doi: 10.1111/mec.14285.
12. **Moll KM, Zhou P, Ramaraj T, Fajardo D, Devitt NP, Sadowsky MJ, Stupar RM, Tiffin P, Miller JR, Young ND, Silverstein KAT, Mudge J.** 2017. Strategies for optimizing BioNano and Dovetail explored through a second reference quality assembly for the legume model, *Medicago truncatula*. *BMC Genomics*. 18(1):578. doi: 10.1186/s12864-017-3971-4.
13. **Beale DJ, Crosswell J, Karpe AV, Ahmed W, Williams M, Morrison PD, Metcalfe S, Staley C, Sadowsky MJ, Palombo EA, Steven ADL.** 2017. A multi-omics based ecological analysis of coastal marine sediments from Gladstone, in Australia's Central Queensland, and Heron Island, a nearby fringing platform reef. *Sci Total Environ*. 609:842-853.
14. **Staley C, Kaiser T, Beura LK, Hamilton MJ, Weingarden AR, Bobr A, Kang J, Masopust D, Sadowsky MJ, Khoruts A.** 2017. Stable engraftment of human microbiota into

mice with a single oral gavage following antibiotic conditioning. *Microbiome*. (1):87. doi: 10.1186/s40168-017-0306-2.

15. **Staley C, Ferrieri AP, Tfaily MM, Cui Y, Chu RK, Wang P, Shaw JB, Ansong CK, Brewer H, Norbeck AD, Markillie M, do Amaral F, Tuleski T, Pellizzaro T, Agtuca B, Ferrieri R, Tringe SG, Paša-Tolić L, Stacey G, Sadowsky MJ.** 2017. Diurnal cycling of rhizosphere bacterial communities is associated with shifts in carbon metabolism. *Microbiome*. 5(1):65. doi: 10.1186/s40168-017-0287-1.
16. **Brown CM, Staley C, Wang P, Dalzell B, Chun CL, Sadowsky MJ.** 2017. A High-Throughput DNA-Sequencing Approach for Determining Sources of Fecal Bacteria in a Lake Superior Estuary. *Environ Sci Technol*. 51:8263-8271.
17. **Jones DS, Lapakko KA, Wenz ZJ, Olson MC, Roepke EW, Sadowsky MJ, Novak PJ, Bailey JV.** 2017. Novel Microbial Assemblages Dominate Weathered Sulfide-Bearing Rock from Copper-Nickel Deposits in the Duluth Complex, Minnesota, USA. *Appl Environ Microbiol*. 83(16). pii: e00909-17. doi: 10.1128/AEM.00909-17
18. **Rosbach JD, Fink RC, Sadowsky MJ, Tong C, Diez-Gonzalez F.** 2017. Factors influencing the Salmonella internalization into seedpods and whole plants of *Arachis hypogaea* (L.). *Food Microbiol*. 66:184-189.
19. **Khanna S, Vazquez-Baeza Y, González A, Weiss S, Schmidt B, Muñoz-Pedrogo DA, Rainey JF 3rd, Kammer P, Nelson H, Sadowsky M, Khoruts A, Farrugia SL, Knight R, Pardi DS, Kashyap PC.** 2017. Changes in microbial ecology after fecal microbiota transplantation for recurrent *C. difficile* infection affected by underlying inflammatory bowel disease. *Microbiome*. 5:55. doi: 10.1186/s40168-017-0269-3.
20. **Romão D, Staley C, Ferreira F, Rodrigues R, Sabino R, Veríssimo C, Wang P, Sadowsky M, Brandão J.** 2017. Next-generation sequencing and culture-based techniques offer complementary insights into fungi and prokaryotes in beach sands. *Mar Pollut Bull*. 119:351-358. doi: 10.1016/j.marpolbul.2017.04.036.
21. **Stoltz KL, Erickson R, Staley C, Weingarden AR, Romens E, Steer CJ, Khoruts A, Sadowsky MJ, Dosa PI.** 2017. Synthesis and Biological Evaluation of Bile Acid Analogues Inhibitory to *Clostridium difficile* Spore Germination. *J Med Chem*. doi: 10.1021/acs.jmedchem.7b00295.
22. **Jang J, Hur HG, Sadowsky MJ, Byappanahalli MN, Yan T, Ishii S.** 2017. Environmental *Escherichia coli*: Ecology and Public Health Implications - A Review. *J Appl Microbiol*. doi: 10.1111/jam.13468.
23. **Staley C, Kaiser T, Gidley ML, Enochs IC, Jones PR, Goodwin KD, Sinigalliano CD, Sadowsky MJ, Chun CL.** 2017. Differential Impacts of Land-based Sources of Pollution on

the Microbiota of Southeast Florida Coral Reefs. *Appl Environ Microbiol.* doi: 10.1128/AEM.03378-16.

24. **Beale DJ, Karpe AV, Ahmed W, Cook S, Morrison PD, Staley C, Sadowsky MJ, Palombo EA.** 2017. A Community Multi-Omics Approach towards the Assessment of Surface Water Quality in an Urban River System. *Int J Environ Res Public Health.* 14(3). pii: E303. doi: 10.3390/ijerph14030303.
25. **Staley C, Vaughn BP, Graiziger CT, Singroy S, Hamilton MJ, Yao D, Chen C, Khoruts A, Sadowsky MJ.** 2017. Community dynamics drive punctuated engraftment of the fecal microbiome following transplantation using freeze-dried, encapsulated fecal microbiota. *Gut Microbes.* doi: 10.1080/19490976.2017.1299310.
26. **Jahansouz C, Staley C, Bernlohr DA, Sadowsky MJ, Khoruts A, Ikramuddin S.** 2017. Sleeve Gastrectomy Drives Persistent Shifts in the Gut Microbiome. *Surg Obes Relat Dis.* doi: 10.1016/j.soard.2017.01.003.
27. **Staley C, Hamilton MJ, Vaughn BP, Graiziger CT, Newman KM, Kabage AJ, Sadowsky MJ, Khoruts A.** 2017. Successful Resolution of Recurrent *Clostridium difficile* Infection using Freeze-Dried, Encapsulated Fecal Microbiota; Pragmatic Cohort Study. *Am J Gastroenterol.* doi: 10.1038/ajg.2017.6.
28. **Kang DW, Adams JB, Gregory AC, Borody T, Chittick L, Fasano A, Khoruts A, Geis E, Maldonado J, McDonough-Means S, Pollard EL, Roux S, Sadowsky MJ, Lipson KS, Sullivan MB, Caporaso JG, Krajmalnik-Brown R.** 2017. Microbiota Transfer Therapy alters gut ecosystem and improves gastrointestinal and autism symptoms: an open-label study. *Microbiome.* doi: 10.1186/s40168-016-0225-7.
29. **Gravina F, Dobrzanski T, Olchanheski LR, Galvão CW, Reche PM, Pileggi SA, Azevedo RA, Sadowsky MJ, Pileggi M.** 2017. Metabolic Interference of sod gene mutations on catalase activity in *Escherichia coli* exposed to Gramoxone® (paraquat) herbicide. *Ecotoxicol Environ Saf.* 139:89-96. doi: 10.1016/j.ecoenv.2017.01.027.
30. **Zhong C, Nelson M, Cao G, Sadowsky MJ, Yan T.** 2017. Complete Genome Sequence of the Triclosan- and Multidrug-Resistant *Pseudomonas aeruginosa* Strain B10W Isolated from Municipal Wastewater. *Genome Announc.* doi: 10.1128/genomeA.01489-16.
31. **Sadowsky MJ, Staley C, Heiner C, Hall R, Kelly CR, Brandt L, Khoruts A.** 2017. Analysis of gut microbiota - An ever changing landscape. *Gut Microbes.* 4:1-8. doi: 10.1080/19490976.2016.1277313.
32. **Staley C, Vaughn BP, Graiziger CT, Sadowsky MJ, Khoruts, A.** 2017. Gut-sparing treatment of urinary tract infection in patients at high risk of *Clostridium difficile* infection. *J Antimicrob Chemother.* doi: 10.1093/jac/dkw49

33. **Nelson MS, Chun CL, Sadowsky MJ.** 2017. Type IV Effector Proteins Involved in the Medicago-Sinorhizobium Symbiosis. *Mol Plant Microbe Interact.* doi: 10.1094/MPMI-10-16-0211-R.
34. **Staley C, Weingarden AR, Khoruts A, Sadowsky MJ.** 2017. Interaction of gut microbiota with bile acid metabolism and its influence on disease states. *Appl Microbiol Biotechnol.* 101:47-64.
35. **Ahmed, W., Staley C, Hamilton KA, Beale DJ, Sadowsky MJ, Toze S, Haas CN.** 2017. Amplicon-based taxonomic characterization of bacteria in urban and peri-urban roof-harvested rainwater stored in tanks. *Sci Total Environ.* 15;576:326-334
36. **Ahmed, W., Staley, C., Sidhu, J., Sadowsky, M., and Toze, S.** 2017. Amplicon-based profiling of bacteria in raw and secondary treated wastewater from treatment plants across Australia. *Applied Microbiology and Biotechnology,* 1-14
37. **Chun CL, Peller JR, Shively D, Byappanahalli MN, Whitman RL, Staley C, Zhang Q, Ishii S, Sadowsky MJ.** 2017. Virulence and biodegradation potential of dynamic microbial communities associated with decaying *Cladophora* in Great Lakes. *Sci Total Environ.* 574:872-880. doi: 10.1016/j.scitotenv.2016.09.107.
38. **Khoruts A, Sadowsky MJ.** 2016. Understanding the mechanisms of faecal microbiota transplantation. *Nat Rev Gastroenterol Hepatol.* doi: 10.1038/nrgastro.2016.98.
39. **Staley C, Kelly CR, Brandt LJ, Khoruts A, Sadowsky MJ.** 2016. Complete Microbiota Engraftment Is Not Essential for Recovery from Recurrent *Clostridium difficile* Infection following Fecal Microbiota Transplantation. *MBio.* 7(6). pii: e01965-16. doi: 10.1128/mBio.0196
40. **Shamseldin, A., Abdelkhalek, A., and MJ Sadowsky.** 2016. Recent changes to the classification of symbiotic, nitrogen-fixing, legume-associating bacteria: a review. doi:10.1007/s13199-016-0462-3
41. **Kelly, CR, A .Khoruts, C. Staley, M.J. Sadowsky, M. Abd, M. Alani, B. Bakow, P. Curran, J. McKenney, A. Tisch, S.E. Reinert, J.T. Machan, and L.J. Brandt.** 2016. Effect of Fecal Microbiota Transplantation on Recurrence in Multiply Recurrent *Clostridium difficile* Infection: A Randomized Trial. *Annal Intern. Med.* 165:609-616.
42. **Shamseldin A, Nelson MS, Staley C, Guhlin J, Sadowsky MJ.** 2016. Draft Genome Sequences of Four Novel Thermal- and Alkaline-Tolerant Egyptian *Rhizobium* Strains Nodulating Berseem Clover. *Genome Announc.* doi: 10.1128/genomeA.00988-16.
43. **Eichmiller, J.J., M.J. Hamilton, C. Staley, M.J. Sadowsky, and P.W. Sorensen.** 2016. Environment Shapes the Fecal Microbiome of Invasive Carp Species. *Microbiome.* 2016; 4: 44. doi: 10.1186/s40168-016-0190-1

44. **Fernandez AL, Sheaffer CC, Wyse DL, Staley C, Gould TJ, Sadowsky MJ.** 2016. Structure of bacterial communities in soil following cover crop and organic fertilizer incorporation. *Appl Microbiol Biotechnol.* 2016 Jul 27. PMID:27464828
45. **Zhang Q, Eichmiller JJ, Staley C, Sadowsky MJ, Ishii S.** 2016. Correlations between pathogen concentration and fecal indicator marker genes in beach environments. *Sci Total Environ.* 573:826-830. doi: 10.1016/j.scitotenv.2016.08.122.
46. **Fernandez AL, Sheaffer CC, Wyse DL, Staley C, Gould TJ, Sadowsky MJ.** 2016. Associations between soil bacterial community structure and nutrient cycling functions in long-term organic farm soils following cover crop and organic fertilizer amendment. *Sci Total Environ.* doi: 10.1016/j.scitotenv.2016.05.073.
47. **Shamseldin A, Carro L, Peix A, Velázquez E, Moawad H, Sadowsky MJ.** 2016. The symbiovar trifolii of *Rhizobium bangladeshense* and *Rhizobium aegyptiacum* sp. nov. nodulate *Trifolium alexandrinum* in Egypt. *Syst Appl Microbiol.* 39:275-279.
48. **Staley C, Sadowsky MJ.** 2016. Similarities and Consistent Patterns of Local Variation in Beach Sand Bacterial Communities throughout the Northern Hemisphere. *Appl Environ Microbiol.* 82:2751-2762.
49. **Shaughnessy MK, Bobr A, Kuskowski MA, Johnston BD, Sadowsky MJ, Khoruts A, Johnson JR.** 2016. Environmental Contamination in Households of Patients with Recurrent *Clostridium difficile* Infection.. *Appl Environ Microbiol.* 82:2686-2692.
50. **Khoruts A, Rank KM, Newman KM, Viskocil K, Vaughn BP, Hamilton MJ, Sadowsky MJ.** 2016. Inflammatory Bowel Disease Affects the Outcome of Fecal Microbiota Transplantation for Recurrent *Clostridium difficile* Infection. *Clin Gastroenterol Hepatol.* doi: 10.1016/j.cgh.2016.02.018.
51. **Staley C, Gould TJ, Wang P, Phillips J, Cotner JB, Sadowsky MJ.** 2016. Sediments and Soils Act as Reservoirs for Taxonomic and Functional Bacterial Diversity in the Upper Mississippi River. *Microb Ecol.* 71:814-824.
52. **Venterea RT, Clough TJ, Coulter JA, Breuillin-Sessoms F, Wang P, Sadowsky MJ.** 2016. Corrigendum: Ammonium sorption and ammonia inhibition of nitrite-oxidizing bacteria explain contrasting soil N₂O production. *Sci Rep.* 6:20720. doi: 10.1038/srep20720.
53. **Prione LP, Olchanheski LR, Tullio LD, Santo BC, Reche PM, Martins PF, Carvalho G, Demiate IM, Pileggi SA, Dourado MN, Prestes RA, Sadowsky MJ, Azevedo RA, Pileggi.** 2016. GST activity and membrane lipid saturation prevents mesotrione-induced cellular damage in *Pantoea ananatis*. *AMB Express.* doi: 10.1186/s13568-016-0240-x.
54. **Weingarden AR, Dosa PI, DeWinter E, Steer CJ, Shaughnessy MK, Johnson JR, Khoruts A, Sadowsky MJ.** 2016. Changes in Colonic Bile Acid Composition following Fecal

Microbiota Transplantation Are Sufficient to Control *Clostridium difficile* Germination and Growth. PLoS One. 11(1):e0147210. doi: 10.1371/ journal.pone. 0147210.

55. **Han D, Nam SI, Ha HK, Kim H, Sadowsky MJ, Lee YK, Hur HG.** 2016. Bacterial Biogeography Influenced by Shelf-Basin Exchange in the Arctic Surface Sediment at the Chukchi Borderland. *Environ. Microbiol.* 18: 668-678, doi: 10.1111/1462-2920.13064.
56. **Sadowsky, M.J. and A Khoruts.** 2016. Faecal microbiota transplantation is promising but not a panacea. *Nature Microbiology* 1, 16015
57. **Solo-Gabriele HM, Harwood VJ, Kay D, Fujioka RS, Sadowsky MJ, Richard LW, Wither A, Caniça M, da Carvalho FR, Duarte A, Edge TA, Gargaté MJ, Gunde-Cimerman N, Hagen F, McLellan SL, Nogueira da Silva A, Babič MN, Prada S, Rodrigues R, Romão D, Sabino R, Samson RA, Segal E, Staley C, Taylor HD, Veríssimo C, Viegas C, Barroso H, Brandão JC.** 2016. Beach sand and the potential for infectious disease transmission: observations and recommendations. *J Mar Biol Assoc UK* 96(1):101–120.
58. **Weingarden AR, Chen C, Zhang N, Graiziger CT, Dosa PI, Steer CJ, Shaughnessy MK, Johnson JR, Sadowsky MJ, Khoruts A.** 2015. Ursodeoxycholic acid inhibits *Clostridium difficile* spore germination and vegetative growth, and prevents the recurrence of ileal pouchitis associated with the infection. *J Clin Gastroenterol.* 2015 Oct 17. PMID: 26485102
59. **Heisel T, Podgorski H, Staley CM, Knights D, Sadowsky MJ, Gale CA..** 2015. Complementary amplicon-based genomic approaches for the study of fungal communities in humans. *PLoS One.* 23;10(2):e0116705. doi: 10.1371
60. **Ahmed W, Staley C, Sadowsky MJ, Gyawali P, Sidhu JP, Palmer A, Beale D, Toze S.** 2015. Toolbox approaches using molecular markers and 16S rDNA amplicon datasets for the identification of fecal pollution in surface water. *Appl Environ Microbiol.* 2015 Jul 31. pii: AEM.02032-15.
61. **Chandrasekaran R, Hamilton MJ, Wang P, Staley C, Matteson S, Birr A, Sadowsky MJ.** 2015. Geographic isolation of *Escherichia coli* genotypes in sediments and water of the Seven Mile Creek - A constructed riverine watershed. *Sci. Total Environ.* 538:78-85
62. **Jang J, Di DY, Han D, Unno T, Lee JH, Sadowsky MJ, Hur HG.** 2015. Dynamic changes in the population structure of *Escherichia coli* in the Yeongsan River basin of South Korea. *FEMS Microbiol Ecol.* 91(11). pii: fiv127. doi: 10.1093/femsec/fiv127. Epub 2015 Oct 20. PMID: 26490749.
63. **Burch TR, Sadowsky MJ, LaPara TM.** 2015 Modeling the fate of antibiotic resistance genes and class 1 integrons during thermophilic anaerobic digestion of municipal wastewater solids. *Appl. Microbiol. Biotechnol.* 100:1437-1444, PMID: 26481624

64. **Staley, C., T. J. Gould, P. Wang, J. Phillips, J. B. Cotner and M. J. Sadowsky.** 2015. High-throughput functional screening reveals low frequency of antibiotic resistance genes in DNA recovered from the Upper Mississippi River. *J. Water Health. J Water Health.* 2015 13:693-703.
65. **Song Z, Vail A, Sadowsky MJ, Schilling JS.** 2015. Influence of Hyphal Inoculum potential on the Competitive Success of Fungi Colonizing Wood. *Microb. Ecol.* 69:758-767
66. **Wongphatcharachai M, Wang P, Staley C, Chun CL, Ferguson JA, Moncada KM, Sheaffer CC, Sadowsky MJ.** 2015. Site-specific distribution and competitive ability of indigenous bean-nodulating rhizobia isolated from organic fields in Minnesota. *J. Biotechnol.* 214:158-68.
67. **Jeon JM, Lee HI, Sadowsky MJ, Sugawara M, Chang WS.** 2015. Characterization of a Functional Role of the *Bradyrhizobium japonicum* Isocitrate Lyase in Desiccation Tolerance. *Int J Mol Sci.* 216:16695-16709. doi: 10.3390/ijms16071669
68. **Unno T, Kim J, Kim Y, Nguyen SG, Guevarra RB, Kim GP, Lee JH, Sadowsky MJ.** 2015. Influence of seawater intrusion on microbial communities in groundwater. *Sci Total Environ.* 532:337-343.
69. **Nelson MS, Sadowsky MJ.** 2015. Secretion systems and signal exchange between nitrogen-fixing rhizobia and legumes. *Front Plant Sci.* 1;6:491. doi: 10.3389/fpls.2015.00491.
70. **Weingarden A, González A, Vázquez-Baeza Y, Weiss S, Humphry G, Berg-Lyons D, Knights D, Unno T, Bobr A, Kang J, Khoruts A, Knight R, Sadowsky MJ.** 2015. Dynamic changes in short- and long-term bacterial composition following fecal microbiota transplantation for recurrent *Clostridium difficile* infection. *Microbiome.* 3;3:10. doi: 10.1186/s40168-015-0070-0.
71. **Narozna D, Pudelko K, Króliczak J, Golińska B, Sugawara M, Mądrzak CJ, Sadowsky MJ.** 2015. Survival and Competitiveness of *Bradyrhizobium japonicum* Strains Twenty Years after Introduction into Field Locations in Poland. *Appl Environ Microbiol.* 81:5552-5559
72. **Ghosh S, LaPara TM, Sadowsky MJ.** 2015. Transformation of tetracycline by TetX and its subsequent degradation in a heterologous host. *FEMS Microbiol Ecol.* 91(6). pii: fiv059. doi: 10.1093/femsec/fiv059. PMID: 26038239
73. **Epstein B, Sadowsky MJ, Tiffin P.** 2015. Selection on horizontally transferred and duplicated genes in sinorhizobium (ensifer), the root-nodule symbionts of medicago. *Genome Biol Evol.* 7:1329-13330.
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