

RUPALI DATTA

Professor, Department of Biological Sciences
Michigan Technological University, Houghton, MI
Phone: 906-487-1783, Email: rupdatta@mtu.edu

Profile: <http://www.mtu.edu/biological/people-groups/faculty-staff/datta/>

RESEARCH INTERESTS

- Phytotechnologies and phytoremediation
- Plant-microbe Interactions
- Plant response to abiotic stress
- Contaminant Speciation, bioavailability and human health risk assessment

EDUCATION

1987 B.S. (Biology and Chemistry) Osmania University, India
1989 M.S. (Biochemistry) University of Hyderabad, India
1990 M. Phil. (Life Sciences) University of Hyderabad, India
1997 Ph.D. (Biochemistry) University of Hyderabad, India

POSITIONS AND EMPLOYMENT

2018 - Professor, Department of Biological Sciences, Michigan Technological University, Houghton, MI (MTU)
2013-2018 Associate Professor (Tenured) Dept. of Biological Sciences, MTU
2008-2013 Associate Professor (tenure-track), Dept. Biological Sciences, MTU
2004-2008 Assistant Professor, Department of Earth and Environmental Sciences (EES), University of Texas at San Antonio, San Antonio (UTSA), TX
2003-2004 Research Assistant Professor and Senior Lecturer, EES, UTSA
2002-2003 Post-doctoral Fellow and Lecturer-I, EES, UTSA
1998-2001 Post-doctoral Associate, Plant Pathology Department, University of Florida, Gainesville, Florida
1997-1998 Visiting Research Fellow, Japanese Society for Promotion of Science Fellowship) Niigata University, Niigata, Japan

SELECTED FUNDED GRANTS

- **United States Environmental Protection Agency; 2002-04; \$391,473/2y (Total):** Biogeochemistry of arsenic in contaminated soils of Superfund sites (*Co-PI*); Proposal ranked 1st nationally in the Hazardous Substances Research program).
- **National Institutes of Health – MBRS; 2004-07; \$414,550 (Direct):** Novel Remediation Methods to Lower Human Health Risk from Exposure to Arsenic-Enriched Soils (*Co-PI*)
- **San Antonio Life Sciences Institute – REF; 2004-05; \$199,990 (Direct):** A multi-disciplinary approach to reduce human bioavailability and carcinogenicity of soil arsenic (*Co-PI*)
- **Department of Housing and Urban Development - Lead Technical Studies Program; 2004-06; \$372,767 (Total):** A novel phytoremediation method using vetiver grass to cleanup lead-based paint-contaminated soils (*Joint-PI*)

- **Department of Defense – Small Business Innovative Research, Phase-I; 2006-07; \$100,000 (Total):** A new method to clean up chromium and metal enriched stormwater in Naval shipyards (*Principal*)
- **Department of Defense – Small Business Innovative Research, Phase-II; 2008-10; \$750,000 (Total):** A new method to clean up chromium and metal enriched stormwater in Naval shipyards (*Principal*)
- **Housing and Urban Development – Lead Technical Studies; 2010-13; \$499,694 (Total):** A Novel Phytoremediation Method using Vetiver Grass to Cleanup Lead-Based Paint Contaminated Soils: Phase II – Field Study (*PI*)
- **UTC- Center for Materials in Sustainable Transportation Infrastructure (MiSTI) 2011; \$25,000 (Total):** Leaching of toxic heavy metals from additives in concrete (*PI*)
- **Office of Surface Mining; Dept. of Interior 2012-14; \$199,945 (total):** Low cost green technology to improve water quality in mining-impacted ecosystems: Phase I – Model development and optimization (*Co-PI*).
- **Michigan Dept. Environ. Quality 2014-16, \$224,816 (total):** Huron Creek Watershed Improvements Phase 1: Reducing Copper Loads from Stamp Sand Deposits in the Keweenaw Peninsula with Permeable Reactive Barriers (*Co-PI*).
- **NSF-SBIR 2014. \$39,953.** Antimicrobial Plastic Masterbatch Pellets Sponsored by Qtek LLC. Datta R (*PI*).
- **US Department of Agriculture 2014. \$150,000 (Total):** Bioactive Compounds in Rice Callus Culture and Blueberry Extracts as Anti-inflammatory Agents of the Gastrointestinal Tract (*PI*)
- **US Housing and Urban Development – Lead Technical Studies 2018-21, 492,633 (Total):** A Novel Phytoremediation Method to Cleanup Lead-Based Paint Contaminated Soils: Phase III – Demonstration Study \$492,633 (*PI*)

SELECTED REFEREED PUBLICATIONS (relevant to the proposed research (out of a total of 250+ publications))

1. Sarkar, D., **Datta, R.** (2003) A modified in-vitro method to assess bioavailable arsenic in pesticide-applied soils. *Environ. Pollut.* 126 (3), 363-366.
2. Sarkar, D, **Datta, R** and Sharma S (2005) Fate and bioavailability of arsenic in organo-arsenical pesticide applied soils. Part-I. Incubation Study *Chemosphere* 60: 188-195.
3. **Datta, R.,** Sarkar, D. (2005) Consideration of soil properties in assessment of human health risk from exposure to arsenical pesticide applied soils. *Integr. Environ. Assess. Mgmt.* 1(1): 5-59.
4. Makris, K.C., Quazi, S., Nagar, R., Sarkar, D., **Datta, R.,** Sylvia V. (2008) In vitro model improves the prediction of soil arsenic bioavailability: Worst-case scenario. *Environ. Sci. Technol.* 42 (16), 6278-6284.
5. Andra, S.S., Saminathan, S.K., Sarkar, D., **Datta, R.** (2008) Chelant-aided enhancement of lead mobilization in residential soils. *Environ. Pollut.* 148: 1139-1148.
6. Andra, S.S., **Datta, R.,** Sarkar, D., Makris, K.C., Mullens, C.P., Sahi, S.V., Bach, S. (2009) Induction of Lead-Binding Phytochelatins in Vetiver Grass. *J. Env. Qual.*, 38: 868-877.
7. Nagar, R., Makris, K., Sarkar, D., Datta, R., Sylvia, V. (2009) Bioavailability and Bioaccessibility of arsenic in a soil amended with drinking water treatment residuals. *Arch.*

- Environ. Contamin. Toxicol.* 57(4): 755-766.
8. Andra, S., **Datta, R.**, Sarkar, D., Bach, S. (2009) Analysis of phytochelatin complexes in the lead tolerant vetiver grass (*Vetiveria zizanioides*) using liquid chromatography and mass spectrometry. *Environmental Pollut.* 157: 2173-2183.
 9. Saminathan, K.M.S., Sarkar, D., Andra, S.S., **Datta, R.** (2010) Lead fractionation and bioaccessibility in contaminated soils with variable chemical properties. *Chem. Speciation Bioavail.* 22(4): 215-225.
 10. Andra, S.S., Sarkar, D., Saminathan, K.M.S., **Datta, R.** (2010) Chelant-assisted phytostabilization of paint-contaminated residential soil. *CLEAN – Soil, Air, Water* 38(9) 803-81.
 11. Andra, S.S., Sarkar, D., Saminathan, K.M.S., **Datta, R.** (2011) Predicting potentially plant-available lead in contaminated residential sites. *Environ. Monitor. Assess.* 175: 661- 676.
 12. Andra, S., **Datta, R.**, Reddy, R., Saminathan, S., Sarkar, D. (2011) Antioxidant Enzymes Response in Vetiver Grass: A Greenhouse Study for Chelant-Assisted Phytoremediation of Lead-Contaminated Residential Soils. *CLEAN – Soil, Air, Water.* 39: 428-436.
 13. Quazi, S., Sarkar, D., **Datta, R.** (2013) Human health risk from arsenical pesticide contaminated soils: A long-term greenhouse study. *J. Hazardous Materials.* 262 (15): 1031-1038.
 14. Li, K., Pidatala, R., Shaik, R., **Datta, R.**, Wusirika, R. (2014) Integrated metabolomic and proteomic approaches dissect the effect of metal resistant bacteria on maize biomass and copper uptake, *Environ. Sci. Technol.* 48: 1184-1193.
 15. Pidatala, V.R., Li, K., Sarkar, D., Wusirika, R., **Datta, R.** (2015) Identification of biochemical pathways associated with lead tolerance and detoxification in *Chrysopogon zizanioides* L. Nash (vetiver) by metabolic profiling. *Environ. Sci. Technol.* 50 (5): 2530–2537
 16. Tiwari, M., Krishnamurthy, S., Shukla, D., Kiiskila, J., Jain, A., **Datta, R.**, Sharma, N., Sahi, S.V. (2016) Comparative transcriptome and proteome analysis to reveal the biosynthesis of gold nanoparticles in Arabidopsis. *Nature Scientific Reports* 6: 21733. DOI: 10.1038/srep21733
 17. Attinti, R., Barrett, K.R., **Datta, R.**, Sarkar, D. (2017) Ethylenediaminedisuccinic acid (EDDS) enhances phytoextraction of lead by vetiver grass from contaminated residential soils in a panel study in the field. *Environ. Pollut.* 225: 524-533
 18. **Datta, R.**, Das, P., Tappero, R., Punamiya, P., Elzinga, E., Sahi, S., Feng, H., Kiiskila, J., Sarkar, D. (2017) Evidence for exocellular Arsenic in Fronds of *Pteris vittata*. *Nature Scientific Reports* 7: 2839. DOI:10.1038/s41598-017-03194-x
 19. Pidatala, V.R., Li, K., Sarkar, D., Wusirika, R., **Datta, R.** (2017) Comparative metabolic profiling of vetiver (*Chrysopogon zizanioides*) and maize (*Zea mays*) under Lead stress. *Chemosphere* 193: 903-911.
 20. Sidhu, V., Sarkar, D., **Datta, R.**, Solomon, B. (2018) Community response to a sustainable restoration plan for a superfund site. *Environ. Sci. Pollut. Res.* 25: 16959- 16968.
 21. Kiiskila, J.D., Sarkar, D., Panja, S., Sahi, S.V., **Datta, R.** (2019) Remediation of acid mine drainage-impacted water by vetiver grass (*Chrysopogon zizanioides*): A multiscale long-term study. *Ecol. Engineer.* 129: 97-108
 22. Driscoll, D., Deshpande, A., Chapp, A., Li, K., **Datta, R.**, Ramakrishna, W. (2019) Anti-inflammatory and immune-modulating effects of rice callus suspension culture and bioactive fractions in an in vitro inflammatory bowel disease model. *Phytomedicine* 57: 364-376