
BIOGRAPHICAL SKETCH

NAME David W. Britt	POSITION TITLE Interim Department Head, Associate Professor		
eRA COMMONS USER NAME			
EDUCATION/TRAINING			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
University of Utah, Salt Lake City, UT	B.S. / B.S.	1992	Chemistry / Materials Science & Eng.
University of Puerto Rico, Humacao, PR	Minor	1989-1990	Spanish Immersion
University of Utah, Salt Lake City, UT	Ph.D.	2000	Bioengineering
Max Planck Institute, Göttingen, Germany		1998-2001	Membrane Biophysics

A. Personal Statement

Dr. Britt joined USU in 2002 where he has built a robust research program, with over 70 peer-reviewed publications stemming from interdisciplinary research funded by NSF, USDA-NIFA, AHA, Dairy Management Inc., and private biomedical industry. Dr. Britt's research focuses on nanoscale phenomena at interfaces with applications in agriculture, medicine, and diagnostics. His 2018 h-index is 29 and citation index 2,835. Dr. Britt also has a passion for teaching and outreach. He hosts underrepresented undergraduate and high school students in his lab each summer, and was awarded the Eldon Gardner Teacher of the Year for Utah State University in 2015.

B. Positions and Honors

PROFESSIONAL EXPERIENCE

2016 – Present	Interim Dept. Head, Biological Eng.	Utah State University
2009 – 2010	Visiting Professor, Chem. & Materials	U. Auckland, NZ
2008 – Present	Associate Professor	Utah State University
2002 – Present	Adjunct Professor, Bioengineering	University of Utah
2002 – 2008	Assistant Professor	Utah State University
2001 – 2002	Research Assistant Professor, Bioeng.	University of Utah

TEACHING RESPONSIBILITIES

1. (BENG 1000, formerly 1890) Methods in Undergraduate Research + Lab (2007 - 2015)
2. (BENG 5850 / 6850) Biomaterials Engineering + Lab (2002 - present)
3. (BENG 2330) Properties of Biomaterials + Lab (2002 - present)
4. (BENG 2330.web) Properties of Biomaterials + Lab (Distance Ed. Course, 2009)
5. (BENG 3000) Bioinstrumentation + Lab (2003, 2004)
6. (BENG 3870) Junior Design + Lab (2003)
7. (PHYX 2400) Introduction to Nanotechnology (2 lectures; H Yang Instructor, 2005)
8. (PHYX 5700) Microfabrication (1 lecture + lab module; T-C Shen Instructor, 2012 - present)

PROFESSIONAL SERVICE

- Gordon Research Conference Co-Chair Nanoscale Science & Engineering for Agriculture & Food Systems, Mount Holyoke, South Hadley, MA (June 2-8, 2018)

- Panel Reviewer: National Science Foundation (CBET-NIRT, EEC-DLR, Bioengineering-GRPF panels), BSF (United States-Israel Binational Science Foundation), USDA-NIFA.
- Journal Review: Environmental Sci: Nano; Environmental Science and Technology, Langmuir, J. Colloid Interface Sci., J. App. Spectroscopy, Biotech Progress, Biosensors & Bioelectronics, J. Agriculture & Food Chemistry, Current Opinion in Environmental Sci & Health, Carbohydrate Polymers; Journal of Basic Microbiology; Science of the Total Environment; PLOS ONE
- Session Organizer and Chair Sustainable Nanotechnology Organization Annual Conference, Orlando, FL, November 10-12, 2016
- Session Organizer and Chair: Nanoparticles in Agriculture and Environment, ACS Colloids and Surfaces Division, ACS National Meeting, Boston, MA August 16-20, 2015
- Program Session Organizer: NanoUtah Annual Nanotechnology Conference, Salt Lake City, UT, October, 2011, 2012, 2013
- Vice Chair for Gordon Research Conference: Nanoscale Science & Engineering for Agriculture & Food Systems, Bentley Univ., Waltham, MA, June 7 - 12, 2015

SELECTED HONORS AND AWARDS

- Outstanding Teacher, Department of Biological Engineering (2016)
- Eldon Gardner Teacher of the Year Award for Utah State University (2015)
- Cover of Journal of Applied Polymer Science (vol. 132, June 5, 2015)
- Outstanding Research Mentor, Department of Biological Engineering (2011)
- Utah State University Robins Award Finalist for Student Mentoring (2008)
- Department Teaching Excellence Award, Utah State University (2007)
- USDA-CSREES Young Investigator Award (2005)
- Top 25 reviewer, Journal of Colloid and Interface Science (2005)
- Outstanding Researcher, Department of Biological Engineering (2005)
- Outstanding Teacher, Department of Biological Engineering (2004)
- Outstanding Advisor, Department of Biological Engineering (2003)
- Ph.D. dissertation represented the University of Utah for the 2000 Council of Graduate Schools International Distinguished Dissertation Award in STEM
- Cover of the journal Langmuir (vol. 17, June 12, 2001)
- National Science Foundation-NATO Post-Doctoral Fellow (1998 - 1999)

OUTREACH

- Developed and organized an 8-week undergraduate immersion in biological engineering research and design (NSF-CBET funded). Hosted 9 underrepresented students, 2017
- Native American STEM Mentor Program (NASMP) faculty mentor, 2013 – present
- Nanodays (Leonardo Museum, SLC) hands-on module development and presentations
- Eng. State and USU Biotechnology Academy Summer high school outreach, 2002 - present

C. Major Research Support

CURRENT:

1. *Principal Investigator:* “Nanoparticles Prime Crop Defenses for Abiotic Stress” (USDA-NIFA). June 1, 2017 – May 31, 2020
2. *Principal Investigator:* “CuO NP bioactivity in the wheat rhizosphere: Interplay of soil chemistry, root exudation, and biofilms” (NSF-CBET). July 1, 2017 – June 30, 2020
3. *Principal Investigator:* “Effects of Metals from Flue Gas” (NSF-CBET). September 1, 2013 – August 31, 2018. Funded a pilot REU to 9 underrepresented students for 8 weeks in 2017.
4. *Principal Investigator:* “Outer membrane vesicle activity in the rhizosphere and biofortification applications” (USDA-HATCH). July 1, 2016–June 30, 2020

5. *Principal Investigator*: “Nanoscale Science and Engineering for Agriculture and Food Systems” (USDA-NIFA). March 1, 2018 – August 31, 2018 (Conference grant: GRC/GRS)

RECENT PAST:

1. NSF MRI: Acquisition of a Field-Emission Scanning Electron Microscope to Catalyze Campus-Wide Research in Bio/Nano and Advanced Energy Materials, T-C Shen, H. Ban, D.W. Britt, A. Jacobson, J.W. Shervais, Sept. 1 2013- Aug. 31 2016.
2. USDA-NIFA: Plant-microbial interactions: effects of sublethal doses of nanoparticles, A.J. Anderson (P.I.), D.W. Britt (Co. P.I.), J. McLean (Co. P.I.), Christian Dimkpa (Co. P.I.), Jan 01, 2012 – Dec 31, 2014.
3. USDA-NIFA: Impact, Detection, and Tracking of NP in Agriculture: A Focus on Crops and Rhizosphere Microbes. D.W. Britt (P.I.), A.J. Anderson (Co. P.I.), J. McLean (Co. P.I.), B. Gale (Co. P.I.), W.P. Johnson (Co. P.I.) USDA. January 1, 2009 – December 31, 2011.

D. RECENT REFEREED PUBLICATIONS. Undergraduates in bold type. Graduates Italics

1. Jacobson, A., **Doxie, S., Potter, M., Adams, J.**, Britt, D.W, *McManus, P.*, McLean, J.E, Anderson, A.J, **2018**. Interactions Between a Plant Probiotic and Nanoparticles on Plant Responses Related to Drought Tolerance. *Industrial Biotechnology*, 14:3, 148-156. doi: 10.1089/ind.2017.0033
2. *Bonebrake, M., Anderson, K., Valiente, J.*, Jacobson, A., McLean, J.E, Anderson, A.J, Britt, D.W. **2017**. Biofilms Benefiting Plants Exposed to ZnO and CuO Nanoparticles Studied with a Root-Mimetic Hollow Fiber Membrane. *Journal of Agricultural and Food Chemistry*, 66:26, 6619–6627. doi: 10.1021/acs.jafc.7b02524
3. Anderson, A.J, McLean, J.E, *McManus, P.*, Britt, D.W. **2017**. Soil chemistry influences the phytotoxicity of metal oxide nanoparticles. *International Journal of Nanotechnology*, 14:1-6, 15-21. Anderson, A.J, McLean, J.E, Jacobson, A., Britt, D.W., (2017). CuO and ZnO Nanoparticles Modify Interkingdom Cell Signaling Processes Relevant to Crop Production. *Journal of Agricultural and Food Chemistry*, 66:26, 6513–6524.
4. **Adams J, Wright M, Wagner H, Valiente J**, Britt D, Anderson A. **2017**. Cu from dissolution of CuO nanoparticles signals changes in root morphology. *Plant Physiol Biochem*. Jan; 110:108-117. doi: 10.1016/j.plaphy.2016.08.005.
5. Anderson AJ, McLean JE, Jacobson AR, Britt DW. **2017**. CuO and ZnO nanoparticles modify interkingdom cell signaling processes relevant to crop production. *J Agric Food Chem*. May 12. doi: 10.1021/acs.jafc.7b01302.
6. Anderson A, McLean JE, *McManus P*, Britt DW. Soil chemistry influences the phytotoxicity of metal oxide nanoparticles. **2017**. *International J Nanotechnology*. Vol. 14, No.1/2/3/4/5/6 pp. 15 - 21
7. **Wright M, Adams J**, Yang K, McManus P, Jacobson A, Gade A, McLean J, Britt D, Anderson A. **2016**. A root-colonizing pseudomonad lessens stress responses in wheat imposed by CuO nanoparticles. *PLoS One*. Oct 24;11(10): e0164635. doi: 10.1371/journal.pone.0164635.
8. Gade, A.; **Adams, J.**; Britt, D. W.; Shen, F. A.; McLean, J. E.; Jacobson, A.; Kim, Y. C.; Anderson, A. J., Ag nanoparticles generated using bio-reduction and -coating cause microbial killing without cell lysis. *Biometals* **2016**, 29, (2), 211-223.
9. **Zabrieski, Z.; Morrell, E.; Hortin, J.**; Dimkpa, C.; McLean, J.; Britt, D.; Anderson, A., Pesticidal activity of metal oxide nanoparticles on plant pathogenic isolates of Pythium. *Ecotoxicology* **2015**, 24, (6), 1305-1314.
10. **Watson, J. L.; Fang, T.**; Dimkpa, C. O.; Britt, D. W.; McLean, J. E.; Jacobson, A.; Anderson, A. J., The phytotoxicity of ZnO nanoparticles on wheat varies with soil properties. *Biometals* **2015**, 28, (1), 101-112.

11. **Stewart, J.; Hansen, T.**; McLean, J. E.; McManus, P.; Das, S.; Britt, D. W.; Anderson, A. J.; Dimkpa, C. O., Salts affect the interaction of ZnO or CuO nanoparticles with wheat. *Environ Toxicol Chem* **2015**, *34*, (9), 2116-2125.
12. *Madsen, B.*; Ho, C. H.; **Henrie, M.**; Ford, C.; Stroup, E.; Maltby, B.; Olmstead, D.; Andersen, M.; Britt, D. W., Hemodialysis membrane surface chemistry as a barrier to lipopolysaccharide transfer. *J Appl Polym Sci* **2015**, *132*, (21).
13. Dimkpa, C. O.; McLean, J. E.; Britt, D. W.; Anderson, A. J., Nano-CuO and interaction with nano-ZnO or soil bacterium provide evidence for the interference of nanoparticles in metal nutrition of plants. *Ecotoxicology* **2015**, *24*, (1), 119-129.
14. Dimkpa, C. O.; **Hansen, T.; Stewart, J.**; McLean, J. E.; Britt, D. W.; Anderson, A. J., ZnO nanoparticles and root colonization by a beneficial pseudomonad influence essential metal responses in bean (*Phaseolus vulgaris*). *Nanotoxicology* **2015**, *9*, (3), 271-278.
15. *Peng, Y.*; Turner, N. W.; Britt, D. W., Trifluorosilane induced structural transitions in beta-lactoglobulin in sol and gel. *Colloid Surface B* **2014**, *119*, 6-13.
16. **Martineau, N.**; McLean, J. E.; Dimkpa, C. O.; Britt, D. W.; Anderson, A. J., Components from wheat roots modify the bioactivity of ZnO and CuO nanoparticles in a soil bacterium. *Environ Pollut* **2014**, *187*, 65-72.
17. **Fang, T.; Watson, J. L.; Goodman, J.**; Dimkpa, C. O.; **Martineau, N.**; Das, S.; McLean, J. E.; Britt, D. W.; Anderson, A. J., Does doping with aluminum alter the effects of ZnO nanoparticles on the metabolism of soil pseudomonads? *Microbiol Res* **2013**, *168*, (2), 91-98.
18. Dimkpa, C. O.; McLean, J. E.; **Martineau, N.**; Britt, D. W.; Haverkamp, R.; Anderson, A. J., Silver Nanoparticles Disrupt Wheat (*Triticum aestivum* L.) Growth in a Sand Matrix. *Environ Sci Technol* **2013**, *47*, (2), 1082-1090.
19. Dimkpa, C. O.; McLean, J. E.; Britt, D. W.; Anderson, A. J., Antifungal activity of ZnO nanoparticles and their interactive effect with a biocontrol bacterium on growth antagonism of the plant pathogen *Fusarium graminearum*. *Biometals* **2013**, *26*, (6), 913-924.
20. Dimkpa, C. O.; Latta, D. E.; McLean, J. E.; Britt, D. W.; Boyanov, M. I.; Anderson, A. J., Fate of CuO and ZnO Nano- and Microparticles in the Plant Environment. *Environ Sci Technol* **2013**, *47*, (9), 4734-4742.
21. Dimkpa, C. O.; *Zeng, J.*; McLean, J. E.; Britt, D. W.; Zhan, J. X.; Anderson, A. J., Production of Indole-3-Acetic Acid via the Indole-3-Acetamide Pathway in the Plant-Beneficial Bacterium *Pseudomonas chlororaphis* O6 Is Inhibited by ZnO Nanoparticles but Enhanced by CuO Nanoparticles. *Appl Environ Microb* **2012**, *78*, (5), 1404-1410.
22. Dimkpa, C. O.; McLean, J. E.; Latta, D. E.; *Manangon, E.*; Britt, D. W.; Johnson, W. P.; Boyanov, M. I.; Anderson, A. J., CuO and ZnO nanoparticles: phytotoxicity, metal speciation, and induction of oxidative stress in sand-grown wheat. *J Nanopart Res* **2012**, *14*, (9).
23. Dimkpa, C. O.; McLean, J. E.; Britt, D. W.; Johnson, W. P.; Arey, B.; Lea, A. S.; Anderson, A. J., Nanospecific Inhibition of Pyoverdine Siderophore Production in *Pseudomonas chlororaphis* O6 by CuO Nanoparticles. *Chem Res Toxicol* **2012**, *25*, (5), 1066-1074.
24. Dimkpa, C. O.; Mclean, J. E.; Britt, D. W.; Anderson, A. J., CuO and ZnO nanoparticles differently affect the secretion of fluorescent siderophores in the beneficial root colonizer, *Pseudomonas chlororaphis* O6. *Nanotoxicology* **2012**, *6*, (6), 635-642.
25. **Calder, A. J.**; Dimkpa, C. O.; McLean, J. E.; Britt, D. W.; Johnson, W.; Anderson, A. J., Soil components mitigate the antimicrobial effects of silver nanoparticles towards a beneficial soil bacterium, *Pseudomonas chlororaphis* O6. *Sci Total Environ* **2012**, *429*, 215-222.