

## Jacob R. Price, Ph.D.

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CONTACT INFORMATION	<div></div> <div></div> <div>JacobRPricePhD@gmail.com</div> <div><a href="http://jacobrprice.github.io/">http://jacobrprice.github.io/</a></div>
EDUCATION	<p><b>Drexel University</b>, Philadelphia, PA</p> <p>Ph.D., Environmental Engineering, 2018</p> <ul style="list-style-type: none"><li>• Thesis Topic: <i>Linking Complex Nutrient Kinetics and Ecological Processes within a Photosynthetic Mixed Microbial Community</i></li><li>• Advisor: Christopher M. Sales, Ph.D</li></ul> <p><b>Temple University</b>, Philadelphia, PA</p> <p>M.S., Civil &amp; Environmental Engineering, 2013</p> <ul style="list-style-type: none"><li>• Thesis Topic: <i>The effects of urbanization on stream channel morphology in southeastern Pennsylvania</i></li><li>• Advisor: Robert J. Ryan, Ph.D, P.E.</li></ul> <p>Graduate Certificate in Stormwater Management, 2013</p> <p><b>The Pennsylvania State University</b>, University Park, PA</p> <p>B.S., Mathematics, 2007</p> <p>Minor, Statistics, 2007</p>
RESEARCH EXPERIENCE	<p><b>Post-Doctoral Researcher</b> 2018 to Present</p> <p>Department of Soil Science, University of Wisconsin - Madison</p> <p>Supervisors: Thea Whitman, Ph.D, Amy Willis, Ph.D., &amp; Karl Broman, Ph.D.</p> <ul style="list-style-type: none"><li>• Addressing misclassification in the microbiome: A data-scientific approach to propagating uncertainty in microbial community composition</li></ul> <p><b>Post-Doctoral Researcher</b> 2018</p> <p>The Sustainable Water Resource Engineering Laboratory Department of Civil, Architectural, and Environmental Engineering Drexel University</p> <p>Supervisor: Franco Montalto, Ph.D, P.E. &amp; Christopher M. Sales, Ph.D.</p> <ul style="list-style-type: none"><li>• Evaluation of rooftop water quality, and the development of conceptual treatment protocols for the Jacob K. Javits Convention Center Green Roof Extension</li></ul> <p><b>Doctoral Research Assistant</b> 2013 to 2018</p> <p>Department of Civil, Architectural, and Environmental Engineering Drexel University</p> <p>Supervisor: Christopher M. Sales, Ph.D</p> <p><b>Masters Research Assistant</b> 2012 to 2013</p> <p>Department of Civil and Environmental Engineering Temple University</p> <p>Supervisor: Robert J. Ryan, Ph.D, P.E.</p> <p><b>Technical Advisor</b> 2012 to 2013</p> <p>Center for Natural Resource Development and Protection, Department of Civil and Environmental Engineering New Jersey Institute of Technology</p> <p>Supervisor: Michel C. Boufadel, Ph.D, P.E.</p>

**Research Assistant** 2010 to 2012  
 Center for Natural Resource Development and Protection,  
 Department of Civil and Environmental Engineering  
 Temple University  
 Supervisor: Michel C. Boufadel, Ph.D, P.E.

HONORS &  
AWARDS

Travel Awards  
 • International Society for Microbial Ecology, Montreal, Canada 2016

Student Awards — Drexel University  
 • Claudio Elia Memorial Fellowship 2015 to 2016  
 • Graduate Assistance in Areas of National Need (GAANN) 2014 to 2015  
 Grand Challenges Fellowship  
 • The Koerner Family Award in 2014 to 2015  
 Civil, Architectural, and Environmental Engineering

Student Awards — Temple University  
 • Scientists as Teachers; Teachers as Scientists Graduate Fellowship 2012 to 2013  
 National Science Foundation Award Number 0841377

REFEREED  
JOURNAL  
PUBLICATIONS

1. **Price, J. R.** & Sales, C. M. “Quantifying the influence of nutrient loading and availability on microbial community dynamics and subsequent kinetic behavior.” (IN PREP).
2. **Nan, Y. & Price, J. R.**, Wang, Y., Cheng, M., Keshani Langroodi, S., Woloszynek, S., Rosen, G.L., & Sales, C. M. “Evidence of predation and parasitism affecting EBPR performance through microbial community instability.” (IN PREP).
3. Minerovic, A., Potapova, M. G., Sales, C. M., **Price, J. R.**, & Enache, M. D. “18S-V9 DNA metabarcoding detects the effect of water-quality impairment on stream biofilm eukaryotic assemblages.” *Ecol Indic.* doi:10.1016/j.ecolind.2020.106225 (2020).
4. **Price, J. R.**, Ledford, S. H., Ryan, M. O., Toran, L. & Sales, C. M. “Wastewater treatment plant effluent introduces recoverable shifts in microbial community composition in receiving streams.” *Sci Total Environ* 613-614, 1104-1116, doi:10.1016/j.scitotenv.2017.09.162 (2018).
5. Sniffen, K. D., **Price, J. R.**, Sales, C. M. & Olson, M. S. “Influence of Scale on Biomass Growth and Nutrient Removal in an Algal-Bacterial Leachate Treatment System.” *Environ Sci Technol* 51, 13344-13352, doi:10.1021/acs.est.7b03975 (2017).
6. **Price, J. R.**, Keshani Langroodi, S., Lan, Y., Becker, J.M., Shieh, W.K., Rosen, G.L., & Sales, C.M. “Untangling the microbial ecosystem and kinetics in a nitrogen removing photosynthetic high density bioreactor.” *Environ. Sci.: Water Res. Technol.* 2, 705-716, doi:10.1039/c6ew00078a (2016).  
 • **Emerging Investigators Series**
7. **Price, J. R.**, Shieh, W. K. & Sales, C. M. “A Novel Bioreactor for High Density Cultivation of Diverse Microbial Communities.” *J Vis Exp* e53443, doi:10.3791/53443 (2015).

- BOOK CHAPTERS
1. Woloszynek, S., Zhao, Z., Ditzler, G., **Price, J.R.**, Reichenberger, E., Lan, Y., Chen, J., Earl, J., Keshani Langroodi, S., Ehrlich, G., & Rosen, G.L. "Analysis Methods for Shotgun Metagenomics" in *Computational Biology: Theoretical and Applied Aspects of Systems Biology* Eds F. Alves Barbosa da Silva, N. Carels, & F. Paes Silva Junior. Springer International Publishing. doi:10.1007/978-3-319-74974-7\_5 (2018).
- SOFTWARE
1. **Price, J. R.** Woloszynek, S., Rosen, G. L. & Sales, C. M. "theseus - An R package for the analysis and visualization of microbial community data." *bioRxiv*, doi:10.1101/295675 (2018).
- TECHNICAL NOTES
1. **Price, J. R.**, Thompson, T. J., & Parish, J. "Automated Parsing of a LabSolutions Batch Results File (ASCII Output) When Using a Spreadsheet or Statistical Package to Summarize Data." Technical Note. Shimadzu Scientific Instruments. doi: 10.13140/RG.2.1.2746.3447. (2015).
- PRESENTATIONS
- Invited Presentations
1. **Price, J.R.**, Willis, A.D., and T.L. Whitman. 2020. "Propagation of uncertainty improves the quality of microbiome data analysis". Biological Discovery from Big Data (BD<sup>2</sup>) Seminar Series. Drexel University. Philadelphia, PA. (**Postponed: COVID-19**).
- Oral Presentations
1. **Price, J.R.**, Willis, A.D., and T.L. Whitman. 2020. "Propagation of uncertainty improves the quality of microbiome data analysis". ACS Fall Meeting. San Francisco, CA.
  2. **Price, J.R.**, Willis, A.D., and T.L. Whitman. 2020. "Propagation of uncertainty improves the quality of microbiome data analysis". ACS National Meeting. Philadelphia, PA. (**Meeting Cancelled: COVID-19**).
  3. He. J.\*, Owusu-Asumeng, E., **Price, J.R.**, Zidar, C., Stolper, J., Lempitsky, I., Montalto, F., and C.M. Sales. 2020. "Urban green roofs as new habitats for birds...and bacteria: A yearlong water quality assessment of stormwater runoff the Javits Center Green Roof". ACS National Meeting. Philadelphia, PA. (**Meeting Cancelled: COVID-19**).
  4. **J.R. Price**. 2019. "Statistical Considerations for 'omic data analysis". Workshop: Meta-omics in Environmental Engineering Research: Theory, Statistics, and Data Interpretation. 2019 AEESP Research and Education Conference. Tempe, AZ.
  5. **Price, J.R.**, and C.M. Sales. 2019. Predation and parasitism induces community stability and performance within EBPR reactors. ACS National Meeting. Orlando, FL.
  6. **Price, J.R.** and C.M. Sales. 2018. Examining nutrient uptake and transformation within photosynthetic microbial communities using a high density bioreactor. 255th American Chemical Society National Meeting. New Orleans, La.
  7. Bradley, T.\*, **Price, J.R.**, and C.M. Sales. 2018. Comparing MiSeq and PacBio SMRT sequencing of fecal samples from various animal sources potentially contributing to microbial contamination of the Delaware River Watershed. Delaware Watershed Research Conference. Philadelphia, PA.

8. Minerovic, A.\*, Potapova, M., **Price, J.R.**, and C.M. Sales. 2018. Molecular and morphological characterization of microbial eukaryote diversity and community structure for stream biomonitoring in New Jersey, USA. 2018 Phycological Society of America/International Society of Protistologists Annual Meeting. Vancouver, Canada.
9. Minerovic, A.\*, Potapova, M., **Price, J.R.**, and C.M. Sales. 2018. Molecular and morphological characterization of diatom diversity and community structure for stream biomonitoring in New Jersey, USA. 2018 International Diatom Symposium. Berlin, Germany.
10. **Price, J.R.**, Ledford, S.H., Ryan, M.O., Toran, L., and C.M. Sales. 2017. The impact of wastewater treatment plant effluent on the composition of microbial communities within receiving streams. Delaware Watershed Research Conference 2017. Philadelphia, PA.
11. Sales, C.M.\*, **Price, J.R.**, and S. Keshani Langroodi. 2017. Tools from molecular ecology provide an augmentative approach to understanding engineered and natural systems. Philadelphia Symposium on Cross-Disciplinary Analytical Approaches. Philadelphia, PA.
12. Ledford, S.H.\*, **Price, J.R.**, Ryan, M., Perez, L. B., Sales, C.M., and L. Toran. 2016. Using multi-parameter biogeological approach to track the impact of treated sewage discharge on urban streams. 2016 Annual Meeting of the Geological Society of America. Denver, CO.
13. **Price, J.R.** and C.M. Sales. 2015. Microalgae: Harnessing Diverse Metabolisms for Environmental Remediation and Waste Stream Treatment. 2015 Annual Meeting of the Phycological Society of America. Philadelphia, PA.

#### Poster Presentations

1. **Price, J.R.**, Willis, A.D., and T.L. Whitman. 2020. "Quantifying and propagating uncertainty in assigning reads to OTUs". ASM Microbe Online.
2. **Price, J.R.**, Willis, A.D., and T.L. Whitman. 2020. "Quantifying and propagating uncertainty in assigning reads to OTUs". ASM Microbe. Chicago, IL. (Meeting Cancelled: COVID-19).
3. **Price, J.R.**, Willis, A.D., and T.L. Whitman. 2020. "Accounting for uncertainty in the read-to-OTU classification problem improves the quality of microbiome analysis". University of Wisconsin - Madison Data Science Research Bazaar. Madison, WI.
4. **J.R. Price** & C.M. Sales. 2018. "Quantifying the influence of nutrient loading on a photosynthetic mixed community". International Society of Microbial Ecology - 17. Leipzig, Germany.
5. **Price, J.R.**, Ledford, S.H.\*, Ryan, M.O., Toran, L., and C.M. Sales. 2017. Wastewater treatment plant effluent introduces recoverable shifts in microbial community composition in urban streams. 2017 Fall meeting of the American Geophysical Union. New Orleans, LA.
6. **Price, J.R.** and C.M. Sales. 2017. Linking ecological aspects to photobioreactor operation and performance. 2017 Annual Meeting of The American Society for Microbiology. New Orleans, LA.

7. **Price, J.R.** and C.M. Sales. 2016. Resolving the relationships between photobioreactor influent, microbial diversity and abundance, and reactor performance within a high density bioreactor. 2016 Meeting of The International Society for Microbial Ecology. Montreal, Canada.
8. Navin, D.V.\*, **Price, J.R.**, and C.M. Sales. 2016. The influence of fluid shear on settling of algal biomass within a high density bioreactor. Hess Undergraduate Scholars Research. Philadelphia, PA.
9. **Price, J.R.**, Shieh, W.K., and C.M. Sales. 2015. A Novel Photobioreactor for Studying Nitrogen Utilization and Transformation by a Mixed Community of Algae and Bacteria Grown at High Cell Densities. Annual Meeting of the Association of Environmental Engineering & Science Professors. New Haven, CT.
10. **Price, J.R.**, Shieh, W.K., and C.M. Sales. 2015. Consumption and Conversion of Nitrogen Species by a Mixed Photosynthetic Community within a High Density Bioreactor. Drexel University Research Day. Philadelphia, PA.
11. **Price, J.R.**, Shieh, W.K., and C.M. Sales. 2015. Nitrogen Removal Dynamics by a Photosynthetic Microbial Community Under High Cell Densities. Annual Meeting of the American Waste Water Association – Pennsylvania Section. Hershey, PA.
12. **Price, J.R.**, and M.C. Boufadel. 2012. The kidney roles of the Delaware River shorelines. Schuylkill Watershed Congress. Pottstown, PA.
13. **Price, J.R.**, Smith, T., and M.C. Boufadel. 2011. The kidney roles of the Delaware River shorelines: Experimental Design. Temple University College of Engineering Research Day and Poster Competition. Philadelphia, PA.

#### TEACHING EXPERIENCE

##### Teaching Assistant - Drexel University

- Engineering Process Lab I & II 2014 to 2017
- Introduction to Infrastructure Engineering 2014
- Groundwater Remediation 2014
- Hydraulics 2013 to 2014
- Hydrology 2013

##### Teaching Assistant - Temple University

- Introduction to Engineering 2012
- Probability, Statistics, and the Stochastic Method 2011
- Mechanics of Fluids 2011

##### Graduate Fellow, Scientists as Teachers – Teachers as Scientists

- Temple University and W.B. Saul Agricultural High School 2012 to 2013

#### MENTORING EXPERIENCE

##### Undergraduate Students

##### Drexel Students Tackling Advanced Research (STAR) Scholars

- Sudipti Attri (BS. CHEME, exp. 2021, Drexel University) 2017
- Shannon Belfield (BS ENVE exp. 2021, Drexel University) 2017
- Marina D'Sousa (BS ENVE exp. 2020, Drexel University) 2016 to 2017

##### Hess Undergraduate Research Scholarship Program

- Daniel Navin (BS ME 2017, Drexel University) 2016

##### Freshman Design Project

- Marina D'Sousa (BS ENVE exp. 2020, Drexel University) 2016
- Fatima Hassan (BS ENVE exp. 2020, Drexel University) 2016

	Co-op & Volunteer Program	
	<ul style="list-style-type: none"> <li>• Jonas Becker (BS BIO, 2016, Hochschule Bremen, Germany) 2015 to 2016</li> <li>• Thomas Thompson (BS/MS ENVE 2016, Drexel University) 2015</li> <li>• Aspen Walker (BS/MS ENVE 2015, The University of Pennsylvania) 2014 to 2015</li> </ul>	
	<b>High School Students</b>	
	Franklin Institute STEM Scholars	
	<ul style="list-style-type: none"> <li>• Bafode Keita 2016</li> <li>• Hasan Talouli 2016</li> <li>• Semir Ibrahim 2015</li> <li>• Kayin Bankole 2014</li> </ul>	
UNIVERSITY SERVICE	<ul style="list-style-type: none"> <li>• Graduate Student Tenure Committee (Chair) 2018</li> <li>Drexel University</li> </ul>	
PROFESSIONAL ACTIVITIES	Service Positions	
	<ul style="list-style-type: none"> <li>• Research Bazaar Planning Committee 2019 to Present</li> <li>• American Society for Microbiology Young Ambassador 2018 to Present</li> <li>• Journal Referee for: The ISME Journal, Scientific Reports, Water Research</li> <li>• Drexel University Point of Contact 2017 to 2018 Northeast Graduate Student Water Symposium</li> <li>• ReadCube Ambassador Program 2015 to Present</li> <li>• Advising Panelist and Task Force Member 2014 to 2015 Watershed Action Through Engineered Response (W.A.T.E.R.) W.B. Saul High School of Agricultural Sciences</li> </ul>	
	Ad hoc Outreach Presentations	
	<ul style="list-style-type: none"> <li>• Sales, C.M., <b>Price, J.R.</b>, Hamilton, K., Rackes, A., &amp; Perez, L. Environmental Engineering Workshop. Franklin Institute STEM Scholars. Franklin Institute, Philadelphia, PA. (2016).</li> <li>• <b>J.R. Price.</b> Potential Uses of Algae in Wastewater Treatment. Gwynedd-Mercy Academy. Ambler, PA. (2015).</li> <li>• <b>J.R. Price.</b> Investigation of Algal Communities. Walter Biddle Saul Agricultural High School. Philadelphia, PA. (2013).</li> </ul>	
	Associations and Memberships	
	<ul style="list-style-type: none"> <li>• American Association for the Advancement of Science (AAAS)</li> <li>• American Chemical Society (ACS)</li> <li>• Association of Environmental Engineering and Science Professionals (AEESP)</li> <li>• American Geophysical Union (AGU)</li> <li>• American Society for Microbiology (ASM)</li> <li>• American Water Resources Association (AWRA)</li> <li>• American Water Works Association (AWWA)</li> <li>• International Society for Microbial Ecology (ISME)</li> </ul>	
OTHER EXPERIENCE	Data Analyst	2009 to 2010
	Arkema Incorporated, Philadelphia, PA	
	Actuarial (Intern followed by) Technician	2006 to 2009
	Penn Mutual Life Insurance Company, Horsham, PA	

## REFERENCES

Thea L. Whitman  
Assistant Professor  
Department of Soil Science  
University of Wisconsin - Madison

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Amy D. Willis  
Assistant Professor  
Department of Biostatistics  
University of Washington

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Christopher M. Sales  
Associate Professor  
Civil, Architectural, and Environmental Engineering  
Drexel University

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