

# JESETH DELGADO VELA

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## EDUCATION

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PhD Environmental Engineering University of Michigan Thesis: Nitrogen and Sulfur Cycling During Wastewater Treatment Thesis Advisors: Dr. Nancy G. Love and Dr. Gregory J. Dick	2018
MSE Environmental Engineering University of Michigan	2014
BS Civil Engineering University of Texas at Austin	2012

## APPOINTMENTS

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Assistant Professor, Howard University	2018-present
Graduate Student Researcher, University of Michigan	2012-2018
Undergraduate Research Assistant, University of Texas	2011-2012
Undergraduate Research Assistant, University of Michigan	2011

## AWARDS

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Ford Foundation Dissertation Award	2016-2017
Rackham Predoctoral Fellowship, (declined)	2016-2017
Best Paper of 2015, Environmental Science and Technology: Letters	2015
Presentation Award, AEEESP Research and Education Conference	2015
National Science Foundation Graduate Research Fellow	2012-2015
Rackham Merit Fellow	2012-2018

## PEER-REVIEWED JOURNAL ARTICLES

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**Delgado Vela, J.,** Dick, G.J., Love, N.G. 2018. Sulfide inhibition of nitrite oxidation in activated sludge depends on community composition. *Water Research*. **DOI:** 10.1016/j.watres.2018.03.047

Stadler, L.B.†, **Delgado Vela, J.**†, Jain, S., Dick, G.J., Love, N.G. 2017. Elucidating the impact of microbial community diversity on pharmaceutical biotransformation during wastewater treatment. *Microbial Biotechnology*. **DOI:** 10.1111/1751-7915.12870

† These authors contributed equally to this work.

**Delgado Vela, J.,** Stadler, L.B., Martin, K. J., Raskin, L., Bott, C. B., Love, N. G. 2015. Prospects for Biological Nitrogen Removal from Anaerobic Effluents during Mainstream Wastewater Treatment. *Environmental Science and Technology: Letters*, **2**(9):234-244. **DOI:** 10.1021/acs.estlett.5b00191. (Best Paper of 2015)

## In review

Sakowski, E., Uritskiy G., Cooper, R., Gomes, M., McLaren M.R., Meisel, J.S., Mickol, R.L., Mintz, C.D., Mongodin E.F., Pop, M., Rahman, M.A., Sanchez, A., Timp, W, **Delgado Vela, J.** Wolz, C.M, Zackular, J.P., Chopyk, J., Commichaux, S., Davis, M., Dluzen, D., Ganesan, S.M., Haruna, M., Nasko, D., Regan, M.J., Sarria, S, Shah, N., Stacy, B., Taylor, D., DiRuggiero, J., Preheim, S.P. Current state and future opportunities for prediction in microbiome research: Report from the Mid-Atlantic Microbiome Meet-up, Baltimore, MD, January 9th, 2019. *mBio*. Revisions Submitted September, 2019.

Bekele, Z.A, **Delgado Vela, J.**, Bott, C.B., Love, N.G. Sensor-mediated controls for aerobic granular sludge processes treating mainstream anaerobic effluents. *Water Research*. Submitted July 2019.

## In preparation, draft available upon request

**Delgado Vela, J.**, Bristow L.A., Marchant, H.K., Love, N.G., Dick, G.J. Sulfide changes microbial interactions in a nitrogen cycling biofilm reactor. In preparation for submission to *Environmental Microbiology*.

**Delgado Vela, J.**, Bekele, Z.A., Gordon, K. J., Klatt, J.M., Dick, G.J., Love, N.G. The impact of sulfide on the performance and microbial ecology of a membrane aerated biofilm reactor. In preparation for submission to *Environmental Science and Technology*.

## INVITED PRESENTATIONS

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North Carolina State Univ, Dept. of Civil, Construction, and Environmental Engineering.	2019
Rowan University, Dept. of Civil and Environmental Engineering.	2018
University of Texas, Dept. of Civil, Architectural, and Environmental Engineering.	2018
The Ohio State University, Dept. of Civil, Environmental, and Geodetic Engineering	2018
University of Michigan, Environmental and Water Resources Seminar.	2018
University of Southern California, Dept. of Civil and Environmental Engineering.	2017

## CONFERENCE PODIUM PRESENTATIONS (\*presenter, †HU graduate student)

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Fofana, R.\*†, Peng, B., Huynh, H., Jones, K., Al-Omari, A., Bott, C.B., **Delgado-Vela, J.**, Murthy, S., Wett, B., Debarbadillo, C., DeClippeleir, H. Media Selection for Enrichment of Anammox in Polishing Filters. 92<sup>nd</sup> Annual Water Environment Federation Technical Exhibition and Conference (WEFTEC), Chicago, IL, September 23<sup>rd</sup>, 2019.

**Delgado Vela, J.\***, Understanding nitrogen and sulfur cycling in urban water systems. Howard University-Ohio State University, Ecology and Evolutionary Sciences Mini-Symposium. Washington, DC, September 18<sup>th</sup>, 2019.

**Delgado Vela, J.\***, Dick, Gregory J., Love, N.G. Sulfide induced dissimilatory nitrite reduction to ammonia in a membrane aerated biofilm reactor. Mid-Atlantic Microbiome Meetup on Predictions and the Microbiome. Baltimore, MD, January 9<sup>th</sup>, 2019.

**Delgado Vela, J.\***, Dick, Gregory J., Love, N.G. The Impact of Sulfide on Nitrification: Implications for Nitrification Processes. Fifth International Conference on Nitrification and Related Processes (ICoN5): Early Career and Graduate Student Workshop. Vienna, Austria, July 23-27, 2017.

**Delgado Vela, J.\***, Dick, Gregory J., Love, N.G. Managing Healthy Activated Sludge Communities: Understanding the Impact of Sulfide on Nitrogen Removal. 2017 Association of Environmental Engineering & Science Professors (AEESP) Research and Education Conference. Ann Arbor, MI, June 20-22, 2017.

Bekele, Z.A.\*, **Delgado Vela, J.**, Martin, K.J., Bott, C.B., Love, N.G., Using sensor-mediated control and modeling to develop an aerobic granular sludge technology for low energy nitrogen removal. 2017 Association of Environmental Engineering & Science Professors (AEESP) Research and Education Conference. Ann Arbor, MI, June 20-22, 2017.

**Delgado Vela, J.\***, Wagner, B.M., Bekele, Z.A., Arcelay, A., Bott, C. B., Dick, G.J., Love, N.G. The Impact of Sulfide on Nitrogen Removal from Mainstream Anaerobic Processes using a Membrane Aerated Biofilm Reactor. 2017 Borchardt Conference, Ann Arbor, MI, February 21-22, 2017.

**Delgado Vela, J.\***, Bekele, Z.A., McFarland, A., Arcelay, A., Martin, K.J., Bott, C. B., Love, N.G. The Membrane Aerated Biofilm Reactor for Nitrogen Removal from Mainstream Anaerobic Processes. 89<sup>th</sup> Annual Water Environment Federation Technical Exhibition and Conference (WEFTEC), New Orleans, LA, September 26-28, 2016.

Stadler, L.B.\*, **Delgado Vela, J.**, Love N.G., Impact of low dissolved oxygen and microbial community on pharmaceutical biotransformations during wastewater treatment. 88<sup>th</sup> Annual Water Environment Federation Technical Exhibition and Conference (WEFTEC), Chicago, IL, September 26-30, 2015.

**Delgado Vela, J.\***, Martin, K. J., Beaton, N., McFarland, A., Stadler, L.B., Bott, C. B., Skerlos, S.J., Raskin, L., Love, N.G. Nutrient Removal from Mainstream Anaerobic Processes Using a Membrane Biofilm Reactor and a Granular Sludge Sequencing Batch Reactor. 88<sup>th</sup> Annual Water Environment Federation Technical Exhibition and Conference (WEFTEC), Chicago, IL, September 26-30, 2015.

**Delgado Vela, J.\***, Martin, K. J., McFarland, A., Beaton, N., Stadler, L.B., Skerlos, S.J., Raskin, L., Bott, C. B., Love, N.G. Removing nitrogen from effluents of anaerobic wastewater treatment processes: Understanding control and operation through biofilm modeling. 250<sup>th</sup> American Chemical Society National Meeting and Exhibition. Boston, MA, August 16-20, 2015.

Stadler, L.\*, **Delgado Vela J.\***, Love, N.G. Elucidating the Relationship between Wastewater Treatment Plant Microbial Diversity and Pharmaceutical Fate. 2015 Association of Environmental Engineering & Science Professors (AEESP) Research and Education Conference. New Haven, CT, June 13-16, 2015. **(Presentation Award)**

**Delgado Vela J.\***, Martin, K. J., Beaton, N., McFarland, A., Stadler, L., Bott, C. B., Raskin, L., Skerlos, S.J., Love, N.G. Nitrogen Removal Downstream of an Anaerobic Membrane Bioreactor for Domestic Wastewater Treatment. IWA Global Challenges: Sustainable Wastewater Treatment and Resource Recovery. Kathmandu, Nepal, October 26-30, 2014.

Stadler, L. B.\*, Smith, A. L.\*, Jain, A. K., Martin, K. J., **Delgado Vela, J.**, Puente, P., Cao, L., Frenette, S., Bott, C. B., Rauch-Williams, T., Shimada, T., Salvesson, A., Love, N. G., Raskin, L., and Skerlos, S. J. Integrating Life Cycle Assessment and Experimental Research: Evaluating Anaerobic Membrane Bioreactors in Domestic Wastewater Treatment for Energy Recovery. Borchardt Conference. Ann Arbor, MI, February 25 – 26, 2014.

Moline, C. J.\*, Stadler, L. B.\*, Su, Lijuan, Ernstoff, A. S., Dapcic, A. D., **Delgado Vela, J.**, Aga, D., and Love, N. G. Pharmaceutical Fate Under Varying Redox Treatment Environments. Proceedings of the 85<sup>th</sup> Annual Water Environment Federation Technical Exhibition and Conference (WEFTEC), New Orleans, LA, September 29 – October 3, 2012.

## POSTER PRESENTATIONS (\*presenter)

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**Delgado Vela, J.\***, Dick, Gregory J., Love, N.G. The Impact of Sulfide on Nitrification: Implications for Nitrification Processes. Fifth International Conference on Nitrification and Related Processes (ICoN5): Early Career and Graduate Student Workshop. Vienna, Austria, July 23-27, 2017.

Bekele, Z.A.\*, **Delgado Vela, J.**, Martin, K.J., Bott, C.B., Love, N.G., Aerobic granular sludge process optimization and modeling for mainstream anaerobically treated wastewater. 10<sup>th</sup> IWA International Conference on Biofilm Reactors. Dublin, Ireland, May 9-12, 2017.

Bekele, Z.A.\*, **Delgado Vela, J.**, Martin, K.J., Bott, C.B., Love, N.G., Achieving nitrogen removal from mainstream anaerobically treated wastewater using aerobic granular sludge with low aeration rate. 2017 Borhardt Conference, Ann Arbor, MI, February 21-22, 2017.

**Delgado Vela, J.\***, Dick, G.J., Love, N.G. Clarifying the impact of sulfide on nitrification in wastewater treatment. IWA Microbial Ecology in Water Engineering & Biofilms joint specialist conference. Copenhagen, Denmark, September 4-7, 2016.

**Delgado Vela, J.\***, Dick, G.J., Love, N.G. The importance of nitrogen and sulfur cycles during wastewater treatment. Michigan Meeting: Unseen Partners: Manipulating Microbial Communities that Support Life on Earth, Ann Arbor, MI, May 16-18, 2016. (with lightening talk)

**Delgado Vela, J.\***, Martin, K. J., McFarland, A.\*, Beaton, N., Stadler, L., Bott, C. B., Raskin, L., Skerlos, S.J., Love, N.G. Advancing Energy Neutral Wastewater Treatment: Removing Nitrogen and Dissolved Methazne from Dilute Anaerobic Effluents. 2015 Association of Environmental Engineering & Science Professors (AEESP) Research and Education Conference. New Haven, CT, June 13-16, 2015.

Stadler, L.\*, **Delgado Vela, J.**, Love, N.G. Elucidating the Relationship between Wastewater Treatment Plant Microbial Diversity and Pharmaceutical Fate. American Society for Microbiology 115<sup>th</sup> General Meeting. New Orleans, LA, May 30-June 2, 2015.

**Delgado Vela, J.\***, Martin, K.J., Stadler, L.B., Bott, C. Skerlos, S.J., Raskin, L., Love, N.G., Nutrient Removal from Mainstream Anaerobic Effluents: Linking Biofilm Modeling to Experimental Design. 87<sup>th</sup> Annual Water Environment Federation Technical Exhibition and Conference (WEFTEC), New Orleans, LA, September 28-October 1, 2014.

**Delgado Vela, J.\***, Stadler, L., Love, N.G., Elucidating Biotransformation of Pharmaceuticals by the Methanotroph Methylosinus Trichosporium Ob3b. Gordon Research Conference Environmental Sciences: Water, Plymouth, NH, June 22-27, 2014.

Cook S.\*, **Delgado Vela, J.**, Stadler, L.\* Advancing the Success of Engineering Service Projects from the Classroom to the Field. 86<sup>th</sup> Annual Water Environment Federation Technical Exhibition and Conference (WEFTEC), Chicago, IL, October 5-9, 2013.

**Delgado Vela, J.\***, Stadler, L., Love, N.G. Elucidating Biotransformation of Pharmaceuticals by Methanotrophic Bacteria. Association of Environmental Engineering & Science Professors (AEESP) 50<sup>th</sup> Anniversary Conference, Golden CO, July 14-16, 2013.

Stadler L.\*, Stevens, L., **Delgado Vela, J.**, Su, L., Aga, D.S., Love, N.G. Impact of redox environment and microbial populations on pharmaceutical biotransformation. 5<sup>th</sup> International Conference, Microbial Ecology and Water Engineering, Ann Arbor, MI, July 7-10, 2013.

## FUNDED PROPOSALS

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### **GOALI: Collaborative Research: Advancing wastewater treatment resiliency and sustainability goals in the face of climate change**

NSF- CBET- Environmental Engineering

PIs: Lauren Stadler (Rice University), **Jeseth Delgado Vela**, Lu Liu (Rice University), Andrew R. Shaw (Black and Veatch)

Total: \$418,696, Share: \$113,191

Project duration: 3 years (2019-2022)

### **Wetland and peroxide treated harmful algal blooms**

EPA P3 Award

PI: Jeseth Delgado Vela

Total: \$25,000

Project duration: 1 year (2019-2020)

## TEACHING

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### **Howard University**

Unit Operations in Environmental Engineering (Senior level)

Spring 2019

Environmental Engineering I (Junior level)

Fall 2018, 2019

## STUDENT SUPERVISION AND MENTORING (present affiliation)

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### **Howard University PhD students**

Rahil Fofana, co-advised with Kimberly Jones and Haydee De Clippeleir

2018-present

Mahsa Pahlavanneshan

2019-present

### **Howard University undergraduate students**

Moriah Brown

2019-present

Siani Brown

2019-present

Travis Flowers

2019-present

## SYNERGISTIC ACTIVITIES AND OUTREACH

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### **Professional Development Activities**

Fellow, ELEVATE, Penn Center for Minority Serving Institutions

2019

NSF Engineering CAREER Workshop

2019

Preparing Future Faculty Seminar on College Teaching

5/2016

Trainee, Integrated Training in Microbial Systems

2016-2018

### **Departmental & Institutional Service**

Program Committee, Environmental Science Symposium, Research Week

Spring 2019

Faculty advisor, Howard University Water Environment Association

2019-present

### **Professional Service**

Member, Evaluation Committee for Comprehensive Learning Management System, HU 2019-2020

Member, Diversity and Inclusion Task Force, WEF	2019-2020
Member, Education Committee, AEESP	2019-present
Reviewer, AEESP SSC Navigating the Academic Job Search Workshop	Summer 2019
Program Committee, WEF Nutrient Removal & Recovery Symposium	2018
Student organizing committee, AEESP 2017 Conference	2016-2017
Reviewer, manuscripts	2013-present
<ul style="list-style-type: none"> <li>• Environmental Science &amp; Technology</li> <li>• Bioresource Technology</li> <li>• Environmental Science: Water Research and Technology</li> <li>• Chemosphere</li> </ul>	

## CERTIFICATIONS

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<b>Certified Engineer in Training</b> , Texas	2012
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