

MEGHAN M. THOMMES

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Education

Boston University, Boston, MA
Ph.D. in Biomedical Engineering

September 2013 – May 2020
GPA: 3.86/4.00

Case Western Reserve University, Cleveland, OH
B.S.E. in Biomedical Engineering, focus in Bioelectric Engineering
Minors in Electrical Engineering and Chemistry

August 2009 – May 2013
GPA: 3.88/4.00
magna cum laude

Publications

Meghan Thommes, Taiyao Wang, Qi Zhao, Ioannis Ch. Paschalidis, Daniel Segrè. Designing metabolic division of labor in microbial communities. *mSystems* (2019). doi: [10.1128/mSystems.00263-18](https://doi.org/10.1128/mSystems.00263-18) (Editor's Choice)

Konrad Herbst, Elena J. Forchielli, Taiyao Wang, **Meghan Thommes**, Ioannis Ch. Paschalidis, Daniel Segrè. Multi-Attribute Subset Selection enables prediction of representative phenotypes across microbial populations. *Communications Biology* (2024). doi: [10.1038/s42003-024-06093-w](https://doi.org/10.1038/s42003-024-06093-w)

Posters and Presentations

(*presenter)

1. **Meghan Thommes***, Taiyao Wang, Qi Zhao, Joshua Goldford, Ioannis Ch. Paschalidis, Daniel Segrè. Microbes distributing metabolism: How cross-feeding interactions support metabolic division of labor. 2018 Boston University Microbiome Day. Boston, MA. February 14, 2018. (Poster Presentation)
2. **Meghan Thommes***, Taiyao Wang, Qi Zhao, Joshua Goldford, Ioannis Ch. Paschalidis, Daniel Segrè. Computational design of metabolic division of labor for synthetic microbial communities. 2017 Metabolic Pathway Analysis Conference. Boseman, MT. July 24-28, 2017. Abstract Book, page 83. (Poster Presentation)
3. **Meghan Thommes***, Andrea Lubbe, Jessica Lee, Melisa Osborne, Arion Stettner, Ilija Dukovski, Alyssa Baugh, Nicholas Shevalier, Joshua Wirtz, Sergey Stolyar, Christopher Marx, Trent Northen, and Daniel Segrè. Synthetic microbial ecology for biofuel production from lignocellulose. 2017 Genomic Sciences Program Annual PI Meeting. Crystal City, VA. February 6-8, 2017. Abstract Book, page 324. (Poster Presentation)
4. **Meghan Thommes***, Taiyao Wang*, Qi Zhao, Joshua Goldford, Ioannis Ch. Paschalidis, Daniel Segrè. Metabolic design of reaction partitioning for engineering microbial communities. 2016 AG3C Annual Meeting. Austin, TX. October 24, 2016. (Poster Presentation)
5. **Meghan Thommes*** and Daniel Segrè. Computer-driven design and experimental testing of a synthetic microbial community. BMES 2016 Annual Meeting. Minneapolis, MN. October 5-8, 2016. Program Book, page 104. (Poster Presentation)

6. **Meghan Thommes** and Daniel Segrè. Controlling microbial growth dynamics through environmental manipulation. Boston University Biomedical Engineering Student Seminar. Boston, MA. June 8, 2016. (Oral Presentation)
7. **Meghan Thommes***, Andrea Lubbe*, Jessica Lee, Arion Stettner, Ilija Dukovski, Alyssa Baugh, Nicholas Shevalier, Joshua Wirtz, Sergey Stolyar, Christopher Marx, Trent Northen, and Daniel Segrè. Designing a microbial community for production of biofuel from lignocellulose. 2016 Genomic Sciences Program Annual PI Meeting. Tysons, VA. March 7-9, 2016. Abstract Book, page 120-121. (Poster Presentation)
8. Arion Stettner*, **Meghan Thommes***, Andrea Lubbe, Ilija Dukovski, Brian Granger, Jessica Lee, Christopher Marx, Trent Northen, and Daniel Segrè. Mapping inter-species interactions and metabolic synergy for next-generation biofuel production. 2015 Genomic Sciences Contractors-Grantees Meeting XIII. Tysons, VA. February 23-25, 2015. Abstract Book, page 251-252. (Poster Presentation)
9. **Meghan Thommes*** and Abidemi Bolu Ajiboye. Development of noninvasive brain-machine interfaces for control of hand grasp force in a virtual functional electrical stimulation arm model. 2013 April Research ShowCASE and Intersections: SOURCE Symposium and Poster Session. Cleveland, OH. April 18, 2013. (Poster Presentation)

Teaching Experience

Boston University

ENG BF 528: Applications in Translational Bioinformatics
Course Lecturer

Spring 2018
 Professor Adam Labadorf

ENG BE 491: Biomedical Measurements I
Course Designer

Summer 2015
 Professor Darren Roblyer

ENG BE 491: Biomedical Measurements I
Teaching Assistant

Fall 2014
 Professors David Mountain, Darren Roblyer, and Andrew Jackson

Case Western Reserve University

ENGR 145: Chemistry of Materials
Recitation Instructor

Spring 2013
 Professor Mark Deguire

ENGR 145: Chemistry of Materials
Recitation Instructor

Fall 2012
 Professor David Schiraldi

Grants and Scholarships

Boston University

Teaching as Research Fellowship

Fall 2015

Distinguished BME Fellowship

September 2013 – August 2014

Case Western Reserve University

SOURCE Undergraduate Research Grant

Summer 2012

President's Scholarship

August 2009 – May 2013

Case Alumni Scholarship

August 2011 – May 2013

Leadership Experience and Activities

Boston University

BU Microbiome Initiative Students and Postdocs Committee	Sept. 2017 – Sept. 2018
Graduate Student Advisory Board	Oct. 2017 – May 2019
Student Association of Graduate Engineers	May 2014 – May 2017
• President	<i>May 2015 – May 2017</i>
• Biomedical Engineering Representative	<i>May 2014 – May 2015</i>
Toastmasters “GeekSpeak”	June 2015 – June 2016
• Vice President of Public Relations	<i>June 2015 – June 2016</i>
BME Graduate Student Committee	Sept. 2013 – May 2017
• Professional Development Subcommittee	
• Biomedical Engineering Seminar Planning Committee	
Graduate Women in Science and Engineering (GWISE) Mentor	2013 – 2014 & 2014 – 2015
GWISE Girls’ Science Club Mentor	Oct. 2014 – May 2015

Case Western Reserve University

Tau Beta Pi (Ohio Alpha Chapter)	Nov. 2010 – May 2013
• Vice President	<i>May 2012 – May 2013</i>
• Bookswap Chair	<i>May 2011 – May 2012</i>
Women in Science and Engineering Roundtable (WISER) Peer Mentor	Sept. 2012 – May 2013
Alpha Eta Mu Beta	March 2011 – May 2013
Varsity Track and Field	Aug. 2009 – May 2013
Varsity Cross-Country	Aug. 2009 – May 2011

Achievements and Honors

Boston University

2018 Boston University Microbiome Day Best Poster Presentation
2017 Metabolic Pathway Analysis Conference Best Poster Presentation
2015 Teaching as Research Fellowship
2015 BME Teaching Assistant of the Year

Case Western Reserve University

2013 Biomedical Engineering Faculty Award
2013 Women in Science and Engineering Roundtable (WISER) Peer Mentor Award
2012 Biomedical Engineering Scholarship Award
2009–2013 University Athletic Association (UAA) All-Academic Recognition

Professional Experience

Dyno Therapeutics

Watertown, MA

Scientist I, Computational Biology

October 2021 – March 2024

- Built data analysis pipelines of NGS data in Python using Pydantic models and Matplotlib figures to derive insights on engineered AAV capsids
- Collaborated with wet-lab scientists to design experiments, develop new approaches to data generation, and generate reports for internal stakeholders
- Collaborated with software engineers to construct and improve analysis frameworks used by all computational biologists

Joyn Bio

Boston, MA

Data Scientist

June 2020 – September 2021

- Evaluated and predicted translation from *in vitro* to *in planta* biological performance of engineered microbes by developing modeling frameworks (linear regression, random forest) in Python and R
- Built data integration pipelines and packages in Python and R to clean, standardize, and consolidate data across departments; developed interactive dashboards in Tableau
- Created conceptual data models to inform modeling efforts, create data templates, and organize data in a centralized location so they can easily be queried and imported into databases
- Collaborated with scientists to design schemas for LIMS and ELN implementation in Benchling; tested API in Python with requests to import existing data; queried PostgreSQL database to generate example dashboards

Insight, *Health Data Science*

Boston, MA

Fellow

January 2020 – April 2020

- Created “NoveList”, a web app that predicts a Goodreads user’s want-to-read book ratings, enabling them to prioritize what to read next
- Built, trained, and evaluated a collaborative filtering recommender system in Jupyter Notebooks with scikit-surprise, pandas, numpy, and seaborn
- Deployed “NoveList” using streamlit and Heroku