

# Miina Yanagihara

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English: Proficient, Japanese: Native

## EDUCATION

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### Doctor of Philosophy in Engineering

March 2019

Department of Urban Engineering, Graduate School of Engineering, The University of Tokyo

*Advisor: Professor Fumiyuki Nakajima (Environmental Science Center)*

*Title: Development of a method to discriminate effects of heavy metals by analyzing metabolomes of *Grandidierella japonica**

### Master of Engineering

March 2016

Department of Urban Engineering, Graduate School of Engineering, The University of Tokyo

*Advisor: Associate Professor Fumiyuki Nakajima*

*Title: Assessment of relationship between metabolomic responses and toxic effect during chronic toxicity test*

### Bachelor of Engineering

March 2014

Department of Urban Engineering, Faculty of Engineering, The University of Tokyo

*Advisor: Associate Professor Fumiyuki Nakajima*

*Title: Assessment of toxicity effects of heavy metals in road dust by analyzing metallothionein in benthic ostracods*

## EMPLOYMENT

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### Project Assistant Professor

April 2019 - March 2020

Urban Sustainability Science Laboratory, Department of Urban Engineering, School of Engineering, The University of Tokyo

Supervisor: Prof. Kensuke Fukushi (Institute for Future Initiatives)

## RESEARCH INTERESTS

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Environmental Engineering, Ecotoxicology, Sustainability Science

## SKILLS

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- Metabolomic analysis: extraction and analysis of metabolome of aquatic invertebrates, using Orbitrap mass spectrometer.
- Chemical analysis: heavy metal analysis using inductively coupled plasma mass spectrometry, polycyclic aromatic hydrocarbon analysis using gas chromatography mass spectrometry.
- Data analysis with R and Python (multivariate analysis such as principal component analysis, cluster analysis, partial least squares regression, etc)
- Culturing and toxicity testing of aquatic organisms (mainly benthic organisms)
- Algal culturing
- Computer skills (MS Word, Excel, PowerPoint, and Adobe Photoshop)

## RESEARCH EXPERIENCE

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### Guest Researcher

June 2020 - present

Molecular Ecology and Health (MEcoH) Lab., Center for Marine Environmental Studies (CMES), Ehime University, Japan

### Collaborative Researcher

April 2019 - March 2020

Department of Urban Engineering, School of Engineering, The University of Tokyo

Project: Developing risk assessment methods for chemicals in sediment that consider exposure routes and bioavailability to benthic organisms

### Graduate Research Assistant

April 2016 - March 2019

Department of Urban Engineering, School of Engineering, The University of Tokyo

- Risk assessment of chemicals in road dust to aquatic organisms by metabolomics
- Development and application of a novel model to assess the exposure of aquatic organisms to heavy metals in the environment by metabolomics

## Internship

August 2014 - September 2014

Division of Water Environment Technology Architecture and Civil Engineering, Chalmers University of Technology. Advisor: Professor Oskar Modin

## PUBLICATIONS

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### Peer-reviewed journal paper

1. M Yanagihara, F Nakajima, T Tobino: Development and application of a metabolomic tool to assess exposure of an estuarine amphipod to pollutants in the environment, *Science of the Total Environment*, 752, 141988, 2021.
2. T Atmaja, M Yanagihara, K Fukushi: GEOSPATIAL VALUATION OF URBAN FARMING IN IMPROVING CITIES RESILIENCE: A CASE OF MALANG CITY, INDONESIA, *The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, XLIII-B5-2020, 107-113, 2020.
3. M Yanagihara, F Nakajima, T Tobino: Effect of control sediment composition on the metabolomic responses of *Grandidierella japonica* during toxicity testing using copper at an acutely toxic level, *Journal of Water and Environment Technology*, 17 (6), 386-394, 2019.
4. M Yanagihara, F Nakajima, T Tobino: Metabolomic responses of an estuarine benthic amphipod to heavy metals at urban-runoff concentrations, *Water Science and Technology*, 78 (11), 2349-2354, 2018.
5. M Yanagihara, F Nakajima, T Tobino: Predicting effects of copper on reproduction of the estuarine amphipod *Grandidierella japonica* using metabolic profiles, *Journal of Japan Society of Civil Engineers, Ser. G (Environmental Research)*, Vol.73, pp.III\_535-III\_541, 2017.

## CONFERENCE PRESENTATIONS

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### International Conferences (\* Presenter)

1. M Yanagihara\*: A metabolomic tool for assessing toxic effects of urban runoff on aquatic ecosystems, The 1st Symposium of JSPS Core to Core Program "Center of Excellence in Health Risk Assessment for Adaptation to Climate Change" (Manila, 2019.11) [Oral, Invited talk]
2. M Yanagihara\*, F Nakajima, T Tobino: Assessment of exposure of chemicals in road dust to an estuarine amphipod by metabolomics, The 19th IWA International Conference on Diffuse Pollution and Eutrophication (Jeju, 2019.10) [Oral, peer-reviewed]
3. F Miura\*, T Watanabe, K Watanabe, M Nishiyama, E Ito, M Yanagihara, K Fukushi: Effect of personal hygiene on norovirus transmission within and among households. The 20th International Symposium on Health-Related Water Microbiology, International Water Association, Health-Related Water Microbiology (Vienna, September 2019) [Poster, peer-reviewed]
4. N Yamaguchi\*, T Tobino, M Yanagihara, F Nakajima: Relationship of fine particles characterized by flow cytometry with filterability of activated sludge in membrane bioreactors, *Water and Environment Technology Conference 2019 Programs and Abstracts*, p.110 (Osaka, 2019.7) *The WET Excellent Presentation Award* [Oral and poster, peer-reviewed]
5. M Yanagihara\*, F Nakajima, T Tobino: Metabolomic responses of estuarine benthic amphipod to heavy metals in urban runoff relevant concentrations, *IWA World Water Congress 2018* (Tokyo, 2018.9) [Oral, peer-reviewed]
6. M Yanagihara\*, F Nakajima, T Tobino: Exploration of metabolomic biomarkers in estuarine benthic amphipod for assessing heavy metal exposure in the receiving water environment, the 14th IWA/IAHR International Conference on Urban Drainage 2017 (Prague, 2017.9) [Oral, peer-reviewed]
7. M Yanagihara\*, F Nakajima, T Tobino: Effect of copper on metabolomes of estuarine amphipod *Grandidierella japonica*, *Water and Environment Technology Conference 2015 Programs and Abstracts*, p.27 (Tokyo, 2015.8) *The WET Excellent Presentation Award* [Oral and poster, peer-reviewed]
8. M Yanagihara\*, O Modin: Effect of inoculum on microbial electrolysis cell efficiency, Seminar organized by Alliance for global sustainability exchange program, Chalmers University of Technology, Sweden. (Gothenburg, 2014.9) [Oral]

## Domestic Conferences (\* Presenter)

1. M Yanagihara\*, Kyoshiro Hiki, Yuichi Iwasaki: Can chemical toxicity in saltwater be predicted from freshwater toxicity data? An evaluation using species sensitivity distributions, The 55<sup>th</sup> Annual Conference of Japan Society on Water Environment (Kyoto; Online, 2021.3) [Peer-reviewed, in Japanese]
2. Y Inazumi\*, F Nakajima, T Tobino, M Yanagihara: An investigation on ecotoxicity-based prioritization of sediment contaminants, The 54<sup>th</sup> Annual Conference of Japan Society on Water Environment (Iwate, 2020.3) [Peer-reviewed, in Japanese]
3. F Miura\*, M Yanagihara, K Fukushi: Forecasting acute gastroenteritis cases using time series of norovirus concentration in sewage, The 54<sup>th</sup> Annual Conference of Japan Society on Water Environment (Iwate, 2020.3) [Peer-reviewed, in Japanese]
4. M Yanagihara\*, F Nakajima, T Tobino: Assessment of ecotoxicity by metabolomic analysis using a high-resolution mass spectrometer: application and challenge, Annual Conference of Society of Environmental Science, Japan (Nagoya, 2019.9) [Oral, peer-reviewed, in Japanese]
5. M Yanagihara\*, F Nakajima, T Tobino: Development of a tool to assess exposure to contaminants by analyzing metabolomic responses of an estuarine benthic organism with a high-resolution mass spectrometer, The 22<sup>nd</sup> Symposium of Japan Society on Water Environment (Hokkaido, 2019.9) [Oral, peer-reviewed, in Japanese]
6. M Yanagihara\*, F Nakajima, T Tobino: Exposure Biomarkers for Toxicants in Sediment by Analyzing Metabolomes of Estuarine Amphipod, The 53<sup>rd</sup> Annual Conference of Japan Society on Water Environment (Yamanashi, 2019.3) [Oral, peer-reviewed, in Japanese]
7. M Yanagihara\*, F Nakajima, T Tobino: Metabolomic characterization of *Grandidierella japonica* exposed to heavy metals and organic pollutants, The 24<sup>th</sup> Annual Meeting of The Japanese Society of Environmental Toxicology (Gifu, 2018.9) *Poster Award* [Poster, in Japanese]
8. M Yanagihara\*, F Nakajima, T Tobino: Effect of reference sediment composition in toxicity test on metabolomic responses of *Grandidierella japonica*, The 52<sup>nd</sup> Annual Conference of Japan Society on Water Environment (Hokkaido, 2018.3) [Oral, peer-reviewed, in Japanese]
9. M Yanagihara\*, F Nakajima, T Tobino: Predicting effects of copper on reproduction of the estuarine amphipod *Grandidierella japonica* using metabolic profiles, The 54<sup>th</sup> Forum of Japan Society of Civil Engineers (Gifu, 2017.11) [Oral, peer-reviewed, in English]
10. M Yanagihara\*, F Nakajima, T Tobino: Metabolomic characterization of estuarine amphipod exposed to heavy metals using high resolution mass spectrometer, The 51<sup>st</sup> Annual Conference of Japan Society on Water Environment (Kumamoto, 2017.3) [Oral, peer-reviewed, in Japanese]
11. M Yanagihara\*, F Nakajima, T Tobino: Predicting chronic effects of copper on amphipod by metabolomics, The 22<sup>nd</sup> Annual Meeting of The Japanese Society of Environmental Toxicology (Ehime, 2016.9) [Poster, in Japanese]
12. M Yanagihara\*, F Nakajima, T Tobino: Assessment of chronic effect on *Grandidierella japonica* and metabolomic analysis by high resolution mass spectrometer, The 50<sup>th</sup> Annual Conference of Japan Society on Water Environment (Tokushima, 2016.3) [Oral, peer-reviewed, in Japanese]

## HONORS AND AWARDS

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### Conference Awards

- The WET Excellent Presentation Award, Water and Environment Technology Conference 2019
- Poster Award, The 24<sup>th</sup> Annual Meeting of The Japanese Society of Environmental Toxicology
- The WET Excellent Presentation Award, Water and Environment Technology Conference 2015

### Others

- Department Award, Department of Urban Engineering, School of Engineering, the University of Tokyo (March 2019)
- Department Award, Department of Urban Engineering, Faculty of Engineering, the University of Tokyo (March 2014)

## GRANTS

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Grant-in-Aid for Young Scientists, Japan Society for the Promotion of Science (April 2020 - March 2022) \*Declined due to change of employment conditions

Research Grant, Kurita Water and Environment Foundation, 980,000 JPY (October 2019 - September 2020)

## **TEACHING AND MENTORING EXPERIENCE**

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### **Assistant Professor**

**April 2019 – March 2020**

Department of Urban Engineering, School of Engineering, The University of Tokyo

- Laboratory classes: Prepared and gave lectures for the analysis of nitrate, phosphorus, trihalomethane for 20 undergraduates.
- Mentored five graduate students and two undergraduate students.

Master's Program in Environmental Engineering, Vietnam Japan University, Hanoi, Vietnam

- Prepared and delivered a lecture about chemical reaction engineering.

### **Teaching Assistant**

**June 2016 - November 2017**

Department of Urban Engineering, School of Engineering, The University of Tokyo

- Prepared and guided experiments for the analysis of heavy metals with ICP-MS, polycyclic aromatic hydrocarbons with GC-MS.
- Prepared and maintained reactors to learn wastewater treatment.