

AYLA KISER

Senior Scientist in Biomimicry

<https://www.aylakiser.com>

FOCUS | As Johnson & Johnson's in-house biomimicry expert, I built the company's first biomimicry program and am developing sustainable biomimetic solutions for consumer healthcare. Prior to my work at Johnson & Johnson, I was a research scientist in environmental engineering. I conduct research, design, write, teach, and give presentations in the fields of biomimicry and environmental engineering, fueled by my deep appreciation and respect for nature.

EXPERIENCE | **SENIOR SCIENTIST IN BIOMIMICRY** JOHNSON & JOHNSON CONSUMER INC.
JANUARY 2019 – PRESENT

Built the biomimicry program within Johnson & Johnson, developing innovative and sustainable biomimetic consumer healthcare solutions, and teaching biomimicry.

POST-DOCTORAL SCIENTIST JOHNSON & JOHNSON CONSUMER INC.
AUGUST 2017 – DECEMBER 2018

Began building the biomimicry program within Johnson & Johnson, developing biomimetic consumer healthcare solutions, and teaching biomimicry in the company.

POST-DOCTORAL SCIENTIST CATALAN INSTITUTE FOR WATER RESEARCH
JUNE 2014 – APRIL 2017

Built integrated models of wastewater treatment plants that I used to identify strategies to reduce energy and chemical consumption while maintaining plant performance.

POST-DOCTORAL SCIENTIST UNIVERSITY OF OREGON
MAY 2012 – MAY 2013

Synthesized and characterized functionalized gold nanoparticles and conducted experiments to better understand their potential behavior in the environment.

LECTURER ARIZONA STATE UNIVERSITY
SUMMER 2011

60 hours of lecture, 15 hours of laboratory instruction for Introduction to Environmental Engineering; rated "Excellent" by 67% and "Very Good" by 33% of students.

EDUCATION | **M.S. BIOMIMICRY** ARIZONA STATE UNIVERSITY
AUGUST 2019

BIOMIMICRY PROFESSIONAL CERTIFICATION BIOMIMICRY 3.8
AUGUST 2019 (2016 – 2018 COHORT)

PH.D. ENVIRONMENTAL ENGINEERING ARIZONA STATE UNIVERSITY
AUGUST 2011

Dissertation: "Fate of Engineered Nanomaterials in Wastewater Treatment Plants"
Co-chaired by Dr. Paul Westerhoff and Dr. Bruce Rittmann

M.S. ENVIRONMENTAL ENGINEERING UNIVERSITY OF NEVADA, LAS VEGAS
MAY 2006

Focus: Water and wastewater treatment

B.S. MECHANICAL ENGINEERING UNIVERSITY OF NEVADA, LAS VEGAS
MAY 2003

Focus: Environmental systems; graduated *cum laude* with University Honors

PUBLICATIONS | Over 1600 citations as of 30 July 2020, Google Scholar

Kiser MA. 2020. Biomimétisme. In: Guissart E, Barragan-Montero V, editors. *Matières premières cosmétiques: Actifs naturels*. Vol. 1. France: Cosmetic Valley Editions.

Juan-Garcia P, **Kiser MA**, Schraa O, Rieger L, Corominas L. 2018. Dynamic air supply models add realism to the evaluation of control strategies in water resource recovery facilities. *Water. Sci. Technol.* 78(5-6), 1104-1114.

McNulty T, Bhate D, Zhang A, **Kiser MA**, Ferry L, Suder A, Bhattacharya S. 2017. A framework for the design of biomimetic cellular materials for additive manufacturing. *Solid Free. Fabr. Symp.*, 2188-2200.

Montserrat A, Bosch LM, **Kiser MA**, Poch M, Corominas L. 2015. Using data from monitoring combined sewer overflows to assess, improve, and maintain combined sewer systems. *Sci. Total Environ.* 505, 1053-1061.

Westerhoff PK, **Kiser MA**, Hristovski K. 2013. Nanomaterial removal and transformation during biological wastewater treatment. *Env. Eng. Sci.* 30 (3), 109-117.

Kiser MA, Ladner DA, Hristovski KD, Westerhoff PK. 2012. Nanomaterial transformation and association with fresh and freeze-dried wastewater activated sludge: Implications for testing protocol and environmental fate. *Env. Sci. & Tech.* 46 (13), 7046-7053.

Westerhoff PK, Song GX, Hristovski K, **Kiser MA**. 2011. Occurrence and removal of titanium dioxide at full scale wastewater treatment plants: Implications for TiO₂ nanomaterials. *J. Env. Monit.* 13 (5), 1195-1203.

Kiser MA, Ryu J, Jang H, Hristovski K, Westerhoff PK. 2010. Biosorption of nanoparticles to heterotrophic wastewater biomass. *Wat. Res.* 44 (14), 4105-4114.

Kiser MA, Oppenheimer J, DeCarolis J, Hirani ZM, Rittmann BE. 2010. Quantitatively understanding the performance of membrane bioreactors. *Sep. Sci. & Tech.* 45 (7), 1003-1013.

Kiser MA, Westerhoff P, Benn T, Wang Y, Perez-Rivera J, Hristovski K. 2009. Titanium nanomaterial removal and release from wastewater treatment plants. *Env. Sci. & Tech.* 43 (17), 6757-6763.

PRESENTATIONS | **Kiser MA.** 2020 Oct 7. The future: Inspired by nature. Invited lecture at: Sorbonne Université, Master 2 Professional Biology Program; Paris, France.

Kiser MA, Brun C, Oddos T. 2019 Oct 16. Biomimicry as a tool for sustainable innovation. Oral presentation at: Cosmetic360 Activist Beauty Conference; Paris, France.

Kiser MA. 2019 Oct 4. Introduction to biomimicry. Invited lecture at: Sorbonne Université, Master 2 Professional Biology Program; Paris, France.

Kiser MA. 2018 Nov 11. Solving healthcare challenges by learning from nature. Oral presentation at: Johnson & Johnson Excellence in Science Symposium; New Brunswick, New Jersey.

Kiser MA. 2017 Oct 4. Expanding the solution space of research challenges with biomimicry. Oral presentation at: Johnson & Johnson Consumer R&D Spotlight on Science and Innovation Symposium; Skillman, New Jersey. (Johnson & Johnson Encore Platinum Award for Best Oral Presentation)

Kiser MA. 2017 Sep 28. Healthcare of the future: Using biomimicry to shift paradigms and advance innovation. Oral presentation at: École Polytechnique Fédérale de Lausanne (EPFL) Bioinspired Solutions for Health seminar; Lausanne, Switzerland.

Kiser MA, Boradkar P, Baumeister D. 2016 Jun 3. Using biomimicry to discover, develop, and evaluate nature-based solutions. Oral presentation at: 10th International Society for Environmental Biotechnology Conference; Barcelona, Spain.

Kiser MA, Corominas L, Rodríguez-Roda I. 2015 Mar 10. Learning from nature: Biomimicry in nanotechnology education. Oral presentation at: SUN-SNO-GUIDENANO Sustainable Nanotechnology Conference; Venice, Italy.

Kiser MA. 2014 Dec 12. NanoPredict: a model to predict the fate of nanoparticles in wastewater treatment plants. Oral presentation at: I Foro LEQUIA de transferencia tecnológica en el campo del agua (LEQUIA Forum I for technology transfer in the field of water); Girona, Spain.

Kiser MA. 2012 Jul 24. Fate and transport of nanomaterials in wastewater treatment plants. Invited talk at: Environmental Protection Agency Region VI and Region VI Pretreatment Association 28th Annual Pretreatment Program Workshop; Albuquerque, New Mexico.

Kiser MA, Ryu J, Ladner D, Hristovski K, Westerhoff P. 2011 Sep 12. Nanoparticle biosorption to wastewater biomass. Oral presentation at: European Association of Chemical and Molecular Sciences International Conference on Chemistry and the Environment; Zurich, Switzerland.

Kiser MA, Westerhoff P, Benn T, Wang Y, Ryu H, Hristovski K. 2010 Oct 4. Potential removal and release of nanomaterials in wastewater treatment plants. Oral presentation at: World Environment Federation Technical Exhibition and Conference; New Orleans, Louisiana.

Kiser MA, Westerhoff P, Ryu H, Benn T. 2010 Aug 25. Occurrence and fate of engineered nanomaterials in wastewater treatment plants. Oral presentation at: 240th American Chemical Society National Meeting and Exposition; Boston, Massachusetts. (ACS Best Student Presentation award)

Kiser MA, Westerhoff P, Benn T, Wang Y, Ryu H. 2010 May 25. Release of nanomaterials from wastewater treatment plants. Oral presentation at: Society of Environmental Toxicology and Chemistry Europe 20th Annual Meeting; Seville, Spain.

Westerhoff P, **Kiser A**, Benn T. 2009 Mar 22. Detection of titanium dioxide in wastewater treatment plants. Oral presentation at: 237th American Chemical Society National Meeting; Salt Lake City, Utah.

Benn T, Westerhoff P, **Kiser A**, Wang Y, Hristovski K. 2008 Sep 26. Detection of nanoscale titanium dioxide in wastewater treatment systems. Oral presentation at: 42nd Annual American Chemical Society Regional Meeting; Las Vegas, Nevada.

Kiser MA, Chen BY, Westerhoff P. 2007 May 3. Sunlight photochemical degradation of disinfection byproducts. Oral presentation at: Arizona Water Pollution Control Association 80th Annual Conference; Mesa, Arizona.

Kiser MA, Chen BY, Westerhoff P. 2007 Apr 19. Sunlight photochemical degradation of disinfection byproducts. Oral presentation at: California-Nevada Section American Water Works Association Spring Conference; Las Vegas, Nevada.

LEADERSHIP

Selected as a Johnson & Johnson Consumer Health Emerging Technical Leader (2020 – 2021 Cohort)

Mentor for the Frasier Global Mentorship Program, Arizona State University School of Sustainability (ASU SOS); mentored two ASU SOS bachelor of science students during Fall 2019 and hosted them for one week in January 2020 at the Johnson & Johnson R&D Center in France for a design sprint focused on biomimetic, sustainable packaging

Trained and supervised two interns in the Johnson & Johnson biomimicry program (2018, 2019)

Trained and supervised a Johnson & Johnson microbiologist during her 3-month rotation in the Johnson & Johnson biomimicry program (2018)

Leadership training in the Biomimicry Professional Certification Program by Biomimicry 3.8 (2016 – 2018)

Supervisor of three M.S. students and four B.S. students (2009 – 2017)

Communications officer in the Marketing and Communications Department of the Catalan Institute of Nanoscience and Nanotechnology (2014)

Project Founder and Leader, *Water and Sanitation in Tsuraku, Ecuador*, Engineers Without Borders, Arizona State University (2007)

AWARDS | Johnson & Johnson Inspire Cheer Awards: “Sustainable packaging design sprint” and “Leading a brainstorming session [confidential details]” (2020)

Johnson & Johnson Inspire Celebrate Award: “Inspiring leader and generous teacher” (2019)

Johnson & Johnson Encore Silver and Bronze Awards for Leadership (2018, 2019)

Johnson & Johnson Encore Bronze Award for Most Innovative Research (2018)

Johnson & Johnson Encore Platinum Award for Best Oral Presentation (2017)

The Biomimicry Center Symbiont Scholarship, Arizona State University (2015 – 2016)

Certificate for the most-cited research article in *Journal of Environmental Monitoring* from the 2012 Impact Factor: Kiser et al. Occurrence and removal of titanium at full-scale wastewater treatment plants: Implications for TiO₂ nanomaterials. 2011. *J. Env. Monit.* 13(5), 1195-1203,

Achievement Rewards for College Scientists (ARCS) (2007 – 2011)

Best Student Presentation Award in “Environmental Applications and Implications of Nanotechnology,” Division of Environmental Chemistry, 240th ACS National Meeting and Exposition; Boston Massachusetts. (2010)

University Graduate Fellowship, Arizona State University (2006 – 2007)

Fulton Signature Fellowship, Arizona State University (2006 – 2007)

Environmental Engineering Scholarship, Air & Waste Management Association, Las Vegas (2004)

American Council of Engineering Companies of Nevada Scholarship (2002)

Edwin Wiegand Science and Technology Scholarship (1998 – 2000)

Rosemary Masek Award for Outstanding Work in Honors History (1998)

National Merit Scholarship (1997)

LANGUAGES | English, fluent (native language)

Turkish, fluent

French, upper intermediate (B2)

HOBBIES | Formula Botanica Diploma in Organic Skincare Formulation (2020 – 2021)

Permaculture

Being outdoors and observing nature

Plant-based nutrition