

# AYLA KISER

Senior Scientist in Biomimicry, Johnson & Johnson Consumer Health

<https://www.aylakiser.com>

**FOCUS** | As Johnson & Johnson's in-house biomimicry expert, I built the company's first biomimicry program, am developing consumer healthcare solutions inspired by nature's genius, and am building a roadmap to nature-inspired planetary health for Johnson & Johnson Consumer Health. Prior to my work at Johnson & Johnson, I was a research scientist in environmental engineering. Today, I conduct research, design, write, teach, and give lectures 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 HEALTH  
JANUARY 2019 – PRESENT

Creating prototypes of biomimetic concepts my team and I developed, designing visual demonstrations for scientific concepts and products, and building a nature-inspired sustainability strategy (Planetary Health roadmap) for the company

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

Built the biomimicry program within Johnson & Johnson, developed concepts for biomimetic consumer healthcare solutions, and taught 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  
and **BIOMIMICRY PROFESSIONAL CERTIFICATION** BIOMIMICRY 3.8  
AUGUST 2019

**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 1700 citations as of 26 February 2021, 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 TiO<sub>2</sub> 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**. 2021 Feb 4. Adventures and lessons of a biomimic in industry. Invited lecture at: Imam Abdulrahman Bin Faisal University, Industrial Design Department, Biomimicry in Engineering and Design course; Dammam, Kingdom of Saudi Arabia.

**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 four ASU SOS bachelor of science students thus far and launched and led sustainability projects between the students and Johnson & Johnson Consumer Health (2019 – present)

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 TiO<sub>2</sub> 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, 240<sup>th</sup> 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