

John P. Sadowski, Ph.D.

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I combine extensive technical and policy expertise in emerging technologies, including AI, nanotechnology, and synthetic biology, with broad experience in outreach and entrepreneurship.

Key skills

- 8 years of U.S. federal government experience in research, public outreach, and strategy analysis on emerging technologies and their health and safety impacts
- 14 years of laboratory research experience at Caltech, Harvard, and elsewhere, focusing on nanotechnology and DNA biophysics
- Robust ability to communicate complex topics simply to both technical and lay audiences, including peer-reviewed journal articles, policy and outreach publications, and oral presentations
- Ability to independently initiate and execute projects and bring in new partners through networking

Professional experience

U.S. National Institute for Occupational Safety and Health (via ATL International contract) ~ Technical Analyst II (2017–2021); Technical Analyst IV (2021–present)

- Developed a framework for conceptualizing and initiating research projects on the effects of artificial intelligence on the health of workers
- Drafted scoping review on research gaps on workplace hazards in the biomanufacturing sector
- Wrote 43 high-visibility Wikipedia articles on health and safety topics; mentored staff for 9 more
- Managed transfer and improvement of NIOSH's publication database on Wikidata
- Coordinated and presented training workshops for NIOSH and international partner institutions

Celunda Research, LLC ~ Co-founder and Chief Scientific Officer (2017–2018)

- Co-founded startup company to prototype a novel graphene-based emitter of terahertz radiation
- Secured funding for customer discovery through National Science Foundation I-Corps program

Wikimedia District of Columbia ~ Treasurer (2016–2022); Vice President (2022–present)

- Part of team to manage 501(c)(3) organization with 1 staff member and ~\$150k annual budget
- Took part in developing organization strategy, and planned training events and other programs

U.S. Naval Research Laboratory ~ Postdoctoral Research Fellow (2014–2015)

- Initiated project to design dynamic DNA nanostructures incorporating optically active molecules

National Academy of Sciences ~ Mirzayan Science and Technology Policy Fellow (2014)

- Contributed to report on industrialization of synthetic biology for chemical manufacturing

Harvard University ~ Graduate Student in Chemistry ~ Advisors: Peng Yin, David Liu (2007–2013)

- Successfully created first well-defined 3D nanostructure using dynamic DNA self-assembly
- Programmed a general software tool to design sequences for large, complex nucleic acid systems
- Investigated creating macroscopic programmable matter using designed surface DNA interactions

California Institute of Technology ~ Undergraduate Research Fellow ~ Advisor: Peter Dervan (2003–2007)

- Initiated project to create and characterize new DNA–organic complexes for molecular self-assembly
- Awarded Caltech Axline Merit Award (4 year full-ride scholarship)

New York University ~ High School Student Researcher ~ Advisor: Nadrian Seeman (2002–2003)

- Initiated project to create DNA nanostructures for potential use in molecular electronics
- Won national finalist awards in Intel, Siemens–Westinghouse, and JSHS research competitions

Education

Harvard University: Ph.D., Chemistry, 2013; M.A., Chemistry, 2009

California Institute of Technology: B.S. with Honor, Chemistry; minor in History & Philosophy of Science, 2007

Publications and conferences

Peer-reviewed publications

1. Worker health and safety in biomanufacturing: a scoping review of research gaps

J.P. Sadowski, E. Seiler, A. Eastlake, C. Pomeroy-Carter, S. Tinkle, L. Hodson, C. Geraci. *Manuscript in preparation*

2. Understanding Förster resonance energy transfer in the sheet regime with DNA brick-based dye networks

D. Mathur, A. Samanta, M.G. Ancona, S.A. Díaz, Y. Kim, J.S. Melinger, E.R. Goldman, J.P. Sadowski, L.L. Ong, P. Yin, I.L. Medintz. *ACS Nano* 15, 16452–8 (2021)

3. Expanding reach of occupational health knowledge: contributing subject-matter expertise to Wikipedia as a class assignment

D.M. Ceballos, R.F. Herrick, T. Carreón, V.T. Nguyen, M.T. Chu, J.P. Sadowski, H. Blumenthal, T.C. Morata. *Inquiry: The Journal of Health Care Organization, Provision, and Financing* 58 (2021)

4. Developing a scalable framework for partnerships between health agencies and the Wikimedia ecosystem

D. Mietchen, L. Rasberry, T. Morata, J.P. Sadowski, J. Novakovich, J.M. Heilman. *Research Ideas and Outcomes* 7, e68121 (2021)

5. Using Wikipedia to promote acoustics knowledge for the International Year of Sound 2020

W.J. Murphy, T.C. Morata, A.A.P. Montilha, J.P. Sadowski. *Proc. of Meetings of Acoustics* 39, 025001 (2019)

6. Developmental self-assembly of a DNA tetrahedron

J.P. Sadowski, C.R. Calvert, D.Y. Zhang, N.A. Pierce, P. Yin. *ACS Nano* 8, 3251–9 (2014)

7. Programming multiple protein patterns on a single DNA nanostructure

J.D. Cohen, J.P. Sadowski, P.B. Dervan. *Journal of the American Chemical Society* 130, 402–3 (2008)

8. Addressing single molecules on DNA nanostructures

J.D. Cohen, J.P. Sadowski, P.B. Dervan. *Angewandte Chemie Int. Ed.* 46, 7956–9 (2007)

Selected other publications

Some principles for understanding AI hazards in the workplace. J.P. Sadowski. *Manuscript in preparation*

The secret origins of NIOSH. J.P. Sadowski. *NIOSH Science Blog* (2021)

How the Internet changed chemistry: spreading science globally with Wikipedia. J.P. Sadowski.

Chemical & Engineering News, 17 August 2015

Multisubjective: nucleic acid design through fast removal of undesired secondary structure. J.P. Sadowski. (2015)

Conferences and seminars—technical

Foundations of Nanoscience 18, Virtual (2021) [Invited talk]

MAD Nano 2, Gaithersburg, MD (2017) [Poster]

American Chemical Society 252nd National Meeting, Philadelphia, PA (2016) [Poster]

George Mason University Department of Chemistry and Biochemistry, Fairfax, VA (2016) [Seminar]

DNA Computing and Molecular Programming 21, Boston, MA (2015) [Poster]

Technische Universität Dresden Center for Advancing Electronics, Dresden, Germany (2015) [Seminar]

DNA Computing and Molecular Programming 20, Kyoto, Japan (2014) [Poster]

MAD Nano 1, Baltimore, MD (2014) [Invited talk]

DNA Computing and Molecular Programming 19, Tempe, AZ (2013) [Contributed talk]

DNA Computing and Molecular Programming 18, Aarhus, Denmark (2012) [Poster]

Harvard University Department of Systems Biology, Boston, MA (2011) [Seminar]

Conferences and seminars—outreach and policy

WikiConference North America 8, Virtual (2021) [Contributed talk]
WikiConference North America 7, Virtual (2020) [Invited workshop]
Sustainable Nanotechnology Organization Conference, Virtual (2020) [Contributed talk]
WikiConference North America 6, Cambridge, MA (2019) [Contributed talk]
WikiConference North America 5, Columbus, OH (2018) [Invited workshop]
Wikimania 15, Cape Town, South Africa (2018) [Invited talk]
NIVA Education Workshop on Digital Media, Copenhagen, Denmark (2018) [Invited workshop]
International Congress on Occupational Health, Dublin, Ireland (2018) [Contributed workshop]
Wikimania 14, Montréal, Québec, Canada (2017) [Invited talk]
WikiConference North America 3, San Diego, CA (2016) [Contributed panel discussion]
Wikimedia Affiliates Conference, Berlin, Germany (2015) [Invited talk]
Harvard Kennedy School (twice, 2013) [Seminar]

Honors and awards

NIOSH Bullard–Sherwood Award for Research-to-Practice, Knowledge Category (2019)
Fed Tech Fellow (2019)
National Science Foundation I-Corps: business accelerator funding for customer discovery activities (2018)
American Society for Engineering Education Postdoctoral Fellowship (2014)
National Science Foundation Graduate Research Fellowship (2008)
Buttonwood Foundation J. Marshall & Jane H. Booker Graduate Scholarship (2007)
Caltech Axline Merit Award: 4-year full scholarship to Caltech (2003–2007)
Caltech Richard P. Schuster Memorial Prize for academic merit in chemistry (2007)
Caltech University College London Scholars Program: one term of study abroad (2006)
Caltech Marcella and Joel Bonsall Prize for Technical Writing (twice, 2003 and 2004)
Junior Science and Humanities Symposium Second Place National Winner in Physical Sciences (2003)
Intel Int'l Science & Engineering Fair 1st Prize American Chemical Society Award & 3rd Award for Chemistry (2003)
Intel Science Talent Search Semifinalist (2003)
Siemens–Westinghouse Competition Regional Finalist (2002)
Eagle Scout with three palms (2001)
Johns Hopkins CTY Talent Search 1st place national in mathematics (1999)

Press

Harnessing Wikipedia's superpowers for journalism. Monika Sengul-Jones. *DataJournalism*, 2 Dec 2020
Geophysical scientists take red pencils to Wikipedia. Allison Torres Burtka. *Associations Now*, 3 Oct 2016
Working with Wikipedia: collaboration is key for chemists contributing to the online encyclopedia.
Matt Davenport. *Chemical & Engineering News*, 14 Sept 2015
Chemistry Ambassadors member spotlight: John Sadowski. American Chemical Society. Sept 2014
Caltech relaxes with Shakespeare's every word. Stephanie Chavez. *Los Angeles Times*, 30 May 2004
Sensitive support of gifted student. John Hildebrand. *Newsday*, 6 May 2003
Fourth grader attends high school. Noah Melnick. *Viking View* (North Shore High School, NY), April 1995

Other interests

- Acted in 8 musicals and 9 other plays at Caltech, MIT, and elsewhere; stage manager for 1 musical; co-wrote, directed, edited, and acted in short film; piano and swing dance experience
- Student government experience in high school, college, and graduate school; includes managing process to create new constitutions to create an acceptable consensus on controversial issues
- Extensive travel experience to 34 U.S. states, 12 European countries, Japan, and South Africa
- Contributed ~4,000 original photographs to Wikipedia, mainly of historic buildings and bridges