

Dr. Rachel Levy

Innovative leader connecting academia, industry, and government.
Creative founder of diverse national networks and collaborations.
Ambassador for science and mathematics in the media.
Award-winning interdisciplinary educator and writer.

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EXPERIENCE

American Association for the Advancement of Science

AMS Congressional Policy Fellow — Washington, DC

AUGUST 2020 - PRESENT

Policy fellow in the office of U.S. Senator Maggie Hassan of New Hampshire advising on education, health, science, and technology and assisting work on the Health, Education, Labor and Pensions (HELP) and Finance Committees.

Mathematical Association of America

Deputy Executive Director — Washington, DC

AUGUST 2018 – AUGUST 2020

Leader of over 8M of grant and foundation-funded programs and 2M competitions programs, supervising staff, faculty directors, and principal investigators. Successful developer of \$1.75M in funding from government grants, foundations, and private companies to broaden participation in STEM careers. Built strategic and diverse teams to enact core values of inclusivity, teaching and learning, community, and communication.

Harvey Mudd College

Promoted to Professor of Mathematics and Associate Dean for Faculty Development — Claremont, CA

JULY 2007 - JULY 2019

Collaborative educator and scholar, awarded \$1.6M in applied mathematics and mathematics education funding. Prolific writer and editor of textbooks, articles, and blogs. Actively engaged in faculty efforts to diversify student body. Developed interdisciplinary and mathematics and writing courses. Supervised postdoctoral researchers, mentored junior faculty, and instituted new professional development for department chairs.

Duke University

Postdoctoral Researcher — Durham, NC

AUGUST 2005 - AUGUST 2007

Carolina Friends School

Middle and High School Faculty and Upper School Dean — Durham, NC

AUGUST 1991 - AUGUST 1995 and AUGUST 1997 - AUGUST 2001

SKILLS

Executive Leadership
Diversity, Equity, and Inclusion
Mathematical Modeling
Writing
Press Communication
Public Speaking

AWARDS

Linking Research and Practice Award National Council of Teachers of Mathematics 2017

Harvey Mudd College Outstanding Faculty Award 2016

Article featured in *Best Writing in Mathematics*, Princeton Press, 2016

Most read blogposts, *MAA Teaching Tidbits* 2016-2017 and *American Scientist Macroscopic* 2015 and 2016

Mathematical Association of America Alder Award for Distinguished Teaching 2013

Iris and Howard Critchell Chair 2011-2012

SIAM Student Paper Prize 2005

EDUCATION — bridging applied mathematics, mathematics education, writing, and design

North Carolina State University

MS and PhD Applied Mathematics, 2001- 2005. Microsoft Future Professors, NCSU Preparing the Professoriate.

University of North Carolina at Chapel Hill

MA Educational Media and Instructional Design, 1994-1996.

Oberlin College

BA Mathematics and English Honors, 1985-1989.

DEVELOPMENT — funding through government grants, foundation, and private donations

Applied Mathematics Research

National Science Foundation — FRG: Collaborative Research: Dynamics of Thin Liquid Films: Mathematics and Experiments, NSF-0968154, \$142K; Symposium & Workshop: Shaking, dripping, and drinking: surface-tension phenomena in organismal biology, NSF-1347346, \$16K.

Research Corporation — Investigation of Surfactant Spreading on Thin Liquid Films, \$48K.

Office of Naval Research — Mathematics of Communication and Control for Dynamic Mobile Aquatic Sensors, \$165K.

Education Research

National Science Foundation — REU Site: National Research Experiences for Undergraduates Program in the Mathematical Sciences, NSF-1950644, \$1.23M; Probing the Inverted Classroom: A Controlled Study of Teaching and Learning Outcomes in Undergraduate Chemistry, Engineering, and Mathematics, NSF-1244786, \$223K; Supplement to Progress Through Calculus for Diversity, Equity and Inclusion Notes Volume, NSF 1430540, \$50K.

Professional Development Research

National Science Foundation — Optimizing the Mathematics Postdoctoral Experience: A Teaching and Research Postdoctoral Fellowship at Harvey Mudd College NSF- 0839966, \$800K; Investigating Mathematical Modeling, Experiential Learning and Research through Professional Development and an Integrated Online Network for Elementary Teachers NSF-1441024, \$1.35M; Regional Professional Development for VITAL Faculty NSF-1903992, \$50K.

Private Foundations and Donations — Prizes for Girls in American Mathematics Competitions – over \$100K to MAA from foundations and private donors, 2020; BIG Math Network – \$300K from Philippe and Claire-Lise Tondeur to SIAM, MAA, AMS, 2019; Outreach Programs – over \$250K for Dolciani, Tensor, and Project NextT programs to MAA, 2019.

INNOVATION — developing networks and building careers

BIG Math Network — Co-founded the Business, Industry and Government (BIG) Mathematics Network to connect mathematical scientists with careers. Engaged companies, tech startups and government labs on advisory board. Co-wrote companion BIG Jobs Guide and Interview Card Game. Secured \$300K of private funding.

Broadening Participation in Mathematics — Built diverse teams and strategic plans focused on inclusivity for the MAA American Mathematics Competitions, MAA MathValues and DUE Point blogs, Progress through Calculus Notes Volume and Tondeur Career Initiatives.

VITAL Faculty — Coined the positive acronym VITAL Faculty for Visitors, Instructors, TAs, Adjuncts and Lecturers. Acronym adopted for successful NSF grant and new Mathematical Association of America membership category.

PUBLICATIONS — forging connections between academia and industry

4 textbooks and 3 book chapters on careers, differential equations, and math modeling education.

15 peer-reviewed applied mathematics articles on models of fluids in biological and industrial systems.

9 peer-reviewed applied mathematics education articles on flipped classrooms and mathematical modeling.

15+ professional society publications, including MAA Focus, Math Horizons, SIAM News, AMS Notices, Mathematics Teacher, and Chance.

30+ press engagements including radio: NPR, Cincinnati Edition, Australian Broadcast Company; newspaper: LA Times, USA Today, US News and World Report, Israel's Calcalist; magazine: Ed Week, American Scientist, the Atlantic, and online: Slate in US and France, Canadian Broadcast Company, boingboing, Campus Technology, Inside Higher Ed.

Blogs served as founding editor and writer for MAA MathValues, MAA Teaching Tidbits and Grandma got STEM and writer for American Scientist Macroscopic and Tenure She Wrote.

Editor of a WWII WAFS/WASP aviator and 1936 Olympic swimmer's autobiography.

TEACHING — building public awareness and broadening participation in STEM

Interdisciplinary Educator — 30 years infusing mathematical modeling, computation, and data into mathematics courses. Experience teaching grades 5-12, undergraduate and graduate school as well as adult learners. Developed innovative courses and teaching techniques spanning mathematical modeling, differential equations, writing, public speaking, and photography of fluid mechanics.

Inclusive Researcher — Supervised diverse group of 50 undergraduate research students from 2007-2018 at Harvey Mudd College, resulting in 6 senior theses, 5 industry projects, 4 undergraduate student publications, and 12 student presentations.

Industrial Mathematics Mentor — Experienced advisor of undergraduate mathematics capstones, including industry problem recruitment and development in biotech, mapping, energy, data science, food production and aerospace.

SERVICE — sparking national and international cooperation in education policy

Empowering Educator — Internationally recognized workshop facilitator and plenary speaker on applied mathematics, data science careers, press communication, active learning, education policy, and mathematical modeling education. Developed mathematical modeling programs for K-12, undergraduates, and graduate students, including professional development for elementary school teachers adopted and sustained by the Pomona Unified School District in California.

Impactful Writer — Lead writer for Guidelines for Assessment and Instruction in Mathematical Modeling Education (SIAM/COMAP), Report on Undergraduate Applied Mathematics Education (SIAM), and Report on Industrial Mathematics (NSF/IPAM). Chair of Harvey Mudd College Mathematics Department review.

Creative Leader — Society for Industrial and Applied Mathematics (SIAM) Vice President for Education; Conference Board for the Mathematical Sciences (CBMS) Research Advisory Group; Science Policy Committee (MAA); Transforming Post-Secondary Education in Mathematics (TPSE Math) Advisory Group; Committee on Committees (AWM); Dana Center Launch Years Consensus Panel; CodeR4Math Advisory Board, and Institute for Computational and Experimental Research in Mathematics (ICERM) Education Board.