Daniel Bennett Fried, Ph.D.

daniel.bennett.fried@gmail.com | (908) 265-4427

APPOINTMENTS

2021-present **Upper School Science Teacher**
The Pingry School, Basking Ridge, NJ

2016-2021 **Assistant Professor of Chemistry (Tenured)**
Saint Peter's University, College of Natural Sciences, Jersey City, NJ

2014-2016 **Assistant Professor of Biology and Chemistry**
Kean University, School of Natural Sciences, Union, NJ

EDUCATION

2011-2014 **Postdoctoral fellow**
Weizmann Institute of Science, Israel. Biological Chemistry Department
Bayer Laboratory, Microbiology
Study and engineering of the bacterial cellulosome system.

2005-2011 **Ph.D. in Chemistry**
Yale University, Department of Chemistry
Schepartz Laboratory, Organic Chemistry, Chemical Biology
Ph.D., Using bipartite tetracysteine display to monitor protein folded state.

2001-2004 **B.S. in Biochemistry, Magna Cum Laude**
Binghamton University, Department of Biology
Kissling Laboratory, Organometallic chemistry
Ben Laboratory, Organic chemistry

EDUCATION STARTUP: https://biochemistryliteracyforkids.com/

2014-present **Biochemistry Literacy for Kids, LLC**
Founder

HIGH SCHOOL COURSES TAUGHT

2021-present Chemistry I and II
2021-present Biology I and II

UNIVERSITY COURSES TAUGHT

2021	Organic Chemistry II
2019-2021	Medicinal Chemistry
2016-2021	General Chemistry I and II
2016-2021	General Chemistry I and II Labs
2016-2021	Biochemistry I & II
2016-2021	Biochemistry I & II Labs

BIOCHEMISTRY LITERACY FOR KIDS CLASSES

2023 **Biochemistry and Physics Literacy Summer Institute**, Pottersville, NJ
50 students from 17 states, Canada, and Australia joined me and two other former professors for a 1 week program that culminated in a poster session at Princeton University.

2020-present **Weekly Zoom Classes** (1-hour, 5 sessions per week)
Approximately 500 elementary and junior high students enrolled in live classes over 4 years, 2000 national and international students enrolled in my asynchronous program.

2019-2020 **Biochemistry Literacy for Kids for 4th, 5th, and 6th graders**, Pilot teaching program, Hudson Montessori School, Jersey City, NJ
(For documentary, see my website.)

2018 **Study and documentary: Yes We Chem! day program for 3rd, 4th, and 5th graders,** Pilot teaching program, Alexander Sullivan Elementary, Jersey City, NJ (For documentary, see my website.)

2017 **More After School Biochemistry**
McKinley Elementary, Westfield, NJ

2017 **Biochemistry for 3rd graders**
Jewish Educational Center, Elizabeth, NJ

2016 **Biochemistry Literacy for Kids After School Program**
Livingston Avenue Elementary School, Cranford, NJ

2016 **Study: Improving High School Chemistry with Molecular Modeling**
Glen Rock High School, Glen Rock, NJ

2016 **Art, Science, & Nature Summer Middle School Youth Program**
Union Community College, Cranford, NJ

2015-2016 **Biochemistry Literacy for Kids After School Program**
Kean University, Union, NJ

2015	**Upward Bound High School Youth Summer Session** Kean University, Union, NJ
2014-2015	**Study: Improving Student Attitudes Using Chemistry Visualization** Maxson Middle School, Plainfield, NJ
2011	**History of Chemistry for Middle School** John C. Daniels School, New Haven, CT
2011	**Pilot Study: College Chemistry for Elementary Students** Peabody Museum, New Haven, CT
2010	**Pilot Study: Realistic Drawing for Elementary Students** Peabody Museum, New Haven, CT

GRADUATE AND UNDERGRADUATE RESEARCH STUDENT SUPERVISOR

2018-present	K-12 Biochemistry outreach projects
2016-present	Fluorescent protein expression, St. Peter's University
2014-2016	Cellulosome protein engineering, Kean University
2011-2013	Biological chemistry laboratory of Ed Bayer, Weizmann Institute
2006-2009	Chemical biology laboratory of Alanna Schepartz, Yale University

SELECTED CONFERENCE PRESENTATIONS

2024	New Jersey Association for Gifted Children Conference, Mercer County Community College, West Windsor, NJ
2024	Conference for K-12 Teachers for NJ STEM Month, Caldwell University
2023	STEMteachersNYC teacher inservice training Coldspring Harbor Labs, New York, NY
2020	The college of New Jersey Education Department, seminar speaker
2020	Fordham University Chemistry Department, seminar speaker
2019	Association for Biology Laboratory Education, Ottawa, CA
2019	National Science Teachers Association national conference molecular modeling workshop presenter, St. Louis MO
2019	New Jersey Science Convention Co-Presenter for the Protein Data Bank, Princeton NJ
2019	Invited Seminar Speaker Fordham University Chemistry Department
2018	Presenter Network of Conservation Educators and Practitioners (NCEP) active teaching program, American Museum of Natural History, NYC
2017	Speaker/panelist Tech & Learning Live, Princeton, NJ
2017	Section-wide Conference of the American Chemical Society New York Local Section, Queensborough Community College, NY

2014	National Science Foundation Days: Baltimore, MD
2014	The American Society for Biochemistry and Molecular Biology: Designing scientific teaching tools for underlying concepts and skills for biochemistry and molecular biology education, Montclair University, NJ
2014	Federation of the Israel Societies For Experimental Biology, Eilat, IL Poster: Single molecule dissociation of the high affinity cohesin-dockerin complex.
2013	Gordon Conference: Cellulosomes, Cellulases & Other Carbohydrate Modifying Enzymes, Andover, NH. Attended: Single molecule dissociation of the high affinity cohesin-dockerin complex.
2009	International History, Philosophy and Science Teaching Group, University of Notre Dame, IN. Poster: Teaching realistic drawing to elementary school students for improved scientific observation skills.
2009	Yale Biophysics Seminar Series, New Haven, CT. Talk: Using bisarsenical fluorescent sensors to probe P53 folded state.
2007	Chemistry-Biology Interface Pre-doctoral Training Program, National Institute of Health, Bethesda, MD. Poster: Using FlAsH and ReAsH to probe folded state of peptides and small proteins.

DOCUMENTARIES—Available on my website: https://biochemistryliteracyforkids.com/

2023	*A Necessary Biochemical Reaction:* Feature length documentary about Biochemistry Literacy and the 2023 Summer Institute,
Director/Producer	David Gaynes (post production)
2019	Hudson Montessori School Biochemistry Literacy for Kids
2018	Jersey City Public Schools Biochemistry Literacy for Kids

PRESS— Links Available on my website: https://biochemistryliteracyforkids.com/blog/

2023	Our Gifted Kis Podcast: Episode #59 *College Level Science for Kids?*
2023	Adventures In Being Gifted Podcast: *Making High-Level Learning Accessible*
2021	Rethinking Learning Podcast: *Episode #118*
2021	mAcademia Podcast: *Episode #34*
2020	The New York Times, *Biochemistry Can Be Elementary*
2020	Medium: *It Turns Out, My 10-Year Old Was ready for Biochemistry*
2019	The Hechinger Report, *Kids can learn biochemistry too,* Tara Mathewson
2019	Higher Ed Geek Podcast: *Episode #67*

PUBLICATIONS

Sara Rose Krivoshik, Andrew Guarnaccia, David Gruber, **Daniel Fried**, Jean Gaffney. Disrupting Fluorescence by Mutagenesis in a Green Fluorescent Fatty Acid Binding Protein from a Marine Eel, *The Protein Journal* **2020** Vol 39, No 2, 145-151.

Daniel B. Fried Enhanced understanding of triacylglyceride digestion and saponification using physical and computer modeling, *Advances in Biology Laboratory Education Publication of the Association for Biology Laboratory Education* **2020** Volume 41, Article 31.

Daniel B. Fried, Pablo P.L. Tinio, Diana Paneque, Azuri Hughes. Elementary student achievement and teacher perception of advanced chemistry curriculum *European Journal of Science and Mathematics Education* **2019** Vol. 7, No 4 137-148

Daniel B. Fried, Pablo P.L. Tinio, Aaron Gumi, Jean P. Gaffney. Enhancing elementary science learning through organic chemistry modeling and visualization, *European Journal of Science and Mathematics Education* **2019** Vol. 7, No 2 73-82

Anders Barth, Jelle Hendrix, **Daniel Fried**, Yoav Barak, Edward Bayer, Don C. Lamb. Dynamic interactions of type I cohesin modules fine-tune the structure of cellulosome of Clostridium thermocellum. *PNAS* **2018** 115, (48)

Markus Jobst, Lukas Milles, Constantin Schoeler, Wolfgang Ott, **Daniel Fried**, Edward, Bayer, Hermann Gaub, and Michael Nash. Resolving dual binding modes of cellulosome cohesin-dockerin complexes using single-molecule force spectroscopy. *eLife* **2015**; 4: e10319

Jonathan Y. Weinstein, Michal Slutzki, Alon Karpol, Yoav Barak, Ozgur Gul, Raphael Lamed, Edward A. Bayer, **Daniel B. Fried**. Insights into a type III cohesin–dockerin recognition interface from the cellulose degrading bacterium *Ruminococcus flavefaciens. Journal of Molecular Recognition* **2015**, 28, (3); 148-154.

Schoeler, C. Malinowska, K. M., Bernardi, R. C., Milles, L. F., Jobst, M. A., Durner, E., Ott, W., **Fried, D. B**., Bayer, E. A., Schulten, K., Gaub, H. E., Nash, M. A. Ultrastable cellulose-adhesion complex tightens under load. Nature Communications, **2014**, 5, (5636).

Yuval Hamberg, Vered Rumi-Israeli, Bareket Dassa, Yoav Barak, Raphael Lamed, Kate Cameron, Carlos M.G.A. Fontes, Edward A. Bayer, **Daniel B. Fried**. Elaborate cellulosome architecture of *Acetivibrio cellulolyticus* revealed by selective screening of cohesin–dockerin interactions. **2014** PeerJ.

Daniel B. Fried, Sarah Morais, Qi Xu, Shi-You Ding, John O. Baker, Yannick J. Bomble, Michael E Himmel, Edward A. Bayer. Self-assembly and Application of Cellulosomal Components. In: Bernd H. A. Rehm, editor. Bionanotechnology: Biological self-assembly and its applications. **2013** Caister Academic Press (pp. 37-62).

Jelle Hendrix, **Daniel Fried**, Yoav Barak, Edward A. Bayer. Don C. Lamb. Conformational dynamics in designer cellulosomes studied by single-pair FRET with Mfd-Pie. Jelle Hendrix, Daniel Fried, Yoav Barak, Edward A. Bayer, Don C. Lamb. *Biophysical Journal* **2012**, 104, (2)

Stefan W. Stahl, Michael A. Nash, **Daniel B. Fried**, Michal Slutzki, Yoav Barak, Edward A. Bayer, Hermann E. Gaub, Single-molecule dissection of the high-affinity cohesin-dockerin complex. PNAS **2012**, 109, 20431-20436.

Daniel B. Fried, Jessica L. Goodman, Alanna Schepartz, Bipartite tetracysteine display requires site flexibility for ReAsH coordination. ChemBioChem **2009**, 10, 1644-1647.

Nathan W. Luedtke, Rachel J. Dexter, **Daniel B. Fried**, Alanna Schepartz, Surveying polypeptide and protein domain conformation and association with FlAsH and ReAsH. Nature Chemical Biology **2007**, 11, 779–784.