Noam Prywes

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UNIVERSITY OF CAMBRIDGE

University of Cambridge - Associate Professor 2025-present

Biochemistry department

- High-throughput enzymology
- Photosynthesis
- Biochemical engineering
- Plant synthetic biology
- Laboratory evolution
- Biophysics

Education and Research Experience

University of California, Berkeley - Postdoctoral fellow 2018-2025

Professors Dave Savage and Brian Staskawicz
Rubisco library screen and chloroplast genome editing

Weizmann Institute for Science - Postdoctoral fellow 2016-2018

Professor Ron Milo
Metagenomic survey of rubisco biochemistry

Harvard University - PhD in Chemistry 2010-2016

Professor Jack Szostak
RNA-world biochemistry, ribozyme kinetics and synthetic chemistry

Columbia University - BA in Chemistry (Minor in Mathematics) 2006-2010

Professor Ruben Gonzalez
Single molecule fluorescence analysis of ribosome recycling

Awards

Extramural

K99 Pathway to Independence Award (NIH)	2021-2024
Life Sciences Research Foundation Fellowship (Finalist)	2019
Graduate Research Fellowship (NSF)	2012-2015
The Barry M. Goldwater Scholarship	2009-2010

Intramural

Outstanding Postdoc Award	MCB Department UC Berkeley	2023
Zuckerman Scholarship	Weizmann Institute for Science	2017-2018
Faculty Dean Fellowship	Weizmann Institute for Science	2017
Koshland Prize	Weizmann Institute for Science	2017
Magna Cum Laude	Columbia University	2010
Honors in Chemistry	Columbia University	2010

Publications

Prywes N, et al. A map of the rubisco biochemical landscape. **Nature.** 2025

Jaffe AL, Harrison K, Wang RZ, Taylor-Kearney LJ, Jain N, **Prywes N**, et al. Cyanobacteria from marine oxygen-deficient zones encode both form I and form II Rubiscos. **PNAS**. 2024

Soni C, **Prywes N**, Hall M, Nair MA, Savage DF, Schepartz A, et al. A Translation-Independent Directed Evolution Strategy to Engineer Aminoacyl-tRNA Synthetases. **ACS Cent Sci.** 2024.

Ding D, Shaw AY, Sinai S, Rollins N, **Prywes N**, Savage DF, et al. Protein design using structure-based residue preferences. **Nat Commun.** 2024.

Prywes N, Phillips NR, Tuck OT, Valentin-Alvarado LE, Savage DF. Rubisco Function, Evolution, and Engineering. ***Annu. Rev. Biochem***. 2023.

Chandrasekaran SS, Agrawal S, Fanton A, Jangid AR, Charrez B, Escajeda AM, … **Prywes N**…et al. Rapid detection of SARS-CoV-2 RNA in saliva via Cas13. ***Nat Biomed Eng***. 2022.

Liu TY, Knott GJ, Smock DCJ, Desmarais JJ, Son S, Bhuiya A, Jakhanwal S, **Prywes N** et al. Accelerated RNA detection using tandem CRISPR nucleases. ***Nat Chem Biol***. 2021.

Davidi D, Shamshoum M, Guo Z, Bar-On YM, **Prywes N**, Oz A, et al. Highly active rubiscos discovered by systematic interrogation of natural sequence diversity. ***EMBO J***. 2020.

Flamholz AI, **Prywes N**, Moran U, Davidi D, Bar-On YM, Oltrogge LM, et al. Revisiting Trade-offs between Rubisco Kinetic Parameters. ***Biochemistry***. 2019.

Strom KR, Szostak JW, **Prywes N‡**. Transfer of Sequence Information and Replication of Diimine Duplexes. ***J Org Chem***. 2019. **†Co-corresponding and last author**

O'Flaherty DK, Kamat NP, Mirza FN, Li L, **Prywes N**, Szostak JW. Copying of Mixed-Sequence RNA Templates inside Model Protocells. ***JACS***. 2018.

Herz E, Antonovsky N, Bar-On Y, Davidi D, Gleizer S, **Prywes N**, et al. The genetic basis for the adaptation of E. coli to sugar synthesis from CO2. ***Nat Comm***. 2017.

Li L, **Prywes N**, Tam CP, O'Flaherty DK, Lelyveld VS, et al. Enhanced Nonenzymatic RNA Copying with 2-Aminoimidazole Activated Nucleotides. ***JACS***. 2017.

Tam CP, Fahrenbach AC, Björkbom A, **Prywes N**, Izgu EC, Szostak JW. Downstream Oligonucleotides Strongly Enhance the Affinity of GMP to RNA Primer–Template Complexes. ***JACS***. 2017.

Prywes N, Blain JC, Del Frate F, Szostak JW. Nonenzymatic copying of RNA templates containing all four letters is catalyzed by activated oligonucleotides. ***eLife***. 2016.

Prywes N*, Michaels YS*, Pal A, Oh SS, Szostak JW. Thiolated uridine substrates and templates improve the rate and fidelity of ribozyme-catalyzed RNA copying. *Chem Commun*. 2016. ***Co-first author**

Li, Li L, Lelyveld VS, **Prywes N**, Szostak JW. Experimental and Computational Evidence for a Loose Transition State in Phosphoroimidazolide Hydrolysis. ***JACS***. 2016.

Budin I, **Prywes N**, Zhang N, Szostak JW. Chain-length heterogeneity allows for the assembly of fatty acid vesicles in dilute solutions. ***Biophys J.*** 2014.

Sternberg SH, Fei J, **Prywes N**, McGrath KA, Gonzalez RL Jr. Translation factors direct intrinsic ribosome dynamics during translation termination and ribosome recycling. ***Nat Struct Mol Biol.*** 2009.

Key citations underlined

Popular publications:

J Kath and N Prywes. "Brave New World? Not Even Close" *Observations Blog*. **Scientific American**, 2017.

J Halperin and N Prywes. "Making data and tools available for the world to see: Arturo Sanchez of CERN on why ATLAS uses CC0 data" *Creative Common Blog - Open Science*. **Creative Commons**, 2016.

N Prywes. "On the Irreversibility of Gene Drives" ***The Scientist***. LabX Media Group, 16 Sep. 2014.

N Prywes. "The Supreme Court's Sketchy Science" ***Slate Magazine***. Washington Post Company, 2013.

Miriam Krule and Noam Prywes. "Stop the Parade!" ***Slate Magazine***. Washington Post Company, 2012.

Selected oral presentations

North American Photosynthesis Congress 2024
Top Oral Presentation for Postdoctoral Fellow
Carnegie Institute invited seminar 2024
Western Photosynthesis Conference 2023
Chloroplast Biotechnology Gordon Research Seminar 2019
Served as Vice-Chair the following meeting
254th meeting of the American Chemical Society 2017
SB7.0: The seventh international meeting on synthetic biology 2017
https://vimeo.com/225292961
14th International Conference on the Synthesis and Simulation of Living Systems 2014

Teaching Experience

Mt. Tamalpais College - Volunteer Instructor (Professor-equivalent) 2019-present
San Quentin State Prison
4 semesters: Math 50a, Chemistry 111, Chemistry 180, Math 99

The New Arab High School for Science - Volunteer Teacher 2018
Lod, Israel: Enrichment program in chemistry

MA Correctional Institution – Norfolk - Volunteer Tutor 2015
Petey Greene, Boston University Prison Education Program

Harvard University - Teaching Fellow 2011-2012
3 semesters: Organic Chemistry, Science of Cooking, and Chemical Biology

Departmental Responsibilities (service)

Postdoc division representative 2023-2024
Biochemistry, Biophysics and Structural biology (BBS)

References

Dave Savage	Associate Professor of Biochemistry	UC Berkeley	+1 (510) 643-7847	savage@berkeley.edu
Jennifer Doudna	Li Ka Shing Professor of Biomedical Science	UC Berkeley	+1 (510) 643-0113	klucas@berkeley.edu
Jack Szostak	University Professor	UChicago	+1 (773) 702-1220	jwszostak@uchicago.edu