

David S. Glass

Education

- 2011 – 2017 M.S. & Ph.D. in Bioengineering at Stanford University
Thesis with Prof. Ingmar Riedel-Kruse: “Natural and synthetic mechanisms for emergent multicellular patterning.”
- 2007 – 2011 A.B. in Chemistry, *magna cum laude* at Princeton University
Thesis with Prof. Joshua Rabinowitz: “Intrinsic and phosphorylation-based regulations of metabolic starvation response in *Saccharomyces cerevisiae*.”
Certificates: Quantitative & Computational Biology, Engineering Biology

Research Experience

- 2018 – 2024 **Postdoctoral Scholar with Prof. Uri Alon**
Weizmann Institute of Science
Systems & synthetic biology: bacterial physiology of antibiotic tolerance, evolutionarily and environmentally stable synthetic differentiation in *E. coli*
- 2012 – 2018 **Ph.D. & Postdoctoral research with Prof. Ingmar Riedel-Kruse**
Stanford University
Synthetic biology and biophysics: modeling of multicellular patterning, synthetic cell-cell adhesion
- 2011 – 2012 **Ph.D. rotations with Profs. Drew Endy, Ingmar Riedel-Kruse, Christina Smolke**
Stanford University
Systems & synthetic biology: DNA-encoded memory, yeast metabolic engineering, patterning models
- 2010 – 2011 **Senior Thesis with Prof. Joshua Rabinowitz**
Princeton University
Metabolomics: systems-level control of yeast starvation response
- 2009 **Project lab research with Profs. Amy Caudy & David Botstein**
Princeton University
Systems biology: mating-related gene expression in sterile yeast mutants
- 2009 **Research intern with Prof. Yaakov Benenson**
Harvard University
Synthetic biology: incoherent feedforward loops for robustness to DNA copy number
- 2008 – 2009 **Research intern & iGEM team member with Prof. Ron Weiss**
Princeton University
Synthetic biology: engineering of neuronal networks

Publications in preparation

- E. Vaisbourd, A. Bren, U. Alon, **D.S. Glass**
Preventing plasmid multimer formation in commonly used synthetic biology plasmids.
In review. BioRxiv: doi.org/10.1101/2024.07.23.604805
Corresponding author.
- M. Raz, **D.S. Glass**, T. Milo, Y. Korem Kohanim, O. Karin, A. Tendler, A. Mayo, U. Alon.
Unifying design principles of endocrine regulatory circuits.
In review. BioRxiv: doi.org/10.1101/2023.07.03.547486
- M. Raz, T. Milo, **D.S. Glass**, A. Bar, A. Mayo, U. Alon.
Endocrine gland size is proportional to its target tissue size.
iScience, in press (2024).

Publications

- D.S. Glass**[†], A. Bren, E. Vaisbourd, A. Mayo, U. Alon[†].
A synthetic differentiation circuit in *Escherichia coli* for suppressing mutant takeover.
Cell (2024).
Corresponding author and lead contact.

- A. Bren*, **D.S. Glass***, Y. Korem Kohanim, A. Mayo, U. Alon.
Tradeoffs in bacterial physiology determine the efficiency of antibiotic killing.
PNAS (2023).
- H. Kim, D.J. Skinner, **D.S. Glass**, A.E. Hamby, B.A.R. Stuart, J. Dunkel, I.H. Riedel-Kruse.
4-bit adhesion logic enables universal multicellular interface patterning.
Nature (2022).
- D.S. Glass**, X. Jin, I.H. Riedel-Kruse.
Nonlinear delay differential equations and their application to modeling biological network motifs.
Nature Communications (2021).
- H. Kim, X. Jin, **D.S. Glass**, I.H. Riedel-Kruse.
Engineering and modeling of multicellular morphologies and patterns.
Current Opinion in Genetics & Development (2020).
- D.S. Glass** & U. Alon.
Programming cells and tissues.
Science News & Views (2018).
- D.S. Glass** & I.H. Riedel-Kruse.
A synthetic cell-cell adhesion toolbox for programming multicellular morphologies and patterns.
Cell (2018).
- D.S. Glass***, X. Jin*, I.H. Riedel-Kruse.
Signaling delays preclude defects in lateral inhibition patterning.
Physical Review Letters (2016).
- A. Caudy, et al.
A new system for comparative functional genomics of *Saccharomyces* yeasts.
Genetics (2013).
- Y.F. Xu, X. Zhao, **D.S. Glass**, F. Absalan, D.H. Perlman, J.R. Broach, J.D. Rabinowitz.
Regulation of yeast pyruvate kinase by ultrasensitive allostery independent of phosphorylation.
Molecular Cell (2012).
- L. Bleris, Z. Xie, **D. Glass**, A. Adadey, E. Sontag, Y. Benenson.
Synthetic incoherent feedforward circuits show adaptation to the amount of their genetic template.
Molecular Systems Biology (2011).

Review

2020 – Pres. Reviewed articles for *Cell*, *ACS Synthetic Biology*, and *iScience*

Teaching

- 2021 – 2022 **ORT Arab School for Science and Engineering**
Taught 11th grade biology enrichment bimonthly to students in an at-risk neighborhood in Lod, Israel.
- 2013 **Stanford University BioE 311: “Biophysics of multicellular systems and amorphous computing”**
Helped design a new graduate-course curriculum, wrote all problem sets, taught mathematical lectures.
- 2013 **Stanford University BioE 42: “Physical Biology of cells”**
Co-TAed undergraduate biophysics. Guest-lectured on the Poisson-Boltzmann equation.
- 2012 – 2014 **Stanford Splash: “Genes and genetic engineering”**
Co-taught a brief introduction to synthetic biology twice a year for middle and high school students.
- 2012 – 2016 **Stanford 49ers:**
Helped run middle school biology labs in East Palo Alto. Financial officer starting fall 2013
- 2012 – 2014 **Stanford mentorship:**
Mentored undergraduate bioengineering students

Honors

- 2018 Zuckerman Scholars Postdoctoral Fellowship (3 years of postdoc salary + ~\$50k research funds)
- 2018 Weizmann Faculty Dean's Fellowship (declined) (2 years of postdoc salary)
- 2013 Bio-X Bowes Graduate Fellowship (3 years of graduate salary)
- 2010 Princeton Dean's Senior Thesis Fund
- 2010 Leach Summer Scholar
- 2007 National Merit Scholar
- 2007 Robert C. Byrd Honors Scholar
- 2007 Edward J. Bloustein Distinguished Scholar

Conferences & Talks

- 2023 University of Arizona Department of Molecular and Cellular Biology, Tucson, AZ. **Invited Talk**
- 2022 Next Generation in Biomedicine Symposium, Broad Institute, Cambridge, MA. **Invited Talk**
- 2022 Israeli Society for Microbiology, Ben Gurion University, Beer Sheva, Israel. **Talk**
- 2018 American Physical Society March Meeting, Los Angeles, CA. **Talk**
- 2018 Biophysical Society Annual Meeting, San Francisco, CA. **Poster**
- 2017 SB7.0, National University of Singapore, Singapore. **Poster**
- 2017 American Society for Microbiology Microbe, New Orleans, LA. **Poster**
- 2015 Biophysical Society Annual Meeting, Baltimore, MD. **Poster**
- 2015 American Society for Microbiology Conference on Biofilms, Chicago, IL. **Poster**

Work Experience

- 2017 – 2018 **Scientific Consultant, BillionToOne**
Developed targeted resequencing protocols and machine learning algorithms for genetic screening.
- 2015 – 2017 **Co-Founder & CTO of Genesis DNA, Inc.**
Co-founded Genesis to develop a next-generation gene synthesis platform. Together with my co-founders, I built Genesis from the ground up, putting together a team, writing grants, raising capital, and setting up a biotech lab. At its largest we had a team of 3 founders, 2 employees, 3 advisors, and several investors. We developed hardware, software, and biochemistry/sequencing protocols. We participated in MIT's Global Founders Skills Accelerator, MassChallenge, and Indie Bio. We closed for lack of funding.
- 2010 – 2011 **IT assistant, Princeton Office of Information Technology**
Assisted Princeton University affiliates with computer setup, repair, and virus removal.
- 2009 – 2012 **Linux Software Development**
Created and maintained an extensible talking alarm clock for Ubuntu (launchpad.net/wakeup).

Skills

Laboratory techniques: synthetic biology, molecular biology, sequencing, mass spectrometry, FACS, microscopy, robotic automation, cell culture, yeast genetics.

Programming languages: Bash, C, Java, LaTeX, Mathematica, MATLAB, Perl, Python, R.

Human languages: English (native), Hebrew (fluent).