

Jared Toettcher

Department of Molecular Biology, Princeton University
Lewis Thomas Hall Room 140, 320 Washington Road, Princeton NJ 08544
Lab: (609) 258-1894 / Cell: (617) 599-8727
toettcher@princeton.edu
<http://molbio.princeton.edu/faculty/molbio-faculty/795-toettcher>

EDUCATION

Massachusetts Institute of Technology Ph.D., Biological Engineering	Cambridge, MA 2004 – 2009
University of California, Berkeley B.Sc. with High Honors, Bioengineering Minor: Mathematics	Berkeley, CA 2000 – 2004

PROFESSIONAL EXPERIENCE

Princeton University Assistant Professor of Molecular Biology Associate Faculty, Chemical and Biological Engineering Member, Cancer Institute of New Jersey	Princeton, NJ 2015-present
---	-------------------------------

RESEARCH POSITIONS AND TRAINING

University of California, San Francisco Cancer Research Institute Postdoctoral Fellow <i>Mentors:</i> Prof. Wendell Lim, Prof. Orion Weiner <i>Topic:</i> Optogenetic approaches for interrogating intracellular signaling	San Francisco, CA 2009-2014
Massachusetts Institute of Technology Graduate Student, Biological Engineering <i>Thesis advisors:</i> Prof. Bruce Tidor and Prof. Galit Lahav (Harvard Medical School) <i>Thesis:</i> Relating topology and dynamics in cell signaling networks	Cambridge, MA 2004 – 2009
University of California, Berkeley Undergraduate Student <i>Advisors:</i> Prof. Adam Arkin and Prof. David Schaffer <i>Topic:</i> Stochastic gene expression in an HIV-1 transcriptional positive feedback loop	Berkeley, CA 2002 – 2004

AWARDS AND FELLOWSHIPS

Cancer Research Institute Postdoctoral Fellowship	2010-2013
NIH Kirschstein Postdoctoral Fellowship	(declined)
MIT Presidential Graduate Fellowship	2004
Phi Beta Kappa	2004
UC Berkeley Regents' Scholarship	2000
National Merit Scholarship	2000

PUBLICATIONS

1. **Toettcher JE**, Weiner OD, Lim WA. Using optogenetics to interrogate the dynamic control of signal transmission by the Ras/Erk module. *Cell* **155**:1422-1434 (2013).
 2. **Toettcher JE**, Gong D, Lim WA, Weiner OD. Light-based feedback for controlling intracellular signaling dynamics. *Nature Methods* **8**:837-839 (2011).
 - *Commentary*: Haugh, J. Cells see the light to bring signaling under control. *Nature Methods* **8**:808-809 (2011).
 3. **Toettcher JE**, Castillo A, Tidor B, White JK. Oscillator sensitivity analysis in the presence of hidden conservation constraints. In *Proceedings of the 48th IEEE Design Automation Conference*, p. 806-811, June 2011.
 4. **Toettcher JE**, Gong D, Lim WA, Weiner OD. Light control of plasma membrane recruitment using the Phy-PIF system. *Methods in Enzymology* **497**, 409-423 (2011).
 5. **Toettcher JE**, Apgar JF, Castillo AR, Tidor B, White J. Recycling circuit simulation techniques for mass-action biochemical kinetics. In: Li P, Silveira LM, Feldman P (Eds.), *Advanced Simulation and Verification of Electronic and Biological Systems*. Springer, p. 115-136 (2011).
 6. **Toettcher JE**, Voigt CA, Weiner OD, Lim WA. The promise of optogenetics in cell biology: interrogating molecular circuits in space and time. *Nature Methods* **8**, 35-38 (2011).
 7. **Toettcher JE**, Mock C, Batchelor E, Loewer A, Lahav G. A synthetic-natural hybrid oscillator in human cells. *Proc Natl Acad Sci* **107**:17047-17052 (2010).
 - *Commentary*: Featured as "Editor's Choice" in Ray LB. Oscillator fine-tuning. *Science Signal*. **3**:ec315.
 8. **Toettcher JE***, Loewer A*, Ostheimer GJ, Yaffe MB, Tidor B, Lahav G. Distinct mechanisms act in concert to mediate cell cycle arrest. *Proc Natl Acad Sci* **16**:785-790 (2009).
 9. Apgar JF, **Toettcher JE**, Endy D, White FM, Tidor B. Stimulus design for model selection and validation in cell signaling. *PLoS Comput Biol* **4**: e30 (2008).
 10. Weinberger LS, Burnett JC, **Toettcher JE**, Arkin AP, Schaffer DV. Stochastic gene expression in a lentiviral positive-feedback loop: HIV-1 Tat fluctuations drive phenotypic diversity. *Cell* **122**:169-82 (2005).
- * Authors contributed equally to this work.

INVITED TALKS AND SEMINARS

Keystone Symposium on Optogenetics, Denver CO	March 2015
Western Association of Core Directors meeting, Davis CA	September 2014
FASEB Meeting on Protein Phosphorylation and Signal Rewiring, Aspen CO	July 2014
iCEMS International Symposium on Light Control in Cell Biology, Kyoto, Japan	June 2014
CSHL Meeting on Computational Cell Biology, Cold Spring Harbor NY	March 2013
INSERM Workshop on Optogenetics, Bordeaux, France	September 2012
LAMPP Seminar, UC Irvine	May 2012
NASA Ames Research Center Synthetic Biology Seminar, Mountain View CA	February 2012
Gordon Research Symposium on Photoreceptor Signaling, Galveston TX	January 2012
1st Engineering in Medicine and Biology Conference, Boston MA	August 2011
48th Design and Automation Conference, San Diego CA	June 2011
Society of Toxicology, Washington DC	March 2011
CSHL Meeting on Computational Cell Biology, Cold Spring Harbor NY	March 2009
Merck-MIT Symposium, Boston MA	November 2008

TEACHING EXPERIENCE

UCSF/PKU Team Challenge Workshop	Beijing, China
Workshop Instructor	Summer 2012

UCSF/Lincoln High School iGEM Team

Instructor / Mentor

University of California, San Francisco

Summer 2010

SMA5301: Computation and Systems Biology

Teaching Assistant

National University of Singapore

Summer 2008

CME5238: Computational Linear Algebra

Teaching Assistant

National University of Singapore

Summer 2008

20.482: Foundations of Algorithms and Computational Techniques in Systems Biology

Teaching Assistant

MIT

Spring 2005

20.420: Biomolecular Kinetics and Cellular Dynamics

Teaching Assistant

MIT

Fall 2005