

## CURRICULUM VITAE

**Andrew M. Leifer**

Lewis-Sigler Fellow and Lecturer of Physics  
Princeton University

### CONTACT INFORMATION

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### PROFESSIONAL EXPERIENCE

**Princeton University**, Princeton, NJ ..... 2012–present  
*Lewis-Sigler Fellow*, Lewis-Sigler Institute for Integrative Genomics  
*Lecturer*, Department of Physics

**Harvard University**, Cambridge, MA ..... 2007-2012  
*NSF Graduate Research Fellow*, Program in Biophysics and Department of Physics

**JILA (NIST-University of Colorado)**, Boulder, CO ..... Summers 2005-2006  
*NSF Summer Undergraduate Research Fellow*

**American Association for the Advancement of Science**, Washington, DC .... Spring 2006  
*Leonard Reiser Fellow*, Center for Science Technology and Security Policy.

**Natl. Telecommunications and Information Administration**, Boulder, CO . Summer 2004  
*Researcher*, Institute for Telecommunication Sciences, Theory Division.

**National Institute of Standards and Technology**, Boulder, CO ..... Summer 2003  
*Researcher*, Statistics Division.

### EDUCATION

**Ph.D. in Biophysics**, Harvard University, Cambridge, MA ..... June 2012  
Thesis Topic: “Optogenetics and computer vision for *C. elegans* Neuroscience and Other Biophysical Applications” Advisor: Professor Aravinthan D.T. Samuel

**B.S. in Physics**, Stanford University, Stanford, CA ..... June 2007

**B.A. in Political Science**, Stanford University, Stanford, CA ..... June 2007

Honors in International Security Studies, Stanford University, Stanford, CA ..... June 2007

Thesis Topic: “International scientific engagement for mitigating emerging nuclear security threats” Advisor: Professor Michael May

## HONORS AND AWARDS

American Physical Society, Biological Physics Thesis Award, Certificate of Merit ..... 2013  
 Lewis-Sigler Fellow, Princeton University ..... 2012–Present  
 Derek C. Bok Certificate of Distinction in Teaching, Harvard University. .... 2008  
 National Science Foundation Graduate Research Fellowship ..... 2007–2011  
 Rieser Fellowship in Science Technology and Global Security, Bulletin of the Atomic Scientist 2006  
 SPIE International Society for Optical Engineering Scholarship ..... 2006  
 American Institute of Physics, Society of Physics Students, Leadership Award ..... 2006  
 National Science Foundation, Summer Undergraduate Research fellowship, ..... 2005–2006  
 AAAS, Center for Science Technology and Security Policy, Intern of the Year Award ..... 2006  
 Harry Press Journalism Award, Stanford University. .... 2006  
 Boothe Prize for Excellence in Writing, Stanford University ..... 2004  
 Robert C. Byrd Academic Merit Scholarship ..... 2003  
 Dofflemyer Eagle Scout Scholarship ..... 2003  
 Awards for the author’s independent research, “Fractals, Power-Laws and the Weibull Distribution: Mathematically Modeling Crumpled Paper” ..... 2003  
 American Mathematical Society, Karl Menger Award.  
 Office of Naval Research, Naval Science Award.  
 Third Place Team Project, Intel International Science and Engineering Fair 2003.  
 First Place Team Project, Colorado Science and Engineering Fair.  
 Scientific American, Outstanding Achievement in Education.  
 Golden State Governor’s Scholarship, State of California ..... 2000

## SERVICE

Invited Participant, NSF Worskshop: Frontiers for Integrative Study of Animal Behavior .... 2014  
 Session Chair, *C. elegans* Topic Mtg: Neuronal Development, Synaptic Function & Behavior 2014  
 Member, Council of the Princeton University Community ..... 2013-2014  
 Chair, Grad Program in Neuroscience Generals Exam Committee, Princeton University .... 2013  
 Senior Staff Committee Member, Lowell House, Harvard College, ..... 2010–2012  
 Resident Tutor, Lowell House, Harvard College ..... 2009–2012  
 Editorial Board Member, Stanford Daily, Stanford University ..... 2006-2007

Scientific Content reviewer for peer-reviewed journals including:

Journal of Visual Experiments and PLoS One

Scientific content reviewer for funding programs including:

NASA Postdoctoral Program, Sir Henry Dale Wellcome Trust Fellowship

**TEACHING**

Marine Biological Laboratory, Woods Hole:

Neural Systems and Behavior, *Faculty* ..... Summer 2014

Princeton University:

ISC 231-232, An Integrated, Quantitative Intro to the Natural Sciences, *Faculty* ..... 2012–2014

Biophysics and Computations in Neurons and Networks, *Assistant Instructor* ..... Summer 2013

Harvard University:

BIOPHYS 242R, Special Topics in Biophysics: Brain and Behavior, *Guest Lecturer* ..... 2013

MCB 199, Statistical Thermodynamics for Quantitative Biology, *Teaching Assistant* ..... 2008

**ADVISING**

Current PhD Students:

Ashley Linder, Program in Neuroscience (jointly advised with Joshua Shaevitz)

Current Undergraduate Students:

David Mazumder

Past Undergraduate Students:

Peter Johnson, Department of Physics, Junior Project

Kevin Mizes, Department of Physics, Treiman Fellow

**INVITED TALKS**

Brandeis University, Computational Seminar ..... expected 2014

*C. elegans* Topic Mtg: Neuronal Development, Synaptic Function & Behavior ..... 2014

Rutgers University, Multi Group Worm Meeting ..... 2013

INSERM, University of Paris Descartes, Optics and Photonics Seminar ..... 2012

Princeton University, Lewis-Sigler Institute for Integrative Genomics ..... 2011

Rutgers University, Molecular Biology and Biochemistry ..... 2010

Harvard University, Rowland Institute ..... 2010

**PEER-REVIEWED PUBLICATIONS**

1. Frederick B. Shipley, Christopher M. Clark, Mark J. Alkema, **Andrew M. Leifer**, “Simultaneous optogenetic stimulation and calcium imaging in freely moving *C. elegans*.” *Frontiers in Neural Circuits* 8:28 (2014).
2. Steven J. Husson, Alexander Gottschalk, **Andrew M. Leifer**, “Optogenetic manipulation of neural activity in *C. elegans*: from synapse to circuits and behavior” *Journal of Biology of the Cell*, 105, 1–16 (2013). **Invited review.**
3. Jamie L. Donnelly, Christopher M. Clark, **Andrew M. Leifer**, Marian Haburacak, Jennifer K. Pirri, Michael M. Francis, Aravinthan D. T. Samuel, and Mark J. Alkema. “Monoaminergic

- orchestration of motorprograms in a complex behavior in *C. elegans*.” *PLoS Biology* 11(4): e1001529 (2013).
4. Quan Wen, Michelle Po, Elizabeth Hulme, Sway Chen, Xinyu Liu, Sen Wai Kwok, Marc Gershow, **Andrew M. Leifer**, Victoria Butler, Christopher Fang-Yen, Taizo Kawano, William R. Schafer, George Whitesides, Matthieu Wyart, Dmitri Chklovskii, Mei Zhen, Aravinthan D T Samuel, “Proprioceptive coupling within motor neurons drives *C. elegans* forward locomotion.” *Neuron*, 76, 750–761 (2012).
  5. Chenxiang Lin, Ralf Jungmann, **Andrew M. Leifer**, Chao Li, Daniel Levner, Gerooge M. Church, William M. Shih, Peng Yin. “Sub-micrometer geometrically encoded fluorescent barcodes self-assembled from DNA.” *Nature Chemistry*, 4, 832–839 (2012).
  6. **Andrew M. Leifer**, Christopher Fang-Yen, Marc Gershow, Mark Alkema, Aravinthan D.T. Samuel, “Optogenetic manipulation of neural activity in freely moving *Caenorhabditis elegans*,” *Nature Methods*, 8(2), p.147–152 (2011) .
  7. Kevin J. Coakley, David S. Simons, **Andrew M. Leifer**. “Secondary Ion Mass Spectrometry Measurements of Isotopic Ratios: Correction for Time Varying Count Rate.” *International Journal of Mass Spectrometry*, 204, 107–120 (2005).

## ACTIVE GRANTS

07/2014–07/2017, Simons Collaboration on the Global Brain Research Award (PI)

“Whole brain calcium imaging in freely behaving nematodes”

Annual Direct Costs: \$80,000

Total Direct Costs: \$240,000

09/2014–08/2016, Innovation Fund for New Ideas in the Natural Sciences (co-PI with Shaevitz),

“All-neuron I/O in freely behaving animals”

Annual Direct Costs: \$100,000

Total Direct Costs: \$200,000