

## Dan Siegal-Gaskins

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- CONTACT INFORMATION** California Institute of Technology *E-mail:* dsg@caltech.edu  
1200 E. California Blvd *Web:* http://dantimatter.com/  
M/C 107-81  
Pasadena, CA 91125
- RESEARCH INTERESTS** Systems and synthetic biology, with a focus on using experimental and computational tools to understand regulatory network function.
- EDUCATION** Ph.D. (Physics), University of Chicago, August 2008  
*Thesis title: Populations to single cells: insights from microfluidic growth experiments*  
*Thesis advisor: Dr. Sean Crosson, Department of Biochemistry and Molecular Biology*
- B.A.Sc. (Engineering Science - Physics option), University of Toronto, May 2002  
*Thesis title: Development of a cryogenic Faraday rotator for CMB polarimetry*  
*Thesis advisors: Dr. C. Barth Netterfield, Department of Physics (Toronto)*  
*Dr. Andrew Lange, Department of Physics (Caltech)*
- POSITIONS HELD** **Postdoctoral Scholar**  
Department of Bioengineering, California Institute of Technology, 2011 - present
- Postdoctoral Fellow**  
Mathematical Biosciences Institute, Ohio State University, 2008 - 2011
- Graduate Research Assistant**  
Department of Physics, University of Chicago, 2002 - 2008
- Undergraduate Research Assistant**  
Department of Physics, University of Toronto, 1999 - 2002
- PUBLICATIONS** Eisenberg MC, Ash JN, and **Siegel-Gaskins D**. 2011. *"In silico synchronization of cellular populations through expression data deconvolution"*. Proceedings of the 48th ACM/IEEE Design Automation Conference, accepted.
- Siegel-Gaskins D (corresponding)**, Mejia-Guerra MK, Smith GD, and Grotewold E. 2011. *"Emergence of switch-like behavior in a large family of simple biochemical networks"*. PLoS Comput Biol 7(5): e1002039.
- Fiebig A, Castro Rojas CM, **Siegel-Gaskins D**, and Crosson S. 2010. *"Interaction specificity and toxicity in a paralogous set of ParE/RelE-family toxin-antitoxin systems"*. Mol Microbiol 77: 236-251.
- Siegel-Gaskins D**, Grotewold E, and Smith GD. 2009. *"The capacity for multistability in small gene regulatory networks"*. BMC Syst Biol 3:96.
- Siegel-Gaskins D (corresponding)**, Ash JN, and Crosson S. 2009. *"Model-based Deconvolution of Cell Cycle Time-series Data Reveals Gene Expression Details at High Resolution"*. PLoS Comput Biol 5(8): e1000460.
- Guet GC, Bruneaux L, Min TL, **Siegel-Gaskins D**, Figueroa I, Emonet T, and Cluzel P. 2008. *"Simultaneous Determination of mRNA and Protein Concentrations in Single Living Bacteria"*. Nucleic Acids Res 36(12):e73.

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- PUBLICATIONS**  
(CONTINUED)     **Siegal-Gaskins D** and Crosson S. 2008. *“Tightly-Regulated and Heritable Division Control in Single Bacterial Cells”*. Biophys J 95(4):2063-72.
- Purcell EB, **Siegal-Gaskins D**, Rawling DC, Fiebig A, and Crosson S. 2007. *“A LOV-Family Photosensory Two-Component System Regulates Bacterial Cell Attachment”*. Proc Natl Acad Sci USA 104(46):18241-18246.
- HONORS AND AWARDS**
- Science Café Grant**, NOVA scienceNOW, 2011
- NIH T32 Postdoctoral Fellowship in Cancer Genetics**, Division of Human Cancer Genetics, Ohio State University, 2010 - 2011
- Doolittle-Harrison Fellowship**, University of Chicago, 2007
- Burroughs Wellcome Fund Interfaces in Science Fellowship**, Cross-Disciplinary Program in Biophysical Dynamics and Biocomplexity, 2005 - 2006
- L. E. (Ted) Jones Award of Distinction**, University of Toronto Engineering Alumni Association, 2002
- Spirit of EngSci Award**, Division of Engineering Science, University of Toronto, 2001
- Undergraduate Summer Research Award**, Natural Sciences and Engineering Research Council of Canada, 1999
- TEACHING EXPERIENCE**
- Teaching Assistant**  
Computational Cell Biology, Cold Spring Harbor Laboratory, 2010  
Computational Biology Workshop, University of Chicago, 2007 - 2008  
Foundations of Modern Physics II, University of Chicago, 2007  
Foundations of Modern Physics, University of Chicago, 2004  
The Evolution of the Universe, University of Chicago, 2003
- Other**  
Integrated Molecular and Cellular Biology for Non-Biologists, Ohio State University, 2009 - 2010  
*(guest lecturer)*  
Calculus and Analytic Geometry II (Life Sciences), Ohio State University, 2009 *(mentor)*  
Calculus and Analytic Geometry I (Life Sciences), Ohio State University, 2008 *(mentor)*
- INVITED SEMINARS**
- Computational Biology and Bioinformatics, University of Southern California, January 19, 2011
- Department of Mathematics, UC Irvine, January 18, 2011
- Computational Cell Biology course, Cold Spring Harbor Laboratory, July 10, 2010
- Research for Undergraduates: Adventures in Mathematical Biology and its Applications (RUMBA) program, Ohio State University, January 21, 2010
- Department of Bioinformatics/Biosystems Engineering, TFH Wildau, November 20, 2009
- Computational Science training for Undergraduates in the Mathematical Sciences (CSUMS) program, College of William and Mary, June 9, 2009

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- CONFERENCE TALKS
- “Identification of novel genetic switch topologies in a large class of biochemical networks”, Ohio Collaborative Conference on Bioinformatics, Ohio State University, 2010 (*contributed*)
  - “The capacity for multistability in small networks”, Network Biology: Understanding metabolic and protein interactions, Mathematical Biosciences Institute, 2009 (*contributed*)
- CONFERENCE POSTERS
- “Emergence of switch-like behavior in a large family of simple biochemical networks”, 11<sup>th</sup> International Conference on Systems Biology, Edinburgh, UK, 2010
  - “The capacity for multistability in small gene regulatory networks”, 10<sup>th</sup> International Conference on Systems Biology, Stanford University, 2009
  - “Model-based Deconvolution of Cell Cycle Time-series Data Reveals Gene Expression”, 10<sup>th</sup> International Conference on Systems Biology, Stanford University, 2009
  - “Generalized Deconvolution of Population-level Gene Expression Data Reveals Details with High Temporal Resolution”, Systems Biology: Networks, Cold Spring Harbor Laboratory, 2009
  - “Control and Inheritance of Division Time in *Caulobacter crescentus*”, 8<sup>th</sup> International Conference on Systems Biology, Long Beach, CA, 2007
  - “A Real-time Study of Genetic Networks Using a Non-coding RNA Reporter System”, International Workshop on Systems Biology, Maynooth, Ireland, 2006
- PROFESSIONAL ACTIVITIES AND OUTREACH
- Reviewer for Biophysical Journal, Journal of Nanobiotechnology, Scientific Reports, Journal of Theoretical Biology, and PLoS Computational Biology
  - Founder and lead organizer, Columbus Science Pub, 2010 - 2011
  - Session Chair, “Mechanics in Cell Biology”, American Physical Society March Meeting, 2010
  - Participant, Computational Cell Biology course, Cold Spring Harbor Laboratory, 2009
  - Instructor, Science and Technology Outreach and Mentoring Program, University of Chicago, 2006 - 2008
  - Participant, Museum Presentation in Science Program, University of Chicago, 2004 - 2005
- REFERENCES
- Available upon request.