DAVID SOLOVEICHIK
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Academic Positions:

06/08-pres *California Institute of Technology*, Postdoctoral Scholar in the DNA and Natural Algorithms Group
Principle investigator: Erik Winfree

Education:

09/02-06/08 *California Institute of Technology*, Computation & Neural Systems, **Ph.D.**
Thesis advisor: Erik Winfree
Dissertation title: "Molecules computing: self-assembled nanostructures, molecular automata, and chemical reaction networks"
(Received Milton and Francis Clauser Doctoral Prize for the most original Caltech dissertation of 2008)

09/98-06/02 *Harvard University*, Computer Science, **M.S.**
Harvard University, Computer Science (Mind, Brain and Behavior Track), **B.S.** with Highest Honors, awarded Magna Cum Laude

Publications:

- Seelig, G., Soloveichik, D., "Signal Propagation and Propagation Delays in Molecular Circuits", to be published in *Proceedings of DNA Computing 15.*
- Soloveichik, D., "Statistical Learning of Arbitrary Computable Classifiers", arXiv preprint cs.LG/0806.3537v2, submitted to ALT 09.
- Cook, M., Soloveichik, D., Winfree, E., Bruck, J., "Programmability of Chemical Reaction Networks", in *Algorithmic Bioprocesses*, (Eds. Condon, Harel, Kok, Salomaa, Winfree), Springer, pp. 543-584, 2009.
- Soloveichik, D., Seelig, G., Winfree, E., "DNA as a Universal Substrate for Chemical Kinetics", in *Proceedings of DNA Computing 14*.
- Soloveichik, D., "Robust Stochastic Chemical Reaction Networks and Bounded Tau-Leaping", *The Journal of Computational Biology* **16**: 501-522 (2009).
- Soloveichik, D., Cook, M., Winfree, E., Bruck, J., "Computation with Finite Stochastic Chemical Reaction Networks", *Natural Computing* **7**: 615-633 (2008).
- Soloveichik, D., Cook, M., Winfree, E., "Combining Self-Healing and Proofreading in Self-Assembly", *Natural Computing* **7**: 203-218 (2008).
- Soloveichik, D., Winfree, E., "Complexity of Self-Assembled Shapes", *SIAM Journal on Computing* **36**: 1544-1569 (2007).
- Seelig, G., Soloveichik, D., Zhang, D. Y., Winfree, E., "Enzyme-Free Nucleic Acid Logic Circuits," *Science* **314**: 1585-1588 (2006).
- Soloveichik, D., Winfree, E., "Complexity of Compact Proofreading for Self-Assembled Patterns", *Proceedings of DNA Computing 11*, *Lecture Notes in Computer Science*, **3892**: 305-324 (2006).
- Soloveichik, D., Winfree, E., "The Computational Power of Benenson Automata", *Theoretical Computer Science*, **244**: 279-297 (2005).

Conference and Invited Talks:

- "Programmable Chemical Kinetics." Invited talk, 6th Annual Conference on the Foundations of Nanoscience, Snowbird, Utah (Apr 2009).
- "Algorithmic Behavior in Well-Mixed Chemical Kinetics." Invited talk, CS Colloquium, Yale (Nov 2008); also invited talk at Caltech Information Science and Technology Seminar (Nov 2008); also invited talk at the AMS Sectional Meeting, Raleigh (Apr 2009).
- "DNA as a Universal Substrate for Chemical Kinetics." 14th International Meeting on DNA Computing, Czech Republic (2008).
- "Fast Simulation of Robust Stochastic Chemical Reaction Networks." Invited talk, Banff Workshop on Stochasticity in Biochemical Reaction Networks, Canada (2007).
- "Complexity of Compact Proofreading for Self-Assembled Patterns." 12th International Meeting on DNA Computing, South Korea (2006).
- "Complexity of Self-Assembled Shapes." 10th International Meeting on DNA Computing, Italy (2004).

Patents:

- Seelig, G., Soloveichik, D., Winfree, E., Zhang, D. Y., “Nucleic acid-based logic circuits”, US Patent Application 20070072215

Teaching:

- Teaching Assistant, “CS/CNS 129: Information and Complexity,” Caltech (2003, 2007); guest lectures on “NP-Completeness” and “Chaitin’s Algorithmic Information Theory”
- Teaching Assistant, “CS/CNS 191: Biomolecular Computation,” Caltech (2007)
- Teaching Assistant, “CS 151: Computational Complexity Theory,” Caltech (2004)

Awards and Honors:

Milton and Francis Clauser Doctoral Prize (for the most original doctoral thesis at Caltech, 2008)
Best Student Paper Award (in DNA Computing Conference, 2004, 2008)
ARCS Foundation Scholarship (2005)
Phi Beta Kappa (2002)

Professional and Community Activities:

Program Committee, International Meeting on DNA Computing (2007, 2008, 2009)
Milken Community High School, Board of Trustees (2006-pres)
Mentor for Milken Community High School Science Research Program (2006-pres)