DEPARTMENT: Bioengineering

BIOGRAPHICAL INFORMATION

A. Identifying Data

Name: Andrew (Drew) David Endy
Current Rank: Assistant Professor
Proposed Rank: Associate Professor with Tenure

B. Academic History

1998 Ph.D. in Biotechnology & Biochemical Engineering
Thayer School of Engineering
Dartmouth College, Hanover, NH

1994 M.S. in Environmental Engineering
Department of Civil Engineering
Lehigh University, Bethlehem, PA

1992 B.S. in Civil Engineering
Department of Civil Engineering
Lehigh University, Bethlehem, PA

C. Employment Record

01/01/2011-10/11/2013 Affiliated Faculty, Center for International Security & Cooperation, Stanford University

09/1/2008 - 10/11/2013 Assistant Professor, Bioengineering Department, Stanford University

08/01/2005 - 08/31/2008 Cabot Career Development Assistant Professor, Biological Engineering Department, Massachusetts Institute of Technology

08/01/2004 - 07/31/2005 Assistant Professor, Biological Engineering Department, Massachusetts Institute of Technology

01/01/2002 - 07/31/2004 Fellow, Biology Department & Biological Engineering Division, Massachusetts Institute of Technology

09/01/1998 - 12/31/2001 Fellow, Molecular Sciences Institute, Berkeley, CA

01/01/1998 - 08/31/1998 Postdoctoral Fellow, Joint Appointment, University of Texas Austin Microbiology Department & University of Wisconsin Madison Chemical Engineering Department

06/01/1994 - 08/31/1994 Research Specialist, Environmental Studies Center, Lehigh University

06/01/1991 - 08/31/1991 Construction Management Associate, National Railroad Passenger Corporation (AMTRAK), Philadelphia, PA

D. Industry Relationships

2009-present Co-Founder & Director, Gen9, Inc., Cambridge, MA

2004-2009 Co-Founder & Director, Codon Devices, Inc. Cambridge, MA

E. Awards & Honors, Professional Service, Major Presentations

Awards and Honors

2013 The Seymour Benzer Lectureship, US National Academy of Sciences

2013 Presidential Champion of Change, The White House

2012 Best Research Article for 2012, Journal of Biological Engineering

2012 Kavli Fellow, Frontiers of Science, US National Academies of Sciences

2011 Best Research Article for 2011, Journal of Biological Engineering

2009 Esquire 75, Most Influential People of the 21st Century

2008-10 Terman Fellow, Stanford University

2007 San Francisco Chronicle, Faces of Business

2007 *Esquire*, Best & Brightest

2005 Cabot Career Development Award, MIT

2005 *WIRED* Rave Awards

2004 Certificate of Service, DARPA ISAT

2003	Certificate of Appreciation, Synthetic Biology Study Chair, DARPA ISAT
1998	Goodrich Prize, Thayer School, Dartmouth College
1994	Darling Fellowship, Thayer School, Dartmouth College
1993	Arthur Humphrey Teaching Award, Lehigh University

Professional Service (selected)

2013-present	Member, US National Academies Forum on Synthetic Biology
2012-present	Voting Member, US National Science Advisory Board for Biosecurity
2011-present	Research Director, Practices Thrust, NSF Synthetic Biology Engineering Research Center (SynBERC)
2011-12	Chair, US Delegation to Six Parties Symposia on Synthetic Biology, US NAS & NAE, UK RAS & RAE, PRC CAS & CAE
2011	Co-drafter, The BioBrick Public Agreement (http://biobricks.org/bpa/)
2011	Chair, SB5.0, The Fifth International Meeting on Synthetic Biology
2010-present	Founding Co-Chair, US Delegation, EU-US Joint Taskforce on Biotechnology, Synthetic Biology Working Group
2010-present	Member, Committee on Science Technology & Law (CSTL), US National Academies of Science
2012-2013	Co-Chair, SB6.0, The Sixth International Meeting on Synthetic Biology
2010-2013	Director, BIOFAB International Open Facility Advancing Biotechnology (BIOFAB), Emeryville, CA
2010-2012	Founding Section Co-Editor, Synthetic Biology, *Nucleic Acids Research*
2010	Witness, US House Energy and Commerce Committee, Synthetic Biology hearing
2010	Opening Witness & Panelist, US Presidential Commission for the Study of Bioethical Issues, Synthetic Biology investigation & report

2009-present	Strategic Director, NSF Synthetic Biology Engineering Research Center (SynBERC)
2009-present	Stanford SEQ2 Building 4 Faculty Planning Committee
2008-present	Board of Advisers, *Scientific American*
2008-present	Stanford BIOE Undergraduate Curriculum Committee
2008	Co-Organizer, SB4.0, The Fourth International Meeting on Synthetic Biology
2007-11	Director, The Molecular Sciences Institute
2007-2009	Founding Investigator and Research Director, Device & Device Composition Thrust, NSF Synthetic Biology Engineering Research Center (SynBERC)
2007-2009	Ad hoc member, US Recombinant DNA Advisory Committee
2007-2008	Reviewer, TR35 Awards
2007	Member, LLNL Biosecurity Advisory Group
2006-present	Advisor, Alfred P. Sloan Foundation
2006-present	PLoS ONE, Founding Editorial Advisory Board
2006-7	Advisor, Bill & Melinda Gates Foundation
2006-7	Advisor, NSABB Synthetic Biology Subgroup
2006	Grant Review, NSF CAREER Program
2006	Advisor, Bulletin of the Atomic Scientists
2006	Member, NIGMS Genetics & Systems Biology Planning Group
2006	Organizer, US NAE JAFOE Meeting (Tskuba)
2006	Co-Organizer, SB2.0, The Second International Meeting on Synthetic Biology

2005-present	Co-Founder & Advisor, OpenWetWare
2005-present	Co-Founder & President, The BioBricks Foundation [501(c)3], Cambridge, MA
2005-2010	Co-Founder and Head Judge, International Genetically Engineered Machines (iGEM) Competition
2005-7	Co-Chair & Author, Alfred P. Sloan Foundation Synthetic Genomics, Options for Governance Study
2005	Participant, IOM/NRC Committee on Advances in Technology and the Prevention of their Application to Next Generation Bioterrorism and Biowarfare Threats
2005	Advisor, Image & Meaning, The Getty Center, Los Angeles
2004	Organizer, SB1.0, The First International Meeting on Synthetic Biology
2003	Delegate, Chinese & US Academies of Science Frontiers, Shanghai
2003	Co-Chair, Formal Languages for Biological Processes, CSH Banbury
2003	Grant Review, Human Frontiers of Science
2003	Grant Review, NHGRI Centers of Excellence in Genomic Science program
2003	Member, NIGMS Biocomputing Planning Group
2003	Organizer, 2003 MIT IAP Synthetic Biology Lab
2002-2008	Co-Founder & Organizer, MIT Synthetic Biology Working Group
2002-2003	Chair, DARPA ISAT Synthetic Biology Study, briefing to Director doi: 1721.1/38455
2002	Participant, Offices of Secretary of Defense & Net Assessment, Biodefense Group
2002	Participant, NIGMS Visions of the Future Planning Group

2001-2004 Member, DARPA Information Science and Technology (ISAT) Study Group

2001 Grant Review, NSF CISE program

2001 Grant Review, NIGMS Biological Simulation program

2001 Grant Review, DOE Microbial Cell and Advanced Modeling and Simulation program

2000-present Research manuscript review for *Bulletin of Mathematical Biology, Journal of Bacteriology, Biophysical Journal, Nature Biotechnology, Physical Review Letters, Trends in Biotechnology, PNAS USA, Science, Virology, Nature, PLoS Biology, Cell, Journal of Biological Engineering, Nucleic Acids Research,* and *Physical Biology*

Major Presentations (selected from over 250)

62. Invited Public Lecture, 11 October 2013, 'Designing With Biology,' Creative Mornings, Design Week Portland, Portland, OR

61. Invited Lecture, 27 September 2013, 'Building Computers With Bacteriophage,' Electronic Materials Symposium, Santa Clara, CA

60. Invited Opening Lecture & Discussion, 16 August 2013, 'What and Why is Synthetic Biology?' US Department of State, Washington DC

59. Invited Briefing, 17 July 2013, 'Synthetic Biology,' 3rd Meeting of the UK Synthetic Biology Leadership Council, Department for Business, Innovation, and Skills, London, UK

58. Invited Lecture, 15 July 2013, 'How Synthetic Biology Differs from Genetic Engineering,' Setting the Patent Framework for Innovation in Synthetic Biology, Imperial College Business School, London, UK

57. Invited Speaker & Panelist, 20 June 2013, 'Open Science,' The White House, Washington DC

56. Invited Discussion Leader, 9 June 2013, 'Living Versus Non-Living Matter,' Opening Session, Gordon Research Conference on Synthetic Biology, Mt. Snow, VT

55. Opening Keynote, 7 June 2013, 'Building Computers with Bacteriophage,' HHMI SEA-PHAGES Annual Symposium, Janelia Farm, VA

54. Keynote, 11 May 2013, ‘Aliens, Computers, and the Bioeconomy,’ San Diego Microbiology Group Annual Meeting, Scripps Institution of Oceanography, La Jolla, CA

53. Invited Closing Perspective, 11 April 2013, ‘How Will Synthetic Biology & Conversation Shape the Future of Nature,’ Wildlife Conservation Society and The Nature Conservancy, Clare College, Cambridge, UK

52. Invited Lectures, 17-18 Dec. 2012, ‘Aliens, Computers, and the Bioeconomy’ and ‘Synthetic Biology Beyond the Bench,’ Pontificia Universidad Católica de Chile, Santiago, Chile

51. Dinner Keynote, 5 December 2012, Institute on Science for Global Policy, Tucson, Arizona

50. Invited Briefing, 14 November 2012, ‘Integrating Strategies for Biological Security,’ Council on Foreign Relations, New York

49. Invited Lecture, 10 October 2012, ‘Let’s Make Biology Easy to Engineer,’ Horizons 2012, Max Planck Institute, Göttingen, Germany

48. Invited Special Briefing, 22 August 2012, ‘Synthetic Biology,’ Defense Science Board, Draper Labs, Cambridge, MA

47. Invited Lecture, 18 July 2012, ‘(Genetic) Data Storage and Standard Biological Parts,’ Viruses of Microbes, Brussels

46. Invited Lecture, 14 May 2012, ‘... on synthetic biology,’ 5th Life Science Symposium, TU Delft, Netherlands

45. Keynote, 27 April 2012, IP Law & The Biosciences, Stanford Law School, Stanford, CA

44. Invited Public Lecture, 19 April 2012, ‘On Synthetic Biology,’ Auditorio Borges, Biblioteca Nacional, Buenos Aires, Argentina

43. Invited Lecture, 3 February 2012, ‘Can We Make Biology Easy to Engineer?’ IBM Almaden, San Jose, CA

42. Invited Lecture, 20 January 2012, Mars, Inc., Annual Scientific Retreat, ‘Can We Make Biology Easy to Engineer (to benefit all people and the planet)?,’ Davis, CA

41. Invited Internal Briefing, 1 December 2011, ‘Metrology & Synthetic Biology,’ NIST, Gaithersburg, MD

40. Keynote, 14 November 2011, ‘Synthetic Biology & Biodefense,’ DTRA CBD Annual Meeting, Las Vegas, NV

39. Invited Briefing, 27 October 2011, ‘Let’s Make Biology Easy to Engineer,’ US Board on Science Technology and Economic Policy, Palo Alto, CA

38. Invited Lecture, 12 September 2011, ‘Lessons of a Would-Be Engineer of Biology,’ 1st Karles Invitational Conference, Naval Research Laboratories, Washington DC

37. Keynote, 31 May 2011, ‘Can We Make Biology Easy to Engineer?’ DSM Science & Technology Innovation Awards, Vaals, Netherlands

36. Invited Lecture, 20 December 2010, ‘Synthetic Biology,’ Beijing Genomics Institute (BGI), Shenzen, China

35. Keynote, 9 December 2010, ‘Open Innovation and Biosecurity,’ Organisation for Economic Co-operation and Development (OECD), Paris, France

34. Invited Ministerial & Advisory Briefings plus Public Lecture, 7-8 December 2010, ‘Synthetic Biology,’ Oslo, Norway

33. Inaugural Knox Lecture, 4 November 2010, ‘The Practical Ethics of Synthetic Biology,’ Tufts University, Medford, MA

32. Invited Public Lecture, 15 October 2010, ‘Building a New Biology,’ Carlmont High School, Carlmont, CA

31. Amgen Keynote, 1 August 2010, ‘A New Biotechnology for the 21st Century,’ Society for Industrial Microbiology Annual Meeting, San Franciso, CA

30. Invited Lecture, 7 July 2010, ‘Let’s Make Biology Easy to Engineer,’ Aspen Ideas Festival, Aspen, CO (with Robert Langer, moderated by Stewart Brand)

29. Keynote, 20 November 2009, ‘Let’s Make Biology Easy to Engineer,’ DTRA Annual Meeting, Dallas, TX

28. Keynote, 27 July 2009, ‘Let’s Make Biology Easy to Engineer,’ 1st Meeting on Biodesign Automation, DAC Annual Meeting, San Francisco, CA

27. Invited Annual Lecture on Law, Health, and the Life Sciences, 16 April 2009, 'Dialog & Notes on Synthetic Biology,' University of Minnesota, Minneapolis, MN

26. Keynote, 6 January 2009, 'Post-Synthesis Genetics & Engineering Biological Simplicity,' Pacific Symposium on Biocomputing, Hawaii

25. Silverstein Lectures, 27-28 October 2008, Northwestern University & Medical School, Evanston and Chicago, IL

24. Public Debate with Jim Thomas of ETC Group and moderated by Stewart Brand, 18 November 2008, 'Synthetic Biology,' The Long Now Foundation, Cowell Theater, San Francisco, CA

23. Keynote, 28 September 2008, 'Building a New Biology,' Applied Biosystems, Inc. Annual Retreat, Asilomar, CA

22. Invited Lecture, 15 April 2008, 'Property Rights & Synthetic Biology,' Yale Law School, New Haven, CT

21. Invited Student & Postdoc Lecture, 14 April 2008, 'Reliable Design & Operation of Biological Systems,' Rockefeller University, New York, NY

20. Invited Lecture, 12 June 2007, 'Engineering Biology,' Kavli Conference on Synthetic Biology, Ilulissat, Greenland

19. Invited Lecture, 6 May 2007, 'Extrinsic Cellular Variation Predetermines Bacteriophage Lambda Development,' Cold Spring Harbor, NY

18. Invited Lecture, 17 April 2007, 'Building a Constructive Culture,' iGEM China, Tianjin, China

17. Invited Public Lecture, 12 October 2006, 'Introduction to Synthetic Biology,' Miraikan, Tokyo, Japan

16. Invited Briefing, 2 September 2006, 'Synthetic Biology & the Biological & Toxin Weapons Convention,' Delegates meeting, Royal Society, London, UK

15. Director's Lecture, 23 June 2006, 'Synthetic Biology,' Lawrence Livermore National Lab, Livermore, CA

14. Keynote, 29 March 2006, 'Post-Synthesis Genetics,' 1st Joint Genome Institute Users Meeting, Walnut Creek, CA

13. Invited Special Seminars (three separate talks over one day to students, faculty, and trustees), 13 March 2006, 'Design of Biological Systems,' The New School, New York, NY

12. Keynote, 22 February 2006, 'Synthetic Biology,' Annual Meeting, Union Schweizerischer Gesellschaften für Experimentelle Biologie, Geneva, Switzerland

11. Science Keynote, 5 December 2005, 'Foundations for Engineering Biology,' US DOE BERAC, Washington DC

10. Keynote, 6 August 2005, 'Open Source Biology,' OSCON, Portland, OR

9. Keynote, 26 June 2005, 'Engineering Biological Systems,' GECCO, Washington DC

8. Invited Lecture, 25 May 2005, 'Building Biological Systems,' Cambridge University, Cambridge, England

7. Invited Lecture, 23 May 2005, 'Building Biological Systems,' Tsinghua Univ., Beijing, China

6. Invited Lecture, 4 March 2005, 'The New Undergraduate Major in Biological Engineering at MIT,' Institute of Biological Engineering Annual Meeting, Athens, GA

5. Invited Policy Lecture, 13 January 2005, 'Synthetic Biology,' Center for Strategic & International Studies, Washington, DC

4. Jones Seminar, 12 November 2004, 'Engineering Biology,' Dartmouth, Hanover, NH

3. Invited Spontaneous Lecture, 11 September 2004, 'Building Biological Systems,' FOO Camp, O'Reilly, Inc, Sebastabol, CA

2. Invited Staff Briefing, 7 September 2004, 'Synthetic Biology,' Alfred P. Sloan Foundation, New York, NY

1. Keynote, 19 July 2004, 'Synthetic Biology,' Defense Sciences Research Council, San Diego, CA

F. Bibliographical Information

Refereed Publications

Customary practice in the candidate's field for order of authors on scholarly publications: Normally, the students or postdocs who primarily executed the

research are listed as first authors with others listed after. Typically, the principal investigator is listed last; co-senior authors are listed together at the end and noted in bold. Student authors are also noted in bold face.

30. **S Kosuri**, DB Goodman, G Cambray, VK Mutalik, Yuan Gao, AP Arkin, **D Endy**, GM Church, "Composability of regulatory sequences controlling transcription and translation in Ê. coli." *PNAS USA* (2013), doi: 10.1073/pnas.1301301110

29. **F St-Pierre**, L Cui, DG Priest, **D Endy**, IB Dodd, KE Shearwin, "One-step cloning and chromosomal integration of DNA." *ACS Synthetic Biology*, doi: 10.1021/sb400021j, 6 May (2013)

28. L Kahl, **D Endy**, "A survey of enabling technologies in synthetic biology." *Journal of Biological Engineering*. doi:10.1186/1754-1611-7-13, 10 May (2013).

27. J Bonnet, P Yin, **ME Ortiz, P Subsoontorn, D Endy**, "Amplifying genetic logic gates," *Science*. 28 Mar (2013).

26. G Cambray, JC Guimaraes, VK Mutalik, C Lam, QA Mai, T Thimmaiah, JM Carothers, AP Arkin, **D Endy**, "Measurement and modeling of intrinsic transcription terminators." *Nucleic Acids Res.* 19 Mar (2013).

25. VK Mutalik, JC Guimaraes, G Cambray, C Lam, MJ Christoffersen, QA Mai, AB Tran, M Paull, JD Keasling, AP Arkin, **D Endy**, "Precise and reliable gene expression via standard transcription and translation initiation elements." *Nat Methods.* 2013 Apr;10(4):354-60. doi: 10.1038/nmeth.2404. Epub 10 Mar (2013).

24. VK Mutalik, JC Guimaraes, G Cambray, QA Mai, MJ Christoffersen, **L Martin**, A Yu, C Lam, C Rodriguez, G Bennett, JD Keasling, **D Endy**, AP Arkin, "Quantitative estimation of activity and quality for collections of functional genetic elements." *Nat Methods.* 2013 Apr;10(4):347-53. doi: 10.1038/nmeth.2403. Epub 10 Mar (2013).

23. D Ghosh, AG Kohli, **F Moser, D Endy**, AM Belcher, "Refactored M13 bacteriophage as a platform for tumor cell imaging and drug delivery," *ACS Synth Biol.* Dec 21;1(12):576-82. doi: 10.1021/sb300052u (2012).

22. PR Jaschke, EK Lieberman, J Rodriguez J, A Sierra A, **D Endy**, "A fully decompressed synthetic bacteriophage øX174 genome assembled and archived in yeast," *Virology.* Dec 20;434(2):278-84. doi: 10.1016/j.virol.2012.09.020 (2012).

21. J Bonnet, **P Subsoontorn**, **D Endy**, "Rewritable digital data storage in live cells via engineered control of recombination directionality," *PNAS USA*, doi: 10.1073/pnas.

1202344109, 21 May (2012).

20. **M Ortiz**, **D Endy**, "Engineered cell-cell communication via DNA messaging," *Journal of Biological Engineering*, 6:16 doi:10.1186/1754-1611-6-16 (2012).

19. **T Thomson**, K Benjamin, A Bush, T Love, D Pincus, O Resnekov, R Yu, A Gordon, A Colman-Lerner, **D Endy**, R Brent, "Scaffold number in yeast signaling system sets tradeoff between system output and dynamic range," *PNAS USA*, November; doi: 10.1073/pnas.1004042108 (2011).

18. D Rebolj, M Fischer, **D Endy**, T Moore, A Šorgo, "Can we grow buildings? Concepts and requirements for automated nano- to meter-scale building,"*Advanced Engineering Informatics* v25(2), 390-398. doi:10.1016/j.aei.2010.08.006 (2011).

17. **L Martin, A Che, D Endy**, "Gemini, a bifunctional enzymatic and fluorescent reporter of gene expression," *PLoS ONE* 4(11): e7569. doi:10.1371/journal.pone. 0007569 (2009).

16. **JR Kelly**, AJ Rubin, CM Ajo-Franklin, J Cumbers, MJ Czar, K deMora, AL Glieberman, DD Monie, **D Endy**, "Measuring the activity of BioBrick promoters using an in vivo reference standard," *Journal of Biological Engineering*, March 20;3:4 (2009).

15. **F St-Pierre, D Endy**, "Determination of cell fate selection during phage lambda infection," *PNAS USA*, December; 105(52), 20705-20710 (2008).

14. **B Canton**, A Labno, **D Endy**, "Refinement and standardization of synthetic biological parts and devices," *Nature Biotechnology,* July; 26(6), 787-93 (2008).

13. **R Shetty, D Endy**, T Knight, "Engineering BioBrick vectors from BioBrick parts," *Journal of Biological Engineering*, Apr 14;2:5 (2008).

12. J Apgar, J Toettcher, **D Endy**, F White, B Tidor, "Stimulus design for model selection and validation in cell signaling," *PLoS Comput Biol*. Feb 15;4(2):e30 (2008).

11. **S Kosuri, JR Kelly, D Endy**, "TABASCO: A single molecule, base-pair resolved gene expression simulator," *BMC Bioinformatics*, 8:480 (2007).

10. H Bugl, JP Danner, RJ Molinari, JT Mulligan, H-O Park, B Reichert, DA Roth, R Wagner, B Budowle, RM Scripp, JAL Smith, SJ Steele, GM Church & **D Endy**, "DNA synthesis and biological security," *Nature Biotechnology*, June, 25, 627-9 (2007).

9. M Garfinkel, **D Endy**, G Epstein, R Friedman, "Synthetic genomics: Options for governance," *Biosecur Bioterror* Dec;5(4):359-62 (2007).

8. **D Endy**, "Foundations for engineering biology," *Nature*, v438 p449-52 (2005).

7. **LY Chan, S Kosuri, D Endy**, "Refactoring bacteriophage T7," *Nature/EMBO Molecular Systems Biology*, v1 pE1-10 (2005).

6. A Colman-Lerner, A Gordon, E Serra, T Chin, O Resnekov, **D Endy**, CG Pesce, R Brent, "Regulated cell to cell variation in a cell fate decision system," *Nature*, v437 p699-706 (2005).

5. **D Endy**, R Brent, "Modelling cellular behavior," *Nature*, v409 p391-5 (2001).

4. **D Endy**, L You, J Yin, IJ Molineux, "Computation, prediction, and experimental tests of fitness for bacteriophage T7 mutants with permuted genomes," *PNAS-USA* v97 p5375-80 (2000).

3. **D Endy**, J Yin, "Toward antiviral strategies that resist viral escape," *Anti-Microbial Agents & Chemotherapy*, v44 p1097-9 (2000).

2. **D Endy**, D Kong, J Yin, "Intracellular kinetics of a growing virus: a genetically structured simulation for the growth of bacteriophage T7," *Biotechnology & Bioengineering* v55 p375-389 (1997).

1. **D Endy**, "Biologically catalyzed reduction of nitrous oxide to nitrogen gas in wastewater treatment systems," *Proc. of the 27th Mid-Atlantic Indust. & Haz. Waste Conference*, p255-70, Technomic (1995).

Refereed Conference Proceedings

1. **P Subsoontorn**, **D Endy**, "Design and analysis of genetically encoded counters." *Procedia Computer Science*, v11 (2012) pp.43-54

Non-Refereed Publications

14. **D Endy**, "Most of the smartest bioengineers work for someone else." The White House Blog, http://www.whitehouse.gov/blog/2013/06/20/most-smartest-bioengineers-work-someone-else 20 June (2013).

13. J Bonnet, **D Endy**, "Switches, switches, every where, in any drop we drink." *Mol Cell*.49(2):232-3. doi: 10.1016/j.molcel.2013.01.005. 24 Jan (2013).

12. **D Endy**, “Essay: Taking Faster and Smarter to New Physical Frontiers,” *The New York Times*, 5 December (2011).

11. **D Endy**, “Building a new biology,” *Comptes Rendus Chimie*, 14:4, 424-428 (2011).

10. **D Endy**, “Synthetic biology: Can we make biology easy to engineer?” *Industrial Biotechnology* 4(4): 340-351 (2008).

9. L Billings, **D Endy**, “Cribsheet #16: Synthetic Biology,” *SEED* July http://seedmagazine.com/content/article/cribsheet_16_synthetic_biology/ (2008).

8. **D Endy**, “Reconstruction of the genomes,” *Science* Feb 29;319(5867):1196-7 (2008).

7. D Baker, G Church, J Collins, **D Endy**, J Jacobson, J Keasling, P Modrich, C Smolke, R Weiss, “Engineering life: Building a fab for biology,” *Scientific American,* June (2006).

6. **D Endy**, “A biological engineer searches for simplicity,” *Nature* 449 doi: 10.1038/449005a (2007).

5. **D Endy**, “Useful Construction: How to design a chassis for synthetic biological systems,” *The Scientist* 20(1) 37-38 (2006).

4. **D Endy**, “2003 Synthetic Biology Study,” US Government, doi:1721.1/38455 (2003).

3. **D Endy**, MB Yaffe, “Molecular Monogamy,” *Nature* 426, 614-15 (2003).

2. AY Ting, **D Endy**, “Decoding NF-kB signaling,” *Science* 298, 1189-1190 (2002).

1. **D Endy**, AP Arkin, “A standard parts list for biological circuitry,” DARPA white paper doi:1721.1/29794 (1999).

Books

2. AD Ginsberg, J Calvert, P Schyfter, A Elfick, **D Endy**, Synthetic Aesthetics: Investigating Synthetic Biology’s Designs on Nature, 334 pages, *MIT Press*, in press (expected March 2014), ISBN: 9780262019996

1. C Wadey, I Deese, **D Endy**, “Adventures in Synthetic Biology,” OpenWetWare and *Nature*, http://hdl.handle.net/1721.1/46337 (2005)

Book Chapters

2. M Garfinkel, **D Endy,** G Epstein**,** R Friedman, "Synthetic Biology" Bioethics Briefing Book, The Hastings Center, Chpt. 35 (2008).

1. **D Endy**, "Towards a predictive biology: The example of bacteriophage T7" Evolution as Computation, Landweber & Winfree (eds.), DIMACS Workshop, Princeton, 201-209 (1999).

Patents

1. "Methods and Composition for Rewriteable Digital Data Storage in Live Cells"
U.S. Provisional Patent Application No.: 61/852,002
Filing Date: March 14, 2013, Inventors: Bonnet et al.

Public Domain Contributions

5. Boolean Integrase Logic (BIL) gates and amplifiers, BioBrick Public Agreement Contribution #57, 28 March 2013.

4. Terminators (BIOFAB E. coli C.dog v1 release), BioBrick Public Agreement Contribution #56, 14 March 2013.

3. Translation Initiation Elements (BIOFAB E. coli C.dog v1 release), BioBrick Public Agreement Contribution #24, 14 March 2013.

2. Promoters, (BIOFAB E. coli C.dog v1 release), BioBrick Public Agreement Contribution #22, 14 March 2013.

1. K1-5 Expression System, BioBrick Public Agreement Contribution #2, 17 June 2011.

List of Former Ph.D. Students

Sriram Kosuri
"Simulation, models, and refactoring of bacteriophage T7 gene expression"
MIT PhD, 2007, doi: 1721.1/39912
Currently, Assistant Professor, Biochemistry, UCLA (effective January 2014)

Barry Canton
"Engineering the interface between cellular chassis and synthetic biological systems"
MIT PhD, 2008, doi: 1721.1/44918,
Currently, Co-Founder, Ginkgo Bioworks, Inc.

Jason Kelly
"Tools and reference standards supporting the engineering and evolution of synthetic biological systems"
MIT PhD, 2008, doi: 1721.1/44917,
Currently, Co-Founder, Gingko Bioworks, Inc.

Reshma Shetty (co-advisee with Tom Knight)
"Applying engineering principles to the design and construction of transcriptional devices,"
MIT PhD, 2008, doi: 1721.1/44921
Currently, Co-Founder and President, Gingko Bioworks, Inc.

Samantha Sutton
"Engineering phosphorylation-dependent post-translational protein devices,"
MIT PhD, 2008, doi: 1721.1/45205,
Currently, VP and Director of Courses and Seminars, The Handel Group, Inc.

Ty Thompson
"Models and analysis of yeast mating response: tools for model building, from documentation to time-dependent stimulation,"
MIT PhD, 2008, doi: 1721.1/45206
Currently, Senior Computational Biologist, Selventa, Inc.

Francois St-Pierre
"Determination of cell fate selection during phage lambda infection"
MIT PhD, 2009, doi: unavailable
Currently, Postdoctoral Fellow, Lin Lab, Stanford

Monica Ortiz
"Engineering bacterial populations via DNA messaging"
Stanford PhD, 2013, doi: unavailable
Currently, Postdoctoral Fellow, Nagpal Lab, Harvard (effective September 2013)

List of Former Students Earning a M.S. or B.S. Thesis

Jeff Gritton
"Architecture and evolutionary stability of yeast signaling pathways"
MIT MS, 2006, doi: 1721.1/37258
Currently, Associate, Vinson & Elkins, LLP

Alex Mallet
"Analysis of Targeted and Combinatorial Approaches to Phage T7 Genome Generation"
MIT MS, 2007, doi: 1721.1/35880
Currently, Senior Development Manager, Amazon, Inc.

Nicolas Koutsoubelis
"Quantitative in silico and in vivo characterization of the recombinase addressable data storage"
University of Freiburg BS, 2012, doi: unavailable
Currently, Research Intern, Centre Recherches Interdisciplinaires - INSERM U1001

List of Current Ph.D. Students

Pakpoom (Ton) Subsoontorn
Anticipated date of graduation: 2014

List of Courses Taught

<u>2013-2014</u>
Stanford BIOE.44, Fundamentals for Engineering Biology Lab (Fall)
Stanford BIOE.244, Languages for Programming DNA (Fall)
Stanford BIOE.80, Introduction to Bioengineering (Spring)

<u>2012-2013</u>
Stanford BIOE.44, Fundamentals for Engineering Biology Lab (Fall)
Stanford BIO 109A/B, Human Genome & Disease (Winter, guest lecture)
Stanford BIOE.44, Fundamentals for Engineering Biology Lab (Spring)
Stanford BIOE.80, Introduction to Bioengineering (Spring, 3 guest lectures)
Stanford PUBPOL.222, Biosecurity & Bioterrorism Response (Spring, 2 guest lectures)
Stanford CHEMENG.454, Synthetic Biology & Metab. Engineering (Spring, 4 classes)
Stanford EE.380, Computer Systems Colloquium (Spring, guest lecture)
Yale Law School 21728, Open Source Systems (Spring, 2 classes)
European Research Area Synthetic Biology Summer School (Summer, guest lecture)

<u>2011-2012</u>
Stanford BIOE.44, Fundamentals for Engineering Biology Lab (Fall)
Stanford BIOE.244, Languages for Programming DNA (Winter)
Stanford BIOE 109A/B, Human Genome & Disease (Winter, guest lecture)

Stanford BIOE.44, Fundamentals for Engineering Biology Lab (Spring)
Stanford EE.380, Computer Systems Colloquium (Spring, guest lecture)

2010-2011
Stanford BIOE.44, Synthetic Biology Laboratory (Fall)
Stanford BIOE.244, Languages for Programming DNA (Winter)
Stanford BIOE.44, Fundamentals for Engineering Biology Lab (Spring)

2008-2009
Stanford BIOE.144 Introduction to Synthetic Biology (Winter)

2007-2008
MIT 20.109 Laboratory Fundamentals in Biological Engineering (Fall)
MIT 20.20 Introduction to Biological Engineering Design (Spring)

2006-2007
MIT 20.181 Biological Engineering Computation (Fall)
MIT 20.109 Laboratory Fundamentals in Biological Engineering (Spring)

2005-2006
MIT 20.109 Laboratory Fundamentals in Biological Engineering (Spring)
MIT 20.180 Programming for Biological Engineering (Spring)

2002-2003
MIT 7.93/BE.490 Foundations of Computational Biology (Spring)

Other Teaching

2005-2010 International Genetically Engineered Machines (iGEM) competition
(as reviewed in, for example, *Nature Biotech* 27:1099-102)
(advisor, MIT iGEM Teams, 2005-2007)
(advisor, Stanford iGEM Teams, 2009-2010)

2004 Synthetic Biology Competition
(as reviewed in *Cell Biol. Educ.* 4:19-23)

2004 MIT IAP Synthetic Biology Lab: Engineered Genetic Polka Dots

2003 MIT IAP Synthetic Biology Lab: Engineered Genetic Blinkers,
(as detailed in *Science* 303:158-61)

2003 LNS126 Genomics & Citizenship, UC Berkeley, CA (guest lecturer)