

Thomas T. Eng, Ph.D.

Curriculum Vitae

Lawrence Berkeley National Laboratory (LBNL)

1 Cyclotron Road MS 978 Berkeley, CA 94720

Email: tteng@lbl.gov

Professional Appointments:

2020-Present **Career Biologist Research Scientist**

Biological Systems Engineering Division. Biosciences Area, Lawrence Berkeley National Lab. Berkeley, CA. Current appointment.

2018-2020 **Biologist Project Scientist**

Biological Systems Engineering Division. Biosciences Area, Lawrence Berkeley National Lab. Berkeley, CA.

2010-2011 **Graduate Student Instructor**

Undergraduate Genetics (MCB.140), Department of Molecular and Cell Biology, University of California, Berkeley. Berkeley, CA.

2007-2009 **Technical Assistant I**

Laboratory of Terry Orr Weaver, PhD.
Whitehead Institute for Biomedical Research. Cambridge, MA.

2006-2007 **Laboratory Teaching Assistant**

Undergraduate Molecular Biology Laboratory (7.02L) Department of Biology, Massachusetts Institute of Technology. Cambridge, MA.

Education and Training:

2016-2018 **Post-doctoral research** in Microbial Systems Biology, LBNL. Berkeley, CA.

Supervisor: Aindrila Mukhopadhyay.

2009-2015 **Ph.D. in Molecular and Cell Biology**, UC Berkeley. Berkeley, CA.

Supervisor: Douglas E. Koshland.

2004-2007 **S.B. in Biology**, Massachusetts Institute of Technology. Cambridge, MA.

Supervisor: Hidde Ploegh.

Publications (Google Scholar h-index = 12; 2,131 total citations) § denotes co-first authorship.

1. **T. Eng**[§], D. Banerjee[§], A.K. Lau, R.A. Herbert, J.P. Prah, A. Deutschbauer, D. Tanjore, and A. Mukhopadhyay. Determinants of Bioreactor Fitness in *Pseudomonas putida* KT2440 Via Fitness Profiling Enables Optimized Indigoidine Production From Lignin-Derived Monomers. *Manuscript in preparation*.
2. E.T. Mohamed, A.Z. Werner, D. Salvachúa, C. Singer, K. Szostkiewicz, M. Jiménez-Díaz, **T. Eng**, M.S. Radi, A. Mukhopadhyay, M.J. Herrgård, S.W. Singer, G.T. Beckham, and A.M. Feist. Adaptive laboratory evolution of *Pseudomonas putida* KT2440 improves hydroxycinnamic acid catabolism and tolerance. *Metabolic Engineering Communications*, 2020 August 29. doi: 10.1016/j.mec.2020.e00143
3. **T. Eng**, R.A. Herbert, B. Wang, U. Martinez, J. Chen, B. Brown, M. Bissell, J.M. Mortimer, and A. Mukhopadhyay. Iron Limitation Drives Antagonistic Interactions Between Root Associated Bacteria. *Frontiers in Microbiology*, 2020 July 22. doi: 10.3389/fmicb.2020.01742

4. D. Banerjee[§], **T. Eng**[§], A.K. Lau, Y. Sasaki, B. Wang, Y. Chen, J.P. Prah, V.R. Singan, R.A. Herbert, Y. Liu, D. Tanjore, C.J. Petzold, J.D. Keasling and A. Mukhopadhyay. Genome-scale Metabolic Rewiring to Achieve Predictable Titers Rates and Yields of a Non-Native Product at Scale. *Nature Communications*, 11, 5385 (2020). doi: 10.1038/s41467-020-19171-4
5. H.G. Lim, B. Fong, G. Alarcon, H. Magurudeniya, **T. Eng**, C.A. Olson, R. Szubin, B.O. Palsson, S.W. Singer, and A.M. Feist. Generation of an Ionic Liquid Tolerant *Pseudomonas putida* KT2440 strain via Adaptive Laboratory Evolution. *Green Chemistry*, 2020; vol 22; pg 5677 – 5690. doi: 10.1039/D0GC01663B
6. **T. Eng**[§], Y. Sasaki[§], R.A. Herbert, A. Lau, J. Trinh, Y. Chen, M. Mirsiaghi, C.J. Petzold, and A. Mukhopadhyay. Production of Tetra-methylpyrazine Using Engineered *C. glutamicum*. *Metabolic Engineering Communications*. 2020 June 10. doi: 10.1016/j.mec.2019.e00115.
7. S. Langley, **T. Eng**, K.H. Wan, R.A. Herbert, A.P. Klein, Y. Yoshikuni, S.G. Tringe, J.B. Brown, S.E. Celniker, J.C. Mortimer, and A. Mukhopadhyay. Complete Genome Sequence of *Agrobacterium* sp. 33MFTa1.1 Isolated From the Roots of *Thlaspi arvense*. *Microbiology Resource Announcements*, 2019 September 12. doi: 10.1128/MRA.00432-19
8. R.A. Herbert, **T. Eng**, U. Martinez, B. Wang, S. Langley, K. Wan, V. Pidatala, E. Hoffman, J. Chen, M.J. Bissell, J.B. Brown, A. Mukhopadhyay, and J. C. Mortimer. Rhizobacteria mediate the phytotoxicity of a range of biorefinery-relevant compounds. *Environmental Toxicology and Chemistry*, 2019 May 20. doi: 10.1002/etc.4501
9. M. Wehrs, D. Tanjore, **T. Eng**, J. Lievense, T. R. Pray, and A. Mukhopadhyay. Engineering Robust Production Microbes for Large-scale Cultivation. *Trends in Microbiology*, 2019 June. doi.org/10.1016/j.tim.2019.01.006
10. Y. Sasaki[§], **T. Eng**[§], R.A. Herbert, J. Trinh, Y. Chan, C.J. Petzold, B. Simmons, and A. Mukhopadhyay. Engineering *Corynebacterium glutamicum* to produce the biogasoline isopentenol from plant biomass hydrolysates. *Biotechnology for Biofuels*, 2019 February 18. doi.org/10.1186/s13068-019-1381-3
11. **T. Eng**, P. Demling, R.A. Herbert, Y. Chen, V. Benites, J. Martin, A. Lipsen, E.E.K. Baidoo, L. Blank, C.J. Petzold, and A. Mukhopadhyay. Restoration of biofuel production levels and increased tolerance under ionic liquid stress is enabled by a mutation in the essential *Escherichia coli* gene *cydC*. *Microbial Cell Factories*. 2018 Oct 8;17(1):159. doi: 10.1186/s12934-018-1006-8.
12. H.M. Jensen, **T. Eng**, V. Chubukov, R.A. Herbert, and A. Mukhopadhyay. Improving membrane protein expression and function using genomic edits. *Scientific Reports*, 2017 Oct 12;7(1):13030. doi: 10.1038/s41598-017-12901-7.
13. **T. Eng**, V. Guacci, D. Koshland. Inter-allelic Complementation Provides Evidence for Cohesin Oligomerization on DNA. *Molecular Biology of the Cell*. 2015 Nov 15;26(23):4224-35. doi: 10.1091/mbc.E15-06-0331.

14. O. Orgil, A. Matityahu, **T. Eng**, V. Guacci, D. Koshland, and I. Onn. A conserved domain in the Scc3 subunit of cohesin mediates the interaction with both Mcd1 and the cohesin loader complex. *PLoS Genetics*, 2015 Mar 6;11(3):e1005036. doi:10.1371/journal.pgen.1005036
15. **T. Eng**, V. Guacci, D. Koshland. ROCC, a conserved region in cohesin's Mcd1 subunit, is essential for the proper regulation of the maintenance of cohesion and establishment of condensation. *Molecular Biology of the Cell*. 2014 Aug 15;15(16):2351-64.
16. N. Sher, S. Li, G. Bell, **T. Eng**, M. Eaton, D. MacAlpine, and T.L. Orr-Weaver. Developmental Control of Gene Copy Number by Repression of Replication Initiation and Fork Progression. *Genome Research*. 2012 Jan;22(1):64-75.
17. A.M. McGehee, E. Guillen, O. Kirak, **T. Eng**, and H.L. Ploegh. Ubiquitin-Dependent Control of Class II MHC Localization is Dispensable for Antigen Presentation and Antibody Production. *PLoS One*. 2011 Apr 20;6(4):e18817.
18. J.C. Kim, J. Nordman, F. Xie, H. Kashevsky, **T. Eng**, D.M. MacAlpine, and T.L. Orr-Weaver. Integrative analysis of gene amplification in Drosophila follicle cells: parameters of origin activation and repression. *Genes and Development*. 2011 Jul 1;25(13):1384-98.
19. J. Nordman, S. Li, **T. Eng**, David MacAlpine, and T.L. Orr-Weaver. Developmental Control of the DNA Replication and Transcription Programs. *Genome Research*. 2011 Feb;21(2):175-81.
20. **modENCODE Consortium et al.** Identification of functional elements and regulatory circuits by Drosophila modENCODE. *Science*. 2010 Dec 24;330(6012):1787-97.
21. S.E. Celniker, L.A. Dillon, M.B. Gerstein, K.C. Gunsalus, S. Henikoff, G.H. Karpen, M. Kellis, E. C. Lai, J.D. Lieb, D.M. MacAlpine, G. Micklem, F. Piano, M. Snyder, L. Stein, K.P. White, R.H. Waterston, **modENCODE Consortium**. Unlocking the Secrets of the Genome. *Nature*. 2009 Jun 18;459(7249):927-30.

National and International Conference Presentations

- 2020 Engineering Conferences International: Microbial Engineering II. Albufeira, Portugal. September 13-19, 2020. *Conference rescheduled*.
- 2019 Engineering Conferences International: Biochemical and Molecular Engineering XXI. Mont Tremblant, Quebec, Canada. July 14-18th 2019.
- 2018 Society for Industrial Microbiology, Annual Meeting and Exhibition. Chicago, IL, USA. August 12-16th 2018.
- 2018 Department of Energy Genome Sciences Annual Principal Investigators' Meeting. Tysons Corner, VA, February 25-28th, 2018
- 2017 Department of Energy Genome Sciences Annual Principal Investigators' Meeting. Crystal City, VA, February 5-8th, 2017.
- 2013 Cold Spring Harbor Symposium: Cell Biology of the Yeasts. Cold Spring Harbor, NY, November 5-9th, 2013.

- 2013 Cohesin Biology and the Cohesinopathies. Certosa di Pontignano Centro Congressi, Pontignano, Siena, Italy. July 12-15th, 2013.
- 2012 Federation of American Societies for Experimental Biology (FASEB): Yeast Chromosome Structure, Replication & Segregation. Steamboat Springs, CO, July 15-20th, 2012.
- 2009 Third Meeting of the Model Organism ENCODE (modENCODE) and ENCODE Consortia. Bethesda, MD, March 25-27th, 2009.
- 2008 Second Meeting of the Model Organism Encode (modENCODE) and ENCODE Consortia. Rockville, MD, June 16-19, 2008.
- 2008 49th Annual Drosophila Research Conference. San Diego, CA, April 2-6, 2008.

Awards, Honors, Inventions

- 2020 Provisional U.S. Patent Application 62/982,001.
- 2020 Provisional U.S. Patent Application 62/980,054.
- 2019 Filed U.S. Patent Application 16/866,453.
- 2010 National Science Foundation Graduate Research Fellowship (2010-2013)
- 2009 National Institutes of Health Predoctoral Training Grant
- 2003 Robert and Mona Dillon Scholarship for Worthy Students (Internal, MIT)

Professional Service and Certifications

Activity Lead for BSL-2 level work at the Joint Bioenergy Institute/LBNL (2018-present).

Sartorius Stedim ambr250 Basic Training Certification (December 2018)

Laboratory Safety Committee, Member (2016-present).

Trainees since 2015:

Undergraduate level: Peyton Freeman (2016), Brenda Wang (2017+), Andrew Lau (2018+), Jessica Trinh (2018), Robin Herbert (2016-2018), Andrew Lau (2018-present), Angela Wei (2019), Emily Bowen (2019), Josephine Gollin (2020).

Graduate level: Philipp Demling (2016), Yusuke Sasaki PhD (2017), Alberto Lopes (2018), Juhi Sharma (2019).