

Vivek K Mutalik, PhD

Selected Publications

1. Emily Freed, James Winkler, Sophie Weiss, Andrew Garst, **Vivek Mutalik**, Adam Arkin, Rob Knight and Ryan Gill, “Genome-wide tuning of protein expression levels to rapidly engineer microbial traits” *ACS Synthetic Biology*, 2015 Accepted.
2. Gregory Linshiz, Nina Stawski, Garima Goyal, Changhao Bi, Sean Poust, Monica Sharma, **Vivek Mutalik**, Jay D Keasling, Nathan J Hillson, “PR-PR: Cross-Platform Laboratory Automation System” *ACS Synthetic Biology*, 3 (8) 515-524, 2014
3. **Vivek Mutalik**, Joao Guimaraes, Guillaume Cambray, Colin Lam, Marc Juul Christoffersen, Quynh-Anh Mai, Andrew Tran, Paull Morgan, Adam Arkin and Drew Endy, “Precise and reliable gene expression via standard transcription and translation initiation elements”, *Nature Methods*, 10 (4), 354-360, 2013. **Highlighted in Nature, Nature Methods, Nature Reviews Genetics, Bioengineered, New Scientist, various Science news agencies.*
4. **Vivek Mutalik**, Joao Guimaraes, Guillaume Cambray, Quynh-Anh Mai, Marc Juul Christoffersen, Lance Martin, Ayumi Yu, Colin Lam, Cesar Rodriguez, Gaymon Bennett, Drew Endy and Adam Arkin, “Quantitative Estimation of Activity and Quality for Collections of Functional Genetic Elements”, *Nature Methods*, 10 (4), 354-360, 2013. **Highlighted in Nature, Nature Methods, Nature Reviews Genetics, Bioengineered, New Scientist, various Science news agencies.*
5. Sriram Kosuri, Daniel B. Goodman, Guillaume Cambray, **Vivek K. Mutalik**, Yuan Gao, Adam P. Arkin, Drew Endy, George M. Church “Composability of regulatory sequences controlling transcription and translation in *E. coli*” *Proceedings of the National Academy of Science, USA* 110 (34), 14024-14029, 2013
6. Cambray, G., Guimaraes, J., **Mutalik, Vivek**, Lam, C., Mai, Quynh-Anh, Thimmaiah, T., Carothers, J., Arkin, A., Endy, D., “Measurement and Modeling of Intrinsic Transcription Terminators”, *Nucleic Acid Research*, 41 (9), 5139-5148, 2013. **Highlighted by New Scientist, various Science news agencies.*
7. Goldbeck C. P., Jensen H. M., TerAvest M. A., Beedle N., Appling Y., Hepler M., Cambray G., **Vivek Mutalik**., Angenent L. T. and Ajo-Franklin C. M. (2013). Tuning promoter strengths for improved synthesis and function of electron conduits in *Escherichia coli*. *ACS Synthetic Biology*, 2(3), 150-159, 2013. **Highlighted by various Synthetic biology and technology news agencies.*
8. Chang Liu, Lei Qi, Julius Lucks, Thomas Segall-Shapiro, Denise Wang, **Vivek Mutalik**, and Adam Arkin, “An adapter from translational to transcriptional control yields composable regulators of gene expression”, *Nature Methods*, 9 (11),1088-

1094, 2012. **Highlighted in commentary “Modular gene-circuit design takes two steps forward” by Jeffrey J Tabor in Nature Methods.*

9. **Vivek K Mutalik**, L. Qi, J. C. Guimaraes, J.B. Lucks and A. P. Arkin, “Rationally designed families of orthogonal RNA regulators of translation”, *Nature Chemical Biology*, 8(5):447-54, 2012. **Highlighted in commentary “Automated Design of RNA Devices” by Farren Isaacs in Nature Chemical Biology.*
10. L. Qi, J.B. Lucks, L.C. Chang, **Vivek K Mutalik** and A. P. Arkin, “Engineering naturally occurring trans-acting non-coding RNAs to sense molecular signals”, *Nucleic Acid Research*, 40(12):5775-86, 2012
11. V. A. Rhodius, **Vivek K Mutalik** and C. A. Gross, “Predicting the strength of UP-elements and full-length *E coli* σ E promoters”, *Nucleic Acid Research*, 40(7):2907-24, 2012
12. G. Cambray, **Vivek K Mutalik** and A. P. Arkin, “Towards rational design of bacterial genomes”, *Current Opinion in Microbiology*, 14 (5), 624-630, 2011
13. J. B Lucks, L. Qi, **Vivek K Mutalik**, D, Wang and A. P. Arkin, “Versatile RNA-sensing transcriptional regulators for engineering genetic networks” *Proceedings of the National Academy of Sciences*, 108 (21), 8617-8622, 2011
14. V. A. Rhodius and **Vivek K Mutalik**, “Predicting Strength and Function for Promoters of the *E. coli* Alternative Sigma Factor, σ E”, *Proceedings of the National Academy of Sciences*, 107, 2854-2859, 2010.
15. **Vivek K Mutalik**, G. Nonaka, S. Ades, V. A. Rhodius and C. A. Gross, “Promoter strength properties of the complete sigma-E regulon of *E coli* and *Salmonella*”, *J. Bacteriology*, 191(23), 7279-7287, 2009
16. **Vivek. K. Mutalik** and K.V. Venkatesh, “A theoretical steady state analysis indicates that induction of *Escherichia coli* *glnALG* operon can display all-or-none behavior”, *BioSystems*, 90: 1-19, 2007
17. I. L. Grigorova, N. J. Phleger, **Vivek. K. Mutalik**, and C. A. Gross, “Insights into transcriptional regulation and sigma competition from an equilibrium model of RNA polymerase binding to DNA”, *Proceedings of the National Academy of Sciences*, [103] (14), 5332–5337, 2006
18. **Vivek. K. Mutalik** and K V. Venkatesh, “Effect of the MAPK cascade structure, nuclear translocation and regulation of transcription factors on gene expression”, *BioSystems*, 85(2):144-57, 2006
19. **Vivek. K. Mutalik** and K V Venkatesh, “Quantification of glycogen cascade system: A highly ultrasensitive response of Glycogen Synthase in the liver and Phosphorylase in the muscle is due to distinctive regulatory design”, *Theoretical Biology and Medical Modelling* 2005, 2:19

20. **Vivek. K. Mutalik**, A. P. Singh, J. S. Edwards and K. V. Venkatesh, "Equilibrium analysis of allosteric interactions shows zero order effects", *Cell Biochemistry and Biophysics Cell Biochemistry and Biophysics* [41] (2), 179-192, 2004.
21. **Vivek. K. Mutalik**, A. P. Singh, J. S. Edwards and K. V. Venkatesh, "Robust global sensitivity in multiple enzyme cascade system explains how the downstream cascade structure may remain unaffected by cross-talk", *FEBS Letters*, [558] (1-3), 79-84, 2004.
22. L. Giri*, **Vivek. K. Mutalik*** and K.V. Venkatesh, "A steady state analysis indicates that negative feedback regulation of PTP1B by Akt elicits bistability in insulin-stimulated GLUT4 translocation", *Theoretical Biology and Medical Modelling* 2004, 1:2 (3 August 2004), *Equal Contribution
23. **Vivek. K. Mutalik**, P. Shah and K V Venkatesh, "Allosteric Interactions and Bifunctionality Make the Response of Glutamine Synthetase Cascade System of *Escherichia coli* Robust and Ultrasensitive", *The Journal of Biological chemistry*, [278] (29), 26327-26332, 2003.
24. **Vivek. K. Mutalik** and K V Venkatesh, "Steady state analysis of signaling pathways in living systems: use of dimensionless parameters akin to chemical plants", *Indian Chemical Engineers*, Section B [46](4), 261-265, 2004