Timothy G. Curran

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Education

- Massachusetts Institute of Technology, Ph.D. Biological Engineering, June 2013 (GPA 5.0)
- California Institute of Technology, B.S., Computer Science, B.S., Mechanical Engineering, June 2008 (GPA 3.7)
- North High School, Phoenix AZ, International Baccalaureate Program, May 2004 (GPA 4.93)

Research

- *Automated MS/MS Peptide Spectral Validation Software (2012)*
  MATLAB-based software package to expedite manual validation of database-generated peptide identifications from LC MS/MS data.
- *Multiplex Multisite Absolute Quantitation by Mass Spectrometry for Phosphoproteomic Signaling Networks (2008-present)*
  Experimental technique development and computational optimization to determine network topology within the EGFR signaling network.
  Thesis Advisor: Professor Forest White
- *Signaling Network Topology Determination (Prof. Tommi Jaakkoli 6.867 2009)*
  Regression-based optimization algorithm for signaling network topology and rates.
- *NetFlix Challenge (Prof. Yaser Abu-Mostafa CS 156b 2008)*
  Machine learning and predictive algorithms as applied to NetFlix user rating prediction.
- *Computational Model of a Cardiac Assist Device (Prof. Morteza Gharib SURF 2007)*
  Finite element modeling of cardiac assist devices to optimize efficiency.
- *Detonation Driven Stress in Piping Features (Prof. Joseph E. Shepherd SURF 2006)*
  Stress, strain, and pressure profile analysis in piping features under detonation loading.

Leadership

- Sidney Pacific Graduate Community
  - Vice President of Resources (2010-2011)
  - MIT William L. Stewart Jr. Award for student leadership (2011), with Executive Council
  - Photofile Chair (2009-10)
- Caltech Health Advocate (2006-08)

Academic Honors

- Integrative Cancer Biology Program Fellowship (2011-13)
- David H. Koch Fellowship (2010-11)
- MIT Energy Initiative (2008-09)
- Franz and Anne Nierlich SURF Fellow (2007)
- Toshi Kubota Aeronautics SURF Fellow (2006)
- Tau Beta Pi Caltech Chapter (2007)
- Valedictorian North High School (2004)
- International Baccalaureate Diploma (2004)
- Merit Scholarships (National Merit, Kanel, La Verne Noyes, Theodore Combs, William Wilcox Webster)

References available upon request.

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Poster Presentations

- *Multiple Absolute Quantitation of Site-specific EGFR Network Phosphorylation.* Systems Biology of Human Disease, Heidelberg, Germany (2012)
- *A Systems Biology Approach to Discover the Perturbed Signaling Pathways in Huntington's Disease by Integrating Genomic, Transcriptional and Proteomic Data.* Huntington's Disease (2012)
- *A Systems Biology Approach to Discover the Components of Perturbed Signaling Pathways in Huntington's Disease by Integrating Genetic and Proteomic Data.* Intelligent Systems for Molecular Biology (2012)
- *Absolute Quantitation of EGFR and Adaptor Protein Phosphorylation Downstream of EGF-family Ligand Stimulation.* Biological Engineering Annual Retreat (2011)
- *HER2 Overexpression Induced Perturbations in the Site-Specific Stoichiometric Dynamics of the EGFR Phosphorylation Network.* MIT CEHS (2011)
- *Multiplex Absolute Quantitation of Site-Specific Phosphorylation in Response to EGF Stimulation.* ICBP Annual Retreat (2010)
- *Multiplex Multisite Absolute Quantitation of Protein Modification.* MIT Department of Biological Engineering Annual Retreat (2010)
- *Phosphoproteomic Measurement and Analysis of Mammary Epithelial Cell Behavior Following EGF-Family Ligand Treatment.* Protein Kinases and Protein Phosphorylation FASEB Summer Research Conference (2009)

Applicable Graduate Coursework (MIT)

- Computer Science (Machine Learning, Advanced Algorithms (audited 2009), Inference and Information (audited 2010))
- Mathematics (Probability and Statistics, Computational Mathematics for Engineers)
- Biological Engineering (Biomolecular Kinetics, Transport)
- Biology (Cell Biology, Protein Biochemistry)

Applicable College Coursework (Caltech)

- Mathematics (Single and Multivariate Calculus, Ordinary and Partial Differential Equations, Complex Analysis, Linear Algebra, Probability and Statistics, Discrete Mathematics)
- Physics (Classical Mechanics, Electricity and Magnetism, Waves, Quantum Mechanics and Thermodynamics)
- Engineering (Statics, Dynamics, Materials, Thermodynamics, Fluid Mechanics, Solid Mechanics, Controls and Design Lab)
- Software Familiarity (MATLAB, Mathematica, SolidWorks, Spin, C, C++ and Java)
- Computer Science (Computing Systems, Algorithms, Information Theory, Neural Computation, Learning Systems and Logic Model Checking)