

## JEREMY E. PURVIS | *Curriculum vitae*

Institute for Medicine and Engineering  
University of Pennsylvania  
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## RESEARCH & TEACHING INTERESTS

systems biology, intracellular signal processing, molecular modeling and simulation, receptor-mediated signaling, machine learning, cell death and survival pathways

## EDUCATION

*University of Pennsylvania, Philadelphia, PA*

**Ph.D.\* | Genomics and Computational Biology** \*scheduled graduation date: **2009**

Thesis Title: A systems approach to cellular signal transduction

Co-Advisor: Scott L. Diamond (Chemical and Biomolecular Engineering)

Co-Advisor: Ravi Radhakrishnan (Bioengineering)

*University of Florida, Gainesville, FL*

**M.S. | Microbiology and Cell Science** **2004**

Thesis Title: Enhanced trehalose production improves growth of *Escherichia coli* under osmotic stress

Advisor: Lonnie O. Ingram

*University of Florida, Gainesville, FL*

**B.S. | Microbiology and Cell Science** **2002**

University Honors Program

## TEACHING & PROFESSIONAL EXPERIENCE

*University of Pennsylvania, Philadelphia, PA*

**Section Instructor** - BE 559 - Multiscale Modeling of Biological Systems **2009**

*University of Pennsylvania, Philadelphia, PA*

**Guest Lecturer** - BE 513 - Cell Biology **2008**

*Manatee County School Board, Bradenton, FL*

**Fulltime Teacher** - Algebra I, Geometry, Art/2-D Composition, Pre-algebra **2004 – 2005**

*University of Florida, Gainesville, FL*

**Guest Lecturer** - MCB 4403 - Prokaryotic Cell Structure and Function **2003**

*University of Florida, Gainesville, FL*

**Teaching Assistant** - MCB 4304 - Advanced Microbiology Lab **2003**

<i>Silverscape, Inc. (now 352 Media Group), Gainesville, FL</i>	
<b>Web Programmer</b>	<b>2001</b>
<i>Manatee County Port Authority, Palmetto, FL</i>	
<b>Student Intern</b> - Assistant to the Engineer	<b>2001</b>
<i>NeuroDimension, Inc., Gainesville, FL</i>	
<b>Programmer</b>	<b>1997 – 1998</b>

## SELECTED DISTINCTIONS

Computational Molecular Science and Engineering Forum (CoMSEF) Graduate Student Award	<b>2008</b>
NHGRI Computational Genomics Training Grant	<b>2008 – 2009</b>
NIH Genomics and Computational Biology Graduate Fellowship	<b>2005 – 2007</b>
James Davidson Graduate Travel Scholarship	<b>2004</b>
American Society for Microbiology Travel Award	<b>2004</b>
President's Award, American Society for Microbiology	<b>2003</b>
Wentworth Scholar	<b>1998</b>
Robert C. Byrd Honors Scholarship	<b>1997 – 2001</b>
University of Florida Honors Program	<b>1997 – 1999</b>

## PEER-REVIEWED PUBLICATIONS

- **Purvis JE**, Radhakrishnan R, Diamond SL. Steady-State Kinetic Modeling Constrains Cellular Resting States and Dynamic Behavior. (2009) *PLoS Comput Biol.* *in press*
- Shih A, **Purvis J**, Radhakrishnan R. Molecular Systems Biology: Bridging the Gap through Multiscale Modeling and High-Performance Computing. (2008) *Mol BioSyst* 4:1142.  
*Featured on the inside front cover art*
- Beavers MP, Myers MC, Shah PP, **Purvis JE**, Diamond SL, Cooperman BS, Huryn DM, Smith AB 3rd. Molecular Docking of Cathepsin L Inhibitors in the Binding Site of Papain. (2008) *J Chem Inf Model* 48(7):1464-72.
- **Purvis JE**, Chatterjee MS, Brass LF, Diamond SL. A molecular signaling model of platelet phosphoinositide and calcium regulation during homeostasis and P2Y1 activation. (2008) *Blood* 112(10):4069-79.  
*Featured in Inside Blood comment: Blood 112(10):3920-1*

- **Purvis J**, Ilango V, Radhakrishnan R. Role of Network Branching in Eliciting Differential Short-Term Signaling Responses in the Hyper-Sensitive Epidermal Growth Factor Receptor Mutants Implicated in Lung Cancer. (2008) *Biotechnol Prog.* 24(3):540-53.
- Shah PP, Myers MC, Beavers MP, **Purvis JE**, Jing H, Grieser HJ, Sharlow ER, Napper AD, Huryn DM, Cooperman BS, Smith AB, Diamond SL. Kinetic Characterization and Molecular Docking of a Novel, Potent, and Selective Slow-binding Inhibitor of Human Cathepsin L. (2008) *Mol Pharmacol.* 74(1):34-41.
- **Purvis J**, Liu Y, Ilango V, Radhakrishnan R. Efficacy of tyrosine kinase inhibitors in the mutants of the epidermal growth factor receptor through a multiscale molecular/systems model for phosphorylation and inhibition. *Proceedings of Foundations of Systems Biology in Engineering.* 2007.
- Liu Y<sup>†</sup>, **Purvis J**<sup>†</sup>, Shih A, Weinstein J, Agrawal N, Radhakrishnan R. A multiscale computational approach to dissect early events in the Erb family receptor mediated activation, differential signaling, and relevance to oncogenic transformations. (2007). *Ann Biomed Eng.* 35(6):1012-25. (<sup>†</sup>equal contribution)
- **Purvis JE**, Yomano LP, Ingram LO. Enhanced trehalose production improves growth of *Escherichia coli* under osmotic stress. *Appl Environ Microbiol.* 2005 71:3761-9.
- Gonzalez R, Tao H, **Purvis JE**, York SW, Shanmugam KT, Ingram LO. Gene array-based identification of changes that contribute to ethanol tolerance in ethanologenic *Escherichia coli*: comparison of KO11 (parent) to LY01 (resistant mutant). *Biotechnol Prog.* 2003 19:612-23.

## INVITED TALKS, PLATFORM PRESENTATIONS, POSTERS & WEBINARS

- **Invited Webinar** | Best of BIOT Webinar - 2009 | ACS Division of Biochemical Technology
- **Platform** | American Institute of Chemical Engineers Annual Meeting - 2008 Philadelphia, PA | “Reverse engineering the human platelet”
- **Poster** | Computational Molecular Science & Engineering Forum – 2008 Philadelphia, PA
- **Invited Talk** | Penn Center for Bioinformatics Retreat - 2008 | Philadelphia, PA
- **Platform** | Biomedical Engineering Society - 2008 | St. Louis, MO
- **Poster** | NHLBI Exploratory Program in Systems Biology Grantee Meeting – 2008 Bethesda, MD
- **Platform** | American Chemical Society - 2008 | Philadelphia, PA | “Closing the circuit: Toward network-based identification of drug-sensitivity and resistance mechanisms”

- **Poster** | Penn Cardiovascular Institute Symposium - 2008 | Philadelphia, PA
- **Platform** | American Institute of Chemical Engineers Annual Meeting - 2007  
Salt Lake City, UT | “LabML: Automatically connecting experiments and simulations”
- **Platform** | American Institute of Chemical Engineers Annual Meeting – 2007  
Salt Lake City, UT | “A multiscale systems model for platelet signaling and activation”
- **Platform** | Biomedical Engineering Society - 2007 | Los Angeles, CA
- **Poster** | Mid-Atlantic Systems Biology Consortium - 2007 | State College, PA
- **Poster** | American Society for Microbiology Annual Meeting - 2004 | New Orleans, LA
- **Platform** | American Society for Microbiology Southeastern Meeting – 2003  
Athens, GA | “Enhanced trehalose production in *E. coli*”

## MEMBERSHIPS & AFFILIATIONS

- Biomedical Engineering Society
- American Institute for Chemical Engineering
- American Chemical Society
- Computational Molecular Science and Engineering Forum

## SOFTWARE & PATENTED TECHNOLOGY

- **BloodFlow Simulation Environment** | Web application for construction and simulation of molecular models of blood function | *in development*
- **Reverse-translation Applet** | Generates primary nucleotide sequence for a desired probability distribution of amino acids. Used to design peptides/antibodies.
- **BioNetGen** | Contributed support for multiple compartments
- **SBML Shorthand** | Contributed support for SBML rules

## REFERENCES

**Scott Diamond**, Ph.D. (Ph.D. Supervisor)  
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Engineering  
University of Pennsylvania  
1020 Vagelos Research Laboratories  
3340 Smith Walk  
Philadelphia, PA 19104

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**Ravi Radhakrishnan**, Ph.D. (Ph.D. Supervisor)  
Department of Bioengineering  
University of Pennsylvania  
240 Skirkanich Hall  
210 South 33<sup>rd</sup> Street  
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(Close Collaborator)  
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**Lonnie Ingram**, Ph.D. (M.S. Supervisor)  
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