

# JAMES A. EDDY

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## EDUCATION

**University of Illinois**, Urbana-Champaign, IL 2007–present  
Pursuing Ph.D., Bioengineering  
Advisor: Nathan D. Price, Ph.D.

**University of Virginia**, Charlottesville, VA May 2007  
B.S., Biomedical Engineering, *With Distinction*  
Cumulative GPA: 3.470 of 4.000 Major GPA: 3.634  
Thesis: Improving Treatment for *Leishmania* Infection: Evaluating *In Silico* Modeling  
as a Treatment Discovery Tool  
Advisor: Jason A. Papin, Ph.D.

## HONORS & AWARDS

- Second Place Poster Award, Chemical & Biomolecular Engineering Eighth Annual Graduate Symposium (2009)
- Biomedical Engineering Society (BMES) Graduate Research Award, 1 of 10 Selected Nationally (2009)
- Biomedical Engineering Society (BMES) Graduate Research Award, 1 of 8 Selected Nationally (2008)
- Finalist, Undergraduate Research and Design Symposium Award (2007)
- Undergraduate Dean's List (Fall 2004–Spring 2006, Spring 2007)

## RESEARCH EXPERIENCE

**Department of Bioengineering, University of Illinois**, Research Group for Computational & Systems Biology  
(August 2007–present)

- *Graduate Research Assistant*
- *Advisor*: Nathan D. Price, Ph.D., Assistant Professor of Chemical Engineering
- Reconstructing a genome-scale metabolic model of the brain cancer glioblastoma
- Building dynamic computational models of signaling pathways in glioblastoma
- Developed and implemented statistical algorithms for analyzing microarray gene expression data to identify molecular signatures for cancer diagnosis and treatment response

**Department of Biomedical Engineering, University of Virginia**, Computational Systems Biology Laboratory  
(August 2006–July 2007)

- *Undergraduate Research Assistant*
- *Advisor*: Jason A. Papin, Ph.D., Assistant Professor of Biomedical Engineering
- Completed the genome-scale metabolic network reconstruction of the parasite *Leishmania major*
- Reconstructed a number of major signaling pathways *in silico* for implementation in an integrative network model of *Saccharomyces cerevisiae*

## PUBLICATIONS

Huang, S., **J.A. Eddy**, and N.D. Price. 2010. Comparative analysis of gene networks in gastrointestinal stromal tumor and leiomyosarcoma. In preparation.

**PUBLICATIONS – CONTINUED**

Milne, C., **J.A. Eddy**, R. Raju, P.J. Kim, H.P. Blaschek, and N.D. Price. 2010. Genome-scale metabolic reconstruction and analysis of hyper-butanol producing strain *Clostridium beijerinckii*. In preparation.

**J.A. Eddy**, S. Gupta, and N.D. Price. 2010. Relative expression analysis of network families. In preparation.

Yang, J., **J.A. Eddy**, A. Hategan, I. Tabus, Y. Wang, D. Cogdell, N.D. Price, R.E. Pollock, A.J. Lazar, K.K. Hunt, J.C. Trent, and W. Zhang. 2010. Integrated Proteomic and Genomic Analysis Reveals a Novel Mesenchymal to Epithelial Reverting Transition in Leiomyosarcoma through Regulation of Slug. *Molecular & Cellular Proteomics*. In press.

Edelman, L.B., **J.A. Eddy**, and N.D. Price. 2010. *In silico* models of cancer. *Wiley Interdisciplinary Reviews: Systems Biology and Medicine*. 2(4):438-459.

**Eddy, J.A.**, N.D. Price, and D. Geman. 2010. Identifying tightly regulated and variably expressed networks by Differential Rank Conservation (DIRAC). *PLoS Computational Biology*. 6(5):e1000792.

**Eddy, J.A.**, J. Sung, D. Geman, and N.D. Price. 2010. Relative expression analysis for molecular cancer diagnosis and prognosis. *Technology in Cancer Research & Treatment*. 9(2):149-159.

**Eddy, J.A.**, D. Geman, and N.D. Price. 2009. Relative Expression Analysis for Identifying Perturbed Pathways. *Conference Proceedings of the IEEE Engineering in Medicine and Biology Society*. 2009:5456-5459.

Milne, C., P.J. Kim, **J.A. Eddy**, and N.D. Price. 2009. Industrial Accomplishments in genome-scale *in silico* modeling for enhanced industrial and medical biotechnology. *Biotechnology Journal*. 4(12):1653-1670.

**Eddy, J.A.** and N.D. Price. Biological data integration and model building. 2009. *Encyclopedia of Complexity and Systems Science*, ed. Robert Meyers.

Lee, J.M.\*, E.P. Gianchandani\*, **J.A. Eddy**, and J.A. Papin. 2008. Dynamic analysis of integrated signaling, metabolic, and regulatory networks. *PLoS Computational Biology*. 4(5):e1000086.

Chavali, A.K., J.D. Whittimore, **J.A. Eddy**, K.T. Williams, and J.A. Papin. 2008. Systems Analysis of Metabolism in Pathogenic Trypanosomatid *Leishmania major*. *Molecular Systems Biology*, 4:177.

\*Authors contributed equally.

**PRESENTATIONS**

**Eddy, J.A.\*** and N.D. Price. “Identifying tightly regulated and differentially expressed pathways by Differential Rank Conservation (DIRAC),” Institute for Genomic Biology (IGB) Fellows Symposium, Platform (Oral) Presentation, April 2010, Urbana, Illinois.

**Eddy, J.A.\***, N.D. Price, and D. Geman. “Identifying tightly regulated and differentially expressed networks by Differential Rank Conservation (DIRAC),” American Institute of Chemical Engineers (AIChE) Annual Meeting, Platform (Oral) Presentation, November 2009, Nashville, Tennessee.

**Eddy, J.A.\***, N.D. Price, and D. Geman. “Identifying tightly regulated and differentially expressed pathways by Differential Rank Conservation (DIRAC),” Chemical & Biomolecular Engineering Eighth Annual Graduate Research Symposium, Poster Presentation, October 2009, Urbana, Illinois.

**PRESENTATIONS – CONTINUED**

**Eddy, J.A.\***, N.D. Price, and D. Geman. “Identifying tightly regulated and differentially expressed pathways by Differential Rank Conservation (DIRAC),” Biomedical Engineering Society (BMES) Annual Meeting, Poster Presentation, October 2009, Pittsburgh, Pennsylvania.

**Eddy, J.A.**, D. Geman, and N.D. Price\*. “Relative Expression Analysis for Identifying Perturbed Pathways,” IEEE Engineering in Medicine and Biology Conference (EMBC), Platform (Oral) Presentation, September 2009, Minneapolis, Minnesota.

**Eddy, J.A.\***, N.D. Price, and D. Geman. “Identifying tightly regulated and differentially expressed pathways by Differential Rank Conservation (DIRAC),” Foundations of Systems Biology in Engineering (FOSBE), Poster Presentation, August 2009, Denver, Colorado.

**Eddy, J.A.\***, N.D. Price, and D. Geman. “Identifying tightly regulated and differentially expressed pathways by Differential Rank Conservation (DIRAC),” Institute for Genomic Biology (IGB) Fellows Symposium, Poster Presentation, April 2009, Urbana, Illinois.

**Eddy, J.A.\***, N.D. Price, and D. Geman. “Identifying tightly regulated and differentially expressed pathways by Differential Rank Conservation (DIRAC),” Biophysics and Computational Biology Symposium, Poster Presentation, May 2009, Urbana, Illinois.

**Eddy, J.A.\***, N.D. Price, and D. Geman. “Pathway Expression Rank Analysis (p-XRAY): a Novel Tool for Gene Set Expression Analysis,” Biomedical Engineering Society (BMES) Annual Meeting, Platform (Oral) Presentation, October 2008, St. Louis, Missouri.

**Eddy, J.A.\***, W. Zhang, and N.D. Price. “Expression-based Prediction of Survival in Gastrointestinal Stromal Tumor Patients,” Biomedical Engineering Society (BMES) Annual Meeting, Poster Presentation, October 2008, St. Louis, Missouri.

Gupta, S.\*, **J.A. Eddy**, S. Hanson, and N.D. Price. “Identifying Biologically Significant Interactions Using Gene Set Expression Reversal Analysis,” Biomedical Engineering Society (BMES) Annual Meeting, Platform (Oral) Presentation, October 2008, St. Louis, Missouri.

**Eddy, J.A.\***, N.D. Price, and D. Geman. “Pathway Expression Rank Analysis (p-XRAY): a Novel Tool for Gene Set Expression Analysis,” American Institute of Chemical Engineers (AIChE) Annual Meeting, Platform (Oral) Presentation, November 2008, Philadelphia, Pennsylvania.

Lee, J.M.\*, E.P., Gianchandani, **J.A. Eddy**, and J.A. Papin. “Application of a Novel Optimization-Based Approach to Characterize Integrated Signalling, Regulatory, and Metabolic Biochemical Networks,” 17<sup>th</sup> International Federation of Automatic Control (IFAC) World Conference, Platform (Oral) Presentation, July 2008, Seoul, Korea.

Lee, J.M.\*, E.P., Gianchandani, **J.A. Eddy**, and J.A. Papin. “Dynamical analysis of an integrated signaling network via linear programming,” 57<sup>th</sup> Canadian Chemical Engineering Conference, Poster Presentation, October 2007, Edmonton, Alberta, Canada.

Gianchandani, E.P.\*, **J.A. Eddy**, J.M. Lee, and J.A. Papin. “Integrated, dynamic flux balance analysis of a representative module in *Saccharomyces cerevisiae*,” Eighth International Conference on Systems Biology (ICSB), Poster Presentation, October 2007, Long Beach, California.

Gianchandani, E.P.\*, **J.A. Eddy**, J.M. Lee, and J.A. Papin. “Integrated, dynamic flux balance analysis of a representative module in *Saccharomyces cerevisiae*,” Biomedical Engineering Society (BMES) Annual Meeting, Poster Presentation, September 2007, Los Angeles, California.

## PRESENTATIONS – CONTINUED

Whittemore, J.D.\*, A.K. Chavali, **J.A. Eddy**, K.T. Williams, and J.A. Papin. “Genome-Scale Network Analysis of *Leishmania major*, a Pathogenic Trypanosomatid,” American Society for Cell Biology (ASCB) Annual Meeting, Poster Presentation, December 2006, San Diego, California.

*\*Speaker/presenter*

## TEACHING EXPERIENCE

**Systems Biology / Metabolic Engineering**, ChBE 474, University of Illinois (Spring 2008)

- *Graduate Teaching Assistant*

**Biochemical Engineering**, ChBE 471, University of Illinois (Fall 2007)

- *Graduate Teaching Assistant*

## PROFESSIONAL MEMBERSHIPS

- Biomedical Engineering Society (BMES), University of Illinois Chapter (2007–present)
- American Institute of Chemical Engineers (AIChE) (2008–present)
- Biomedical Engineering Society (BMES), University of Virginia Chapter (2006–2007)