

Lei Yang

EDUCATION

- **Ph.D. in Bioinformatics and Computational Biology, Iowa State University (2008)**
Dissertation: Understanding Protein Motions by Computational Modeling and Statistical Approaches (Advisor: [Dr. Robert L. Jernigan](#))
- **M.S. in Statistics, Iowa State University (2005)**
Creative Component: Analyzing HIV-1 Protease Structures Using Principal Component Analysis and Anisotropic Network Model (Advisor: [Dr. Alicia Carriquiry](#))
- **M.Phil. in Biochemistry, Chinese University of Hong Kong (2001)**
Thesis: Identification of CYP2E1-Dependent Genes Involved in Carbon Tetrachloride-Induced Hepatotoxicity (Advisor: [Dr. Susanna S. T. Lee](#))
- **B.S. in Biology; B.E. in Economics and Management, University of Science and Technology of China (1998)**

RESEARCH EXPERIENCE

- **Statistical Scientist, Monsanto (2008-Present)**
- **Research Assistant, Bioinformatics and Computational Biology, Iowa State University (2002-2008)**
- **Research Assistant, Department of Biochemistry, Chinese University of Hong Kong (1999-2002)**

PUBLICATIONS

- **Refereed Journal Papers:**
 - [Yang L](#), Song G and Jernigan RL. Protein Elastic Network Models and the Ranges of Cooperativity (2009), *Proceedings of the National Academy of Sciences*, 106:12347-12352. [[Abstract](#)] [[PDF](#)]
 - Feng Y, [Yang L](#), Kloczkowski A and Jernigan RL. The Energy Profiles of Atomic Conformational Transition Intermediates of Adenylate Kinase (2009), *Proteins: Structure, Function, and Bioinformatics*, 77: 551-558. [[Abstract](#)] [[PDF](#)]
 - [Yang L](#), Song G and Jernigan RL. Comparisons of Experimental and Computed Protein Anisotropic Temperature Factors (2009), *Proteins: Structure, Function, and Bioinformatics*, 76:164-175. [[Abstract](#)] [[PDF](#)]
 - Kloczkowski A, Jernigan RL, Wu Z, Song G, [Yang L](#), Kolinski A and Pokarowski P, Distance Matrix-Based Approach to Protein Structure Prediction (2009), *Journal of Structural and Functional Genomics*, 10:67-81. [[Abstract](#)] [[PDF](#)]
 - [Yang L](#), Song G, Carriquiry A and Jernigan RL. Close Correspondence between the Motions from Principal Component Analysis of Multiple HIV-1 Protease Structures and Elastic Network Modes (2008), *Structure*, 16: 321-330. [[Abstract](#)] [[PDF](#)] [[Report](#)]
 - [Yang L](#), Song G and Jernigan RL. How Well Can We Understand Large-Scale Protein Motions Using Normal Modes from Elastic Network Models? (2007), *Biophysical Journal*, 93: 920-929. [[Abstract](#)] [[PDF](#)]
 - Avasarala S, [Yang L](#), Sun Y, Leung AWC, Chan WY, Cheung WT and Lee SST. A Temporal Study on the Histopathological, Biochemical and Molecular Responses of CCl₄-Induced Hepatotoxicity in Cyp2e1-Null Mice (2006), *Toxicology*, 228: 310-322. [[Abstract](#)] [[PDF](#)]

- **Refereed Conference Papers:**
 - [Yang L](#), Song G and Jernigan RL. Comparison of Experimental and Computed Protein Anisotropic Temperature Factors, in *Proceedings of 2007 IEEE International Conference on Bioinformatics and Biomedicine Workshops*, pp 89-96, November 2007, Fremont, CA, USA. [[Abstract](#)] [[PDF](#)]
- **Book Chapters:**
 - Jernigan RL, [Yang L](#), Kurkcuoglu O, Song G and Doruker P. Elastic Network Models of Coarse-Grained Proteins are Effective for Studying the Structural Control Exerted over their Dynamics in “Coarse-Graining of Condensed Phase and Biomolecular Systems”, Ed. Voth G, *Taylor and Francis Group, LLC*, September, 2008. [[Link](#)]
- **Work Under Revision:**
 - [Yang L.](#), Toward Improving Phage Display Based Conformational Epitope Prediction, *Bioinformatics and Biology Insights*.
 - [Yang L](#), Song G and Jernigan RL. Setting Standards for the Quality of Correlated Dynamics in NMR Structural Ensembles.
 - [Yang L](#), You L, Song G and Jernigan RL. The Extent of Improvement on Protein B-Factor Prediction by Combining Rigid Body Motions and Internal Flexibilities.

PRESENTATIONS

- **Conference Talks:**
 - Kloczkowski A, Jernigan RL, Wu Z, Song G, [Yang L](#), Kolinski A and Pokarowski P. Distance Matrix-Based Approach to Protein Structure Prediction, *2008 NIGMS Protein Structure Initiative Bottlenecks Workshop*, April 2008, National Institutes of Health, Bethesda, MD, USA.
 - [Yang L](#), Song G and Jernigan RL. Comparison of Experimental and Computed Protein Anisotropic Temperature Factors, *Computational Structural Bioinformatics Workshop (CSBW) on IEEE International Conference on Bioinformatics and Biomedicine (BIBM 2007)*, November 2007, San Jose, CA, USA.
- **Conference Posters:**
 - [Yang L](#), Song G and Jernigan RL. How Well Can We Understand Large-Scale Protein Motions Using Elastic Network Modes? *The Joint Meeting of the Biophysical Society 52nd Annual Meeting & 16th International Biophysics Congress*, February 2008, Long Beach, CA, USA.
 - [Yang L](#), You L, Song G and Jernigan RL. ENM: An R Package for the Computational Modeling and Analysis of Protein Dynamics Using Elastic Network Models, *useR! 2007 - The R User Conference*, August 2007, Ames, IA, USA.
 - [Yang L](#), Song G, Carriquiry A and Jernigan RL. Identification of Essential Protein Motions from Principal Component Analysis of Multiple HIV-1 Protease Structures and Agreement with Elastic Network Modes, *The 20th Annual Symposium of The Protein Society & 20th Anniversary Celebration*, August 2006, San Diego, CA, USA.
 - [Yang L](#), Song G, Carriquiry A and Jernigan RL. Identifying of Essential Protein Motions from Principal Component Analysis of Multiple HIV-1 Protease Structures and Agreement with Elastic Network Modes, *The 32nd Steenbock Symposium - Dynamics of Proteins and Macromolecular Assemblies*, May 2006, Madison, WI, USA.
 - [Yang L](#), Song G, Zhao X, Carriquiry A and Jernigan RL. Motion Analysis of HIV-1 Protease by Anisotropic Network Model and Principal Component Analysis, *The 14th Growth*

Factors and Signal Transduction Symposium - Integration of Structural and Functional Genomics, September 2005, Ames, IA, USA.

- Yang L, Song G, Zhao X, Carriquiry A and Jernigan RL. Motion Analysis of HIV-1 Protease by Anisotropic Network Model and Principal Component Analysis, *The 5th Annual Joint Bioinformatics Workshop between UI and ISU*, July 2005, Iowa City, IA, USA.
- Yang L, Tian L and Lee SST. Identification of CYP2E1 Dependent Genes Involved in Carbon Tetrachloride (CCl₄) and Acetaminophen (APAP) Induced Hepatotoxicity, *The 13th International Symposium on Microsomes and Drug Oxidations (MDO2000)*, July 2000, Stresa, Italy.
- Tian L, Yang L, Chan WY, Cheung WT and Lee SST. Differential Display Analysis of Peroxisome Proliferator-Activated Receptor Alpha (PPAR α) Dependent Genes Involved in the Cellular Fasting Response, *The 13th International Symposium on Microsomes and Drug Oxidations (MDO2000)*, July 2000, Stresa, Italy.

PROFESSIONAL ACTIVITIES

- **Professional Memberships:**
 - Full Member, Sigma Xi
 - Fellow, Royal Statistical Society (RSS)
 - Member, New York Academy of Sciences (NYAS)
 - Member, American Statistical Association (ASA)
 - Member, American Association for The Advancement of Science (AAAS)
 - Member, Institute of Mathematical Statistics (IMS)
- **Peer-Review Experience:**
 - Reviewed 20+ papers for various journals including *Proteins: Structure, Function and Bioinformatics*, *Cancer Informatics*, *Polymers*, *Journal of Biomolecular Structure and Dynamics*, *Theoretical Chemistry Accounts*, and *Bioinformatics and Biological Insights*, etc., and 1 grant proposal for *National Science Foundation (NSF)*

TEACHING EXPERIENCE

- **Iowa State University**
 - Invited talk for *Protein Dynamics*, Computational Biochemistry (BBMB541), Fall 2007
 - Teaching Assistant, Survey of Biochemistry (BBMB301), Spring 2006 & Fall 2006
- **Chinese University of Hong Kong**
 - Teaching Assistant and Section Instructor for *Transgenic Technology*, Molecular Biotechnology (MBT4031), Spring 2000 & Spring 2001
 - Teaching Assistant, Environmental Science (ENS4251), Spring 2000

AWARDS AND HONORS

- Professional Advancement Grant (PAG), Iowa State University, 2006 & 2007
- Graduate Research Assistantship, Iowa State University, 2002-2008
- Premium for Academic Excellence (PACE) Award, Iowa State University, 2002
- Postgraduate Studentship, Chinese University of Hong Kong, 1999-2001
- China Mathematical Olympiad (CMO), 2nd Prize (Silver Medal) in Province, 1992
- China Physical Olympiad (CPO), 3rd Prize (Bronze Medal) in Province, 1992

CONTACT INFORMATION

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