Curriculum Vitae

Guoxing Fu

Georgia State University

EDUCATION

PhD	Georgia State University, Biology	2012
Master	Georgia State University, Computer Science	2012
Master	Georgia State University, Biology	2011
Bachelor	Lanzhou University, China, Biology	2005

RESEARCH BACKGROUND

2006-present Graduate Research Assistant to Dr. Irene T. Weber
Department of Biology, Georgia State University

- Investigated substrate specificity of executioner caspases at P5 position
- Performed crystallography study and computational modeling on recognition of D-amino acids by D-Arginine dehydrogenase

2009-present Graduate Research Assistant to Dr. Robert Harrison
Department of Computer Science, Georgia State University

- System biology studies on a deterministic-stochastic crossover method for simulating biochemical systems

2005-2006 Graduate Research Assistant to Dr. Rui Wang
Institute of Biochemistry and Molecular Biology, Lanzhou University

- Studies on the peptide agonist and antagonist of nociceptin receptor

2003-2005 Undergraduate Research Assistant to Dr. Xiaojun Ma
School of Life Science, Lanzhou University

AWARDS AND HONORS

Molecular Basis of Disease Fellowship, Georgia State University 2008-2012
Invited Presenter at 9th Annual SER-CAT Symposium, University of Kentucky 2012
Featured in GSU Magazine, Georgia State University 2012
Molecular Basis of Disease Research Day Best Biology Poster Award 2011
Ahmed T. Abdelal Graduate Fellowship in Biotechnology, Georgia State University 2011
Molecular Basis of Disease Program Research Day Oral Presentation Award 2010
Invited Presenter, Young Leaders Symposium, 67th Annual Pittsburgh Diffraction Conference, University of Georgia, Athens, GA. 2009
2009 SER-CAT Young Investigator Award, Argonne National Laboratory 2009

COMPUTATIONAL SKILLS AND EXPERIENCE

Programming language: Java, C/C#, Python, XML, PHP, Linux shell
Web development: HTML, ASP, JSP, CSS, jQuery, JavaScript, Servlet, Xquery, XPATH, Apache HTTP Server, Apache Tomcat Server, Windows IIS
Database: MySQL, Oracle
Operating systems: Linux, UNIX, Windows
Bioinformatics software and packages: BLAST, ClustalW2, FASTA, LALIGN, R, HKL2000, COOT, CCP4, SHELX, CNS, Pymol,

Structural bioinformatics

- Performed structure prediction studies on proteins like caspases, D-Arginine dehydrogenase and D-aspartate oxidase using Python, AMMP, COOT
- Investigated protein-ligand interactions

System biology study (http://crossover.servehttp.com/)

- Developed and implemented a JAVA and XML based program for a deterministic-stochastic crossover method for simulating biochemical networks
- Investigated biochemical systems such as auto regulatory gene network

BioLab management system

- Worked in a team to develop a system for maintaining order history, experimental protocols, work flow and work reports in research laboratories
- Prepared documents including rationale, problem statement, sequence diagram and user guide
- Implemented and tested the system in JAVA

Web design project

- Develop website using HTML5, ASP, CSS, jQuery, C# and MySQL
- Work with Microsoft Visual Studio, Eclipse, Fireworks, Microsoft Expression Studio
- Maintain WEB server and FTP server

PUBLICATIONS

1. **Guoxing Fu**, Amit Sabnis, Robert W. Harrison. (2012) A Deterministic-Stochastic Crossover Algorithm for Simulating Biochemical Networks. (ready to submit)
2. Irene T. Weber, Johnson Agniswamy, **Guoxing Fu**, Chen-Hsiang Shen, Robert W. Harrison. (2012) Reaction Intermediates Discovered in Crystal Structures of Enzymes. In “Structural and Mechanistic Enzymology: Bringing Computations and Experiments Together”, Eds., Christo Christov and Tatyana Karabencheva, Advances in Protein Chemistry and Structural Biology, Elsevier, Inc.
3. **Guoxing Fu**, Hongling Yuan, Siming Wang, Giovanni Gadda, Irene Weber (2011). Atomic Resolution Structure of an N(5) Flavin Adduct in D-arginine Dehydrogenase. *Biochemistry* 50: 6292-6294.
4. **Guoxing Fu**, Hongling Yuan, Congran Li, Chung-Dar Lu, Giovanni Gadda, and Irene

T. Weber. (2010) Conformational Changes and Substrate Recognition in Pseudomonas aeruginosa D-Arginine Dehydrogenase. *Biochemistry* 49: 8535–8545

5. Hongling Yuan, **Guoxing Fu**, Phillip T. Brooks, Irene T. Weber, and Giovanni Gadda (2010) Steady-State Kinetic Mechanism and Reductive Half-Reaction of D-Arginine Dehydrogenase from Pseudomonas aeruginosa. *Biochemistry* 49: 9542–9550
6. Bin Fang, **Guoxing Fu**, Robert W. Harrison, Irene T. Weber. (2009). Caspase-3 Binds Diverse P4 Residues as Revealed by Crystallography and Structural Modeling. *Apoptosis* 14:741-52
7. **Guoxing Fu**, Alexander A. Chumanevich, Johnson Agniswamy, Bin Fang, Robert W. Harrison and Irene T. Weber. (2008) Structural Basis for Executioner Caspase Recognition of P5 Position in Substrates. *Apoptosis* 13:1291–1302
8. Yali Peng, Min Chang, Shouliang Dong, Wei Li, Renwen Han, **Guoxing Fu**, Qiang Chen and Rui Wang. (2006) Novel Potent Agonist [(pF)Phe^{4}, Aib^{7}, Aib^{11}, Arg^{14}, Lys^{15}] N/OFQ-NH_2 and Antagonist [Nphe^{1}, (pF)Phe^{4}, Aib^{7}, Aib^{11}, Arg^{14}, Lys^{15}] N/OFQ-NH_2 of Nociceptin/orphanin FQ Receptor. *Regulatory Peptides* 134:75-81

ORAL PRESENTATIONS AT CONFERENCES

1. **Guoxing Fu**, Hongling Yuan, Congran Li, Chung-Dar Lu, Giovanni Gadda, and Irene T. Weber. Conformational Changes and Substrate Recognition in Pseudomonas Aeruginosa D-Arginine Dehydrogenase. 9th Annual SER-CAT Symposium. University of Kentucky, Lexington, KY. March 16, 2012
2. **Guoxing Fu**, Hongling Yuan, Congran Li, Chung-Dar Lu, Giovanni Gadda, and Irene T. Weber. Conformational Changes and Substrate Recognition in Pseudomonas Aeruginosa D-Arginine Dehydrogenase. Molecular Basis of Disease Program Research Day, Georgia State University, Atlanta, GA. May 2010
3. **Guoxing Fu**, Alexander A. Chumanevich, Johnson Agniswamy, Bin Fang, Robert W. Harrison, Irene T. Weber. Structural basis for substrate specificity of executioner caspases. 67th Annual Pittsburgh Diffraction Conference. University of Georgia, Athens, GA. October 29-31, 2009
4. **Guoxing Fu**, Alexander A. Chumanevich, Johnson Agniswamy, Bin Fang, Robert W. Harrison, Irene T. Weber. Structural basis for substrate specificity of executioner caspases. Structural basis for substrate specificity of executioner caspases. 6th Annual SER-CAT Symposium, University of Alabama, Huntsville, AL. March 20, 2009

POSTER PRESENTATIONS AT CONFERENCES

1. **Guoxing Fu**, Hongling Yuan, Congran Li, Chung-Dar Lu, Giovanni Gadda, and Irene T. Weber. Conformational Changes and Substrate Recognition in Pseudomonas Aeruginosa D-Arginine Dehydrogenase. Biology Poster Day, Georgia State University, Atlanta, GA, February 24, 2012
2. **Guoxing Fu**, Hongling Yuan, Congran Li, Chung-Dar Lu, Giovanni Gadda, and Irene T. Weber. Conformational Changes and Substrate Recognition in Pseudomonas Aeruginosa D-Arginine Dehydrogenase. 20th Annual Suddath Symposium, Georgia Institute of Technology, Atlanta, GA, February 16-17, 2012

3. **Guoxing Fu**, Hongling Yuan, Congran Li, Chung-Dar Lu, Giovanni Gadda, and Irene T. Weber. Conformational Changes and Substrate Recognition in Pseudomonas Aeruginosa D-Arginine Dehydrogenase. Molecular Basis of Disease Program Research Day. Georgia State University, Atlanta, GA, June 17, 2011
4. **Guoxing Fu**, Hongling Yuan, Congran Li, Chung-Dar Lu, Giovanni Gadda, and Irene T. Weber. Conformational Changes and Substrate Recognition in Pseudomonas Aeruginosa D-Arginine Dehydrogenase. Second Southeast Enzyme Conference, Georgia State University, Atlanta, GA, April 10, 2011
5. Giovanni Gadda, Hongling Yuan, Swathi Gannavaram, **Guoxing Fu**, Irene Weber. Mechanistic Investigation of D-Arginine Dehydrogenase from Pseudomonas aeruginosa. . Annual Meeting of the Florida Section of the American Chemical Society (FAME 2011), Tampa, FL, May 12-14, 2011
6. Irene T. Weber, Johnson Agniswamy, **Guoxing Fu**, Ying Zhang, Chen-Hsiang Shen, Yuan-Fang Wang, Robert W. Harrison, Chung-Dar Lu, Giovanni Gadda, John M. Louis, Arun K. Ghosh. Structural Perspectives on HIV Protease and Bacterial Flavoenzymes. SER-CAT Symposium, North Carolina State University, Raleigh, NC, March 4, 2011
7. **Guoxing Fu**, Hongling Yuan, Congran Li, Chung-Dar Lu, Giovanni Gadda, and Irene T. Weber. Conformational Changes and Substrate Recognition in Pseudomonas Aeruginosa D-Arginine Dehydrogenase. Biology Poster Day, Georgia State University, Atlanta, GA, February 25, 2011
8. **Guoxing Fu**, Hongling Yuan, Congran Li, Chung-Dar Lu, Giovanni Gadda, and Irene T. Weber. Conformational Changes and Substrate Recognition in Pseudomonas Aeruginosa D-Arginine Dehydrogenase. Biotech Symposium: Advances in Cancer Research – Molecular Targeting and Therapeutics, Georgia State University, Atlanta, GA, December 3, 2010
9. Hongling Yuan, **Guoxing Fu**, Phillip T. Brooks, Irene Weber, and Giovaani Gadda. Kinetic and Structural Studies of D-Arginine Dehydrogenase. First Southeast Enzyme Conference, Georgia State University, Atlanta, GA, April 10, 2010
10. **Guoxing Fu**, Alexander A. Chumanevich, Johnson Agniswamy, Bin Fang, Robert W. Harrison, Irene T. Weber. Structural Basis for substrate specificity of executioner caspase. First Southeast Enzyme Conference, Georgia State University, Atlanta, GA, April 10, 2010
11. Irene T. Weber, **Guoxing Fu**, Chen-Hsiang Shen, Ping Liu, Andrey Kovalevsky, Yuan-Fang Wang and Robert W. Harrison. Serendipitous Reaction Intermediates in Crystal Structures of Enzymes. First Southeast Enzyme Conference, Atlanta, GA, April 10, 2010
12. **Guoxing Fu**, Alexander A. Chumanevich, Johnson Agniswamy, Bin Fang, Robert W. Harrison, Irene T. Weber. Structural Basis for substrate specificity of executioner caspase. Biology Poster Day, Georgia State University, Atlanta, GA, February 27, 2010
13. Bin Fang, **Guoxing Fu**, Johnson Agniswamy, Robert W. Harrison, Irene T. Weber. Structural basis of substrate specificity of caspase-3 at S4 and S5 revealed by crystallography and kinetic studies. Biotech Symposium: Advances in Cancer Research: Biomarkers Detection – Epigenetic Regulation. Georgia State University,

Atlanta, GA, November 23-24, 2009

14. **Guoxing Fu**, Alexander A. Chumanevich, Johnson Agniswamy, Bin Fang, Robert W. Harrison, Irene T. Weber. Structural Basis for substrate specificity of executioner caspase. Biotech Symposium: Advances in Cancer Research: Biomarkers Detection – Epigenetic Regulation, Georgia State University, Atlanta, GA, November 23-24, 2009
15. Bin Fang, **Guoxing Fu**, Johnson Agniswamy, Robert W. Harrison, Irene T. Weber. Structural basis of substrate specificity of caspase-3 at S4 and S5 revealed by crystallography and kinetic studies. Pittsburgh Diffraction Conference, University of Georgia, Athens, GA, October 29-31, 2009
16. Bin Fang, **Guoxing Fu**, Johnson Agniswamy, Robert W. Harrison, Irene T. Weber. Structural basis of substrate specificity of caspase-3 at S4 and S5 revealed by crystallography and kinetic studies. University of Maryland, College Park MD, May 28-30, 2009.
17. **Guoxing Fu**, Alexander A. Chumanevich, Johnson Agniswamy, Bin Fang, Robert W. Harrison, Irene T. Weber. Structural Basis for Executioner Caspase Recognition of P5 Position in Substrates. Molecular Basis of Disease Day, Georgia State University, Atlanta, GA, May 22, 2009
18. Bin Fang, **Guoxing Fu**, Johnson Agniswamy, Robert W. Harrison, Irene T. Weber. Caspase-3 Binds Diverse P4 Residues in Peptides as Revealed by Crystallography and Structural Modeling. Biology and Chemistry Poster Day, Georgia State University, Atlanta, GA, February 21, 2009
19. **Guoxing Fu**, Alexander A. Chumanevich, Johnson Agniswamy, Bin Fang, Robert W. Harrison, Irene T. Weber. Structural Basis for Executioner Caspase Recognition of P5 Position in Substrates. Biology and Chemistry Poster Day, Georgia State University, Atlanta, GA, February 21, 2009
20. Bin Fang, **Guoxing Fu**, Alexander A. Chumanevich, Johnson Agniswamy, Robert W. Harrison, Irene T. Weber. Structural and Kinetic Analysis Reveals Substrate Recognition of Executioner Caspases at P5 Position. Georgia State Biotechnology Symposium: From Gene Regulation to Biotechnology: a Gram Positive Perspective. Georgia State University, Atlanta, GA, August 14-15, 2008
21. Bin Fang, Johnson Agniswamy, **Guoxing Fu** and Irene T. Weber. Structural and kinetic analysis of caspase-3 and caspase-7 reveals role for S5 binding site and plasticity in substrate recognition. 16th Annual Bud Suddath Symposium at Georgia Institute of Technology, Atlanta, GA, Mar. 7-8, 2008
22. Bin Fang, **Guoxing Fu**, Johnson Agniswamy, Irene T. Weber Structural Analysis of Caspase-3 Substrate Specificity at S4 and S5 Binding Sites. Biology and Chemistry Poster Day, Georgia State University, Atlanta, GA, Feb 23, 2008
23. Yali Peng, Min Chang, Wei Li, Renwen Han, **Guoxing Fu**, Shouliang Dong, and Rui Wang. Structure-activity studies on N-terminal modified analogies of nociceptin/orphanin FQ. 9th China Biochemistry and Cell Molecular Biology Conference, China, 2005
24. Min Chang, Yali Peng, Wei Li, Renwen Han, **Guoxing Fu**, Shouliang Dong, and Rui Wang. Structure-activity studies on different modifications of nociceptin/orphanin FQ: Identification of highly potent agonists and antagonists of its receptor. 9th China

Biochemistry and Cell Molecular Biology Conference, China, 2005

TEACHING EXPERIENCE

2007-2009 Molecular Cell Biology LAB (4 semesters)
Department of Biology, Georgia State University

- Prepared and gave lectures about molecular cell biology.
- Directed experiments like spectrophotometry, enzyme kinetics, protein isolation and PCR
- Graded assignments and exams

2008-2009 Fundamentals of Bioinformatics (2 semesters)
Department of Biology, Georgia State University

- Helped students with topics like sequence alignment, protein structure analysis and literature search
- Guided students to use software like RasMol, Pymol and AMMP for structure display and prediction
- Graded assignments

2006-2007 Introductory Chemistry I (1 semester)
Department of Biology, Georgia State University

- Introduced basic principles and applications of chemistry, such as atomic structure, isotopes, and chemical equations
- Helped students with chemistry experiments such as making solutions and titration