TATIANA V. MISHANINA
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Education

Ph. D. in Chemistry, University of Iowa, Iowa City, IA
Fall 2008 – Present (anticipated graduation December 2013)
Thesis title: Unraveling the mechanism of a novel thymidylate biosynthesis enzyme – flavin-dependent thymidylate synthase.
Thesis Advisor: Prof. Amnon Kohen
GPA 3.92/4.00

B. S. in Chemistry, Wichita State University, Wichita, KS *summa cum laude*
August 2005 – May 2008
GPA 4.00/4.00

Teaching Experience

Undergraduate Research Mentor, 2011 – Present
Department of Chemistry, University of Iowa, Iowa City, IA

Tutor in Chemistry, Fall 2010 – Present
Women In Science and Engineering (WISE), University of Iowa, Iowa City, IA

Graduate Teaching Assistant, 2008 – 2010
Department of Chemistry, University of Iowa, Iowa City, IA
- Discussion TA for undergraduate General and Organic Chemistry courses

Tutor in Calculus and Differential Equations, Fall 2007
College of Engineering, Wichita State University, Wichita, KS

Tutor in Biology, Fall 2006
Student Support Services, Wichita State University, Wichita, KS

Publications

Mishanina, T.V., Koehn, E. M., Conrad, J. A., Palfey, B. A., Lesley, S. A., and Kohen, A (**2012**). "Trapping of an intermediate in the reaction catalyzed by flavin-dependent thymidylate synthase." *J. Am. Chem. Soc.*134(9):4442-48.

Mishanina, T. V., Koehn, E. M., and Kohen, A. (**2011**) "Mechanisms and inhibition of uracil methylating enzymes." *Bioorg. Chem.* Published online Nov. 27, 2011. DOI: 10.1016/j.bioorg.2011.11.005.

Hong, M., **Mishanina, T. V.,** and Cady, S. D. (**2009**). "Accurate measurement of methyl ^{13}C chemical shifts by solid-state NMR for the determination of protein side chain conformation: the influenza A M2 transmembrane peptide as an example." *J. Am. Chem. Soc.* 131(22):7806-16.

Cady, S. D., **Mishanina, T. V.**, and Hong, M. (**2009**). "Structure of amantadine-bound M2 Transmembrane peptide of influenza A in lipid bilayers from magic-angle spinning solid-state NMR: the role of Ser31 in amantadine binding." *J. Mol. Biol.* 385(4):1127-41.

Research Experience

Graduate Research Assistant, Fall 2008 -- Present
Department of Chemistry, University of Iowa, Iowa City, IA
Mentor: Prof. Amnon Kohen
Project title: Mechanistic studies of thymidylate biosynthesis by ThyX thymidylate synthase.

- Isolated and characterized a novel reaction intermediate in thymidylate biosynthesis
- Developed the protocol for anaerobic rapid-quench and stopped-flow studies
- Performed a variety of enzymatic assays: steady-state and single-turnover kinetics using radiolabeled compounds, spectroscopy (UV-vis, NMR) and mass spectrometry; inhibition studies, etc.

Molecular Genetics Intern, Summer 2012
Integrated DNA Technologies, Coralville, IA
Supervisor: Dr. Scott Rose
Project title: *Thermus aquaticus* (Taq) mutant DNA polymerase library testing.

- Performed initial mutant library testing: sequenced the vector and Taq polymerase insert, located sites of mutation, tested Taq pol expression on a small scale (<1 mL)
- Reverted one of the mutants to wild-type by site-directed mutagenesis
- Moved Taq pol insert from the original plasmid into pET27b(+) via isothermal assembly

Graduate Research Assistant, Summer 2008
Department of Chemistry, Iowa State University, Ames, IA
Mentor: Prof. Mei Hong
Project title: Structure of influenza A M2 transmembrane peptide from solid-state NMR.

- Compiled and correlated methyl ^{13}C chemical shifts for various proteins deposited in Biological Magnetic Resonance Data Bank (BMRB)
- Analyzed NMR data and built structural models for M2 peptide

Undergraduate Research Assistant, Spring 2008
Department of Chemistry, Wichita State University, Wichita, KS
Mentor: Prof. James Bann
Project title: Fluorescent labeling of lethal factor (LF_n) of anthrax toxin for *in vivo* monitoring of LF_n refolding.

- Synthesized and purified the fluorescent tag AsCy3
- Performed fluorescence binding assays
- Expressed and purified LF_n for binding studies

Academic Honors/Recognition

- Best poster award, Midwest Enzyme Chemistry Conference (MECC): October 2012
- University of Iowa Graduate College SIF Fellowship: Spring 2012
- Graduate Student Senate (GSS) travel award: Spring 2012
- Executive Council of Graduate and Professional Students (ECGPS) travel award: Spring 2012
- Usha Prize winner for the poster presentation, Annual Center for Biocatalysis and Bioprocessing Conference: October 2011
- Iowa Center for Biocatalysis and Bioprocessing Pre-doctoral Fellowship: 2010-12
- Outstanding Teaching Assistant Award, University of Iowa: Spring 2010
- Award for an outstanding poster presentation, K-INBRE Symposium: January 2009
- Shriner Tuition Scholarship, University of Iowa: Fall 2008
- K-INBRE (Kansas Idea Network of Biomedical Research Excellence) Scholarship: Spring 2008

Oral presentations

"Unraveling the mechanism of a novel thymidylate biosynthesis enzyme." ACS MWRM, Omaha, NE: October **2012**.

"Towards better antibiotics: Studies of alternative thymidylate synthase." Annual Center for Biocatalysis and Bioprocessing Conference, Iowa City, IA: October **2012**.

"Investigating the mechanism of a novel pathway towards thymidylate." Center for Biocatalysis and Bioprocessing (CBB) Symposium, Iowa City, IA: May **2012**.

"Trapping of an intermediate in a novel thymine biosynthesis pathway." Jakobsen Graduate Conference, Iowa City, IA: March **2012**.

"Trapping and identification of an intermediate in a new reaction in thymidylate production." Center for Biocatalysis and Bioprocessing Symposium, Iowa City, IA: May **2011**.

Poster presentations

"Towards better antibiotics: Studies of alternative thymidylate synthase." Annual Center for Biocatalysis and Bioprocessing Conference, Iowa City, IA: October **2012**.

"Piecing together the mechanism of flavin-dependent thymidylate synthase from trapping of reaction intermediates." MECC, Chicago, IL: October **2012**.

"Flavin-dependent thymidylate synthase: Trapping of a reaction intermediate." Gordon Research Conference, Galveston, TX: February **2012**.

"Chemical trapping of an intermediate in the reaction catalyzed by flavin-dependent thymidylate synthase." MECC, Chicago, IL, and Annual Center for Biocatalysis and Bioprocessing Conference, Iowa City, IA: October **2011**.

"Unusual route to thymidylate: Studies of flavin-dependent thymidylate synthase." Jakobsen Graduate Conference, Iowa City, IA: March **2011**.

"Hunting for an intermediate: Studies of chemical mechanism of flavin-dependent thymidylate synthase." MECC, Chicago; MWRM, Wichita, KS, and Annual Center for Biocatalysis and Bioprocessing Conference, Iowa City, IA: October **2010**.

"Inhibition of Oxidase Activity of Flavin-Dependent Thymidylate Synthase by the Substrate CH_2H_4folate." MECC, Chicago, IL; MWRM, Iowa City, IA, and Annual Center for Biocatalysis and Bioprocessing Conference, Iowa City, IA: October **2009**.

"Towards Monitoring the Cellular Refolding of the Anthrax Lethal Factor." K-INBRE Symposium, Manhattan, KS: January **2009**.

Volunteering

- Discussion moderator, Jakobsen Graduate Conference, Iowa City, IA: March 2012
- Discussion moderator, Gordon Research Seminar, Galveston, TX: February 2012
- Chemistry demonstrations, iExploreSTEM Festival for kids, Iowa City, IA: September 2011
- Judge, Eastern Iowa Science and Engineering Fair, Cedar Rapids, IA: March 2011
- Uptown Bill's Small Mall, Iowa City, IA: October 2009 – December 2010
- Small group leader, International Student Orientation, University of Iowa: August 2010 and 2011
- Rummage on the Ramp, Iowa City, IA: July 2010
- Tour guide, STEM Summit, Iowa City, IA: May 2010