

Sister M. Lucy Gantt, FSGM, Ph.D.

Education

2006	Ph.D.	Chemistry (concentration in Chemical Biology) University of Michigan, Ann Arbor, MI
2002	M.S.	Chemistry University of Michigan, Ann Arbor, MI
2000	B.S. (with honors) <i>summa cum laude</i>	Biochemistry Washington State University, Pullman, WA

Teaching Experience

Aug. 2012 – present	Part-time Assistant Professor Pre-Nursing Chemistry class and lab, Cell Physiology lab, Survey of Physical Science Franciscan University of Steubenville
Jun. 21-24 2016	Short Course Master Teacher Catholic Diocese of Pittsburgh Summer Institute “Integrating Science, Math, and Faith in the Classroom”
Aug. 2003 – Dec. 2003 Aug. 2002 – Dec. 2002	Graduate Student Instructor Biochemistry discussion section, University of Michigan
Aug. 1999 – Dec. 1999	Teaching Assistant Organic Chemistry lab, Washington State University
Jan. 1998 – May 1999	General Chemistry lab and discussion section, Washington State University

Research Experience

June 2007 – May 2009	Mechanistic studies of human aromatase <i>Postdoctoral Research: University of Illinois, Urbana-Champaign</i> <ul style="list-style-type: none">Demonstrated by spectroscopic methods that the cytochrome P450 aromatase has a stabilized peroxo-ferric intermediate, which may be used as a nucleophile in the reaction mechanism Advisor: Prof. Stephen G. Sligar, Ph.D.
July 2001 – June 2007	Catalytic mechanism and metal-dependence of human histone deacetylase 8 (HDAC8) <i>Doctoral Dissertation: University of Michigan</i> <ul style="list-style-type: none">Initiated studies on HDAC8 and demonstrated that this protein is a mononuclear metalloenzyme that has higher catalytic activity with Fe(II) than Zn(II)Showed that HDAC8 uses a single general acid/base catalyst (His143), with His142 serving as an electrostatic catalystDemonstrated HDAC8 activation and inhibition by monovalent cations Advisor: Prof. Carol A. Fierke, Ph.D.
May 2001 – July 2001	Computational study of inhibitor binding <i>Industrial Research Rotation: Pfizer, Ann Arbor, MI</i> <ul style="list-style-type: none">Performed proof of principal algorithm testing to predict the binding constants for reversible enzyme inhibitors

- Dec. 2000 – May 2001 **Ribosomal switch helix studies using a fluorescently-labeled RNA construct**
Research Rotation: University of Michigan (Prof. Nils. G. Walter, Ph.D.)
- Demonstrated that an isolated ribosomal RNA construct can alternate between two base pairings, as indicated by changes in fluorescence resonance energy transfer (FRET) efficiency and UV cross-linking
- Sept. 2000 – Dec 2000 **Investigation of farnesyltransferase catalytic mechanism**
Research Rotation: University of Michigan (Prof. Carol A. Fierke, Ph.D.)
- Using a farnesyldiphosphate substrate analog, tested the importance for transition state stabilization of charge delocalization within the diphosphate moiety

Undergraduate Research Projects

- 1998 – 2000 **Investigation of the membrane targeting of AcrA, a bacterial multi-drug efflux pump protein** (*Washington State University*)
- 1997 – 1998 **Development of MALDI mass spectrometry as a tool for identifying bacteria** (*Pacific Northwest National Laboratory, Richland, WA*)
- 1997 **Atomic force microscopy of bacteriophage structure** (*Washington State Univ.*)

Mentoring Experience

- Jun. 2008 – May 2009 **Mentored an Undergraduate Student in Laboratory Research**
University of Illinois, Urbana-Champaign
- Spring 2007 **Mentored a First-Year Graduate Student Research Rotation**
University of Michigan

Selected Awards and Fellowships

- Graduate* NSF Predoctoral Fellowship
Regents' Fellowship, University of Michigan
NIH Chemistry Biology Interface Predoctoral Training Program
Outstanding First Year Graduate Student, Department of Chemistry
- Undergraduate* Barry M. Goldwater Scholarship
College of Sciences Distinguished Undergraduate
Outstanding Senior in Chemistry or Biochemistry

Publications

- S. M. Gantt**, C. Decroos, M. S. Lee, L. E. Gullett, C. M. Bowman, D. W. Christianson, C. A. Fierke
“General base-general acid catalysis in human histone deacetylase 8.”
Biochemistry. **2016**, 55, 820-32.
- S. L. Gantt**, C. G. Joseph and C. A. Fierke
“Activation and inhibition of histone deacetylase 8 by monovalent cations.”
J. Biol. Chem. **2010**, 285, 6036-43
- S. L. Gantt**, I. G. Denisov, Y. V. Grinkova and S. G. Sligar
“The critical iron-oxygen intermediate in human aromatase.”
Biochem. Biophys. Res. Commun. **2009**, 387, 169-73

D. P. Dowling, **S. L. Gantt**, S. G. Gattis, C. A. Fierke and D. W. Christianson

“Structural studies of human histone deacetylase 8 and its site-specific variants complexed with substrate and inhibitors.”

Biochemistry. **2008**, *47*, 13554-63

S. L. Gantt, S. G. Gattis and C. A. Fierke

“The catalytic activity and inhibition of human histone deacetylase 8 is dependent on the identity of the active site metal ion”

Biochemistry. **2006**, *45*, 6170-8

M. C. Pirrung, L. N. Tumey, C. R. Raetz, J. E. Jackman, K. Snehalatha, A. L. McClerren, C. A. Fierke, **S. L. Gantt** and K. M. Rusche

“Inhibition of the antibacterial target UDP-(3-*O*-acyl)-*N*-acetylglucosamine deacetylase (LpxC): isoxazoline zinc amidase inhibitors bearing diverse metal binding groups”

J. Med. Chem. **2002**, *45*, 4359-70

S. L. Gantt, N. B. Valentine, A. J. Saenz, M. T. Kingsley and K. L. Wahl

“Use of an internal control for matrix-assisted laser desorption/ionization time-of-flight mass spectrometry analysis of bacteria”

J. Am. Soc. Mass Spectrom. **1999**, *10*, 1131-7

A. J. Saenz, C. E. Petersen, N. B. Valentine, **S. L. Gantt**, K. H. Jarman, M. T. Kingsley, K. L. Wahl

“Reproducibility of matrix-assisted laser desorption/ionization time-of-flight mass spectrometry for replicate bacterial culture analysis.”

Rapid Commun. Mass Spectrom. **1999**, *13*, 1580-5