

Abby Maranda Hodges

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Education

- Ph.D., Yale University, New Haven, Connecticut 2002 - 2008
Department of Chemistry: Organic Chemistry
Dissertation: *Optimization and Characterization of a Protein Scaffold and Its Biological Applications*
Thesis Advisor: Alanna Schepartz, Milton J. Harris Professor of Chemistry
- B.S., *Summa Cum Laude*, Denison University, Granville, Ohio 1998-2002
B.S. in Chemistry, with Honors; GPA 3.92
Senior Thesis: *Determination of Nearest Neighbor Effects on the Current Assigned α -proton Random Coil Value of Alanine*
Advisor: Sonya McKay

Employment

- Associate Professor of Chemistry**, Mid-America Nazarene University Fall 2014-present
Courses taught: Organic Chemistry I (lecture and lab), Introduction to Chemistry for the Health Sciences
Managed and mentored a research group of undergraduate students during the school year.
- Associate Professor of Chemistry**, Azusa Pacific University Fall 2013-2014
Assistant Professor of Chemistry Fall 2008-Fall 2013
Assistant Department Chair for Department of Biology and Chemistry Fall 2013-2014
Courses taught: General Chemistry I and II (lectures and labs), Introduction to Chemistry lecture, Organic Chemistry for the Health Sciences lecture, Chemical Biology lecture, Senior seminar: Ethics and the sciences.
Managed and mentored a research group of undergraduate students during the school year and the summer.
- Research Mentor**, Yale University Summer 2004, 2007-2008
Lynn McGregor, *Yale undergraduate*
Designed a year-long research project related to my dissertation research; taught molecular and cell biology techniques; consulted regularly regarding results and future experiments.
Philip Eck, *Science Technology and Research Scholars summer program for College Freshman and Sophomores in minority groups.*
Taught basic research skills; trained student on necessary equipment; provided guidance in preparing a scientific presentation.

Research Experience

REST Research program, Azusa Pacific and Mid-America Nazarene Universities 2008-present

- Amplified the PAH1, and PAH2 gene from a cDNA library and subcloned them into expression plasmids
- Designed and partially synthesized a model peptoid mimic of the REST protein
- Expressed, purified and identified GST-REST(1-138), His-PAH1, and His-PAH2 protein fusions
- Optimized binding assays using immunoprecipitations and isothermal titration calorimetry

Doctoral Research, Yale University 2003-2008

- Isolated and removed amino acids responsible for dimerization of avian pancreatic polypeptide, a protein scaffold, and introduced additional amino acid changes to refold the protein core.
- Analyzed the binding mode and specificity of three miniature protein ligands for anti-apoptosis proteins Bcl-X_L and Bcl-2.
- Investigated the ability of a family of miniature protein ligands for Src SH3 domains to activate specific Src family kinases in mammalian cells.

Undergraduate Honors Research, Denison University 2001-2002

- Synthesized tetrameric peptides in solution phase
- Characterized the peptides by 1D and 2D ¹H NMR
- Measured the impact of changes in pH, urea, and nearest neighbors on the α-proton chemical shifts of alanine

Procter and Gamble Summer Internship, Corporate Research-Biotechnology Division 2002
Synthesized and purified a variety of nitrogen-containing heterocycles that were screened for their ability to inhibit biofilm formation.

Grants and Fellowships

Faculty Research Grant, 2013, Azusa Pacific University

Faculty Research Grant, 2012, Azusa Pacific University

Faculty Research Grant, 2010, Azusa Pacific University

Faculty Research Grant, 2009, Azusa Pacific University

Publications and Patents

Schepartz, A.; Hodges, A.M.; Zellefrow, C.; Kritzer, J. MODIFIED MINIATURE PROTEINS. International Patent number WO/2009/020477; 2009-02-12,

Hodges, A.M.; Schepartz, A. *Journal of the American Chemical Society*, 2007, 129, 11024-11025.

Zellefrow, C.D.; Griffiths, J.S.; Saha, S.; Hodges, A.M.; Goodman, J.L.; Paulk, J.; Kritzer, J.A.; Schepartz, A. *Journal of the American Chemical Society*, 2006, 128, 16506-16507.

Carlisle, E.A.; Holder, J.L.; Maranda, A.M. (A.M. Hodges previously published under A.M. Maranda); de Alwis, A.R.; Selkie, E.L.; McKay, S.L. *Biopolymers*, 2006, 85, 72-80.

Gemperli, A.C.; Rutledge, S.E.; **Maranda, A.M.**; Schepartz, A. *Journal of the American Chemical Society*, **2005**, *127*, 1596-1597.

Lagueux, R.; Lerner, B.; **Maranda, A.**; Rando, B. In *Becoming Teachers: The Graduate Student Guide to Teaching at Yale University*; Lagueux, R.; Ed.; 2nd edition; The McDougal Graduate Teaching Center: New Haven, CT., 2004.

Posters and Presentations

Bathke, K.; Jones, M.; Chronkite, C.; Parton, A.; **Hodges, A.M.** (April, 2013) Investigations Towards Determining the Binding Affinity and Specificity of REST for mSIN3. Poster presentation at the West Coast Biological Sciences Undergraduate Research Conference, San Diego, CA.

Chronkite, C.; Bathke, K.; Jones, M.; Parton, A.; **Hodges, A.M.** (April, 2013) Preparing REST and Associated Proteins for Binding Tests Using Isothermal Titration Calorimetry. Poster presentation at the West Coast Biological Sciences Undergraduate Research Conference, San Diego, CA.

Chronkite, C.; Bathke, K.; Jones, M.; Parton, A.; **Hodges, A.M.** (April, 2013) Examining the Binding Specificity of the Transcription Factor REST to the PAH1 domain of mSin3. Poster presentation at the West Coast Regional Honors Conference, Flagstaff, AZ.

Hodges, A.M. (April 2012) Chemical Biology: Using Chemical Tools to Answer Biological Questions. Presentation at Denison University Department of Chemistry and Biochemistry Awards Banquet as the Distinguished Alumni Speaker, Granville, OH.

Bathke, K.; Kizzar, K.; **Hodges, A.M.** (November 2011) Towards characterization of the binding interface of REST with mSIN3 PAH1 and PAH2 domains. Poster presentation at the American Chemical Society Southern California Regional meeting, Pasadena, CA.

Smeragliuolo, S.; Williams, J.; **Hodges, A.M.** (March 2011) Investigations into the essential binding motif of the transcriptional repressor REST with mSin3. Poster presentation at the American Chemical Society National meeting, Anaheim, CA.

Sharpe, M.; Williams, J.; **Hodges, A.M.** (April 2010) Investigations into the Essential Binding Motif of the Transcriptional Repressor REST. Poster presentation at the West Coast Biological Sciences Undergraduate Research Conference, Santa Clara, CA.

Smeragliuolo, S.; **Hodges, A.M.** (March 2010) Is Nuclear Energy Good? Oral presentation, Azusa Pacific University Common Day of Learning, Azusa, CA

Bozzuto, D.; **Hodges A.M.** (September 2009) Investigations Towards the Minimal Binding Motif of the Transcriptional Repressor REST. Poster presentation, Annual Fall Research Symposium for the Azusa Pacific University Department of Biology and Chemistry, Azusa, CA. Awarded best poster presentation.

Hodges, A.M.; McGregor, L.; and Schepartz, A. (August 24, 2007) Towards *In Vivo* Activation of Src Family Kinases by Encodable Miniature Proteins. Poster presentation, Annual Bristol-Myers Squibb (BMS) Symposium, New Haven, CT.

Hodges, A.M.; and Schepartz, A. (June 1, 2007) Tuning the Dimerization State of a Miniature Protein Scaffold. Poster presentation, Chemical Biology Symposium, New Haven, CT.

Maranda, A.M. (A.M. Hodges previously published under A.M. Maranda); Gemperli, A, and Schepartz, A. (May, 2005) Investigations Towards the Optimization of Paralog Specific Miniature Proteins. Poster presentation, Chemical Biology Symposium, New Haven, CT.

Maranda, A.M.; Schepartz, A. (April 2004) Chemical Biology Lab: A Model for Bridging the Gap Between Research and Teaching. Poster presentation, Annual Yale Spring Teaching Forum, New Haven, CT.

Maranda, A.M.; Gemperli, A.; and Schepartz, A. (August 27, 2004) Discovery and Analysis of Ligands that Control Cell Life and Death. Talk presented at the BMS Symposium, New Haven, CT.

Maranda, A.M., Selkie, E.L., McKay, S.L. (November, 2001) Determination of Nearest Neighbor Effects on the Random Coil Value of Alanine. Poster presentation, Central Ohio Undergraduate Research Symposium and also presented at Ohio State University Chemistry Department Evans Lecture, November 2001. Awarded best poster presentation.

Updated September 23, 2014