

George F. Heine Jr., Ph.D.

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EDUCATION

Ph.D., Plant Cellular and Molecular Biology

June 2006

The Ohio State University, Columbus, OH

- Dissertation: "Functional Analysis of P1, A Model R2R3 MYB Domain Transcription Factor"
- Advisor: Erich Grotewold, Department of Plant Cellular and Molecular Biology

B.S. Plant Biology

May 2000

Oklahoma State University, Stillwater, OK

GRANTS AND RESEARCH SUPPORT

NIH Ruth L. Kirschstein National Research Service Award, National Cancer Institute Postdoctoral Fellowship (F32: GN 1F32CA130302). 2007-2010

Title: Understanding the role of BRCA1 in response to DNA damage

RESEARCH INTERESTS

- DNA damage signaling in response to chemotherapeutic drugs
- Post-translational modifications of proteins in response to DNA damage
- Gene regulation

RESEARCH AND PROFESSIONAL EXPERIENCE

- **Ruth L. Kirschstein NRSA Postdoctoral Fellow** 2009-current
The Ohio State University Medical Center, Columbus, OH
Laboratory of Dr. Andrea Dosef (Postdoc advisor)
- **Ruth L. Kirschstein NRSA Postdoctoral Fellow** 2007-2009
The Ohio State University Medical Center, Columbus, OH
Laboratory of Dr. Jeffrey Parvin (Postdoc advisor)
 - Designed and developed methods to identify ubiquitinated proteins in HeLa cells using Mass spectrometry and Difference In-Gel Electrophoresis (DIGE)
 - Customized ubiquitin assay for the identification of sumoylated proteins in HeLa cells following DNA damage
 - Identified and characterized new targets of post-translational modifications after DNA damage
- **Postdoctoral Researcher** 2006-2007
Brigham and Woman's Hospital/ Harvard Medical School, Boston, MA
Laboratory of Dr. Jeffrey Parvin (Postdoc advisor)
 - Developed transcriptional assay to measure the activation potential of RNA polymerase II in response to DNA damage
 - Performed Chromatin Immunoprecipitation (ChIP) to evaluate proteins located at a DNA damage site using Real-Time PCR
- **Graduate Research Assistant** 2002-2006
The Ohio State University, Columbus, OH
Laboratory of Dr. Erich Grotewold (Ph.D. advisor)
 - Utilized protein-DNA binding assay to uncover reduction/oxidation control of the MYB domain transcription factor
 - Implemented genetic screens for novel mutants of MYB proteins in maize plants
 - Investigated conformational changes in MYB domain proteins using fluorescence spectrometry

- **Graduate Research Assistant and Co-Developer for the 2005 Practical Summer Workshop in Functional Genomics** 2004-2005
The Ohio State University, Columbus, OH
 - Organized, developed, and directed research modules
 - Provided in lab support
 - Created the workshop handbook
- **Undergraduate Research Project** 1999-2000
Oklahoma State University, Stillwater, OK
 - Isolated Cyanobacteria from the Salt Plains National Wildlife Refuge
 - Determined affects of salinity on photosynthetic rates of isolated species
- **Summer Research Intern** 1997
City of Fort Smith, Fort Smith, AR
 - Participated in watershed management projects including water quality and macroinvertebrate population analyses

TEACHING AND SUPERVISORY EXPERIENCE

- **Introductory Plant Biology Lecture** 2003
The Ohio State University, Columbus, OH
 - Developed lectures and labs for introductory plant biology class
 - Created tests and quizzes
- **Graduate Research Assistant** 2002-2006
The Ohio State University, Columbus, OH
Laboratory of Dr. Erich Grotewold (Ph.D. advisor)
 - Managed and supervised research projects for three undergraduate students
- **Introductory Plant Biology Lab** 2001-2003
The Ohio State University, Columbus, OH
 - Facilitated lab lectures and guided lab experiments
- **Introductory Biology Lab** 1999-2000
Oklahoma State University, Stillwater, OK
 - Facilitated lab lectures and guided lab experiments

PUBLICATIONS

- **Heine, G.F.**, Horwitz, A.A., and Parvin, J.D. (2008) Multiple mechanisms contribute to inhibit transcription in response to DNA damage. *J. Biol. Chem.*, **283**(15): 9555-61
- **Heine, G.F.**, and Parvin, J.D. (2007) BRCA1 control of steroid receptor ubiquitination. *Science STKE*. **391**:34
- Horwitz, A.A., Affar, E.B., **Heine, G.F.**, Shi, Y., and Parvin, J.D. (2007) A novel mechanism for transcriptional repression dependent on the BRCA1 E3 ubiquitin ligase. *PNAS*, **104**(16):6614-9
- **Heine, G.F.**, Malik, V., Dias, A.P., and Grotewold, E. (2007) Expression and molecular characterization of ZmMYB-IF35 and related R2R3 MYB transcription factors, *Mol Biotechnol*. **37**(2):155-64.
- **Heine, G.F.**, Hernandez, M.J., and Grotewold, E. (2004) Two cysteines in plant R2R3 MYB domains participate in REDOX-dependent DNA binding. *J. Biol. Chem.*, **279**: 37878–37885.
- Hernandez, M.J., **Heine, G.**, Irani, N.G., Feller, A., Kim, M-G., Matulnik, T., Chandler V.L., Grotewold, E. (2004) Different mechanisms participate in the R-dependent activity of the R2R3 MYB transcription factor C1. *J. Biol. Chem.* **279**: 48205-48213
- **Heine, G.F.**, and Grotewold, E. The nitrosylation of a plant R2R3 MYB domain suggests a role for transcriptional regulation in vivo (in preparation)

AWARDS AND HONORS

- Experimental Biology (ASBMB) Competitive Travel Award 2008
- The American Society of Plant Biologists Competitive Financial Aid Award 2004
- 46th Annual Maize Genetics Conference Financial Aid Award 2004
- 45th Annual Maize Genetics Conference Financial Aid Award 2003
- Betty and Richard Speirs Jr. Undergraduate Fellowship 1998-1999

COMMITTEES AND SERVICE

- **Postdoctoral Advisor, Event planning committee for the Office of Postdoctoral Programs**
The Ohio State University Medical Center, Columbus, OH 2008-present
- **Postdoctoral Advisor, The College Of Medicine Research Education Council**
The Ohio State University Medical Center, Columbus, OH 2007-2009
- **Graduate student representative, Research Committee for the Department of Plant Cellular and Molecular Biology**
The Ohio State University, Columbus, OH 2005-2006
- **President, Graduate Student Association for the Department of Plant Cellular and Molecular Biology**
The Ohio State University, Columbus, OH 2003-2005
- **Graduate student representative, Graduate Studies Committee for the Department of Plant Cellular and Molecular Biology**
The Ohio State University, Columbus, OH 2002-2003
- **Graduate student representative, Diversity Committee for the College Of Biological Sciences**
The Ohio State University, Columbus, OH 2001-2002

MEETING PRESENTATIONS

- **Heine, G.F.**, Horwitz, A.A., and Parvin J.D. DNA Damage Induced Inhibition of RNA Polymerase II and the Contributions of BRCA1. American Society for Biochemistry and Molecular Biology, San Diego, CA. 2008 (Poster)
- **Heine, G.F.**, and Grotewold, E. REDOX-dependent DNA-binding of R2R3 MYB transcription factors. American Society for Biochemistry and Molecular Biology, Redox Signaling in Biology and Disease. Kiawah Island, SC. 2004 (Poster)
- **Heine, G.F.** and Grotewold, E. Functional Characterization of Evolutionary Conserved MYB Domain Residues Using P1 as a Model Annual Meeting of The American Society of Plant Biologists. Orlando, FL. 2004 (Poster)
- **Heine, G.F.** and Grotewold, E. Functional Characterization of Evolutionary Conserved MYB Domain Residues Using P1 as a Model. 46th Annual Maize Genetics Conference. Mexico City, Mexico 2004 (Poster)
- **Heine, G.F.**, Dias, A.P., and Grotewold, E. Functional Significance of the Evolutionary Steps that Shaped the R2R3 Myb Gene Family. 45th Annual Maize Genetics Conference. Lake Geneva, WI 2003 (Poster)