

# Tamara K. (Mann) Nowling

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## Education

**Ph.D.** in Molecular, Cellular, and Developmental Biology Program, Iowa State University, Laboratory of Christopher Tuggle, Ph.D., May, 1997

**B.A.** in Biology and Chemistry, University of Northern Iowa, Dec., 1990

## Research Experience

### ASSISTANT PROFESSOR

Medical University of South Carolina, Charleston, SC

Dept. of Medicine, Div. of Rheumatology, 5/06-present

Research focus: Expression, regulation and function of the Fli1 gene in lupus and autoimmunity in children

### RESEARCH ASSISTANT PROFESSOR

Medical University of South Carolina, Charleston, SC

Dept. of Medicine, Div. of Rheumatology, 6/03-5/06

Research focus: Expression, regulation and function of the Fli1 gene in lupus and autoimmunity in children

### POSTDOCTORAL

University of Nebraska Medical Center, Omaha, NE

Eppley Institute for Research in Cancer and Allied Diseases, 5/97-5/03

Research advisor: Angie Rizzino, Ph.D.

Research focus: Differential regulation of FGF-4 and TGF $\beta$ II gene expression and the function of distal enhancers

### GRADUATE

Iowa State University, Department of Animal Science

Graduate Research Assistant, 1991-1997

Research advisors: Christopher Tuggle, Ph.D. and Marit Nilsen-Hamilton, Ph.D.

Research focus: Regulation of the spatial and temporal expression of the Hoxa5 and Hoxd4 genes in early mouse development

University of Northern Iowa, Department of Biology

Graduate Research Assistant, 1/91-6/91

Research advisor: Darrell Wiens, Ph.D.

Research focus: Effects of isotretinoin on heart development in the chick

### UNDERGRADUATE

University of Northern Iowa, Department of Biology

Undergraduate Research Assistant, 1989-1990

Research advisor: Darrell Wiens, Ph.D.

Research focus: Effects of isotretinoin on heart development in the chick

## Teaching Experience

### Medical University of South Carolina

Advanced Topics in Immunology (team taught graduate student course), Spring, 2008  
Basics of Molecular Biology, lectures for Rheumatology Fellows, 12/2004-present  
Undergraduate and High School student mentor, 5/06-present

### Eppley Institute for Research in Cancer and Allied Diseases

Supervised/trained laboratory technicians and graduate students, 1998-2002

### Iowa State University, Graduate Teaching Assistant

Introductory Biology laboratory course, 1991, 1995, 1996

### University of Northern Iowa, Undergraduate Teaching Assistant

Comparative Anatomy laboratory course, 1990

## Awards and Honors

Undergraduate: Omicron Delta Kappa; Sigma Xi Research Society

6/00-5/02: Postdoctoral Fellowship, NCI Cancer Research Training Program

9/03-8/05: Selected by Dr. Gary Gilkeson to receive support from an award presented to him from the SLE Kirkland Scholar Program to support the development of a junior investigator in the field of lupus under his mentorship.

## Committees and Activities

4/2005-present: MUSC Women Scholars Initiative Networking Series and Eminent Scholar Committees

10/2005-present: Molecular Biology Study Section, Arthritis Foundation

12/05: Grant Review Committee, University Research Committee, MUSC

03/07: Attended the 2007 Southern Regional Professional Development Conference for Women in Medicine and Research, Houston, TX

10/2008-present: MUSC Excellence Champion for Rheumatology Division

## Publications

1. Wiens, D.J., **T.K. Mann**, D.E. Federson, W.K. Rathmell, and B.H. Franck. 1992. Early heart development in the chick embryo: Effects of isotretinoin on cell proliferation, alpha-actin synthesis, and development of contractions. *Differentiation* 51:105-112.
2. **Nowling, T. Mann**. 1997. Identification and characterization of proteins binding to regulatory elements of the *Hoxa-5* spatial-specific enhancer. Ph.D. dissertation, Iowa State University, Ames, IA.
3. Wilder, P.J., D. Kelly, K. Brigman, C.L. Peterson, **T. Nowling**, Q.-S. Gao, R.D. McComb, M.R. Capecchi and A. Rizzino. 1997. Inactivation of the FGF-4 gene in embryonic stem cells alters growth and/or survival of their early differentiated progeny. *Developmental Biology* 192:614-629.
4. Johnson, L.R., K.A. Lamb, Q.-S. Gao, **T.K. Nowling** and A. Rizzino. 1998. Role of the transcription factor Sox-2 in the expression of the FGF-4 gene in embryonal carcinoma cells. *Molecular Reproduction and Development* 50:377-386.
5. **Nowling, T.K.**, W. Zhou, K.E. Krieger, C. Larochele, M.C. Nguyen-Huu, L. Jeannotte and C.K. Tuggle. 1999. *Hoxa-5* gene regulation: A gradient of binding activity to a brachial spinal cord element. *Developmental Biology* 208:134-146
6. **Nowling, T.K.**, L.R. Johnson, M.S. Wiebe and A. Rizzino. 2000. Identification of the transactivation domain of the transcription factor Sox-2 and an associated co-activator. *Journal of Biological Chemistry* 275:3810-3818.
7. Luster, T.A., L.R. Johnson, **T.K. Nowling**, K.A. Lamb, S. Philipsen and A. Rizzino. 2000. Effects of three Sp1 motifs on the transcription of the FGF-4 gene. *Molecular Reproduction and Development* 57:4-15.
8. Wilder, P.J., M.M. Desler, **T.K. Nowling**, and A. Rizzino. 2001. Isolation and Characterization of the Murine Transforming Growth Factor-beta2 Promoter. *Gene* 270:201-209.

9. Johnson, L.R., T.K. Johnson, M. Desler, T.A. Luster, **T.K. Nowling**, R.E. Lewis and A. Rizzino. 2002. Effects of B-Myb on gene transcription. *Journal of Biological Chemistry* 277:4088-4097.
10. Kim, J.-H., P.J. Wilder, J.-W. Hou, **T.K. Nowling** and A. Rizzino. 2002. Activation of the Murine Type II Transforming Growth Factor-beta Receptor gene: Upregulation and function of the transcription factor Elf-3/Ert/Esx/Ese-1. *Journal of Biological Chemistry* 277:17520-17530.
11. **Nowling, T.K.**, M. Desler, C. Kuszynski and A. Rizzino. 2002. Transfection of embryonal carcinoma cells at high efficiency using liposome-mediated transfection. *Molecular Reproduction and Development* 63:309-17.
12. **Nowling, T.K.**, C.T. Bernadt, L.R. Johnson, M. Desler and A. Rizzino. 2003. The co-activator p300 physically associates with and can mediate the action of the distal enhancer of the FGF-4 gene. *Journal of Biological Chemistry*, 278:13696-705.
13. Wiebe, M.S., **T.K. Nowling** and A. Rizzino. 2003. Identification of novel domains within Sox-2 and Sox-11 involved in autoregulation of DNA binding and partnership specificity. *Journal of Biological Chemistry*, 278:17901-11.
14. Kopp, J.L., P.J. Wilder, M. Desler, J.H. Kim, J. Hou, **T. Nowling**, and A. Rizzino. 2004. Unique and selective effects of five Ets family members, Elf3, Ets1, Ets2, PEA3 and PU.1, on the promoter of the type II TGF-beta receptor gene. *Journal of Biological Chemistry*, 279:19407-20.
15. Bernadt CT, **Nowling T**, and Rizzino A. 2004. Transcription factor Sox-2 inhibits co-activator stimulated transcription. *Molecular Reproduction and Development* 69:260-267.
16. Bernadt C, **Nowling T**, Wiebe M, and Rizzino, A. 2005. NF-Y Behaves As a Bimodal Transcription Factor That Can Stimulate or Repress the *FGF-4* Promoter in an Enhancer-Dependent Manner. *Gene Expression*, 12:193-212.
17. Crosby M, Svenson J, Gilkeson G, and **Nowling T**. 2005. A novel PPAR response element in the murine iNOS promoter. *Molecular Immunology* 42:1303-10.
18. Crosby MB, Zhang J, **Nowling TM**, Svenson JL, Nicol CJ, Gonzalez FJ, Gilkeson GS. 2006. Inflammatory modulation of PPARgamma expression and activity. *Clin Immunol.* 118:276-83
19. **Nowling, TK** and G Gilkeson. 2006. Regulation of Fli1 gene expression and lupus. *Autoimmunity Reviews*, 5:377-382.
20. Bouali H, Nietert P, **Nowling T**, Pandey J, Dooley MA, Cooper G, Harley J, Kamen DL, Oates J, Gilkeson G. 2007. Association of the G-463A Myeloperoxidase Gene Polymorphism with Renal Disease in Blacks with Systemic Lupus Erythematosus, *Journal of Rheumatology*, 34:2028-34.
21. **Nowling TK**, Fulton JD, Gilkeson G. 2008. Ets Factors and a Newly Identified Polymorphism Regulate Fli1 Promoter Activity in Lymphocytes. *Molecular Immunology*, 45:1-12.
22. Svenson J, Chike-Harris K, Amria M and **Nowling TK**. The mouse and human Fli1 genes are similarly regulated by Ets factors in T cells, submitted to *Genes and Immunity*.
23. Svenson J, Nietert P, Amria M, Gilkeson G and **Nowling TK**. Association of a polymorphic microsatellite in the Fli1 promoter with lupus, *In Preparation*.

#### **Abstracts/Presentations**

1. **Mann, T.**, D. Federson, K. Meyer, and D. Wiens. 1990. The effect of isotretinoin on cell proliferation and heart vesicle form and function development in the chick embryo. Iowa Academy of Sciences Annual Meeting, Des Moines, IA.
2. Wiens, D., **T. Mann**, D. Federson, W. Rathmell, and B. Franck. 1991. Isotretinoin and early heart development in the chick embryo: Effects on cell proliferation, actin synthesis, and the development of heart contractions. FASEB Annual Meeting, Atlanta, GA.
3. Wiens, D., J. Rathmell, **T. Mann**, C. Hall, and S. Briggs. 1992. Fibronectin distribution during heart formation. American Society for Cell Biology Annual Meeting, Denver, CO, *Molec. Biol. Cell* 3:313a.

4. **Nowling T.**, C. Nguyen-Huu, and C. Tuggle. 1993. Regulatory elements involved in spatial-specific expression in the mouse. Symposium in Developmental Biology, University of Minnesota, St. Paul, MN.
5. **Nowling, T.**, W. Zhou, C. Nguyen-Huu, and C. Tuggle. 1994. Identification of proteins binding to regulatory elements of the Hoxa-5 spatial-specific enhancer. Mouse Molecular Genetics Meeting, Cold Spring Harbor, NY.
6. **Nowling, T.K.**, W. Zhou, C. Nguyen-Huu, and C.K. Tuggle. 1996. Cis-acting elements and trans-acting factors regulating Hoxa-5: A gradient of binding activity to a brachial spinal cord element. Symposium in Developmental Biology, University of Minnesota, St. Paul, MN.
7. Johnson, L.R., **T.K. Nowling** and A. Rizzino. 1998. Roles of NF-Y and Sox-2 in the transcription of the FGF-4 gene. FASEB Meeting: "Transcriptional regulation during cell growth, differentiation and development", Snowmass Village, CO.
8. **Nowling, T.K.**, Johnson, L.R. and A. Rizzino. 2000. Identification of the transactivation domain of the transcription factor Sox-2 and an associated co-activator. FASEB Meeting: "Transcriptional regulation during cell growth, differentiation and development", Snowmass Village, CO.
9. Luster, T.A., **T.K. Nowling** and A. Rizzino. 2000. Effects of three Sp1 motifs on the transcription of the FGF-4 gene. FASEB Meeting: "Transcriptional regulation during cell growth, differentiation and development", Snowmass Village, CO.
10. **Nowling, T.K.** "Identification of the transactivation domain of Sox-2 and an associated co-activator". Molecular, Cellular and Developmental Biology Program Seminar Series, Iowa State University, Ames IA, Jan. 26, 2000.
11. **Nowling, T.**, C. Bernadt, L. Johnson, M. Desler and A. Rizzino. 2001. The role of p300 in the regulation of the FGF-4 gene. AACR Special Conferences in Cancer Research: "Cancer and Chromosomal Organization/Epigenetics of Cancer", Palm Desert, CA.
12. Wiebe, M.S., **T. Nowling** and A. Rizzino. 2001. Functional characterization of Sox transcription factors. AACR Special Conferences in Cancer Research: "Cancer and Chromosomal Organization/Epigenetics of Cancer", Palm Desert, CA.
13. Bernadt, C.T., **T.K. Nowling** and A. Rizzino. 2001. Effects of the transcription factor Sox-2 on co-activator-stimulated transcription. AACR Special Conferences in Cancer Research: "Cancer and Chromosomal Organization/Epigenetics of Cancer", Palm Desert, CA.
14. Luster, T.A., **T.K. Nowling**, K. Lamb and A. Rizzino. 2001. Effects of three Sp1 motifs on the transcription of the FGF-4 gene. AACR Special Conferences in Cancer Research: "Cancer and Chromosomal Organization/Epigenetics of Cancer", Palm Desert, CA.
15. Fulton, J.D., S. Gallant, J. Zhang, G. Gilkeson and **T. Nowling**. 2005. The role of Fli1 in the pathogenesis of lupus. Federation of Clinical Immunology Societies Annual Meeting, Boston, MA.
16. Fulton, J.D., G. Gilkeson and **T. Nowling**. 2005. The role of Fli1 in the pathogenesis of lupus. American College of Rheumatology Annual Meeting, San Diego, CA.
17. Fulton, J.D., G. Gilkeson and **T. Nowling**. 2006. Regulation of Fli1 in lymphocytes: Identification of a polymorphism in lupus prone mice. Gene Expression and Signaling in the Immune System, Cold Spring Harbor, NY, 2006.
18. Svenson, J., K. Chike-Harris, M. Amria and **T. Nowling**. 2008. Differential regulation of Fli1 by Ets factors in lymphocytes. Gene Expression and Signaling in the Immune System, Cold Spring Harbor, NY.
19. Svenson, J., K. Chike-Harris, M. Amria and **T. Nowling**. 2008. Differential regulation of Fli1 by Ets factors in lymphocytes. NIH Career Development Symposium, Washington, D.C.
20. Svenson, J., K. Chike-Harris, M. Amria, **T. Nowling**. 2008. Differential binding of Ets factors to the Fli1 gene promoter in lymphocytes of MRL/lpr lupus mice. American College of Rheumatology Annual Meeting, San Francisco, CA.