

Mary E. White
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EDUCATION

B.S. (Zoology) University of Texas at Austin, 1982.
Ph.D. (Developmental Biology, Dr. W.R. Jeffery) University of Texas at Austin, 1989.
Dissertation: Analysis of the Ascidian Cytoskeleton: Temporal and Spatial Expression of an Invertebrate Intermediate Filament Gene.

POSTDOCTORAL EXPERIENCE

Sept. 1989-Oct. 1990. University of Texas at Austin. Dr. James J. Bull and Dr. David M. Hillis. Using Bacteriophage T7 as an experimental system to study phylogenetic reconstruction methods. | |
Jan. 1991-August 1991. The Salk Institute; La Jolla, CA. Dr. Merl Hoekstra.
Homologous recombination in yeast-- using a yeast artificial chromosome system to map large regions of DNA (i.e. Human chromosomes).

PROFESSIONAL SOCIETIES

American Association for the Advancement of Science
Society for the Study of Amphibians and Reptiles
American Society of Ichthyologists and Herpetologists
Herpetologists' League
Ecology and Evolutionary Biology Group of Southeastern Louisiana

AWARDS □

President's Award for Excellence in Teaching; Southeastern Louisiana University, 2002.

Teaching Experience

General Biology I
Cell Biology
Animal Development Lecture and Lab
Biology Senior Seminar
Graduate Molecular Biology
Graduate Seminar—How to Be A Graduate Student

Research Interests

Research projects on-going in the laboratory include:

Evolution of germ cell determination in vertebrates-- This project is in collaboration with Dr. Andrew Johnson from the University of Nottingham. We have been studying mode of germ cell determination in vertebrates, and how it may effect macroevolution by release of a developmental constraint.

Physiological effects of saltwater intrusion on amphibians—This is a recent project in which we are studying the effects of salinity on the development of amphibians. This work currently focuses on the effects of varying concentrations of salt on the expression of “heat-shock” proteins in frog embryos.

Phylogenetic Relationships among snakes—this work includes a variety of projects including relationships of palm pitvipers of the genus *Bothriechis* and an investigation on foxsnakes.

Recent Publications

White, M. E. (2011) Oogenesis and Early Embryogenesis. Pp. 97-118. In R.D. Aldridge and D. M. Sever (eds), *Reproductive biology and phylogeny of snakes*. Volume 9, Reproductive Biology and Phylogeny series, B. G. M. Jamieson (ed). CRC Press, Boca Raton, Florida.

Crother, B.I., M. E. White, J.M. Savage, M.E. Eckstudd, M.R. Graham and D.W. Gardner (2011) A Reevaluation of the Status of the Foxsnakes *Pantherophis gloydi* Conant and *P. vulpinus* Baird and Girard (Lepidosauria). ISRN Zoology Volume 2011.

Eckstudd, M.E., D.M. Sever, **M.E. White** and B.I. Crother. (2009). Phylogenetic Analysis of Sperm Storage in Female Squamates Chapter 5 in L.T. Dahnof (Ed.), *Animal Reproduction: New Research Developments* (pp. 185-218). NOVA Science Publishers, Inc., Happaugue, New York.

Crother, B.I., **M.E. White**, D. Gardner and J. Warms (2009). Giant Canadian Snakes and Forensic Phylogenetics. *Contemporary Herpetology* 2009(2).

Crother, B. I., **M. E. White** and A.D. Johnson. (2007) Inferring Developmental Constraint and Constraint Release: Primordial Germ Cell Determination as Examples. *J. of Theoretical Biology*.

White, M.E., M. Kelly-Smith, and B.I. Crother. Higher level snake phylogeny as inferred from 28S ribosomal DNA and morphology. (2005). Book chapter IN *Ecology and Evolution in the Tropics* (eds., M. Donnelly, B. Crother, C. Guyer, M. Wake, M. White), University of Chicago Press (in press)

Johnson, A., R.F. Bacharova, B.I. Crother, **M.E. White**, R. Patient, M. Drum, and T. Masi (2003). Regulative Germ Cell Specification in Axolotl Embryos: A Primitive Trait Conserved in the Mammalian Lineage. *Phil. Trans. R. Soc. London*:358:1371.

Johnson, A., M. Drum, R. Bachvarova, T. Masi, **M. E. White**, and B. Crother. (2003) Evolution of Pre-determined Germ Cells in Vertebrate Embryos. Implications for macroevolution. *Evolution and Development* 5: 414-431.

Taggart, T., B.I. Crother, and **M.E. White** (2002). Palm-pitviper (*Bothriechis*) phylogeny, mtDNA and consilience. *Cladistics*. 17,#4.

White M.E. and B.I. Crother. (2000). Gene conversions may obscure actin gene family relationships. *J. Mol. Evol.* 50:170-174.

Books and Lab Manuals:

Donnelly, M., B. I Crother, C. Guyer, M. Wake, and **M.E. White**. (2005). Editors. *Ecology and Evolution in the Tropics. A Herpetological Perspective*. University of Chicago Press. Chicago, IL.,

M.E. White and F.M. Campo. *Investigations in Biology. I. Cellular and molecular biology and genetics*. McGraw Hill Companies. **Four Editions: 1999, 2001, 2004 and 2008.**

M.E. White and F.M. Campo. *Investigations in Biology. II. Evolution, Diversity and Ecology*. McGraw Hill Companies. **Three Editions: 1999, 2001 and 2004.**

F. M. Campo and **M.E. White** (2008). *Investigations in Biology: Evolution, Diversity and Ecology*. Primis Custom Publishing.

Recent Presentations:

Effects of Salinity on Development in Green Tree Frogs (*Hyla cinerea*). World Congress of Herpetology, August 2012, Vancouver, British Columbia.

Investigating Primordial Germ Cell Development Using Germ Cell-Specific Genes in Fish. With Laura Jackson and Brian Crother. World Congress of Herpetology, August 2012, Vancouver, British Columbia.

Salinity and Heat Shock Proteins in Green Treefrogs (*Hyla cinerea*). With Kayla Basham and Laura Jackson. Joint Meeting of Ichthyologists and Herpetologists, July 2010, Providence RI.

Unusual Bullfrog (*Lithobates catesbeianus*) Tadpole Phenotype May Indicate Hybrids With Brian Crother, Ronn Altig and James Austin. Joint Meeting of Ichthyologists and Herpetologists, July 2009, Portland OR.

Phylogenetic Analysis of Sperm Storage in Female Squamates. Mallory Eckstut, David Sever, Mary White, and Brian Crother, Joint Meeting of Ichthyologists and Herpetologists, July 2009, Portland OR.

Do Snakes have Predetermined Germ Cells? with B. Crother. Joint Meeting of Ichthyologists and Herpetologists, July 2008, Montreal, Canada.

A Re-examination of Relationships among the Palm Pit Vipers (*Bothriechis*) with B. Crother and J. Keeling. Joint Meeting of Ichthyologists and Herpetologists, July 2008, Montreal, Canada.

Phylogeography of *Necturus beyeri* (Amphibia; Proteidae) with R. Chabarria, B. Crother, H. Bart, K. Tenaglia and C. Guyer. Joint Meeting of Ichthyologists and Herpetologists, July 2008, Montreal, Canada.

Primordial Germ Cell Determination in Fish. With Brian Crother and Andrew Johnson. Joint Meeting of Ichthyologists and Herpetologists, July 2006, New Orleans, LA.

Squamate Phylogeny. With Brian Crother, Frank Burbrink, and Alec Pyron. Joint Meeting of Ichthyologists and Herpetologists, July 2006, New Orleans, LA.

Women: Mad Scientists, or Just A Little Annoyed? Southeastern Louisiana University Women's History Month Presentation. March 2006.

Grants:

NSF/ Louisiana Board of Regents P-Fund Grant 2009-2010. Biochemical Effects of Saltwater Intrusion on Amphibian Development (A Pilot Study).

Louisiana Board of Regents Enhancement Program. 2006-2007. Enhancement of instruction and research in the biological sciences through acquisition of a workgroup cluster. With Kyle Piller and Brian Crother.

NSF CAREER GRANT: Laboratory Evolution: Creating Known Phylogenies. 1996-2002.

NSF-RUI Determination of Higher Order Relationships Among Snakes Using Ribosomal DNA Sequences. With Brian I. Crother. 1992-1998,

Louisiana Education Quality Support Fund - Determination of Higher Order Relationships Among Snakes Using Ribosomal DNA Sequences. With Brian I. Crother. 1992.

Louisiana Education Quality Support Fund Instrumentation Program-- Science and the Future: Integrating Molecular Biology into a Classical Curriculum. With Brian I. Crother and Patricia L. Bounds. 1994-1995.

NSF Instrumentation and Laboratory Improvement-- Science and the Future: Integrating Molecular Biology into a Classical Curriculum. With Brian I. Crother, Patricia L. Bounds, and Edward T. Nelson. 1994-96

Louisiana Education Quality Support Fund Instrumentation Grant-- A Perpetual Learning Laboratory for the Biological Sciences. With Gary Shaffer and Michael Greene. 1997-1998.

NSF Research Experiences for Undergraduates Supplement; with B. I. Crother. 1994.

NSF Research Opportunity Award Supplement, with B. I. Crother for Steven Werman. 1995.

Graduate Students:

Laura Jackson 2011

Kelly Ryan 2010

Ryan Chabarria, M.S. 2008

Angel Reine, M.S. 2007
Damien Green, M.S. 2007
Maria Brown, M.S. 2004
David Gardner, M.S. 2003
Eric O'Neil, M.S. 2002
Lisa Aucoin, M.S. (posthumous) 2001
Maria Kelly Smith, M.S. 2000
Dorothy Scholl-Meeker, M.S. 1999
Brian Warren, M.S. 1999
Travis Taggart, M.S. 1998
Christie Watkins, M.S. 1996

Analysis of the various cytoskeletons and cytoskeleton proteins play very important role on the drug targeting. Different types of analytical instruments are used for the analysis of cytoskeleton elements and their role on the different function and diseases. The binding of the major cytoskeleton fiber proteins themselves (except for some intermediate filaments) to phospholipids appears generally to be relatively weak and transient (Resch et al., 2002). Linking of cytoskeletal filaments with directly to the lipid bilayer, intact cells assemble complexes of various proteins at points where the cytoskeleton attaches to the membrane. Spatiotemporal Analysis of Flow-Induced Intermediate Filament Displacement in Living Endothelial Cells. [tmp.1106929732.pdf](https://arxiv.org/abs/1106.9297). Spatial and temporal normalization of the illumination intensity allowed quantitative analysis of GFP-vimentin fluorescence intensity (Hiraoka et al., 1990; Kam et al., 1993). After flow loop assembly and chamber placement on the microscope stage, cells were selected that expressed GFP-vimentin distributed to the endogenous IF network. Spatial distribution of flow-induced IF movement. A displacement index, $DI(t_i, t_j)$, was computed as a measure of the degree of filament movement during a time interval. If $DI = 0$, then the fluorescence intensity distribution functions overlap completely, indicating that no movement occurred during the interval. Intermediate filaments are a primary component of the cytoskeleton, although they are not found in all eukaryotes, and are absent in fungi and plants [1]. These filaments, which extend throughout the cytoplasm and inner nuclear membrane are composed from a large family of proteins that can be broadly grouped into five classes. IF assembly begins with the folding of IF proteins into a conserved alpha-helical rod shape, followed by a series of polymerization and annealing events that lead to the formation of filaments roughly 8 to 12 nm in diameter. This is made possible by extensive interactions between the constituent protofilaments of an intermediate filament, which enhance its resistance to compression, twisting, stretching and bending forces.