

Matthew J. Jenny, IV

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MAJOR RESEARCH INTERESTS:

My primary interests are in the field of environmental/ecological genomics; specifically in the development and utilization of genomic based approaches in marine organisms for a 'systems biology' approach towards understanding the interactions between ecosystem and organismal health. Related to this is a strong interest in the genomic and molecular processes involved in adaptation to environmental and ecological factors.

EDUCATION:

- 2005** **Ph.D., Molecular and Cellular Biology & Pathobiology**, Marine Biomedicine and Environmental Sciences Center, Medical University of South Carolina, Charleston, SC
Dissertation Title: Characterization of Metallothionein Gene Diversity in the American Oyster, *Crassostrea virginica*, by Genomic, Transcriptomic and Proteomic Approaches.
Advisor: Dr. Robert W. Chapman
- 1999** **M.S., Environmental Science, Toxicology focus**, Medical University of South Carolina/University of Charleston, Charleston, SC
Thesis Title: Effects of Ammonium Perchlorate on Thyroid Hormone Levels, Hematopoiesis, and Immune Status of Female B6C3F1 Mice
Advisor: Dr. Deborah Keil
- 1995** **B.S., Biology**, University of South Alabama, Mobile, AL
Minors in chemistry and anthropology

RESEARCH/WORK EXPERIENCE:

- 2005-** **Postdoctoral Investigator**, Woods Hole Oceanographic Institution, Woods Hole, MA
- Characterization of *AhR/AhRR* pathway in zebrafish, *Danio rerio*
 - RNA knockdown and rescue
 - Comparative fish genomics (*D. rerio*, *Fundulus heteroclitus*)
- 1999-2005** **Graduate Student**, Medical University of South Carolina, Charleston, SC
- Characterization of *metallothionein* gene diversity in the American oyster, *Crassostrea virginica*
 - Establishment of an expressed sequence tag (EST) database for *Crassostrea virginica* (<http://www.marinegenomics.org>)
 - Development and characterization of a *Crassostrea* cDNA microarray
 - Development and characterization of *Crassostrea virginica* and *C. gigas* BAC libraries
- 1998-1999** **Research Assistant**, Medical University of South Carolina, Charleston, SC
- Characterization of effects of individual and mixed exposures to N,N-diethyl-m-toluamide (DEET), pyridostigmine bromide (PYR), and JP-8 jet fuel on immune function in B6C3F1 mice.

- 1997-1999** **Graduate Student**, Medical University of South Carolina, Charleston, SC
- Evaluation of the immunotoxicological effects of exposure to ammonium perchlorate in drinking water given to B6C3F1 mice.
- 1996-1997** **Laboratory Director**, Public Service District #1, Hilton Head Island, SC
- Responsible for the analysis of water and wastewater.
- 1993-1996** **Laboratory Manager**, AQUASTAR, Mobile, AL (subsidiary of TAI Env. Sciences, Inc.)
- Responsible for all aspects of aquaculture facilities including culture of marine and freshwater algae, breeding several species of freshwater and marine fish as well as several marine invertebrates including oysters, echinoderms, and several species of crustacea.
- 1989-1996** **Laboratory Supervisor**, TAI Environmental Sciences, Inc. Mobile, AL
- Development and implementation of QA/QC program based on GLP protocol. Bioassay analysis of water and wastewater associated with NPDES protocol as well as soil and sediment testing under various EPA hazardous waste protocols. Ecological assessment and benthic studies. 40 hour Corps of Engineers wetlands delineation course.

TEACHING/MENTORING EXPERIENCE:

- 2006** **Co-mentor**, Annie Brock, WHOI Undergraduate Summer Student Fellow
- 2004-2006** **Thesis Advisory Committee Member**, Andrew Baltzegar, graduate student, Grice Marine Laboratory, College of Charleston, Charleston, SC
- 2004 & 2005** **Guest Lecturer**, Immunology of Marine Organisms, College of Graduate Studies, Medical University of South Carolina
- 2004** **Co-mentor**, Latasha Amisial, graduate student rotation, Medical University of South Carolina
- 2003** **Guest Lecturer**, Genetics and Genomics, College of Graduate Studies, Medical University of South Carolina

PEER REVIEWED PUBLICATIONS:

Cole W. Matson, Bryan W. Clark, **Matthew J. Jenny**, Carrie R. Fleming, Mark E. Hahn, and Richard T. Di Giulio. (2008). Development of the morpholino gene knockdown technique in *Fundulus heteroclitus*: a tool for studying molecular mechanisms in an established environmental model. *Aquatic Toxicology* (submitted manuscript).

Jared V. Goldstone, Maria E. Jönsson, Bruce R. Woodin, **Matthew J. Jenny**, D. R. Nelson, and John J. Stegeman. (2008). A new cytochrome P450 1 subfamily, CYP1D, similar to CYP1As: Constitutive expression in zebrafish and relationship to a human CYP pseudogene. *Gene* (in revision).

Brad R. Evans, Sibel I. Karchner, Lenka L. Allan, Richard S. Pollenz, Robert L. Tanguay, **Matthew J. Jenny**, David H. Sherr, and Mark E. Hahn. (2008). Repression of aryl hydrocarbon receptor (AHR) signaling by AHR repressor (AHRR): Role of DNA binding and competition for ARNT. *Molecular Pharmacology* 73(2): 387-398.

Maria E. Jönsson, **Matthew J. Jenny**, Bruce W. Woodin, Mark E. Hahn, and John J. Stegeman. (2007). Role of AHR2 in the expression of novel cytochrome P450 1 family genes, cell cycle genes,

and morphological defects in developing zebrafish exposed to 3,3',4,4',5-pentachlorobiphenyl (PCB126). *Toxicological Sciences* 100(1): 180-193.

Matthew J. Jenny, Robert W. Chapman, Annalaura Mancina, Yian A. Chen, David J. McKillen, Hal Trent, Paul Lang, Jean-Michel Escoubas, Evelyne Bachere, Viviane Boulo, Z. John Liu, Paul S. Gross, Charles Cunningham, Pauline M. Cupit, Arnaud Tanguy, Ximing Guo, Dario Moraga, Isabelle Boutet, Arnaud Huvet, Sylvain De Guise, Jonas S. Almeida, Gregory W. Warr (2007). A cDNA Microarray for *Crassostrea virginica* and *C. gigas*. *Marine Biotechnology* 9(5): 577-591.

Charles Cunningham, Junichi Hikima, **Matthew J. Jenny**, George Fang, Chris Saski, Robert W. Chapman, Mats Lundqvist, Rod Wing, Pauline M. Cupit, Paul S. Gross, Gregory W. Warr, Jeff Tomkins (2006). New Resources for Marine Genomics: BAC Libraries for the Eastern and Pacific oysters (*Crassostrea virginica* and *C. gigas*). *Marine Biotechnology* 8(5): 521-533.

Matthew J. Jenny, Gregory W. Warr, Amy H. Ringwood, David A. Baltzegar, Robert W. Chapman (2006). Regulation of Metallothionein Genes in the American Oyster (*Crassostrea virginica*): Ontogeny and Differential Expression in Response to Different Stressors. *Gene* 379: 156-165.

David J. McKillen, Yian A. Chen, Shuyuan Wu, Chuming Chen, **Matthew J. Jenny**, Javier Robalino, David C. McLean, Paul S. Gross, Robert W. Chapman, Gregory W. Warr, Jonas S. Almeida (2005). Marine Genomics: A Clearinghouse for Genomic and Transcriptomic Data of Marine Organisms. *BMC Genomics* 6(1): 34.

Yian A. Chen, David J. McKillen, Shuyuan Wu, **Matthew J. Jenny**, Paul S. Gross, Gregory W. Warr, Jonas S. Almeida (2004). Optimal cDNA Microarray Design Using Expressed Sequence Tags (ESTs) for Organisms with Limited Genomic Information. *BMC Bioinformatics* 5(1): 191

Matthew J. Jenny, Amy H. Ringwood, Kevin Schey, Gregory W. Warr, and Robert W. Chapman (2004) Diversity of Metallothioneins in the American oyster, *Crassostrea virginica*, Revealed by Transcriptomic and Proteomic Approaches. *European Journal of Biochemistry* 271: 1702-1712.

Deborah E. Keil., D. Alan Warren, **Matthew J. Jenny**, Jackie G. EuDaly, Joshua Smythe, Margie M. Peden-Adams (2003). Immunological Function is Altered in F1 Mice Exposed to JP-8 Jet Fuel During *In Utero* Development. *Toxicological Sciences* 76: 347-356.

Matthew J. Jenny, Amy H. Ringwood, Eric R. Lacy, Alan J. Lewitus, Jason W. Kempton, Paul S. Gross, Gregory W. Warr, and Robert W. Chapman (2002). Potential Indicators of Stress Response Identified by Expressed Sequence Tag Analysis of Hemocytes and Embryos from the American Oyster, *Crassostrea virginica*. *Marine Biotechnology* 4: 81-93.

MANUSCRIPTS IN PREPARATION:

Matthew J. Jenny, Gregory W. Warr, David A. Baltzegar, David Coulliard, Jed V. Goldstone, and Robert W. Chapman. (2007). A Phylogenetic Comparison of Molluscan Metallothioneins based on Genomic and Transcriptomic Analysis of Three Distinct Gene Families from *Crassostrea virginica*.

Mark E. Hahn, Sibel I. Karchner, Diana G. Franks, Bruce R. Woodin, **Matthew J. Jenny**, Katie L. Barott, Michael J. Cipriano, and Andrew G. McArthur. The Transcriptional Response to Oxidative Stress in Zebrafish Embryos.

Matthew J. Jenny, Sibel Karchner, Diana Franks, Bruce W. Woodin, John J. Stegeman, and Mark E. Hahn. (2007). Interaction between the aryl hydrocarbon receptor and the AHR repressor in regulating 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)-responsive genes.

David A. Baltzegar, **Matthew J. Jenny**, Demetri D. Spyropoulos, and Robert W. Chapman. Characterization of a *Hoxa2* homolog in *Fundulus* (Linnaeus) with observations of the developmental expression pattern.

TECHNICAL PUBLICATIONS:

Keil, D.; Warren, D. A.; **Jenny, M.**; EuDaly, J.; Dillard, R. (1999). Final Report: Effects of Ammonium Perchlorate on Immunotoxicological, Hematological, and Thyroid Parameters in B6C3F1 Female Mice. Environmental Protection Agency, Report no. DSWA01-97-0008.

OTHER PUBLICATIONS:

Matthew J. Jenny and Robert W. Chapman (2004). Ecogenomics: New Approach to Understanding Oyster Health. *Global Aquaculture Advocate* **7(3)**: 57-58.

GRANTS AND AWARDS:

- 2003-2005** EPA STAR Graduate Fellowship, *Development of a Predictive Model to Determine the Extent of Cellular Damage and Metals Contamination Based on Gene Expression Profiles in Oysters, Crassostrea virginica* (Jenny, stipend, tuition and fees, \$5000/year research expense allowance)
- 2002-2003** National Estuarine Reserve Research (NERR) Fellowship, *Identification of Early Warning Indicators of Environmental Stress in the ACE Basin (South Carolina) Using Gene Expression Profiles from Oysters, Crassostrea virginica* (Jenny and Chapman, Total Award \$25,000)
- 2001** Slocum-Lunz Foundation Grant, *Cloning and Characterization of Metallothionein Isoforms from Crassostrea virginica* (Jenny, \$800)

PROFESSIONAL AFFILIATIONS:

Society of Toxicology (1997)
American Association for the Advancement of Science (1999)

PROFESSIONAL PRESENTATIONS/ABSTRACTS:

M. E. Jönsson, **M. J. Jenny**, B. R. Woodin, M. E. Hahn, J. J. Stegeman (May, 2007). Role of AHR2 in the expression of cytochrome P450 family genes, cell cycle genes, and morphological defects in developing zebrafish exposed to PCB126. Pollutant Responses in Marine Organisms (PRIMO 14). Florianópolis, Santa Catarina, Brazil.

M. J. Jenny, S. I. Karchner, D. G. Franks, M. Jönsson, J. J. Stegeman, M. E. Hahn (March, 2007). Interaction between the aryl hydrocarbon receptor and AHR repressor in regulating 2,3,4,5-tetrachlorodibenzo-p-dioxin (TCDD)-responsive genes. Society of Toxicology Annual Conference. Charlotte, North Carolina, USA.

M. J. Jenny, G. W. Warr, A. Mancina, C. Cunningham, Y. A. Chen, P. Lang, P. Gross, H. Trent, D. McKillen, J. Almeida, R. W. Chapman (July, 2006). Design and Characterization of a Multi-Species Oyster cDNA Microarray. International Society of Developmental and Comparative Immunology, Charleston, South Carolina, USA.

M. J. Jenny, G. W. Warr, C. Cunningham, A. Mancia, Y. A. Chen, H. Trent, D. McKillen, J. Almeida, R. W. Chapman (Feb, 2006). Design and Characterization of a Multi-Species Oyster cDNA Microarray. National Shellfish Association, Monterey, CA, USA.

M. J. Jenny, A. H. Ringwood, K. Schey, G. W. Warr, R. W. Chapman (March, 2004). A Functional Genomics and Proteomics Approach to Metallothionein Gene Discovery in the American Oyster, *Crassostrea virginica*. World Aquaculture Society, Honolulu, HI, USA

R. W. Chapman, **M. J. Jenny**, P. S. Gross, A. H. Ringwood, J. A. F. Robledo, G. R. Vasta, J. Liu, C. Cunningham, M. Gomez-Chiarri, J. M. Escoubas, E. Bachere, P. Roche, J. Almeida, Y. A. Chen, G. W. Warr (March, 2004). Ecogenomics: The Use of cDNA Microarray as a Diagnostic Tool for Characterizing Environmental Responses and Host-Parasite Interaction in the American Oyster, *Crassostrea virginica*. World Aquaculture Society, Honolulu, HI, USA

M. L. Lundqvist, **M. J. Jenny**, G. W. Warr, P. S. Gross, Jose A. F. Robledo, G. R. Vasta, Z. J. Liu, J. Tomkins, G. C. Fang, C. Saski, M. Gomez-Chiarri, J.-M. Escoubas, E. Bachere, P. Roche, D. Hedgecock, and R. W. Chapman (January, 2004). Current State of Oyster (*Crassostrea*) Functional Genomics Resources. Plant, Animal & Microbe Genomes Conference, San Diego, CA.

M. J. Jenny, A. H. Ringwood, K. Schey, G. W. Warr, R. W. Chapman (July, 2003). Characterization of a Novel Metallothionein Family in the American Oyster, *Crassostrea virginica*. International Society for Developmental and Comparative Immunology, St. Andrews, Scotland, UK

M. J. Jenny, G. W. Warr, A. H. Ringwood, P. S. Gross, J. A. F. Robledo, G. R. Vasta, R. W. Chapman (July, 2003). ECOGENOMICS: The Use of Gene Expression Profiles for Evaluating the Relationship between Ecosystems and *Crassostrea virginica*. International Society for Developmental and Comparative Immunology, St. Andrews, Scotland, UK

M. J. Jenny, G. W. Warr, A. H. Ringwood, P. S. Gross, J. A. F. Robledo, G. R. Vasta, R. W. Chapman (May, 2003). ECOGENOMICS: The Use of Gene Expression Profiles for Evaluating the Relationship between Ecosystems and *Crassostrea virginica*. Pollutant Responses in Marine Organisms (PRIMO 12), Tampa, FL, USA

M. J. Jenny, A. H. Ringwood, K. Schey, G. W. Warr, R. W. Chapman (May, 2003). Metallothionein Diversity in the American Oyster, *Crassostrea virginica*. Pollutant Responses in Marine Organisms (PRIMO 12), Tampa, FL, USA

M. J. Jenny, G. W. Warr, Z. J. Liu, G. R. Vasta, A. H. Ringwood, P. S. Gross, E. R. Lacy, J. Almeida, R. W. Chapman (November, 2002). ECOGENOMICS: The Use of Gene Expression Profiles for Evaluating the Relationship between Ecosystems and *Crassostrea virginica*. International Conference for Shellfish Restoration, Charleston, SC

M. J. Jenny, A. H. Ringwood, K. Schey, G. W. Warr, R. W. Chapman (November, 2002). Characterization of a Novel Metallothionein Family in *Crassostrea virginica*. International Conference for Shellfish Restoration, Charleston, SC

M. J. Jenny, G. W. Warr, A. H. Ringwood, E. R. Lacy, A. J. Lewitus, J. W. Kempton, P. S. Gross, R. W. Chapman (January 2002). Expressed Sequence Tag Analysis of Hemocytes and Embryos from the American Oyster, *Crassostrea virginica*, used to Identify Potential Biomarkers. Plant, Animal & Microbe Genomes X Conference, San Diego, CA.

M. J. Jenny, A. H. Ringwood, E. R. Lacy, R. W. Chapman, and G. W. Warr (July, 2001). The Cloning and Characterization of Metallothionein Isoforms from Oyster Embryos, *Crassostrea virginica*. Pollutant Responses in Marine Organisms (PRIMO 11), Plymouth, Devon, UK.

M. J. Jenny D. A. Warren, J. Eudaly, R. B. Dillard, and D. E. Keil (March, 2000). Dietary Iodine Modulates the Immunotoxicity of Ammonium Perchlorate. Society of Toxicology Annual Conference, Philadelphia, PA.

M. J. Jenny D. A. Warren, J. Eudaly, R. B. Dillard, and D. E. Keil (March, 1999). Effects of Ammonium Perchlorate on Thyroid, Hematological, and Immunotoxicological Parameters in B6C3F1 Female Mice. Society of Toxicology Annual Conference, New Orleans, LA.