

**Curriculum Vitae**  
Xabier Arzuaga, Ph.D.

**Contact information:**

Toxicology and Nutritional Sciences  
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**Education:**

- Ph.D.** Toxicology, University of Kentucky, Lexington, Kentucky, U.S.A. 2004  
“Mechanisms of resistance to halogenated and non-halogenated AHR ligands in chronically contaminated killifish populations”.
- B.S.** Coastal Marine Biology (magna cum laude) University of Puerto Rico, 1998  
Humacao, Puerto Rico.

**Professional Positions and Job Related Training:**

- Postdoctoral Fellow: University of Kentucky Superfund Basic Research Program and Animal and Food Sciences, College of Agriculture, University of Kentucky, Lexington, KY (November 2004 - present).
- Teaching Assistant: General Biology, Biology Department, University of Puerto Rico, Rio Piedras, PR (Fall Semester 1998).
- Completed the Hazardous Materials Incident Response Operations course offered at Tetra Tech NUS (Cincinnati OH; January 22-26, 2007).

**Research Technical Experience:**

*Whole organism* - fish aquaculture, experience with dissection and tissue sampling of fish and rodent research models, primary cell culture, and coastal marine ecology field work via SCUBA diving.

*Molecular and Cell Biology* - Isolation of protein, DNA, RNA, from whole tissue and cell culture, PCR, plasmid cloning, and isolation, agarose gel electrophoresis, northern blotting, sodium dodecyl sulfate-polyacrylimide gel electrophoresis (SDS-PAGE), real time PCR (RT-PCR), and fluorescent microscopy.

*Enzymology* - spectrophotometry, fluorometry, and immunoblotting.

*Additional skills* – Grant writing, scientific report and manuscript writing.

**Awards, Funding and Honors:**

- The Merck Postdoctoral Award for Meritorious Research. Society of Toxicology 47<sup>th</sup> Annual Meeting. Seattle, WA-2008 03/17/2008
- Awarded second place at the Linda and Jack Gill Heart Institute Cardiovascular Research Day poster presentation competition (University of Kentucky). 10/19/2007
- Awarded first place at the Linda and Jack Gill Heart Institute Cardiovascular Research Day poster presentation competition (University of Kentucky). 10/13/2006
- University of Kentucky Lyman T. Johnson Postdoctoral Year Fellowship. 2006-2007
- University of Kentucky Lyman T. Johnson Postdoctoral Year Fellowship. 2007-2008
- National Research Service Award, (National Institutes of Health). Molecular Mechanisms of Resistance in Vertebrates. F31-ES05942A. 2001-2004
- University of Kentucky Lyman T. Johnson Academic Year Fellowships. 2000-2004

### **Professional Societies:**

- Society of Toxicology (2004 - present).
- Society of Environmental Toxicology and Chemistry (2000 - 2002).

### **Teaching Experience:**

- Prepared and gave a lecture on polychlorinated biphenyl (PCB) toxicity to a graduate level class (Professional Seminar on Environmental Health - CPH921, and Advanced Issues in Dietetics; University of Kentucky), and lectures on general biology to undergraduate classes (University of Puerto Rico).
- Mentored undergraduate students in cardiovascular and nutritional toxicology research using aortic endothelial cells as a research model, and in aquatic toxicology research using adult rainbow trout (*Oncorhynchus mykiss*), Channel catfish (*Ictalurus punctatus*) and fish embryos (*Fundulus heteroclitus*) as research model organisms. The results generated from those projects has been presented at national meetings and submitted for publication in peer reviewed scientific journals.

### **Interest:**

I am interested in the biochemical, molecular, and developmental effects of environmental contaminants in vertebrate research models and how they relate to other biological systems.

### **Languages (written and spoken):**

English: Advanced

Spanish: Advanced

### **Publications:**

1. **Arzuaga X**, Reiter G, Majkova Z, Kilgore M W, Toborek M, and Hennig B. 2007. Activation of PPAR-alpha reduces PCB-induced endothelial activation: possible interactions in inflammation and atherosclerosis. *Cardiovascular Toxicology* 7(4): 264-72.
2. Oesterling E, Chopra N, Gavalas V, **Arzuaga X**, Lim E, Sultana R, Butterfield D, Bachas L, and Hennig B. 2008. Alumina Nanoparticles Induce Expression of Endothelial Cell Adhesion Molecules. *Toxicology Letters* (*in press*).
3. Shen H, **Arzuaga X**, Toborek M, and Hennig B. 2008. Zinc nutritional status modulates expression of AhR-responsive P450 enzymes in vascular endothelial cells. *Environmental Toxicology and Pharmacology* 25 (2): 197-201.
4. Venkatachalam K, **Arzuaga X**, Chopra N, Gavalas VG, Xu J, Bhattacharyya D, Hennig B, Bachas LG. 2008. Reductive dechlorination of 3,3',4,4'-tetrachloro biphenyl (PCB77) using palladium or palladium/iron nanoparticles and assessment of the reduction in toxic potency in vascular endothelial cells. *Journal of Hazardous Materials* (*in press*).
5. **Arzuaga X** and Elskus A. Chronically contaminated killifish (*Fundulus heteroclitus*) embryos from polluted sites are resistant to AHR ligand mediated induction of CYP1A activity, ROS production and developmental deformities. *Aquatic Toxicology* (*manuscript in preparation*).
6. **Arzuaga X**, Wassenberg D, Giulio R D, Elskus A. 2006. The chlorinated AHR ligand 3,3',4,4',5-pentachlorobiphenyl (PCB126) promotes reactive oxygen species (ROS) production during embryonic development in the killifish (*Fundulus heteroclitus*). *Aquatic Toxicology* 76: 13-23.
7. Hennig B, Lei W, **Arzuaga X**, Ghosh D, Saraswathi V, Toborek M. 2006. Linoleic acid induces proinflammatory events in vascular endothelial cells via activation of PI3K/Akt and ERK1/2 signaling. *Journal of Nutritional Biochemistry* 17: 766-772.

8. **Arzuaga X**, Calcaño W, and Elskus A. 2004. The DNA de-methylating agent 5-azacytidine does not restore CYP1A induction in PCB resistant Newark Bay killifish (*Fundulus heteroclitus*). *Marine Environmental Research*. 58: 517-20.

9. **Arzuaga X**, and Elskus A. 2002. Evidence for resistance to benzo[a]pyrene and 3,4,3'4'-tetrachlorobiphenyl in a chronically polluted *Fundulus heteroclitus* population. *Marine Environmental Research* 54: 247-251.

#### **Selected Presentations at National and International Meetings:**

1. **Arzuaga X**, Cassis L, Stromberg A, Black E, Toborek M, and Hennig B, Activation of Peroxisome Proliferator Activated Receptors (PPARs) is altered by exposure to co-planar 3,3',4,4',-Tetrachlorobiphenyl (PCB77). 20th Superfun Basic Research Programs Annual Meeting. Durham, NC. December 2007.

2. English V, **Arzuaga X**, Toborek M, Black E, Stromberg A, Hennig B, and Cassis L. The organic pollutant PCB77 increases atherosclerosis in LDL receptor deficient mice despite reductions in serum cholesterol concentrations. 20th Superfun Basic Research Programs Annual Meeting. Durham, NC. December 2007.

3. Venkatachalam K, **Arzuaga X**, Chopra N, Gavalas V, Xu J, Bhattacharyya D, Hennig B, and Bachas L. Reductive dechlorination of 3,3',4,4',-Tetrachlorobiphenyl (PCB77) using palladium or palladium/iron nanoparticles and assessment of the toxic potency in vascular endothelial cells. 20th Superfun Basic Research Programs Annual Meeting. Durham, NC. December 2007.

4. **Arzuaga X**, Kluemper C T, Toborek M, and Hennig B. The dietary flavonoid quercetin blocks PCB77 induced pro-inflammatory responses in vascular endothelial cells. 46th Society of Toxicology Annual Meeting. Charlotte, NC. March 2007.

5. **Arzuaga X**, Reiterer G, Majkova Z, Toborek M, Hennig B. PPAR-alpha agonists protect against PCB-induced vascular endothelial cell activation. 9th Annual Gill Heart Institute Cardiovascular Research Day. Lexington, KY. October 2006.

6. Oesterling E, **Arzuaga X**, Eun Jin Lim, Toborek M, Hennig B, Manufactured nano-sized alumina particle induced endothelial cell dysfunction: implications in vascular disease. 9th Annual Gill Heart Institute Cardiovascular Research Day. Lexington, KY. October 2006.

7. Shen H, **Arzuaga X**, Toborek M, and Hennig B. Zinc nutritional status modulates PCB77-induced pro-inflammatory responses in vascular endothelial cells. The fourth PCB Workshop: Recent Advances in the Environmental Toxicology and Health Effects of PCBs. Zakopane, Poland. September 2006.

8. **Arzuaga X**, Reiterer G, Majkova Z, Kilgore M, Toborek M, Hennig B. 3,3',4,4'-tetrachlorobiphenyl disrupts PPAR signaling in vascular endothelial cells. Dioxin 2005: 25th International Symposium on Halogenated Environmental Organic Pollutants and POPs. Toronto, Canada. August 2005.

9. **Arzuaga X**. AHR/CYP1A mediates PCB induction of teratogenesis and CYP1A, but not oxidative stress: an in ovo vertebrate model. Ohio Valley Society of Toxicology, Environmental Protection Agency, Cincinnati, OH. November 2003.

10. **Arzuaga X**, Calcaño W, Elskus A, Resistance to CYP1A induction in Newark Bay killifish (*Fundulus heteroclitus*) is not due to DNA methylation. Pollutant Responses in Marine Organisms (12th International Symposium). Tampa, FL. May 2003.

**References:**

Bernhard Hennig, Ph.D.  
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The University of Maine USGS Research Fishery Biologist/Toxicologist  
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