



University of Arizona Superfund Research Program

Training Core



Training Goal

To produce graduates from the various disciplines participating in our SRP who are versed in multi-disciplinary approaches needed to address continuing and emerging complex environmental problems in the 21st century.

Colloquium - Key Mechanism for Interacting with Trainees

- Monthly Colloquium is mandatory for all Trainees, Pis, co-Pis
- Allows us to make students aware of opportunities
- Colloquium evolves to keep it fresh
- Feedback drives change

Engagement ↔ Participation ↔ Feedback

Trainee Requirements

Mandatory

1. Participation in year-long Colloquium on Environmental Health and Sciences
2. Participation in one (or more) CE/RT activity
3. Participation in an inter or intra-University Science fair or meeting
4. Submission of an annual progress report and evaluation

Encouraged

1. Take courses outside discipline
2. Include Professors outside discipline on graduate committee
3. Attend seminars/workshops outside discipline

Results - CE/RT Activities

Students have:

Developed informational pamphlets

Helped “train the trainers”



Trainee Corin Hammond



Trainee Pablo Sanchez Soria discussing toxicology basics with a Promotora group



Fei Zhao: “I thought this was so far the best experience I have had after getting into the toxicology field”.



Trainees Lucia Rodriguez-Freire (top) and Juliana Gil (bottom) helping with a “hands on” activity.

Results - CE/RT Activi



Superfund Research Program
The University of Arizona

Students:

Attend CAB and other
community meetings

Goodyear Superfund site CAB

Motorola 52nd St Superfund Site CAB

Iron King Mine Superfund site – Agua Fria Festival

Tucson International Airport Authority Superfund site CAB

Border 2012

New for 2012 – interacting with local High Schools

Focus is on attracting students into STEM

Results - Meetings



Students:

Regularly win awards/scholarships

Linnea Herbertson – Great Lakes National Scholarship, 2012

Robert Root – NIH Toxicology Training Grant Fellowship, 2012

Juliana Gil – UA Earth Week, 1st place poster, 2012

Corin Hammond – UA Earth Week, 1st place oral presentation, 2012

⇒ Janae Csavina – Australian Endeavour Research Fellowship, 2011

Alexis Valentin Vargas – ASM Robert Watkins Graduate Research Fellowship, 2011

Corin Hammond – Annual SRP meeting 1st place poster award, 2011

Karis Nelson – International Phytotechnology Conference 3rd place poster award, 2011

Monica Ramirez – Wetterhahn award, 2011

Monica Ramirez – NASA Space Grant Fellowship, 2010, 2011

Alicia Bolt – Society for Toxicology Annual Meeting, 1st place research award, 2011

Lucia Rodriguez-Freire Annual SRP meeting 3rd place poster award, 2010

⇒ Monica Ramirez – ORD EPA Grant, 2010

Alexis Valentin Vargas – Sloane Foundation Fellowship, 2009



Janae Csavina's story

- Attended SRP sponsored Pacific Rim Conference in Korea
- Met Mark Taylor , McQuarie Univ., Australia
- Awarded grant from Australian Endeavour Research Fellowship Program
- Graduated August 2012
- Now working at NEON (National Ecological Observatory Network)



Janae studied particulates emitted from the Mount Isa copper and lead smelter in Queensland, Australia.



Janae examines the equipment set up to collect and measure particulate emissions.



Janae on the mine tailings at Mount Isa.

Noteworthy outcome: An international collaboration has developed between UA and Macquarie University with three joint publications coming. Mark Taylor will attend the UA SRP-sponsored Dust Conference planned for May 2013.

Monica Ramirez-Andreotta's story

- Joined UA SRP 2005 as RTC coordinator
- Part-time grad student 2008, full-time 2010
- Interest in Environmental Justice
- Developed “Gardenroots” – a blend of bench research and citizen science



Yavapai County Master Gardeners, Payson, AZ



Gardenroots citizen-scientists learn about study results



- Self-funded entire project through a combination of EPA grant, Sloane Fellowship, UA WSP Fellowship, UA NASA Space Grant, SRP Training Core
- Will graduate Dec 2012

Lessons our Training Core has Taught Us

- Keep things fresh
- Students love learning about how other disciplines relate to them
- Student response to CE/RT activities is off the charts
- Students love to step up to challenges

Thanks!

Duke University Superfund Center Training Core

Edward D. Levin, Ph.D.

Duke University Superfund Basic Research Center

Seminar Series

Symposia

Workshops

Undergraduate Research Training

Summer Research Placements

Graduate Training

Postdoctoral Mentorship

Junior Faculty Mentorship

Spring 2011

Jan 14 Ralph Cooper, Ph.D. US-EPA

The Many Faces of the Chlorotriazine Herbicide Atrazine

Jan 21 Paul Foster, Ph.D., NIEHS

Endocrine disruption of rat reproductive development by phthalates:
implications for human health cumulative risk assessment

Jan 28 Edward D. Levin, Ph.D., Duke University

Developmental neurotoxicity of Organophosphate pesticides in rats and zebrafish

Feb 4 Wayne Thomann, Ph.D., Duke University

Chemical and Biological Contaminants in the Indoor Environment

Feb 11 Douglas Bell, Ph.D., NIEHS

Genetics of oxidative stress

Feb 18 Julia F. Storm, MSPH, North Carolina State University

Reaching Practitioners from MDs to Farm workers: Communicating
Agricultural Health and Safety Risks

Feb 25 Rebecca Fry, Ph.D., UNC

The two faces of arsenic: cancer causing and cancer treating

Spring 2011 (Continued)

Mar 4 Jean Harry, Ph.D., NIEHS

Neuronal/glia interactions and inflammation: possible targets for neurotoxicity, neuroprotection, and therapeutic opportunities

Mar 18 John Rogers, Ph.D., US-EPA

Intrauterine programming of adult disease by maternal undernutrition or chemical exposure

Mar 25 Spring Symposium: **The Social Context of Environmental Exposures in Children**

Apr 1 Donald McDonnell, Ph.D., Duke University

Incorporating our evolving understanding of nuclear receptor action into mechanism-based screens for endocrine disruptors

Apr 8 Alicia Timme-Laragy, Ph.D., Woods Hole Oceanographic Institute

Nrf2b: a novel paralog of the antioxidant response element transcription factor Nrf2 in zebrafish

Apr 15 Lindsey Van Tiem, Duke University

Molecular mechanisms of polycyclic aromatic hydrocarbon-induced teratogenesis in zebrafish (*Danio rerio*)

Apr 22 Charles Rice, Ph.D., Clemson University

Immune function in Atlantic killifish, *Fundulus heteroclitus*, adapted to environmental contaminants

Fall 2011

Sept. 2 Chris Newland, Ph.D., Auburn University

An ounce of prevention can test a hypothesis: Dietary nutrients, calcium channels, and protection against methylmercury's neurotoxicity

Sept. 9 Paul Watkins, Ph.D., Hamner Institutes for Health

Idiosyncratic hepatotoxicity

Sept. 16 Toxicogenomics Symposium UNC

Sept. 23 Craig Butt, Ph.D., Duke University

Investigating the disruption of thyroid hormones by halogenated organic compounds using in vitro techniques

Sept. 30 Dave Volz, Ph.D., University of South Carolina

Aberrant ligand-induced activation of G-protein-coupled estrogen receptor 1 (GPER) results in developmental malformations during vertebrate embryogenesis

Oct. 7 Helen Hsu-Kim, Ph.D., Duke University

Nanoscale metal-organic matter interactions: Implications for mercury bioavailability in contaminated sediments

Oct. 14 Joel Meyer, Duke University

Fate and effects of persistent mitochondrial DNA damage

Fall 2011 (Continued)

Oct. 21 Jerry Yen, Duke University
OP effects on developing zebrafish nervous system

Oct. 28 Steve Diamond, US-EPA Duluth, CEINT co-sponsor
The role of sunlight in assessing environmental risk of nanoscale titania

Nov. 4 Fall Symposium, **Discovering the Vulnerable Mechanisms Causing Persistent Functional Impairment with Developmental Toxicology**

Nov. 11 David DeMarini Ph.D., US-EPA RTP
Chlorinated chromosomes: Swimming and your genes

Nov. 18 Dennis Lemly, Ph.D., Wake Forest/US Forest Service
The myth of clean coal: A fish and wildlife perspective

Dec. 2 Autumn Bernal, Duke University
The effects of low dose radiation exposure on the epigenome of the avy mouse

Spring 2012

Jan 13 David Armstrong, Ph.D., National Institute of Environmental Health Sciences
Endocrine disruption of synaptic plasticity in the postnatal mouse hippocampus

Jan 20 Gregory J Cole, Ph.D., North Carolina Central University
Mechanisms of ethanol-induced CNS abnormalities in zebrafish: evidence for disrupted extracellular matrix function

Jan 27 Maxwell Leung, Duke University ITEHP Doctoral Candidate
Later-life effects of mitochondrial DNA damage during development in the whole organism model *Caenorhabditis elegans*

Feb 3 Kevin Crofton, Ph.D., US-Environmental Protection Agency
The role of thyroid hormones in neurodevelopment: using mode-of-action pathways to focus research strategies

Feb 10 Marion Ehrich, Ph.D., Virginia Tech University
Fullerenes for ameliorating organophosphorus threats

Feb 17 Richard L. Auten, M.D., Duke University
Air Pollution Exposure in Pregnancy Effects on Respiratory Function in Offspring: Innate Immunity as Gateway

Feb 24 Kia Walcott, Duke University ITEHP Doctoral Candidate
An in vivo, tissue-specific RNAi screen for ion channels contributing to nociception in *Drosophila*

Spring 2012 (Continued)

Mar 2 Kent Pinkerton, Ph.D., University of California-Davis
Nanomaterials from children's health to chronic obstructive pulmonary disease
103 Byran Research Building, 11:30 AM-1:00 PM

Mar 16 Rosalind Coleman, M.D., University of North Carolina
Acyl-CoAs and lipid partitioning

Mar 23 Fernando Galvez, Ph.D., Louisiana State University
The physiological and genomic effects of the Deepwater Horizon oil spill on resident killifish

Mar 30 Kyle Erwin, Duke University ITEHP Doctoral Candidate
Insights into PCB126-mediated developmental cardiotoxicity in zebrafish

Apr 6 Amanda Bass, Duke University ITEHP Doctoral Candidate
The Role of mitochondrial dynamics and autophagy in removal of persistent mitochondrial DNA damage

April 13 Pam Noyes, Duke University ITEHP Doctoral Candidate
Polybrominated Diphenyl Ether (PBDE) Flame Retardants in Fathead Minnows:
Metabolism and Disrupted Thyroid Regulation at Early and Adult Life Stages

Apr 20 Spring Symposium: Causes and Consequences Connecting Human and Environmental Health

Fall 2012

- Sept 7 Tso-Pang Yao, Ph.D., Duke University
Connecting mitochondrial toxin to neurodegeneration
- Sept 14 Christie M Sayes, PhD. Research Triangle Institute International
Contemporary issues in nanotoxicology: Continuing to relate material properties to biological responses
- Sept 21 Charlotte Clark, Ph.D. Duke University
Research Translation in Toxicology and Environmental Health
- Sept 28 Andrew Arrant, Duke University ITEHP
Immaturity of the serotonergic system mediates lack of drug-induced behavioral inhibition in adolescents
- Oct 5 Ashley Parks, Duke University ITEHP
Bioavailability and effects of single-walled carbon nanotubes in a benthic estuarine system
- Oct 12 Amy Ringwood, Ph.D., University of North Carolina-Charlotte
Bivalve Biomarkers - Models for Pollutant and Nanoparticle Bioreactivity

Fall 2012 (Continued)

Oct 19 Kristie Willet, Ph.D., University of Mississippi

Reproductive, Developmental and Epigenetic Effects of
Benzo(a)pyrene in *Fundulus heteroclitus* and *Danio rerio*

Oct 21-24 **Superfund Basic Research Program Conference**

Nov 2 Cavin Ward-Caviness, Duke University

Gene-Environment Interactions in Chronic Cardiovascular Diseases

Nov 9 Scott Ballinger, Ph.D., University of Alabama-Birmingham

Mitochondrial fitness as a susceptibility factor for cardiovascular
disease

Nov 16 Lynn Singer, Ph.D., Case Western Reserve University

MDMA and cocaine: challenges of understanding prenatal exposure
effects

Nov 30 Nancy Denslow, Ph.D., University of Florida

Molecular approaches to understanding persistent organochlorine
pesticides at Lake Apopka, Florida

Speaker Contact Info

Tso-Pang Yao, Ph.D., Duke University
Email: tsopang.yao@duke.edu Phone:
919-613-8654

Christie M Sayes, Ph.D., RTI International
Email: csayes@rti.org
Phone: 919-541-6414

Charlotte Clark, Ph.D., Duke University
Email: cclark@duke.edu
Phone: 919-684-3159

Andrew Arrant, Duke University
Email: andrew.arrant@duke.edu
Phone: 919-491-6575

Ashley Parks, Duke University
Email: ashley.parks@duke.edu
Phone: 805-558-3132

Amy Ringwood, Ph.D. UNC-Charlotte
Email: AHRingwo@uncc.edu
Phone: 704-687-8501
Host: Lee Ferguson

Kristie Willett, Ph.D., University of Mississippi
Email: kwillett@olemiss.edu
Phone: 662-915-6691

Cavin Ward-Caviness, Duke University
Email: cavin.ward-caviness@duke.edu
Phone: 919-613-0603

Scott Ballinger, Ph.D. Univ of Alabama-
Birmingham
Email: sballing@uab.edu
Phone: 205-934-4621
Host: John Hollingsworth

Lynn T. Singer, Ph.D., Case Western Reserve
Email: Lynn.Singer@case.edu
Phone: 216-368-1610

Nancy Denslow, Ph.D., University of Florida
Email: ndenslow@ufl.edu
Phone: 352-294-4642
Host: Rich Di Giulio

Future speaker possibilities

Keith Tierney, Ph.D., University of Alberta

Email: ktierney@ualberta.ca

Phone: 780-492-5339 Lab phone: 780-492-1286

Suggested by Rich DiGuilio

Lori Snyder Benneer, Ph.D., Duke University

Email: lori.benneer@duke.edu

Phone: 919-613-8083

Arnaud Van Wettere DVM, PhD, North Carolina State University

Email: arnaud_vanwettere@ncsu.edu

Phone: 919-515-7410

suggested by David Hinton

Scott Mabury, Ph.D., University of Toronto

Email: smabury@chem.utoronto.ca

Phone: 416-978-1780

Suggested by Heather Stapleton

Sherry Ferguson, Ph.D., National Center for Toxicological Research

Email: Sherry.Ferguson@fda.hhs.gov

Phone: 870-543-7589

Suggested by Ed Levin

Symposia

Semi-Annual Symposia

Spring 2004	Obesity: Developmental Origins and Environmental Influences
Fall 2004	Comparative Toxicogenomics
Spring 2005	Toxic Risks with Aging
Fall 2005	Epigenetic Imprinting and Disease Susceptibility
Spring 2006	Environmental Carcinogenesis (Co-sponsored)
Fall 2006	Toxicant-Induced Alterations of Sexual Differentiation
Spring 2007	Developmental Neurobehavioral Disabilities and Toxic Exposure
Fall 2007	Developmental High Throughput Screening with Biologic Meaning: Going Somewhere Fast
Spring 2008	Aquatic Models of Human Disease (Co-sponsored)
Fall 2008	The Toxic-Legal Interface: Use of Toxicological Science in Regulation and Litigation
Spring 2009	Managing Toxic Risks for Global Health
Fall 2009	Environmentally Responsible Commercialization of Nanotechnology
Spring 2010	Mountaintop Coal Mining: Human Health and Ecological Concerns
Fall 2010	Cancer and the Environment: From Molecules to Populations
Spring 2011	The Social Context of Environmental Exposures in Children
Fall 2011	Discovering the Vulnerable Mechanisms Causing Persistent Functional Impairment with Developmental Toxicology
Spring 2012	Causes and Consequences Connecting Human and Environmental Health

Spring 2012 Symposium

Duke Integrated Toxicology and Environmental Health Program
Duke University Superfund Research Center

Causes and Consequences Connecting Environmental and Human Health

April 20, 2012, Washington Duke Conference Center

8:30-9:00

Welcome and Overview

Richard Di Giulio, Ph.D., Duke University, Durham, NC

9:00-9:45

William Schlesinger, Ph.D., Cary Institute of Ecosystem Studies
Climate Change versus Human and Ecosystem Health

9:45-10:15

Joel Meyer, Ph.D., Duke University, Durham, NC
Global Environmental Health: Cook Stoves

10:15-10:30

Break

- 10:30 – 11:00 Michael Hendryx , Ph.D., University of West Virginia, Morgantown
Human Health and Ecological Impacts of Mountaintop Coal Mining
- 11:00 – 11:45 Richardson Peterson, Ph.D., University of Wisconsin, Madison WI
Investigative Toxicology Connecting Environmental and Human
Health: Dioxin-Induced Heart Malformation in Zebrafish
- 11:45 – 12:15 Robin Whyatt, Columbia University, Dr.P.H., New York, NY
Phthalate Exposures, Child Mental, Motor and Behavioral Development
and
Respiratory Health
- 12:15-1:15 Lunch
- 1:15 – 1:45 Patricia Fair, Ph.D., NOAA, Charleston, SC
Environmental Exposures and Marine Mammal Health
- 1:45 – 2:30 John McLachlan, Ph.D., Tulane University, New Orleans, LA
Gene-Environment Interactions
- 2:30-3:00 Andrew Kane, Ph.D., University of Florida, Gainesville
Psychological Impacts of Hurricane Katrina
- 3:00 Closing remarks
Edward Levin, Ph.D., Duke University, Durham, NC

Workshops

Writing

Research Translation

Methods

Undergraduate Research Training

Summer Research Placements

Graduate Training

Postdoctoral Mentorship

Junior Faculty Mentorship

Interactions with other programs

