

## Joel N. Meyer

Nicholas School of the Environment  
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### Employment:

- 2013-present. **Duke University**: Associate Professor, Nicholas School of the Environment. Additional appointments:  
Faculty member, Integrated Toxicology and Environmental Health Program  
Faculty member, Pharmacological Sciences Training Program  
Member, Duke Cancer Institute  
Fixed Term Graduate Faculty, Environmental Science and Engineering, UNC Chapel Hill
- 2009-present. **Duke University**: Secondary appointment, Civil and Environmental Engineering
- 2007-2013. **Duke University**: Assistant Professor, Nicholas School of the Environment. Faculty member, Integrated Toxicology and Environmental Health Program
- 2003-2006. **National Institute of Environmental Health Sciences** (RTP, NC): Post-doctoral researcher (Intramural Research Training Award)
- 1994-1997. **Instituto de Estudios Avanzados José Martí** (Quetzaltenango, Guatemala): High School Teacher and Program Director (Biology, English)
- 1993-1994. **Centro de Estudios de Español "Pop Wuj"** (Quetzaltenango, Guatemala): Translator and Appropriate Technology Work Projects Coordinator

### Education:

- Postdoctoral training 2003-2006  
DNA Repair and Mitochondrial Damage Group, Laboratory of Molecular Genetics  
**National Institute of Environmental Health Sciences**, RTP, NC.
- Doctor of Philosophy 2003  
Environmental Toxicology  
Integrated Toxicology Program and Nicholas School of the Environment  
**Duke University**, Durham, NC.
- Bachelor of Science 1992, Magna Cum Laude  
Environmental Studies, Peace and Conflict Studies  
**Juniata College**, Huntingdon, PA.

### Honors and professional affiliations:

Environmental Mutagenesis and Genomics Society  
Society of Environmental Toxicology and Chemistry  
Society of Toxicology

Outstanding New Environmental Scientist Award (NIEHS), 2011

### Peer-reviewed publications (\*corresponding author; †undergraduate):

52. Colton MD<sup>†</sup>, Kwok KWH, Brandon JA<sup>†</sup>, Warren IH<sup>†</sup>, Ryde IT, Cooper EM, Hinton DE, Rittschof D, **Meyer JN\***. 2014. Developmental toxicity and DNA damage from

- exposure to parking lot runoff water in the Japanese medaka (*Oryzias latipes*). Marine Environmental Research *in press*. PMID: in progress.
51. Rooney JP, Luz AL, González-Hunt CP, Bodhicharla R, Ryde IT, **Meyer JN\***. 2014. Effects of 5-fluoro-2'-deoxyuridine on mitochondrial biology in *Caenorhabditis elegans*. Experimental Gerontology 56: 69-76. PMID: in progress.
  50. Levard C, Yang X, **Meyer JN**, Lowry GV\*. 2014. Response to Comment on "Sulfidation of Silver Nanoparticles: Natural Antidote to Their Toxicity." Environmental Science and Technology 48: 6051-6052.
  49. Choi J\*, Tsyusko OV\*, Unrine JM, Chatterjee N, Ahn J-M, Yang X, Thornton BL<sup>†</sup>, Ryde IT, Starnes D, **Meyer JN\***. 2014. A micro-sized model for the *in vivo* studies of nanoparticle toxicity: What has *Caenorhabditis elegans* taught us? Environmental Chemistry 11: 227-246.
  48. Rooney JP, Ryde IT, Saunders LH, Colton MD<sup>†</sup>, Germ KE, Mayer GD, Greenamyre JT, **Meyer JN\***. **In press**. PCR-based determination of mitochondrial DNA copy number in multiple species. Methods in Molecular Biology: Mitochondrial Regulation: Methods and Protocols *in press*. PMID: in progress.
  47. Bodhicharla R, Ryde IT, Prasad GL, **Meyer JN\***. 2014. The tobacco-specific nitrosamine 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone (NNK) induces mitochondrial and nuclear DNA damage in *Caenorhabditis elegans*. Environmental and Molecular Mutagenesis 55: 43-50.
  46. Ahn J-M, Eom H-J, Yang X, **Meyer JN**, Choi J\*. 2014. Oxidative DNA damage of bare and polyvinylpyrrolidone-coated silver nanoparticles in the nematode *Caenorhabditis elegans*. Chemosphere 108: 343-352.
  45. Yang X, Jiang C, Hsu-Kim H, Badireddy AR, Dykstra M, Wiesner MR, Hinton DE, **Meyer JN\***. 2014. Silver nanoparticle behavior, uptake, and toxicity in *Caenorhabditis elegans*: Effects of natural organic matter. Environmental Science and Technology 48: 3486-3495.
  44. Rand AA, Rooney JP, Butt CM, **Meyer JN**, Mabury SA\*. 2014. Cellular toxicity associated with exposure to perfluorinated carboxylates (PFCAs) and their metabolic precursors. Chemical Research in Toxicology 27: 42-50. PMID: in progress.
  43. Furda A, Santos JH, **Meyer JN**, Van Houten B\*. 2014. Quantitative PCR-based measurement of nuclear and mitochondrial DNA damage and repair in mammalian cells. Methods in Molecular Biology: Molecular Toxicology Protocols 1105: 419-437.
  42. Levard C, Hotze EM, Colman BP, Dale AL, Truong L, Yang X, Bone AJ, Brown GE Jr, Tanguay RL, Di Giulio RT, Bernhardt ES, **Meyer JN**, Wiesner MR, Lowry GV\*. 2013. Sulfidation of silver nanoparticles: Natural antidote to their toxicity. Environmental Science and Technology 47: 13440-13448.
  41. Turner EA, Arnold MH, Kroeger GL, Thornton BL<sup>†</sup>, **Meyer JN\***. 2013. The toxicity of mountaintop mining/valley fill-associated effluent results both from metal exposure and osmotic stress in *Caenorhabditis elegans*. PLoS ONE 8(9): e75329.
  40. Arnold MC, Badireddy AR, Wiesner MR, Di Giulio RT, **Meyer JN\***. 2013. Cerium oxide nanoparticles are more toxic than equimolar bulk cerium oxide in *Caenorhabditis elegans*. Archives of Environmental Contamination and Toxicology 65: 224-233.
  39. **Meyer JN\***, Leung MCK, Rooney JP, Sandoel A, Hengartner MO, Kisby GE, Bess AS. 2013. Mitochondria as a target of environmental toxicants. Toxicological Sciences 134: 1-17. PMID: PMC3693132.
  38. Leung MCK, Rooney JP, Ryde IT, Bernal AJ, Bess AS, Crocker TL, Ji AQ, **Meyer JN\***. 2013. Effects of early life exposure to ultraviolet C radiation on mitochondrial DNA content, transcription, ATP production, and oxygen consumption in developing

- Caenorhabditis elegans*. BMC Pharmacology and Toxicology 14:9. PMID: PMC3621653.
37. Bess AS, Leung MCK, Ryde IT, Rooney JP, Hinton DE, **Meyer JN\***. 2013. Effects of mutations in mitochondrial dynamics-related genes on the mitochondrial response to ultraviolet C radiation in developing *Caenorhabditis elegans*. Worm 2(1): 1-7. PMID: PMC3670464.
  36. Bess AS, Ryde IT, Hinton DE, **Meyer JN\***. 2013. UVC-induced mitochondrial degradation via autophagy correlates with mtDNA damage removal in primary human fibroblasts. Journal of Biochemical and Molecular Toxicology 27: 28-41. PMID: PMC3640456.
  35. Hunter SE, Gustafson MA, Margillo KM<sup>†</sup>, Lee SA<sup>†</sup>, **Meyer JN\***. 2012. *In vivo* repair of alkylating and oxidative DNA damage in the mitochondrial and nuclear genomes of wild-type and glycosylase-deficient *Caenorhabditis elegans*. DNA Repair 11: 857-863. PMID: PMC3484215.
  34. Brar SS, **Meyer JN**, Bortner C, Van Houten B, Martin WJ II\*. 2012. Mitochondrial DNA-depleted A549 cells are resistant to bleomycin. American Journal of Physiology - Lung Cellular and Molecular Physiology 303: L413-24. PMID: PMC3468425.
  33. Kasiviswanathan R, Gustafson MA, Copeland WC, **Meyer JN\***. 2012. Human mitochondrial DNA polymerase  $\gamma$  exhibits potential for bypass and mutagenesis at UV-induced cyclobutane thymine dimers. The Journal of Biological Chemistry 287: 9222-9229. PMID: PMC3308766.
  32. Bess AS, Crocker TL, Ryde IT, **Meyer JN\***. 2012. Mitochondrial dynamics and autophagy aid in removal of persistent mitochondrial DNA damage in *Caenorhabditis elegans*. Nucleic Acids Research 40: 7916-7931. PMID: PMC3439916.
  31. Furda AM, Bess AS, **Meyer JN**, Van Houten B\*. 2012. Analysis of DNA damage and repair in nuclear and mitochondrial DNA of animal cells using quantitative PCR. In Methods in Molecular Biology: DNA repair protocols (Lotte Bjergbæk, editor). Volume 920: 111-132. Springer Science+Business Media New York, USA.
  30. Yang X, Gondikas A, Marinakos SM, Auffan M, Liu J, Hsu-Kim H, **Meyer JN\***. 2012. The mechanism of silver nanoparticle toxicity is dependent on dissolved silver and surface coating in *Caenorhabditis elegans*. Environmental Science and Technology 46: 1119-1127.
  29. Leung MCK, Goldstone JV, Boyd WA, Freedman JH, **Meyer JN\***. 2010. *Caenorhabditis elegans* generates biologically relevant levels of genotoxic metabolites from aflatoxin B<sub>1</sub> but not benzo[a]pyrene *in vivo*. Toxicological Sciences 118: 444-453. PMID: PMC2984530.
  28. **Meyer JN\***, Lord CA, Yang X, Turner EA, Badireddy AR, Marinakos S, Chilkoti A, Wiesner MR, Auffan M. 2010. Intracellular uptake and associated toxicity of silver nanoparticles in *Caenorhabditis elegans*. Aquatic Toxicology 100:140-150.
  27. Boamah E, Brekman A, Tomasz M, Myeku N, Figueiredo-Pereira M, Hunter S, **Meyer JN**, Bargonetti J\*. 2010. DNA adducts of decarbamoyl mitomycin C efficiently kill cells with compromised p53 through proteasome-mediated degradation of Chk1. Chemical Research in Toxicology 23: 1151–1162. PMID: PMC2907727.
  26. Kullman SW\*, Mattingly CJ, **Meyer JN**, Whitehead A. 2010. Perspectives on informatics in toxicology. In A Textbook of Modern Toxicology, 4th edition (Ernest Hodgson, editor). John Wiley and Sons, Hoboken NJ. Pp 593-605.
  25. Alexeyenko A, Wassenberg DM, Lobenhofer EK, Yen J, Sonnhammer ELL, Linney E, **Meyer JN\***. 2010. Interactome-based analysis of the transcriptomic response to dioxin in developing zebrafish *Danio rerio*. PLoS ONE 5: e10465. PMID: PMC2864754.

24. Hunter SE, Jung D, Di Giulio RT, **Meyer JN\***. 2010. The QPCR assay for analysis of mitochondrial DNA damage, repair, and relative copy number. Methods 51:444-451. PMID: PMC2912960.
23. **Meyer JN\***. 2010. QPCR: A tool for analysis of mitochondrial and nuclear DNA damage in ecotoxicology. Ecotoxicology 19: 804-811. PMID: PMC2844971
22. Haugen AC, Di Prospero NA, Parker JS, Fannin RD, Chou J, **Meyer JN**, Halweg C, Collins JB, Durr A, Fischbeck K, Van Houten B\*. 2010. Altered gene expression and DNA damage in peripheral blood cells from Friedreich's ataxia patients: cellular model of pathology. PLoS Genetics 6: e1000812. PMID: PMC2799513.
21. Boyd WA, Crocker TL, Rodriguez AM, Lehmann DW, Leung MC-K, Freedman JH, Van Houten B, and **Meyer JN\***. 2010. Nucleotide excision repair is not detectably inducible, but is required for normal lifespan and growth, in genotoxin-stressed adult *Caenorhabditis elegans*. Mutation Research/Fundamental and Molecular Mechanisms of Mutagenesis 683: 57-67. PMID: PMC2799044.
20. Eischeid AC, **Meyer JN**, Linden KG\*. 2009. UV disinfection of adenoviruses: molecular indications of DNA damage efficiency. Applied and Environmental Microbiology 75: 23-28. PMID: PMC2612207.
19. Jung D, Cho Y, **Meyer JN**, Di Giulio RT\*. 2009. Adaptation of long-range, quantitative polymerase chain reaction as a sensitive assay of DNA damage in the environmental model, Atlantic killifish (*Fundulus heteroclitus*). Comparative Biochemistry and Physiology C Toxicology & Pharmacology 149:182-186. PMID: PMC2676791.
18. Leung MCK\*, Williams PL, Benedetto A, Au C, Helmcke KJ, Aschner M, **Meyer JN**. 2008. *Caenorhabditis elegans*: an emerging model in biomedical and environmental toxicology. Toxicological Sciences 106: 5-28. PMID: PMC2563142.
17. Billiard SM, **Meyer JN**, Wassenberg DM, Hodson PV, and Di Giulio RT\*. 2008. PAH developmental toxicity is not additive: toward a mechanistic understanding. Toxicological Sciences 105: 5-23. PMID: PMC2734299.
16. Di Giulio RT\*, and **Meyer JN**. 2008. Reactive oxygen species and oxidative stress. *In The Toxicology of Fishes* (Di Giulio RT and Hinton DE, editors), Taylor and Francis, Washington, DC. Pp 273-324.
15. Burnett KG\*, Bain LJ, Baldwin WS, Callard GV, Cohen S, Di Giulio RT, Evans DH, Gómez-Chiarri M, Hahn ME, Hoover CA, Karchner SI, Katoh F, MacLatchy DL, Marshall WS, **Meyer JN**, Nacci DE, Oleksiak MF, Rees BB, Singer TP, Stegeman JJ, Towle DW, Van Veld PA, Vogelbein WK, Whitehead A, Winn RN, Crawford DL. 2007. *Fundulus* as the Premier Teleost Model in Environmental Biology: Opportunities for New Insights Using Genomics. Comparative Biochemistry and Physiology, Part D Genomics and Proteomics 2: 257–286. PMID: PMC2128618.
14. **Meyer JN**, Boyd WA, Azzam GA†, Haugen AC, Freedman JF, and Van Houten B\*. 2007. Decline of nucleotide excision repair capacity in aging *Caenorhabditis elegans*. Genome Biology 8: R70. PMID: PMC1929140.
13. Wielgus A, Chignell CF, Miller DS, Van Houten B, **Meyer J**, Hu D-N, and Roberts JE\*. 2007. Phototoxicity in human retinal epithelial cells promoted by hypericin, a component of St. John's Wort. Photochemistry and Photobiology 83: 706-713. PMID: PMC2092452.
12. Chan SL, Santos JH, **Meyer JN**, Mandavilli BS, Cook DL Jr, McCash CL, Kissling G, Van Houten B, Copeland WC, Walker VE, Witt KL, and Bishop JB\*. 2007. Mitochondrial toxicity in cardiomyocytes of CD-1 mice following perinatal exposure to AZT, 3TC, or AZT/3TC in combination. Environmental and Molecular Mutagenesis 48: 190-200.

11. Santos JH\*, **Meyer JN**, and Van Houten B. **2006**. Mitochondrial localization of telomerase as a determinant for hydrogen peroxide-induced mitochondrial DNA damage and apoptosis. Human Molecular Genetics 15: 1757-1768.
10. Santos JH, **Meyer JN**, Mandavilli BS, and Van Houten B\*. **2006**. Quantitative PCR-based measurement of nuclear and mitochondrial DNA damage and repair in mammalian cells. In Methods in Molecular Biology: DNA repair protocols: Mammalian Systems, 2<sup>nd</sup> edition (Daryl Henderson, editor). Volume 314: 183-199. Humana Press Inc., Totawa, NJ, USA.
9. Timme-Laragy AR\*, **Meyer JN**, Waterland RA, and Di Giulio RT. **2005**. Analysis of CpG methylation in the promoter region of the CYP1A gene in *Fundulus heteroclitus* from creosote-contaminated and reference sites. Comparative Biochemistry and Physiology C Toxicology & Pharmacology 141: 406-411.
8. **Meyer JN**, Volz DC, Freedman JF, and Di Giulio RT\*. **2005**. Differential display of hepatic mRNA from *Fundulus heteroclitus* inhabiting a Superfund estuary. Aquatic Toxicology 73: 327-341.
7. Santos JH, **Meyer JN**, Skorvaga M, Annab LA, and Van Houten B\*. **2004**. Mitochondrial hTERT exacerbates free radical-mediated mtDNA damage. Aging Cell 3: 399-411.
6. **Meyer JN**, Smith JD, Winston GW, and Di Giulio RT\*. **2003**. Antioxidant defenses in killifish (*Fundulus heteroclitus*) exposed to Superfund sediments and model prooxidants: short-term and heritable responses. Aquatic Toxicology 65: 377-395.
5. **Meyer JN**, Wassenberg DM, Karchner SI, Hahn ME, and Di Giulio RT\*. **2003**. Expression and inducibility of aryl hydrocarbon receptor pathway genes in wild-caught killifish (*Fundulus heteroclitus*) with different contaminant-exposure histories. Environmental Toxicology and Chemistry 22: 2337-2343.
4. **Meyer JN\***, and Di Giulio RT. **2003**. Heritable adaptation and associated fitness costs in killifish (*Fundulus heteroclitus*) inhabiting a contaminated estuary. Ecological Applications 13: 490-503.
3. **Meyer JN\***, Nacci DE, and Di Giulio RT. **2002**. Cytochrome P4501A (CYP1A) in killifish (*Fundulus heteroclitus*): heritability of altered expression and relationship to survival in contaminated sediments. Toxicological Sciences 68: 69-81.
2. **Meyer J\***, and Di Giulio R. **2002**. Patterns of heritability of decreased EROD activity and resistance to PCB 126-induced teratogenesis in laboratory-raised offspring of killifish (*Fundulus heteroclitus*) from a creosote-contaminated site in the Elizabeth River, VA, USA. Marine Environmental Research 54: 621-628.
1. Keller JM, **Meyer JN**, Mattie M, Augspurger T, Rau M, Dong J, and Levin E\*. **1999/2000**. Assessment of immunotoxicology in wild populations: Review and recommendations. Reviews in Toxicology 3: 167-212.

#### **Non-peer reviewed publications:**

5. **Meyer JN\***, Francisco AB. **2013**. A call for fuller reporting of toxicity test data. Integrated Environmental Assessment and Management 9(2):347-348.
4. Leung MCK, Bungler AD, Walsky RL, **Meyer JN\***. **2013**. *In vivo* analysis of the ability of *Caenorhabditis elegans* to metabolize the human CYP3A and CYP1A2 diagnostic substrates testosterone and phenacetin. Worm Breeder's Gazette 19(3): 28.
3. **Meyer JN\*** and Bess AS. **2012**. Involvement of autophagy and mitochondrial dynamics in determining the fate and effects of irreparable mitochondrial DNA damage. Autophagy punctum 8:1822-1823. PMID: PMC3541291.

2. **Meyer JN**, Van Houten, B. **2010**. Apparently normal DNA repair and transcript expression in the RB885 strain carrying an intronic deletion in the *xpc-1* gene. Worm Breeder's Gazette 18: 23.
1. **Meyer J**. **2000**. Adaptation to xenobiotics: multigenerational costs and benefits. SETAC Globe Newsletter 1: 41-42. Invited opinion article.

**Selected national/international meeting presentations (1<sup>st</sup>/Senior author only; †undergraduate):**

- Jayasundara N, Van Tiem L, **Meyer JN**, Erwin K, Tsai H-J, Kirby M, Di Giulio RT. **2014**. Transcriptomic analysis of AHR-dependent and AHR-independent genes involved in the synergistic cardiac developmental toxicity of PAHs. Poster presentation. Society of Toxicology Annual Meeting, Phoenix, AZ. March 23-27.
- Luz AL, **Meyer JN**. **2014**. Investigating genetic susceptibility to mitochondrial toxicity. ?? presentation. Society of Toxicology Annual Meeting, Phoenix, AZ. March 23-27.
- Yang Y, Schindler A, Taggart R, Badireddy AR, Hsu-Kim H, Sherwood DR, Wiesner M, Hinton DE, **Meyer JN**. **2014**. *In vivo* study of endocytosis and lysosome function in silver nanoparticle uptake and toxicity in *Caenorhabditis elegans*. Poster presentation. Society of Toxicology Annual Meeting, Phoenix, AZ. March 23-27.
- Rooney JP, Bodhicharla R, Bess AS, Leung MCK, Ryde IT, Ji AQ, **Meyer JN**. **2014**. Developmental exposure to Ultraviolet C Radiation results in altered energy production later in life in *Caenorhabditis elegans*. 2014. Poster presentation. Society of Toxicology Annual Meeting, Phoenix, AZ. March 23-27.
- González CP, Ryde IT, **Meyer JN**. **2014**. Mitochondrial DNA damage and dysfunction and their effects on dopaminergic neurodegeneration after chemical insult in *Caenorhabditis elegans*. Poster presentation. Society of Toxicology Annual Meeting, Phoenix, AZ. March 23-27.
- Turner EA, Donoghue LJ, Brock TJ, Hopkins CE, Meyer JN. 2014. Investigating mechanisms of mitochondrial DNA damage-mediated developmental arrest. Poster presentation. Society of Toxicology Annual Meeting, Phoenix, AZ. March 23-27.
- Luz AL, Rooney JP, González CP, **Meyer JN**. **2014**. Investigating genetic susceptibility to arsenite-induced mitochondrial toxicity. Poster presentation. NIEHS/SRP meeting, NIEHS, RTP, NC. March 3-4.
- Jayasundara N, Van Tiem L, **Meyer JN**, Erwin K, Tsai H-J, Kirby M, Di Giulio RT. **2013**. Transcriptomic analysis of AHR-dependent and AHR-independent genes involved in the synergistic cardiac developmental toxicity of PAHs. Poster presentation. North American Society of Environmental Toxicology and Chemistry Annual Meeting, Nashville TN, November 17-21.
- Yang Y, Badireddy AR, Taggart R, Hsu-Kim H, Wiesner M, Hinton DE, **Meyer JN**. **2013**. Intracellular trafficking and toxicity of silver nanoparticles in *Caenorhabditis elegans*. Platform presentation. North American Society of Environmental Toxicology and Chemistry Annual Meeting, Nashville TN, November 17-21.
- Meyer JN**, Luz AL, Bess AS, Leung MCK, Bodhicharla R, González CP, Ryde IT, Ji AQ, Rooney JP. **2013**. Delayed effects of early-life exposure to irreparable mtDNA damage in *Caenorhabditis elegans*. Environmental Mutagenesis and Genomics Society, Monterey, CA. September 21-25.
- Meyer JN**. **2013**. Fate and consequences of persistent mitochondrial DNA damage. Platform and poster presentation. Gordon Research Conference: Cellular & Molecular Mechanisms of Toxicity, Andover, NH. August 11-16.
- Rooney JP, Bodhicharla R, Bess AS, Leung MCK, Ryde IT, Ji AQ, **Meyer JN**. **2013**. Developmental exposure to Ultraviolet C Radiation results in altered energy

- production later in life in *Caenorhabditis elegans*. Poster presentation. 19<sup>th</sup> International *C. elegans* meeting, Los Angeles, CA, June 26-30.
- Bodhicharla R, Prasad GL, **Meyer JN. 2013**. The tobacco-specific nitrosamine 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone (NNK) induces mitochondrial and nuclear DNA damage in *Caenorhabditis elegans*. Poster presentation. 19<sup>th</sup> International *C. elegans* meeting, Los Angeles, CA, June 26-30.
- Rooney JP, Bodhicharla R, Bess AS, Leung MCK, Ryde IT, Ji AQ, **Meyer JN. 2013**. Developmental exposure to Ultraviolet C Radiation results in altered energy production later in life in *Caenorhabditis elegans*. Poster presentation. United Mitochondrial Disease Foundation meeting, Newport Beach, CA, June 12-15.
- González CP, Bodhicharla R, **Meyer JN. 2013**. Mutations in *pink-1* and *pdr-1* result in reduced dopaminergic neurodegeneration after chemical insult in *Caenorhabditis elegans*. Poster presentation. Society of Toxicology Annual Meeting, San Antonio, Texas, March 10-14.
- Bodhicharla R, Prasad GL, **Meyer JN. 2013**. The tobacco-specific nitrosamine 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone (NNK) induces mitochondrial and nuclear DNA damage in *Caenorhabditis elegans*. Poster presentation. Society of Toxicology Annual Meeting, San Antonio, Texas, March 10-14.
- Meyer JN**, Leung MCK, Rooney JP, Ji AQ, Ryde IT, Bess AS. **2012**. Mitochondrial DNA as a target of environmental toxicants. Poster presentation. North American Society of Environmental Toxicology and Chemistry Annual Meeting, Long Beach, CA, November 11-15.
- Yang XY, Badireddy AR, Jiang C, Hsu-Kim H, Wiesner MR, Hinton DE, **Meyer JN. 2012**. Interactions of silver nanoparticles with natural organic matter and temperature in *Caenorhabditis elegans*. Poster presentation. North American Society of Environmental Toxicology and Chemistry Annual Meeting, Long Beach, CA, November 11-15.
- Yang XY, Jiang C, Hsu-Kim H, Badireddy AR, Wiesner MR, Hinton DE, **Meyer JN. 2012**. In vivo study of the role of endocytosis in silver nanoparticle uptake localization, and toxicity in *Caenorhabditis elegans*. Poster presentation. North American Society of Environmental Toxicology and Chemistry Annual Meeting, Long Beach, CA, November 11-15.
- Turner EA, Arnold MC, Kroeger GL, **Meyer JN. 2012**. Assessing the mechanisms of toxicity in mountaintop removal/valley fill coal mining-affected watershed samples using a *Caenorhabditis elegans* bioassay. Poster presentation. North American Society of Environmental Toxicology and Chemistry Annual Meeting, Long Beach, CA, November 11-15.
- Meyer JN. 2012**. Silver nanoparticle toxicity in *Caenorhabditis elegans*. Poster presentation. European Society of Environmental Toxicology and Chemistry Annual Meeting, Berlin, Germany, May 20-24.
- Meyer JN. 2012**. Later-life effects of early-life mitochondrial DNA damage. Poster presentation. European Society of Environmental Toxicology and Chemistry Annual Meeting, Berlin, Germany, May 20-24.
- Bess AS, Crocker TL, Ryde I, **Meyer JN. 2011**. Mitochondrial dynamics and autophagy aid in removal of persistent mitochondrial DNA damage. Poster presentation, North American Society of Environmental Toxicology and Chemistry Annual Meeting, Boston, Massachusetts, November 13-17.
- Leung MCK, Goldstone JV, Boyd WA, Freedman JH, **Meyer JN. 2011**. DNA Damage from aflatoxin B<sub>1</sub> but not benzo[a]pyrene in *Caenorhabditis elegans*: a case study of evolution of genotoxicity. Platform presentation. North American Society of

- Environmental Toxicology and Chemistry Annual Meeting, Boston, Massachusetts, November 13-17.
- Yang XY, Gondikas A, Auffan M, Hsu-Kim H, **Meyer JN. 2011.** Silver nanoparticle toxicity is dependent on dissolution and mitigated by natural organic matter in *Caenorhabditis elegans*. Poster presentation. North American Society of Environmental Toxicology and Chemistry Annual Meeting, Boston, Massachusetts, November 13-17.
- Bess AS, Crocker TL, Ryde IT, **Meyer JN. 2011.** Mitochondrial dynamics and autophagy aid in removal of persistent mitochondrial DNA damage. Poster presentation, Environmental Mutagen Society Annual Meeting, Montreal, Quebec, October 15-19. November 13-17.
- Kasiviswanathan R, Gustafson MA, Copeland WC, **Meyer JN. 2011.** Human mitochondrial DNA polymerase  $\gamma$  exhibits potential for bypass and mutagenesis at UV-induced cyclobutane thymine dimers. Poster presentation, Environmental Mutagen Society Annual Meeting, Montreal, Quebec, October 15-19. November 13-17.
- Meyer JN. 2011.** Mitochondrial dynamics as a new pathway for the removal of damaged DNA. Platform presentation. Mitochondrial Medicine 2011 Symposium, Schaumburg, Illinois, June 15-18.
- Yang XY, Gondikas A, Auffan M, Hsu-Kim H, **Meyer JN. 2011.** The mechanism of silver nanoparticle toxicity is dependent on size and surface coating in *Caenorhabditis elegans*. Poster presentation. ICEIN Meeting, Durham, NC, May 9-11.
- Meyer JN. 2011.** The roles of mitochondrial fusion, fission, and autophagy in removing damaged mitochondrial DNA. Platform presentation. Society of Toxicology Annual Meeting, Washington, DC, March 6-10.
- Arnold MC, Badireddy AR, Auffan M, Wiesner MR, Di Giulio RT, **Meyer JN. 2010.** Physical and toxicological study on cerium oxide nanoparticles in *Caenorhabditis elegans*. Poster presentation. North American Society of Environmental Toxicology and Chemistry Annual Meeting, Portland, Oregon, November 7-11.
- Yang XY, Lord CA, Badireddy AR, Auffan M, Wiesner MR, **Meyer JN. 2010.** Intracellular uptake and mechanisms of toxicity of silver nanoparticles in the nematode *Caenorhabditis elegans*. Platform presentation. North American Society of Environmental Toxicology and Chemistry Annual Meeting, Portland, Oregon, November 7-11.
- Turner EA, Kroger GL, Miranda ML, **Meyer JN. 2010.** Development of a bioassay using *Caenorhabditis elegans* to assess the environmental impact of mountaintop removal/valley fill coal mining. Poster presentation. North American Society of Environmental Toxicology and Chemistry Annual Meeting, Portland, Oregon, November 7-11.
- Meyer JN, Bess AS, Leung MCK, Smith AM, McKeever MG<sup>†</sup>, Margillo KM<sup>†</sup>, Crocker TL. 2010.** Sources, fate and consequences of persistent mitochondrial DNA damage. Platform presentation (session chair). North American Society of Environmental Toxicology and Chemistry Annual Meeting, Portland, Oregon, November 7-11.
- Bess AS, Crocker TL, **Meyer JN. 2010.** Mitochondrial fusion and autophagy aid in removal of helix-distorting mitochondrial DNA damage. Poster presentation. Environmental Mutagen Society Annual Meeting, Fort Worth, Texas, October 23-27.
- Meyer JN, Jung D, Di Giulio RT. 2010.** Quantifying Mitochondrial and Nuclear DNA Damage in Sentinel Species. Invited Platform Presentation. Environmental Mutagen Society Annual Meeting, Fort Worth, Texas, October 23-27.



- Meyer JN. 2010.** Desarrollo y uso del ensayo QPCR para daño al ADN nuclear y mitocondrial (2-day short course). XI Congreso Colombiano de Genética Humana, Medellín, Colombia, October 6-8.
- Meyer JN. 2010.** Destino y efectos del daño persistente al ADN mitocondrial. Invited plenary presentation. XI Congreso Colombiano de Genética Humana, Medellín Colombia, October 6-8.
- Smith AM, Crocker TL, Leung MCK, **Meyer JN. 2010.** Mitochondrial fusion and autophagy aid in removal of persistent mitochondrial DNA damage. Platform presentation, Society of Toxicology Annual Meeting, Salt Lake City, Utah, March 7-11.
- Leung MCK, Arrant AE, Smith AM, McKeever M<sup>†</sup>, Margillo KM<sup>†</sup>, Crocker TL, **Meyer JN. 2010.** Mitochondrial genotoxicity during development leads to dopaminergic neurodegeneration in adult *Caenorhabditis elegans*. Poster presentation, Society of Toxicology Annual Meeting, Salt Lake City, Utah, March 7-11.
- Meyer JN, Auffan M, Wiener MR, Lord CA. 2009** Silver nanoparticles inhibit growth in *Caenorhabditis elegans*. Platform presentation, ICEIN 2009 International Conference on the Environmental Implications of NanoTechnology, Howard University, Washington, DC September 9-11.
- Meyer JN. 2009.** Interactomes and their applications in toxicology. Platform presentation (session chair). Society of Toxicology Annual Meeting, Baltimore, Maryland, March 15-19.
- Leung MCK, McKeever M<sup>†</sup>, Berkowitz A<sup>†</sup>, Boyd WA, Bungler A, Freedman JH, Walsky RL, Stapleton HM, **Meyer JN. 2009.** Environmental mutagenesis and cytochrome P450 activities in the nematode *Caenorhabditis elegans*. Poster presentation. Society of Toxicology Annual Meeting, Baltimore, Maryland, March 15-19.
- Smith AM, Leung MCK, Arrant A, Bernal A, Crocker TL, **Meyer JN. 2009.** Removal of bulky DNA adducts following ultraviolet radiation exposure involves mitochondrial fusion and autophagy. Poster presentation. Society of Toxicology Annual Meeting, Baltimore, Maryland, March 15-19.
- Meyer JN, Arrant AE, Bernal AJ, Leung MCK, Crocker TL. 2008.** Bulky mitochondrial DNA adducts cause developmental arrest and are handled via a process involving mitochondrial fusion and autophagy in the model organism *Caenorhabditis elegans*. Platform presentation. North American Society of Environmental Toxicology and Chemistry Annual Meeting, Tampa, Florida, November 16-20.
- Leung MCK, Boyd WA, Bungler A, Rice JR, Freedman JH, Walsky RL, Stapleton HM, **Meyer JN. 2008.** Characterization of cytochrome P450 activities in the nematode *Caenorhabditis elegans*. Poster presentation. North American Society of Environmental Toxicology and Chemistry Annual Meeting, Tampa, Florida, November 16-20.
- Meyer JN, Arrant AE, Bernal AJ, Leung MCK, Crocker TL. 2008.** The Use of *C elegans* to study mitochondrial DNA damage, fusion/fission events and autophagy. Invited platform presentation. Environmental Mutagen Society Annual Meeting, Puerto Rico, October 18-22.
- Boyd WA, Crocker TL, Rodriguez AM, Leung MCK, Lehmann DW, Freedman JH, Van Houten B, **Meyer JN. 2008.** Growth arrest, DNA repair, and transcriptomic response to DNA damage in *Caenorhabditis elegans*. Poster presentation. Society of Toxicology Annual Meeting, Seattle, WA, March 16-20.
- Meyer JN, Wassenberg DM, Lobenhofer EK, Sonnhammer ELL, Linney E, Alexeyenko A. 2008.** Interactome-based analysis of the transcriptomic response to dioxin in developing zebrafish. Poster presentation, Aquatic Animal Models of Human Disease Conference, Durham, NC, January 31-February 3.

- Meyer JN**, Boyd WA, Lehmann DW, Haugen AC, Freedman JH, and Van Houten, B. **2007**. Nucleotide excision repair is required for normal lifespan and growth in genotoxin-stressed adult *Caenorhabditis elegans*. Poster presentation, 16<sup>th</sup> International *C. elegans* meeting, Los Angeles, CA, June 27-July 1.
- Meyer JN**, Boyd WA, Azzam GA<sup>†</sup>, Haugen AC, Freedman JH, and Van Houten B. **2006**. Genotoxicity and age-related differences in nucleotide excision repair following UVC exposure in *Caenorhabditis elegans*. Platform presentation. Environmental Mutagen Society Annual Meeting, Vancouver, BC, September 16-21.
- Meyer JN**, Boyd WA, Azzam GA<sup>†</sup>, Haugen AC, Freedman JH, and Van Houten B. **2006**. Altered homeostatic networks and decreased nucleotide excision repair in aging *Caenorhabditis elegans*. Poster presentation. 2<sup>nd</sup> Interactome Networks meeting (Cold Spring Harbor Laboratory/Wellcome Trust), Hinxton, UK, August 30-September 3.
- Meyer JN**, Boyd WA, Freedman JH, and Van Houten B. **2005**. DNA damage formation and removal in aging, repair-deficient, or frataxin-deficient *Caenorhabditis elegans*. Poster presentation. 15<sup>th</sup> International *C. elegans* meeting, Los Angeles, CA, June 25-29.
- Meyer JN**, Boyd WA, Haugen AC, Freedman JH, Van Houten B. **2004**. A *Caenorhabditis elegans* model of Friedreich's ataxia shows iron sensitivity, mitochondrial DNA damage, and altered gene expression. Poster presentation. Environmental Mutagen Society Annual Meeting, Pittsburgh, PA, October 2-6.
- Meyer JN**, Volz DC, Freedman JH, and Di Giulio RT. **2003**. Differential display of hepatic mRNA from *Fundulus heteroclitus* inhabiting a Superfund estuary. Poster presentation. North American Society of Environmental Toxicology and Chemistry Annual Meeting, Austin, TX, November 9-13.
- Meyer JN**, Timme AR, Waterland RA, Powell WH, Karchner SI, Hahn ME, and Di Giulio RT. **2003**. Analysis of CpG methylation in the promoter region of the CYP1A gene in *Fundulus heteroclitus* from creosote-contaminated and reference sites. Platform presentation. Pollutant Responses in Marine Organisms 12<sup>th</sup> International Symposium. Safety Harbor, Florida, USA, May 9-13.
- Meyer JN**, Smith JD, Winston GW, and Di Giulio RT. **2002**. Antioxidant defenses in killifish (*Fundulus heteroclitus*) exposed to Superfund sediments: short-term and evolutionary responses. Poster presentation. North American Society of Environmental Toxicology and Chemistry Annual Meeting, Salt Lake City, UT, November 16-20.
- Meyer JN** and Di Giulio RT. **2002**. Nongenetic heritability of an altered cytochrome P451A phenotype in killifish (*Fundulus heteroclitus*) from a contaminated site. Poster presentation. Developmental Toxicology in the 21<sup>st</sup> Century: Multidisciplinary Approaches using Model Organisms and Genomics. NIEHS, Research Triangle Park, NC, April 22-24.
- Meyer JN** and Di Giulio RT. **2001**. Mechanisms of adaptation in F<sub>1</sub> and F<sub>2</sub> offspring of wild-caught killifish (*Fundulus heteroclitus*) from a contaminated site. Platform presentation. North American Society of Environmental Toxicology and Chemistry Annual Meeting, Baltimore, MD, November 11-15.
- Meyer JN** and Di Giulio RT. **2001**. Mechanisms of adaptation and fitness costs in F<sub>1</sub> and F<sub>2</sub> offspring of wild-caught killifish (*Fundulus heteroclitus*) from a contaminated site. Platform presentation, Pollutant Responses in Marine Organisms 11<sup>th</sup> International Symposium. Plymouth, United Kingdom, July 10-13.
- Meyer JN** and Di Giulio RT. **2001**. Adaptations in a population of killifish inhabiting a polluted estuary: mechanisms, fitness costs, and genetic consequences. Platform

presentation. Office of Naval Research Harbor Processes Review. Washington, DC, June 4-5.

**Meyer JN** and Di Giulio RT. **2000**. Mechanisms of adaptation and fitness costs in F<sub>1</sub> and F<sub>2</sub> offspring of wild-caught killifish (*Fundulus heteroclitus*) from a contaminated site. Platform presentation. North American Society of Environmental Toxicology and Chemistry Annual Meeting, Nashville, TN November 12-16.

**Meyer JN**, MacLean ED, Di Giulio RT. **1999**. Measures of fitness in F<sub>1</sub> and F<sub>2</sub> offspring of wild-caught mummichog (*Fundulus heteroclitus*) from a contaminated site. Platform presentation, North American Society of Environmental Toxicology and Chemistry Annual Meeting, Philadelphia, PA, November 14-18.

**Meyer JN**, MacLean ED, Di Giulio RT. **1999**. Increased sensitivity to oxidative stress in a creosote-adapted population of mummichog (*Fundulus heteroclitus*). Poster presentation. Pollutant Responses in Marine Organisms 10<sup>th</sup> International Symposium. Williamsburg, VA, April 25-29.

### **Non-conference presentations:**

**2008:** UNC DNA Repair Focus Group, NC State Toxicology, NIEHS Laboratory of Molecular Genetics

**2009:** US EPA (RTP)

**2010:** Asociación Colombiana de Genética Humana workshop and presentation

**2011:** ECU Biology, Baylor University Biology, NIEHS DERT, Duke ITEHP Seminar Series; Duke ITEHP Symposium

**2012:** Belmont University Annual Environmental Science Lecture; Duke ITEHP Symposium; OneHealth course lecture; Leibniz Research Institute for Environmental Medicine; NIA Laboratory of Molecular Gerontology; ONES Awardee Symposium

**2013:** US EPA (RTP); Clemson University; NIEHS; Duke ITEHP Symposium; ONES Awardee Symposium

**2014:** Duke University Interdisciplinary Mitochondrial Colloquium; ONES Awardee Symposium

### **Teaching:**

#### *University graduate*

**Environmental Health** (ENV537), Duke University, 2009, 2011-2014. Co-instructor.

**Environmental Toxicology** (ENV501), Duke University, 2005, 2007- 2014. Co-Instructor or Instructor.

**Mechanisms in Toxicology** (ENV819), Duke University, 2008, 2011. Instructor.

#### *University undergraduate*

**Introduction to Environmental Science and Policy** (ENV102), Duke University. 2007-2013. Instructor.

**Environmental Chemistry and Toxicology** (ENV360), Duke University, 2008 - 2014. Co-Instructor.

**Integrating Environmental Science and Policy** (ENV201), Duke University, 2006, Co-Instructor; 2-3 malaria module lectures, 2007-2014.

#### *Middle School and High School*

**English** (Middle School and High School), Colegio de Estudios Avanzados "José Martí," Quetzaltenango, Guatemala. 1994-1997. Program Director and Instructor.

**Biology** (High School), Colegio de Estudios Avanzados "José Martí," Quetzaltenango, Guatemala. 1996. Instructor.