

Joel N. Meyer

Nicholas School of the Environment
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Employment

2013-present. **Duke University**: Associate Professor, Nicholas School of the Environment (NSOE).

Additional appointments:

Faculty member, Integrated Toxicology and Environmental Health Program (ITEHP), **Duke University** (2007-present)

Secondary appointment, Civil and Environmental Engineering, **Duke University** (2009-present)

Faculty member, Pharmacological Sciences Training Program, **Duke University** (2013-present)

Member, Duke Cancer Institute, **Duke University** (2013-present)

Affiliate, Duke Global Health Institute (DGHI), **Duke University** (2016-present)

Fixed Term Graduate Faculty, Environmental Science and Engineering, **UNC Chapel Hill** (2013-present)

2007-2013. **Duke University**: Assistant Professor, Nicholas School of the Environment.

2003-2006. **National Institute of Environmental Health Sciences** (RTP, NC): Post-doctoral researcher (Intramural Research Training Award)

1995-1997. **Instituto de Estudios Avanzados José Martí** (Quetzaltenango, Guatemala): High School Teacher (Biology, English) and Program Director (English)

1993-1995. **Centro de Estudios de Español "Pop Wuj"** (Quetzaltenango, Guatemala): Translator and Appropriate Technology Work Projects Coordinator

Education

Postdoctoral training 2003-2006 (mentor: Bennett Van Houten)

DNA Repair and Mitochondrial Damage Group, Laboratory of Molecular Genetics
National Institute of Environmental Health Sciences, RTP, NC

Doctor of Philosophy 2003 (advisor: Richard Di Giulio)

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

Bass Chair for Excellence in Research and Undergraduate Teaching (Truman and Nellie Semans/Alex Brown & Sons Associate Professor of Molecular Environmental Toxicology), 2017

Outstanding New Environmental Scientist Award (NIEHS), 2011

Professional affiliations

Environmental Mutagenesis and Genomics Society

Society of Environmental Toxicology and Chemistry
Society of Toxicology

Peer-reviewed publications

*corresponding author; †undergraduate

h index = 41, i10 index = 72, g index = 112, total citations = 8917 (October 2019, Google Scholar)

101. Laranjeiro R, Harinath G, Hewitt JE, Hartman JH, Royal MA, **Meyer JN**, Vanapalli SA, Driscoll M*. **In press**. Swim exercise in *Caenorhabditis elegans* extends neuromuscular and gut healthspan, enhances learning ability, and protects against neurodegeneration. Proceedings of the National Academy of Sciences of the United States of America.
100. Hartman JH, Richie CT, Gordon KL, Mello DF, Castillo P, Zhu A, Wang Y, Hoffer BJ, Sherwood DR, **Meyer JN**, Harvey BK*. **2019**. MANF deletion abrogates early larval *Caenorhabditis elegans* stress response to tunicamycin and *Pseudomonas aeruginosa*. European Journal of Cell Biology. PMID in progress.
99. Hershberger KA, Leuthner TC, Waters TA, **Meyer JN***. **In press**. *Caenorhabditis elegans* strain sensitivity to sodium arsenite exposure is varied based on age and outcome measured. microPublication Biology. PMID in progress.
98. Mello DF, Trevisan R, Rivera N, Geitner NK, Di Giulio RT, Wiesner MR, Hsu-Kim H, **Meyer JN***. **In press**. Caveats to the use of MTT, Neutral Red, Hoechst, and Resazurin to measure silver nanoparticle toxicity. Chemico-Biological Interactions PMID in progress.
97. Hartman JH, González-Hunt CP, Hall SM[†], Caldwell KA, Caldwell GA, Ryde IT, **Meyer JN***. **2019**. Genetic defects in mitochondrial dynamics in *Caenorhabditis elegans* impact ultraviolet C radiation- and 6-hydroxydopamine-induced neurodegeneration. International Journal of Molecular Sciences 20: 3202. PMID6651461.
96. Smith LL, Ryde IT, Hartman JH, Romersi RF[†], Markovich Z[†], **Meyer JN***. **2019**. Strengths and limitations of morphological and behavioral analyses in detecting dopaminergic deficiency in *Caenorhabditis elegans*. Neurotoxicology 74: 209-220. PMID6751008.
95. Leung MCK*, **Meyer JN**. **2019**. Mitochondria as a target of organophosphate and carbamate pesticides: revisiting common mechanisms of action with new approach methodologies. Reproductive Toxicology 89: 83-92. PMID6766410.
94. Bachman H, Fu H, Huang P-S, Tian Z, Embry-Seckler J, Rufo J, Xie Z, Hartman JH, Zhao S, Yang S, **Meyer JN**, Huang TJ*. **2019**. Open Source Acoustofluidics. Lab on a Chip 19: 2404 - 2414. PMID in progress.
93. Maglioni S, Mello DF, Schiavi A, **Meyer JN**, Ventura N*. **2019**. Mitochondrial bioenergetics changes during development as an early indicator of *Caenorhabditis elegans* health-span upon mitochondrial stress. Aging 11: 6535-6554. PMID6738431.
92. Zhang J, Yang S, Chen C, Hartman JH, Huang P-S, Wang L, Tian Z, Zhang SP, Faulkenberry D, **Meyer JN**, Huang TJ*. **2019**. Surface acoustic waves enable rotational manipulation of *Caenorhabditis elegans*. Lab on a Chip 9: 984-992. PMID6659422.
91. Dreier DA, Mello DF, **Meyer JN**, Martyniuk CJ*. **2019**. Linking mitochondrial dysfunction to organismal and population health in the context of environmental pollutants: Progress and considerations for mitochondrial adverse outcome

- pathways. Environmental Toxicology and Chemistry 8: 1625-1634. PMID: in progress.
90. Berky A, Ryde IT, Feingold BJ, Ortiz E, Wyatt L, Weinhouse C, Hsu-Kim H, **Meyer JN***, Pan WK*. **2019**. Predictors of mitochondrial DNA copy number and damage in a mercury-exposed rural Peruvian population near artisanal and small-scale gold mining: an exploratory study. Environmental and Molecular Mutagenesis 60: 197-210. PMC6452630.
 89. Hibshman JD, Leuthner TC, Mello DF, Shoben C, Sherwood DR, Meyer JN, Baugh LR*. **2018**. Non-selective autophagy reduces mitochondrial content during starvation in *Caenorhabditis elegans*. American Journal of Physiology-Cell Physiology 315: C781-C792. PMC6336938.
 88. Sanders LH*, Rouanet JP, Howlett EH, Leuthner TC, Rooney JP, Greenamyre JT, **Meyer JN**. **2018**. Newly revised protocol for quantitative PCR-based assay to measure mitochondrial and nuclear DNA damage. Current Protocols in Toxicology 76: e50. PMC6060631.
 87. Cothren SD, **Meyer JN**, Hartman JH*. **2018**. Blinded visual scoring of images using the freely-available software Blender. Bio-protocol 8(23): e3103. PMC6370323.
 86. Weinhouse C*, Truong L, **Meyer JN**, Allard P. **2018**. *Caenorhabditis elegans* as an emerging model system in environmental epigenetics. Environmental and Molecular Mutagenesis 59: 560-575. PMC6113102.
 85. **Meyer JN***, Hartman JH, Mello DF. **2018**. Mitochondrial Toxicity. Toxicological Sciences 162: 15-23. PMC5837373.
 84. Hartman JH, Smith LL, Gordon KL, Laranjeiro R, Driscoll M, Sherwood DR, **Meyer JN***. **2018**. Swimming exercise and transient food deprivation in *Caenorhabditis elegans* promote mitochondrial maintenance and protect against chemical-induced mitotoxicity. Scientific Reports 8: 8359. PMC5974391.
 83. Maurer LL, Luz AL, **Meyer JN***. **2018**. Detection of mitochondrial toxicity of environmental pollutants using *Caenorhabditis elegans*. In Mitochondrial Dysfunction Caused by Drugs and Environmental Toxicants, Volume II, First Edition, (Will Y and Dykens JA, editors), Wiley, Pp 655-689.
 82. Luz AL, Kassotis CD, Stapleton HM, **Meyer JN***. **2018**. The high production volume fungicide pyraclostrobin induces triglyceride accumulation associated with mitochondrial dysfunction, and promotes adipocyte differentiation independent of PPAR γ activation, in 3T3-L1 cells. Toxicology 393: 150-159. PMC5726929.
 81. **Meyer JN*** and Chan SS. **2017**. Sources, mechanisms, and consequences of chemical-induced mitochondrial toxicity. Toxicology 391: 2-4. PMC5681391.
 80. **Meyer JN***, Leuthner TC, Luz AL. **2017**. Mitochondrial fusion, fission, and mitochondrial toxicity. Toxicology 391:42-53. PMC5681418.
 79. Gonzalez-Moragas L, Maurer LL, Harms VM[†], **Meyer JN**, Laromaine A, Roig A*. **2017**. Materials science and toxicological approaches to study metal and metal oxide nanoparticles in the model organism *Caenorhabditis elegans*. Materials Horizons 4: 719–746. PMC5648024.
 78. Chen Y, **Meyer JN**, Hill HZ, Lange G, Condon MR, Klein JC, Ndirangu D, Falvo MJ*. **2017**. Role of mitochondrial DNA damage and dysfunction in veterans with Gulf War Illness. PLoS ONE 12:e0184832. PMC5599026.
 77. Hartman JH*, Kozal JS, Di Giulio RT, **Meyer JN**. **2017**. Zebrafish have an ethanol-inducible hepatic 4-nitrophenol hydroxylase that is not CYP2E1-like. Environmental Toxicology and Pharmacology 54:142-145. PMC5563387.
 76. Luz AL, Godebo TR, Smith LL, Leuthner T, Kubik LL, **Meyer JN***. **2017**. Deficiencies in mitochondrial dynamics sensitize *Caenorhabditis elegans* to arsenite and other

- mitochondrial toxicants by reducing mitochondrial adaptability. Toxicology 387: 81-94. PMC5535741.
75. Hartman JH*, Miller GP, **Meyer JN**. 2017. Toxicological implications of mitochondrial localization of CYP2E1. Toxicology Research 6: 273-289. PMC5627779.
74. Weinstein JR, Asteria-Peñaloza R, Diaz-Artiga A, Davila G, Ryde IT, Hammond SK, **Meyer JN**, Benowitz N, Thompson LM*. 2017. Exposure to polycyclic aromatic hydrocarbons and volatile organic compounds among rural Guatemalan women cooking and heating with solid fuels. International Journal of Hygiene and Environmental Health 220: 726-735. PMC5474125.
73. Lewis JJ, Hollingsworth JW, Chartier R, Cooper EM, Foster WM, Gomes G, Kussin P, MacInnis J, Padhi B, Panigrahi P, Rodes C, Ryde IT, Singha A, Stapleton HM, Thornburg J, Young C, **Meyer JN**, Pattanayak SK*. 2017. Biogas stoves reduce firewood use, household air pollution, and hospital visits in Odisha, India. Environmental Science and Technology 51: 560-569.
72. Wyatt LH, Luz AL, Ryde IT, Cao X, Maurer LL, Blawas AM[†], Aballay A, Pan WKY, **Meyer JN***. 2017. Effects of methyl and inorganic mercury on genome homeostasis and mitochondrial function in *Caenorhabditis elegans*. DNA Repair 52: 31-48. PMC5394729.
71. Luz AL, **Meyer JN***. 2016. Effects of reduced mitochondrial DNA content on secondary mitochondrial toxicant exposure in *Caenorhabditis elegans*. Mitochondrion 30: 255-264. PMC5023498.
70. Santa-González GA, Gómez-Molina A, Arcos-Burgos M, **Meyer JN**, Camargo M*. 2016. Distinct adaptive response to repeated exposure to hydrogen peroxide associated with upregulation of DNA repair genes and cell cycle arrest. Redox Biology 9: 124-133. PMC4971155.
69. Luz AL, Lagido C, Hirschey MD, **Meyer JN***. 2016. *In vivo* determination of mitochondrial function using luciferase-expressing *Caenorhabditis elegans*: contribution of oxidative phosphorylation, glycolysis, and fatty acid oxidation to toxicant-induced mitochondrial dysfunction. Current Protocols in Toxicology 69: 25.8.1-25.8.22. PMC5002950.
68. Luz AL, Godebo TR, Bhatt DP, Ilkayeva OR, Maurer LL, Hirschey MD, **Meyer JN***. 2016. Arsenite uncouples mitochondrial respiration and induces a Warburg-like effect in *Caenorhabditis elegans*. Toxicological Sciences 152: 349–362. PMC4960910. **Cover feature.**
67. Wyatt LH, Diringier SE, Rogers LA[†], Hsu-Kim H, Pan WKY, **Meyer JN***. 2016. Antagonistic growth effects of mercury and selenium in *Caenorhabditis elegans* are chemical species-dependent and do not depend on internal Hg/Se ratios. Environmental Science and Technology 50: 3256-64. PMC4964607.
66. Maurer LL*, **Meyer JN**. 2016. A systematic review of evidence for silver nanoparticle-induced mitochondrial toxicity. Environmental Science: Nano 3: 311-322.
65. Maurer LL, Yang X, Schindler AJ, Taggart RK, Jiang C, Hsu-Kim H, Sherwood DR, **Meyer JN***. 2016. Intracellular trafficking pathways in silver nanoparticle uptake and toxicity in *Caenorhabditis elegans*. Nanotoxicology 10: 831–835. PMC4864179.
64. Van Houten B*, Hunter SE, **Meyer JN**. 2016. Mitochondrial DNA damage induced autophagy, cell death, and disease. Frontiers in Bioscience 21: 42-54. PMC4750375.
63. González-Hunt CP, Rooney JP, Joglekar R, Anbalagan C, Ryde IT, **Meyer JN***. 2016. PCR-based analysis of mitochondrial DNA copy number, mitochondrial DNA damage, and nuclear DNA damage. Current Protocols in Toxicology 67: 20.11.1-20.11.25. PMC4928199.

62. Maurer LL, Ryde IT, Yang X, **Meyer JN***. 2015. *Caenorhabditis elegans* as a model for toxic effects of nanoparticles: lethality, growth, and reproduction. Current Protocols in Toxicology 66: 20.10.1-20.10.25.
61. Luz AL, Smith LL, Rooney JP, **Meyer JN***. 2015. Seahorse Xf(e) 24 Extracellular Flux Analyzer-based analysis of cellular respiration in *Caenorhabditis elegans*. Current Protocols in Toxicology 66: 25.7.1-25.7.15. PMC4632645.
60. Gorka DE, Osterberg JS, Gwin C, Colman BP, **Meyer J**, Bernhardt ES, Gunsch CK, Di Giulio RT, Liu J*. 2015. Reducing environmental toxicity of silver nanoparticles through shape control. Environmental Science and Technology 49: 10093–10098.
59. Robey RB*, Weisz J, Kuemmerle N, Salzberg AC, Berg A, Brown DG, Kubik L, Palorini R, Al-Mulla F, Al-Temaimi R, Colacci A, Mondello C, Raju J, Woodrick J, Scovassi AI, Singh N, Vaccari M, Roy R, Forte S, Memeo L, Salem HK, Amedei A, Hamid RA, Williams GP, Lowe L, **Meyer J**, Martin FL, Bisson WH, Chiaradonna F, Ryan EP. 2015. Metabolic reprogramming and dysregulated metabolism: Cause, consequence, and/or enabler of environmental carcinogenesis? Carcinogenesis 36 (S1): S203-S231. PMC4565609.
58. Luz AL, Rooney JP, Kubik LL, González-Hunt CP, Song DH, **Meyer JN***. 2015. Mitochondrial morphology and fundamental parameters of the mitochondrial respiratory chain are altered in *Caenorhabditis elegans* deficient in mitochondrial dynamics and homeostasis processes. PLoS ONE 10(6): e0130940. PMC4480853.
57. Bone AJ, Matson CW, Colman BP, Yang X, **Meyer JN**, Di Giulio RT*. 2015. Silver nanoparticle toxicity to Atlantic killifish (*Fundulus heteroclitus*) and *Caenorhabditis elegans*: A comparison of mesocosm, microcosm and conventional laboratory studies. Environmental Toxicology and Chemistry 34: 275-282.
56. Jayasundara N, Van Tiem L, **Meyer JN**, Erwin K, Di Giulio RT*. 2015. AHR2-mediated transcriptomic responses underlying the synergistic cardiac developmental toxicity of PAHs. Toxicological Sciences 143: 469-481. PMC4306723.
55. Rooney JP, Ryde IT, Saunders LH, Howlett EH, Colton MD[†], Germ KE, Mayer GD, Greenamyre JT, **Meyer JN***. 2015. PCR based determination of mitochondrial DNA copy number in multiple species. Methods in Molecular Biology: Mitochondrial Regulation: Methods and Protocols 1241: 23-38. PMC4312664.
54. González-Hunt CP, Leung MCK, Bodhicharla RK, McKeever MG[†], Arrant AE, Margillo KM[†], Ryde IT, Cyr DD, Kosmaczewski SG, Hammarlund M, **Meyer JN***. 2014. Exposure to mitochondrial genotoxins and dopaminergic neurodegeneration in adult *Caenorhabditis elegans*. PLoS ONE 9(12):e114459. PMC4259338.
53. Shaughnessy DT, McAllister KA, Worth L Jr, Haugen AC, **Meyer JN**, Domann FE, Van Houten B, Mostoslavsky R, Bultman SJ, Baccarelli AA, Begley T, Sobol RW, Hirschey MD, Ideker T, Santos JH, Copeland WC, Tice RR, Balshaw DM, Tyson FL. 2014. Mitochondria, energetics, epigenetics, and cellular responses to stress. Environmental Health Perspectives 122: 1271-1278. PMC4256704.
52. Sendoel A, Maida S, Zheng X, Teo Y, Stergiou L, Rossi C-A, Subasic D, Pinto S, Kinchen JM, Shi M, Boettcher S, **Meyer JN**, Manz MG, Bano D, Hengartner MO*. 2014. DEPDC1/LET-99 participates in an evolutionarily conserved pathway for anti-tubulin drug-induced apoptosis. Nature Cell Biology 16: 812-820.
51. Rooney JP, Luz AL, González-Hunt CP, Bodhicharla R, Ryde IT, Anbalagan C, **Meyer JN***. 2014. Effects of 5-fluoro-2'-deoxyuridine on mitochondrial biology in *Caenorhabditis elegans*. Experimental Gerontology 56: 69-76. PMC4048797.
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[†], 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. Colton MD[†], Kwok KWH, Brandon JA[†], Warren IH[†], 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 99: 117-124. PMC4309550.
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. Comparative toxicity of silver nanoparticles on oxidative stress and DNA damage 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.
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. PMC4407362.
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. PMC4019074.
41. Turner EA, Arnold MH, Kroeger GL, Thornton BL[†], **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. PMC3774817.
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, Sendoel A, Hengartner MO, Kisby GE, Bess AS. 2013. Mitochondria as a target of environmental toxicants. Toxicological Sciences 134: 1-17. PMC3693132. **Cover feature.**
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. 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. 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. PMC3640456.
35. Hunter SE, Gustafson MA, Margillo KM[†], Lee SA[†], **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. 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. PMC3468425.
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29. Leung MCK, Goldstone JV, Boyd WA, Freedman JH, **Meyer JN***. 2010. *Caenorhabditis elegans* generates biologically relevant levels of genotoxic metabolites from aflatoxin B₁ but not benzo[a]pyrene *in vivo*. Toxicological Sciences 118: 444-453. 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. 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, Sonhammer ELL, Linney E, **Meyer JN***. 2010. Interactome-based analysis of the transcriptomic response to dioxin in developing zebrafish *Danio rerio*. PLoS ONE 5: e10465. 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. PMC2912960.
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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. 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. 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.
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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. 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. PMC2092452.
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- 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

8. **Meyer JN***, Simon AH[†], Umakanth K, Yang X. **2017**. Silver nanoparticles are in general more toxic to *C. elegans* than gold, copper, iron, titanium dioxide, zinc oxide, cerium oxide, and carbon-based nanoparticles. Worm Breeder's Gazette published online January 17.
7. Maurer LL, Jiang C, Hsu-Kim H, **Meyer JN***. **2017**. Analysis of mitochondrial sodium, magnesium, calcium, manganese, and iron in wild-type *C. elegans*. Worm Breeder's Gazette published online January 17.
6. Klionsky DJ* *et al.* **2016**. Guidelines for the use and interpretation of assays for monitoring autophagy (2nd edition). Autophagy 12: 1-222. PMC4835977.
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, Bunker 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: 28.
3. **Meyer JN***, 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. 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 scientific society meeting presentations (limited to those I presented; †undergraduate)

- Meyer JN. 2019.** What have we learned about (mostly silver) nanomaterial toxicity in the *Caenorhabditis elegans* model? Center for the Environmental Implications of NanoTechnology Annual Meeting. Durham, NC.
- Hartman JHH, **Meyer JN. 2019.** Swim exercise in *Caenorhabditis elegans* protects dopaminergic neurons from age- and rotenone-induced toxicity. Poster presentation. United Mitochondrial Disease Foundation Symposium. Alexandria, VA.
- Meyer JN. 2019.** Does exposure to mitochondrial toxicants during germ cell development result in lifelong alterations in mitochondrial function mediated by epigenetic changes? Platform presentation. Society of Toxicology. Baltimore, MD.
- Meyer JN. 2018.** Long-term effects of early-life mitochondrial toxicity in the context of genetic deficiencies. Platform presentation. Society of Environmental Toxicology and Chemistry. Sacramento, CA.
- Meyer JN. 2017.** Roles of mitochondrial fusion, fission, and autophagy in response to environmental mitotoxicants. Poster presentation. Society of Environmental Toxicology and Chemistry. Minneapolis, MN.
- Meyer JN. 2017.** Roles of mitochondrial fusion, fission, and autophagy in response to environmental mitotoxicants. Poster presentation. United Mitochondrial Disease Foundation. Alexandria, VA.
- Meyer JN. 2016.** Long-term effects of early-life mitochondrial toxicity in the context of genetic deficiencies. Invited platform presentation. Society of Toxicology Annual Meeting, New Orleans, LA.
- Meyer JN. 2014.** Mechanisms of uptake and toxicity of silver nanoparticles in *Caenorhabditis elegans*. Platform presentation. North American Society of Environmental Toxicology and Chemistry Annual Meeting, Vancouver, BC, Canada.
- 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*. Poster presentation. Environmental Mutagenesis and Genomics Society, Monterey, CA.
- Meyer JN. 2013.** Fate and consequences of persistent mitochondrial DNA damage. Platform and poster presentations. Gordon Research Conference: Cellular & Molecular Mechanisms of Toxicity, Andover, NH.
- 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.
- Meyer JN. 2012.** Silver nanoparticle toxicity in *Caenorhabditis elegans*. Poster presentation. European Society of Environmental Toxicology and Chemistry Annual Meeting, Berlin, Germany.
- 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.
- Kasiswathan R, Gustafson MA, Copeland WC, **Meyer JN. 2011.** Human mitochondrial DNA polymerase γ exhibits potential for bypass and mutagenesis at UV-induced cyclobutane thymine dimers. Poster presentation, Environmental Mutagen Society Annual Meeting, Montreal, Quebec, October 15-19.

- Meyer JN. 2011.** Mitochondrial dynamics as a new pathway for the removal of damaged DNA. Platform presentation. Mitochondrial Medicine 2011 Symposium, Schaumburg, IL.
- 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.
- Meyer JN, Bess AS, Leung MCK, Smith AM, McKeever MG[†], Margillo KM[†], 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, OR.
- 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, TX.
- 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.
- Meyer JN. 2010.** Destino y efectos del daño persistente al ADN mitocondrial. Invited plenary presentation. XI Congreso Colombiano de Genética Humana, Medellín Colombia.
- 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.
- Meyer JN. 2009.** Interactomes and their applications in toxicology. Platform presentation (session chair). Society of Toxicology Annual Meeting, Baltimore, Maryland.
- 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, FL.
- 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.
- 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.
- 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.
- 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, 16th International *C. elegans* meeting, Los Angeles, CA.
- Meyer JN, Boyd WA, Azzam GA[†], 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.
- Meyer JN, Boyd WA, Azzam GA[†], Haugen AC, Freedman JH, and Van Houten B. 2006.** Altered homeostatic networks and decreased nucleotide excision repair in aging

- Caenorhabditis elegans*. Poster presentation. 2nd Interactome Networks meeting (Cold Spring Harbor Laboratory/Wellcome Trust), Hinxton, UK.
- 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. 15th International *C. elegans* meeting, Los Angeles, CA.
- 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.
- 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.
- 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 12th International Symposium. Safety Harbor, FL, USA.
- 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.
- 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 21st Century: Multidisciplinary Approaches using Model Organisms and Genomics. NIEHS, Research Triangle Park, NC.
- Meyer JN** and Di Giulio RT. **2001**. Mechanisms of adaptation in F₁ and F₂ 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.
- Meyer JN** and Di Giulio RT. **2001**. Mechanisms of adaptation and fitness costs in F₁ and F₂ offspring of wild-caught killifish (*Fundulus heteroclitus*) from a contaminated site. Platform presentation, Pollutant Responses in Marine Organisms 11th International Symposium. Plymouth, United Kingdom.
- 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.
- Meyer JN** and Di Giulio RT. **2000**. Mechanisms of adaptation and fitness costs in F₁ and F₂ 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.
- Meyer JN**, MacLean ED, Di Giulio RT. **1999**. Measures of fitness in F₁ and F₂ 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.
- 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 10th International Symposium. Williamsburg, VA.

Other presentations

- 2019:** UC Riverside; University of Puerto Rico Medical Science Campus; UNC Greensboro; UW Milwaukee; Duke-NUS Translational Parkinson's Research Symposium; Duke University ITEHP Symposium; Duke Hospital Cancer Center Prostate and Urologic Cancers Symposium
- 2018:** Oregon State University; North Carolina Central University
- 2017:** North Carolina Society of Toxicology
- 2016:** University of Washington Department of Biochemistry; RTP180; Duke Tumor Biology Group Retreat; ONES Awardee Symposium; Genetics and Environmental Mutagenesis Society; Institut Ciència de Materials de Barcelona
- 2015:** National Toxicology Program; Rutgers University Graduate School of Biomedical Sciences; Agency for Toxic Substances and Disease Registry; Duke Cancer Institute/ITEHP Symposium; Cancer Control and Population Sciences Seminar Series (Duke Cancer Institute); NC State Department of Toxicology
- 2014:** Duke Interdisciplinary Mitochondrial Colloquium; ONES Awardee Symposium; Carolina Science Café; Duke Center for DNA and Genome Stability; National Academy of Sciences Arab American Frontiers Program; Duke Megatrends presentation
- 2013:** US EPA (RTP); Clemson University; NIEHS; Duke ITEHP Symposium; ONES Awardee 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
- 2011:** ECU Biology; Baylor University Biology; NIEHS DERT; Duke ITEHP Seminar Series; Duke ITEHP Symposium; Duke Aging Colloquium
- 2010:** Asociación Colombiana de Genética Humana workshop and presentation
- 2009:** US EPA (RTP); Duke Center for DNA and Genome Stability
- 2008:** UNC DNA Repair Focus Group; NC State Toxicology; NIEHS Laboratory of Molecular Genetics

Teaching

University graduate (at Duke University)

Environmental Health (ENV537): 2009, 2011-2014. Co-instructor.

Environmental Toxicology (ENV501): 2005, 2007- 2019. Co-Instructor or Instructor.

Mechanisms in Toxicology (ENV819): 2008, 2011, 2015, 2017, 2019. Instructor.

Seminar in Toxicology (ENV847/848): Fall 2017-2019 (every semester). Instructor.

Connections in Global Health (ENV795): Fall 2017. Instructor.

University undergraduate (at Duke University)

Introduction to Environmental Science and Policy (ENV102): 2007-2017. Instructor.

Environmental Chemistry and Toxicology (ENV360): 2008 - 2019. Co-Instructor.

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

Connections in Global Health (ENV395): Fall 2017. Instructor.

Middle School and High School (at Colegio de Estudios Avanzados "José Martí," Quetzaltenango, Guatemala.)

English (Middle School and High School): 1994-1997. Program Director and Instructor.

Biology (High School): 1996. Instructor.

Service activities

Journal peer reviewer: Analytical Chemistry (1), Aquatic Toxicology (7), Archives of Environmental Contamination and Chemistry (1), Biochemical Pharmacology (2), Biology Methods & Protocols (1), BBA-Gene Regulatory Mechanisms (1), Biology Letters (1), BMC Biology (1), BMC Pharmacology & Toxicology (3), Cell Death and Disease (1), Cellular and Molecular Biology (1), Chemical Reviews in Toxicology (1), Chemico-Biological Interactions (2), Chemosphere (6), Comparative Biochemistry and Physiology (4), Developmental Biology (1), Diabetes/Metabolism Research and Reviews (1), DNA Repair (7), Ecotoxicology (3), Ecotoxicology and Environmental Safety (4), Ecotoxicology and Molecular Mutagenesis (3), EMBO Journal (1), Environmental Health Perspectives (1), Environment International (2), Environmental and Molecular Mutagenesis (10), Environmental Pollution (2), Environmental Science and Technology (10), Environmental Toxicology (3), Environmental Toxicology and Chemistry (4), Environmental Toxicology and Pharmacology (2), Epigenetics (1), Experimental Gerontology (2), Food and Chemical Toxicology (1), Free Radicals in Biology and Medicine (1), Genome Research (1), Genomics (1), Journal of Agricultural and Food Chemistry (1), Journal of Applied Microbiology (1), The Journal of Biological Chemistry (1), Journal of Experimental Biology (1), Journal of Gerontology (2), Journal of Visualized Experiments (1), Marine Environmental Research (1), Mechanisms of Ageing and Development (1), Methods (1), Mitochondrion (3), Molecular Carcinogenesis (1), Mutation Research (1), Nanomedicine (1), Nanotoxicology (9), Nature Nanotechnology (1), Neurotoxicology (4), Neurotoxicology and Teratology (5), Nucleic Acids Research (2), PLoS Genetics (1), PLoS ONE (14), Radiation Oncology (1), Science of the Total Environment (1), Scientific Reports (1), Toxicological Sciences (21), Toxicology (10), Toxicology Letters (1).

Editorial Board, BMC Pharmacology and Toxicology (2012-2017), DNA Repair (2013-present), Environmental and Molecular Mutagenesis (2013-present), Korean Journal of Environmental Health and Toxicology (2011-present).

Scientific Society Service: Councilor to the Board of Directors, Genetics and Environmental Mutagenesis Society 2007-2010; Councilor, Molecular and Systems Biology Specialty Section, Society of Toxicology (2013-2015); Awards and Honors Committee (2012-2014), Publications Committee (2014-present), and Councilor (2017-present), Environmental Mutagenesis and Genomics Society.

Grant reviews: Banco de la República (Colombia, 1), Biotechnology and Biological Sciences Research Council (UK, 2), Environment and Health Fund (Israel, 1), Medical Research Council National Centre for the Replacement, Refinement and Reduction of Animals in Research (UK, 1), Maine Water Resources Institute (1), NIEHS SBIR (1), NIEHS/Superfund (1, with Co-Chair duties), NIEHS Special Emphasis/Specialty (10), NSF (1), Netherlands Organization for Scientific Research (1), NOMD (1), NAL (1), SIEE study section 2019-2023.

Director of Graduate Studies, ENV (PhD) program, 2013-2018; Integrated Toxicology and Environmental Health Program (2018-present).

Research Mentoring

Undergraduate students: Greg Azzam (NCSU, 2007); Kiersten Bell (Duke, 2018); Avery Berkowitz (NSOE, 2010); Shefali Bikwadia (Biology, 2021); Ashley Blawas

(Biomedical Engineering, 2018), Meryl Colton (NSOE, 2011); Audrey Dinyari (UNC, 2017); Lauren Donoghue (UNC, 2014); Laura Guidera (Biology, 2018); Samantha Hall (Biology/NSOE, 2015); Victoria Harms (Baylor University, 2018); Jamie Harris (Biology, 2019); Jina Kim (NSOE, 2013); Madeleine McKeever (Biology, 2009); Kathleen Margillo (NSOE, 2011); Audrey Hagopian (NSOE, 2014); Sean Lee (Biology, 2011); Zachary Markovich (Chemistry, 2020), Luiza Perez (Sociology, 2019), Caroline Reed (UNC, 2018), Riccardo Romersi (Chemistry/NSOE, 2020); Michael Saporito (Biology, 2019); Alex Simon (Virginia Tech, 2013); Tim Sokolskyi (NSOE, 2021); Brittany Lila Thornton (NSOE, 2013); Tanner Waters (NSOE, 2018).

Master's students: Emily Buenger (NSOE, MS, 2013); Christina Chao (DGHI, MS, 2015); Genna Gomes (NSOE, MEM, 2015); Alexander Kliminsky (NSOE, MEM, 2016); Kara Koehn (NSOE, MEM, 2009); Sharon Luong (NSOE, MEM, 2010); Emily Robie (DGHI, MS, 2019); Katherine Stencel (NSOE, MS, 2015); Krithika Umakanth (NSOE, MEM, 2011).

*Doctoral students (major advisor; * indicates joint advising):* Amanda Bess (NSOE, 2012); Claudia González-Hunt (NSOE, 2017); Rashmi Joglekar* (NSOE, 2019); Dillon King* (NSOE, 2023); Maxwell Leung (NSOE, 2012); Tess Leuthner (NSOE, 2019); Jessica Lewis* (NSOE, 2015); Anthony Luz (NSOE, 2017); John Rooney (NSOE, 2015); Latasha Smith (NSOE and Pharmacology and Cancer Biology, 2019); Lauren Wyatt* (NSOE, 2017); Xinyu Yang (NSOE, 2014).

Doctoral students (thesis committee): Christina Arnaout (Civil and Environmental Engineering/Pratt, 2013); Audrey Bone (NSOE, 2015); Autumn Bernal (University Program in Genetics and Genomics, 2012); Daniel Brown (NSOE, 2015); Xiou Cao (Molecular Genetics and Microbiology, 2017); Elizabeth Chan (Immunology, 2014); Bryan Clark (NSOE, 2011); Xiaoxing Cui (NSOE, 2018); Lauren Czaplicki (Civil and Environmental Engineering/Pratt, 2017); Drew Day (NSOE, 2017); Anne Eischeid (Civil and Environmental Engineering/Pratt, 2009); Tara Essock-Burns (NSOE, 2015); Carrie Fleming (NSOE, 2010); Dawoon Jung (NSOE, 2009); Jordan Kozal (NSOE, 2018); Christopher Leonetti (NSOE, Duke University, 2016); Casey Lindberg (NSOE, 2020); Laura Macaulay (NSOE, 2015); Priyaanka Nanduri (Pharmacology and Cancer Biology, 2015); Pam Noyes (NSOE, 2011); Ashley Parks (Civil and Environmental Engineering/Pratt, 2013); Allison Phillips (NSOE, 2019); Simon Roberts (NSOE, 2014); Matt Ruis (NSOE, 2021); Rose Schrott (NSOE, 2021); Lindsey Van Tiem (NSOE, 2011); Jerry Yen (Microbiology and Genetics, 2012).

Post-graduate researchers: Rakesh Bodhicharla (2011-2013); Jessica Hartman (2016-present); Kirsten Helmcke (2010); Kathleen Hershberger (2018-present); Senyene Eno Hunter (2009-2010); Laura (Kubik) Maurer (2014-2016); Danielle Ferraz Mello Trevisan (2017- present); Lu Wang (2019-present).

Visiting scholars: Jinhee Choi (2010-2011; University of Seoul, South Korea), Gloria Santos Gonzáles (2013; Universidad de Antioquia, Colombia), Silvia Maglioni (2015; IUF- Leibniz Research Institute for Environmental Medicine, Germany), Lesly Tejada Benítez (2012 and 2016; Universidad de Cartagena, Colombia), Lam Van Giang (2011; Vietnam National University, Vietnam).

Grants

Current:

Does exposure to mitochondrial toxicants during germ cell development result in lifelong alterations in mitochondrial function mediated by epigenetic changes?

1R01-ES028218

NIEHS

9/15/2017-8/31/2022

\$986,260 total direct costs

Role: PI, Susan Murphy and Ryan Baugh, Co-Is)

Persistent mitochondrial and epigenetic effects of early-life toxicant exposure

P42-ESO10356

NIEHS (NIH) and EPA

4/1/2017-3/31/2022

\$1,202,150 total direct costs

Role: PI, Project 3 (Susan Murphy, Co-I)

Part of Superfund Basic Research Center (Richard Di Giulio, PI)

Training Core, Superfund Research Center

P42-ESO10356

NIEHS (NIH) and EPA

4/1/2017-3/31/2022

\$584,800 total direct costs

Role: PI, Training Core

Part of Superfund Basic Research Center (Richard Di Giulio, PI)

Are mitochondria a major target of antimicrobial silver nanoparticles?

1R21-ESO26743-01A1

NIEHS (NIH)

3/1/2017-2/28/2019

\$275,000 total direct costs

Role: PI

Mitochondrial dysfunction and Gulf War Illness

GW150184

Department of Defense

9/1/2016-8/31/2019

\$500,000 total direct costs

Role: PI (Michael Falvo and William Pan, Co-Is)

Development of an acoustofluidic-based *C. elegans* 3D imaging and sorting system

R43 OD024963

Ascent Bio-Nano Technologies, Inc. (NIH Prime)

8/1/2018-7/31/2020

\$150,000 total direct costs

Role: Co-I (Lin Wang, PI; Tony Huang, Co-I)

Completed:

Responses of *Caenorhabditis elegans* to nanomaterials

DBI-1266252

Center for Environmental Implications of NanoTechnology (Mark Wiesner, PI)

NSF/EPA Cooperative Agreement

9/15/13-8/31/19 (NCE)

\$289,230 total direct costs

Role: Co-I and Associate Director, Theme 2: Cellular and Organismal Responses

Developmental PAH exposures in fish: Mechanisms of toxicity, adaptation and later life consequences (Project 3)

P42 ES010356-10A2

NIEHS (NIH) and EPA

04/01/2011-03/31/2017

\$1,599,664 total direct costs

Role: Co-PI, Project 3 (Richard Di Giulio, PI)
Part of Superfund Basic Research Center (Richard Di Giulio, PI)

The role of mitochondrial DNA damage in neurodegeneration

1R01-ES017540-01A2
NIEHS (NIH)
05/16/11-05/15/16
\$1,225,064 total direct costs
Role: PI

Impacts on human health and the environment from resource extraction in the Amarakaeri Reserve

Hunt Oil Company
06/18/2014-06/17/2016
\$50,000
Role: Co-I (William Pan, PI)

The role of exposure to environmental toxicants in pro-oncogenic shifts in pyruvate metabolism

Duke Cancer Institute Pilot Project
09/01/2015-08/31/2016
\$150,176 total direct costs (no overhead)
Role: Co-PI with Matthew Hirschey

The role of exposure to environmental toxicants in pro-oncogenic metabolic shifts

Duke Cancer Institute Pilot Project
02/01/2014-01/31/2015
\$138,176 total direct costs (no overhead)
Role: Co-PI with Matthew Hirschey

Health, environmental, and climate impacts of household energy choices in India

Problem-Focused Interdisciplinary Research Scholarship Teams (PFIRST); Duke University Provost's Fund
04/01/2011-03/31/2014
\$80,000 (no overhead; this is total funding for all investigators)
Role: Co-I (Subhrendu Pattanayak, PI)

Responses of *Caenorhabditis elegans* to nanomaterials

EF-830093
Center for Environmental Implications of NanoTechnology (Mark Wiesner, PI)
NSF/EPA Cooperative Agreement
10/1/08-9/30/13
\$398,000 total direct costs
Role: Co-I and Associate Director, Theme 2: Cellular and Organismal Responses

Do TSNA and PAHs interact synergistically to cause DNA damage and promote carcinogenesis?

RJ Reynolds Tobacco Company
02/01/2010-08/31/2013
\$65,000 plus postdoctoral salary and benefits (no overhead)
Role: PI

Environmental effects on human and ecological health

Foundation for the Carolinas
06/01/2009-05/31/2013
\$107,759 total direct costs (no overhead)
Role: Co-I

Molecular and physiological responses to persistent mitochondrial DNA damage

R21 NS065468

NINDS (NIH)
05/01/09-04/30/11
\$225,000 total direct costs
Role: PI

Functional genomics research core

P42 ES010356
NIEHS (NIH) and EPA
09/01/2007-03/31/2011 (No Cost Extension period after 04/01/2009)
\$461,484 total direct costs (09/01/2007 forward)
Role: PI, Genomics Core
Note: replaced Jonathan Freedman and Seth Kullman in this position
Part of Superfund Basic Research Center (Richard Di Giulio, PI)

**The fate of bulky mitochondrial DNA lesions after environmental genotoxic stress
in a model organism**

P30 ES011961-01A1
NIEHS (NIH)
Duke University Center for the Comparative Biology of Vulnerable Populations
Pilot Project
09/01/07-08/31/08
\$43,232 total direct costs (no overhead)
Role: PI