Nicole T. Comfort

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Education

2016 – **Columbia University Mailman School of Public Health** (New York, NY)
Ph.D. Program in Environmental Health Sciences, anticipated Oct. 2021
Cumulative GPA: **3.842**/4.0

2016 – 2017 **Columbia University Mailman School of Public Health** (New York, NY)
M.A., Columbia University Graduate School of Arts & Sciences, Oct. 2017

2016 **Boston University School of Public Health (SPH)** (Boston, MA)
Non-degree coursework
Introduction to Toxicology, Foundations of Environmental Health
Cumulative GPA: **4.0**/4.0

2011 – 2015 **Northeastern University** (Boston, MA)
B.S., Behavioral Neuroscience, May 2015
Cumulative GPA: **3.985**/4.0, *summa cum laude, University Honors Distinction*

Work Experience

2018- **Graduate Research Assistant, Columbia University**
Department of Environmental Health Sciences
Primary advisor: **Dr. Andrea Baccarelli**

2016-2017 **Graduate Student Researcher, Columbia University**
Research rotations
Department of Genetics & Development
Advisors: **Dr. Timothy Bestor, Dr. Matthieu Boulard,** Dr. Olya Yarychkivska
Project: Regulation of DNA Methyltransferase 1 (*DNMT1*)
Techniques: PCR, Bisulfite sequencing, Western blot, cell culture

Department of Environmental Health Sciences
Advisor: **Dr. Diane Re**
Project: Organophosphate toxicity in stem cell-derived motor neurons; examine potential common mechanisms for organophosphate-induced delayed neuropathy and amyotrophic lateral sclerosis (ALS)
Techniques: Primary cell culture, extracellular vesicle isolation from human brain tissue and mouse astrocytes, tissue sectioning, antibody staining of spinal cord tissue and neuromuscular junctions, slide mounting, motor neuron counting, imaging using flash cytometer and analysis using MetaMorph® to assess neuronal outgrowth

Advisor: **Dr. Andrea Baccarelli**
Project: Assess the effect of phthalate exposure on male infertility using mitochondrial lesions as a biomarker of phthalate exposure and DNA damage, quality control assays
Techniques: PCR, PicoGreen dsDNA quantification assay, DNA lesions quantification assay, gel electrophoresis, data analysis in R

2015-2016 **Research Associate, Environmental Health Dept., Boston University School of Public Health**
Advisors: **Dr. Roberta F. White,** Dr. Kimberly Sullivan
Research Areas: Gulf War Illness, clinical research; Identify plasma biomarkers of Gulf War Illness using "omic" technology, assess efficacy of intranasal insulin on memory and attention functioning, mood, and overall physical health in Gulf War veterans
Techniques: Various neuropsychological assays for cognitive function including CPT3, COWAT (FAS), Finger tapping test, Grooved pegboard test, Block design, Trail-making, CVLT-II, and TOMM

2014-2015 **Research Assistant, Neurology Dept., Biogen**
Advisors: **Dr. Marion Wittmann, Dr. Brandon Farley**
Research Areas: Assay optimization to assess clinical onset of disease in amyotrophic lateral sclerosis (ALS) transgenic mouse and demyelination in the optic pathway of rats after injection of a neurotoxic/gliotoxic compound
Techniques: EEG/EMG recordings, compound muscle action potential (CMAP) recordings, visual evoked potentials, behavioral measurements (rotarod, grip strength), data analysis

2013-2014 **Research Assistant, Neurobiology Dept., Harvard Medical School**
Advisors: **Dr. John Maunsell, Dr. Mark Histed**
Research Areas: Visual and auditory perception, neural coding
Techniques: Optogenetics in mice, stereotaxic surgery, *in vivo* electrophysiology, single-unit neural recording, operant conditioning, data analysis using MATLAB

2011-2013 **Undergraduate volunteer, Psychology Dept., Northeastern University**
Advisors: **Dr. Richard Melloni, Jr.,** Dr. Thomas Morrison
Research Areas: Anabolic-androgenic steroids, offensive aggression, affective behaviors (e.g. anxiety), actions of arginine vasopressin and dopamine in lateral anterior hypothalamus
Techniques: Rodent behavioral tests (elevated plus maze, resident-intruder paradigm, black/white box) and scoring, stereotaxic surgery, cardiac perfusions, brain extractions, tissue cross-sectioning with microtome, slide mounting and coverslipping, immunohistochemistry

Grants and Fellowships

2017-2018 National Institute of Environmental Health Sciences Pre-doctoral Training Grant (2T32ES007322-16); Principal Investigator: Andrea Baccarelli

2016-2017 National Institute of Environmental Health Sciences Pre-doctoral Training Grant (4T32ES007322-15); Principal Investigator: Joseph H. Graziano

Awards and Honors

Northeastern University

2015 Huntington 100 Award – *recognizes one hundred students selected for their impressive achievements and impact both on campus and around the world*

2015 Sears B. Condit Award – *recognizes the one hundred graduating students with the highest quality GPAs in the class*

2015 Provost Undergraduate Research and Creative Endeavors Award – *offers financial and academic support to Northeastern students seeking to conduct original projects of their own design*

2014 President's Award – *awarded to the top ten students in the class; note that NU's total undergraduate enrollment is nearly 14,000 students*

2014 Behavioral Neuroscience Department Travel Award

2011-2015 Dean's Scholarship, Dean's List

Publications

Yarychkivska, O., Shahabudhin, Z., **Comfort, N.**, Boulard, M., Bestor, T.H. BAH domains and a histone-like motif in DNA methyltransferase I (*DNMT1)* regulate de novo and maintenance methylation in vivo. 2018. *J Biol Chem,* pii: jbc.RA118.004612.

Comfort, N., Re, D.B. Sex-specific neurotoxic effects of organophosphate pesticides across the life course. 2017. *Curr Environ Health Rep*, 4(4): 392-404.

Qiang, L., Rao, A.N., Mostoslavsky, G., James, M.F., **Comfort, N.**, Sullivan, K., Baas, P.W. Reprogramming cells from Gulf War veterans into neurons to study Gulf War Illness. 2017. *Neurology*, 88(20): 1968-1975.

Acknowledgements:
Histed, M.H. and Maunsell, J.H.R. Cortical neural populations can guide behavior by integrating inputs linearly, independent of synchrony. 2014. *Proc Natl Acad Sci U.S.A.,* 111(1): E178-E187.

Glickfeld, L., Histed, M.H., Maunsell, J.H.R. Mouse primary visual cortex is used to detect both orientation and contrast changes. 2013. *J. Neurosci,* 33(50): 19416-19422.

Abstracts

2018 **Nicole Comfort,** Wanda Phipatanakul, Andrea Baccarelli. Saliva extracellular vesicle (EV) microRNA and asthma severity in urban school children. Academic Pediatric Association (APA) Environmental Health Scholars Retreat. Providence, RI. Abstract accepted for October 2018 APA conference.

2017 Teresa Obis, Meredith Loth, Agnese Ramirez, Samantha Merwin, Beatriz Blanco, Sara

Guariglia, Vesna Ilievski, Silvia Tamanini, **Nicole Comfort**, Yanelli Nunez, Marfred E. Munoz Umanes, Mary Gamble, Vernice Jackson-Lewis, Shingo Kariya, Stefania Corti, Tomas Guilarte, and Diane B. Re. PK11195, a ligand of the translocator protein 18KDa, improves grip strength, motor performance, and muscle innervation at early but not late disease stages in the amyotrophic lateral sclerosis mutant superoxide dismutase 1 mouse model. Program No. 670.10. 2017 Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2014. Online.

2015 Brandon J. Farley, **Nicole T. Comfort**, Jessica L. Goodman, Anne M. Kuszpit, Tracy Cole, Holly Kordasiewicz, Eric Swayze, Alexander McCampbell, and Marion Wittmann. Antisense oligonucleotide treatment protects against neuromuscular denervation in the SOD1 G93A mouse model of ALS as evaluated by a pre-symptomatic electrophysiological measure. Program No. 69.18. 2015 Neuroscience Meeting Planner. Chicago, IL: Society for Neuroscience, 2015. Online.

2014 M. H. Histed, **N. T. Comfort**, R. T. Ohman, A. R. Perillo, J. H. R. Maunsell. Linear integration for perceptual behavior in mouse primary auditory and visual cortex. Program No. 530.05. 2014 Neuroscience Meeting Planner. Washington, DC: Society for Neuroscience, 2014. Online.

Conference and Seminar Presentations

2018 Student Research Diversity Day, Columbia University Mailman School of Public Health. *Saliva extracellular vesicle (EV) microRNA and asthma severity in urban school children.* Poster presentation.

2015 RISE: Research, Innovation, and Scholarship Expo, Northeastern University. Poster presentation.

2014 M. H. Histed, **N. T. Comfort**, R. T. Ohman, A. R. Perillo, J. H. R. Maunsell (2014). *Linear integration for perceptual behavior in mouse primary auditory and visual cortex.* (Poster presented at forty-fourth annual Society for Neuroscience Annual Meeting, Washington, D.C.)

2014 Honors Evening Poster Session, Northeastern University. Poster presentation.

Teaching Experience

Specific courses

2018 **Teaching Assistant** for course titled "Fundamental Toxicology for Public Health-Related Disciplines." Developed and taught a lecture, developed quizzes, graded assignments, held office hours.

Other teaching activities

2018 **Workshop guide** for Columbia's **Mendelian Randomization Boot Camp,** a two-day intensive combination of seminars and hands-on analytical sessions to provide an overview of the concepts, techniques, packages, data sources, and data analysis methods needed to conduct Mendelian Randomization studies. Provide coding assistance to workshop participants.

2018	Completed the "Evidence-Based Teaching in Science & Engineering Seminar," an intensive, 4-week, STEM-focused teaching development program offered by the Columbia University Center for Teaching and Learning (CTL).
2014-2015	Volunteer teacher for NEPTUN (NorthEastern Program for Teaching by Undergraduates) *Splash* weekends at Northeastern University
2013-2015	Interaxon volunteer, presenting neuroscience topics to youth in Boston
2012-2013	College of Reading and Learning Association certified tutor, Northeastern University Peer Tutoring Program

Professional Organizations and Society Memberships

2018-	International Society for Extracellular Vesicles
2015-	Nu Rho Psi National Honor Society, Massachusetts Beta Chapter
2015-	Tri Beta Biological Honor Society, Chi Delta Epsilon Chapter
2014-2016	Society for Neuroscience

Leadership and Volunteer Activities

2017-	**Doctoral representative,** Environmental Health Science, **Graduate Student Association,** Columbia Mailman School of Public Health
2015-	**Climate Reality Leader**, received training at twenty-seventh Climate Reality Leadership Corps Training, New Delhi, India
2014-2015	**President**, Nu Rho Psi National Honor Society, Massachusetts Beta Chapter at Northeastern University
2013-2014	Secretary, Nu Rho Psi National Honor Society, Massachusetts Beta Chapter at Northeastern University
2014	**Alternative Spring Break Team Leader**, Northeastern University, Tandana Foundation, Ecuador
2013	Alternative Spring Break Participant, Northeastern University, Rebuilding Together, Oklahoma, U.S.
2012-2015	Behavioral Neuroscience program peer mentor – mentor incoming Behavioral Neuroscience major undergraduates

Related Professional Skills

DNA/RNA extractions	Cell culture	SDS-PAGE
DNA methylation analysis	Extracellular vesicle isolation	Antibody staining
R, SAS	Western Blot	Mendelian randomization
PCR	Rodent behavioral testing	

Interests

Acrylic and watercolor painting, international travel, long-distance running, hiking, playing classical flute and piano, activism and volunteering, gardening