

ABEE BOYLES, PH.D.
Epidemiology Branch
National Institute of Environmental Health Sciences
111 T.W. Alexander Dr., MD A3-05
Durham, NC 27709
P: (919) 541-7886, F: (919) 541-2511
Email: boylesa@niehs.nih.gov

EDUCATION AND EMPLOYMENT

National Institute Environmental Health Sciences/ NIH Epidemiology Branch	
IRTA Post Doctoral Fellow	2006-present
Duke University Ph.D. University Program in Genetics and Genomics	2006
Certificate in Teaching College Biology	2006
Certificate in Bioinformatics and Genome Technology	2004
GlaxoSmithKline Department of Receptor Biochemistry, Research Assistant	1999-2001
North Carolina State University , B.S. Zoology, Minor in Genetics, summa cum laude	1998

HONORS

Fellows Award for Research Excellence (FARE), 2010
NSF Graduate Research Fellowship, Honorable Mention, 2003
James B. Duke Fellowship, 2001-2005
John T. Caldwell Alumni Scholarship, 1994-1998

SCIENTIFIC SERVICE

Peer Reviewer: American Journal of Epidemiology, Birth Defects Research Part A, Epidemiology, Human Mutation, Human Reproduction, JAMA, Kidney International, Marine Mammal Science, Mutation Research, Nutrition Reviews, Oral Diseases
NIEHS Trainees Assembly (NTA) Steering Committee 2007-present
NIEHS Division of Intramural Research Council – NTA representative 2008-2009
NIEHS Assembly of Scientists Council – NTA representative 2008-2009, 2010-present

PUBLISHED WORK

Jugessur A, Shi M, Gjessing HK, Lie RT, Wilcox AJ, Weinberg CR, Christensen K, **Boyles AL**, Daack-Hirsch S, Trung TN, Bille C, Lidral AC and Murray JC. Fetal genetic risk factors for isolated cleft lip only versus isolated cleft lip and palate: A phenotype-specific analysis using two population-based studies of orofacial clefts in Scandinavia (submitted, *Genetic Epidemiology*)

Boyles AL,* DeRoo LA,* Lie, RT, Taylor JA, Jugessur A, Murray JC, Wilcox AJ. Maternal alcohol consumption, alcohol metabolism genes and the risk of oral clefts: a population based case-control study in Norway (in press, *American Journal of Epidemiology*)

*co-first authored

Jugessur A,* Shi M,* Gjessing HK, Lie RT, Wilcox AJ, Weinberg CR, Christensen K, **Boyles AL**, Daack-Hirsch S, Trung TN, Christiansen L, Lidral AC and Murray JC. Maternal genes and the risk of orofacial clefts in offspring: A comprehensive search for genetic associations in two population-based cleft studies from Scandinavia (in press, *PLoS ONE*)

*co-first authored

Jugessur A,* Shi M,* Gjessing HK, Lie RT, Wilcox AJ, Weinberg CR, Christensen K, **Boyles AL**, Daack-Hirsch S, Trung TN, Bille C, Lidral AC and Murray JC. (2009) Genetic Determinants of Facial Clefting:

Analysis of 357 Candidate Genes Using Two National Cleft Studies from Scandinavia. *PLoS ONE* 4(4): e5385.

*co-first authored

Boyles AL, Wilcox AJ, Taylor JA, Shi M, Weinberg CR, Meyer K, Fredriksen Å, Ueland PM, Johansen AMW, Drevon CA, Jugessur A, Trung TN, Gjessing HK, Vollset SE, Murray JC, Christensen K, and Lie RT. (2009) Oral facial clefts and gene polymorphisms in metabolism of folate/one-carbon and vitamin A: a pathway-wide association study. *Genetic Epidemiology* 33(3):247-255.

Boyles AL, Wilcox AJ, Taylor JA, Meyer K, Fredriksen Å, Ueland PM, Drevon CA, and Lie RT. (2008) Folate and one-carbon metabolism gene polymorphisms and their associations with oral facial clefts. *American Journal of Medical Genetics Part A*. 146A(4):440-449.

O'Grady G, **Boyles AL**, Speer MC, DeRuyter F, Strittmatter W, and Worley G. (2007) Apolipoprotein E alleles and sensorineural hearing loss. *International Journal of Audiology* 46(4):183-186.

Boyles AL, Enterline DS, Hammock PH, Siegel DG, Slifer SH, Mehlretter L, Hu-Lince D, Stephan D, Milhorat TH, Iskandar BJ, George TM, and Speer MC. (2006) A whole genome screen for Chiari malformation type I shows significant linkage to regions on chromosomes 9 and 15. *American Journal of Medical Genetics Part A*. 140A:2776-2785.

Boyles AL, Billups AV, Deak KL, Siegel DG, Mehlretter L, Slifer SH, Bassuk AG, Kessler JA, Reed MC, Nijhout HF, George TM, Enterline DS, Gilbert JG, Speer MC, and the NTD Collaborative Group. (2006) Neural tube defects and folate pathway genes: family-based association tests of gene-gene and gene-environment interactions. *Environmental Health Perspectives* 114:1547-1552. (Science Selections comment by E. Hood pg A601)

Boyles AL, Scott WK, Martin ER, Schmidt S, Li YJ, Ashley-Koch A, Bass MP, Schmidt M, Pericak-Vance MA, Speer MC, and Hauser ER (2005) Linkage disequilibrium inflates Type I error rates in multipoint linkage analysis when parental genotypes are missing. *Human Heredity* 59: 220-227.

Deak KL, **Boyles AL**, Etchevers HC, Melvin EC, Siegel DG, Graham FL, Slifer S, Enterline DS, George TM, Vekemans M, McClay D, Bassuk AG, Kessler JA, Linney E, Gilbert JR, Speer MC and the NTD Collaborative Group (2005) SNPs in the Neural Cell Adhesion Molecule 1 (*NCAM1*) may be associated with Human Neural Tube Defects. *Human Genetics* 117: 133-142.

Bammler T, Beyer RP, Bhattacharya S, Boorman GA, **Boyles A**, Bradford BU, Bumgarner RE, Bushel PR, Chaturvedi K, Choi D, Cunningham ML, Deng S, Dressman HK, Fannin RD, Farin FM, Freedman JH, Fry RC, Harper A, Humble MC, Hurban P, Kavanagh TJ, Kaufmann WK, Kerr KF, Jing L, Lapidus JA, Lasarev MR, Li J, Li YJ, Lobenhofer EK, Lu X, Malek RL, Milton S, Nagalla SR, O'Malley JP, Palmer VS, Pattee P, Paules RS, Perou CM, Phillips K, Qin LX, Qiu Y, Quigley SD, Rodland M, Rusyn I, Samson LD, Schwartz DA, Shi Y, Shin JL, Sieber SO, Slifer S, Speer MC, Spencer PS, Sproles DI, Swenberg JA, Suk WA, Sullivan RC, Tian R, Tennant RW, Todd SA, Tucker CJ, Van Houten B, Weis BK, Xuan S, Zarbl H, and Members of the Toxicogenomics Research Consortium. (2005) Standardizing global gene expression analysis between laboratories and across platforms. *Nature Methods*. 2:351-6.

Qin LX, Kerr K, and **Contributing Members of the Toxicogenomics Research Consortium**. (2004) Empirical evaluation of data transformations and ranking statistics for microarray analysis. *Nucleic Acids Research* 32:5471-5479.

Purugganan MD, **Boyles AL**, and Suddith, JI (2000). Variation and selection at the *CAULIFLOWER* floral homeotic gene accompanying the evolution of domesticated *Brassica oleracea*. *Genetics* 155:855-862.

Lowman AC† and Purugganan MD (1999). Duplication of the *Brassica oleracea APETALA1* floral homeotic gene and the evolution of the domesticated cauliflower. *J. Heredity* 90: 514-520.

†published under maiden name

INVITED COMMENTARY AND BOOK CHAPTER

Boyles AL. (2010) The quest for the elusive causative SNP. *Kidney International* 78:9-10.

Boyles AL, Hammock P, and Speer MC (2005) Candidate Gene Analysis in Human Neural Tube Defects. *American Journal of Medical Genetics Part C: Seminars in Medical Genetics* 135:9-23.

ORAL PRESENTATIONS

FASEB Summer Conferences: Folic Acid, B12, and One-Carbon Metabolism, 2010

“Inhibited binding of folic acid to folate receptor α in maternal serum and folate related birth defects in Norway.” Carefree, AZ. **AL Boyles,** JL Ballard, EB Gorman, DR McConnaughey, RM Cabrera, AJ Wilcox, RT Lie, and RH Finnell.

Society for Pediatric and Perinatal Epidemiologic Research, 2009

“Maternal alcohol consumption and infant clefts: the role of alcohol metabolism gene variants.” Anaheim, CA. **AL Boyles,** LA DeRoo, AJ Wilcox, JA Taylor, A Jugessur, K Christensen, JC Murray and RT Lie.

NIEHS Science Awards Day, 2007

“Folate and one-carbon metabolism gene polymorphisms and their associations with oral facial clefts.” Durham, NC. **AL Boyles,** AJ Wilcox, JA Taylor, M Shi, CR Weinberg, K Meyer, Å Fredriksen, PM Ueland, CA Drevon, K Solvoll, JC Murray, A Jugessur, and RT Lie.

Society of Toxicology Annual Meeting, 2006

“The relationship between folate deficiency, maize consumption, fumonisin intake, and genetic factors on neural tube defect incidence worldwide.” San Diego, CA. **AL Boyles** spoke in place of: M Speer, A Wise, JR Gilbert, and J Freedman.

Calcasieu Community Health and Environmental Forum, 2004

“Neural Tube Defects: Genetic and Environmental Risk Factors” McNeese State University, Lake Charles, LA **AL Boyles** spoke in place of: MC Speer

American Society of Human Genetics Annual Meeting, 2004

“Linkage disequilibrium inflates Type I error rates in multipoint linkage analysis when parental genotypes are missing.” Toronto, Canada. **AL Boyles,** WK Scott, ER Martin, S Schmidt, YJ Li, A Ashley-Koch, MP Bass, MA Pericak-Vance, MC Speer, and ER Hauser.

American Syringomyelia Alliance Project Annual Medical Conference, 2004

“Familial correlations, high density genomic screening, and expression analysis in Chiari Type I Malformation with or without Syringomyelia: A multifaceted approach to understanding etiology from a genetic and genomics perspective.” Miami, FL. **AL Boyles,** DS Enterline, P Hammock, L Mehlretter, JR Gilbert, TM George, and MC Speer.

Third Structural Birth Defects Meeting, 2004

“Genomic Screening and Testing of Candidate Genes in Human Neural Tube Defects.” St. Louis, MO. MC Speer, E Rampersaud, K Bastress, **AL Boyles,** EC Melvin, TM George, F Swift, JR Gilbert, and the NTD Collaborative Group.

Piedmont Genetic Epidemiology Society Meeting, 2003

“Microarray Analysis in Pulmonary Fibrosis” Durham, NC. **AL Boyles**

POSTER PRESENTATIONS

American Society of Human Genetics Annual Meeting, 2009

“Fetal genetic risk factors for isolated cleft lip only.” Honolulu, HI. A Jugessur, M Shi, H Gjessing, RT Lie, AJ Wilcox, CR Weinberg, K Christensen, **AL Boyles**, S Daack-Hirsch, T Trung Nguyen, C Bille, AC Lidral, JC Murray.

Society for Epidemiologic Research, 2009

“Maternal alcohol consumption and infant clefts: the role of alcohol metabolism gene variants.” Anaheim, CA. **AL Boyles**, LA DeRoo, AJ Wilcox, JA Taylor, A Jugessur, K Christensen, JC Murray and RT Lie.

American Society of Human Genetics Annual Meeting, 2007

“Folate metabolism genes and their associations with oral facial clefts.” San Diego, CA. **AL Boyles**, AJ Wilcox, JA Taylor, M Shi, CR Weinberg, K Meyer, Å Fredriksen, PM Ueland, CA Drevon, K Solvoll, JC Murray, A Jugessur, and RT Lie.

American Society of Human Genetics Annual Meeting, 2007

“Comprehensive analysis of 331 candidate genes for orofacial clefting in a population-based infant-parent case-control study from Norway.” San Diego, CA. A Jugessur, M Shi, H Gjessing, AJ Wilcox, RT Lie, CR Weinberg, TN Trung, AC Lidral, **AL Boyles**, K Christensen, JC Murray.

Society for Epidemiologic Research, 2007

“Folate metabolism genes and the risk of orofacial clefts.” Boston, MA. **AL Boyles**, AJ Wilcox, K Meyer, Å Fredriksen, PM Ueland, CA Drevon, K Solvoll, and RT Lie.

Society for Pediatric and Perinatal Epidemiologic Research, 2007

“Folate metabolism genes and the risk of orofacial clefts.” Boston, MA. **AL Boyles**, AJ Wilcox, K Meyer, Å Fredriksen, PM Ueland, CA Drevon, K Solvoll, and RT Lie.

American Society of Human Genetics Annual Meeting, 2006

“Chiari type I malformation: phenotypic definition by MRI and significant linkage to 15q21.3 and 9q22.31 with a high-density SNP genomic screen.” New Orleans, LA. **AL Boyles**, DS Enterline, PH Hammock, DG Siegel, SH Slifer, L Mehlretter, JR Gilbert, D Hu-Lince, D Stephan, BJ Iskandar, TM George, TH Milhorat, MC Speer.

American Society of Human Genetics Annual Meeting, 2005

“Neural tube defects and folate pathway genes: family-based association tests of gene-gene and gene-environment interactions.” Salt Lake City, UT. **AL Boyles**, AV Billups, DG Siegel, SH Slifer, MC Reed, HF Nijhout, TM George, AG Bassuk, JA Kessler, JR Gilbert, MC Speer, and NTD Collaborative Group.

Annual Meeting: The Society for the Study of Evolution, et al., 1998

“Molecular Evolution and Flower Development Genes in *Brassica oleracea*: Patterns of Duplication and Variation.” University of British Columbia, Vancouver. **AC Lowman*** and MD Purugganan.

*presented under maiden name

SPECIALTY COURSES

Design and Analysis of DNA Microarray Studies – Jan. 23-25, 2003: New York, NY

25th Advanced Gene Mapping/Linkage Course – Dec. 8-12, 2003: New York, NY

NCSU Summer Institute in Statistical Genetics: Quantitative Genetics – May 31-Jun. 2, 2004: Raleigh, NC
Microarray Analysis – Jun. 7-9, 2004: Raleigh, NC