Min Shi

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PERSONAL DATA

Name: Min Shi
Current position: Staff Scientist
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EDUCATION

5/2002 - 5/2005	Ph.D.	Biology (Human Genetics)	University of Iowa	Iowa City, IA
5/2004 - 12/2004	M.D./B.S.	Biostatistics	University of Iowa	Iowa City, IA
8/2002 - 5/2004	M.S.	Computer Sciences	University of Iowa	Iowa City, IA
8/1999 - 5/2002	M.C.S	Biology	University of Iowa	Iowa City, IA
9/1993 - 7/1999	M.S.	Clinical Medicine	China Medical University	Shenyang, China

EMPLOYMENT HISTORY

11/2009- Current	Staff Scientist, Biostatistics Branch, National Institute of Environmental Health Science
09/2005 – 11/2009	Research Fellow, Biostatistics Branch, National Institute of Environmental Health Science
05/2005 – 09/2005	Postdoctoral Fellow, Pediatrics Dept., The University of Iowa

TEACHING EXPERIENCE

2011-2013	Guest Lecturer, North Carolina Central University
2012-2013	Biostatistics and Bioinformatics Short Courses, NIEHS
2001-2003	Teaching Assistant, The University of Iowa

HONORS AND AWARDS

2007	C. W. Cotterman Award, for best publication in the American Journal of Human Genetics during September 2006 – August 2007 by a trainee member of the American Society of Human Genetics American Society of Human Genetics

RESEARCH INTERESTS

Developing statistical methods to investigate the genetics and interplay of genes and environmental factors in complex disease using data collected from high-throughput genomic studies and epidemiological studies. Carrying out epidemiologic and genetic studies of complex diseases.

PROFESSIONAL ORGANIZATIONS AND ACTIVITIES

Member, Statistical Advisory Board, PLoS ONE
Member, Editorial Board, Clinical Epidemiology Reviews
Member, American Society of Human Genetics
Member, American Statistical Association
Member, Society for Epidemiologic Research

Reviewer for: American Journal of Epidemiology
American Journal of Medical Genetics
Annals of Human Genetics
Biometrics
Birth Defect Research
Biostatistics
Cleft Palate-Craniofacial Journal
Epidemiology
European Journal of Human Genetics
Genetic Epidemiology
Heredity
Human Genetics
Human Reproduction
Journal of the Association for Research in Otolaryngology
Journal of Medical Genetics
The Pharmacogenomics Journal
The Laryngoscope
PLoS ONE
Schizophrenia Bulletin
Statistics in Medicine

PUBLICATIONS IN PEER REVIEWED JOURNALS

1. High M, Hye-Youn C, Marzec J, Wiltshire T, ..., **Shi M**, ..., Kleeberger S (21 authors in total) "Determinants of host susceptibility to murine RSV disease identify a role for the innate immunity scavenger receptor MARCO gene in human infants" *Ebiomedicine*
2. Wise AS*, **Shi M***, Weinberg CR. (2016) "Family-based multi-SNP X chromosome analysis using parental information" *Frontiers in genetics 2016 Feb 22;7:20. doi: 10.3389/fgene.2016.00020.*
3. O'Brien K*, **Shi M***, Taylor JA, Wise AS, Zaykin DV, Sandler DP, Weinberg CW (2016) "A family-based, genome-wide association study of young-onset breast cancer: Inherited variants and maternally-mediated effects" *Euro J Hum Genet 2016 Feb 17. dot: 10.1038/ejhg.2016.11*
4. **Shi M**, DeRoo L, Sandler D, Weinberg CR (2015) "Migraine and possible etiologic heterogeneity for hormone-receptor-negative breast cancer" *Scientific Reports* 2015 Oct 12;5:14943. doi: 10.1038/srep14943.
5. **Shi M**, Umbach DM, Weinberg CR (2015) "Using parental phenotypes in case-parent studies" *Frontiers in genetics* 6:15, doi:10.3389/fgene.2015.00221
6. Weinberg CR, **Shi M**, DeRoo L, Basso O, Skjaerven R (2015) "Season and preterm birth in Norway: A cautionary tale" *International J Epi 2015 Jun;44(3):1068-78. doi: 10.1093/ije/dyv100.*
7. Wise A. S., **Shi M**., Weinberg C. R. "Learning about the X from our parents"(2015) *Frontiers in genetics* 6:15, doi:10.3389/fgene.2015.00015.
8. Caballero M, Serra ME, …, **Shi M**, …, Polack FP (42 authors in total) (2015) "TLR4 genotype and environmental LPS mediate RSV bronchiolitis through Th2 polarization" *Journal of Clinical Investigation* 125, 571-582, doi:10.1172/JCI75183
9. **Shi M**, Umbach DM, Weinberg CR (2014) "Disentangling Pooled Triad Genotypes for Association Studies" *Annals of Hum Genet 78(5): 345-356*
10. Weinberg CR, **Shi M**, DeRoo LA, Taylor JA, Sandler DP, Umbach DM (2014) "Asymmetry in family history implicates nonstandard genetic mechanisms: Application to the genetics of breast cancer", *PLoS Genetics 10(3):e1004174*
11. Kim J, Stirling KJ, Cooper ME, Ascoli M, Momany AM, McDonald EL, Schaa KL, Ryckman K, Cosentino V, Gadow E, Saleme C, **Shi M**, Hallman M, Plunkett J, Teramo KA, Muglia LJ, Feenstra B, Geller F, Boyd HA, Melbye M, Marazita ML, Dagle JM, Murray JC (2013) "Sequence variants in oxytocin pathway genes and preterm birth" *BMC Medical Genetics 14:77*
12. **Shi M**, Umbach DM, Weinberg CR (2013) "Case-sibling studies that acknowledge unstudied parents and permit unmatched individuals" *International J Epi 42(1): 298-307*
13. van der Zanden L, Galesloot T,Feitz W, Brouwers M, **Shi M**, Knoers N, Franke B, Roeleveld N, van

Rooij I (2012) "Exploration of gene-environment interactions, maternal effects and parent-of-origin effects in the etiology of hypospadias" *The Journal of Urology 188(6): 2354-60*

14. Gao J, Nalls MA, **Shi M**, Hernandez DG, Park Y, Huang X, Hollenbeck A, Singleton AB, Chen H (2012) "An exploratory analysis on gene-environment interactions for Parkinson disease" *Neurobiology of Aging 33(10): 2528 e1-6*

15. **Shi M**, Murray JC, Marazita ML, Lie RT, Munger RG, Ruczinski I, …, Beaty TH (24 authors in total) (2012) "Genome wide study of maternal and parent-of-origin effects on the etiology of orofacial clefts" *Am J Med Genet, Part A 158A(4): 784-94*

16. Wu T, Fallin MD, **Shi M**, Ruczinski I, Liang KY, Hetmanski JB, Wang H, Ingersoll RG, Huang S, Ye X, Wu-Chou Y, Chen PK, Jabs EW, Shi B, Redett R, Scott AF, Beaty TH (2012) "Evidence of gene-environment interaction for the RUNX2 gene and environmental tobacco smoke in controlling the risk of cleft lip with/without cleft palate" *Birth Defects Res A Clin Mol Teratol 94(2):76-83*

17. **Shi M**, Weinberg CR (2011) "How much are we missing in SNP-by-SNP analyses of GWAS" *Epidemiology 22(6):845-7*

18. Weinberg CR, **Shi M**, Umbach DM (2011) "A sibling-augmented case-only approach for assessing multiplicative GxE interaction" *Am J of Epidem 174(10):1183-9*

19. Torgerson DG, Ampleford EJ, Chiu GY, Gauderman WJ, Gignoux CR, Graves PE, Himes BF, ..., **Shi M**, … Ober C, Nicolae DL(76 authors in total) (2011) "Meta-analysis of genome-wide association studies of asthma in ethnically diverse north American populations" *Nature Genetics 43: 887-892*

20. **Shi M**, Umbach DM, Weinberg CR (2011) "Family based Gene-by-Environment Interaction Studies: Revelations and Remedies" *Epidemiology 22(3): 400-407*

21. **Shi M**, London SJ, Chiu GY, Hancock DB, Zaykin D, Weinberg CR (2011) "Using imputed genotypes for relative risk estimation in case-parent studies" *Am J of Epidem 173(5): 553-9*

22. Jugessur A, **Shi M**, Gjessing HK, Lie RT, Wilcox AJ, Weinberg CR , Christensen K, Boyles AL, Daack-Hirsch S, Nguyen TT, Christiansen L, Lidral AC and Murray JC (2011) "Fetal genetic risk of isolated cleft lip only versus isolated cleft lip and palate: A subphenotype analysis using two population-based studies of orofacial clefts in scandinavia." *Birth Defects Res Part A Clin Mol Teratol 91(2): 85-92*

23. Jugessur A*, **Shi M***, Gjessing HK, Lie RT, Wilcox AJ, Weinberg CR , Christensen K, Boyles AL, Daack-Hirsch S, Nguyen TT, Christiansen L, Lidral AC and Murray JC, (2010) "Maternal genes and facial clefts in offspring: A comprehensive search for genetic associations in two population-based cleft studies from Scandinavia" *PLoS One 5(7): e11493* (*These authors contributed equally to this work)

24. **Shi M**, Umbach DM, Weinberg CR (2010) "Testing Haplotype-Environment Interactions Using Case-parent Triads" *Human Heredity70: 23-33*

25. Wu H, Romieu I, **Shi M**, Hancock DB, Li H, Sienra-Monge JJ, Chiu GY, Xu H, Estela del Rio-Navarro B, London SJ, J Allergy Clin Immun (2010) "Evaluation of candidate genes in a genome-wide association study of childhood asthma in Mexicans" *The Journal of Allergy and Clinical Immunology 125(2): 321-327.e13*

26. Hancock DB, Romieu I, **Shi M**, Sienra-Monge J-J, Wu H, Chiu GY, Li H, del Rio-Navarro BE, Willis-Owens SAG, Weiss ST, Raby BA, Gao H, Eng C, Chapela R, Burchard EG, Tang H, Sullivan PF, London SJ (2009) "Genome-Wide Association Study Implicates Chromosome 9q21.31 as a Susceptibility Locus for Asthma in Mexican Children" *PLoS Genet 5(8): e1000623*

27. Kimani J, Yoshiura K, **Shi M**, Jugessur A, Moretti-Ferreira J, Christensen K, Murray JC, (2009) "Search For Genomic Alterations In Monozygotic Twins Discordant For Cleft Lip And/Or Palate"

Twin Research and Human Genetics 12(5): 462–468

28. Weinberg CR, **Shi M** (2009) "The genetics of preterm birth: Using what we know to design better association studies" *Am J Epidemiol 170:1373-1381*

29. Jugessur A*, **Shi M***, Gjessing HK, Lie RT, Wilcox AJ, Weinberg CR, Christensen K, Boyles A, Daack-Hirsch S, Trung T, Lidral A, Murray JC(2009) "Genetic Determinants of Orofacial Clefts: Exploring 334 Cleft Candidate Genes in Two Population-based Cleft Cohorts from Scandinavia" *PLoS ONE 4(4):e5385* (*These authors contributed equally to this work)

30. Kistner E, **Shi M**, Weinberg CR (2009) "Using Cases and parents to Study Multiplicative Gene-by-Environment Interaction" *Am J Epidemiol 170:393-400*

31. **Shi M**, Umbach DM, Weinberg CR (2009), "Using Case-parent Triads to Estimate Relative Risk Associated with a Candidate Haplotype" *Annals of Hum Genet 73(pt3): 346-59*

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

33. **Shi M***, Mostowska A*, Jugessur A, Johnson MK, Mansilla A, Christensen K, Lie RT, Wilcox A, Murray JC (2009) "Identification of Microdeletions in Candidate Genes for Cleft Lip and/or Palate" *Birth Defects Res Part A Clin Mol Teratol 85:42-51* (*These authors contributed equally to this work)

34. Vermeulen SH, **Shi M**, Weinberg CR, Umbach DM (2009) "A hybrid design: case-parent triads supplemented by control-mother dyads" *Genet Epidemiol 33(2): 136-44*

35. **Shi M**, Umbach DM, Vermeulen SH, Weinberg CR (2008) "Making the most of case-mother/control-mother studies" *Am J Epidemiol 168: 541-47*

36. **Shi M**, Wehby GL, Murray JC. (2008). Review on genetic variants and maternal smoking in the etiology of oral clefts and other birth defects. *Birth Defects Res C 84(1):16-29*

37. Kimani J, **Shi M**, Daack-Hirsch S, Christensen K, Moretti-Ferreira D, Marazita M, Field L, Canady J, Murray JC (2007) "X-chromosome inactivation patterns in monozygotic twins and sib pairs discordant for non-syndromic cleft lip and/or palate". *Am J Med Genet 143A: 3267-72*

38. Steffen KM, Cooper ME, **Shi M** , Caprau D, Simhan HC, Dagle J, Marazita ML, Murray JC (2007) "Maternal and fetal variation in genes of cholesterol metabolism is associated with preterm delivery" *J Perinatol 27 (11): 672-680*

39. Ehn N, Cooper M, Orr K, **Shi M**, Johnson M, Caprau D, Dagle J, Johnson K, Marazita M, Merrill D, Murray JC (2007) "Evaluation of Fetal and Maternal Genetic Variation in the Progesterone Receptor Gene for Contributions to Preterm Birth" *Pediatr Res 62(5): 630-634*

40. **Shi M**, Umbach DM, Weinberg CR (2007) "Identification of Risk-related Haplotypes Using Multiple Linked SNPs from Nuclear Families" *Am J Hum Genet 81(1): 53-66*

41. **Shi M**, Christensen K, Weinberg CR, Romitti P, Bathum L, Lozada A, Morris RW, Lovett M, Murray JC (2007) "Orofacial cleft risk is increased with maternal smoking and specific detoxification-gene variants" *Am J Hum Genet 80(1): 76-90*

42. Zucchero T, Cooper M, Maher B, Daack-Hirsch S, Nepomuceno B, Ribeiro L, Caprau D, Christensen K, Suzuki Y, Machida J, Natsume N, Yoshiura K, Vieira A, Orioli I, Castilla E, Moreno L, Arcos-Burgos M, Lidral A, Field L, Liu Y, Ray A, Goldstein T, Schultz R, **Shi M**, Kondo S, Schutte B, Marazita M, Murray J (2004) "Interferon Regulatory Factor 6 (IRF6) is a Modifier for Isolated Cleft Lip and Palate" *New Engl J Med 351(8):769-80*

43. Suzuki Y, Jezewski P, Machida J, Watanabe Y, **Shi M**, Cooper M, Viet L, Tin N, Hai H, Natsume N,

Shimozato K, Marazita M, Murray JC, (2004) "In A Vietnamese Population MSX1 Variants Contribute To Cleft Lip And Palate" *Genetics in Medicine 6(3):117-25*

44. Schultz RE, Cooper ME, Daack-Hirsch S, **Shi M**, Nepomucena B, Graf KA, O'Brien EK, O'Brien SE, Marazita M, Murray JC, (2004) "A Targeted Scan Of Fifteen Regions For Nonsyndromic Cleft Lip And Palate In Filipino Families" *Am J Med Genet 125A(1): 17-22*

45. **Shi M**, D. Caprau D, Dagle J, Christiansen L, Christensen K, Murray JC (2004). "Application Of Kinetic Polymerase Chain Reaction And Molecular Beacon Assays To Pooled Analyses And High-Throughput Genotyping For Candidate Genes" *Birth Defects Res Part A Clin Mol Teratol 70(2): 65-74. PMID:14991913*

46. **Shi M**, Caprau D, Romitti P, Christensen K, Murray JC (2003). "Genotype Frequencies And Linkage Disequilibrium In The CEPH Human Diversity Panel For Variants In Folate Pathway Genes MTHFR, MTHFD, MTRR, RFC1, And GCP2" *Birth Defects Res Part A Clin Mol Teratol 67(8): 545-9. PMID:14632302*

***** The authors contributed equally.

LETTERS AND BOOK CHAPTERS

1. Weinberg CR, **Shi M**, Umbach DM (2011) Re: "Genetic association and gene-environment interaction: A new method for overcoming lack of exposure information in controls." *Am J of Epidem*

2. Weinberg C, **Shi M**, Umbach D (2016 in reparation) "Family-based case-control approaches to study the role of genetics" *Handbook of Statistical Methods for Case-Control*

MANUSCRIPTS SUBMITTED OR IN PREPARATION

1. Weinberg CR, **Shi M**, Basso O, DeRoo L, Harmon Q, Wilcox A, Skjaerven R (submitted) "Season of conception, smoking and preeclampsia in Norway"

2. **Shi M***, O'Brien K* **,** Taylor JA, Keller J, Wise AS, Zaykin DV, Sandler DP, Weinberg CW (submitted) "Genetic risk factors for young-onset breast cancer: An investigation of previous GWAS hits"

3. Wang C, Chen R, **Shi M**, Cai J, Shi J, Yang C,Li H, Lin Z, Meng X, Liu C, Niu Y, Xia Y, Zhao Z,Kan H, Weinberg CR (submitted) "Acute effects of particulate air pollution on inflammation biomarkers and methylation: A panel study in Shanghai"

4. Liu X, Hong X, Tsai H, Mestan K, **Shi M**, Kefi A, Hao K, Wang G, Caruso D, Geng H, Gao Y, He J, Kumar R, Liu R, Wang H, Yu Y, Bartell T, Schleimer R, Weeks D, Pongracic J, Wang X (submitted) "Genome-wide Association Study of Parental Genotypic Effects on Food Allergy Development in Offspring"

5. **Shi M**, Wise A, Umbach D, Weinberg C (in preparation) "Simulation of Genome-wide Genotypes for Triads with Realistic Linkage Disequilibrium Structures"

6. **Shi M***, Li L*, Wise A, Umbach D, Krahn J, Li Y, Weinberg C (in preparation) "GA-KNN algorithm for detecting epistasis effects in case-parents triads"

INVITED TALKS

"A Nonparametric Method for Finding Risk-Haplotype Tagging Alleles Using Cases and Their Parents" at Advanced Methodology Student Workshop at the 20th annual meeting of Society for Pediatric and Perinatal Epidemiologic Research (Boston MA, June 2007)

"Haplotype-Based Association Methods: Cleft Lip/Palate As An Example" at Wright State University, Boonshoft School of Medicine, Lifespan Health Research Center (Dayton OH, Dec 2008)

"Haplotype-Based Association Methods: Cleft Lip/Palate As An Example" at University of Iowa, Environmental Health Sciences Research Center (Iowa City IA, Dec 2008)

"Method for Haplotype-Based Association Using Case-Parent Triads" at State University of New York, Downstate Medical Center, School of Public Health (Brooklyn NY, Jan 2009)

"Methods for Family-Based Association Studies with Applications to Orofacial Clefts" Keynote Speaker at the 2nd international conference of "Project New Life" (HaiKou, China 2011)

"Using families to study genetic and environmental risk factors of complex diseases" at University of Tennessee Health Science Center (Memphis TN, Jan 2013)

"Case-sibling studies that acknowledge unstudied parents and permit unmatched individuals" University of California at Merced (Merced CA, April 2013)

"Studying genes and environments in the etiology of complex diseases" University of Michigan (Michigan MI, April 2013)

CONFERENCE TALKS

"Application of Kinetic PCR and Molecular Beacon Technology to Pooled Sample and High-Sensitivity Analysis of the MTHFR Gene" **Shi M**, Dagle J, Caprau D, Murray JC, The American Society of Human Genetics 51th Annual meeting (San Diego CA, Oct 2001)

"Gene-by-Environment Interaction in Studies Based on Nuclear Families" **Shi M**, Umbach DM, Weinberg CR , 2010 Joint Statistical Meetings (Vancouver, BC Canada 2010)

"Case-sibling studies that acknowledge unstudied parents and permit unmatched individuals" **Shi M**, Umbach DM, Weinberg CR , 2013 Eastern North American Region (ENAR) spring meeting (Orlando, FL 2013)

SELECTED POSTER PRESENTATIONS AND PUBLISHED ABSTRACTS

1. **Shi M**, Christensen K, Lozada A, Romitti R, Murray JC, "Maternal cigarette smoking and variants in GSTP1 and GSTT1 contribute to the etiology of orofacial clefting", The American Society of Human Genetics 53rd Annual meeting (Los Angeles, CA 2003)
2. **Shi M**, Christensen C, Weinberg C, Lozada A, Romitti P, Murray JC, "Analysis of maternal smoking and sixteen detoxification genes in the etiology of orofacial clefts", The American Society of Human Genetics 54th Annual meeting (Toronto, Canada 2004)
3. **Shi M**, Umbach DM, Weinberg CR, "A method for finding risk haplotypes using cases and their parents", The American Society of Human Genetics 56th Annual meeting (New Orleans, LA 2006)
4. **Shi M**, Mostowska A ,Christensen K, Lie, RT, Jugessur A, Wilcox A, Weinberg CR, Murray JC, "Detecting deletion regions in candidate genes of cleft lip and palate", The American Society of Human Genetics 57th Annual meeting (San Diego, CA 2007)
5. **Shi M,** Umbach DM, Vermeulen SH, Weinberg CR, "Studying genetic contributions by mother and child to susceptibility: efficient design and analysis for diseases of early life", The American Society of Human Genetics 58th Annual meeting (Philadelphia, PA 2008)
6. **Shi M,** Umbach DM, Weinberg CR, "Gene-by-Environment Interaction in Studies Based on Nuclear Families", The American Society of Human Genetics 60th Annual meeting (Washington, DC 2010)
7. **Shi M,** Umbach DM, Weinberg CR, "Making the Most of Case-Sibling Studies", The American Society of Human Genetics 61th Annual meeting (Montreal, Canada 2011)

8. **Shi M,** Umbach DM, Weinberg CR, "Making use of missing parents and unmatched siblings in case-sibling studies", 2012 Triangle Statistical Genetics Conference (Chapel Hill, NC 2012)
9. **Shi M,** Umbach DM, Weinberg CR, "Case-sibling studies that acknowledge unstudied parents and enroll unmatched individuals", The American Society of Human Genetics 62th Annual meeting (San Francisco, CA 2012)
10. **Shi M**, DeRoo LA, Sandler DP, Weinberg CR "Menstrual migraine and breast cancer", The Society of Epidemiologic Research Annual Meeting (Boston, MA 2013)
11. **Shi M**, Umbach DM, Weinberg CR, "Disentangling Pooled Triad Genotypes for Association Studies", The American Society of Human Genetics 63rd Annual meeting (Boston, MA 2013)
12. **Shi M**, Umbach DM, Weinberg CR, "Making use of parental phenotypes in case-parent genetic studies", The American Society of Human Genetics 64th Annual meeting (San Diego, CA 2014)
13. **Shi M**, DeRoo LA, Sandler DP, Weinberg CR "Migraine and possible etiologic heterogeneity for hormone-receptor-negative breast cancer", The Joint Statistical Meeting (Seattle, WA 2015)
14. **Shi M**, Umbach DM, Weinberg CR, "Using parental phenotypes in case-parent genetic studies", The International Genetic Epidemiology Society meeting (Baltimore, MD 2015)
15. **Shi M,** O'Brien K, Taylor JA, Wise AS, Zaykin DV, Sandler DP, Weinberg CW, "A family-based, genome-wide association study of young-onset breast cancer: Inherited variants and maternally-mediated effects" The American Society of Human Genetics 66th Annual meeting (Vancouver, Canada 2016)