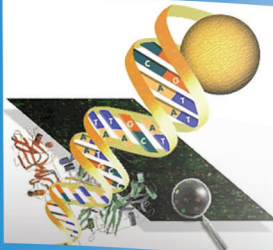
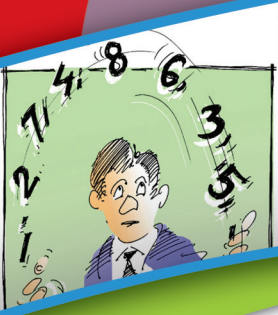




Guy Brock, Ph.D.

Assistant Professor
of Bioinformatics & Biostatistics
School of Public Health



My focal area of methodological research is in statistical bioinformatics and statistical genetics, and I have published on miRNA data analysis, missing value imputation, cluster validation, and classification for high-throughput data. I have a history of collaborations on bioinformatics-intensive projects with investigators from the Birth Defects Center (BDC), where I serve as the Director of the Biostatistics / Bioinformatics Core of the NIH / NCRR funded COBRE P20 grant "Molecular Determinants of Developmental Defects", and the NIEHS funded P30 grant "Center for Environmental Genomics and Integrative Biology", as a member of the Bioinformatics, Biostatistics and Computational Biology Core. In particular, I have co-authored several publications on genome-wide expression patterns of miRNAs during murine embryonic secondary palate and neural tube development (in Birth Defects Research Part A). Additionally, I am a Co-Principal Investigator (along with Dr. Mukhopadhyay, BDC) on the COBRE funded subproject Integrated Analysis of RNA Expression During Orofacial Development, which involves integration of miRNA and mRNA expression data to identify critical regulatory regions, and the newly funded NIDCR R03 grant Integrated Analysis: Epigenetic Regulation of Gene Expression During Orofacial Development, which will determine regions of the genome which are epigenetically regulated during palatal development. Additional areas of clinical and collaborative research include transplantation, liver disease, community acquired pneumonia, and breast and prostate cancer genetics. Lastly, I currently serve as the Director of the Statistical Consulting Center in the Department of Bioinformatics and Biostatistics, which provides opportunities to develop new collaborations.

Grants Funded:

R03DE021460-01A1 (Mukhopadhyay, P and Brock, GN) 09/01/12-08/31/14
NIH / NIDCR \$300,000 (total direct costs) 1.8 Calendar
Integrated Analysis: Epigenetic Regulation of Gene Expression During Orofacial Development
Role: Co-PI. Responsible for biostatistical / bioinformatics analysis and development of methods for integrating array-based gene expression and gene methylation data.

P20RR017702 (Greene, RM) 01/01/11-05/31/13 2.4 Calendar
NIH / NCRR
Molecular Determinants of Developmental Defects
Project Title: *Integrated Analysis of RNA Expression During Orofacial Development*
Role: Co-PI of subproject (with P. Mukhopadhyay)

P20RR017702 (Greene, RM) 09/30/02-05/31/13 2.4 Calendar
NIH / NCRR \$297,367 (core only)
Molecular Determinants of Developmental Defects
Role: Co-Investigator / Bioinformatics and Biostatistics Core Support. I provide core support in the areas of bioinformatics, biostatistics, and study design for the investigators supported by the P20 award.

R01HD053509 (Greene, RM) 12/01/07-11/30/12 0.63 Calendar
NIH \$255,546 (annual direct costs)
Transcriptional Coactivators and Pregnancy Outcomes
Role: Co-Investigator. Analyzed experimental data and provide statistical and computational support.

R01DE018215 (Greene, RM) 04/01/09-03/31/14 1.05 Calendar
NIH \$250,000 (annual direct costs)
Nutritional Epigenetics and Orofacial Development
Role: Co-Investigator. Analyzed data from NimbleGen 2.1M mouse promoter arrays, which quantifies genome-wide methylation levels in gene promoter regions.

HHSN272201000040C (V Yu, Univ of Pittsburgh) 06/15/12 – 06/14/17
2.4 calendar
NIH (BAA-NIAID-DMID-NIHAI2009058) \$2,424,011 (subproject awarded to UofL)
Microbiology Testing with the Aim of Directed Antimicrobial Therapy for Community-Acquired Pneumonia (CAP)
Role: Co-Investigator. Responsible for study design and planning, statistical analysis, power and sample size determination

1R01ES021375-01 (PI: M Cave) 3/1/12 - 02/28/17 0.12 calendar
NIH / NIEHS \$ 1,874,167
PCBs worsen obesity/metabolic syndrome through "toxic metabolic endotoxemia"
Role: Co-Investigator. Responsible for analyzing experimental data and provide statistical and computational support.

10EM00542 (Rouchka, E and Kalbfleisch, T) 01/01/10-12/31/11 1.06 Calendar
DOE \$951,501 (project total costs)
Extension of Informatics Infrastructure to Support Translational and Basic Research
Role: Co-Investigator. I developed methods and software tools for the integrated analysis of miRNA and mRNA expression data, and applied these methods to data from mouse embryonic tissue collected during neural tube development.

RC2AA019385-01 (McClain, C) 09/01/09-08/31/11 2.4 Calendar
NIH \$1,618,051 (project total costs)

Biomarkers for Steatohepatitis

Role: Co-Investigator. Analyzed experimental data and provide statistical and computational support.

P30 ES014443 (Ramos) 04/01/07 – 03/31/11 1.8 Calendar
NIH / NIEHS \$600,000 (core only)

*Center for Environmental Genomics and Integrative Biology
Bioinformatics, Biostatistics and Computational Biology Core*

Role: Statistical Consultant. Analyzed associations between environmental toxins and liver disease using data from the NHANES study. Also analyzed data concerning associations between SNP markers and Crohn's disease.

Clinical & Translational Science Pilot (Kidd, LR) 7/1/10-6/30/11
Intramural \$49,980

Innate Immune Response Predictors of Prostate Cancer Outcomes

Role: Co-Investigator. Performed gene-gene interaction analysis and pathway analysis involving genetic markers for PCa risk, and supervised other statistical analyses.

Publications:

Brock GN, Mukhopadhyay P, Pihur V, Webb C, Green RM, and Pisano MM. "MmPalateMiRNA, an R Package Compendium Illustrating Analysis of miRNA Microarray Data", accepted to Source Code in Biology and Medicine

Ferguson N, Datta S, and Brock G (2012). "msSurv, an R package for nonparametric estimation of multistate models", *Journal of Statistical Software* 50:14.

Brock GN, Barnes CN, Ramirez JA, Myers JA (2011). "How to handle mortality when investigating length of hospital stay and time to clinical stability" *BMC Med Res Methodol.* 11(1):144.

Brock GN, Mostajabi F, Ferguson N, Carrubba CJ, Eng M, Buell JF, Marvin MR (2011). "Prophylaxis against denovo hepatitis B for liver transplantation utilizing Hep B core(+) donors: does HBIG provide a survival advantage?" *Transplant Int.* 24(6):570-81.

Oh S, Kang DD, **Brock GN**†, Tseng GC† (2011) "Biological impacts of missing value imputation on down-stream analyses in microarray data" *Bioinformatics* 27(1):78-86.

Alton TM, **Brock G**, Yang D, Wilkings D, Hertweck P, and Loveless MB (2012). "Retrospective Review of Intrauterine Device in Adolescent and Young Women" *Journal of Pediatric and Adolescent Gynecology* 25(3):195-200.

Lavender NA, Rogers EN, Yeyeodu S, Rudd J, Hu T, Zhang J, **Brock GN**, Kimbro KS, Moore JH, Hein DW, Kidd LR. (2012) "Interaction among Apoptosis-Associated Sequence Variants and Joint Effects on Aggressive PCA" *BMC Medical Genomics* 5(1):11. [Epub ahead of print]

Cannon RM, **Brock G**, Marvin MR, Eng M, Buell JF (2012). "Analysis of BK Viral Infection After Alemtuzumab Induction for Renal Transplant", *Transplant Infectious Disease* 14(2):142-9.

Muenyi CS, Pinhas AR, Fan TW, **Brock GN**, Helm CW, and States JC (2012). "Sodium arsenite ± hyperthermia sensitize p53 expressing human ovarian cancer cells to cisplatin by modulating platinum DNA damage responses." *Toxicological Sciences* 127(1):139-49.

Mukhopadhyay P, Singh S, **Brock G**, Pisano MM, and Greene RM. (2012) "Strain-specific modifier genes governing craniofacial phenotypes in ski-null mice" *Birth Defects Research Part A* 94(3):162-75.

Cannon RM, **Brock G**, Buell JF (2012). "Surgical Resection for Hilar Cholangiocarcinoma: Experience improves Resectability", *HPB* 14(2):142-9.

Lutz PM, Keltly EA, Brown TD, Wilson TJ, **Brock G**, Neal R. (2012) "Environmental Cigarette Smoke exposure Modulates IgE levels of Pb-exposed Children", *Toxicology* 291(1-3):43-50.

Lu C, Hallgren JJ, Lin Y, Black DS, Ekstrom LC, Fentie IH, **Brock G**, Song Y, Winstead WI, Roisen FJ (2011). "Human olfactory-derived neural progenitors diminish locomotory deficits following spinal cord contusion injury" *Journal of Neurodegeneration and Regeneration* 4(1):33-50.

Cannon RM, **Brock G**, Buell JF (2011). "A Novel Classification System to Address Financial Impact and Referral Decisions for Bile Duct Injury in Laparoscopic Cholecystectomy" *HPB Surgery*, 2011:371245.

Bordón J, Plankey MW, Young M, Greenblatt RM, Villacres MC, French AL, Zhang J, **Brock G**, Appana S, Herold B, Durkin H, Golub JE, Fernandez-Botran (2011). "Lower levels of interleukin-12 precede the development of tuberculosis among HIV-infected women" *Cytokine*, 56(2):325-31. PMID: 21880503.

Mukhopadhyay P, **Brock GN**, Appana S, Webb C, Greene RM, and Pisano MM (2011). "MicroRNA gene expression signatures in the developing neural tube" *Birth Defects Research Part A*, 91(8):744-62. PMID: 21770019.

Cannon RM, **Brock GN**, Marvin MR, Buell JF (2011). "Laparoscopic Liver Resection: An Examination of Our First 300 Patients" *J Am Coll Surg*, 213(4):501-7. PMID: 21624840.

Ramsey TL, Meltzer HY, **Brock GN**, Mehrotra B, Jayathilake K, Bobo WV, Brennan MD (2011). "Evidence for a SULT4A1 haplotype correlating with baseline psychopathology and response to atypical antipsychotics in schizophrenia and related disorders" *Pharmacogenomics* 12(4):471-80.

Gobejishvili L, Avila DV, Barker DF, Ghare S, Henderson D, **Brock GN**, Kirpich IA, Joshi-Barve S, Mokshagundam SP, McClain CJ, Barve S (2011). "S-Adenosylmethionine Decreases LPS-Induced Phosphodiesterase 4B2 and Attenuates TNF Expression via cAMP/PKA Pathway" *J Pharmacol Exp Ther* 337(2):433-43.

Kidd LCR, Templeton TM, Doll M, Srivastava D, Thacker B, Komolafe O, Pihur V, **Brock G**, and Hein DW (2011). "No association between variant N-acetyltransferase genes, cigarette smoking and prostate cancer susceptibility among men of African descent" *Biomarkers in Cancer* 3:1–13.

Warner DR, Mukhopadhyay P, **Brock GN**, Pihur V, Pisano MM, Greene RM (2011). "TGFβ and Wnt-3a interact to induce unique gene expression profiles in murine embryonic palate mesenchymal cells" *Reproductive Toxicology* 31(2):128-33.

Eng M, **Brock G**, Li X, Chen Y, Ravindra KV, Buell JF, Marvin MR (2011). "Perioperative Anticoagulation and Antiplatelet Therapy in Renal Transplant: Is There an Increase in Bleeding Complication?" *Clinical Transplantation* 25(2):292-6.

† Co-supervising authors

External Professional Activities:

Reviewer for Bioinformatics, BMC Bioinformatics, BMC Systems Biology, Biometrics and Biostatistics, Statistics in Medicine, Computers in Biology and Medicine, PloS ONE

Grant reviewer for Centers for Disease Control and Prevention, Pennsylvania Department of Health and the Oak Ridge Associated Universities