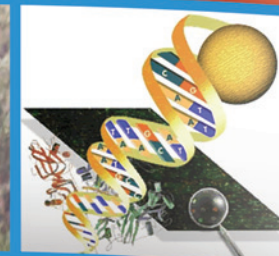


Guy Brock, Ph.D.

Associate Professor
Department of Bioinformatics & Biostatistics
School of Public Health



Scholarly Activities:

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. Additionally, I have developed several publicly available software packages (*MmPalateMiRNA*, *cIValid*, and *msSurv*) for bioinformatics and biostatistics methods. I have a history of collaborations on bioinformatics-intensive projects with investigators from the Birth Defects Center (BDC), where I served as the Director of the Biostatistics / Bioinformatics Core of the NIH / NCI funded COBRE P20 grant "*Molecular Determinants of Developmental Defects*". In particular, I have co-authored several publications on genome-wide expression patterns of miRNAs during murine embryonic development (neural tube, secondary palate, and upper lip) and genome-wide temporal changes in the methylome of the murine embryonic palate. Additionally, I was 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 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:

Role: Co-PI with Partha Mukhopadhyay - Responsible for biostatistical / bioinformatics analysis and development of methods for integrating array-based gene expression and gene methylation data.

Title: *Integrated Analysis: Epigenetic Regulation of Gene Expression During Orofacial Development*

Funding Agency: NIDCR

Direct Costs Funded: \$300,000

Role: Co-I - Responsible for analyzing experimental data and provide statistical and computational support.

Title: *PCBs worsen obesity/metabolic syndrome through toxic metabolic endotoxemia*

Funding Agency: NIEHS

Direct Costs Funded: \$1,874,167

Role: Co-I - Responsible for analyzing experimental data and provide statistical and computational support.

Title: *Role of ECM and inflammatory remodeling in alcohol-induced liver and lung disease*

Funding Agency: NIH

Direct Costs Funded: \$1,995,187

Role: Co-I - Responsible for analyzing experimental data and provide statistical and computational support.

Title: *Griffithsin-based Rectal Microbicides for PREvention of Viral ENTRY (PREVENT)*

Funding Agency: NIH

Direct Costs Funded: \$13,800,000

Role: Co-I - Responsible for biostatistical / bioinformatics analysis of experimental data.

Title: *Plasma DSC for early detection of disease and therapeutic efficacy in melanoma*

Funding Agency: NCI

Publications (2013-2014):

Yang D, Parrish RS, and **Brock GN** (2014). "Empirical evaluation of consistency and accuracy of methods to detect differentially expressed genes based on microarray data", *Computers in Biology and Medicine* 46:1-10.

Arnold FW, Wiemken TL, Peyrani P, Ramirez JA, and **Brock GN** (2013). "An assessment of mortality differences among hospitalized patients with community-acquired pneumonia in three continental regions: Results from the Community-Acquired Pneumonia Organization (CAPO) international cohort study," *Respiratory Medicine* 107(7):1101-11.

Brock GN, Mukhopadhyay P, Pihur V, Webb C, Greene RM, Pisano MM. (2013) "MmPalateMiRNA, an R package compendium illustrating analysis of miRNA microarray data", *Source Code in Biology and Medicine* 8(1):1.

Cambon AC, Baumgartner KB, **Brock GN**, Cooper NG, Wu D, Rai SN. "Classification of Clinical Outcomes Using High-throughput Informatics: Part 1- Nonparametric Method Reviews" *Model Assisted Statistics and Applications* 12/2014; (In Press).

Oliveira GM, Ritter AV, Heymann HO, Swift E Jr, Donovan T, **Brock G**, Wright T (2014). "Remineralization Effect of CPP-ACP and Fluoride for White Spot Lesions in vitro", *Journal of Dentistry*, 2014 Sep 23 (epub ahead of print).

Ghare SS, Joshi-Barve S, Moghe A, Patil M, Barker DF, Gobejishvili L, **Brock GN**, Cave M, McClain CJ, Barve SS (2014). "Coordinated histone H3 methylation and acetylation regulate physiologic and pathologic fas ligand gene expression in human CD4+ T cells" *J Immunol*. 193(1):412-21.

Warner DR, Mukhopadhyay P, **Brock G**, Webb CL, Michele Pisano M, Greene RM (2014). "MicroRNA expression profiling of the developing murine upper lip" *Dev Growth Differ*. 56(6):434-47.

Lenhardt R, Burkhart MT, **Brock GN**, Kanchi-Kandadai S, Sharma R, Akça O. (2014) "Is video laryngoscope-assisted flexible tracheoscope intubation feasible for patients with predicted difficult airway? A prospective, randomized clinical trial." *Anesth Analg*. 118(6):1259-65.

Neal RE, Chen J, Jagadapillai R, Jang H, Abomoelak B, **Brock G**, Greene RM, Michele Pisano M (2014). Developmental cigarette smoke exposure: Hippocampus proteome and metabolome profiles in low birth weight pups. *Toxicology*. 317:40-9.

Ramos IN, Appana SN, **Brock G**, Kalbfleisch T, He Q and Ramos KS (2013). "Health Status, Perceptions and Needs of Hispanics in Rural Shelbyville, Kentucky," *J Immigr Minor Health*. 2013 Sep 8. [Epub ahead of print].

Barton C, Kouokam JC, Lasnik AB, Foreman O, Cambon A, **Brock G**, Montefiori DC, Vojdani F, McCormick AA, O'Keefe BR, Palmer KE (2014). "Activity and effect of subcutaneous treatment with the broad spectrum antiviral lectin Griffithsin in two laboratory rodent models" *Antimicrobial Agents and Chemotherapy* 58(1):120-7.

Winegar B, Cox M, Truelove D, **Brock G**, Scherrer N, Pass LA (2013). "Efficacy of Alvimopan Following Bowel Resection: A Comparison of Two Dosing Strategies" *Annals of Pharmacotherapy*, 47(11):1406-13.

Boone SD, Baumgartner KB, Baumgartner RN, Connor AE, Pinkston CM, John EM, Hines LM, Stern MC, Giuliano AR, Torres-Mejia G, **Brock GN**, Groves FD, Kerber RA, Wolff RK, Slattery ML. (2013). "Associations between genetic variation among genes in the TGF- β Signaling pathway and the heterogeneity of breast cancer risk among Hispanic and non-Hispanic white women: The Breast Cancer Health Disparities Study" *Breast Cancer Research and Treatment* 141(2):287-97.



Andres SA, **Brock GN**, Wittliff JL (2013). "Prediction of Breast Cancer Recurrence using Expression Levels of a Small Gene Set," *BMC Cancer* 13:326.

Rogers EN, Jones DZ, Kidd NC, Yeyeodu S, **Brock G**, Ragin C, Jackson M, McFarlane-Anderson N, Tulloch-Reid M, Sean Kimbro K and Kidd LR (2013). "Toll-Like Receptor-Associated Sequence Variants and Prostate Cancer Risk among Men of African Descent," *Genes and Immunity* 14(6):347-55.

Seelan RS, Appana SN, Mukhopadhyay P, Warner DR, **Brock GN**, Pisano MM, Greene RM (2013). "Developmental Profiles of the Murine Palatal Methylome" *Birth Defects Res A Clin Mol*, 97(4):171-86.

Cannon RM, **Brock GN**, Garrison RN, Marvin MR, Franklin GA (2013). "To Pump or Not to Pump: A Comparison of Machine Perfusion vs Cold Storage for Deceased Donor Kidney Transplantation" *Journal of the American College of Surgeons* 216(4):625-33.

Buell JF, Gayet B, Han HS, Wakabayashi G, Kim KH, Belli G, Cannon R, Saggi B, Keneko H, Koffron A, **Brock G**, Dagher I (2013). "Evaluation of stapler hepatectomy during laparoscopic liver resection", *HPB* 15(11):845-850.

External Professional Activities (2013-2014):

Associate Editor for PLOS ONE, Computational Biology Journal, Annals of Biometrics & Biostatistics, and Journal of Medical Statistics and Informatics.

Statistical Advisor to BMC Editorial Board.

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

Reviewer for Medical Research Council, Molecular and Cellular Medicine Board (Developmental Biology)