

BIOGRAPHICAL SKETCH

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NAME: David T. Redden

eRA COMMONS USER NAME (credential, e.g., agency login): DRedden

POSITION TITLE: Professor, Biostatistics

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of Alabama, Tuscaloosa, Alabama	PhD	1995	Applied Statistics
University of Alabama, Tuscaloosa, Alabama	MS	1993	Applied Statistics
Auburn University, Auburn, Alabama	BS	1991	Mathematics

A. Personal Statement

I have 20 years of experience as a research biostatistician and university professor. I have served as Principal Investigator of a K25 award that developed statistical methods to estimate and control for the effects of admixture within genetic association studies. As the former Principal Investigator of the NIAMS Multidisciplinary Clinical Research Center (MCRC) Methodology Core, I mentored junior investigators and oversaw the design, data collection and management, and analysis of the MCRC projects. These 4 projects included an outcome and effectiveness research study with, two genetic association studies, and an imaging study. I have also served as Co-PI and Statistician on multiple R01 grants and longitudinal studies investigating AIDS, Diabetes, Obesity, Tuberculosis, Asthma, Early Childhood Education, Nutrition, Gerontology, Urinary Incontinence, and Pain. I currently serve on the Executive Committee of UAB Center for Clinical and Translational Science. I have expertise in design and analysis of clustered trials, group randomized trials, power calculations, generalized estimating equations, and regression methodology.

B. Positions and Honors**Positions and Employment**

1995 - 1996 Post-Doctoral Fellow, University of Alabama at Birmingham, Civitan International Research Center

1996 - 1999 University of Alabama at Birmingham, Research Assistant Professor, Division of Medical Statistics, Department of Hematology and Oncology, School of Medicine

1999 - 2001 Research Triangle Institute, Statistician, Statistical Research Division

2001 - 2004 University of Alabama at Birmingham, Assistant Professor, Department of Biostatistics, School of Public Health.

2002 – 2009 Veterans Administration Hospital, Birmingham AL, Research Statistician, Geriatric Research, Education and Clinical Center

2004 - 2012 University of Alabama at Birmingham, Associate Professor, Department of Biostatistics, School of Public Health

2012 - University of Alabama at Birmingham, Full Professor, Department of Biostatistics, School of Public Health

2014 - University of Alabama at Birmingham, Chair, Department of Biostatistics, School of Public Health

C. Contribution to Science (Underlining indicates that a co-author is a student or mentee).

1. **Development of New Statistical Methodology.** Over the past 20 years, I have had the privilege to work on many challenging and innovative clinical research projects. Within several clinical research projects, hypotheses are often presented and data are collected that do not have appropriate statistical methods. From those studies, I have had the opportunity to work with graduate students, post-doctoral fellows, and other researchers on developing new statistical methods in group randomized trials, quantile regression, genetic association studies, and clinical trials. Below is subset of my published articles focusing on statistical methods.
 - a) Cui X, Yu S, Tamhane A, Causey ZL, Steg A, Danila MI, Reynolds RJ, Wang J, Wanzeck KC, Tang Q, Ledbetter SS, **Redden DT**, Johnson MR, Bridges SL Jr. Simple regression for correcting ΔC_t bias in RT-qPCR low-density array data normalization. *BMC Genomics*. 2015 Dec;16(1):1274. doi: 10.1186/s12864-015-1274-1. Epub 2015 Feb 14. PubMed PMID: 25776666. PMCID – In Progress
 - b) Li P, **Redden DT**. Small sample performance of bias-corrected sandwich estimators for cluster-randomized trials with binary outcomes. *Stat Med*. 2015 Jan 30;34(2):281-96. PubMed PMID: 25345738; NIHMSID: NIHMS634700; PubMed Central PMCID: PMC4268228.
 - c) Richardson E, **Redden DT**. Moving towards multiple site outcomes in spinal cord injury pain clinical trials: An issue of clustered observations in trial design and analysis. *J Spinal Cord Med*. 2014 May;37(3):278-87. doi: 10.1179/2045772313Y.0000000165. Epub 2013 Nov 11. PubMed PMID: 24621021; PubMed Central PMCID: PMC4064577.
 - d) **Redden DT**, Fernández JR, Allison DB. A simple significance test for quantile regression. *Stat Med*. 2004 Aug 30;23(16):2587-97. PubMed PMID: 15287086.

2. **Conduct and Analysis of Cluster Designs/Group Randomized Trials.** In 1995, the first NIH research project on which I worked was a multi-site study that followed the development of children over time. Within that project, I learned about cluster randomized trials and hierarchical linear models. Both of those topics have fascinated me over my career, and I have had the opportunity to reuse the skills developed during that period for clustered designs in tuberculosis, osteoporosis screening, AIDS research, and spinal cord injury research. Below is subset of my published articles focusing on cluster designs.
 - a) Bailey FA, Williams BR, Woodby LL, Goode PS, **Redden DT**, Houston TK, Granstaff US, Johnson TM 2nd, Pennypacker LC, Haddock KS, Painter JM, Spencer JM, Hartney T, Burgio KL. Intervention to improve care at life's end in inpatient settings: the BEACON trial. *J Gen Intern Med*. 2014 Jun;29(6):836-43. doi: 10.1007/s11606-013-2724-6. PubMed PMID: 24449032; PubMed Central PMCID: PMC4026508.
 - b) Warriner AH, Outman RC, Feldstein AC, Roblin DW, Allison JJ, Curtis JR, **Redden DT**, Rix MM, Robinson BE, Rosales AG, Safford MM, Saag KG. Effect of self-referral on bone mineral density testing and osteoporosis treatment. *Med Care*. 2014 Aug;52(8):743-50. doi: 10.1097/MLR.000000000000170. PubMed PMID: 24984211; PubMed Central PMCID: PMC4101066.
 - c) Megazzini KM, Sinkala M, Vermund SH, **Redden DT**, Krebs DW, Acosta EP, Mwanza J, Goldenberg RL, Chintu N, Bulterys M, Stringer JS. A cluster-randomized trial of enhanced labor ward-based PMTCT services to increase nevirapine coverage in Lusaka, Zambia. *AIDS*. 2010 Jan 28;24(3):447-55. doi: 10.1097/QAD.0b013e328334b285. PubMed PMID: 19926959_ No NIH Funding.
 - d) Bailey WC, Gerald LB, Kimerling ME, **Redden D**, Brook N, Bruce F, Tang S, Duncan S, Brooks CM, Dunlap NE. Predictive model to identify positive tuberculosis skin test results during contact investigations. *JAMA*. 2002 Feb 27;287(8):996-1002. PubMed PMID: 11866647.

3. **Collaborative Research in Organ Donation and Transplant Research.** Over the past 10 years, I have worked closely with investigators involved in organ donation and transplant research. I collaborated with Derek Dubay, MD, in the development of his Mentored Patient-Oriented Research Career Development Award (K23). This K award was instrumental in setting the stage for a recent R03 award. The collaboration has led to numerous collaborative papers of which a subset is listed below.

- a) White JA, **Redden DT**, Bryant MK, Dorn D, Saddekni S, Abdel Aal AK, Zarzour J, Bolus D, Smith JK, Gray S, Eckhoff DE, DuBay DA. Predictors of repeat transarterial chemoembolization in the treatment of hepatocellular carcinoma. *HPB (Oxford)*. 2014 Dec;16(12):1095-101. doi: 10.1111/hpb.12313. Epub 2014 Aug 26. PubMed PMID: 25158123; PubMed Central PMCID: PMC4253333.
- b) DuBay DA, Ivankova N, Herby I, Wynn TA, Kohler C, Berry B, Foushee H, Carson AP, **Redden DT**, Holt C, Siminoff L, Fouad M, Martin MY. African American organ donor registration: a mixed methods design using the theory of planned behavior. *Prog Transplant*. 2014 Sep;24(3):273-83. doi: 10.7182/pit2014936. PubMed PMID: 25193729; PubMed Central PMCID: PMC4377221.
- c) DuBay DA, **Redden DT**, Bryant MK, Dorn DP, Fouad MN, Gray SH, White JA, Locke JE, Meeks CB, Taylor GC, Kilgore ML, Eckhoff DE. Resource utilization associated with procurement of transplantable organs from donors that do not meet OPTN eligible death criteria. *Transplantation*. 2014 May 27;97(10):1043-8. doi: 10.1097/01.TP.0000441093.32217.cb. PubMed PMID: 24503760; PubMed Central PMCID: PMC4024080.
- d) DuBay D, **Redden D**, Haque A, Gray S, Fouad M, Siminoff L, Holt C, Kohler C, Eckhoff D. Is decedent race an independent predictor of organ donor consent or merely a surrogate marker of socioeconomic status? *Transplantation*. 2012 Oct 27;94(8):873-8. doi: 10.1097/TP.0b013e31826604d5. Erratum in: *Transplantation*. 2013 Feb 27;95(4):e23. PubMed PMID: 23018878; PubMed Central PMCID: PMC3566527.

4. **Collaborative Research in End of Life Care.** Over the past 15 years, I have served as the lead statistician for the Department of Veterans Affairs Birmingham/Atlanta Geriatric Research Education and Clinical Center (GRECC). Within this collaborative effort, I have designed numerous clinical trials, multiple pilot studies, a cluster design study for improving end of life care, and a new group randomized trial. This long standing collaboration has been very productive and a subset of the published papers is listed below.

- a) Johnson TM 2nd, Markland AD, Goode PS, Vaughan CP, Colli JL, Ouslander JG, **Redden DT**, McGwin G, Burgio KL. Efficacy of adding behavioural treatment or antimuscarinic drug therapy to α -blocker therapy in men with nocturia. *BJU Int*. 2013 Jul;112(1):100-8. doi: 10.1111/j.1464-410X.2012.11736.x. Epub 2013 Feb 28. PubMed PMID: 23448285. No NIH Funding.
- b) Gleason JL, Richter HE, **Redden DT**, Goode PS, Burgio KL, Markland AD. Caffeine and urinary incontinence in US women. *Int Urogynecol J*. 2013 Feb;24(2):295-302. doi: 10.1007/s00192-012-1829-5. Epub 2012 Jun 15. PubMed PMID: 22699886; PubMed Central PMCID: PMC3505252.
- c) Bailey FA, Williams BR, Goode PS, Woodby LL, **Redden DT**, Johnson TM 2nd, Taylor JW, Burgio KL. Opioid pain medication orders and administration in the last days of life. *J Pain Symptom Manage*. 2012 Nov;44(5):681-91. doi: 10.1016/j.jpainsymman.2011.11.006. Epub 2012 Jul 4. PubMed PMID: 22765968. No NIH Funding.
- d) Bailey FA, Allen RS, Williams BR, Goode PS, Granstaff S, **Redden DT**, Burgio KL. Do-not-resuscitate orders in the last days of life. *J Palliat Med*. 2012 Jul;15(7):751-9. doi: 10.1089/jpm.2011.0321. Epub 2012 Apr 26. PubMed PMID: 22536938. No NIH Funding.

5. Collaborative Research in Genetic Studies. In 2003, I became very interested in the effect of admixture on genetic association studies. Through collaborations with multiple faculty at the University of Alabama at Birmingham, I have been able to apply the techniques I learned during that time to numerous genetic association studies.

- a) Dong C, Ptacek TS, **Redden DT**, Zhang K, Brown EE, Edberg JC, McGwin G Jr, Alarcón GS, Ramsey-Goldman R, Reveille JD, Vilá LM, Petri M, Qin A, Wu J, Kimberly RP. Fcγ receptor IIIa single-nucleotide polymorphisms and haplotypes affect human IgG binding and are associated with lupus nephritis in African Americans. *Arthritis Rheumatol.* 2014 May;66(5):1291-9. doi: 10.1002/art.38337. PubMed PMID: 24782186; PubMed Central PMCID: PMC4069204.
- b) Divers J, **Redden DT**, Carroll RJ, Allison DB. How to estimate the measurement error variance associated with ancestry proportion estimates. *Stat Interface.* 2011 Jul 1;4(3):327-337. PubMed PMID: 24089627; PubMed Central PMCID: PMC3786624.
- c) Divers J, **Redden DT**, Rice KM, Vaughan LK, Padilla MA, Allison DB, Bluemke DA, Young HJ, Arnett DK. Comparing self-reported ethnicity to genetic background measures in the context of the Multi-Ethnic Study of Atherosclerosis (MESA). *BMC Genet.* 2011 Mar 4;12:28. doi: 10.1186/1471-2156-12-28. PubMed PMID: 21375750; PubMed Central PMCID: PMC3068121.
- d) **Redden DT**, Divers J, Vaughan LK, Tiwari HK, Beasley TM, Fernández JR, Kimberly RP, Feng R, Padilla MA, Liu N, Miller MB, Allison DB. Regional admixture mapping and structured association testing: conceptual unification and an extensible general linear model. *PLoS Genet.* 2006 Aug 25;2(8):e137. Epub 2006 Jul 18. PubMed PMID: 16934005; PubMed Central PMCID: PMC1557785.

Complete List of Published Work in MyBibliography:

<http://www.ncbi.nlm.nih.gov/sites/myncbi/david.redden.1/bibliography/47766083/public/?sort=date&direction=ascending>.

D. Research Support

Ongoing Research Support

P60 AR064172 (Redden) 09/16/2013 – 07/31/2018

Methodology Core for the Multidisciplinary Clinical Research Center

The core is responsible for the design and analysis of 4 novel research projects in rheumatoid arthritis and musculoskeletal diseases. The methodology core is also responsible for the methods development and publication. Role: PI

R01 DK082548 (Burgio) 08/06/2012 – 07/31/2015

Combined Behavioral and Drug Treatment of Overactive Bladder in Men

The primary objective of this trial is to compare the effectiveness of interventions for urinary incontinence across 3 arms: behavior alone, drug alone and combined therapy. Role: Co-Investigator

H133 N110008 (McLain) 10/01/2011 – 09/30/2016

Model Regional Spinal Cord Injury Care System

Research Project: Virtual Walking for Reducing Spinal Cord Injury-Related Neuropathic Pain. Goals are to examine effects of immersive virtual reality walking on SCI-related neuropathic pain. Role: Co-Investigator

R37 AR067427 (Bradley) 09/15/2014 – 04/30/2019

Ethnic Differences in Responses to Painful Stimuli (UPLOAD)

The proposed study will be the first to directly investigate ethnic group differences in central pain processing and to prospectively characterize the temporal development and mediators of changes in central pain processing contributing to ethnic group differences in knee osteoarthritis-related pain. Role: Co-Investigator

R01 AR060240 (K. Saag)

09/01/2011 – 08/31/2016

Activating Patents to Reduce Osteoporosis Aproposis

This research project is a two group design to compare education among doctors and direct to patient information with regard to getting prescriptions for osteoporosis filled. Role: Co-Investigator

U19 HS021110 (K. Saag)

09/30/2011 – 08/31/2016

UAB Deep South Arthritis and Musculoskeletal

This center award has multiple projects focusing on novel research strategies for arthritis and musculoskeletal research. Role: Co-Investigator

P50 AR060772 (K. Saag)

09/01/2012 – 08/31/2017

Centers of Research Translation (CoRT)

CoRT will support the conduct of innovative translation research and the training of clinical investigators in gout and hyperuricemia. The overall goal of the UAB CoRT is to improve the health care of patients with gout and hyperuricemia by applying scientifically rigorous, state-of-the-art methodology to clinically important questions in translational investigation. Role: Co-Investigator

UL1 TR000165 (Kimberly)

05/01/2011 – 04/30/2015

UAB Center for Clinical & Translational Science (CCTS)

Dr. Redden serves on the Executive Committee of the UAB CCTS which provides infrastructure and services in translating research from bench to bedside. Within his role, Dr. Redden is a member of the Biostatistics and Epidemiology Research Division (BERD) which assists the university in the design and analysis of clinical translational research. Role: Co-Investigator