

## **Bryan E. Shepherd**

Department of Biostatistics, Vanderbilt University  
1161 21st Avenue South S2323 MCN  
615-343-3496 (phone) 615-343-4924 (fax)  
bryan.shepherd@vanderbilt.edu

### **EDUCATION**

University of Washington, Seattle, WA  
Ph.D. in Biostatistics, 2005

Dissertation: “Causal Inference in HIV Vaccine Trials: Sensitivity analyses comparing outcomes only existing in a subset chosen post-randomization”

Advisor: Peter B. Gilbert

Committee: Donna Pauler Ankerst, Thomas Lumley, John Potter, Thomas Richardson, Steve Self

M.S. in Biostatistics, 2001

Brigham Young University, Provo, UT  
B.S. in Statistics, 1999  
University Honors and Magna Cum Laude  
Minors in Mathematics and Botany

### **COLLABORATIVE RESEARCH HISTORY**

Statistical Designs and Methods for Partially Controlled HIV/AIDS Studies, 2007-present  
Principal Investigator: Constantine Frangakis (Johns Hopkins University)  
I lead a Vanderbilt subcontract of this grant. My proposed work deals with creating new sensitivity analysis methods for HIV vaccines trials.

Vanderbilt Meharry Center for AIDS Research (CFAR), 2005-present  
Principal Investigator: Richard D’Aquila (2P30 AI 54999-03; NIH; \$1,020,202)  
Head statistician for Vanderbilt CFAR.

Caribbean, Central and South American network (CCASAnet), 2006-present  
Principal Investigator: Daniel Masys (1 U01 AI069923-01; NIH; \$515,892)  
Shared database of HIV epidemiology data. My role is to lead analyses and develop novel biostatistics approaches.

Vaccine Center, Vanderbilt University, 2005-present  
Principal Investigator: James Crowe, Jr. (Biostatistics collaboration plan)  
Statistician for vaccine center.

Departments of Hematology and Statistics, University of Washington, 2001-2005,  
Principal Investigators: Janis Abkowitz and Peter Gutterp  
Use stochastic processes to study stem cell kinetics

Kenya Medical Research Institute and University of Nairobi, Kenya / Department of Ob-  
stetrics and Gynecology, University of Washington, summer 2000.  
Principal Investigator: Craig Cohen  
Statistical analyst for group studying HIV and sexually transmitted infections in  
Nairobi

Department of Microbiology, Brigham Young University, 1997-1999,  
Principal Investigator: Kim O'Neill  
Statistical analyst for laboratory doing DNA and cancer research

Departments of Political Science and Statistics, Brigham Young University, fall 1998  
Principle Investigators: David Magleby and JL Madrigal  
KBYU/Utah Colleges Exit Poll: chair of committee responsible for sample design of  
state-wide election poll

## **TEACHING**

Teaching Assistant, 2000-2001, Department of Biostatistics, University of Washington.  
Courses: Theory of Linear Models, Medical Biometry II (introduction to biostatistics),  
Special Emphases in Biostatistics (introductory course to health services students)

Teaching Assistant, 1997-1999, Department of Statistics, Brigham Young University.  
Courses: Statistics and Probability for Secondary Educators, Statistical Computing,  
Principles of Statistics

## **OTHER PROFESSIONAL EXPERIENCE**

SAS Programmer, Summer 1998, McBride Biostatistical Research, Morristown, NJ.

C++ Programmer, Summer 1997, Department of Statistics, Brigham Young University.

## **ACADEMIC AWARDS**

Senior Student Award, 2005, Department of Biostatistics, University of Washington

NIH Cardiovascular Training Grant, 2000-2005

Graduate Merit Award, 1999-2000, Department of Biostatistics, University of Washington

\$1000 Undergraduate Research Award, 1998, Office of Research and Creative Activities, Brigham Young University

Edwin Hinckley Scholarship, 1998, 1.5 tuition for one year (replaced final year of Trustees Scholarship), Brigham Young University

Trustees Scholarship, 1993, full tuition for four years, Brigham Young University

## ACADEMIC SERVICE

Chair of MS Allocation Committee, Department of Biostatistics, Vanderbilt University, 2005-present

Member of Faculty Search Committee, Department of Biostatistics, Vanderbilt University, 2005-present

Chapter Representative, Middle Tennessee Chapter of the American Statistical Association, 2006-present

Informal Seminar Series, Department of Biostatistics, University of Washington Student Chair, 2002-2004: recruited and introduced speakers; coordinated, set-up, and publicized seminar. Committee Member, 2001-2005.

## REVIEWED FOR

*American Journal of Epidemiology, Biometrics, Blood, Methods of Information in Medicine, Proceedings of the Royal Society B: Biological Sciences, Statistics in Medicine, The American Statistician, The Bill and Melinda Gates Foundation*

## PUBLICATIONS

**Shepherd BE**, Redman MW, Ankerst DP. Does finasteride affect the severity of prostate cancer? a causal sensitivity analysis. *Journal of the American Statistical Association* (in press).

Utley TJ, Ducharme NA, Varthakavi V, **Shepherd BE**, Santangelo PJ, Lindquist ME, Goldenring JR, Crowe JE Jr. Respiratory syncytial virus uses a Vps4-independent budding mechanism controlled by Rab11-FIP2. *Proceedings of the National Academy of Sciences* (in press).

Tsai CS, **Shepherd BE**, Vermund SH. Does douching increase risk for sexually transmitted infections? A prospective study in high-risk adolescents. *American Journal of Obstetrics and Gynecology* (in press).

- Morel KR, **Shepherd BE**. Developing a symptom validity test for posttraumatic stress disorder: application of the binomial distribution. *Journal of Anxiety Disorders* (in press).
- Carlisle J, Evans W, Hajizadeh R, Nadaf M, **Shepherd BE**, Ott RD, Richter K, Drake W. Multiple Mycobacterium antigens induce interferon-gamma production from sarcoidosis peripheral blood mononuclear cells. *Clinical and Experimental Immunology* (in press).
- Allen SS, Evans W, Carlisle J, Hajizadeh R, Nadaf M, Pride DT, Shepherd BE, Johnson JE, Drake WP (2008). Superoxide dismutase A antigens derived from molecular analysis of sarcoidosis granulomas elicit systemic Th-1 immune responses. *Respiratory Research* 9: 36.
- Carlucci JG, Kamanga A, Sheneberger R, **Shepherd BE**, Jenkins CA, Spurrier J, Ver-mund SH (2008). Predictors of adherence to antiretroviral therapy in rural Zambia. *Journal of Acquired Immune Deficiency Syndromes* 47: 615–622.
- Shepherd BE** (2008). The cost of checking proportional hazards. *Statistics in Medicine* 27: 1248–1260.
- Tian C, Luskin GK, Dischert KM, Higginbotham JN, **Shepherd BE**, Crowe JE Jr (2008). Immunodominance of the VH1-46 antibody gene segment in the primary repertoire of human rotavirus-specific B cells is reduced in the memory compartment through somatic mutation of nondominant clones. *Journal of Immunology* 180: 3279–3288.
- Riviello ED, Sterling TR, **Shepherd B**, Fantan T, Makhema J (2007). HIV in the workplace in Botswana: incidence, prevalence, and disease severity. *AIDS Research and Human Retroviruses* 23: 1453–1460.
- Jemai Y, Rotnitzky A, **Shepherd BE**, Gilbert PB (2007). Semiparametric estimation of treatment effects given baseline covariates on an outcome measured after a post-randomization event occurs. *Journal of the Royal Statistical Society, Series B* 69: 879–901.
- Mok H, Lee S, Utley TJ, **Shepherd BE**, Polosukhin VV, Collier ML, Davis NL, Johnston RE, Crowe JE Jr (2007). Venezuelan equine encephalitis replicon particles encoding respiratory syncytial virus surface glycoproteins induce protective mucosal responses in mice and cotton rats. *Journal of Virology* 81: 13710–13722.
- Shepherd BE**, Kiem HP, Lansdorp PM, Aubert G, Dunbar CE, LaRochelle A, Seggewiss R, Gutter P, Abkowitz JL (2007). Hematopoietic stem cell behavior in non-human primates. *Blood* 110: 1806–1813.

- Williams JV, Chen Z, Cseke G, Wright DW, Keefer CJ, Tollefson SJ, Hessel A, Podsiad A, **Shepherd BE**, Sanna PP, Burton DR, Crowe JE Jr, Williamson RA (2007). A Recombinant Human Monoclonal Antibody to Human Metapneumovirus Fusion Protein that Neutralizes Virus in Vitro and is Effective Therapeutically in Vivo. *Journal of Virology* 81, 8315–8324.
- Hajizadeh R, Sato H, Carlisle J, Nadaf MT, Evans W, **Shepherd BE**, Miller RF, Kalams SA, Drake WP (2007). Mycobacterium tuberculosis antigen 85A induces Th-1 immune responses in systemic sarcoidosis. *Journal of Clinical Immunology* 27, 445–454.
- Shepherd BE**, Gilbert PB, Lumley T (2007). Sensitivity analyses comparing time-to-event outcomes only existing in a subset selected post-randomization. *Journal of the American Statistical Association* 102, 573–582.
- Shepherd BE**, Gilbert PB, Mehrotra DV (2007). Eliciting a counterfactual sensitivity parameter. *The American Statistician* 61, 56–63.
- Tian C, Luskin GK, Dischert KM, Higginbotham JN, **Shepherd BE**, Crowe JE Jr (2007). Evidence for preferential Ig gene usage and differential TdT and exonuclease activities in human naive and memory B cells. *Molecular Immunology* 44, 2173–83.
- Hulgan T, **Shepherd BE**, Raffanti SP, Fusco JS, Beckerman R, Barkanic G, Sterling TR (2007). Absolute and percentage CD4+ lymphocytes are independent predictors of disease progression in HIV-infected persons initiating HAART. *Journal of Infectious Diseases* 195, 425–431.
- Drake WP, Dhason MS, Nadaf M, **Shepherd BE**, Vivedulu S, Hajizadeh R, Newman LS, Kalams SA (2007). Cellular recognition of Mycobacterium ESAT-6 and katG peptides in systemic sarcoidosis. *Infection and Immunity* 75, 527–530.
- Parham GP, Sahasrabudhe VV, Mwanahamuntu MH, **Shepherd BE**, Hicks ML, Stringer EM, Vermund SH (2006). Prevalence and predictors of squamous intraepithelial lesions of the cervix in HIV-infected women in Lusaka, Zambia. *Gynecologic Oncology* 103, 1017–1022.
- Shepherd BE**, Gilbert PB, Jemai Y, Rotnitzky A (2006). Sensitivity analyses comparing outcomes only existing in a subset selected post-randomization, conditional on covariates, with application to HIV vaccine trials. *Biometrics* 62, 332–342.
- Shepherd BE**, Rossini AJ, Soto RJ, de Rivera IL, Mullins JI (2005). Sampling designs for HIV molecular epidemiology with application to Honduras. *AIDS Research and Human Retroviruses* 21, 907–914.
- Gilbert PB, Ackers M, Berman PW, Francis DP, Popovic V, Hu D, Heyward WL, Sinangil

F, **Shepherd BE**, Gurwith M (2005). HIV-1 virologic and immunologic progression and antiretroviral therapy initiation among HIV-1-infected participants in an efficacy trial of recombinant glycoprotein 120 vaccine. *Journal of Infectious Diseases* 192, 974–983.

**Shepherd BE**, Gutterop P, Lansdorp PM, Abkowitz JL (2004). Estimating human hematopoietic stem cell kinetics using granulocyte telomere lengths. *Experimental Hematology* 32, 1040–1050.

Mwachari CW, **Shepherd BE**, Cleopa O, Odhiambo JA, Cohen CR (2004). Mortality and burden of disease in a cohort of HIV-seropositive adults in Nairobi, Kenya. *International Journal of STD and AIDS* 15, 120–126.

**Shepherd BE**, Schaalje GB, Smith MJ, Murray BK, O’Neill KL (2000). Statistical analysis of the comet assay using a mixture of gamma distributions. *Quantitative Microbiology* 2, 69–79.

## INTRAMURAL PRESENTATIONS

Shepherd BE. An introduction to linear mixed effects models.  
MS Continuing Education Meeting, Department of Biostatistics, Vanderbilt University, April 17 and May 1, 2008

Shepherd BE. Biostatistics 101.  
2nd Annual Administrative Retreat, Department of Biostatistics, Vanderbilt University, April 4, 2008

Shepherd BE. Design of medical studies and some analysis advice.  
The Caribbean, Central, and South American network, Educational Visit, Huesped Foundation, Buenos Aires, Argentina, September 26, 2007.

## INVITED PRESENTATIONS

Shepherd BE. The cost of checking proportional hazards.  
Department of Biostatistics, Vanderbilt University, April 23, 2008

Shepherd BE. Sensitivity analyses comparing time-to-event outcomes only existing in a subset selected post-randomization, with application to HIV vaccine trials.  
Department of Economics, Vanderbilt University, Statistics Study Group Seminar Series, February 14, 2008

Hulgan T, Shepherd BE. Baseline CD4 lymphocyte percentage and HIV/AIDS disease progression on therapy: the promise and problems of predictive modeling.

Vanderbilt-Meharry Center for AIDS Research Work in Progress Seminar, May 24, 2007

Shepherd BE. The causal effect of finasteride on the severity of prostate cancer.  
Department of Biostatistics, Vanderbilt University, September 20, 2006

Shepherd BE. An analysis problem arising in HIV vaccine trials and our proposed solution.  
Infectious Disease Grand Rounds, Vanderbilt University, February 1, 2006  
Department of Statistics, Brigham Young University, February 28, 2006

Shepherd BE. Stochastic modeling of hematopoiesis.  
Department of Biostatistics, Vanderbilt University, November 9, 2005

Shepherd BE. Comparing outcomes that only exist in a group chosen after randomization.  
Department of Biostatistics, Vanderbilt University, January 19, 2005  
Department of Biostatistics, Emory University, February 18, 2005  
Statistics Group, RAND Corporation, February 21, 2005  
Department of Biostatistics, Harvard University, March 3, 2005  
Department of Statistics, Simon Fraser University, March 7, 2005  
Department of Biostatistics, UCSF, April 6, 2005  
Causal Inference Working Group, Department of Biostatistics, Johns Hopkins University, December 14, 2006

## **CONTRIBUTED PRESENTATIONS**

Shepherd BE. The cost of checking proportional hazards. Joint Statistical Meetings.  
August 1, 2007. Salt Lake City.

Shepherd BE. The causal effect of finasteride on the severity of prostate cancer.  
Joint Statistical Meetings. August 7, 2006. Seattle.

Shepherd BE, Gilbert PB. Causal inference in HIV vaccine trials: Comparing biomarkers  
measured only in a subgroup chosen post-randomization. Joint Statistical Meetings.  
August 5, 2003. San Francisco.

Shepherd BE, Schaalje GB. Statistical analysis of the comet assay using a mixture of  
gamma distributions. 42nd Annual Conference on Cardiovascular Disease Epidemiol-  
ogy and Prevention. April 23, 2002. Honolulu.

Shepherd BE, O'Neill K. Analysis of tail moments in the comet assay. American Micro-  
biology Association. May 28, 1998. Idaho Falls.

## **CONTRIBUTED POSTERS**

- Shepherd BE, Jenkins CA, Rebeiro PF, Stinnette SE, Bebawy SS, Kheshti A, Blackwell R, Raffanti S, Hulgán T, Sterling TR. When to start highly active antiretroviral therapy: a pilot study of inverse probability weighted methods. 12th International Workshop on HIV Observational Databases; March 29, 2008. Malaga, Spain.
- Shepherd BE. Modelling HIV disease progression among persons initiating HAART: the cost of checking and correcting violations of the proportional hazards assumption. 11th International Workshop on HIV Observational Databases; March 23, 2007. Monte Carlo, Monaco.
- Shepherd BE, Sterling TR, Moore RD, Raffanti SP, Hulgán T. Evaluation of a prognostic model for HIV disease progression after initiation of HAART. 11th International Workshop on HIV Observational Databases; March 23, 2007. Monte Carlo, Monaco.
- Shepherd BE, Kiem HP, Dunbar CE, Laroche A, Donahue RE, Seggewiss R, Lansdorp PM, Gutter P, Abkowitz JL. Estimating the replication rate of hematopoietic stem cells in non-human primates: a test of Hayflick's hypothesis. American Society of Hematology; December 10, 2005. Atlanta.
- Shepherd BE, Gilbert PB, Gurwith M, Francis D. Assessment of HIV vaccine effects on viral load in the first Phase III trial of AIDSVAX B/B. Eleventh Conference on Retroviruses and Opportunistic Infections, February 11, 2004. San Francisco.
- Shepherd BE, Gutter P, Abkowitz JL. Estimating human hematopoietic stem cell kinetics using granulocyte telomere lengths. American Society of Hematology; December 7, 2003. San Diego.