

Erin E. Gabriel

CONTACT INFORMATION Biostatistics Research Branch
National Institute of Allergy and Infectious Diseases
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Rockville MD 20852

EDUCATION **University of Washington**, Seattle, WA USA

Ph.D., Biostatistics, September 2007 - August 2012

- Dissertation Topic: *Evaluation of Potential Surrogate Endpoints*
- Advisor: Professor Peter B. Gilbert Ph.D.

M.S., Biostatistics, September 2007 - August 2009

McGill University, Montréal, QC CA

M.A., Economics, August 2002 - October 2004

Washington College, Chestertown, MD USA

B.A., Mathematics, August 1999 - August 2002

RESEARCH INTERESTS My research interests are focused on statistical methods for infectious disease prevention, treatment and investigation. These include surrogate marker and biomarker evaluation, methods for vaccine evaluation and advancement, clinical trials methods, statistical methods for measurement of immune response, host-immune prediction and evaluation of laboratory methods. I am also generally interested in methods for time series data, survival analysis and unique missing data patterns.

PEER REVIEWED PUBLICATIONS Bradley SM, **Gabriel EE**, Aufderheide TP, Barnes R, Christenson J, Davis DP, Stiell IG, Nichol G, the Resuscitation Consortium Investigators. Survival Increases with CPR by Emergency Medical Services Before Defibrillation of Out-of-Hospital Ventricular Fibrillation or Ventricular Tachycardia: Observations from the Resuscitation Outcomes Consortium. *Resuscitation*. Feb 2010; 81(2):155-162.

Gilbert PB, Grove D, **Gabriel EE**, Huang Y, Gray G, Hammer SM, Buchbinder SP, Kublin J, Corey L, Self SG. A Sequential Phase 2b Trial Design for Evaluating Vaccine Efficacy and Immune Correlates for Multiple HIV Vaccine Regimens. *Statistical Communications in Infectious Diseases*. Oct 2011; 3(1):Online.

Defawe OD, Fong Y, Vasilyeva E, Pickett M, Carter DK, **Gabriel EE**, Rerks-Ngarm S, Nitayaphan S, Frahm N, McElrath MJ, De Rosa SC. Optimization and Qualification of a Multiplex Bead Array to Assess Cytokine and Chemokine Production by Vaccine-specific Cells. *Journal of Immunological Methods*. Aug 2012; 382(1-2):117-128.

Janes H, Frahm N, DeCamp A, Rolland M, **Gabriel E**, Wolfson J, Hertz T, Kallas E, Goepfert P, Robertson M, Corey L, Mullins J, McElrath MJ, Gilbert PB. MRKA5 HIV-1 gag/pol/nef Vaccine-induced T-cell Responses Inadequately Predict Distance of Breakthrough HIV-1 Sequences to the Vaccine or Viral Load. *PLoS ONE*. Aug 2012; 7(8):e43396.

Forthal D, **Gabriel EE**, Wang A, Landucci G, Phan TB. Association of Fc γ Receptor IIIa Genotype with the Rate of HIV Infection Following gp120 Vaccination. *Blood*. Aug 2012; 120(14):2836-2842.

Kunwar P, Hawkins NR, Yu X, Liu Y, Collier A, **Gabriel EE**, Hertz T, Horton H. Breadth or conservation score (CS): which is more important for HIV-1 T cell based vaccine immunogen design? *Retrovirology*. 2012; 9(Suppl 2): P260.

Kunwar, Pratima and Hawkins, Natalie and Dinges, Warren L and Liu, Yi and **Gabriel, Erin E** and Swan, David A and Stevens, Claire E and Maenza, Janine and Collier, Ann C and Mullins, James I and others. Superior control of HIV-1 replication by CD8+ T cells targeting conserved epitopes: Implications for HIV vaccine design. *PloS one*. 2013; 8(5).

Gabriel EE, Gilbert PB. Evaluating Principle Surrogate Endpoints with Time to Event Data Accounting for Time-varying Treatment Efficacy. *Biostatistics*, 2014; 15(2).

Gilbert PB, **Gabriel, EE**, Miao X, Li X, Parrino J, Chan I. Fold rise in Antibody Titers by gpELISA is an Excellent Correlate of Protection for a Herpes Zoster Vaccine, Demonstrated via the Vaccine Efficacy Curve. *The Journal of Infectious Diseases*. 210 (10), 1573-1581.

Gabriel EE, Sachs MC, Gilbert PB. Comparing and Combining Biomarkers as Principle Surrogates for Time-to-Event Clinical Endpoints. *Statistics in Medicine*. 34 (3), 381-395.

Gilbert PB, **Gabriel EE**, Huang Y, Chan I. Surrogate Endpoint Evaluation: Principal Surrogate Criteria and the Prentice Definition. *Journal of Causal Inference*. 2193-3685.

Gabriel EE, Follmann D. Augmented Trial Designs for Evaluation of Principal Surrogates. *Biostatistics* in press.

SUBMITTED
MANUSCRIPTS

Gabriel EE, Daniels M., Halloran ME. Comparing Biomarkers as Trial Level General Surrogates.

Li Qingxue, Bu Wei, **Gabriel EE**, Aguilar Fiona, Hoshino Yo, Miyadera Hiroko, Hess Christoph, Hornung Ronald, Cohen Jeffrey I. Different HLA-DQ α 1 alleles are associated with EBV infectivity in healthy individuals and correlate with binding of EBV glycoprotein 42 to B cells.

Fiore-Gartland Andrew, Manso Bryce A., Friedrich David P., **Gabriel EE**, Finak Greg, Moodie Zoe, Hertz Tomer, De Rosa Stephen C., Frahm Nicole, Gilbert Peter B., M. McElrath Juliana. Pooled-peptide epitope mapping strategies are efficient and highly sensitive: an evaluation of methods for identifying human T cell epitope specificities in large-scale HIV vaccine efficacy trials.

Follmann Dean, Huang Chiung-Yu, **Gabriel EE**. Who Really Gets Strep Sore Throat? Confounding and Effect Modification of a Time Varying Exposure on Recurrent Events

ORAL
PRESENTATIONS

Bradley, Steve M, **Gabriel EE**: Survival increases with CPR before defibrillation of out-of-hospital ventricular fibrillation or ventricular tachycardia: Observations from the Resuscitation Outcomes Consortium and difficulties in analysis. *Student Seminar: University of Washington*, January 28, 2009.

Gabriel EE: HIV Vaccine Trials: The first, the Step and The Thai. *Student Seminar: University of Washington*, October 30, 2009.

Gabriel EE: Methods for evaluation of surrogate endpoints in the counterfactual based causal framework. *Student Seminar: University of Washington*, March 9, 2011.

Gabriel EE, Gilbert PB. Paper Presentation: Evaluation of Biomarkers as Principal Surrogates for Time-to-Event Endpoints. *Joint Statistical Meeting*, July 30-August 2, 2011.

Gabriel EE, Gilbert PB. Paper Presentation: Semi-parametric Evaluation of Specific Surrogates of Protection for Time-to-Event Clinical Endpoints Allowing for Time-Varying Treatment Effects. *Joint Statistical Meeting*, July 28-August 2, 2012.

Gabriel EE, Halloran ME. Speed Session: Comparing Biomarkers as Trial Level General Surrogates. *Joint Statistical Meeting*, 2013.

Gabriel EE, Follmann Dean. Experimental Designs For Assessing Intermediate Response Measures as Surrogates. *Joint Statistical Meeting*, 2014.

Gabriel EE, Individual and trial level correlates and surrogates, why the details matter and why they are not the same. *The Western North American Region of The International Biometric Society* Invited session, June 2015.

Gabriel EE, Why Correlates of protection are good targets for vaccine improvement and Correlates of risk are not. *LMIV NIAID NIH seminar series*, invited session September 2015.

RELEVANT WORK
EXPERIENCE

National Institutes of Health, Biostatistics Research Branch, National Institute of Allergy and Infectious Diseases, Bethesda, MD 20892

Mathematical Statistician (August 2013-Present)

Center for Statistics and Quantitative Infectious Diseases (CSQUID) at the Fred Hutchinson Cancer Research Center, Seattle, WA USA

Postdoctoral Fellow (Sept 2012 - August 2013)

Vaccine and Infectious Disease Division at the Fred Hutchinson Cancer Research Center, Seattle, WA USA

Research Assistant (Sept 2009-August 2012)

Resuscitation Outcomes Consortium, Seattle, WA USA

Research Assistant (Sept 2007-Sept 2009)

Statistical Consultant to the United States Department of Justice, Washington, D.C. USA

Statistical Consultant; independent contractor (February 2007- August 2007)

Department of Biostatistics, Bioinformatics, and Biomathematics, Georgetown University, Washington, D.C. USA

Research Intern: Under Dr. Francoise Seillier-Moiseiwitsch (Sept 2006-June 2007)

Arc Worldwide, Chicago, IL USA

Data Analyst (July 2005-August 2006)

Matrix Inc, Chicago, IL USA

Consultant (November 2004-July 2005)

TEACHING
EXPERIENCE

University of Washington Department of Biostatistics:

Teaching Assistant (Winter 2010)
Advanced Regression Methods for Dependent Data

University of Washington Department of Biostatistics:

Teaching Assistant (Spring 2011)
Introduction to Biostatistic Methods

Teaching Assistant (Fall 2009)
Applied Biostatistics I

McGill University Department of Economics:

Teaching Assistant (Fall 2003)

FUNDING AND
AWARDS

Funding Sources:

- NIH Clinical Research on AIDS Training Grant (2008-2012)
- NIH Cancer Epidemiology Training Grant (2007-2008)

Awards:

- Dean's List, Washington College (1999-2002)
- B.A., Summa cum laude (2002)

PROTOCOLS

Primary Biostatistician

1. Testing Pfs25-EPA/Alhydrogel as a Potential Malaria Transmission Blocking Vaccine
2. Study of Safety and Effectiveness of Intravenous Immunization With PfSPZ Vaccine in Healthy African Adults
3. Preventing the Spread of Malaria in Mali
4. Sanaria PfSPZ Challenge With Pyrimethamine Chemoprophylaxis (PfSPZ-CVac Approach): Phase 1 Trial to Determine Safety and Protective Efficacy of Sanaria PfSPZ Challenge With Concurrent Pyrimethamine Treatment That Inhibits Development of Asexual Blood-stage Parasites
5. Study of the Safety and Immunogenicity of Pfs230D1M-EPA/Alhydrogel and Pfs25M-EPA/Alhydrogel , a Transmission Blocking Vaccine Against Plasmodium Falciparum Malaria, in Adults in the U.S. and Mali
6. Markers of T Cell Suppression: Antimalarial Treatment and Vaccine Responses in Healthy Malian Adults
7. Assessing Human-to-Mosquito Transmission in Volunteers Participating in Malaria Vaccine Candidate Trials in Mali
8. Markers of T Cell Suppression: Associations With Malaria Infection and Antimalarial Treatment in Malian Children
9. Host and Parasite Factors That Influence Susceptibility to Malaria Infection and Disease During Pregnancy and Early Childhood in Ouelessebouyou and Bamako, Mali

10. Seasonal Intermittent Preventive Treatment With Sulfadoxine-Pyrimethamine in Children in Mali
11. A Trial of Seasonal Malaria Chemoprevention Plus Azithromycin in African Children (SMCAZ)
12. Differences in Malaria Infection Levels in HIV-infected Infants and Children Receiving PI- and NNRTI-based HAART
13. Impact of TMP-SMX Prophylaxis on Malaria Infection and Immunity in Children in Uganda

SERVICE

NIAID Division of AIDS (2013-Present)

Voting Member: Clinical Science Review Committee

NIAID Biostatistics Research Branch (2013-Present)

Organizer: Seminar Series

Statistical Reviewer (2011-Present)

Biometrics

Biostatistics

Statistics in Medicine

PNAS

Clinical Trials

Statistical Methods in Medical Research