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The Human Immune Monitoring Center
Institute for Immunity, Transplantation and Infection
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EDUCATION

Masters program in Statistics, Stanford University, 1999-2000 (degree not completed).
Ph.D. Ecology (Plant Physiology and Population Biology), University of California, Davis, 1994.
B.S. Range and Wildlands Science (summa cum laude), University of California, Davis, 1987.

CURRENT POSITION

Biostatistician (Senior Research Engineer). Human Immune Monitoring Center, Institute for Immunity, Transplantation and Infection, Stanford University.

PRIOR STATISTICAL POSITIONS

- **Biostatistician (Senior Research Engineer)**. Division of Infectious Diseases and Geographic Medicine, 2017-2019.
- **Biostatistician (Senior Research Engineer)**, Human Immune Monitoring Center, Institute for Immunity, Transplantation and Infection, Stanford University. 2015-2017.
- **Biostatistician (Senior Research Engineer)**, Division of Sleep Medicine, Department of Psychiatry and Behavioral Sciences, Stanford University. 2012-2015.
- **Biostatistician (Senior Research Scientist - Basic Life)**, Division of Sleep Medicine, Department of Psychiatry and Behavioral Sciences, Stanford University. 2009-2012.
- **Biostatistician (Senior Research Scientist - Basic Life)**, Department of Health Research and Policy, Division of Biostatistics, Stanford University. 2003-2008.
- **Biostatistician (Software Developer/Programmer)**, Department of Health Research and Policy, Division of Biostatistics, Stanford University. 2002-2003.
- **Senior Statistician**, Arthritis, Rheumatism, and Aging Medical Information System (ARAMIS), Division of Immunology and Rheumatology, Stanford University. 2001-2002.
- Owned and operated **private statistical consultancy** to universities, corporations, and public agencies, providing consultation in statistical design and analysis. 1994-2000.

PROFESSIONAL APPOINTMENTS AND ACTIVITIES

Appointments

Statistical Director, Myalgic Encephalomyelitis/Chronic Fatigue Syndrome Initiative, Stanford University, 2014-2019.

Biostatistician, Human Immune Monitoring Center, Stanford University, 2011-**present**.

Consulting Statistician (Professional Development), Perry Point Cooperative Studies Program, Coordinating Center, Department of Veteran Affairs Maryland Health Care System, 2012-2015.

Center Statistician, Geriatric Research and Education Clinical Center, Department of Veteran Affairs Palo Alto Health Care System, 2010-2012.

Center Statistician, Center for Health Care Evaluation, Department of Veteran Affairs Palo Alto Health Care System, 2009-2013.

Center Statistician, National Center for Post-traumatic Stress Disorders, Department of Veteran Affairs Palo Alto Health Care System, 2008-2017.

Director of Data Coordinating Center, Apnea Positive Pressure Long-term Efficacy Study (APPLES), Stanford University, NIH/NHLBI, 2007-2010.

Statistical Reviewer, Scientific Review Committee, Stanford Comprehensive Cancer Center, 2007.

Biostatistical Reviewer, Department of Veteran Affairs Cooperative Studies Program, 2004-2005.

Biostatistical Reviewer for the General Clinical Research Center (GCRC), Stanford University, 2004.

Consulting Statistician, Division of Therapeutics and Medical Consequences (NIDA/NIH), 2002-2018.

Coordinator, Workshop in Biostatistics, Stanford University, 2006-2008.

Research Affiliate, Department of Veteran Affairs Palo Alto Health Care System, 2001-2016.

Professional Societies

Member, American Statistical Association, 2005-2008, 2017-2019.

Editorial

Reviewer to *Scientific Reports*, 2019.

Reviewer to *Vaccine*, 2017.

Reviewer to *Drug and Alcohol Dependence*, 2016.

Reviewer to *Journal of Experimental Biology*, 2015.

Reviewer to *Journal of Clinical Oncology*, 2015.

Consulting Biostatistician to *Journal of Pediatric Gastroenterology and Nutrition*, 2006-2010.

Editorial Board of *Journal of Clinical Oncology*, 2005-2007.

Editorial Board of *American Journal of Physiology: Endocrinology and Metabolism*, 2004-2006.

PUBLICATIONS

1. Vareniova Z, Rojas-Hernandez LS, Spano J, Capek V, Rosenberg-Hasson Y, **Holmes T**, Milla C. **2023**. Azithromycin promotes proliferation, and inhibits inflammation in nasal epithelial cells in primary ciliary dyskinesia. *Scientific Reports* 13:14453.
2. **Holmes TH**. **2023**. A taxonomy of multiple regression methods for immunologists. *Journal of Immunological Methods* 519:113506.
3. Narula M, Lakshmanan U, Borna S, Schulze JJ, **Holmes TH**, Harre N, Kirkey M, Ramachandran A, Tagi VM, Barzaghi F, Grunebaum E, Upton JEM, Hong-Diep Kim V, Wysocki C, Dimitriades VR, Weinberg K, Weinacht KG, Gernez Y, Sathi BK, Schelotto M, Johnson M, Olek S, Sachsenmaier C, Roncarolo MG, Bacchetta R. **2023**. Epigenetic and immunological indicators of IPEX disease in subjects with FOXP3 gene mutation. *J Allergy Clin Immunol*. 151:233-246.
4. **Holmes TH**. **2021**. Rigorous quantification of bacterial richness in ticks: A case study. *Molecular Ecology*, 30: 2207–2213.
5. Subrahmanyam PB, **Holmes TH**, Lin D, Su LF, Obermoser G, Banchereau J, Pascual V, García-Sastre A, Albrecht RA, Palucka K, Davis MM, Maecker HT. **2020**. Mass Cytometry Defines Virus-Specific CD4+ T Cells in Influenza Vaccination. *Immunohorizons* 11;4(12):774-788.
6. **Holmes TH**. **2020**. Generalized mathematical model for immunoassay interference. *Autoimmunity Reviews* 19: 102663.
7. **Holmes TH**, Subrahmanyam PB, Wang W, Maecker HT. **2019**. Penalized supervised starplots: Example application in influenza-specific CD4+ T Cells. *Viral Immunology* 32:102-109.
8. Sanyal M, **Holmes TH**, Maecker HT, Albrecht RA, Dekker CL, He X, & Greenberg HB. **2019**. Diminished B-cell response after repeat influenza vaccination. *Journal of Infectious Diseases* 219:1586-1595.
9. Rathore DK, **Holmes TH**, Nadeau KC, Mittal P, Batra A, Rosenberg-Hasson Y, Sopory S, Gupta R, Chellani HK, Aggarwal KC, Bal V, Natchu UCM, Bhatnagar S, Tavassoli M, Lyell DJ, Rath S, Wadhwa N, & Maecker HT. **2018**. Differences in multiple immune parameters between Indian and U.S. infants. *PLoS ONE* 13:1-15
10. Lee CP, **Holmes TH**, Neri E, Kushida CA. **2018**. Deception in clinical trials and its impact on recruitment and adherence of study participants. *Contemporary Clinical Trials* 72:146–157.
11. Pomares C, Devillard S, **Holmes TH**, Olariu TR, Press CJ, Ramirez R, Talucod J, Estran R, Su C, Dubey JP, Ajzenberg D, and Montoya JG. **2018**. Genetic characterization of *Toxoplasma gondii* DNA samples isolated from humans living in North America. *The Journal of Infectious Diseases*, 218:1783-1791.
12. **Holmes TH**, Li S, McCann DJ. **2018**. Linear-rank testing of a non-binary, responder-analysis, efficacy score to evaluate pharmacotherapies for substance use disorders. *Statistical Methods in Medical Research* 27: 2154–2167.
13. **Holmes TH**, Kushida CA. **2017**. Adherence to continuous positive airway pressure improves attention/psychomotor function and sleepiness: a bias-reduction method with further assessment of APPLS. *Sleep Medicine* 37:130-134.

14. Woodward S, Jamison AL, Gala, S, **Holmes TH**. **2017**. Canine companionship is associated with modification of attentional bias in posttraumatic stress disorder. *PLoS ONE* 12(10): e0179912.
15. Montoya JG, **Holmes TH**, Anderson JN, Maecker HT, Rosenberg-Hasson Y, Valencia IJ, Chu L, Younger JW, Tato CM, Davis MM. **2017**. Cytokine signature associated with disease severity in chronic fatigue syndrome patients. *Proceedings of the National Academy of Sciences USA* 114 (34) E7150-E7158.
16. Zulman DM, Chee CP, Ezeji-Okoye SC, Shaw JG, **Holmes TH**, Kahn JS, Asch SM. **2017**. Evaluation of an intensive outpatient program to augment primary care for high-need Veterans Affairs patients. *Journal of the American Medical Association Internal Medicine* 177(2):166-175.
17. Pomares C, **Holmes TH**, Estran R, Press CJ, Ramirez R, Talucod J, Maecker H, Rosenberg-Hasson Y, Montoya JG. **2016**. Cytokine profiles in patients with toxoplasmic lymphadenitis in the setting of pregnancy. *Cytokine* 90:14-20.
18. **Holmes TH**, He X. **2016**. Human immunophenotyping via low-variance, low-bias, interpretive regression modeling of small, wide data sets: application to aging and immune response to influenza vaccination. *Journal of Immunological Methods* 437: 1-12.
19. **Holmes TH**, Zulman DM, Kushida CA. **2017**. Adjustment for variable adherence under hierarchical structure: instrumental variable modeling via compound residual inclusion. *Medical Care* 55:e120-e130.
20. Appel NM, Li S, **Holmes TH**, Acri JB. **2015**. A dopamine D₃ receptor antagonist (GSK598809) potentiates the hypertensive effects of cocaine in conscious, freely-moving dogs. *Journal of Pharmacology and Experimental Therapeutics*, 354: 484-492.
21. Zulman DM, Chee CP, Wagner TH, Yoon J, Cohen DM, **Holmes TH**, Ritchie C, Asch SM. **2015**. Multimorbidity and health care utilization among high-cost patients in the U.S. Veteran Affairs healthcare system. *BMJ Open* 5, e007771.
22. Anderson AL, Li S, Markova D, **Holmes TH**, Chiang N, Kahn R, Campbell J, Dickerson DL, Galloway GP, Stock C, Elkashef AM. **2015**. Bupropion for the treatment of methamphetamine dependence in non-daily users: a randomized, double-blind, placebo-controlled trial. *Drug and Alcohol Dependence* 150: 170-174.
23. Liu A, Cardell J, Ariel D, Lamendola C, Abbasi F, Kim SH, **Holmes TH**, Tomasso V, Mojaddidi H, Grove K, Kushida CA, Reaven, GM. **2014**. Abnormalities of lipoprotein concentrations in obstructive sleep apnea are related to insulin resistance. *SLEEP* 38: 793-799.
24. He X, **Holmes TH**, Sanyal M, Albrecht R, García-Sastre A, Dekker C, Davis M, Greenberg H. **2014**. Distinct patterns of B-cell activation and priming by natural influenza infection versus inactivated influenza vaccination. *The Journal of Infectious Diseases* 211:1051-1059.
25. Kushida CA, Nichols DA, **Holmes TH**, Miller MA, Griffin K, Cardell C, Hyde PR, Cohen E, Manber R, Walsh JK. **2014**. SMART DOCS: A new patient-centered outcomes and coordinated-care management approach for the future practice of sleep medicine. *SLEEP* 38: 315-326.
26. Frayne SM, **Holmes TH**, Berg E, Goldstein MK, Berlowitz DR, Miller DR, Pogach LM, Laungani KJ, Lee TT, Moos R. **2014**. Mental illness and intensification of diabetes medications: an observational cohort study. *BMC Health Services Research* 14: 458.

27. **Holmes TH**, Lewis DB. **2014**. Bayesian immunological model development from the literature: example investigation of recent thymic emigrants. *Journal of Immunological Methods* 414: 32-50.
28. Chen SF, **Holmes TH**, Slifer T, Ramachandran V, Mackey S, Hebson C, Arvin AM, Lewis DB, Dekker CL. **2014**. Longitudinal kinetics of cytomegalovirus-specific T-cell immunity and viral replication in infants with congenital cytomegalovirus infection. *Journal of the Pediatric Infectious Diseases Society*, 5:14-20.
29. Perino AC, Hoang DD, **Holmes TH**, Santangeli P, Heidenreich PA, Perez MV, Wang PJ, Turakhia MP. **2014**. Association between success rate and citation count of studies of radiofrequency catheter ablation for atrial fibrillation possible evidence of citation bias. *Circulation: Cardiovascular Quality and Outcomes* 7: 687-692.
30. Turakhia M, Santangeli P, Winkelmayr WC, Xu X, Ullal AJ, Than CT, Schmitt S, **Holmes T**, Frayne SM, Phibbs CS, Yang F, Hoang DA, Ho PM, Heidenreich PA. **2014**. Increased mortality associated with digoxin in contemporary patients with atrial fibrillation: findings from the TREAT-AF Study. *Journal of the American College of Cardiology* 64: 660-668.
31. Sasaki S, **Holmes TH**, Albrecht RA, Garcia-Sastre A, Dekker CL, He X, Greenberg HB. **2014**. Distinct cross-reactive B-cell responses to live attenuated and inactivated influenza vaccines. *The Journal of Infectious Diseases* 210: 865-874.
32. Pernas LF, Ramirez R, **Holmes TH**, Montoya JG, Boothroyd JC. **2014**. Immune-profiling of pregnant Toxoplasma-infected USA and Colombia patients reveals surprising impacts of infection on peripheral blood cytokines. *The Journal of Infectious Diseases* 210: 923-931.
33. Turakhia MP, **Holmes TH**. **2013**. Regarding "Feasibility and safety of same-day discharge after implantable cardioverter defibrillator placement for primary prevention." *Pacing and Clinical Electrophysiology* 37: 131.
34. Newman B, Krane EJ, Gawande R, **Holmes TH**, Robinson TE. **2013**. Chest CT in children: anesthesia and atelectasis. *Pediatric Radiology* 44: 164-172.
35. Rosen CS, Greenbaum MA, Schnurr PP, **Holmes TH**, Brennan P, Friedman MJ. **2013**. Do benzodiazepines reduce the effectiveness of exposure therapy for PTSD? *Journal of Clinical Psychiatry* 74: 1241-1247.
36. Kushida CA, Nichols DA, **Holmes TH**, Quan SF, Walsh JK, Gottlieb DJ, Simon RD, Guilleminault C, White DP, Goodwin JL, Schweitzer PK, Leary EB, Hyde PR, Hirshkowitz M, Green S, McEvoy LK, Chan C, Gevins A, Kay GG, Bloch DA, Crabtree T, Dement WC. **2012**. Effects of continuous positive airway pressure on neurocognitive function in obstructive sleep apnea patients: the apnea positive pressure long-term efficacy study (APPLES). *SLEEP* 35: 1593-1602.
37. **Holmes TH**, Nichols DA, Thomander D, Kushida CA. **2012**. A method for estimating normative distributions for study-specific populations of clinical trials. *Contemporary Clinical Trials* 33: 445-449.
38. Dhabhar FS, Saul AN, **Holmes TH**, Daugherty C, Neri E, Tillie JM, Kusewitt D, Oberyzyzn TM. **2012**. High-anxious individuals show increased chronic stress burden, decreased protective immunity, and increased cancer progression in a mouse model of squamous cell carcinoma. *PLoS One* 7: e33069.

39. Anderson AL, Li S, Biswas K, McSherry F, **Holmes T**, Iturriaga E, Kahn R, Chiang N, Beresford T, Campbell J, Haning W, Mawhinney J, McCann M, Rawson R, Stock C, Weis D, Yu E, Elkashef AM. **2012**. Modafinil for the treatment of methamphetamine dependence. *Drug and Alcohol Dependence* 120: 135-141.
40. Sasaki S, Sullivan M, Narvaez CF, **Holmes TH**, Furman D, Zheng N, Nishtala M, Wrammert J, Smith K, James JA, Dekker CL, Davis MM, Wilson PC, Greenberg HB, He X. **2011**. Limited efficacy of inactivated influenza vaccine in elderly individuals is associated with decreased production of vaccine-specific antibodies. *The Journal of Clinical Investigation* 121: 3109-3119.
41. Price EA, Mehra R, **Holmes TH**, Schrier SL. **2011**. Anemia in older persons: etiology and evaluation. *Blood Cells, Molecules, and Diseases* 46: 159-165.
42. **Holmes TH**, Anderson AL, Li S, Elkashef AM. **2011**. Advantages of joint modeling of component HIV risk behaviors and non-response: application to randomized trials in cocaine-dependent and methamphetamine-dependent populations. *Frontiers in Psychiatry* 2: Article 41, 1-6.
43. Kimerling R, Street AE, Pavao J, Smith MW, Cronkite RC, **Holmes TH**, Frayne SM. **2010**. Military-related sexual trauma among VHA patients returning from Afghanistan and Iraq. *American Journal of Public Health*, 100: 1409-1412.
44. Dhabhar FS, Saul AN, Daugherty C, **Holmes TH**, Bouley DM, Oberyszyn TM. **2010**. Short-term stress enhances cellular immunity and increases early resistance to squamous cell carcinoma. *Brain, Behavior and Immunity* 24: 127-137.
45. Johnson BA, Elkashef AM, Seneviratne C, Ait-Daoud N, Kahn RC, Li S, Bloch DA, **Holmes TH**, Wang X, Vocci FJ, Li MD. **2010**. Association between genotype of the serotonin transporter-linked region of the serotonin transporter gene and age of onset of methamphetamine use: a preliminary analysis. *Frontiers in Psychiatry* 1: Article 145, 1-8.
46. Frayne SM, Berg E, **Holmes TH**, Laungani K, Berlowitz DR, Miller DR, Pogach L, Jackson VW, Moos R. **2010**. Mental illness-related disparities in length of stay: Algorithm choice influences results. *Journal of Rehabilitation Research & Development* 47:709-18.
47. Anderson AL, Reid MS, Li S, **Holmes T**, Shemanski L, Slee A, Smith EV, Kahn R, Chiang N, Vocci F, Ciraulo D, Dackis C, Roache JD, Salloum IM, Somoza E, Urschel III HC, Elkashef AM. **2009**. Modafinil for the treatment of cocaine dependence. *Drug and Alcohol Dependence* 104: 133-9.
48. Sims T, **Holmes TH**, Bravata DM, Garber AM, Nelson L, Goldstein MK. **2008**. Health preferences are not equal to the sum of their parts: older adults' valuations of states of functional dependency. *Journal of Clinical Epidemiology* 61: 1261-1270.
49. Asagami T, **Holmes TH**, Swiersz L, Reaven G. **2008**. Differential effects of insulin sensitivity on androgen levels in women with polycystic ovary syndrome or normal ovulation. *Journal of Clinical Endocrinology and Metabolism* 57: 1355-1360.
50. Sasaki S, He X, **Holmes TH**, Dekker CL, Kemble GW, Arvin AM, Greenberg HB. **2008**. Influence of prior influenza vaccination on antibody and B-cell responses. *PLoS ONE* 3: 1-11.

51. He X, **Holmes TH**¹, Sasaki S, Jaimes MC, Kemble GW, Dekker CL, Arvin AM, Greenberg HB. **2008**. Baseline levels of influenza-specific CD4 memory T-cells affect T-cell responses to influenza vaccines. *PLoS ONE* 3: 1-7.
52. He X, **Holmes TH**, Mahmood K, Kemble GW, Dekker CL, Arvin AM, Greenberg HB. **2008**. Phenotypic changes in influenza-specific CD8 T cells after immunization of children and adults with influenza vaccines. *Journal of Infectious Disease* 197: 803-811.
53. Elkashef AM, Rawson RA, Anderson AL, Smith EV, Chiang N, Kahn R, Pierce VJ, Li S, **Holmes T**, Vocci F, Ling W, Haning W, McCann M, Mawhinney J, Campbell J, Weis D, Gorodetzky C, Carlton B. **2008**. Bupropion for the treatment of methamphetamine dependence. *Neuropsychopharmacology* 33: 1162-1170.
54. Rinderknecht CH, Belmares MP, Catanzarite TLW, Bankovich AJ, **Holmes TH**, Garcia KC, Nanda N, Busch R, Kovats S, Mellins ED. **2007**. Postranslational regulation of I-E^d by affinity for CLIP. *Journal of Immunology* 179: 5907-5915.
55. Zeman AM, **Holmes TH**, Stamatis S, Tu W, He X, Kemble G, Greenberg HB, Lewis DB, Arvin AM, Dekker CL. **2007**. Humoral and cellular immune responses in children given annual immunization with trivalent inactivated influenza vaccine. *Pediatric Infectious Diseases Journal* 26: 107-115.
56. Sasaki S, Jaimes MC, **Holmes TH**, Dekker CL, Mahmood K, Kemble GW, Arvin AM, Greenberg HB. **2007**. Comparison of the influenza-specific effector and memory B cell response after LAIV and TIV immunization in children and adults. *Journal of Virology* 81: 215-228.
57. He X, **Holmes TH**, Mahmood K, Kemble GW, Dekker C, Lewis D, Arvin A, Greenberg H. **2006**. Cellular immune responses in children and adults receiving inactivated and live attenuated influenza vaccines. *Journal of Virology* 80: 11756-11766.
58. Sandborg C, **Holmes TH**, Lee T, Biederman K, Bloch DA, Emery H, McCurdy D, Mellins E. **2006**. Candidate early predictors for progression to joint damage in systemic juvenile idiopathic arthritis. *Journal of Rheumatology* 33: 2322-2329.
59. Wang J, **Holmes TH**, de Guevara LL, Cheung R, Wright TL, He X, Greenberg HB. **2006**. Phenotypic and functional status on intrahepatic T cells in chronic hepatitis C. *Journal of Infectious Diseases* 194: 1068-1077.
60. Tu W, Potena L, Stepick-Biek P, Liu L, Dionis K, Luikart H, Fearon WF, **Holmes TH**, Valantine HA, Mocarski ES, Lewis DB. **2006**. T-cell immunity to subclinical cytomegalovirus infection limits cardiac allograft disease. *Circulation* 114:1608-1615.
61. Klein NP, **Holmes TH**, Sharp MA, Heineman TC, Schleiss MR, Bernstein DI, Kemble G, Arvin AM, Dekker CL. **2006**. Variability and gender differences in memory T cell immunity to varicella-zoster virus in healthy adults. *Vaccine* 24: 5913-5918.
62. Kushida CA, Nichols DA, Quan SF, Goodwin J, White DP, Gottlieb D, Walsh JK, Schweitzer PK, Guilleminault C, Simon RD, Leary EB, Hyde PR, **Holmes TH**, Bloch D, Green S, Gevins A, McEvoy L, Dement WC. **2006**.

¹ In the published version of this paper, a footnote on the first two authors reads, "These authors contributed equally to this work."

The apnea positive-pressure long-term efficacy study (APPLES): rationale, design, methods, and procedures. *Journal of Clinical Sleep Medicine* 2: 288-300.

63. Elkashef A, **Holmes TH**, Bloch DA, Shoptaw S, Kampman K, Reid M, Somoza E, Ciraulo D, Rotrosen J, Leiderman D, Montgomery A, Vocci F. **2005**. Retrospective analyses of pooled data from CREST I and CREST II trials. *Addiction* 100 (Supplement 1): 91-101.
64. Kampman KM, Leiderman D, **Holmes T**, LoCastro J, Bloch DA, Reid MS, Shoptaw S, Montgomery MA, Winhusen TM, Somoza EC, Ciraulo DA, Elkashef A, Vocci F. **2005**. Cocaine rapid efficacy screening trials (CREST), lessons learned. *Addiction* 100 (Supplement 1): 102-110.
65. He X, Draghi M, Mahmood K, **Holmes TH**, Kemble GW, Arvin AM, Parham P, Greenberg HB. **2004**. T cell-dependent production of interferon gamma in natural killer cells in response to influenza A virus. *Journal of Clinical Investigation* 114: 1812-1819.
66. Wang J, **Holmes TH**, Cheung R, Greenberg HB, He X. **2004**. Polychromatic flow cytometric analysis of intrahepatic lymphocytes in chronic hepatitis C – expression of chemokine receptors and its relationship to liver inflammation. *Journal of Infectious Diseases* 190: 989-997.
67. Chen SF, Tu W, Sharp M, He X, Greenberg H, **Holmes T**, Wang Z, Kemble G, Manganello A, Adler S, Dekker C, Lewis DB, Arvin AM. **2004**. Antiviral CD8 T cells in the control of primary human cytomegalovirus infection in early childhood. *Journal of Infectious Diseases* 189: 1619-1627.
68. **Holmes TH**. **2004**. Ten categories of statistical errors: a guide for research in endocrinology and metabolism. *American Journal of Physiology: Endocrinology and Metabolism* 286: E495-E501.
69. Tu W, Chen S, Sharp M, Dekker C, Adler S, Manganello AM, Maecker H, **Holmes TH**, Wang Z, Kemble G, Arvin A, Lewis DB. **2004**. Persistent and selective deficiency of CD4+ T cell immunity to cytomegalovirus in immunocompetent young children. *Journal of Immunology* 172: 3260-3267.
70. Drohan L, Holm B, Cordoba-Tongson E, Dekker C, **Holmes T**, Maecker H, Mellins E. **2004**. Selective developmental defects of cord blood antigen presenting cell subsets. *Human Immunology* 65: 1356-1369.
71. Robinson TE, Leung AN, Northway WH, Blankenberg FG, Bloch DA, **Holmes TH**, Moss RB. **2003**. Composite spirometric-computed tomography outcome measure in early cystic fibrosis lung disease. *American Journal of Respiratory and Critical Care Medicine* 168: 588-593.
72. He X, Mahmood K, Maecker HT, **Holmes TH**, Kemble GW, Arvin A, Greenberg HB. **2003**. Analysis of the frequencies and memory T cell phenotypes of human CD8+ T cells specific for influenza A viruses. *Journal of Infectious Diseases* 187: 1075-1084.

ONGOING RESEARCH SUPPORT

(PI: Maecker)
09/01/11 – present, Internal Stanford Funding
Human Immune Monitoring Center

U19AI057229 (PI: Davis)
05/19/2020-03/31/2024, NIH/NIAID

Title: Influenza responses and repertoire in vaccination, infection and tonsil organoids - NOT-AI-20-031-COVID-19 (IMPACC)

2U24CA224309 (PI: Maecker)

07/12/2023 – 06/30/2028, NIH/NCI

Title: Stanford Cancer Immune Monitoring and Analysis Center (CIMAC)

COMPLETED RESEARCH SUPPORT

05/30/19 – 08/31/19, Internal Stanford Funding.
Division of Infectious Diseases and Geographic Medicine

(PI: Montoya)

09/01/13 – 05/29/19, Internal Stanford Funding.

Division of Infectious Diseases and Geographic Medicine

5U19AI057229-11 (PI: Davis)

05/01/14 – 04/30/19, NIH/NIAID

Title: Adaptive and innate immunity, memory and repertoire in vaccination and infection.

1R21HL121521-01A1 (PI: Kushida)

09/01/2016 – 05/31/2018, NIH/NHLBI

Title: Predictive Adherence Modeling (PAM) Study

CE-12-11-4137 (PI: Kushida)

09/30/13 – 09/29/16, 02/01/18 – 06/30/18 PCORI

Title: Sustainable Methods, Algorithms, and Research Tools for Delivering Optimal Care Study (SMART DOCS).

1 Y01 DA 40032 (PI: Kushida)

10/01/02 – 03/30/14, 08/01/14 – 09/30/17, NIH/NIDA

Title: Cooperative Studies Program Coordinator Center.

13046055 (PI: Woodward)

01/01/15 – 06/30/17, CDMRP/USAMRMC/TATRC

Title: Can a Canine Companion Modify Autonomic Reactivity and Tone in PTSD?

SDR 11-439-1 (PI: Cronkite)

01/01/13 – 09/30/16 Department of Veteran Affairs (Parent I01)

Title: Phase II Evaluation of the Department of Veteran Affairs HSR&D Career Development Program.

No grant number (PI: Robinson)

09/01/15 – 09/01/16, Thrasher Foundation

Title: An Innovative Testing Strategy for Early Lung Disease Surveillance in CF Infants

(PI: Dhabhar)

09/01/14 – 08/31/16, Office of Naval Research

Title: Biomarkers and Mechanisms of Resilience versus Susceptibility to Stress.

JPA (PI: Biswas)
10/01/12 – 12/31/15, Department of Veterans Affairs/Perry Point CSPCC
Title: Statistical Professional Development.

Department of Veteran Affairs IPA (PIs: Asch/Ezeji-Okoye)
09/01/13 – 08/31/15, Department of Veterans Affairs/Specialty Care Transformation Initiative
Title: High intensity management for complex patients.

4 U19 AI090019-02 Supplement (PIs: Maecker, Rath)
05/01/13 – 08/31/15, NIH/NIAID
Title: Neonatal immune profiles: infections and toxicants.

5K23HL096842-05 (PI: Chen PI)
10/16/14 – 12/31/14, NIH/NIAID
Title: Predicting Lung Allograft Rejection Using CMV-Specific T-cell Responses

1U01HL108647 (PI: Reaven)
07/01/12 – 09/30/14, NIH
Title: Sleep apnea, Type 2 diabetes, and CVD: a cluster related to insulin resistance.

3R01 AI083757 (PI: Lewis)
02/01/10 – 09/30/14, NIH/NIAID
Title: Recent Thymic Emigrants of the CD4 T-cell Lineage.

5U19 AI057229-10 (PI: Davis)
04/01/09 – 03/31/14, NIH
Title: Influenza Immunity: Protective Mechanisms Against a Pandemic Respiratory Virus.

(PI: Koopman)
09/01/13 – 03/31/14, Internal Stanford Funding.
Title: Research in chronic Lyme disease syndrome.

(PI: Koopman)
10/01/13 – 01/31/14, Internal Stanford Funding
Title: Research in rural videoconferencing.

IIR 09 092 3 (PI: Turakhia)
08/01/11 – 09/30/13, Department of Veterans Affairs/Center for Health Care Evaluation HSR&D
Title: Dual Use: Safe in Atrial Fibrillation?

IPA Department of Veteran Affairs Core funds (PI: Rosen)
10/01/08 – 09/30/13, Department of Veterans Affairs/National Center for Post-Traumatic Stress Disorder
Title: Dissemination & Training Division.

1R01HS019738 01 (PI: Kushida)
10/01/10 – 09/30/13, Agency for Healthcare Research and Quality
Title: Comparative Outcomes Management with Electronic Data Technology (COMET) Study.

IPA Department of Veteran Affairs Core Funds (PIs: Frayne/Humphreys/Asch)
10/01/09 – 08/30/13, Department of Veterans Affairs/Center for Health Care Evaluation

Title: Center for Health Care Evaluation (CHCE): An HSR&D Center of Excellence.

(PI: Robinson)

09/01/12 – 08/31/13, Internal Stanford Funding

Title: Assistance with Manuscript Preparation.

207003 (PI: Koopman)

08/01/11 – 12/31/12, State of California

Title: Expanding Rural Access: Distance Delivery of Support Groups.

IIR 11 071 1 (PI: Goldstein)

10/01/11 – 09/30/12, Department of Veterans Affairs/HSR&D

Title: Automating Performance Metrics for Quality Improvement in Complex Chronic Disease.

IPA Department of Veterans Affairs/Geriatric Research, Education and Clinical Center (GRECC) (PI: Goldstein)

10/01/10 – 09/30/12

Title: Statistician.

41905 (PI: Koopman)

01/01/08 – 09/30/12, Turn the Corner Foundation and Internal Stanford Funding..

Title: Multi-Method Examination of Diverse Manifestations of Lyme Disease

(PI: Concepcion)

09/01/11 – 08/31/12, Internal Stanford Funding

Title: BK Virus Infection in Kidney Transplantation.

(PI: Dekker)

09/01/11 – 08/31/12, Internal Stanford Funding

Title: Maternal Epidemiology of Congenital CMV.

R01 CA107498 (PI: Dhabhar)

01/31/11– 01/31/12 (NCX), NIH/NCI

Title: Stress & UV Induced Squamous Cell Carcinoma.

1 R01 MH072386 (PI: Gore-Felton)

08/01/06 – 07/31/11, NIH/NCI

Title: Efficacy of Group Intervention to Reduce Stress Symptoms.

1 R01 AG029124 01 (PI: Schrier)

03/01/07 – 02/28/11, NIH/NIA

Title: Etiology, Stem Cell Biology and Therapy of Anemia in the Elderly.

1 R01 DK071202 (PI: Frayne)

05/01/05 – 10/31/10, NIH

Title: Barriers to Diabetes Care and Mental Illness.

VAHSRND IMV 04 062 (PI: Goldstein)

01/01/06 – 09/31/10, Department of Veterans Affairs

Title: VISN Collaborative for Improving Hypertension Management with ATHENA-HTN.

13BB 2400 (PI: Koopman)
07/01/07 – 08/31/10, State of California
Title: Expanding Rural Access: Distance Delivery of Support Groups.

5 R01 HL68060 (PIs: Dement, Kushida)
09/30/02 – 07/31/10, NIH/NHLBI
Title: APPLES: Apnea Positive Pressure Long-Term Efficacy Study.

1 P01 HL075462 (PI: Strober)
07/01/04 – 06/20/10, NIH/NHLBI
Title: Project 1: Blood Stem Cell Transplantation as Immunotherapy.

SELECTED POSTERS

Gupta S, Lewis DB, Goronzy J, **Holmes TH**, Chen SF, Maecker HT. Extensive profiling of human cytomegalovirus-specific T cell phenotypes prior to lung transplantation to predict post-transplant risk of rejection. Federation of Clinical Immunology Societies (FOCIS) **2020** Annual Meeting (virtual), October 28-31, 2020. <https://www.focisnet.org/meetings/focis-2020/>.

Subrahmanyam PB, Wang W, Lin D, Su L, Obermoser G, Palucka K, Davis MM, Maecker HT. Clustering and visualization of influenza-specific CD4+ T cell responses. FOCIS 2019, June 18-21, **2019**, Boston, MA, USA.

Pomares, C., Devillard, S., **Holmes, T.H.**, Olariu, T.R., Press, C.J., Ramirez, R., Talucod, J., Estran, R., Su, C., Dubey, J.P., Ajzenberg, D., Montoya, J.G. Genetic characterization of *Toxoplasma gondii* DNA samples isolated from humans living in North America: An unexpected high prevalence of atypical genotypes. ECCMID, April 21-24, **2018**, Madrid, Spain.

Lin, D., Schaffert, S., **Holmes, T.H.**, Zimmermann, H., Trappe, R.U., Martinez, O.M., & Maecker, H.T. Defining differences of EBV-specific immune response between transplant controls and PTLN patients using high-dimensional mass cytometry. FOCIS 2015, June 24-27, **2015**, San Diego, CA, USA.

Halvorson, M., Finney, J., Bi, X., Maisel, N., Hayashi, K., Blonigen, D., Bui, L., Chan, Y., Weitlauf, J., Zulman, D., Owens, D., Goldstein, M., Fine, M., Timko, C, Asch, S., Cucciare, M., **Holmes, T.**, & Cronkite, R. A multivariate model of mentoring relationships and outcomes in the VA Health Services Research & Development CDA Program. AcademyHealth, June, **2015**, Minneapolis, MN, USA, and VA HSR&D/QUERI Meeting, July 8, **2015**, Philadelphia, PA, USA.

PROFESSIONAL PRESENTATIONS

1. **“A Survey of Multiple Regression Methods for Univariable Screening”** Presentation to Institute for Immunology, Transplantation and Infection Methods Development in Immunology, Stanford University, November 2022.
2. **“Cluster Randomized Trials”** Presentation to Perry Point CSPCC, Department of Veterans Affairs, July 2015.

3. **“Interim Analyses: Practical Concepts”** Joint presentation to Perry Point CSPCC, Department of Veterans Affairs, and Center for Innovation to Implementation, Department of Veterans Affairs, April 2015.
4. **“Sample Size Analyses: Practical Concepts”** Joint presentation to Perry Point CSPCC, Department of Veterans Affairs, and Center for Innovation to Implementation, Department of Veterans Affairs, April 2015.
5. **“Bayesian Trial Design”** Joint presentation to Perry Point CSPCC, Department of Veterans Affairs, and Center for Innovation to Implementation, Department of Veterans Affairs, March 2015.
6. **“I. Testing Missing Type and II. Bayesian Trial Design”** Joint presentation to Perry Point CSPCC, Department of Veterans Affairs, and Center for Innovation to Implementation, Department of Veterans Affairs, November 2014.
7. **“Estimating Subpopulation Treatment Responses: Application to SMART DOCS,”** Presentation to Sleep Grand Rounds, Department of Psychiatry and Behavioral Sciences, Stanford University, September 2014.
8. **“Code for Multiple Regression of Sparse Clustered Observational Data,”** Presentation to Phase II Evaluation of the Department of Veteran Affairs HSR&D Career Development Program, Center for Innovation to Implementation, Department of Veterans Affairs, July 2014.
9. **“Experimental Design for Panel Assays,”** Presentation to the Human Immune Monitoring Center, Stanford University School of Medicine, May 2014.
10. **“Treatment of Non-ignorable Missing Data: Concepts and Practice,”** Society for Clinical Trials, Philadelphia, May 2014.
11. **“Dimension Reduction for Multiple Regression of Clustered Observational Data”**, Presentation to Phase II Evaluation of the Department of Veteran Affairs HSR&D Career Development Program, Center for Innovation to Implementation, Department of Veterans Affairs, April 2014.
12. **“Strategies under Recruitment Shortfalls, Part II”** Joint presentation to Perry Point CSPCC, Department of Veterans Affairs, and Center for Innovation to Implementation, Department of Veterans Affairs, April 2014.
13. **“Strategies under Recruitment Shortfalls, Part I”** Joint presentation to Perry Point CSPCC, Department of Veterans Affairs, and Center for Innovation to Implementation, Department of Veterans Affairs, February 2014.
14. **“Introduction to Concepts in Adaptive Trial Designs”** Joint presentation to Perry Point CSPCC, Department of Veterans Affairs, and Center for Innovation to Implementation, Department of Veterans Affairs, December 2013.
15. **“Analysis with Missing Data, Part IV”** Joint presentation to Perry Point CSPCC, Department of Veterans Affairs, and Center for Innovation to Implementation, Department of Veterans Affairs, October 2013.

16. **“Application of Instrumental-Variable Methods to Variable Adherence: Part II: Example Applications”** Joint presentation to Center for Innovation to Implementation, Department of Veterans Affairs, and Specialty Care Transformation Initiative (ImPACT), Department of Veterans Affairs, September 2013.
17. **“Efficient Design and Analysis of Very Small Longitudinal Studies”** Joint presentation to Department of Psychiatry and Behavioral Sciences, Stanford University, Department of Pediatrics, Stanford University, and Center for Innovation to Implementation, Department of Veterans Affairs, August 2013.
18. **“Analysis with Missing Data, Part III”** Joint presentation to Perry Point CSPCC, Department of Veterans Affairs, and Center for Innovation to Implementation, Department of Veterans Affairs, August 2013.
19. **“Application of Instrumental-Variable Methods to Variable Adherence: Part I: Concepts & Methods”** Joint presentation to Center for Innovation to Implementation, Department of Veterans Affairs, and Specialty Care Transformation Initiative (ImPACT), Department of Veterans Affairs, August 2013.
20. **“Analysis with Missing Data, Part II”** Joint presentation to Perry Point CSPCC, Department of Veterans Affairs, and Center for Innovation to Implementation, Department of Veterans Affairs, May 2013.
21. **“Analysis with Missing Data, Part I”** Perry Point CSPCC, Department of Veterans Affairs, January 2013.
22. **“Simulating Longitudinal Data”** Perry Point CSPCC, Department of Veterans Affairs, January 2013.
23. **“Primer on Mixed Model Regression”** Perry Point CSPCC, Department of Veterans Affairs, December 2012.
24. **“General Guidelines on Statistical Programming”** Specialty Care Transformation Initiative (ImPACT), Department of Veterans Affairs, September 2012.
25. **“Strengthening Statistical Elements of Geriatric Research Proposals”** Geriatric Research, Education and Clinical Center, Palo Alto Division, Department of Veterans Affairs, May 2012.
26. **“Overview of Survival Analysis, Part 2”** Department of Psychiatry and Behavioral Sciences, Stanford University School of Medicine, October 2010.
27. **“Overview of Survival Analysis, Part 1”** Department of Psychiatry and Behavioral Sciences, Stanford University School of Medicine, October 2009.
28. **“Adjusting for Self-Selection Bias: Concept, Method, Example”** Center for Health Care Evaluation, Menlo Park Division, Department of Veterans Affairs, July 2009.