Hyoyoung Choo-Wosoba, Ph.D.

PERSONAL INFORMATION

Citizenship: U.S.A. since June, 2021
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EDUCATION

Ph.D. Biostatistics, University of Louisville, Louisville, KY, U.S.A.   2012 - 2016
Ph.D. Dissertation Title: "Inference for a zero-inflated Conway-Maxwell Poisson regression
                for clustered count data"
Advisor: Dr. Somnath Datta
M.S.   Statistics, University of Nebraska, Lincoln, NE, U.S.A.   2007 - 2009
B.A.   Applied Statistics, KonKuk University, Seoul, South Korea   2002 - 2006

PUBLICATIONS

Statistical Methods Papers

Choo-Wosoba, H., Albert, P.S., Zhu, B. **(2022)** A hidden Markov modeling approach for identifying tumor subclones in next-generation sequencing studies. *Biostatistics* **23**, 69-82.

Choo-Wosoba, H., Kundu, D., Albert, P.S. **(2020)** A simple approach for fitting two-part mixed effects models for longitudinal semi-continuous data. *Statistical Methods in Medical Research* **29**, 3351-3361.

Buhule O.D., **Choo-Wosoba, H.**, Albert, P.S. **(2020)**. Modeling repeated labor curves in consecutive pregnancies: individualized prediction of labor progression from previous pregnancy data. *Statistics in Medicine*, **39**, 1068-1083.

Choo-Wosoba, H., Albert, P.S., Zhu, B. **(2018)**. hsegHMM: hidden Markov model-based allele-specific copy number alteration analysis accounting for hypersegmentation. *BMC Bioinformatics* **19**, 1-14.

Choo-Wosoba, H., Gaskins, J., Levy, S., Datta, S. **(2018)**. A Bayesian approach for analyzing zero-inflated clustered count data with dispersion. *Statistics in Medicine* **37**, 801-812.

Choo-Wosoba, H., Datta, S. **(2017)**. Analyzing clustered count data with a cluster-specific random effect zero-inflated Conway-Maxwell-Poisson distribution. *Journal of Applied Statistics* **45**, 799-814.

Choo-Wosoba, H., Levy, S., and Datta, S. **(2016)**. Marginal regression models for clustered count data based on zero-inflated Conway-Maxwell-Poisson distribution with applications. *Biometrics* **72**, 606-618.

Collaborative Papers

Barton, B.E., Collins, M.K., Chau, C.H., Choo-Wosoba, H., Venzon, D.J., Steinebach, C., Garchitorena, K.M., Shah, B., Sarin, E.L., Gütschow, M. and Figg, W.D. **(2024)**. Preclinical Evaluation of a Novel Series of Polyfluorinated Thalidomide Analogs in Drug-Resistant Multiple Myeloma. *Biomolecules* **14**(6), 725.

Xue, E., Bracken-Clarke, D., Iannantuono, G.M., **Choo-Wosoba, H.**, Gulley, J.L. and Floudas, C.S. **(2024)**. Utility of Large Language Models for Health Care Professionals and Patients in Navigating Hematopoietic Stem Cell Transplantation: Comparison of the Performance of ChatGPT-3.5, ChatGPT-4, and Bard. *Journal of Medical Internet Research* **26**, 54758.

Skorupan, N., Peer, C.J., Zhang, X., **Choo-Wosoba, H.**, Ahmad, M.I., Lee, M.J., Rastogi, S., Sato, N., Yu, Y., Pegna, G.J., Steinberg, S.M. **(2024)**. Tofacitinib to prevent anti-drug antibody formation against LMB-100 immunotoxin in patients with advanced mesothelin-expressing cancers. *Frontiers in Oncology* **14**, 1386190.

Carr, S.R., Hernandez, F.V., Varghese, D.G., **Choo-Wosoba, H.**, Steinberg, S., Teke, M.E., Rivero, J.D., Schrump, D.S., and Hoang, C.D. **(2024)**. Pulmonary Metastasectomy for Adrenocortical Carcinoma— Not If, but When. *Cancers* **16**(4), 702.

Iannantuono, G.M., Bracken-Clarke, D., Karzai, F., **Choo-Wosoba, H.**, Gulley, J.L. and Floudas, C.S. **(2024)**. Comparison of large language models in answering Immuno-oncology questions: a cross-sectional study. *The Oncologist* **29**(5), 407-414.

Hernandez, F.V., Tolunay, U.T., Demblowski, L.A., Wang, H., Carr, S.R., Hoang, C.D., **Choo-Wosoba, H.**, Steinberg, S.M., Zeiger, M.A. and Schrump, D.S. **(2024)**. Current status of National Institutes of Health funding for thoracic surgeons in the United States: Beacon of hope or candle in the wind?. The Journal of Thoracic and Cardiovascular Surgery **167**(1), 271-280.

Bissa, M., Galli, V., Schifanella, L., Vaccari, M., Rahman, M.A., Gorini, G., Binello, N., Sarkis, S., Gutowska, A., Silva de Castro, I., **Choo-Wosoba, H.**, Breed, M.W., Kramer, J., and Franchini, G. **(2023)**. In Vivo Treatment with Insulin-like Growth Factor 1 Reduces CCR5 Expression on Vaccine-Induced Activated CD4+ T-Cells. *Vaccines* **11**(11), 1662.

Iannantuono, G.M., Chandran, E., Floudas, C.S., **Choo-Wosoba, H.**, Butera, G., Roselli, M., Gulley, J.L. and Karzai, F. **(2023)**. Efficacy and safety of PARP inhibitors in metastatic castration-resistant prostate cancer: A systematic review and meta-analysis of clinical trials. *Cancer Treatment Reviews*, 102623.

Patterson, M.T., Khan, S.M., Nunes, N.S., Fletcher, R.E., Bian, J., Hadjis, A.D., Eckhaus, M.A., Mendu, S.K., de Paula Pohl, A., Venzon, D.J. and **Choo-Wosoba, H. (2023)**. Murine allogeneic CAR T cells integrated before or early after posttransplant cyclophosphamide exert antitumor effects. *Blood, The Journal of the American Society of Hematology* **141**(6), 659-672.

Bissa, M., Kim, S., Galli, V., Fourati, S., Sarkis, S., Arakelyan, A., de Castro, I.S., Rahman, M.A., Fujiwara, S., Vaccari, M., Tomalka, J.A. et al. **(2023)**. HIV vaccine candidate efficacy in female macaques mediated by cAMP-dependent efferocytosis and V2-specific ADCC. *Nature communications* **14**(1), 575.

Rahman, M.A., Bissa, M., Silva de Castro, I., Helmold Hait, S., Stamos, J.D., Bhuyan, F., Hunegnaw, R., Sarkis, S., Gutowska, A., Doster, M.N. and Moles, R. et al. **(2023)**. Vaccine plus microbicide effective in preventing vaginal SIV transmission in macaques. *Nature Microbiology*, 1-14.

Milewski, D., Jung, H., Brown, G.T., Liu, Y., Somerville, B., Lisle, C., Ladanyi, M., Rudzinski, E.R., **Choo-Wosoba, H.**, Barkauskas, D.A. and Lo, T. **(2023)**. Predicting molecular subtype and survival of rhabdomyosarcoma patients using deep learning of H&E images: a report from the children's oncology group. *Clinical Cancer Research* **29**(2), 364-378.

Fletcher, R.E., Nunes, N.S., Patterson, M.T., Vinod, N., Khan, S.M., Mendu, S.K., Li, X., de Paula Pohl, A., Wachsmuth, L.P., **Choo-Wosoba, H.** and Eckhaus, M.A. **(2023)**. Posttransplantation cyclophosphamide expands functional myeloid-derived suppressor cells and indirectly influences Tregs. *Blood Advances* **7**(7), 1117-1129.

Sui, Y., Li, J., Andersen, H., Zhang, R., Prabhu, S.K., Hoang, T., Venzon, D., Cook, A., Brown, R., Teow, E. and Velasco, J. et al. **(2022)**. An intranasally administrated SARS-CoV-2 beta variant subunit booster vaccine prevents beta variant replication in rhesus macaques. *PNAS nexus* **1**(3), pgac091.

Pratt, D., Lucas, C.H.G., Selvam, P.P., Abdullaev, Z., Ketchum, C., Quezado, M., Armstrong, T.S., Gilbert, M.R., Papanicolau-Sengos, A., Raffeld, M. and **Choo-Wosoba, H. (2022)**. Recurrent ACVR1 mutations in posterior fossa ependymoma. *Acta neuropathologica* **144**(2), 373-376.

Friesen, M.C., **Choo-Wosoba, H.**, Sarazin, P., Hwang, J., Dopart, P., Russ, D.E., Deziel, N.C., Lavoué, J., Albert, P.S. and Zhu, B. **(2021)**. Simultaneous modeling of detection rate and exposure concentration using semi-continuous models to identify exposure determinants when left-censored data may be a true zero. *Journal of exposure science & environmental epidemiology* **31**(6), 1047-1056.

Nepal C., Zhu B., O'Rourke C.J., Bhatt D.K., Lee D., Song L., Wang D., Van Dyke A., **Choo-Wosoba H.**, Liu Z., Hildesheim A. **(2021)**. Integrative molecular characterization of gallbladder cancer reveals microenvironment-associated subtypes. *Journal of Hepatology*, **74**, 1132-1144.

Jones, R. J., Langseth, H., Grimsrud, T.K., Engel, L.S., Sjödin, A., **Choo-Wosoba, H.**, Albert, P.S., Ward, M.H. **(2018)**. A nested case-control study of polychlorinated biphenyls, organochlorine pesticides, and thyroid cancer in the Janus Serum Bank Cohort. *Enviornmental Research* **165**, 125-132.

Murphy, G., Abnet, C.C., **Choo-Wosoba, H.**, Vogtmann, E., Weinstein, S.J., Taylor, P.R., Männistö, S., Albanes, D., Dawsey, S.M., Rehfeld, J.F. and Freedman, N.D. **(2017)**. Serum gastrin and cholecystokinin are associated with subsequent development of gastric cancer in a prospective cohort of Finnish smokers. *International Journal of Epidemiology* **46**, 914-923.

Sikdar, S., **Choo-Wosoba, H.**, Abdia, Y., Dutta, S., Gill, R., Datta, S., and Datta, S. **(2014)**. An integrative exploratory analysis of –omics data from the ICGC cancer genomes lung adenocarcinoma study. *Systems Biomedicine* **2**, 56-64.

WORK EXPERIENCE

Staff Scientist I	Office of Collaborative Biostatistics	2021-present
	Office of the Clinical Director	
	Center for Cancer Research	
	National Cancer Institute	

National Institutes of Health – Bethesda, MD, U.S.A.

- Collaborate with NCI clinicians to provide biostatistical expertise for non- and clinical trial designs and analyses (primarily on Phase 1/2 studies for clinical trials)
- Serve as a Safety Monitoring Committee (SMC) member to review the safety report form as a part of the trial process for statistical perspective.

Actively search for an interesting scientific question in clinical trials that may be formulated to the development of statistical methodology

Staff Fellow   Division of Biometrics III   2019 – 2021
                              Office of Biostatistics
                              Office of Translational Sciences
                              Center for Drug Evaluation and Research
                              Food and Drug Administration – White Oak, MD, U.S.A.

- Actively communicate with clinical review teams to provide statistical perspective and considerations for specific clinical trials (primarily on Phase 2b/3/4 studies)
- Review specific protocols in considering the risk-benefit relationship as well as statistical analyses
- Actively search for an interesting scientific question in clinical trials that may be formulated to the development of statistical methodology

Postdoctoral Fellow   Biostatistics Branch   2016 – 2019
                              Division of Cancer Epidemiology and Genetic
                              National Cancer Institute - Shady Grove, MD, U.S.A.
Mentor: Dr. Paul Albert

Project 1:
Copy number alteration analysis with hidden Markov model approach for NGS platform whole exome sequencing data. These projects involve developing innovative hidden Markov modeling approaches that cannot easily be fit with the standard forward-backward algorithm for maximum-likelihood estimation.
- Developed statistical methodology accounting for hypersegmentation with quantifications of uncertainty
- Developed statistical methodology incorporating tumor heterogeneity in cancer

Project 2:
Two-part mixed effects model for longitudinal semi-continuous data
- Proposed a conditional approximation-based imputation approach for fitting two-part mixed models with complex random effects structure that can be implemented with standard statistical software.

Graduate Research Assistant Department of Bioinformatics and Biostatistics   2012 – 2016
                              University of Louisville – Louisville, KY, U.S.A.
Advisor: Dr. Somnath Datta

Project 1:
Zero-inflated model inference with a Conway-Maxwell-Poisson distribution

- Developed a marginal regression approach based on clustered count data with excessive zero by using a Conway-Maxwell-Poisson distribution
- Inference in a mixed effects model based on a zero-inflated Conway-Maxwell-Poisson model for clustered count data
- Developed a Bayesian approach for a zero-inflated Conway-Maxwell-Poisson model for clustered count data

Project 2:

Critical Assessment of Massive Data Analysis (CAMDA) project: A comprehensive omics study for the International Cancer Genome Consortium (ICGC) cancer genomes lung adenocarcinoma data
Mentor: Dr. Somnath Datta and Dr. Susmita Datta

- A collaborative work with Sinjini Sikdar, Younathan Abdia, Sandipan Dutta, Ryan Gill, Somnath Datta and Susmita Datta
- Integrated multiple molecular profile data sets which are gene expression, microRNA expression, protein expression, somatic copy number variation, DNA methylation profiles associated with lung adenocarcinoma
- Constructed the network associated with lung adenocarcinoma based on the relationship among the multiple molecular profile datasets by using clustering and penalized regression

RESEARCH INTERESTS

Nonparametric statistical approach   early phase clinical trial
generalized linear mixed effects model   longitudinal data
Bayesian hierarchical modeling   genetic data