

Yong Zang, PhD

Associate Professor

**Co-Director of Biostatistics and Data Management Core, Indiana
University Simon Comprehensive Cancer Center**

Department of Biostatistics and Health Data Science

Center for Computational Biology and Bioinformatics

Indiana University School of Medicine, Indianapolis, IN 46202

Email: zangy@iu.edu

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Research Interest:

- Theory, algorithms and software development for adaptive clinical trial design.
- Methods and tests for statistical genetics.

Education and Training:

- The University of Texas MD Anderson Cancer Center, **Postdoc fellow in Biostatistics**, 2011-2014. (Postdoc mentor: Drs. Ying Yuan and J. Jack Lee)
- The University of Hong Kong, **Ph.D. in Statistics**, 2007-2011. (Ph.D. advisor: Drs. Wing Kam Fung and Gang Zheng)
- University of Science and Technology of China, **M.S. in Statistics**, 2004-2007.
- Anhui University, **B.S. in Statistics**, 2000-2004.

Academic Positions:

- Associate Professor with Tenure, *Department of Biostatistics and Health Data Science*, Indiana University School of Medicine, 2022-present.
- Assistant Professor, *Department of Biostatistics and Health Data Science*, Indiana University School of Medicine, 2016-2022.
- Assistant Professor, Department of Mathematical Sciences, Florida Atlantic University, 2014-2016.
- Joint and adjunct faculty appointment:
 - Center for Computational Biology and Bioinformatics, Indiana University School of Medicine, 2016-present.
 - School of Informatics, IUPUI, 2016-present.

Administrative Positions and Services:

- Co-Director, Biostatistics and Data Management Core, IU Simon Comprehensive Cancer Center, 2022-present.
- Associate Director for Clinical Research, Biostatistics and Data Management Core, IU Simon Comprehensive Cancer Center, 2021-2022.
- Member, Biostatistics and Data Management Core, IU Simon Comprehensive Cancer Center, 2016-present.
- Statistical Reviewer, Indiana CTSI, 2016-present.

External Committees and Activities:

- DOD, CDMRP Panel, TBIPHRP FP-TT (panel reviewer), 2022.
- NIH ITCR (ad hoc reviewer), 2023.
- German Research Foundation (ad hoc reviewer), 2023.
- NIH ZRG1 CTH-E(11) (panel reviewer), 2023.

- Scientific committee member of Bayes 2024.

Awards and Scholarships:

- Indiana CTSI Biostatistics, Epidemiology & Research Design Program Award, 2018.
- Thomas Chalmers Student Scholarship Award Finalist by the Society for Clinical Trials, 2014.

Teaching:

- **Course Developed**
 - B670 - Adaptive Clinical Trial Design
- **Course Taught**
 - B670 (2018, 2021) - Adaptive Clinical Trial Design.
 - B582 (2019-2020) - Introduction to Clinical Trials
 - MAC 2312 (2016) - Calculus 2
 - STA 5195 (2015) - Biostatistics
 - STA 6326 (2015) - Mathematical Statistics
 - STA 3173 (2014-2016) - Introduction to Biostatistics

Students:

- Yingjie Qiu (PhD, 2021-current, co-advised with Dr. Yi Zhao)- Biostatistics, Indiana University; *2023-2024 IUPUI Chancellor's Scholars*
- Jiaying Guo (PhD, graduated in 2023)- Biostatistics, Indiana University, currently Biostatistician in Eli Lilly

- Wenrong Chen (PhD, 2021-2023, co-advised with Dr. Xiaowen Liu)- Bioinformatics, Indiana University, currently Postdoc fellow in Baylor College of Medicine
- Abdul Rehman Basharat (PhD, 2021-current, co-advised with Dr. Xiaowen Liu)-Bioinformatics, Indiana University
- Mu Shan (PhD, 2020-current)- Biostatistics, Indiana University.
- Tian He (PhD, graduated in 2022, co-advised with Dr. Hao Liu)- Biostatistics, Indiana University, currently Biostatistician in Merck
- Yifei Zhang (PhD, graduated in 2021) - Biostatistics, Indiana University, currently Principal Statistician at Hengrui Medicine, Shanghai, China.

Grants:

- **Ongoing:** PI - Use Bayesian methods to facilitate the data integration for complex clinical trial (NIGMS R01 1R01GM150808, **PI: Yong Zang**), 2023-2027.
- **Ongoing:** PI - Curve-free Phase I/II Clinical Trial Designs for Molecularly Targeted Agents and Immunotherapy (NCI R21 1R21CA264257, **PI: Yong Zang**), 2021-2024.
- **Ongoing:** PI - Transparent and Efficient Dose-finding Clinical Trial Designs for Targeted therapies and Immunotherapy (Ralph W. and Grace M. Showalter Trust, **PI: Yong Zang**), 2021-2024.
- **Ongoing:** co-Investigator - Developmental and Hyperactive Ras Tumor (DHART) SPORE (NIH SPOREs, PI: Wade Clapp), 2015-2026.
- **Ongoing:** co-Investigator - Urine based circulating tumor DNA analysis (NIH R37, PI: Tim Lautenschlaeger), 2021-2026.
- **Ongoing:** co-Investigator - The Indiana University-Ohio State University Maternal and Pediatric Precision in Therapeutics Data,

Model, Knowledge, and Research Coordination Center (NIH P30, PI: Sara Quinney), 2021-2026.

- **Ongoing:** Subcontract PI - Computational Tools for Proteoform Identification by Top-down Data Independent Acquisition Mass Spectrometry (NIH R01, PI: Xiaowen Liu), 2021-2025.
- **Ongoing:** co-Investigator - Indiana University Melvin and Bren Simon Cancer Center Support Grant (NIH P30, PI: Kelvin Lee), 2019-2024.
- **Ongoing:** co-Investigator - Collaborative Study on the Genetics of Alcoholism (NIH U01, PI: Howard J. Edenberg), 2017-2023.
- **Completed:** co-Investigator - Implementing Genomic Medicine through Pragmatic Trials in Diverse and Underserved Populations across Indiana (NIH U01, PI: Todd Skaar), 2020-2022.
- **Completed:** co-Investigator - Embedding Pharmacogenotyping in an Integrated Health System for the Underserved (NIH U01, PI: Todd Skaar), 2017-2020.
- **Completed:** co-Investigator - Therapeutic Targeting TFE3 in Translocation Renal Cell Carcinoma (DoD, PI: Roberto Pili), 2018-2020.
- **Completed:** co-Investigator - Immunomodulation by dietary protein restriction (NIH R21, PI: Roberto Pili), 2018-2020.

Consulting

- Selux Diagnostics, 2022-current

Publications († for corresponding author, ‡ for supervised student):

- **Methodological Publications:**

1. **Zang Y†**, Thall P and Yuan Y. A generalized phase 1-2-3 design integrating dose optimization with confirmatory treatment comparison. *Biometrics* accepted, 2023+.
2. Park J, Hu W, Jin IH, Liu H and **Zang Y†**. A Bayesian adaptive biomarker stratified phase II randomized clinical

trial design for radiotherapies with competing risks survival outcomes. *Statistical Methods in Medical Research* in press, 2023+.

3. **Zang Y**[†], Guo B, Qiu Y[‡], Liu H, Opyrchal M and Lu X. Adaptive phase I-II clinical trial designs identifying optimal biological doses for targeted agents and immunotherapies. *Clinical Trials* accepted, 2023+. (**Invited review paper**)
4. Chen W[‡], Ding Z, **Zang Y** and Liu X. Characterization of proteoform post-translational modifications by top-down and bottom-up mass spectrometry in conjunction with UniProt annotations. *Journal of Proteome Research* 22: 3178-3189, 2023.
5. Thall P, **Zang Y**, Chapple AG, Yuan Y, Lin R, Marin D and Msaouel P. Novel clinical trial designs that optimize dose to improve long-term outcomes. *Clinical Cancer Research* 29: 4549-4554, 2023.
6. Basharat AR[‡], **Zang Y**, Sun L and Liu X. TopFD: A proteoform feature detection tool for top-down proteomics. *Analytical Chemistry* 95: 8189-8196, 2023.
7. Thall P, **Zang Y** and Yuan Y. Generalized phase I-II designs to increase long term therapeutic success rate. *Pharmaceutical Statistics* 22: 692-706, 2023.
8. Qiu Y[‡], Zhao Y, Liu H, Cao S, Zhang C and **Zang Y**[†]. Modified isotonic regression based phase I/II clinical trial design identifying optimal biological dose. *Contemporary Clinical Trials* 127: 107139, 2023.
9. Shan M[‡], Guo B, Liu H, Li Q and **Zang Y**[†]. Bayesian order constrained adaptive design for phase II clinical trials evaluating subgroup-specific treatment effect. *Statistical Methods in Medical Research* 32: 885-894, 2023.
10. Guo B, **Zang Y**, Lin H and Zhang R. A Bayesian phase I/II design to determine subgroup-specific optimal dose for immunotherapy sequentially combined with radiotherapy. *Pharmaceutical Statistics* 22: 143-161, 2023.

11. Chen W‡, McCool E, Sun L, **Zang Y**, Ning X, Liu, X. Evaluation of machine learning models for proteoform retention and migration time prediction in top-down mass spectrometry. *Journal of Proteome Research* 21: 1736-1747, 2022.
12. Zhang Y‡, Guo B, Cao S, Zhang C and **Zang Y**†. SCI: A Bayesian adaptive phase I/II dose-finding design accounting for semi-competing risks outcomes for immunotherapy trials. *Pharmaceutical Statistics* 21: 960-973, 2022.
13. Guo B and **Zang Y**. A Bayesian phase I/II biomarker-based design for identifying subgroup-specific optimal dose for immunotherapy. *Statistical Methods in Medical Research* 31: 1104-1119, 2022.
14. Guo B and **Zang Y**. BIPSE: A biomarker-based phase I/II design for immunotherapy trials with progression-free survival endpoint. *Statistics in Medicine* 41: 1205-1224, 2022.
15. Chen Z and **Zang Y**†. CMAX3: A robust statistical test for genetic association accounting for covariates. *Genes* 12: 1723, 2021.
16. Zhang Y‡ and **Zang Y**†. CWL: A conditional weighted likelihood method to account for the delayed joint toxicity-efficacy outcomes for phase I/II clinical trials. *Statistical Methods in Medical Research* 30: 892-903, 2021.
17. Han Y, Liu H, Cao S, Zhang C and **Zang Y**†. TSNP: a two-stage nonparametric phase I/II clinical trial design for immunotherapy. *Pharmaceutical Statistics* 20: 282-296, 2021.
18. Guo B and **Zang Y**. BILITE: A Bayesian phase II design for immunotherapy by jointly modeling the longitudinal immune response and time-to-event efficacy. *Statistics in Medicine* 39: 4439-4451, 2021.
19. Zhang Y‡, Cao S, Zhang C, Jin IH and **Zang Y**†. A Bayesian adaptive phase I/II clinical trial design with late-

- onset competing risk outcomes. *Biometrics* 77: 796-808, 2021 (**Top cited article 2020-2021, 2021-2022**).
20. Han Y, Yuan Y, Cao S, Li M and **Zang Y†**. One the use of marker strategy design to detect predictive marker effect in cancer immunotherapy and targeted therapy. *Statistics in Bioscience* 12: 180-195, 2020.
 21. **Zang Y†**, Guo B, Han Y, Cao S and Zhang C. A Bayesian adaptive marker stratified design for molecularly targeted agents with customized hierarchical modeling. *Statistics in Medicine* 38: 2883-2896, 2019.
 22. **Zang Y†**, Fung WK, Cao S, Ng HKT and Zhang C. Robust tests for gene–environment interaction in case-control and case-only designs. *Computational Statistics and Data analysis* 129: 79-92, 2019.
 23. Guo B and **Zang Y**. A Bayesian adaptive phase II clinical trial design accounting for spatial variation. *Statistical Methods in Medical Research* 28: 3187-3204, 2018.
 24. **Zang Y†** and Guo B. Optimal two-stage enrichment design correcting for biomarker misclassification. *Statistical Methods in Medical Research* 27: 35-47, 2018.
 25. **Zang Y†** and Yuan Y. Optimal sequential enrichment design for phase II clinical trials. *Statistics in Medicine* 36: 54-66, 2017.
 26. **Zang Y†** and Lee JJ. A robust two-stage design identifying the optimal biological dose for phase I/II clinical trials. *Statistics in Medicine* 36: 27-42, 2017.
 27. **Zang Y**, Liu S and Yuan Y. Optimal marker-strategy clinical trial design to detect predictive markers for targeted therapy. *Biostatistics* 17: 549-560, 2016.
 28. **Zang Y**, Lee JJ and Yuan Y. Two-stage marker stratified clinical trial design in the presence of biomarker misclassification. *Journal of the Royal Statistical Society: Series C* 65: 585-601, 2016.

29. Guo B, **Zang Y** and Yuan Y. A Bayesian phase I/II clinical trial design in the presence of informative dropouts. *Statistics and Its Interface* 8: 217-226, 2015.
30. **Zang Y**, Liu S and Yuan Y. Optimal marker-adaptive designs for targeted therapy based on imperfectly measured biomarkers. *Journal of the Royal Statistical Society: Series C* 64: 635-650, 2015.
31. **Zang Y** and Lee JJ. Adaptive clinical trial designs in oncology. *Chinese Clinical Oncology* 3(4), 2014. (**Invited review paper**)
32. **Zang Y**, Lee JJ and Yuan Y. Adaptive designs for identifying optimal biological dose for molecularly targeted agents. *Clinical Trials* 11: 319-327, 2014.
33. **Zang Y** and Yuan Y. A shrinkage method for testing the Hardy-Weinberg equilibrium in case-control studies. *Genetic Epidemiology* 37: 743-750, 2013.
34. **Zang Y** and Fung WK. Robust Mantel-Haenszel test under genetic model uncertainty allowing for covariates in case-control association studies. *Genetic Epidemiology* 35: 695-705, 2011.
35. **Zang Y** and Fung WK. Robust tests for matched case-control genetic association studies. *BMC Genetics* 11(91), 2010.
36. **Zang Y**†, Fung WK and Zheng G. Simple algorithms to calculate asymptotic null distributions for robust tests in case-control genetic association studies in R. *Journal of Statistical Software*, 33(8), 2010.
37. **Zang Y**, Fung WK and Zheng G. Asymptotic powers for matched trend tests and robust matched trend test in case-control genetic association studies. *Computational Statistics and Data Analysis* 54: 65-77, 2010.
38. **Zang Y**, Fung WK and Zheng G. Tail strength to combine two p-values: Their correlation cannot be ignored. *American Journal of Human Genetics* 84: 291-295, 2009.

39. **Zang Y**, Zhang H, Yang YN and Zheng G. Robust genomic control and robust delta-centralization for case-control association studies. *Human Heredity* 63: 187-195, 2007.

• **Collaborative Publications:**

40. Gu X, Li K, Zhang M, Chen Y, Zhou J, Yao C, **Zang Y**, He J, Wan J, Guo B. Aspartyl-tRNA synthetase 2 orchestrates iron-sulfur metabolism in hematopoietic stem cells via fine-tuning alternative RNA splicing. *Cell Reports* accepted, 2023+

41. Chen C, Liu Y, Luo M, Yang J, Chen Y, Wang R, Zhou J, **Zang Y**, Diao L, Han L. PancanQTLv2.0: a comprehensive resource for expression quantitative trait loci across human cancers. *Nucleic Acids Research* accepted, 2023+

42. Johnson T, Steere B, Zhang P, **Zang Y**, Higgs R, Milch C, Reinisch W, Panés J, Huang K, D'Haens G, Krishnan V. Mirikizumab-induced transcriptome changes in ulcerative colitis patient biopsies at week 12 are maintained and through week 52. *Clinical and Translational Gastroenterology* in press, 2023+

43. Eadon MT, Rosenman MB, Zhang P, Fulton CR, Callaghan JT, Holmes AM, Levy KD, Gupta SK, Haas DM, Vuppalanchi R, Benson EA, Kreutz RP, Tillman EM, Shugg T, Pierson RC, Gufford BT, Pratt VM, **Zang Y**, Desta Z, Dexter PR, Skaar TC. The INGENIOUS Trial: Impact of pharmacogenetic testing on adverse events in a pragmatic clinical trial. *The Pharmacogenomics Journal* in press, 2023+

44. Zhang Z, Zhu H, Dang P, Wang J, Chang W, Wang X, Alghamdi N, Lu A, **Zang Y**, Wu W, Wang Y, Zhang Y, Cao S, Zhang C. FLUXestimator: a webserver for predicting

- metabolic flux and variations using transcriptomics data. *Nucleic Acids Research* 51: W180-W190, 2023.
45. Cao S, Chang W, Wan C, Lu X, Dang P, Zhou X, Zhu H, Chen J, Li B, **Zang Y**, Wang Y, Zhang C. Pipeline for Characterizing Alternative Mechanisms (PCAM) based on bi-clustering to study colorectal cancer heterogeneity. *Computational and Structural Biotechnology Journal* 21: 2160-2171, 2023.
46. Pandey G, Kuo S, Horne-Osipenko KA, Pandey AK, Kamarajan C, de Viteri SS, Kinreich S, Chorlian DB, Kuang W, Stephenson M, Kramer J, Anokhin A, **Zang Y**, Kuperman S, Hesselbrock V, Schuckit M, Dick D, Chan G, McCutcheon VV, Edenberg H, Bucholz KK, Meyers JL, Porjesz B. Associations of parent–adolescent closeness with P3 amplitude, frontal theta, and binge drinking among offspring with high risk for alcohol use disorder. *Alcohol: Clinical and Experimental Research* 47: 155-167, 2023.
47. Quinney SK, Bies RR, Grannis SJ, Bartlett EM, Mendonca E, Rogerson CM, Backes CH, Shah DK, Tillman EM, Costantine MM, Aruldas BW, Allam R, Grant A, Abbasi MY, Kandasamy M, **Zang Y**, Wang L, Shendre A, Li L. The MPRINT Hub Data, Model, Knowledge and Research Coordination Center: Bridging the gap in maternal-pediatric therapeutics research through data integration data and pharmacometrics. *Pharmacotherapy* 43: 391-402, 2023.
48. Wan C, Dang P, Zhao T, **Zang Y**, Zhang C, Cao S. Bias aware probabilistic boolean matrix factorization. *Proceedings of the Thirty-Eighth Conference on Uncertainty in Artificial Intelligence, PMLR* 180:2035-2044, 2022.
49. Le A, Mohammadi H, Burney H, **Zang Y**, Frye D, Shiue K, Lautenschlaeger T, Miller J. Local and distant brain control in melanoma and NSCLC brain metastases with concurrent

- radiosurgery and immune checkpoint inhibition. *Journal of Neuro-Oncology* 158: 481-488, 2022.
50. Khaliq AM, Erdogan C, Kurt Z, Turgut SS, Grunvald MW, Rand T, Khare S, Borgia JA, Hayden DM, Pappas SG, Govekar HR, Kam AE, Reiser J, Turaga K, Radovich M, **Zang Y**, Qiu Y, Liu Y, Fishel ML, Turk A, Gupta V, Al-Sabti R, Subramanian J, Kuzel TM, Sadanandam A, Waldron A, Hussain A, Saleem M, El-Rayes B, Salahudeen AA, Masood A. Refining colorectal cancer classification and clinical stratification through a single-cell atlas. *Genome Biology* 23: 113, 2022.
51. Radhakrishnan R, Brown BP, Haas DM, **Zang Y**, Sparks C, Sadhasivam S. Pilot study of fetal brain development and morphometry in prenatal opioid exposure and smoking on fetal MRI. *Journal of Neuroradiology* 49: 53-58, 2022.
52. Lai D, Johnson E, Colbert S, Pandey G, Chan G, Bauer L, Francis M, Hesselbrock V, Kamarajan C, Kramer J, Kuang W, Kuo S, Kuperman S, Liu Y, McCutcheon V, Pang Z, Plawecki M, Schuckit M, Tischfield J, Wetherill L, **Zang Y**, Edenberg H, Porjesz B, Agrawal A, Foroud Tatiana. Evaluating risk for alcohol use disorder: polygenic risk scores and family history. *Alcoholism: Clinical and Experimental Research* 46: 374-383, 2022.
53. Nurnberger J, Wang Y, **Zang Y**, etc. High polygenic risk scores are associated with age of onset of alcohol use disorder in adolescents and young adults at risk. *Biological Psychiatry Global Open Science* 2: 379-388, 2021.
54. Chang W, Dang P, Wan C, Lu X, Fang Y, Zhao T, **Zang Y**, Li B, Zhang C, Cao S. Spatially and robustly hybrid mixture regression model for inference of spatial dependence. *ICDM 2021 (full conference paper)*, 2021.
55. Alghamdi N, Chang W, Dang P, Lu X, Wan C, Gampala S, Huang Z, Wang J, Ma Q, **Zang Y**, Fishel M, Cao S, Zhang

- C. A graph neural network model to estimate cell-wise metabolic flux using single cell RNA-seq data. *Genome Research* 31: 1867-1884, 2021.
56. Sadhasivam S, Aruldas BW, Packiasabapathy S, Overholser BR, Zhang P, **Zang Y**, Renschler JS, Fitzgerald RE, Quinney SK. A novel perioperative multi-dose methadone-based multi-modal analgesic strategy in children achieved safe and low analgesic blood methadone levels enabling opioid sparing sustained analgesia with minimal adverse effects. *Anesthesia & Analgesia* 133: 327-337, 2021.
57. Freije SL, Kushdilian M, Burney HN, **Zang Y** and Saito NG. A retrospective analysis of 287 patients undergoing prophylactic radiation therapy for the prevention of heterotopic ossification. *Advances in Radiation Oncology* 6: 100625, 2021.
58. Lu X, Tu S, Chang W, Wan C, Wang J, **Zang Y**, Ramdas B, Kapur R, Lu X, Cao S and Zhang C. SSMD: A semi-supervised approach for a robust cell type identification and deconvolution of mouse transcriptomics data. *Briefings in Bioinformatics* 22: bbaa307, 2021.
59. Chang W, Wan C, **Zang Y**, Zhang C and Cao S. Supervised clustering of high dimensional data using regularized mixture modeling. *Briefings in Bioinformatics* 22: bbaa291, 2021.
60. Zhang X, **Zang Y**, Zhang Y, Kubal C and Lin J. Allograft Necrosis in Liver Biopsy Is Predictive for Organ Outcome and Patient Survival. *Transplantation Proceedings* 53: 124-129, 2021.
61. Elbanna M, Shiue K, Edwards D, Cerra-Franco A, Agrawal N, Hinton J, Mereniuk T, Huang C, Ryan JL, Smith J, Aaron VD, Burney H, **Zang Y**, Holmes J, Langer M, Zellars R and Lautenschlaeger T. Impact of lung parenchymal-only failure

on overall survival in early stage lung cancer patients treated with stereotactic ablative radiation therapy. *Clinical Lung Cancer* 22: 342-359, 2021.

62. Johnson E, Sanchez-Roige S, Acion L, Adams MJ, Bucholz KK, Chan G, Chao MJ, Chorlian DB, Dick DM, Edenberg HJ, Foroud T, Hayward C, Heron J, Hesselbrock V, Hickman M, Kendler KS, Kinreich S, Kramer J, Kuo SI, Kuperman S, Lai D, McIntosh AM, Meyers JL, Plawecki MH, Porjesz B, Porteous D, Schuckit MA, Su J, **Zang Y**, Palmer AA, Agrawal A, Clarke T and Edwards AC. Polygenic contributions to alcohol use and alcohol use disorders across population-based and clinically ascertained samples *Psychological Medicine* 51: 1147-1156, 2021.
63. de Viteri S, Pandey A, Pandey G, Kamarajan C, Smith R, Anokhin A, Bauer L, Bender A, Chan G, Dick D, Edenberg H, Kinreich S, Kramer J, Schuckit M, **Zang Y**, McCutcheon V, Bucholz K, Porjesz B and Meyers J. Pathways to Post-Traumatic Stress Disorder and Alcohol Dependence: Trauma, executive functioning, and family history of alcoholism in adolescents and young adult. *Brain and Behavior* 10: e01789, 2020.
64. Shah-Williams E, Skaar T, Holmes A, Levy K, **Zang Y**, Dexter P, Stoughton C. Enrollment of diverse populations in the INGENIOUS pharmacogenetics clinical trial. *Frontiers in Genetics* 11: 571, 2020.
65. McClelland 3rd S, Lautenschlaeger T, **Zang Y**, Hanna NH, Shiue K, Kamer AP, Agrawal N, Ellsworth SG, Rhome RM and Watson GA. Radiosurgery dose reduction for brain metastases on immunotherapy (RADREMI): A prospective phase I study protocol. *Reports of Practical Oncology & Radiotherapy* 25: 500-506, 2020.

66. Cho SB, Smith RL, Bucholz K, Chan G, Edenberg HJ, Hesselbrock V, Kramer J, McCutcheon VV, Nurnberger J, Schuckit M, **Zang Y**, Dick DM and Salvatore JE. Using a developmental perspective to examine the moderating effects of marriage on heavy episodic drinking in a young adult sample enriched for risk. *Development and Psychopathology* 33: 1097-1106, 2020.
67. Nurnberger J, Yang Z, **Zang Y**, Acion L, Bierut L, Bucholz K, Chan C, Dick D, Edenberg H, Kramer J, Kuperman S, Rice J, Schukit M. Developing of alcohol use disorder as function of age, severity, and comorbidity with externalizing and internalizing disorders in a young adult cohort. *Journal of Psychiatry and Brain Science* 4: e190016, 2019.
68. Wan C, Chang W, Zhang Y, Shah F, Lu X, **Zang Y**, Zhang A, Cao S, Fishel M, Ma Q and Zhang C. LTMG: a novel statistical modeling of transcriptional expression states in single-cell RNA-Seq data. *Nucleic Acids Research* 47: e111, 2019.
69. Fulton CR, **Zang Y**, Desta Z, Rosenman MB, Holmes AM, Decker BS, Zhang Y, T Callaghan J, Pratt VM, Levy KD, Guord BT, Dexter PR, Skaar TC, Eadon MT. Drug-gene and drug-drug interactions associated with tramadol and codeine therapy in the INGENIOUS trial. *Pharmacogenomics* 20: 397-408, 2019.
70. Shiue K, Cerra-Franco A, Shapiro R, Estabrook N, Mannina EM, Deig CR, Althouse S, Liu S, Wan J, **Zang Y**, Agrawal N, Ioannides P, Liu Y, Zhang C, DesRosiers C, Bartlett G, Ewing M, Langer M, Watson G, Zellars R, Kong FM, Lautenschlaeger T. Histology, tumor volume, and radiation dose predict outcomes in NSCLC patients after stereotactic ablative radiotherapy. *Journal of Thoracic Oncology* 13: 1549-1559, 2018.

71. Lu X, Pan X, Wu C, Zhao D, Feng S, **Zang Y**, Lee R, Khadka S, Amin SB, Jin E, Shang X, Deng P, Luo Y, Morgenlander WR, Weinrich J, Lu X, Jiang S, Chang Q, Navone NM, Troncoso P, DePinho RA, Wang YA. An in vivo screen identifies PYGO2 as a driver for metastatic prostate cancer. *Cancer Research* 78: 3823-3833, 2018.
72. Wang W, Huang L, Jin J, Jolly S, **Zang Y**, Wu H, Yan L, Pi W, Li L, Mellor AL, Kong FM. IDO Immune status after chemoradiation may predict survival in lung cancer patients. *Cancer Research* 78: 809-816, 2018.
73. Adelaiye-Ogala R, Budka J, Damayanti NP, Arrington J, Ferris M, Hsu C, Chintala S, Orillion A, Miles KM, Shen L, Elbanna M, Ciamporzero E, Arisa S, Pettazzoni P, Draetta GF, Seshadri M, Hancock B, Radovich M, Kota J, Buck M, Keilhack H, McCarthy BP, Persohn SA, Territo PR, **Zang Y**, Irudayaraj J, Tao WA, Hollenhorst P, Pili R. EZH2 modifies sunitinib resistance in renal cell carcinoma by kinome reprogramming. *Cancer Research* 77: 6651-6666, 2017.
74. Ndekwe P, Ghabril MS, **Zang Y**, Mann SA, Cummings OW and Lin J. Substantial hepatic necrosis is prognostic in fulminant liver failure. *World Journal of Gastroenterology* 23: 4303-4310, 2017.

- **Book Chapters**

75. **Zang Y** and Yuan Y. Optimal biomarker-guided design for targeted therapy with imperfectly measured biomarkers. *Statistical Applications from Clinical Trials and Personalized Medicine to Finance and Business Analytics* 3-13, Springer, 2016.

76. Zhang H, Li QZ, **Zang Y**, Yang YN, and Zheng G.
Centralized genomic control: a simple approach correcting
for population structures in case-control association studies.
*Methods and Applications of Statistics in the Life and Health
Sciences* 81-93, Wiley: Hoboken, NJ, 2009.

Invited Presentations and Short Courses:

1. Novel dose optimization methods for immunotherapy with survival outcome. *Department of Bioinformatics and Biostatistics, University of Louisville, 2023.*
2. A generalized phase 1-2-3 design integrating dose optimization with confirmatory treatment comparison. *ICSA Chinese Conference, Chengdu; Anhui University, Hefei; University of Science and Technology of China, Hefei; Shanghai University of Finance and Economics, Shanghai 2023.*
3. Bayesian clinical trial designs and their implementation. *The 36th New England Statistics Symposium, invited short course (joint with Dr. Ying Yuan), Boston, 2023.*
4. Curve-free phase I/II clinical trial designs for molecularly targeted agents and immunotherapy. *ITCR Annual Conference, St. Louis, 2022.*
5. T-3+3: 3+3 design with delayed outcomes. *Midwest Biopharmaceutical Statistics Workshop, Indianapolis, 2022.*
6. Generalized phase I-II designs to increase long term therapeutic success rate. *SCT Annual Conference, San Diego, 2022.*
7. A Bayesian adaptive phase I/II clinical trial design with late-onset competing risk outcomes. *Department of Statistics, School of Economics, Xiamen University, 2022(virtual).*

8. A Bayesian adaptive phase I/II clinical trial design with late-onset competing risk outcomes. *Clinical Research Institute, Shanghai Jiao Tong University*, 2021(virtual).
9. SCI: A Bayesian adaptive phase I/II design accounting for semi-competing risks outcomes for immunotherapy trials. *Statistics 2021 Canada*, 2021(virtual).
10. A Bayesian hierarchical modeling approach to borrow the prior biomarker information for the marker-stratified design. *KOL lecture series on adaptive designs*, 2020(virtual).
11. Clinical trial designs. *Biostatistics for Health Care Researchers: A Short Course, Indiana University*, 2020-2023(virtual).
12. Statistical designs for phase I clinical trials. *CTO educational series, Indiana University*, 2019.
13. Bayesian adaptive phase I/II clinical trial designs. *Markey Cancer Center, University of Kentucky*, 2017.
14. A robust two-stage design identifying the optimal biological dose for phase I/II clinical trials in personalized medicine. *Clinical trial design in the era of precision medicine, Indiana University*, 2017.