

Xianming TAN

Lineberger Comprehensive Cancer Center
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RESEARCH INTEREST

Statistical Methodology

- Finite Mixture Models
- Analysis of multivariate binary data
- Design of Clinical Studies
- Variable Selection for Zero-Inflated Models
- Non-parametric Regression

Applied Statistics

- Meta Analysis
- Analysis of Observational Studies
- Intensive Longitudinal Data Analysis
- Design of Ecological Momentary Assessment
- Latent Class Analysis
- Behavioral Science

EDUCATION

- 2005 Ph.D. in Statistics** Nankai University, Tianjin, China
1998 M.S. in Economics Huazhong University of Science & Technology, Wuhan, China
1995 B.S. in Mathematics Beijing Normal University, Beijing, China

PROFESSIONAL EXPERIENCE

- Research Associate Professor** September 2015 –
*Department of Biostatistics and Lineberger Comprehensive Cancer Center,
 University of North Carolina at Chapel Hill*
- Biostatistician** August 2011 – April 2015
Research Institute of the McGill University Health Centre, Canada
- Research Associate** August 2008 – July 2011
The Methodology Center of Penn State University
- Biostatistics Post Doctoral Fellowship** January 2007 - August 2008
Clinical Trials Group, NCIC, Kingston, ON, Canada
- Conducted methodology research in optimal design of two-stage clinical trials, and in the estimation of crossing-point of two hazard functions
 - Wrote statistical analysis plan for a (prostate) cancer clinical trial, and conducted the data analysis
- Visiting Assistant Professor** Sep 2006 – Dec 2006
Department of Statistics and Actuarial Science, University of Waterloo, ON, Canada
- Assistant Professor** Jul 2003 – Sep 2006

PUBLICATIONS

Books and Chapters

- 1) Luo, Y., **Tan, X.** and Tu, D. (2011). Assessing Similarity of Two Survival Functions Based on Censored Data and the Trimmed Mallows Distance, In *Theoretical Advances and Applications in Operations Research-/Modeling Non-normal Phenomena* (Ed. K. Tan and J. Gani), 33-46, Kyushu University Press, Fukuoka, Japan.
<http://www.kup.or.jp/en/backup/newbooks/1056Operations%20Research.html>

Peer-reviewed publications

(A): Methodology

- 1) B. Jia, D. Zeng, J. J. Liao, G. F. Liu, **X. Tan**, G. Diao, and J. G. Ibrahim, Inferring latent heterogeneity using many feature variables supervised by survival outcome, *Statistics in Medicine*, 40 (2021).
- 2) Y. Sun, X. Zhang, X. Tan, and D. Tu, Estimation of the binomial probabilities in a two-stage phase ii clinical trial with two co-primary endpoints, *Contemporary Clinical Trials*, 105 (2021).
- 3) **Tan, X.**, Chen, B, Sun, J, Patel, T, Ibrahim, JG, (2020). A Hierarchical Testing Approach for Detecting Safety Signals in Clinical Trials, *Statistics in Medicine*. 39(10) 1541-1557.
- 4) **Tan, X.**, Liu, G. F., Zeng, D., Wang, W., Diao, G., Heyse, J. F., & Ibrahim, J. G. (2019). Controlling False Discovery Proportion in Identification of Drug-Related Adverse Events from Multiple System Organ Classes. *Statistics in Medicine*. 38(22): 4378-4389.
- 5) Diao, G., Liu, G. F., Zeng, D., Wang, W., Tan, X., Heyse, J. F., & Ibrahim, J. G. (2019). Efficient methods for signal detection from correlated adverse events in clinical trials. *Biometrics*. doi:10.1111/biom.13031
- 6) Xu, J., **Tan, X.**, & Zhang, R. (2019). A penalized maximum likelihood approach for estimating mixture of regression models. (in Chinese) *SCIENTIA SINICA Mathematica*, 49(8), 1159-1182.
- 7) Chen, J., Li, S. & Tan, X. (2016) Consistency of the penalized MLE for two-parameter gamma mixture models. *Sci. China Math*. 59(12): 2301-2318. doi:10.1007/s11425-016-0125-0.
- 8) Yi, G.Y., **Tan, X.**, Li, R. (2015). Variable selection and inference procedures for marginal analysis of longitudinal data with missing observations and covariate measurement error *The Canadian Journal of Statistics*.43: 498-518.
- 9) Dziak, J., Li, R., **Tan, X.**, Shiffman, S., and Shiyko, M. P. (2015). Modeling Intensive Longitudinal Data on Smoking Cessation with Mixtures of Nonparametric Trajectories and Time-Varying Effects. *Psychological methods*.20: 444-469.
- 10) Bray, B., Lanza, S., and **Tan, X.** (2015) Eliminating Bias in Classify-Analyze Approaches for Latent Class Analysis. *Structural Equation Modelling*. 22: 1-11.
- 11) Dziak, J., Lanza, S., and **Tan, X.** (2014). Effect Size, Statistical Power and Sample Size Requirements for the Bootstrap Likelihood Ratio Test in Latent Class Analysis. *Structural Equation Modeling*. 21:534-552.
- 12) Su, X., Fan, J., Levine, R.A., **Tan, X.**, and Tripathi. A. (2013) Multiple-Inflation Poisson Model with L_1 Regularization. *Statistica Sinica*. 23:1071-1090.
- 13) Lanza, S., **Tan, X.**, and Bray, B. (2013). Latent Class Analysis With Distal Outcomes: A Flexible Model-Based Approach. *Structural Equation Modeling*. 20:1-26.
- 14) Buu, A., Li, R., **Tan, X.**, and Zucker, B. (2012). Statistical models for longitudinal zero-inflated count data with applications to the substance abuse field. *Statistics in Medicine*. 31:4074-4086.
- 15) **Tan, X.**, Shiyko, M., Li, R., Li, Y., and Dierker, L. (2012). A Time-Varying Effect Model for Intensive

Longitudinal Data. *Psychological methods*. 17(1):61-77.

- 16) Buu, A., Johnson, N., Li, R., and **Tan, X.** (2011). New variable selection methods for zero-inflated count data with applications to the substance abuse field. *Statistics in Medicine*. 30(18):2326-2340.
- 17) **Tan, X.**, Dierker, L., Rose, J., and Li, R. (2011). How Spacing of Data Collection May Impact Estimates of Substance Use Trajectories. *Substance Use and Misuse*. 46(6):758-768.
- 18) Dierker, L., Rose, J., **Tan, X.**, and Li, R. (2010). Uncovering multiple pathways to substance use: A comparison of methods for identifying population subgroups. *The Journal of Primary Prevention*, 31(5-6):333-348.
- 19) Zhu, L., **Tan, X.**, and Tu, D. (2010). Testing the Homogeneity of Two Survival Functions against a Mixture Alternative Based on Censored Data. *Communications in Statistics - Simulation and Computation*, 39, 767-776.
- 20) Xu, J., **Tan, X.**, and Zhang, R. (2010). Note on Phillips (1991) "Constrained maximum likelihood approach to estimating switching regressions". *Journal of Econometrics*. 154, 35-41.
- 21) **Tan, X.**, Takahara, G., and Tu, D. (2009). Optimal Two-Stage Design for Phase II Cancer Clinical Trials with Responses and Early Progression as Co-primary Endpoints. *Statistics in Biopharmaceutical Research*, 2(3): 348-354.
- 22) Cheng, M., Qiu, P., **Tan, X.**, and Tu, D. (2009). Nonparametric Confidence Intervals for the Crossing Point of Two Hazard Functions. *Lifetime Data Analysis*, 15(4): 441-454.
- 23) Chen, J., **Tan, X.** (2009). Inference for Multivariate Normal Mixtures. *Journal of Multivariate Analysis*, 100, 1367-1383.
- 24) Chen, J., **Tan, X.**, and Zhang, R. (2008). Inference for Normal Mixture in Mean and Variance. *Statistica Sinica*, 18, 443-465.
- 25) Chen, J., Li, P., and **Tan, X.** (2007). Inference for Von Mises Mixture in Mean Direction and Concentration Parameters (in Chinese). *Journal of Systems Science and Mathematical Sciences*, 27, 59-67.

(B): Collaborative

- 1) S. Sud, B. C. Gerring, B. S. Wacaser, X. Tan, S. S. Tatko, T. J. Royce, A. Z. Wang, and R. C. Chen, Underascertainment of clinically meaningful symptoms during prostate cancer radiation therapy—does this vary by patient characteristics?, *International Journal of Radiation Oncology Biology Physics*, (2021).
- 2) B. M. Vickerman, C. P. O'Banion, X. Tan, and D. S. Lawrence, Light-controlled release of therapeutic proteins from red blood cells, *ACS Central Science*, 7 (2021).
- 3) J. M. Wilson, C. Lumley, X. Tan, C. Shen, A. Coniglio, M. Weissler, W. G. Yarbrough, T. Hackman, J. Blumberg, A. Zanation, B. Thorp, S. N. Patel, and B. S. Chera, Clinical outcomes of patients with pT1-t2n0 oral tongue squamous cell carcinoma, *American Journal of Clinical Oncology: Cancer Clinical Trials*, 44 (2021).
- 4) Brnich, E. C. Arteaga, Y. Wang, **X. Tan**, and J. S. Berg, A validated functional analysis of palb2 (partner and localizer of brca2) missense variants for use in clinical variant interpretation, *The Journal of Molecular Diagnostics*, (2021).
- 5) W. C. Chou, Z. Guo, H. Guo, L. Chen, G. Zhang, K. Liang, L. Xie, **X. Tan**, S. A. Gibson, E. Rampanelli, Y. Wang, S. A. Montgomery, W. J. Brickey, M. Deng, L. Freeman, S. Zhang, M. A. Su, X. Chen, Y. Y. Wan, and J. P. Ting, Aim2 in regulatory t cells restrains autoimmune diseases, *Nature*, 591 (2021).
- 6) Song, L., Guo, P.R., **Tan, X.M.**, Chen, R., Nielsen, M.E., Birken, S., Koontz, B., Northouse, L., & Mayer, D.K. (2021) Enhancing Survivorship Care Planning for Patients with Localized Prostate Cancer Using a

- Couple-focused Web-based, mHealth Program: The Results of A Pilot Feasibility Study. *Journal of Cancer Survivorship*. 15.1: 99-108.
- 7) Hao Guo, ..., **Xianming Tan**, ... Jenny P. Ting. (2020) Multi-omics analyses of radiation survivors identify radioprotective microbes and metabolites. *Science*. 370, no. 6516.
 - 8) Cuthbertson, C. C., **Tan, X.**, Heiss, G, Kucharska - Newton, A., Nichols, H. B., Kubota, Y., & Evenson, K. R. (2020). Associations of leisure-time physical activity and television viewing with life expectancy cancer-free at age 50: The ARIC Study. *Cancer Epidemiology and Prevention Biomarkers*. 29(12), 2617-2625.
 - 9) L. Hu, H. Xie, X. Liu, F. Potjeyd, L. I. James, E. M. Wilkerson, L.E. Herring, L. Xie, X. Chen, J. C. Cabrera, K. Hong, C. Liao, X. Tan, A. S. Baldwin, K. Gong, and Q. Zhang, Tbk1 is a synthetic lethal target in cancer with vhl loss, *Cancer Discovery*, 10 (2020).
 - 10) K. A. Pearlstein, S. Saripalli, R. Basak, J. Sun, J. Dooley, X. Tan, A. Z. Wang, R. C. Chen, and P. Mavroidis, Dosimetric correlations with urinary quality of life in patients receiving post-prostatectomy radiation therapy, *Journal of Radiation Oncology*, (2020).
 - 11) Emerson, MA., **Tan, X.**, ... (2020). Breast cancer treatment delays by socioeconomic and health care access latent classes in black and white women. *Cancer*. 126(22):4957-66.
 - 12) Anureet C. Copeland, **Xianming Tan**, Rebekah P. Nash, Emily G. Holmes, Janell Markey, Thomas C. Shea, William A. Wood, Eliza M. Park. (2020). Collaborative Care for Depression and Anxiety in the Bone Marrow Transplant Population: A Pilot Feasibility Study. *Psycho-Oncology*. Sep 2.
 - 13) Song, L., Guan, T., Guo, P., Song, F., Houtven C., **Tan, X.**, Keyserling, T. (2020) Cardiovascular Disease, Risk Factors and Health Behaviors among Cancer Survivors and Spouses: A MEPS Study. *Cancer Medicine*. 9, no. 18: 6864-6874.
 - 14) Xu, Y., Lv, L.... **Tan, X.**... Xiong, Y. (2019) Tumor suppressor TET2 promotes cancer immunity and immunotherapy efficacy. *The Journal of clinical investigation*. 129.10 (2019): 4316-4331.
 - 15) Song, L., Guan, T., Guo, P., Keyserling, T. C., Van Houtven, C., & **Tan, X.** (2019). Prevalence of cardiovascular disease and risk factors, quality of life, and health behaviors of cancer survivors and their spouses: findings from MEPS. *Journal of Cancer Survivorship*, 13(5), 739-748.
 - 16) Cuthbertson, C. C., **Tan, X.**, Heiss, G, Kucharska - Newton, A., Nichols, H. B., Kubota, Y., & Evenson, K. R. (2019). Associations of Leisure - Time Physical Activity and Television Viewing With Life Expectancy Free of Nonfatal Cardiovascular Disease: The ARIC Study. *Journal of the American Heart Association*, 8(18), e012657.
 - 17) Bryant, A.L., Coffman, E., Phillips, B., Tan, X., Bullard, E., Hirschey, R., Bradley, J., Bennett, A., Stover, A., Song, L., Shea, T., & Wood, W. A. (in press). Pilot Randomized Trial of an Electronic Symptom Monitoring and Reporting Intervention for Hospitalized Adults Undergoing Hematopoietic Stem Cell Transplantation. *Supportive Care in Cancer*
 - 18) Walburn, T., Wang, K., Sud, S., Zakrzewski, A., Roehm, R., Sutton, S., **Tan, X.**, . . . Chera, B. S. (2019). A Prospective Analysis of Radiation Oncologist Compliance With Early Peer Review Recommendations. *Int J Radiat Oncol Biol Phys*. doi:10.1016/j.ijrobp.2019.02.036
 - 19) Dittus, C., Grover, N., Ellsworth, S., **Tan, X.**, & Park, S. I. (2018). Bortezomib in combination with dose-adjusted EPOCH (etoposide, prednisone, vincristine, cyclophosphamide, and doxorubicin) induces

- long-term survival in patients with plasmablastic lymphoma: a retrospective analysis. *Leuk Lymphoma*, 59(9), 2121-2127. doi:10.1080/10428194.2017.1416365
- 20) Uchimura, T., Oyama, Y., Deng, M., Guo, H., Wilson, J. E., Rampanelli, E., ... , **Tan, X.**, ..., Ting, J. P. Y. (2018). The Innate Immune Sensor NLRC3 Acts as a Rheostat that Fine-Tunes T Cell Responses in Infection and Autoimmunity. *Immunity*, 49(6), 1049-1061.e1046. doi:10.1016/j.immuni.2018.10.008
- 21) Kumar, S., Lindsay, D., Chen, Q. B., Garrett, A. L., **Tan, X. M.**, Anders, C. K., . . . Gupta, G. P. (2018). Tracking plasma DNA mutation dynamics in estrogen receptor positive metastatic breast cancer with dPCR-SEQ. *NPJ Breast Cancer*, 4, 39. doi:10.1038/s41523-018-0093-3
- 22) Mavroidis, P., Grimm, J., Cengiz, M., Das, S., **Tan, X.**, Yazici, G., & Ozyigit, G. (2018). Fitting NTCP models to SBRT dose and carotid blowout syndrome data. *Med Phys*, 45(10), 4754-4762. doi:10.1002/mp.13121
- 23) Coombs, C. C., Gillis, N. K., **Tan, X.**, Berg, J. S., Ball, M. C., Balasis, M. E., Montgomery, N. D., Bolton, K., Parker, J. S., Mesa, T. E., Yoder, S. J., Hayward, M. C., Patel, N. M., Richards, K. L., Walko, C. M., Knepper, T. C., Soper, J. T., Weiss, J., Grilley-Olson, J. E., Kim, W. Y., Earp, S., Levine, R., Papaemmanuil, E., Zehir, A., Hayes, D. N. and Padron, E. (2018). Identification of clonal hematopoiesis mutations in solid tumor patients undergoing unpaired next-generation sequencing assays. *Clinical cancer research: an official journal of the American Association for Cancer Research*.
- 24) Santos, H. P., Jr., Nephew, B. C., Bhattacharya, A., **Tan, X.**, Smith, L., Alyamani, R. A. S., . . . Murgatroyd, C. (2018). Discrimination exposure and DNA methylation of stress-related genes in Latina mothers. *Psychoneuroendocrinology*, 98, 131-138. doi:10.1016/j.psyneuen.2018.08.014
- 25) Reeve BB, **Tan X**, Chen RC, Usinger DS, Pinheiro LC. Symptom and function profiles of men with localized prostate cancer. *Cancer*. 2018. 124(13), 2832-2840.
- 26) Judy, G. D., Green, R., Aumer, S. L., Amdur, R. J., **Tan, X.**, Sheets, N., . . . Chera, B. S. (2018). Preservation of swallowing function with de-intensified chemoradiation therapy for HPV-associated oropharyngeal squamous cell carcinoma. *Adv Radiat Oncol*, 3(3), 356-365. doi:10.1016/j.adro.2018.03.002
- 27) Chera BS, Amdur RJ, Tepper JE, **Tan X**, Weiss J, Grilley-Olson JE, Hayes DN, Zanation A, Hackman TG, Patel S, Sheets N, Weissler MC, Mendenhall WM. Mature Results of a Prospective Study of e De-intensified Chemoradiotherapy for Low-Risk HPV-associated Oropharyngeal Squamous Cell Carcinoma. *Cancer*. 2018, 124(11): 2347-2354.
- 28) Coles T, Bennett AV, **Tan X**, Battaglini C, Sanoff HK, Basch E, Jensen RE, Reeve BB. (2018). Relationship Between Sleep and Exercise as Colorectal Cancer Survivors Transition Off Treatment. *Supportive Care Cancer*. 26(8):2663-2673.
- 29) Song, L., Dunlap, K. L., **Tan, X.**, Chen, R. C., Nielsen, M. E., Rabenberg, R. L., ... & Mayer, D. K. (2018). Enhancing Survivorship Care Planning for Patients With Localized Prostate Cancer Using a Couple-Focused mHealth Symptom Self-Management Program: Protocol for a Feasibility Study. *JMIR research protocols*, 7(2), e51.
- 30) Park EM, **Tan X**, Stephenson EM, Deal AM, Yopp JM, Rosenstein DL, Edwards T, Song MK. (2018). Psychometric Analysis of the Parenting Concerns Questionnaire in Women with Metastatic Cancer. *Journal of Pain and Symptom Management*. 55(2): 451-457.
- 31) Terzo, L., Fleming, M., Yechoor, A., Camporeale, J., Troxler, M., Roth, E., ... , **Tan, X.**, ..., Chera, B. S. (2017). Reducing Unplanned Admissions: Focusing on Hospital Admissions and Emergency Department Visits for Patients With Head and Neck Cancer During Radiation Therapy. *Clin J Oncol Nurs*, 21(3),

363-369. doi:10.1188/17.Cjon.363-369

- 32) Coles T, **Tan X**, Bennett AV, Sanoff HK, Basch E, Jensen RE, Reeve BB. Sleep Quality in Individuals Diagnosed with Colorectal Cancer: Factors Associated with Sleep Disturbance as Patients Transition off Treatment. *Psycho-Oncology*. 2017;1-7. <https://doi.org/10.1002/pon.4595>.
- 33) Pinheiro, L. C., **Tan, X.**, Olshan, A. F., Wheeler, S. B., Reeder-Hayes, K. E., Samuel, C. A., & Reeve, B. B. (2017). Examining health-related quality of life patterns in women with breast cancer. *Quality of Life Research*, 26(7), 1733-1743.
- 34) Forghani, R., Kelly, H., Yu, E., Belair, M., Letourneau-Guillon, L., Le, H., ... , **Tan, X.**, ..., Levental, M. (2017). Low-Energy Virtual Monochromatic Dual-Energy Computed Tomography Images for the Evaluation of Head and Neck Squamous Cell Carcinoma: A Study of Tumor Visibility Compared With Single-Energy Computed Tomography and User Acceptance. *J Comput Assist Tomogr*, 41(4), 565-571. doi:10.1097/rct.0000000000000571
- 35) Santos, H., **Tan, X.**, & Salomon, R. (2016). Heterogeneity in perinatal depression: how far have we come? A systematic review. *Archives of Women's Mental Health*, 1-13.
- 36) B.S. Chera, A. Yechoor, L. Stravers, J. Camporeale, M.E. Fleming, L. Terzo, M. Troxler, E. Roth, **X. Tan**, L. Mazur, L. Brown, M. Pignone, L.B. Marks (2016). Reducing Emergency Room Visits and Unplanned Hospital Admissions During Radiation Therapy in Patients With Head and Neck Cancer. *International Journal of Radiation Oncology, Biology, physics*. 96 (2), E334–E335.
- 37) Cohen, S. L., Rosen, A. I., **Tan, X.**, & Kingdom, F. A. (2016). Improvement of the visual field index in clinical glaucoma care. *Canadian Journal of Ophthalmology/Journal Canadien d'Ophthalmologie*, 51(6), 445-451.
- 38) Frentzas, S., Simoneau, E., Bridgeman, V., Vermeulen, P., ... , **Tan, X.**, ..., Cunningham, D., Metrakos, P., Reynolds, A. (2016). Vessel co-option mediates resistance to anti-angiogenic therapy in liver metastases. *Nature Medicine*. 22(11): 1294-1302
- 39) Forghani, R., Roskies, M., Liu, X., **Tan, X.**, Mlynarek, A., Payne, R., Nair, J., Hier, M., Levental, M.. (2016) Dual-Energy CT Characteristics of Parathyroid Adenomas on 25- and 55-Second 4D-CT Acquisitions. *Journal of Computer Assisted Tomography*. 40(5): 806-814.
- 40) Al Yazidi G, Boudes E, **Tan X**, Saint-Martin C, Shevell M, Wintermark P. (2015) Intraventricular hemorrhage in asphyxiated newborns treated with hypothermia: a look into incidence, timing and risk factors. *BMC Pediatr*. 15(1):106
- 41) Mark, J. P., **Tan, X.**, Vinh, D.C., Popradi, G. (2015). Risk Factors for Progression of CMV Viremia to CMV Disease after Allogeneic Hematopoietic Stem Cell Transplantation. *Journal of Biology of Blood and Marrow Transplantation*. 21(2), S296–S297.
- 42) Giladi, H., Choiniere, M., Fitzcharles, M., Ware, M., **Tan, X.**, Shir, Y. (2015) Pregabalin for chronic pain: does one medication fit all? *Current Medical Research & Opinion*. 31(7):1403-11.
- 43) Boudes, E., **Tan, X.**, Saint-Martin, C., Shevell, M., Wintermark, P. (2015). Magnetic Resonance Imaging Obtained During Versus After Hypothermia in Asphyxiated Newborns. *Archives of Disease in Childhood*. 100(3):F238-42
- 44) Peng, S., Boudes, E., **Tan, X.**, Saint-Martin, C., Shevell, M., Wintermark, P. (2015) Does near-Infrared spectroscopy identify asphyxiated newborns at risk of developing brain injury during hypothermia treatment? *American Journal of Perinatology*. 32(6):555-64
- 45) Tallon, B., Julie Bruneau, J., Tsoukas, C.M., Routy, J.P., **Tan, X.**, and Bernard N.F. (2014) KIR3DS1 homozygous HIV-exposed individuals have a longer time to HIV seroconversion than those with other generic KIR3DL1/S1 genotypes. *PLoS ONE*. 9(10):e110480
- 46) Tulandi, T., Alghanaim, N., Hakeem, G., **Tan, X.** (2014) Pre and post-conceptual abdominal cerclage

- by laparoscopy or laparotomy. *Journal of Minimally Invasive Gynecology*. 21:987-993.
- 47) Wintermark, P., Boudes, E., Gilbert, G., Leppert, I., **Tan, X.**, Pike, G., Saint-Martin, C.. (2014). Measurement of Brain Perfusion in Newborns: Pulsed Arterial Spin Labeling (PASL) versus Pseudo-Continuous Arterial Spin Labeling (pCASL). *NeuroImage: Clinical*. 6:126-133.
 - 48) Hopfer, S., **Tan, X.**, and Wylie, J. (2014). A social network informed latent class analysis of patterns of substance use, sexual behavior, and mental health, Winnipeg, Canada. *American Journal of Public Health*. 104:834-839.
 - 49) Valentino, S.W., Moore, J.E., Cleveland, M. J., Greenberg, M.T., **Tan, X.** (2014). Profiles of Financial Stress over Time Using Subgroup Analysis. *Journal of Family and Economic Issues*. 35:51-64.
 - 50) Alayed, N., Alghanaim, N., **Tan, X.**, Tulandi, T.(2014). Preemptive use of gabapentin in abdominal hysterectomy: An underutilized treatment? *The American College of Obstetricians and Gynecologists*. 123:1221-1229.
 - 51) Hopfer, S., Hecht, M.L., Lanza, S.L., **Tan, X.**, Xu, S. (2013). Preadolescent Drug Use Resistance Skill Profiles, Substance Use, and Substance Use Prevention. *The Journal of Primary Prevention*. 34:395-404.
 - 52) Selya, A. S., Dierker, L. C., Rose, J. S., Hedeker, D., **Tan, X.**, Li, R., Mermelstein, R. J. (2013). Time-varying effects of smoking quantity and nicotine dependence on adolescent smoking regularity. *Drug and Alcohol Dependence*. 128(3):230-237.
 - 53) Bhat, M., Deschenes, M., **Tan, X.**, Martel, M., Bhat, V., Wong, P., Metrakos, P., and Ghali, P. (2012). Smoking Increases Recurrent Viral Hepatitis After Liver Transplantation. *Liver Transplantation*. 18:828-833
 - 54) Smail, N., Paraskevas, S., **Tan, X.**, Metrakos, P., and Cantarovich, M.. (2012) Renal function in recipients of pancreas transplant alone. *Current Opinion Organ Transplant*. 17:73-79.
 - 55) Shiyko, M. P., Lanza, S. T., **Tan, X.**, Li, R., and Shiffman, S. (2012). Using the time-varying effect model (TVEM) to examine dynamic associations between negative affect and self-confidence on smoking urges: Differences between successful quitters and relapsers. *Prevention Science*. 13(3):288-299.

Non-refereed Papers

- 1) **Tan, X.**, Chen, J., and Zhang, R. (2007). Consistency of the Constrained Maximum Likelihood Estimator in Finite Normal Mixture Models. *2007 Proceedings of the American Statistical Association, Section on Statistical Education [CD-ROM], Alexandria, VA: American Statistical Association, 2113-2119.*

CONTRACTS & GRANTS

Tan, X.M. (PI) (2006-2009). Chinese NSF 10601026. "Inference and application of mixture models."
Amount \$30,000 (170,000 Yuan).

Tan X.M. (PI) (2/01/2017-1/30/2018) UNC Executive Vice Chancellor & Provost.
Optimal design of ecological momentary assessment studies: a pilot study on sampling frequency.

Tan X.M. (PI) (08/01/2020-07/31/2021) UNC TraCS \$5-\$50K grant.
Building an intelligent EMA system to study the feasibility of conducting EMA studies on at risk children and adolescents

Cancer Center Core Support Grant: - Bioinformatics

5-P30-CA016086-45	Earp (PI)	12/1/20	11/30/25	2.49 Calendar (21.00%)
National Cancer Institute				Role: Co-Investigator (Biostatistician).
NIH (NCI)		\$7,827,615		

Cancer Center Core Support Grant: - Biostatistics and Data Management Core

This is a competing renewal for the Lineberger Comprehensive Cancer Center's Center Core Support Grant from NCI. This proposal includes support for nine scientific programs, 22 shared resources, three staff investigators and budgets for leadership, planning and evaluation, administration and developmental research.

Role: Biostatistician

1-R01-CA237129-02 (Nyante) 09/01/2019 – 08/31/2024 1.20 Calendar
NCI \$585,676

Understanding the Biological Basis for the Association Between Parenchymal Texture Features and Breast Cancer Risk

The objective of this study is to identify the biological processes associated with parenchymal texture features.

1-R01-CA244825-01A1 (Liu) 07/07/2020 – 06/30/2025 0.64 Calendar
NIH \$388,750

Elucidating novel functions of cGAS in breast cancer

We are hopeful that our studies will facilitate the development of new therapeutic options for breast cancer patients, with potential relevance to a subset of lung cancer as well.

5-R01-LM013329-02 (Nirjon) 09/10/2019 – 07/31/2023 0.12 Calendar
National Library of Medicine \$197,204

SCH: INT: AURA - Connecting Audio and Radio Sensing Systems to Improve Care at Home

The proposed system can potentially ease the unbalanced demands between the workforce shortage of oncology professionals and the growing patient population.

1-R01-NR019245-01 (Santos) 09/10/2020 – 07/31/2025 0.60 Calendar
NIH \$385,667

Genetic and Epigenetic Effects on Childhood Cognitive Trajectories

Our central hypothesis is that genetic variants of immune-related genes interact with neonatal immune factors to increase risk for a low-stable trajectory of cognitive function during childhood and adolescence.

5-R21-CA231847-02 (Bower) 09/13/2019 – 08/31/2021 0.37 Calendar
NCI \$169,106

DHFRP1 pseudogene status as a biomarker of chemotherapy response and outcomes in African-American breast cancer patients

The ultimate goal of this work is to develop alternative strategies for the personalized treatment of high-risk AA breast cancer patients.

1-U01-DE029754-01 (Yarbrough) 07/01/2020 – 04/30/2025 0.60 Calendar
NIDCR \$809,450

Observational study to validate HPV DNA genotyping and prognostic genomic biomarkers for diagnosis and treatment of HPV-associated HNSCC

We propose to partner with MD Anderson Cancer Center to leverage an ongoing trial and use detection of circulating HPV DNA to distinguish patients with oral HPV infection from those with early HPV+ OPSCC.

W81XWH1910813 (Zhang) 09/30/2019 – 09/29/2021 0.60 Calendar

DOD/University of Texas Southwestern Med. Ctr. \$71,620

TBK1 serves as a novel therapeutic target in kidney cancers with VHL loss

We propose a novel mechanism by which VHL loss may regulate TBK1 phosphorylation/activation in cancer.

1-R21-CA235029-01 (Ryan) 01/01/2019 - 12/31/2020

0.36 Calendar

NIH (NCI) \$130,449

Interval Exercise Training as a Therapy for Endometrial Cancer

The goal of this trial is to assess the impact of High-intensity interval training (HIIT) on endometrial cancer (EC) proliferation and related metabolic pathways by comparing pre-intervention endometrial biopsies to post-intervention hysterectomy specimens. In parallel, we will delineate the interplay of HIIT on the cardiometabolic health of the EC patients via a comprehensive assessment of cardiovascular and metabolic biomarkers of HIIT response that includes traditional (VO₂peak, BMI, HgBA1C, fasting insulin/glucose, lipids) and novel (metabolomic profiling) biomarkers. This innovative approach will lead to a greater understanding of the feasibility and initial effects of HIIT in EC treatment. This will be the first trial of HIIT in EC and will provide the underlying biological framework for future clinical trials of HIIT as a metabolic targeted strategy in obesity-driven EC.

Role: Biostatistician

1-UG3-CA233251-01 (Reuland) 09/30/2018 - 08/31/2019

0.6 Calendar

NIH (NCI) \$519,841

Scaling Colorectal Cancer Screening Through Outreach, Referral, and Engagement (SCORE): A State-Level Program to Reduce Colorectal Cancer Burden in Vulnerable Populations

Our objective here is to leverage our expertise in colorectal cancer (CRC) screening intervention research, implementation science, stakeholder engagement, and modeling to achieve this goal for our state. Our central hypothesis is that a pragmatic trial assessing impacts and costs for combinations of these evidence-based interventions (EBIs) will yield one or more strategies that stakeholders find to be cost-effective and sustainable.

Role: Biostatistician

1-R01-GM130866-01 (Giudice) 03/01/2019 - 02/29/2024 0.36

Calendar

NIH \$210,000

Alternative Splicing Regulation and Membrane Trafficking

The overall goal is to identify the molecular mechanisms of trafficking-splicing interplay, and their physiological significance.

Role: Biostatistician

1-K23-NR017898-01 (Santos) 09/26/2018 - 08/31/2021

0.24 Calendar

NIH (NINR) \$122,415

Placental DNA Methylation, Maternal Hardship and Child Neurodevelopmental Outcomes

The overall goal of this project is to establish relationships among DNA methylation, maternal hardship and neurodevelopmental impairment in extremely preterm children. This study will provide the groundwork to inform interventions to reduce mothers' stress responses and children's neurodevelopmental impairment, thereby improving quality of life for the 16,500 families with a child surviving extremely premature birth annually in the US.

Role: Biostatistician

5-R01-NR016990-01-02 (Song) 09/25/2017 – 06/30/2022
0.6 Calendar
NIH (NINR) \$347,057

Efficacy of a Couple-focused, Tailored, Symptom Self-Management mHealth Intervention for Prostate Cancer Patients and Partners

The overall goal of this project is to test the efficacy of the couple-focused, web-based tailored mHealth symptom management program called Prostate Cancer Education & Resources for Couples (PERC). There are three specific aims: Primary Aim: Assess the efficacy of PERC for improving QOL among patients and their intimate partners. Secondary Aim: Test the effects of PERC on symptom appraisals and coping resources.

Exploratory Aim: Determine if patients' race/ethnicity, [education], type of cancer treatment, or couples' relationship quality at baseline moderate the effects of PERC on patient and partner cancer-related QOL at follow-ups.

Role: Biostatistician

5-R01-GM067113-13-15 (Xiong) 04/01/2016 – 03/31/2020
0.6 Calendar
NIH (NIGMS) \$99,947

Epigenetic Control by Ubiquitylation

A major finding from the comprehensive sequencing efforts of cancer genomes is that nearly half of newly discovered driver genes whose mutations contribute to the tumor's initiation and progression encode proteins that directly regulate chromatin through modification of histones or DNA. This investigation is aimed at determining how TET and PRC1 are regulated by three cullin-based E3 ubiquitin ligases that we recently discovered.

Role: Biostatistician

2-R01-A1029564-26 (Ting) 06/01/2018 – 05/31/2023
0.60 Calendar

Molecular and Functional Analysis of NLR Family Members

Main goals of this project is to propose a new hypothesis that in addition to its known role will explore how NLRP12 found in the nucleus affects gene expression. Aim 1: To test the hypothesis that DNA binding to NLRC3 affects its association with several partner proteins to mediate an array of functions. Aim 2: To test the hypothesis that NLRX1 binding to RNA regulates it function and interaction with other proteins. Aim 3: To test the hypothesis that NLRP12 trans-locates to the nucleus and controls transcription.

Role: Biostatistician

8100058892 (Ibrahim) 07/01/2009 – 03/31/2022
0.60 Calendar
Merck Sharp & Dohme Corp. \$188,881

Methods for Interim Analysis with Incomplete Adjudication of Events

Main goals of this project is to develop a new statistical methodology to address various issues arising from real clinical studies, including but not limited to missing data analysis and drug safety signal detection. Results of the research will be submitted to statistical and biomedical journals for publication.

Role: co-investigator

1 R21 CA212516-02 (Song) 12/1/2016 – 11/30/2018 0.60 Calendar
National Cancer Institute \$239,250 (direct)

Enhancing Survivorship Care Planning for Patients with Localized Prostate Cancer Using A Couple-focused Web-based Tailored Symptom Self-management Program

This project will test the feasibility of adding an evidence-based symptom self-management program, Prostate Cancer Education & Resources for Couples (PERC), to survivorship care plans (SCPs) and test the initial benefits of the enhanced SCPs (ESCPs) (in comparison to the mandated regular SCPs) in men treated for newly diagnosed localized prostate cancer and their partners.

Role: Co-Investigator

R01 CA174453 Bryce (PI) 9/21/12-7/31/17

National Cancer Institute

PROMIS Validation In Prospective Population-Based Prostate Cancer Research Study

Using innovative qualitative and quantitative methodologies, the NIH Patient-Reported Outcomes Measurement Information System® (PROMIS®) initiative has developed high quality and clinically relevant patient-reported measures to be used to evaluate the impact of both disease and interventions on patients' lives. This study will add new knowledge of the reliability, validity, and responsiveness of PROMIS measures through an extensive psychometric evaluation within a population-based cohort of men with prostate cancer participating in a prospective comparative effectiveness research (CER) study. Study results will provide key validation data on the PROMIS measures and will inform the adoption of PROMIS measures in prostate cancer CER and outcomes research.

Role: Co-Investigator (Biostatistician).

R01-CA155342 Louise (PI) 3/1/12-2/28/17

National Cancer Institute

Technologists Effect on the Accuracy of Mammography

The purpose of this study is to better understand the role of mammography technologists on the performance of mammography in community practice. In order to assess the impact of radiologic technologists on mammography accuracy and to describe the population of mammography technologists across North Carolina (in terms of education, training, work experiences and job satisfaction), we will utilize Carolina Mammography Registry data and a statewide survey mailed to all North Carolina mammography technologists.

Role: Biostatistician consultant.

R21-HS024062 Mazur (PI) 8/1/15-7/31/17

Agency for Healthcare Research and Quality

Enhancing Providers' Ability to Follow-up on Abnormal Test Results

The overall goal of this application is to assess levels of mental workload and performance of providers during abnormal test results workflows within the Epic environment. Efforts must be made to enhance providers' ability to acknowledge abnormal result alerts and forcing documentation of follow-up plans before an alert can be closed out while ensuring proper levels of mental (or cognitive) workload.

Role: Co-Investigator (Biostatistician).

Teaching

2017 Spring

BIOS668: Design of Public Health Studies

18 students (14 Undergraduates, 2 Graduates, 2 Auditors)

2018 Spring

BIOS668: Design of Public Health Studies

25 students (17 Undergraduates, 7 Graduates)

2019 Spring

BIOS668: Design of Public Health Studies

23 students (20 Undergraduates, 3 Graduates)

2020 Spring

BIOS668: Design of Public Health Studies

28 students (21 Undergraduates, 7 Graduates)

2021 Spring

BIOS668: Design of Public Health Studies

31 students (29 Undergraduates, 2 Graduates)

AWARD

The year 2015 The Canadian Journal of Statistics Award

The Canadian Journal of Statistics Award is awarded annually by the SSC to the author(s) of an article published in the previous year in the journal, in recognition of the outstanding quality of the paper's methodological innovation and presentation. This year's winners are **Grace Y. Yi** (University of Waterloo), **Xianming Tan** (Pennsylvania State University), and **Runze Li** (Pennsylvania State University) for their paper "*Variable selection and inference procedures for marginal analysis of longitudinal data with missing observations and covariate measurement error*", which appeared in volume 43, number 4, 2015, pages 498-518.

SERVICE

Referee

- 1) Statistica Sinica
- 2) Journal of American Statistics Association
- 3) Journal of Statistical Planning and Inference
- 4) Statistics in Medicine
- 5) Computational Statistics and Data Analysis
- 6) Journal of Probability and Statistics
- 7) Statistical Papers
- 8) Journal of Multivariate Analysis
- 9) Test
- 10) Communications in Statistics: Theory and Methods
- 11) Psychological Methods
- 12) Addictive Behaviors
- 13) Journal of Biopharmaceutical Statistics
- 14) Clinical Trials: Journal of the Society for Clinical Trials
- 15) American Journal of Public Health
- 16) BMC Medical Research Methodology

Committees

1. Biostatistics Seminar Committee, since Spring 2019
Role: Co-chair
2. Web and Communication Committee, Fall 2015 – Spring 2021
Role: member

Invited Presentations

1. A Review of Mixture Varying Coefficient Models for Longitudinal Data. HongKong, ICSA 2013.
2. Mixture of Generalized Varying Effect Models. Miami Beach, JSM 2011.
3. Variable selection for marginal analysis of longitudinal data with missing observations, April 18, 2016, University of California at Riverside http://publichealth.uci.edu/ph/news_events/seminar_event/10759
4. Statistical Methods for Analyzing Safety Data in Clinical Trials. November 16, 2017, the Methodology Center at the Pennsylvania State University

PhD Dissertation Committee

1. Theresa M. Coles (2017)
Department of Health Policy and Management, Gillings School of Global Public Health, University of North Carolina at Chapel Hill
Committee members
Reeve, Bryce (Chair)
Basch, Ethan Martin
Bennett, Antonia V
TAN, Xianming
Sanoff, Hanna
2. Xiaoqiang Xue, (2018)
Department of Biostatistics, Gillings School of Global Public Health, University of North Carolina at Chapel Hill
Committee members
Ivanova, Anastasia (chair)
Fedorov, Valerii
Fine, Jason P
Foster, Matthew C
TAN, Xianming
3. Carmen Cuthbertson, (2019)
Department of Health Policy and Management, Gillings School of Global Public Health, University of North Carolina at Chapel Hill
Committee members
Evenson, Kelly (Chair)
Heiss, Gerardo
Nichols, Hazel
Kucharska-Newton, Anna

TAN, Xianming

4. Marc Aaron Emerson, (2020)
Department of Epidemiology, Gillings School of Global Public Health, University of North Carolina at Chapel Hill
Committee members
Yvonne Golightly, MS, PhD (Chair)
Allison Aiello, MS, PhD
Katie Reeder-Hayes, MBA, MSc, MD
Xianming Tan, MS, PhD
Melissa Troester, MPH, MS, PhD

5. Jacob Elliot Hammers (2020)
Department of Biomedical Engineering, University of North Carolina at Chapel Hill
Committee members
Lalush, David S. PhD (Chair)
Mavroidis, Panayiotis, PhD
Chen, Ronald C, MD
Chang, Sha Xiao, PhD
Xianming Tan, MS, PhD

6. Jitong Lou, (2021)
Department of Biostatistics, Gillings School of Global Public Health, University of North Carolina at Chapel Hill
Committee members
Donglin Zeng (chair)
Ximing An
TAN, Xianming

7. Beilin Jia, (2021)
Department of Biostatistics, Gillings School of Global Public Health, University of North Carolina at Chapel Hill
Committee members
Donglin Zeng (chair)
Jason Liao
Ibrahim Joseph
TAN, Xianming

8. Paloma Hauser, (on going)
Department of Biostatistics, Gillings School of Global Public Health, University of North Carolina at Chapel Hill
Committee members
Ibrahim Joseph (chair)
Fang Chen
TAN, Xianming

9. Alexander Ralph Quinter, (on going)
Department of Biostatistics, Gillings School of Global Public Health, University of North Carolina at Chapel Hill

Committee members

Donglin Zeng (chair)
Ibrahim Joseph
TAN, Xianming

10. Yumeng Ren, (on going)
Department of Epidemiology, Gillings School of Global Public Health, University of North Carolina at Chapel Hill

Committee members

Melissa Troester (chair)
Ugwuji Maduekwe
Joanna Maselkou
Olshan Andrew
TAN, Xianming

Master Students

1. Kyle Mann, (Master Student), 2017
My Role: Thesis Advisor
Department of Biostatistics, Gillings School of Global Public Health, University of North Carolina at Chapel Hill
2. Brandon Gerring, (Master Student), 2019
My Role: Academic Advisor
Department of Biostatistics, Gillings School of Global Public Health, University of North Carolina at Chapel Hill
3. Xiaoyang Chen (Master Student), 2019
My Role: Thesis Advisor
Department of Biostatistics, Gillings School of Global Public Health, University of North Carolina at Chapel Hill
Committee members
TAN, Xianming
4. Peiran Guo (Master Student), 2020
My Role: Thesis Advisor
Department of Biostatistics, Gillings School of Global Public Health, University of North Carolina at Chapel Hill
Committee members
TAN, Xianming
5. Euphy Wu (Master Student. Moved to PhD program),

My Role: Thesis Advisor

Department of Biostatistics, Gillings School of Global Public Health, University of North Carolina at Chapel Hill

Committee members

TAN, Xianming

6. Michelle Gao (Master Student), 2021

My Role: Thesis Advisor

Department of Biostatistics, Gillings School of Global Public Health, University of North Carolina at Chapel Hill

Committee members

TAN, Xianming

7. Coco Chang (Master Student, on going), 2022

My Role: Thesis Advisor

Department of Biostatistics, Gillings School of Global Public Health, University of North Carolina at Chapel Hill

Committee members

TAN, Xianming

Undergraduate Student Honor Thesis

1. Coco Chang (Undergraduate Student), 2021

My Role: Thesis Advisor

Department of Biostatistics, Gillings School of Global Public Health, University of North Carolina at Chapel Hill

Committee members

TAN, Xianming

1. Ishani Kapoor, (Undergraduate Student), 2020

My Role: Thesis Advisor

Department of Biostatistics, Gillings School of Global Public Health, University of North Carolina at Chapel Hill