

Scientific Program (June 14th - June 17th)

June 14 2:00 PM -3:00 PM

Keynote Session I (*Keynote*)

Room: Regency DEF

Organizer: ICSA 2018 organizing committee.

Chair: Aiyi Liu, NIH & President, ICSA.

2:00 PM Keynote lecture I: Reflections on Statistical Practice, Leadership, and Training

Lisa LaVange. University of North Carolina at Chapel Hill

June 14 3:20 PM -5:00 PM

Session 1: Network Data Analysis (*Featured*)

Room: Brunswick A (120)

Organizer: Cheng Yong Tang, Temple University

Chair: Cheng Yong Tang, Temple University.

- Model-assisted design of experiments on social networks
Edoardo Airoldi. Harvard University
- Why Aren't Network Statistics Accompanied By Uncertainty Statements?
Eric Kolaczyk. Boston University
- Empirical risk minimization for relational data
Peter Orbanz. Columbia University
- Floor Discussion.

Session 2: Future of Statisticians in the pharmaceutical world – A panel Discussion with Leaders (*Featured*)

Room: Brunswick B (120)

Organizer:

Jason Liao, Merck & Co., Inc.

Gang Li, Johnson & Johnson

Zhaoling Meng, Sanofi

Hong Tian, Johnson & Johnson .

Facilitator: Surya Mohanty, Johnson & Johnson.

3:20 PM **Panelists:**

Jesse Berlin, Sr. Vice President, Epidemiology, Johnson & Johnson

Bruce Binkowitz, Vice President, Biostatistics & Programming, Shionogi, Inc

Ivan Chan, Vice President, Pipeline Statistics and Programming, Data and Statistical Sciences, Abbvie

Eric Genevois-Marlin, Vice President, Head of Global Biostatistics & Programming, Sanofi

Jose Pinheiro, Head, Statistical Modeling & Methodology, Johnson & Johnson

Bill Wang, Executive Director, BARDS, Merck & Co., Inc.

Session 3: Some recent development in large-scale statistical learning with complex data (*Invited*)

Room: Garden State B (70)

Organizer: Kun Chen, University of Connecticut.

Chair: Kun Chen, University of Connecticut.

3:20 PM Integrative multi-view reduced-rank regression: bridging group-sparse and low-rank models.

♦ *Gen Li*¹ and *Kun Chen*². ¹Columbia University
²University of Connecticut

3:45 PM Sparse Penalized Quantile Regression: Method, Theory, and Algorithm

Yuwen Gu. University of Connecticut

4:10 PM Disease progression modeling with large-scale observational data

Zhaonan Sun. IBM Research

4:35 PM Efficient big data model selection with applications to fraud detection

Gregory Vaughan. Bentley University

5:00 PM Floor Discussion.

Session 4: SIBS Sponsored Session: Methods for Big Data Analysis in Genomics and Biomedicine (*Invited*)

Room: Conference I

Organizer: Hongzhe Li, University of Pennsylvania.

Chair: Yu Zhang, Pennsylvania State University .

3:20 PM Uncovering the hierarchical conformation of topologically associating domains from Hi-C data

♦ *Yu Zhang*¹, *Lin An*, *Tao Yang* and *Qunhua Li*¹.
¹Pennsylvania State University

3:45 PM Estimating the overall contribution of human microbiome to the risk of developing cancers based on prospective studies

Jianxin Shi. National Cancer Institute

4:10 PM A geometric comparison of the rejection regions of association tests

♦ *Ian Barnett*¹, *Zhonghua Liu*² and *Xihong Lin*².
¹University of Pennsylvania ²Harvard University

4:35 PM A semi-supervised approach for predicting cell type/tissue specific functional consequences of non-coding variation using massively parallel reporter assays

Iuliana Ionita-Laza. Columbia University

5:00 PM Floor Discussion.

Session 5: Basket Trials, Umbrella Trials, Platform Trials and Other Master Protocols in the Clinical Development of Cancer Targeted Therapies (*Invited*)

Room: Garden State C (70)

Organizer: Mary Zhao, Boehringer Ingelheim Pharmaceuticals, Inc..

Chair: Mary Zhao, Boehringer Ingelheim Pharmaceuticals, Inc..

3:20 PM Overview of Basket and Umbrella Trials: Features, Challenges, and Examples

Lindsay Renfro. Mayo Clinic

- 3:40 PM Statistical Designs for Histology Agnostic Clinical Trials in Oncology
Richard Simon. R Simon Consulting
- 4:00 PM Use of Historical Control Data in Platform Trial
Satrajit Roychowdhury. Pfizer Inc.
- 4:20 PM Basket Trial Designs Using Hierarchical Modeling and Dirichlet Process Priors
♦ *Mithat Gonen¹, Kristen Cunanan, Ronglai Shen¹ and Alexia Iasonos¹*. ¹Memorial Sloan Kettering Cancer Center
- 4:40 PM Discussant: Cong Chen, Merck & Co., Inc.
- 5:00 PM Floor Discussion.

Session 6: Recent Work on Clinical Trial Design and Analysis (Invited)

- Room: Salon AB
Organizer: Ying Lu, Stanford University.
Chair: Ying Lu, Stanford University.
- 3:20 PM The current status and challenges of clinical efficiency assessment in Traditional Chinese Medicine
Baoyan Liu. Chinese Academy of Traditional Chinese Medicine Sciences
- 3:45 PM A Randomized Controlled Clinical Trial for Traditional Chinese Medicine Treatment of Primary Insomnia
Shiyan Yan. Institute of Clinical Basic Medicine, China Academy of Chinese Medical Science
- 4:10 PM Inferring a null or non-null effect for binary endpoints in randomized blinded clinical trials
♦ *Li-Hsin Chien¹, Hua Jin², Jitendra Ganju³ and Ying Lu¹*. ¹Department of Biomedical Data Science and Center for Innovative Study Design, Stanford University ²South China Normal University and Stanford University ³Consultant, San Francisco, CA, USA
- 4:35 PM Floor Discussion.

Session 7: Statistical inferences in some semi-parametric models (Invited)

- Room: Conference B (65)
Organizer: Yixin Fang, New Jersey Institute of Technology.
Chair: Yixin Fang, New Jersey Institute of Technology.
- 3:20 PM Longitudinal Mixed Effects Model with Fused Lasso Regularization
Judy Zhong. NYU Langone Health
- 3:45 PM Estimating Time-Varying Treatment Effect in Presence of Unmeasured Confounders
♦ *Haiqun Lin¹ and Robert Rosenheck*. ¹Yale University
- 4:10 PM Online clustering using Gaussian mixture models
Lei Yang. New York University
- 4:35 PM Single-index model for inhomogeneous spatial point processes
♦ *Ji Meng Loh¹ and Yixin Fang*. ¹New Jersey Institute of Technology
- 5:00 PM Floor Discussion.

Session 8: Recent Advances in Dose Response Clinical Trials (Invited)

- Room: Conference A (65)
Organizer: Naitee Ting, Boehringer Ingelheim Pharmaceuticals, Inc..
Chair: Naitee Ting, Boehringer Ingelheim Pharmaceuticals, Inc..
- 3:20 PM A Cautionary Note When a Dose Ranging Study is Used for Proving the Concept
♦ *Qiqi Deng¹, Kun Wang², Xiaofei Bai¹ and Naitee Ting¹*. ¹Boehringer Ingelheim Pharmaceuticals, Inc. ²Shenzhen Middle School
- 3:45 PM Dynamic Development Paths for Expanding a Proof-of-Concept (PoC) Study to Explore Dose Range
Qiqi Deng, Xiaofei Bai and Naitee Ting. Boehringer Ingelheim Pharmaceuticals, Inc.
- 4:10 PM Phase II dose spacing based on PK recommendations
♦ *Junxian Geng, Shihai Lu and Naitee Ting*. Boehringer Ingelheim Pharmaceuticals, Inc.
- 4:35 PM Discussant: Weidong Zhang, Pfizer Inc.
- 5:00 PM Floor Discussion.

Session 9: Statistics and machine learning at the frontier of data-driven application and technology (Invited)

- Room: Garden State A (50)
Organizer: Donghui Yan, University of Massachusetts Dartmouth.
Chair: Donghui Yan, University of Massachusetts Dartmouth.
- 3:20 PM Reinforcement learning for taxi driver dispatching
Zhiwei Qin. DiDi Research America
- 3:45 PM Extracting data from tables and charts in natural document formats
David Rosenberg. Bloomberg / New York University
- 4:10 PM Data Science in e-commerce
Donghui Yan. University of Massachusetts Dartmouth
- 4:35 PM Discussant: Yuandong Tian, Facebook AI Research
- 5:00 PM Floor Discussion.

Session 10: Data-Driven Decision Making and Objective Statistical Modeling with Big Data Applications (Invited)

- Room: Salon CD
Organizer: Yuhong Yang, University of Minnesota.
Chair: Wei Qian, University of Delaware.
- 3:20 PM Variable Selection Using Orthogonal Greedy Algorithms in Sparse High-Dimensional Time Series Models
Ching-Kang Ing. National Tsing Hua University
- 3:45 PM A New Information Criterion for Model Selection
♦ *Jie Ding¹, Vahid Tarokh¹ and Yuhong Yang²*. ¹Duke University ²University of Minnesota
- 4:10 PM Estimation and Optimization of Composite Outcomes
♦ *Daniel Lockett¹, Eric Laber² and Michael Kosorok¹*. ¹University of North Carolina at Chapel Hill ²North Carolina State University
- 4:35 PM Efficient Online Bandit Multiclass Learning with sqrt(T) Regret
Chicheng Zhang. Microsoft Research

5:00 PM Floor Discussion.

Session 11: Dynamic Modeling and Machine Learning for Big Data from Large Cohort Studies (*Invited*)

Room: Conference C (65)

Organizer: Colin Wu, National Heart, Lung and Blood Institute.

Chair: Colin Wu, National Heart, Lung and Blood Institute.

3:20 PM Nonparametric Estimation of Risk Tracking Indices for Longitudinal Studies

♦ *Xin Tian and Colin Wu.* National Heart, Lung and Blood Institute

3:45 PM Cardiovascular Health Across the Lifespan

♦ *Colin Wu¹ and Norrina Allen².* ¹National Heart, Lung and Blood Institute ²Northwestern University

4:10 PM Local Box-Cox transformation on time-varying parametric models for smoothing estimation of conditional CDF with longitudinal data

♦ *Mohammed Chowdhury¹, Colin Wu² and Reza Modarres³.* ¹Kennesaw State University ²National Heart, Lung and Blood Institute ³George Washington University

4:35 PM Discussant: Zhaohai Li, George Washington University

5:00 PM Floor Discussion.

June 15 8:30 AM -9:45 AM

Opening Ceremony and Keynote Session II (*Keynote*)

Room: Regency DEF

Organizer: ICSA 2018 organizing committee.

Chair: Gang Li, Executive Director, ICSA.

8:35 AM **Opening addressing**

8:45 AM Keynote lecture II: The Changing Landscape of Drug Development: To Adapt or Not to Adapt

Dionne Price. Office of Biostatistics, Office of Translational Sciences Center for Drug Evaluation and Research (CDER), FDA

June 15 10:00 AM - 11:40 AM

Session 12: Deep learning and its mechanism (*Featured*)

Room: Brunswick A (120)

Organizer:

Donghui Yan, University of Massachusetts Dartmouth

Aiyu Chen, Google, LLC.

Chair:

Donghui Yan, University of Massachusetts Dartmouth

Aiyu Chen, Google, LLC.

- A Unified View of Deep Generative Models
Eric Xing. Carnegie Mellon University
- A Geometric View to Optimal Transportation and Generative Model
Xianfeng Gu. Stony Brook University

- Analysis on gradient descent dynamics in Deep Neural Network

Yuandong Tian. Facebook AI Research

- Floor Discussion.

Session 13: Making sense of data for business: the role of statistics (*Invited*)

Room: Regency C (80)

Organizer: Dungang Liu, Lindner College of Business, University of Cincinnati.

Chair: Yichen Qin, Lindner College of Business, University of Cincinnati.

10:00 AM Multilevel Log-Gaussian Cox Process Modelling for Structured Temporal Point Processes with Applications in Stock Market Trading

Yongtao Guan. University of Miami

10:25 AM Learning heterogeneity in causal inference using sufficient dimension reduction

Wenbo Wu. University of Oregon

10:50 AM Threshold Factor Models for High-Dimensional Time Series

Xialu Liu. San Diego State University

11:15 AM Structural Break Detection in Financial Durations

Yaohua Zhang. Vertex Pharmaceuticals

11:40 AM Floor Discussion.

Session 14: Challenges and Innovations in Modeling Large-Scale Imaging Data (*Invited*)

Room: Garden State B (70)

Organizer: Fengqing (Zoe) Zhang, Drexel University.

Chair: Jiangtao Gou, Fox Chase Cancer Center.

10:00 AM A time-varying AR coefficient model of functional near-infrared spectroscopy data

♦ *Marco Benedetti and Timothy Johnson.* University of Michigan

10:25 AM Can neuroimaging diagnose neurodegenerative diseases?

♦ *Lei Wang¹, Karteek Popuri, Rakesh Balachandar, Kathryn Alpert, Donghuan Lu, Mahadev Bhalla, Ian Mackenzie, Robin Hsiung, Veronika Hanks, Kristen Warren, Konstantinos Arfanakis, Julie Schneider, David Bennett and Mirza Faisal Beg.* ¹ Feinberg School of Medicine, Northwestern University

10:50 AM Challenges in the analysis of MRI and PET data in studies of Alzheimer's disease and Down syndrome

♦ *Dana Tudorascu¹, Davneet Minhas¹, Zheming Yu¹, Ben Handen¹, Bill Klunk¹, Brad Christian² and Ann Cohen¹.* ¹University of Pittsburgh ²University of Wisconsin-Madison

11:15 AM Joint Modeling of Multimodal Neuroimaging Signatures of PTSD

♦ *Fengqing Zhang and Xin Niu.* Drexel University

11:40 AM Floor Discussion.

Session 15: Statistical advance in functional genomics (*Invited*)

Room: Garden State A (50)

Organizer: Qunhua Li, Department of Statistics, Penn State University.

Chair: Audrey Fu, Department of Statistics, University of Idaho.

10:00 AM Annotation Regression for Genome-Wide Association Studies
♦ *Sunyoung Shin*¹ and *Sunduz Keles*². ¹University of Texas at Dallas ²University of Wisconsin-Madison

10:25 AM Learning causal biological networks with the principle of Mendelian randomization
♦ *Audrey Fu and Md. bahadur Badsha*. University of Idaho

10:50 AM Condition-adaptive fused graphical lasso: an adaptive procedure for inferring condition-specific gene co-expression network
♦ *Qunhua Li*¹, *Yafei Lyu*¹, *Lingzhou Xue*¹, *Feipeng Zhang*¹, *Laura Saba* and *Katerina Kechris*. ¹Pennsylvania State University

11:15 AM Novel method for inferring genes that escape X chromosome inactivation from RNA seq data
Dajiang Liu. Pennsylvania State University

11:40 AM Floor Discussion.

Session 16: Innovative Statistical Designs in Early Oncology Drug Development (*Invited*)

Room: Conference A (65)

Organizer: Nicole Li, Merck & Co., Inc..

Chair: Meihua Wang, Merck & Co., Inc..

10:00 AM Early oncology drug development: can we achieve more with less?
Rong Liu. Bayer

10:25 AM Simulation Studies of Two Dose Escalation Methods for Oncology Drug Combination Therapies
♦ *Jing Hu*¹, *Ron Yu*¹ and *Kc Huang*². ¹Gilead Sciences ²Genentech

10:50 AM A time-to-event early oncology dose-finding framework for fast decision-making and incorporation of late-onset toxicity
♦ *Zhen Zeng and Cong Chen*. Merck & Co., Inc.

11:15 AM Benefits of Borrowing Information in Oncology Basket Trial
♦ *Fang Liu and Cong Chen*. Merck & Co., Inc.

11:40 AM Floor Discussion.

Session 17: Recent Advances in Nonparametric Methods (*Invited*)

Room: Regency A (80)

Organizer: Mei-Ling Ting Lee, University of Maryland, College Park.

Chair: Aiyi Liu, National Institutes of Health.

10:00 AM Rank-Based Tests for Clustered Data with R package clus-rank
♦ *Yujing Jiang*¹, *Jun Yan*², *Xin He*³, *Mei-Ling Ting Lee*³ and *Bernard Rosner*⁴. ¹Colorado State University ²University of Connecticut ³University of Maryland, College Park ⁴Harvard University

10:25 AM A log rank test for clustered data with informative within-cluster group size
♦ *Somnath Data*¹, *Mary Gregg*² and *Doug Lorenz*². ¹University of Florida ²University of Louisville

10:50 AM Evaluating accuracy of diagnostic tests without conditional independence assumption
Larry Tang. George Mason University

11:15 AM The noise barrier and the large signal bias of the Lasso and other convex estimators
Pierre Bellec. Rutgers University

11:40 AM Floor Discussion.

Session 18: Advancing Complex Innovative Clinical Trial Design (*Invited Panel*)

Room: Brunswick B (120)

Organizer: Fanni Natanegara, Eli Lilly and Company.

Facilitator: Freda Cooner, Sanofi.

10:00 AM **Panelists:**

Danise Subramaniam, Eli Lilly & Company

Cristiana Mayer, Johnson & Johnson

Dionne Price, FDA

Session 19: Real-World Evidence: Moving from Data to Knowledge and Decision Making (*Invited*)

Room: Conference B (65)

Organizer: Xuanyao He, Eli Lilly and Company.

Chair: Xuanyao He, Eli Lilly and Company.

10:00 AM Transforming Real World Data into Scientific Evidence for the Regulatory Decision-Making
Vandana Mukhi. Center for Devices and Radiological Health, FDA

10:25 AM Treatment decision using causal survival forests
♦ *Yifan Cui*¹, *Michael Kosorok*¹, *Stefan Wager* and *Ruoqing Zhu*. ¹University of North Carolina at Chapel Hill

10:50 AM Diagnosis of diabetic retinopathy using medical images and deep learning methods
♦ *Xuanyao He and Haoda Fu*. Eli Lilly and Company

11:15 AM Floor Discussion.

Session 20: The role of real world evidence in the development of medical treatment (*Invited*)

Room: Conference I (80)

Organizer: Xiwu Lin, Janssen Research and Development, LLC.

Chair: Jiayu Fu, Janssen China Research and Development.

10:00 AM Use of Real World Evidence for premarketing evaluation of medical devices
Nelson T. Lu. FDA

10:25 AM Applying propensity score adjustment in synthesizing real-world data in regulatory decision making
Chenguang Wang. Johns Hopkins University

10:50 AM Weighting Strategies for Comparative Effectiveness Research using Observational Data
♦ *Julia Wang, Xiwu Lin and Kwan Lee*. Janssen PRD

11:15 AM Discussant: Xiwu Lin, Janssen Research and Development, LLC

11:40 AM Floor Discussion.

Session 21: Statistical methods and applications in mobile health (*Invited*)

Room: Regency B (80)

Organizer: Chongzhi Di, Fred Hutchinson Cancer Research Center.

Chair: Sisheng Liu, Fred Hutchinson Cancer Research Center.

10:00 AM Partially Observed Dynamic Models for Tracking Therapeutic and Engagement Outcomes

♦ *Zhenke Wu*¹, *Walter Dempsey*² and *Susan Murphy*³.¹Department of Biostatistics, University of Michigan²Department of Statistics, Harvard University ³Department of Statistics and of Computer Science, Harvard University

10:30 AM Compositional and functional data analysis methods for accelerometer data

♦ *Chongzhi Di and Yifan Zhu*. Fred Hutchinson Cancer Research Center

10:50 AM Clustering functional data with application to electronic medication adherence monitoring in HIV prevention trials

♦ *Yifan Zhu, Chongzhi Di and Ying Qing Chen*. Fred Hutchinson Cancer Research Center

11:15 AM Discussant: Vadim Zipunnikov, Johns Hopkins University

11:40 AM Floor Discussion.

Session 22: Recent Developments in Risk Prediction Models (*Invited*)

Room: Brunswick C (80)

Organizer: Danping Liu, National Cancer Institute.

Chair: Danping Liu, National Cancer Institute.

10:00 AM Dementia risk prediction in preclinical stage

Zheyu Wang. Johns Hopkins University

10:25 AM Risk Prediction for Heterogeneous Populations with Application to Hospital Admission Prediction

♦ *Jared Huling*¹, *Menggang Yu*, *Muxuan Liang* and *Maureen Smith*. ¹Ohio State University

10:50 AM A Joint Model for Partial Peer Network Data with Informative Cluster Size

♦ *Danping Liu*¹, *Patrick Coyle*², *Denise Haynie*³, *Bruce Simons-Morton*³ and *Joe Bible*⁴. ¹National Cancer Institute ²Temple University ³Eunice Kennedy Shriver National Institute of Child Health and Human Development ⁴Clemson University

11:15 AM Floor Discussion.

Session 23: classification for high dimensional complex data (*Invited*)

Room: Garden State C (70)

Organizer: Ning Hao, University of Arizona.

Chair: Han Xiao, Rutgers University.

10:00 AM Sparse quadratic classification rules via linear dimension reduction

♦ *Irina Gaynanova and Tianying Wang*. Texas A & M University

10:25 AM Dynamic linear discriminant analysis in high dimensional space

Binyan Jiang. The Hong Kong Polytechnic University10:50 AM Quadratic discriminant analysis for high-dimensional data
♦ *Yingli Qin*¹, *Yilei Wu* and *Mu Zhu*¹. ¹University of Waterloo

11:15 AM Sparse Tensor Additive Learning for Click-Through-Rate Prediction

Will Wei Sun. University of Miami

11:40 AM Floor Discussion.

Session 24: Individualized Benefit-Risk Assessment: What, Why, and How (*Invited*)

Room: Conference C (65)

Organizer: Sammy Yuan, Merck & Co., Inc..

Chair: Christopher Assaid, Merck & Co., Inc..

10:00 AM Bayesian Approaches for individualized benefit-risk assessment

♦ *Yueqin Zhao*¹, *Ram Tiwari*, *Jyoti Zalkikar* and *Siqi Cui*.¹U.S. Food and Drug Administration

10:25 AM Individual Benefit Risk Assessment: Overview and Proposal

♦ *Sammy Yuan and Shahrul Mt-Isa*. Merck & Co., Inc.

10:50 AM Discussant: Bill Wang, Merck & Co., Inc., U.S.

Discussant: Janet Wittes, Statistics Collaborative, Inc.

11:40 AM Floor Discussion.

June 15 1:00 PM -2:00 PM**Keynote Session III** (*Keynote*)

Room: Regency DEF

Organizer: ICSA 2018 organizing committee.

Chair: Minge Xie, Rutgers University.

1:00 PM Keynote lecture III: How good is your selected subgroup?

Xuming He. University of Michigan**June 15 2:10 PM -3:50 PM****Session 25: New methods and challenges for analyzing of process data** (*Featured*)

Room: Brunswick A (120)

Organizer: Yang Feng, Columbia University.

Chair: Yi-Hsuan Lee, Educational Testing Service.

- New methods and challenges for analyzing process data in educational measurement

Zhiliang Ying. Columbia University

- A joint Modeling Framework using responses and response times to track skill acquisition: Model Estimation and Application

Shiyu Wang. University of Georgia

- Assessing 21st-century skills via human-human interactions: task design and psychometric challenges

Jiangang Hao. Educational Testing Service

- Floor Discussion.

Session 26: Biosimilar and bioequivalence (Invited)

Room: Conference A (65)

Organizer: Yi Tsong, CDER, FDA.

Chair: Shein-Chung Chow, CDER, FDA.

- 2:10 PM New Proposal for Equivalence Criteria in Bioequivalence Study with Binary Clinical Endpoint
♦ *Mengdie Yuan¹, Jingyu Luan¹ and Hui Sun. ¹U.S. Food and Drug Administration*
- 2:35 PM Sample Size Requirement for Analytical Biosimilarity Assessment
Tianhua Wang. U.S. Food and Drug Administration
- 3:00 PM Bioequivalence and Non-Inferiority Testing in The Presence of Subject-By-Treatment Interaction
Elena Rantou. U.S. Food and Drug Administration
- 3:25 PM Modified Wald Test for Reference Scaled Equivalence Assessment of Analytical Biosimilarity
♦ *Yu-Ting Weng¹, Yi Tsong², Meiyu Shen¹ and Chao Wang¹.* ¹U.S. Food and Drug Administration ²CDER, FDA
- 3:50 PM Floor Discussion.

Session 27: Clinical trial design and statistical methods for cancer studies (Invited)

Room: Conference B (65)

Organizer: Jiangtao Gou, Hunter College, The City University of New York.

Chair: Fengqing Zhang, Drexel University.

- 2:10 PM A novel randomized Phase 2 trial design that constrains sample size by requiring a sufficient experimental response rate
♦ *Brian Egleston, Samuel Litwin, Stan Basickes and Eric Ross.* Fox Chase Cancer Center
- 2:35 PM Sparse Minimum Discrepancy Approach to Sufficient Dimension Reduction with Simultaneous Variable Selection in Ultrahigh Dimension
♦ *Wei Qian¹, Shanshan Ding¹ and Dennis Cook².* ¹University of Delaware ²University of Minnesota
- 3:00 PM Optimal timing of futility interim analyses
♦ *Dong Xi, Paul Gallo and David Ohlssen.* Novartis
- 3:25 PM Hierarchical testing in a group sequential trial when the primary endpoint data become available earlier than the secondary endpoint data
Jiangtao Gou. Fox Chase Cancer Center
- 3:50 PM Floor Discussion.

Session 28: Advance in Statistical Methods for Large and Complex Data (Invited)

Room: Regency A (80)

Organizer: Dehan Kong, University of Toronto.

Chair: Dehan Kong, University of Toronto.

- 2:10 PM A Nonconvex approach to Sparse Generalized Eigenvalue Problem with Applications to Multivariate Statistics
♦ *Kean Ming Tan¹, Zhaoran Wang, Han Liu and Tong Zhang.* ¹University of Minnesota

- 2:35 PM Online experimental design for automated high-throughput neural circuit mapping
Shizhe Chen. Columbia University
- 3:00 PM Concentration inequalities for time series
Fang Han. University of Washington
- 3:25 PM Statistical Inference for Online Learning and Stochastic Approximation via Hierarchical Incremental Gradient Descent
♦ *Weijie Su¹ and Yuancheng Zhu.* ¹University of Pennsylvania
- 3:50 PM Floor Discussion.

Session 29: Statistical Issues for Prognostic Biomarker Discovery and Risk Prediction in Cancer Genom (Invited)

Room: Conference C (65)

Organizer: Li-Xuan Qin, Memorial Sloan Kettering Cancer Center.

Chair: Li-Xuan Qin, Memorial Sloan Kettering Cancer Center.

- 2:10 PM Measuring differential treatment benefit to evaluate predictive cancer biomarkers
♦ *Jaya Satagopan and Alexia Iasonos.* Memorial Sloan Kettering Cancer Center
- 2:35 PM Gaussian process regression for survival time prediction with genome-wide gene expression
♦ *Aaron Molstad, Li Hsu and Wei Sun.* Fred Hutchinson Cancer Research Center
- 3:00 PM Extreme Gradient Boosting for survival data
♦ *Xuefeng Wang¹ and Zhenyu Zhang².* ¹Moffitt Cancer Center ²Stony Brook University
- 3:25 PM Adjusting for Handling Effects in Microarray Data for Prognostic Biomarker Discovery and Survival Risk Prediction
♦ *Ai Ni¹, Mengling Liu² and Li-Xuan Qin¹.* ¹Memorial Sloan Kettering Cancer Center ²New York University
- 3:50 PM Floor Discussion.

Session 30: Revisiting challenges in time-to-event type of analysis in oncology trials (Invited)

Room: Conference I (80)

Organizer: Li Li, Eli Lilly and Company.

Chair: Hong Wang, Eli Lilly and Company.

- 2:10 PM A Bayesian Joint Model of Recurrent Events and a Terminal Event
♦ *Ming Wang¹, Zheng Li² and Vern M. Chinchilli².* ¹Pennsylvania State University College of Medicine ²Pennsylvania State University
- 2:35 PM Cure Model in Cancer Immunotherapy
♦ *Shu Wang¹, Chengxing (Cindy) Lu² and Rong Liu².* ¹University of Pittsburgh ²Bayer
- 3:00 PM Missing data sensitivity analysis for time-to-event data in clinical trials
♦ *Xuezhou Mao, Chuanping Yu, Li Qi and Lan Yu.* Sanofi
- 3:25 PM Validity of Real-World Control Arms for Single-Arm Clinical Trials: An Oncology Case Study
♦ *Zhanglin Cui, Yanping Wang and Douglas Faries.* Eli Lilly and Company
- 3:50 PM Floor Discussion.

Session 31: Effective Communication (*Invited Panel*)

Room: Brunswick B (120)

Organizer: Lei Wang, The Lotus Group, LLC.

Facilitator: Helena Fan, The Lotus Group, LLC.

2:10 PM **Panelists:**

Lei Wang, The Lotus Group, LLC

Joshua Chen, Sanofi Pasteur

Laura Meyerson, Merck & Co., Inc

Ouhong Wang, Vertex Pharmaceuticals

Session 32: Statistical Process Control (*Invited*)

Room: Brunswick C (80)

Organizer: Dong Han, Shanghai Jiao Tong University.

Chair: Yanhong Wu, California State University Stanislaus.

2:10 PM On optimal control chart of change-point detection for dependent observation sequence

Dong Han. Shanghai Jiao Tong University

2:35 PM Run Length Properties of The EWMA Control Chart With Changing Limits

Gaofeng Lv. Shanghai Jiao Tong University

3:00 PM A Distribution-Free Control Chart for Monitoring High-Dimensional Processes with Individual Observation

♦ *Jinyu Fan and Lianjie Shu.* University of Macau

3:20 PM A Hybrid Hierarchical Bayesian Model for Spatio-Temporal Surveillance Data

Jian Zou. Worcester Polytechnic Institute

3:50 PM Floor Discussion.

Session 33: Decision making in early clinical development of new drugs (*Invited*)

Room: Regency B (80)

Organizer: Wenqiong Xue, Boehringer Ingelheim Pharmaceuticals, Inc..

Chair: Rui Wu, Boehringer Ingelheim Pharmaceuticals, Inc..

2:10 PM PKQT Model Selection, Diagnostics and Prediction for One Oncology Drug

Shu Yang. Novartis

2:35 PM Dose-finding designs in the presence of disease progression

♦ *Bin Cheng¹, Lucie Biard and Shing Lee.* ¹Columbia University

3:00 PM An ROC based approach to interim Go/No-Go decision-making in clinical development

Lanju Zhang. Abbvie, Inc.

3:25 PM Using Bayesian proof-of-concept (PoC) criteria to design randomized Phase II oncology trials stratified by biomarker status

Yong Zhang. Eisai

3:50 PM Floor Discussion.

Session 34: Statistical inference in data science (*Invited*)

Room: Garden State A (50)

Organizer: Yichuan Zhao, Georgia State University.

Chair: Jason Liao, Merck & Co., Inc..

2:10 PM Robust Jackknife Empirical Likelihood for Non-smooth U-structure Equations

Yongli Sang. University of Louisiana at Lafayette

2:35 PM Empirical likelihood for the bivariate survival function under univariate censoring

♦ *Yichuan Zhao and Haitao Huang.* Georgia State University

3:00 PM Smooth and non-smooth functionals of the NPMLE under interval censoring

Zhigang Zhang. Memorial Sloan Kettering Cancer Center

3:25 PM Autoregressive Model for matrix valued time series

Han Xiao. Rutgers University

3:50 PM Floor Discussion.

Session 35: Advances in the pediatric drug development with extrapolation (*Invited*)

Room: Regency C (80)

Organizer: Zhaoling Meng, Sanofi.

Chair: Zhaoling Meng, Sanofi.

2:10 PM Utilization of Adult Data in Designing Pediatric Pharmacokinetic Studies: How Much is Historical Adult Data Worth?

♦ *Chyi-Hung Hsu and Steven Xu.* Janssen Research and Development, LLC

2:35 PM Modeling and simulation for planning and assessing the PK/PD consistency and comparison between pediatric and adult data

♦ *Mei Zhang and Zhaoling Meng.* Sanofi

3:00 PM Borrowing information from adult studies into pediatrics trials: Bayesian approach and a case study

Jingjing Ye. FDA

3:25 PM Discussant: Zhaoling Meng, Sanofi

3:50 PM Floor Discussion.

Session 36: Model Informed Clinical Drug Development (*Invited*)

Room: Garden State B (70)

Organizer: Susan Wang, Boehringer Ingelheim Pharmaceuticals, Inc..

Chair: QiQi Deng, Boehringer Ingelheim Pharmaceuticals, Inc..

2:10 PM Model Informed regulatory decisions

Jingyu Yu. U.S. Food and Drug Administration

2:35 PM Connecting the Dots to Inform Clinical Decision Making: PKPD Modeling, Meta-analysis, and Clinical Trial Design Optimization

♦ *Qi Tang, Zhaoling Meng, Lei Ma, Dimple Patel and Christine Veyrat-Follet.* Sanofi

3:00 PM Method on the determination of the threshold value for a continuous biomarker

♦ *Jianan Hui and Bushi Wang.* Boehringer Ingelheim Pharmaceuticals, Inc.

3:25 PM Discussant: Ying Lu, Stanford University

3:50 PM Floor Discussion.

Session 37: Novel Applications of Statistical Learning Methods in Complex Biomedical Data (*Invited*)

Room: Garden State C (70)

Organizer: Jiwei Zhao, State University of New York at Buffalo.

Chair: Jiwei Zhao, State University of New York at Buffalo.

- 2:10 PM Clustering Data on the Sphere: State of the Art and a Poisson Kernel-Based Algorithm
Marianthi Markatou. University at Buffalo
- 2:35 PM Identification of Optimal Biomarker Combination for Treatment-Selection in the Presence of Missing Data
♦ *Ying Huang¹ and Xiao-Hua Zhou²*. ¹Fred Hutchinson Cancer Research Center ²University of Washington
- 3:00 PM Risk screening for Alzheimer's Disease progression with Volume under the ROC Surface
Yu Cheng. University of Pittsburgh
- 3:25 PM Point and Interval Estimations for Individualized MCID
Jiwei Zhao. State University of New York at Buffalo
- 3:50 PM Floor Discussion.

June 15 4:10 PM - 5:50 PM**Session 38: Statistical Models for Understanding HIV/AIDS Epidemics** (*Invited*)

Room: Garden State B (70)

Organizer: Le Bao, Pennsylvania State University.

Chair: Le Bao, Pennsylvania State University.

- 4:10 PM Trial Designs for Evaluating Combination HIV Prevention Approaches.
♦ *Sayan Dasgupta¹, Ying Qing Chen¹, Lili Peng¹, Yixin Wang¹ and Thomas Fleming²*. ¹Fred Hutchinson Cancer Research Center ²University of Washington
- 4:35 PM Size Estimation of People At High Risk for HIV Infections
Le Bao. Pennsylvania State University
- 5:00 PM Comparison between HIV routine testing data and sentinel surveillance data
♦ *Ben Sheng¹, Jeffrey Eaton², Kimberly Marsh³, Mary Mahy³ and Le Bao¹*. ¹Pennsylvania State University ²Imperial College London ³UNAIDS
- 5:25 PM Spatial-temporal distribution of newly detected HIV/AIDS cases among women aged ≥ 15 years old in China, 2010-2016
Fangfang Chen. National Center for AIDS/STD Control and Prevention, China CDC
- 5:50 PM Floor Discussion.

Session 39: Logical Inference on Efficacy in Subgroups and Their Mixtures: Targeted Therapies (*Invited*)

Room: Regency A (80)

Organizer: Hong Tian, Johnson & Johnson.

Chair: Ying Wan, Johnson & Johnson.

- 4:10 PM Logic-respecting Efficacy Measures
Jason Hsu. Ohio State University

- 4:35 PM The Subgroup Mixable Estimation Principle
♦ *Haiyan Xu¹ and Jason Hsu²*. ¹Johnson & Johnson ²Ohio State University
- 5:00 PM Logical Inference on Efficacy in Subgroups and Their Mixtures:
♦ *Hong Tian¹ and Jason Hsu²*. ¹Janssen Research and Development, LLC ²Ohio State University
- 5:25 PM Discussant: Yi Liu, Takeda
- 5:50 PM Floor Discussion.

Session 40: The Jiann-Ping Hsu Invited Session on Biostatistical and Regulatory Sciences (*Invited*)

Room: Brunswick A (120)

Organizer: Lili Yu, Georgia Southern University.

Chair: Jingxian Cai, PPD.

- 4:10 PM Applications of Mediation analysis to Estimands in Clinical Trials
♦ *Jingxian Cai and Andrew Hartley*. PPD
- 4:35 PM K-subtree Pseudo-likelihood method in Phylogenetic tree model
Weifeng Wang. University of Georgia
- 5:00 PM Inference on the phylogenetic tree sets
Yan Du. University of Georgia
- 5:25 PM Floor Discussion.

Session 41: Statistical Inference for Distributed Data and Online Streaming Data (*Invited*)

Room: Regency B (80)

Organizer: Xi Chen, New York University.

Chair: Xi Chen, New York University.

- 4:10 PM Quantile Regression for big data with small memory
♦ *Xi Chen¹, Weidong Liu and Yichen Zhang*. ¹New York University
- 4:35 PM Communication-Efficient Distributed Statistical Inference
♦ *Yun Yang¹, Jason Lee² and Michael Jordan³*. ¹Florida State University ²University of Southern California ³University of California, Berkeley
- 5:00 PM Distributed estimation of principal eigenspaces
♦ *Ziwei Zhu¹, Jianqing Fan¹, Kaizheng Wang¹ and Dong Wang*. ¹Princeton University
- 5:25 PM Statistical Inference for Model Parameters in Stochastic Gradient Descent
♦ *Yichen Zhang¹, Xi Chen¹, Jason Lee² and Xin T. Tong³*. ¹New York University ²University of Southern California ³National University of Singapore
- 5:50 PM Floor Discussion.

Session 42: New developments in microbiome sequencing data modeling and analysis (*Invited*)

Room: Garden State C (70)

Organizer: Zhigang Li, Geisel School of Medicine at Dartmouth College.

Chair: Zhiguang Huo, University of Florida.

- 4:10 PM A two-stage microbial association mapping framework with advanced FDR control
♦ *Jiyuan Hu*¹, *Hyunwook Koh*², *Linchen He*², *Huilin Li*², *Menghan Liu*² and *Martin Blaser*². ¹NYU Langone Medical Center ²NYU School of Medicine
- 4:35 PM Optimal Error-in-Variable Compositional Regression for Next-Generation Sequencing Data
♦ *Pixu Shi*, *Anru Zhang* and *Yuchen Zhou*. University of Wisconsin-Madison
- 5:00 PM A Random Effects Model for Large-Scale Multinomial Data
♦ *Wei Lin* and *Jingru Zhang*. Peking University
- 5:25 PM GLM-based latent variable ordination method
♦ *Michael Sohn* and *Hongzhe Li*. University of Pennsylvania
- 5:50 PM Floor Discussion.

Session 43: Flexible modeling and inference for complex data*(Invited)*

Room: Regency C (80)

Organizer: Yichao Wu, University of Illinois at Chicago.

Chair: Guan Yu, University at Buffalo.

- 4:10 PM Stagewise Co-Sparse Low-Rank Matrix Decomposition
Kun Chen. University of Connecticut
- 4:35 PM On Scalable Inference with Stochastic Gradient Descent
♦ *Yixin Fang*¹, *Jinfeng Xu*² and *Yang Lei*³. ¹New Jersey Institute of Technology ²Hong Kong University ³New York University School of Medicine
- 5:00 PM Conditional regression based on a multivariate zero-inflated logistic model for human microbiome data
♦ *Zhigang Li*¹ and *Hongzhe Li*². ¹Geisel School of Medicine at Dartmouth College ²University of Pennsylvania
- 5:25 PM Spillover effect of information arrivals in security trading
♦ *Haipeng Xing* and *Zhenning Wang*. SUNY, Stony Brook
- 5:50 PM Floor Discussion.

Session 44: Statistical solutions to practical issues in educational testing *(Invited)*

Room: Garden State A (50)

Organizer: Yi-Hsuan Lee Educational Testing Service.

Chair: Yi-Hsuan Lee, Educational Testing Service.

- 4:10 PM Best Linear Prediction of Test True Scores
Lili Yao. Educational Testing Service
- 4:35 PM Modeling Writing Processes Using Keystroke Logs
♦ *Hongwen Guo*, *Mo Zhang*, *Paul Deane* and *Randy Bennett*. Educational Testing Service
- 5:00 PM Latent Regression Model for Group Score Estimation: Model Selection and Model Reduction
Yue Jia. Educational Testing Service
- 5:25 PM Statistical Procedures for Detecting Large-Scale Unusual Similarity in Responses
Yi-Hsuan Lee. Educational Testing Service
- 5:50 PM Floor Discussion.

Session 45: New Topics in Statistical Learning *(Invited)*

Room: Conference A (65)

Organizer: Ganggang Xu, Binghamton University.

Chair: Wei Sun, University of Miami.

- 4:10 PM Individualized Treatment Rules with Reject and Refine Options
♦ *Xingye Qiao*¹ and *Haomiao Meng*. ¹Binghamton University
- 4:35 PM High-dimensional cost-constrained regression via non-convex optimization
♦ *Guan Yu*¹, *Haoda Fu*² and *Yufeng Liu*. ¹State University of New York at Buffalo ²Eli Lilly and Company
- 5:00 PM Likelihood Ratio Test for Stochastic Block Models with Bounded Degrees
Zuofeng Shang. Indiana University-Purdue University Indianapolis
- 5:25 PM A Big Data Linear Regression Via A-optimal Subsampling
♦ *Sean Peng* and *Fei Tan*. Indiana University-Purdue University Indianapolis
- 5:50 PM Floor Discussion.

Session 46: Futility analysis and interim decision making*(Invited)*

Room: Conference B (65)

Organizer: Qiqi Deng, Boehringer Ingelheim Pharmaceuticals, Inc..

Chair: Miguel Garcia Jr, Boehringer Ingelheim Pharmaceuticals, Inc..

- 4:10 PM Extending a futility rationale to multiple endpoint settings
♦ *Paul Gallo* and *Dong Xi*. Novartis
- 4:35 PM Interim Futility Analysis for Longitudinal Data With Adaptive Timing and Error Rate Preservation
G. Cai. GlaxoSmithKline
- 5:00 PM Statistical Consideration when Combining Two Independent Trials in Interim Futility Analysis
♦ *Dooti Roy*¹, *Qiqi Deng*¹, *Ming-Hui Chen*² and *Ying Ying Zhang*. ¹Boehringer Ingelheim Pharmaceuticals, Inc. ²University of Connecticut
- 5:25 PM Futility and the DSMB: An Unholy Alliance?
Janet Wittes. Statistics Collaborative, Inc.
- 5:50 PM Floor Discussion.

Session 47: Recent Biomarker Developments with Applications in Brain Research and Disorders *(Invited)*

Room: Brunswick B (120)

Organizer: Rosanne Lane, Janssen Research and Development, LLC.

Chair: Rosanne Lane, Janssen Research and Development, LLC.

- 4:10 PM Constructing Concurrent Network of Biomarker Processes Using Dynamical Systems
♦ *Ming Sun* and *Yuanjia Wang*. Columbia University
- 4:35 PM Adjusting for Covariate Measurement Error in Failure Time Analysis under Competing Risks
♦ *Carrie Caswell* and *Sharon Xie*. University of Pennsylvania

- 5:00 PM Determine Appropriate Sample Size for a Biomarker Signature Discovery Problem Using Penalized Regression
♦ *Xiang Li, Hong Tian and Liang Xiu.* Janssen Research and Development, LLC
- 5:25 PM Discussant: Yevgen Tymofyeyev, Janssen Research and Development, LLC
- 5:50 PM Floor Discussion.

Session 48: Collaboration Space between Biostatistics and Pharmacometrics (*Invited*)

Room: Conference C (65)

Organizer: Jose Pinheiro, Janssen.

Chair: Jose Pinheiro, Janssen Research and Development, LLC.

- 4:10 PM This isn't peewee soccer - building teamwork between statisticians and pharmacometricians
Bret Musser. Regeneron Pharmaceuticals, Inc.
- 4:35 PM Synergy between Pharmacometrics and Statistics in Drug Development Decision Making
Liping Zhang. Janssen Research and Development, LLC
- 5:00 PM Discussant: David Ohlssen, Novartis.
Discussant: Robert Bies, SUNY Buffalo.
- 5:50 PM Floor Discussion.

Session 49: Study Designs for Phase I Oncology Dose-Finding Trials (*Invited*)

Room: Conference I (80)

Organizer: Mary Zhao, Boehringer Ingelheim Pharmaceuticals, Inc.

Chair: Zhichao Sun, Boehringer Ingelheim Pharmaceuticals, Inc..

- 4:50 PM Embracing model-based designs for dose finding trials
Birgit Gaschler-Markefski. Boehringer Ingelheim Pharmaceuticals, Inc.
- 4:10 PM AAA: Triple-adaptive Bayesian designs for the identification of optimal dose combinations in dual-agent dose-finding trials
♦ *Yuan Ji¹ and Jiaying Lyu².* ¹University of Chicago ²Fudan University
- 4:30 PM Flexible early-phase design for combination therapies
Nolan Wages. University of Virginia
- 5:10 PM Time-to-event Bayesian Optimal Interval Design to Accelerate Phase I Trials
Ruitao Lin. University of Texas M.D. Anderson Cancer Center
- 5:30 PM Accuracy, Safety and Reliability of Novel Phase I Trial Designs
♦ *Ying Yuan¹, Lei Nie² and Heng Zhou¹.* ¹University of Texas MD Anderson Cancer Center ²U.S. Food and Drug Administration
- 5:50 PM Floor Discussion.

Session 50: Design and execution of late stage oncology trials in modern cancer drug development (*Invited*)

Room: Brunswick C (80)

Organizer: Rong Liu, Bayer.

Chair: Rong Liu, Bayer.

- 4:10 PM A pitfall in monitoring survival trials under non-proportional hazards
Xiaodong Luo. Sanofi
- 4:35 PM A Flexible Survival Model for Fitting Time to Event Data in Clinical Trials
♦ *Jason Liao¹ and Frank Liu.* ¹Merck & Co., Inc.
- 5:00 PM Multiple Hypothesis Testing and Timing of Analyses in Immuno-oncology Trials
♦ *Christine Gause and Keaven Anderson.* Merck Research Laboratories
- 5:25 PM Apply Bayesian Response Adaptive Design to Select Winner from Novel Cancer Treatment
Xiaoling Wu. Celgene
- 5:50 PM Floor Discussion.

June 16 8:30 AM - 9:30 AM

Keynote Session IV (*Keynote*)

Room: Regency DEF

Organizer: ICSA 2018 organizing committee.

Chair: Heping Zhang, Yale University & President-elect, ICSA.

- 8:30 AM Keynote lecture IV: Statistical Inference With High-Dimensional Data
Cun-Hui Zhang. Rutgers University

June 16 9:50 AM -11:30 AM

Session 51: Challenges and advances in imaging-genetics (*Featured*)

Room: Brunswick A (120)

Organizer: Cheng Yong Tang, Temple University

Chair: Cheng Yong Tang, Temple University.

- Challenges and Progress in Imaging Genetic - Big Data Squared - Studies
Heping Zhang. Yale University
- Bayesian nonparametric method for genetic dissection of brain activation region
♦ *Jian Kang¹, Zhuxuan Jin² and Tianwei Yu².* ¹University of Michigan ²Emory University
- Relationships Between Brain Structural Connectome and Traits
Zhengwu Zhang. University of Rochester
- Floor Discussion.

Session 52: Integrative analysis of multi-view data with applications to precision medicine (*Invited*)

Room: Garden State B (70)

Organizer: Gen Li, Department of Biostatistics, Columbia University.

Chair: Gen Li, Department of Biostatistics, Columbia University.

- 9:50 AM Joint Modeling of Multi-System Wearable Data
Vadim Zipunnikov. Johns Hopkins Bloomberg School of Public Health

10:15 AM Integrating large-scale sequencing data for cancer classification
Ronglai Shen. Memorial Sloan Kettering Cancer Center

10:40 AM Integrative clustering of multidimensional omics data
♦ *Mengyun Wu*¹, *Sebastian Teran Hidalgo*, *Yang Li*² and *Shuangge Ma*. ¹Yale University ²Renmin University of China

11:05 AM An Integrative Graphical Modeling Approach for Multiple Heterogeneous Omics Data
♦ *Annaliza McGillivray*¹ and *George Michailidis*². ¹University of Florida Informatics Institute ²University of Florida

11:30 AM Floor Discussion.

Session 53: Real world evidence in the US health care system (Invited)

Room: Brunswick B (120)

Organizer: Victoria Gamerman, Boehringer Ingelheim Pharmaceuticals, Inc.

Chair: Nan Shao, Boehringer Ingelheim Pharmaceuticals, Inc.

9:50 AM Successfully Integrate RWE in Clinical Processes in the Era of Big Data
Kelly Zou. Pfizer Inc.

10:15 AM Statistical challenges and method-exploration for intermittent missing data occurring concurrently with right censoring: Quantitative illustration from a real-world study evaluating treatment patterns and unmet needs in adult patients with moderate-to-severe Atopic Dermatitis (AD)
♦ *Zhen Chen*¹, *Toshio Kimura*, *Weiming Du*¹, *Usha Mallya*, *Abhijit Gadkari* and *Raymond Miao*. ¹Regeneron Pharmaceuticals, Inc.

10:40 AM Illuminating variation in implantable cardiac device use and outcomes with billing claims data
♦ *Laura Hatfield*¹, *Sharon-Lise Normand*¹, *Daniel Kramer*² and *Rita Volya*¹. ¹Harvard Medical School ²Beth Israel Deaconess Medical Center

11:05 AM Real world challenges in the design of pragmatic trials
Valentina Zubek. Boehringer Ingelheim Pharmaceuticals, Inc.

11:30 AM Floor Discussion.

Session 54: Statistical Inference for Discrete and Categorical Data (Invited)

Room: Regency B (80)

Organizer: Robin Gong, Harvard University.

Chair: Paul Edlefsen, Fred Hutchinson Cancer Research Center.

9:50 AM Evaluating vaccine efficacy variation by type of infecting pathogen using Dempster-Shafer (DS) Multinomial models.
♦ *Paul Edlefsen*¹, *Robin Gong*² and *Jan Hannig*³. ¹Fred Hutchinson Cancer Research Center ²Harvard University ³University of North Carolina at Chapel Hill

10:15 AM Change Point Detection for Poisson Time Series Images with Applications to Astronomy and Astrophysics
Thomas Lee. University of California, Davis

10:40 AM Poisson is enticing, but this preprocessed long-tail fish has fewer bones...

Xiao-Li Meng. Harvard University

11:05 AM Floor Discussion.

Session 55: Modern Statistical Development for Biomedical Big Data (Invited)

Room: Regency C (80)

Organizer: Qingxia Chen, Vanderbilt University Medical Center.

Chair: Zhiguang Huo, University of Florida.

9:50 AM Bayesian Large Scale Inference for Time to First Event of Multivariate Ordinal Survival Outcomes with Application to TennCare Cohort Study

♦ *Qingxia Chen*¹, *David Schlueter*², *Christopher Fonnbeck*¹ and *Pingsheng Wu*¹. ¹Vanderbilt University Medical Center ²Vanderbilt University

10:15 AM Online Updating of Survival Analysis in the Big Data Setting
♦ *Jing Wu*¹, *Elizabeth Schifano*, *Jun Yan*², *Yishu Xue* and *Ming-Hui Chen*². ¹University of Rhode Island ²University of Connecticut

10:40 AM Estimating Causal Log-Odds Ratio Using Case-Control Sample and Its Application in the Pharmaco-Epidemiology Study
Donglin Zeng. University of North Carolina at Chapel Hill

11:05 AM Quantile Decision Trees and Forest with its application for predicting the risk (Post-Traumatic Stress Disorder) PTSD after experienced an acute coronary syndrome
♦ *Ying Wei*¹, *Huichen Zhu*¹ and *Ian Kronish*. ¹Columbia University

11:30 AM Floor Discussion.

Session 56: New advanced methods in functional data analysis (Invited)

Room: Regency A (80)

Organizer: Shujie Ma, University of California, Riverside.

Chair: Li Cai, Soochow University.

9:50 AM Optimal weighting schemes for longitudinal and functional data

♦ *Xiaoke Zhang*¹ and *Jane-Ling Wang*². ¹George Washington University ²University of California, Davis

10:15 AM A simultaneous confidence band for variance function based on dense functional data
Suojin Wang. Texas A & M University

10:40 AM Supervised Principal Component Regression for Functional Data with High Dimensional Predictors
♦ *Dehan Kong*¹, *Xinyi Zhang*¹ and *Qiang Sun*¹. ¹University of Toronto

11:05 AM Oracally Efficient Estimation for Dense Functional Data With Holiday Effects
Li Cai. Soochow University

11:30 AM Floor Discussion.

Session 57: Dimension reduction, variable selection and their applications (Invited)

Room: Garden State A (50)

Organizer: Xiangrong Yin, University of Kentucky.

Chair: Wenbo Wu, University of Oregon.

- 9:50 AM Sufficient Variable Selection Using Independence Measures for Continuous Responses
♦ *Xiangrong Yin*¹, *Baoying Yang* and *Nan Zhang*.
¹University of Kentucky
- 10:15 AM Some Dimension Reduction Strategies for the Analysis of Survey Data
♦ *Derek Young* and *Jiaying Weng*. University of Kentucky
- 10:40 AM Spatial envelope models
Qin Wang. Virginia Commonwealth University
- 11:05 AM Efficient integration of sufficient dimension reduction and prediction in discriminant analysis
Xin Zhang. Florida State University
- 11:30 AM Floor Discussion.
- 9:50 AM Statistical Considerations: Best practices for Sponsor/CRO Relationships
Patrick Larson. Merck & Co., Inc.
- 10:15 AM Key Components for a Successful Sponsor/CRO Strategic Partnership
Jianrong Li. PPD
- 10:40 AM Functional Service Outsourcing Trends and Experience
Tiepu Liu. FMD K&L, Inc.
- 11:05 AM Discussant: *Mei Wu*, Sanofi
- 11:30 AM Floor Discussion.

Session 58: Analysis and computation for complex models*(Invited)*

Room: Brunswick C (80)

Organizer: *Wentao Li*, Newcastle University, UK.Chair: *Wentao Li*, Newcastle University, UK.

- 9:50 AM Bayesian functional quantile regression
♦ *Yusha Liu*¹, *Jeffrey Morris*² and *Meng Li*¹. ¹Rice University ²University of Texas M.D. Anderson Cancer Center
- 10:15 AM Validation of Approximate Bayesian Computation on Posterior Convergence
♦ *Wentao Li*¹ and *Paul Fearnhead*². ¹Newcastle University ²Lancaster University
- 10:40 AM Learning Temporal Evolution of Spatial Dependence
Shiwei Lan. Department of Computing + Mathematical Sciences, California Institute of Technology
- 11:05 AM Floor Discussion.

Session 59: Hierarchical generalized linear models in practice *(Invited)*

Room: Garden State C (70)

Organizer: *Youngjo Lee*, Seoul National University.Chair: *Ying Lu*, Stanford University.

- 9:50 AM Optimality of the maximum h-likelihood estimators
Youngjo Lee. Seoul National University
- 10:15 AM H-likelihood Inference for Survival Models with Random Effects
Il do Ha. Pukyong National University
- 10:40 AM Power and false discovery rates of HGLMs and other statistical models analyzing RNAseq data
♦ *Dongseok Choi*¹, *Maengseok Noh*², *Jiwoong Kim*³ and *Youngjo Lee*³. ¹Oregon Health & Science University ²Pukyong National University ³Seoul National University
- 11:05 AM Data analysis using MDHGLM package in R
Maengseok Noh. Pukyong National University
- 11:30 AM Floor Discussion.

Session 60: Building Successful Sponsor/CRO Relationship - A Biostatistical Perspective *(Invited)*

Room: Conference A (65)

Organizer: *Xiaohua Sheng*, FMD K&L, Inc..Chair: *Xiaohua Sheng*, FMD K&L, Inc..**Session 61: Statistical and Regulatory Issues in Human Drug Abuse Studies** *(Invited)*

Room: Conference B (65)

Organizer: *Qianyu Dang*, U.S. Food and Drug Administration.Chair: *Steve Bai*, U.S. Food and Drug Administration.

- 9:50 AM Statistical Issues in Human Drug Abuse Studies
Qianyu Dang. U.S. Food and Drug Administration
- 10:15 AM Statistical and Regulatory Issues in Human Drug Abuse Studies
♦ *Catherine Mills* and *Denise Milovan*. Syneos Health
- 10:40 AM Overview of Human Abuse Potential Studies as Applied to Abuse Deterrent Assessment
James Tolliver. U.S. Food and Drug Administration
- 11:05 AM Floor Discussion.

Session 62: Statistical Innovations in Big Data Analysis*(Invited)*

Room: Conference C (65)

Organizer: *Zhengqing Ouyang*, The Jackson Laboratory for Genomic Medicine.Chair: *Yuping Zhang*, University of Connecticut.

- 9:50 AM Parallel Markov Chain Monte Carlo Methods for Bayesian Analysis of Big Data
Erin Conlon. University of Massachusetts Amherst
- 10:15 AM More Efficient Estimation for Logistic Regression with Optimal Subsample
Haiying Wang. University of Connecticut
- 10:40 AM Joint Principal Trend Analysis for Longitudinal High-dimensional Data Integration
♦ *Yuping Zhang*¹ and *Zhengqing Ouyang*². ¹University of Connecticut ²The Jackson Laboratory for Genomic Medicine
- 11:05 AM On adaptive weighting of omics meta-analysis
Yongseok Park. University of Pittsburgh
- 11:30 AM Floor Discussion.

Session 63: Student Awards, Session I (ICSA Student Paper Awards)

Room: Conference I (80)

ICSA Student Paper Awards Committee.

Chair: *Ying Hung*, Rutgers University.

- 9:50 AM Conditional modeling of survival data with semi-competing risks
♦ *Tonghui Yu and Liming Xiang*. Nanyang Technological University
- 10:15 AM Approximate confidence distribution computing: An effective likelihood-free method with statistical guarantees
♦ *Suzanne Thornton¹, Wentao Li and Minge Xie¹*. ¹Rutgers University ²Lancaster University
- 10:40 AM A Fast Score Test for Generalized Mixture Models
♦ *Rui Duan¹, Yang Ning², Shuang Wang³, Lindsay Bruce⁴, Raymond Carroll⁵ and Yong Chen¹*. ¹University of Pennsylvania ²Cornell University ³Columbia University ⁴Pennsylvania State University ⁵Texas A & M University
- 11:05 AM Generalized Integrative Principal Component Analysis for Multi-Type Data with Block-Wise Missing Structure
♦ *Huichen Zhu¹, Gen Li¹ and Eric Lock²*. ¹Columbia University ²University of Minnesota
- 11:30 AM Floor Discussion.

June 16 1:00 PM -2:40 PM

Session 64: An introduction to BFF: new statistical inference tools for data science (*Featured*)

Room: Brunswick A (120)

Organizer: Minge Xie, Rutgers University.

Chair: Minge Xie, Rutgers University.

- 1:00 PM Could descendants of Jeffreys, Fisher and Neyman become best friends forever?
Jan Hannig. University of North Carolina at Chapel Hill
Discussant: Xiao-Li Meng, Harvard University
Discussant: Thomas Lee, University of California, Davis
Discussant: Robin Gong, Harvard University
Floor Discussion.

Session 65: New Advances in Functional Data Analysis (*Invited*)

Room: Regency A (80)

Organizer: Pang Du, Virginia Polytechnic Institute and State University.

Chair: Pang Du, Virginia Polytechnic Institute and State University.

- 1:00 PM Principal Component Analysis for Functional Data on Riemannian Manifolds and Spheres
♦ *Xiongtao Dai¹ and Hans-Georg Mueller*. ¹University of California, Davis
- 1:25 PM Covariance Estimation and Principal Component Analysis for Spatially Dependent Functional Data
Yehua Li. University of California, Riverside
- 1:50 PM Bayesian Spline Smoothing with Ambiguous Penalties
♦ *Xinlian Zhang, Gauri Datta, Ping Ma and Wenxuan Zhong*. University of Georgia
- 2:15 PM Partially functional linear regression in high dimensions.
♦ *Hao Zhang¹, Dehan Kong², Fang Yao and Kaijie Xue*. ¹University of Arizona ²University of Toronto

2:40 PM Floor Discussion.

Session 66: SII Sponsored Invited Session: Modern Statistical Interface with Applications (*Invited*)

Room: Garden State B (70)

Organizer: Ming-Hui Chen, University of Connecticut.

Chair: Heping Zhang, Yale University.

- 1:00 PM Smoothing spline ANOVA for super-large samples: Scalable computation via rounding parameters
♦ *Nathaniel Helwig¹ and Ping Ma²*. ¹University of Minnesota ²University of Georgia
- 1:25 PM Discovering Stock Chart Patterns by Statistical Estimation and Inference
♦ *Hoang Tran¹ and Yiyuan She²*. ¹Rho, Inc. ²Florida State University
- 1:50 PM MCMC algorithms for empirical Bayes analysis of rank data
♦ *Vivekananda Roy¹, Arnab Laha and Somak Dutta*. ¹Iowa State University
- 2:15 PM Dimension Reduction for Big Data
Tonglin Zhang. Purdue University
- 2:40 PM Floor Discussion.

Session 67: Machine learning and causal inference with some industrial practices (*Invited*)

Room: Conference A (65)

Organizer: Aiyou Chen, Google, LLC.

Chair: Aiyou Chen, Google, LLC.

- 1:00 PM Automated Machine Learning
Jin Cao. Bell Labs, Nokia
- 1:25 PM Application of Causal Bayesian Networks to Environmental Data
♦ *Jie Hu, Carlos Carrion, Andrew MCGowan and Megan Chen*. The Climate Corporation
- 1:50 PM Hierarchical Modeling and Shrinkage for User Session Length Prediction in Media Streaming
♦ *Zhen Zhu¹, Antoine Dediou², Rahul Mazumder² and Hossein Vahabi¹*. ¹Pandora Media, Inc. ²Massachusetts Institute of Technology
- 2:15 PM Bias Correction For Paid Search In Media Mix Modeling
♦ *Aiyou Chen¹, David Chan, Michael Perry, Yuxue Jin, Yunting Sun¹, Nancy Wang and Jim Koehler*. ¹Google, LLC
- 2:40 PM Floor Discussion.

Session 68: Learning from Big Data in Life Science and Translational Medicine (*Invited*)

Room: Regency C (80)

Organizer: Ying Lu, Stanford University.

Chair: Long Feng, Yale University.

- 1:00 PM Big-Data Analysis Points Toward A New Cancer Drug Discovery Method
Bin Chen. Michigan State University
- 1:25 PM Mobile Health Apps Transforming Medical Research and Clinical Care: Using Apple's new Research Kit for Asthma Mobile Health Study
Pei Wang. Icahn School of Medicine at Mount Sinai

- 1:50 PM Classification Errors and the Neyman-Pearson Classification
Jingyi Jessica Li. University of California, Los Angeles
- 2:15 PM Discussant: Jing Huang, Veracyte, Inc.
- 2:40 PM Floor Discussion.

Session 69: Copula-based and mixed models to analyze next-generation sequencing data (*Invited*)

Room: Garden State A (50)

Organizer: Ruzong Fan, Georgetown University Medical Center.

Chair: Chi-yang Chiu, University of Tennessee Health Science Center.

- 1:00 PM Copula-based models for testing genetic effects in family studies: efficient sampling schemes and analysis
♦ *Richard Cook¹ and Yujie Zong²*. ¹University of Waterloo ²University of Cambridge
- 1:25 PM Multivariate linear mixed models for detecting gene-environment interactions
♦ *Hyeonju Kim and Saunak Sen*. University of Tennessee Health Science Center
- 1:50 PM Testing the heritability and parent-of-origin hypotheses for ages at onset of Psoriatic arthritis under biased sampling
♦ *Lajmi Lakhel-Chaieb¹, Richard Cook² and Yujie Zong³*. ¹Laval University ²University of Waterloo ³University of Cambridge
- 2:15 PM Regression analysis of dependent current status data using copulas
Ling Ma. Clemson University
- 2:40 PM Floor Discussion.

Session 70: Biomarker and patient subgroup identification for precision medicine (*Invited*)

Room: Conference C (65)

Organizer: Jie Cheng, Abbvie, Inc..

Chair: Xiwu Lin, Johnson & Johnson.

- 1:00 PM Exhaustive Search for Subgroup Identification with Adaptive Binning and Screening
♦ *Hong Zhang¹ and Jie Cheng²*. ¹Merck & Co., Inc ²Abbvie Inc
- 1:25 PM An exhaustive search based algorithm for patient subgroup identification
♦ *Jie Cheng¹ and Hong Zhang*. ¹Abbvie, Inc.
- 1:50 PM Subgroups for precision medicine: from identification to confirmation
Lei Shen. Eli Lilly and Company
- 2:15 PM Discussant: Qi Tang, Sanofi
- 2:40 PM Floor Discussion.

Session 71: New Developments in High Dimensional Data Analysis (*Invited*)

Room: Regency B (80)

Organizer: Wanjie Wang, National University of Singapore.

Chair: Wanjie Wang, National University of Singapore.

- 1:00 PM High-dimensional statistical inferences with over-identification: confidence set estimation and specification test
♦ *Cheng Yong Tang¹, Jinyuan Chang and Tong Tong Wu*. ¹Temple University
- 1:25 PM Functional Debias Estimation of Genetic Relatedness in High-dimensional Linear Models
♦ *Wanjie Wang¹, Zijian Guo², Tony Cai³ and Hongzhe Li³*. ¹National University of Singapore ²Rutgers University ³University of Pennsylvania
- 1:50 PM Collaborative Spectral Clustering in Attributed Networks
Pengsheng Ji. University of Georgia
- 2:15 PM Graph-Based Two-Sample Tests for Discrete Data
♦ *Jingru Zhang¹ and Hao Chen²*. ¹Peking University ²University of California, Davis
- 2:40 PM Floor Discussion.

Session 72: Recent developments for causal effect estimation in observational studies (*Invited*)

Room: Garden State C (70)

Organizer: Kean Ming Tan, University of Minnesota.

Chair: Zhichao Jiang, Princeton University.

- 1:00 PM Kernel-based covariate functional balancing for observational studies
♦ *Kwun Chuen Gary Chan¹ and Raymond Wong*. ¹University of Washington
- 1:25 PM Robust Estimation of Propensity Score Weights via Subclassification
♦ *Linbo Wang¹, Xiao-Hua Zhou² and Thomas Richardson³*. ¹Harvard University ²Peking University ³University of Washington
- 1:50 PM Multiply Robust Causal Inference With Double Negative Control Adjustment for Unmeasured Confounding
♦ *Xu Shi¹, Wang Miao¹ and Eric Tchetgen Tchetgen²*. ¹Department of Biostatistics, Harvard University ²Wharton School, University of Pennsylvania
- 2:15 PM Adaptive Estimation in Structured Factor Models with Applications to Overlapping Clustering
Yang Ning. Cornell University
- 2:40 PM Floor Discussion.

Session 73: Challenges and Current Methods in Consumer Healthcare Studies (*Invited*)

Room: Brunswick C (80)

Organizer: Chunming Li, Pfizer Inc..

Chair: Chunming Li, Pfizer Inc..

- 1:00 PM Differences in the Application of Dental Pain Model across Sites and their Impact
♦ *Rina Leyva and Chunming Li*. Pfizer Inc.
- 1:25 PM Sample Size Evaluation in Bioequivalence Studies with a Replicated Crossover Design
♦ *Jing Li and Chunming Li*. Pfizer Inc.
- 1:50 PM Risk Modeling for Rx to OTC Switch to inform the selection of the threshold for rates misuse
Ching-Ray Yu. Pfizer Inc.

- 2:15 PM Statistical issues and considerations in equivalence assessment of SPF: in vivo and in vitro
♦ *Junhong Zhu*¹ and *Eduardo Ruvolo*². ¹Ipsen Biopharmaceuticals, Inc. ²Bayer
- 2:40 PM Floor Discussion.

Session 74: The Future of Big Data and Artificial Intelligence*(Invited Panel)*

Room: Brunswick B (120)
Organizer: Kelly Zou, Pfizer Inc.
Facilitator: Kelly Zou, Pfizer Inc.

- 1:00 PM **Panelists:**
Aiyi Liu, National Institutes of Health
William Marder, IBM Watson Health
James Rosenberger, National Institute of Statistical Sciences
Cheng Zhang, Clover Health
Tian Zheng, Columbia University
Kelly Zou, Pfizer Inc

Session 75: Statistical Analysis of Textual Data *(Invited)*

Room: Conference B (65)
Organizer: Yunting Sun, Google, LLC.
Chair: Yunting Sun, Google, LLC.

- 1:00 PM Which Encoding is the Best for Text Classification in Chinese, English, Japanese and Korean?
Xiang Zhang. New York University
- 1:25 PM Rare Feature Selection in High Dimensions
♦ *Xiaohan Yan*¹ and *Jacob Bien*². ¹Cornell University
²University of Southern California
- 1:50 PM Organic ranking of competing domains
♦ *Yunting Sun and Aiyu Chen*. Google, LLC
- 2:15 PM Floor Discussion.

Session 76: Student Awards, Session II (ICSA Student Paper Awards)

Room: Conference I (80)
ICSA Student Paper Awards Committee.
Chair: Ying Hung, Rutgers University.

- 1:00 PM Optimal calibration for computer model prediction with finite samples
Xiaowu Dai. University of Wisconsin-Madison
- 1:25 PM Empirical-likelihood-based criteria for model selection on marginal analysis of longitudinal data with dropout missingness
♦ *Chixiang Chen and Ming Wang*. Pennsylvania State University College of Medicine
- 1:50 PM Online Sequential Leveraging Sampling Method for Streaming Time Series Data
♦ *Rui Xie, T. N. Sriram*¹, *Wei Biao Wu and Ping Ma*¹.
¹University of Georgia
- 2:15 PM Floor Discussion.

Session 77: Recent Advances of Statistical Modeling in Biomedical Research *(Invited)*

Room: Brunswick D (80)
Organizer: Zhao Ren, University of Pittsburgh.
Chair: Zhao Ren, University of Pittsburgh.

- 1:00 PM Conditional adaptive Bayesian spectral analysis of nonstationary biomedical time series
♦ *Robert Krafty*¹, *Scott Bruce*², *Matrica Hall*¹ and *Daniel Buysse*¹. ¹University of Pittsburgh ²George Mason University
- 1:25 PM BAMM-SC: A Bayesian Mixture Model for Clustering Droplet-based Single cell Transcriptomic Data from multiple individuals
♦ *Ying Ding*¹, *Zhe Sun*¹, *Ming Hu*² and *Wei Chen*¹.
¹University of Pittsburgh ²Cleveland Clinic Lerner Research Institute
- 1:50 PM Understanding Cellular Heterogeneity Using Single-cell Data
Lynn Lin. Pennsylvania State University
- 2:15 PM Fast and Robust Deconvolution of Tumor Infiltrating Lymphocyte from Expression Profiles using Least Trimmed Squares
♦ *Yuying Xie*¹, *Ming Yan*, *Yu Lei* and *Yuning Hao*. ¹Michigan State University
- 2:40 PM Floor Discussion.

June 16 3:00 PM -4:40 PM**Session 78: Statistical Inference in Air Pollution and Health Epidemiology** *(Invited)*

Room: Garden State A (50)
Organizer: Shu Yang, North Carolina State University.
Chair: Shu Yang, North Carolina State University.

- 3:00 PM A Causal Inference Analysis of the Effect of Wildland Fire Smoke on Ambient Air Pollution Levels
♦ *Alexandra Larsen*¹, *Shu Yang*¹, *Ana Rappold*² and *Brian Reich*¹. ¹North Carolina State University ²U.S. Environmental Protection Agency
- 3:20 PM Efforts to Quantify the Causal Effect of Fine Particulate Matter on Mortality
♦ *Zhulin He, Zhengyuan Zhu and Hengfang Wang*. Iowa State University
- 3:40 PM Remove Confounding in Air Pollution Studies With Negative Controls
♦ *Wang Miao and Eric Tchetgen Tchetgen*. Harvard University
- 4:00 PM A Bayesian critical window variable selection method for estimating the impact of air pollution exposure during pregnancy
Joshua Warren. Department of Biostatistics, Yale University
- 4:20 PM Causal inference in the context of an error prone exposure: air pollution and mortality
♦ *Xiao Wu*¹, *Danielle Braun*², *Marianthi-Anna Kioumourtoglou*³, *Christine Choirat*², *Qian Di*² and *Francesca Dominici*². ¹Harvard University ²Harvard T.H. Chan School of Public Health ³Mailman School of Public Health, Columbia University
- 4:40 PM Floor Discussion.

Session 79: New research strategies in clinical studies (Invited)

Room: Conference A (65)

Organizer: Peng Yang, Clindata Insight, Inc..

Chair: Kun Nie, Amgen.

- 3:00 PM Basket Trial Design in Oncology Studies
Kun Nie. Clindata Insight, Inc.
- 3:25 PM Statistical learning for biomarker discovery and development in cancer prevention studies
Xi Zhou. Weill Cornell Medical College
- 3:50 PM Penalized multiple inflated values selection method with application to SAFER data
Yang Li. Renmin University of China
- 4:15 PM Floor Discussion.

Session 80: Addressing the issue of multiplicity and selection in modern data analysis (Invited)

Room: Regency A (80)

Organizer: Zhigen Zhao, Temple University.

Chair: Zhigen Zhao, Temple University.

- 3:00 PM Multiple Testing for temporal pattern change detection and identification
Zhi Wei. New Jersey Institute of Technology
- 3:25 PM Estimation with truncated data
♦ *Asaf Weinstein¹ and Amit Meir.* ¹Stanford University
- 3:50 PM Local False Discovery Rate Based Methods for Multiple Testing of One-Way Classified Hypotheses
♦ *Zhigen Zhao¹ and Sanat Sarkar.* ¹Temple University
- 4:15 PM Floor Discussion.

Session 81: New methods with modern large and complex data sets (Invited)

Room: Brunswick A (120)

Organizer: Cheng Yong Tang, Temple University.

Chair: Zeda Li, Baruch College, The City University of New York.

- 3:00 PM Pre-processing with Orthogonal Decompositions for High-dimensional Explanatory Variables
Xu Han. Temple University
- 3:25 PM Multiple change point detection for manifold-valued data with applications to dynamic functional connectivity
Qiang Sun. University of Toronto
- 3:50 PM Empirical Band Analysis of Nonstationary Time Series
Scott Bruce. George Mason University
- 4:15 PM A Bayesian General Linear Modeling Approach to Cortical Surface fMRI Data Analysis
Yu Yue. Baruch College, The City University of New York
- 4:40 PM Floor Discussion.

Session 82: Recent Advances in Genomic Data Analysis (Invited)

Room: Regency B (80)

Organizer: Mei-Ling Ting Lee, University of Maryland, College Park.

Chair: Weiliang Qiu, Harvard University.

3:00 PM Pedigree-based Functional Linear Mixed Models for Association Analysis of Quantitative Traits with Next-generation Sequencing Data

♦ *Ruzong Fan¹, Bingsong Zhang¹, Ao Yuan¹, Chi-Yang Chiu², Fang Yuan³, Xin Li¹, Hong-Bin Fang¹, Kenneth Lange⁴, Daniel Weeks⁵, Alexander Wilson⁶, Joan Bailey-Wilson⁶, M'hamed Lajmi Lakhhal-Chaieb⁷, Richard Cook⁸, Francis McMahon⁶, Christopher Amos⁹ and Momiiao Xiong¹⁰.* ¹Georgetown University Medical Center ²University of Tennessee Health Science Center ³Kunming Medical University ⁴University of California, Los Angeles ⁵University of Pittsburgh ⁶National Institutes of Health ⁷Université Laval ⁸University of Waterloo ⁹Dartmouth Medical School ¹⁰University of Texas at Houston

3:25 PM Gene-based Association Testing of Dichotomous Traits with Generalized Linear Mixed Models Using Extended Pedigrees

♦ *Chi-Yang Chiu¹, Yingda Jiang, Daniel Weeks² and Ruzong Fan³.* ¹The University of Tennessee Health Science Center ²University of Pittsburgh ³Georgetown University Medical Center

3:50 PM Meta-analytic and integrative framework for sparse K-means to identify disease subtypes

♦ *Zhiguang Huo¹ and George Tseng².* ¹Department of Biostatistics, University of Florida ²University of Pittsburgh

4:15 PM RNASeqDesign: A framework for RNA-Seq genome-wide power calculation and study design issues

♦ *Chien-Wei Lin¹, George Tseng², Yongseok Park², Ge Liao and Mei-Ling Ting Lee³.* ¹Medical College of Wisconsin ²University of Pittsburgh ³University of Maryland, College Park

4:40 PM Floor Discussion.

Session 83: Statistical Learning for Complex and High-Dimensional Data with Modern Applications (Invited)

Room: Garden State B (70)

Organizer: Lingzhou Xue, Pennsylvania State University.

Chair: Lingzhou Xue, Pennsylvania State University.

3:00 PM Blessing of Massive Scale: Total Cardinality Approach for Spatial Graphical Model Estimation

Ethan Fang. Pennsylvania State University

3:25 PM Semi-supervised Inference for Explained Variance in High-dimensional Linear Regression and Its Applications

♦ *Zijian Guo¹ and Tony Cai².* ¹Rutgers University ²University of Pennsylvania

3:50 PM Learning causal networks via additive faithfulness

♦ *Kuang-Yao Lee¹, Tianqi Liu², Bing Li³ and Hongyu Zhao⁴.* ¹Temple University ²Kensho ³Pennsylvania State University ⁴Yale University

4:15 PM Minimax Estimation of Large Precision Matrices with Bandable Cholesky Factor

Zhao Ren. University of Pittsburgh

4:40 PM Floor Discussion.

Session 84: Recent advances in high-dimensional statistics
(Invited)

Room: Brunswick B (120)

Organizer: Zijian Guo, Rutgers University.

Chair: Shaokun Li, University of Pennsylvania.

- 3:00 PM Adaptive QDA to dimensionality
♦ *Qing Yang*¹ and *Guang Cheng*². ¹Department of Statistics, Purdue University ²Purdue University
- 3:25 PM Robust estimation, efficiency, and Lasso debiasing
Po-Ling Loh. University of Wisconsin-Madison
- 3:50 PM Learning Nonconvex Hierarchical Interactions
♦ *Lingzhou Xue*¹ and *Hongbo Dong*. ¹Pennsylvania State University
- 4:15 PM Randomized incomplete U -statistics in high dimensions
♦ *Xiaohui Chen*¹ and *Kengo Kato*². ¹University of Illinois at Urbana-Champaign ²University of Tokyo
- 4:40 PM Floor Discussion.

Session 85: Nonparametric and high dimensional statistics
(Invited)

Room: Garden State C (70)

Organizer: Zongming Ma, University of Pennsylvania.

Chair: Fengnan Gao, Fudan University.

- 3:00 PM Mean Field Variational Inference: Computational and Statistical Guarantees
Anderson Zhang. Yale University
- 3:25 PM Trace regression with nonconvex regularization
Tingni Sun. University of Maryland, College Park
- 3:50 PM Maximum likelihood estimation of Sublinear Preferential Attachment Models and its connection to Janson's urn models
♦ *Fengnan Gao*¹ and *Aad Van der vaart*. ¹Fudan University
- 4:15 PM Floor Discussion.

Session 86: Leveraging Evidence from Historical/Subsidiary Data in Randomized Controlled Trial (Invited)

Room: Conference B (65)

Organizer: Samiran Ghosh, Wayne State University.

Chair: Freda Cooner, Sanofi.

- 3:00 PM The use of alternative data in clinical trials in small population and pediatric patients
Shiling Ruan. Novartis
- 3:25 PM Bayesian Approach of testing Noninferiority in Presence of Historical Data
Samiran Ghosh. School of Medicine, Wayne State University
- 3:50 PM A Note on Posterior Predictive Assessment to Assess Model Fit for Incomplete Longitudinal Data
Arkendu Chatterjee. Merck & Co., Inc.
- 4:15 PM Discussant: Yu Lan, Sanofi and Satrajit Roychoudhury, Pfizer Inc.
- 4:40 PM Floor Discussion.

Session 87: Immunogenicity Testing of Therapeutic Protein Product (Invited)

Room: Conference C (65)

Organizer: Yi Tsong, CDER, FDA.

Chair: Shein-Chung Chow, CDER, FDA.

- 3:00 PM Issues in designing immunogenicity studies
Yun Wang. U.S. Food and Drug Administration
- 3:25 PM Statistical evaluation of several methods for cut point determination of immunogenicity screening assay
♦ *Yi Tsong*¹, *Meiyu Shen*² and *Xiaoyu Dong*³. ¹CDER, FDA ²U.S. Food and Drug Administration ³Amgen
- 3:50 PM Discussant: Shein-Chung Chow, CDER, FDA.
- 4:15 PM Floor Discussion.

Session 88: Statistical advances and challenges in immunology development (Invited)

Room: Conference I (80)

Organizer: Qiqi Deng, Boehringer Ingelheim Pharmaceuticals, Inc.

Chair: Wenqiong Xue, Boehringer Ingelheim Pharmaceuticals, Inc.

- 3:00 PM Robust Phase 3 Designs for Adaptive Population Modification
♦ *Cong Chen*¹, *Xiaoyun(Nicole) Li*, *Wen Li* and *Robert Beckmanb*. ¹Merck & Co., Inc.
- 3:25 PM A Bayesian hierarchical model for indirect comparison of immuno-oncology drugs
♦ *Jingyi Liu*, *Ji Lin*, *Zach Thomas* and *Yumin Zhao*. Eli Lilly and Company
- 3:50 PM Statistical Considerations When Applying Restricted Mean Survival Time in Immune-Oncology Trials
♦ *Ying Lu*¹, *Hua Jin*² and *Lu Tian*¹. ¹Department of Biomedical Data Science and Center for Innovative Study Design, Stanford University ²South China Normal University and Stanford University
- 4:15 PM Discussant: Qiqi Deng, Boehringer Ingelheim Pharmaceuticals, Inc.
- 4:40 PM Floor Discussion.

Session 89: Statistical learning for high-dimensional and complex data (Invited)

Room: Brunswick C (80)

Organizer: Yiwen Liu, University of Georgia.

Chair: Wenxuan Zhong, University of Georgia.

- 3:00 PM Theory Informs Practice: Smoothing Parameters Selection for Smoothing Spline ANOVA Models in Large Samples
♦ *Xiaoxiao Sun*¹, *Wenxuan Zhong*² and *Ping Ma*². ¹University of Arizona ²University of Georgia
- 3:25 PM High-dimensional Spatially Varying Coefficient Models
♦ *Xinyi Li*¹, *Li Wang*¹, *Dan Nettleton*¹ and *Guannan Wang*². ¹Iowa State University ²College of William & Mary
- 3:50 PM Differential network analysis via a novel biclustering framework
♦ *Sha Cao*¹, *Xiaoyu Lu*, *Chi Zhang*¹ and *Na Bo*. ¹Indiana University School of Medicine

4:15 PM Robust Optimal Scoring Discriminant Analysis & Discrete Wavelet Packet Transform Based Discriminant Analysis for Whole Genome Sequences

Hsin-Hsiung Huang. University of Central Florida

4:40 PM Floor Discussion.

Session 90: Advances in Complex and Network Data Analysis

(Invited)

Room: Regency C (80)

Organizer: Pengsheng Ji, University of Georgia.

Chair: Pengsheng Ji, University of Georgia.

3:00 PM On the generalization and computation of data depth

Yiyuan She. Florida State University

3:25 PM Two-Step Bayesian Multiple Classifications with Logic Expressions

♦ *Wensong Wu and Tan Li*. Florida International University

3:50 PM Understanding Kernel-Embedding Based Goodness-of-Fit Tests

Krishnakumar Balasubramanian. Princeton University

4:15 PM An empirical bayes method to estimate interaction intensities and identify long-range chromosomal interactions based on Hi-C data

♦ *Qi Zhang and Zheng Xu*. University of Nebraska–Lincoln

4:40 PM Floor Discussion.

Session 101: The win ratio: what is it? (Invited)

Room: Brunswick D (80)

Organizer: Gaohong Dong, iStats, Inc.

Chair: Haiyan Xu, Johnson & Johnson; Yaping Wang, FDA.

3:00 PM What is really the win ratio?

♦ *Gaohong Dong*¹, *Victoria Chang*², *Junshan Qiu*³, *Roland Matsouaka*⁴ and *David Hoaglin*⁵. ¹iStats, Inc. ²Abbvie, Inc. ³U.S. Food and Drug Administration ⁴Duke University School of Medicine ⁵University of Massachusetts Medical School

3:25 PM A Generalized Analytic Solution to the Win Ratio

♦ *Di Li*¹ and *Gaohong Dong*². ¹Bristol-Myers Squibb ²iStats, Inc.

3:50 PM Confidence interval estimations for the matched win ratio

♦ *Roland Matsouaka*¹ and *Adrian Coles*². ¹Duke University School of Medicine ²Duke University

4:15 PM Stratified win ratio

♦ *Junshan Qiu*¹, *Gaohong Dong*², *Duolao Wang* and *Marc Vandemeulebroecke*. ¹U.S. Food and Drug Administration ²iStats, Inc.

4:40 PM Discussant: Xiaodong Luo, Sanofi

Floor Discussion.

June 17 8:30 AM - 10:10 AM

Session 91: Real world evidence data: applications, promises and cautions (Invited)

Room: Garden State C (70)

Organizer: Zhaoling Meng, Sanofi.

Chair: Mei Zhang, Sanofi.

8:30 AM Patient Centered Network Analytics for Integrative Mining of Heterogeneous Health Data

Fei Wang. Weill Cornell Medical College

8:55 AM Real-World Study Design and Analysis Considerations to Control for Confounding

♦ *Hongwei Wang, Weili He and Meijing Wu*. Abbvie, Inc.

9:20 AM Real World Evidence and Model-informed Drug Development - an antidiabetic drug cardiovascular outcome case study

♦ *Zhaoling Meng*¹, *James Rogers*², *Dimple Patel*¹, *Qi Tang*¹, *Jonathan Sidi*², *Nadi Gaudel-Dedieu*¹ and *David Delvart*¹. ¹Sanofi ²Metrum Research Group

9:45 AM CDRH Real-World Evidence Guidance and Regulatory Experience with RWE on Medical Devices

Yuzhi (Alex) Hu. FDA

10:10 AM Floor Discussion.

Session 92: Dimension reduction and nonparametric methods (Invited)

Room: Regency A (80)

Organizer: Cheng Yong Tang, Temple University.

Chair: Cheng Yong Tang, Temple University.

8:30 AM Sufficient Dimension Reduction under Dimension-reduction-based Imputation with Predictors Missing at Random

♦ *Qihua Wang*¹ and *Xiaojie Yang*. ¹Academy of Mathematics and Systems Science, Chinese Academy of Sciences

8:55 AM Envelope Quantile Regression

♦ *Shanshan Ding*¹, *Zhihua Su*², *Guangyu Zhu*³ and *Lan Wang*⁴. ¹University of Delaware ²University of Florida ³University of British Columbia ⁴University of Minnesota

9:20 AM Asymptotics and Optimal Bandwidth Selection for Nonparametric Estimation of Density Level Sets

Wanli Qiao. George Mason University

9:45 AM Transformed Variable Selection in Sufficient Dimension Reduction

Yuxiao Dong. Temple University

10:10 AM Floor Discussion.

Session 93: Novel Methods to Estimating and Computing Densities for Bayesian Applications (Invited)

Room: Regency B (80)

Organizer: Xiaojing Wang, University of Connecticut.

Chair: Erin Conlon, University of Massachusetts Amherst .

- 8:30 AM Partition Weighted Approach for Estimating Marginal Posterior Density with Applications
♦ *Lynn Kuo, Yu-Bo Wang, Ming-Hui Chen and Paul Lewis.* University of Connecticut
- 8:55 AM A Bayesian hierarchical model for related densities using Polya trees
♦ *Li Ma and Jonathan Christensen.* Duke University
- 9:20 AM Semi-Implicit Variational Inference
♦ *Mingyuan Zhou and Mingzhang Yin.* University of Texas at Austin
- 9:45 AM Bayesian Integrative Model for Deciphering High-Dimensional Genotype-Phenotype Map
Chuanhua Julia Xing. XPrecision, LLC
- 10:10 AM Floor Discussion.

Session 94: Statistical methods for large-scale complex data (*Invited*)

Room: Garden State A (50)

Organizer: Xin Xing, University of Georgia.

Chair: Wenxuan Zhong, University of Georgia.

- 8:30 AM Integrative statistical causal analysis of the microbiome, metabolome and inflammation data in to understand oral cancer mechanism
♦ *Di Wu¹, Siliang Gong¹, Rujin Wang¹ and Flavia Teles².* ¹University of North Carolina at Chapel Hill ²University of Pennsylvania
- 8:55 AM Pearson's chi-squared statistics: approximation theory and beyond
♦ *Mengyu Xu¹, Danna Zhang and Weibiao Wu.* ¹University of Central Florida
- 9:20 AM Early stopping for nonparametric testing
♦ *Meimei Liu and Guang Cheng.* Purdue University
- 9:45 AM Left truncated mixture Gaussian distribution based modeling of single cell RNA-seq data
♦ *Chi Zhang and Changlin Wan.* Indiana University School of Medicine
- 10:10 AM Floor Discussion.

Session 95: Statistical Methods Beyond Parametrics in Biomedical Studies (*Invited*)

Room: Regency C (80)

Organizer: Jiwei Zhao, State University of New York at Buffalo.

Chair: Jiwei Zhao, State University of New York at Buffalo.

- 8:30 AM Nonparametric Identified Methods to Handle Nonignorable Missing Data
Mauricio Sadinle. University of Washington
- 8:55 AM Recurrent Event Analysis with Covariates Observed at Irregular, Informative Clinical Visits, with Application to Electronic Medical Records Data
♦ *Yifei Sun¹ and Chiung-Yu Huang².* ¹Columbia University ²University of California, San Francisco
- 9:20 AM Some Ideas on Calibration in the Presence of Nonignorable Missing Data
Peisong Han. University of Michigan

- 9:45 AM Mediation Higher Criticism Test in Epigenomic Studies
♦ *Jincheng Shen¹ and Xihong Lin².* ¹University of Utah ²Harvard Univeristy
- 10:10 AM Floor Discussion.

Session 96: High-dimensional statistical inference and computing (*Invited*)

Room: Brunswick A (120)

Organizer: Anru Zhang, University of Wisconsin-Madison.

Chair: Anru Zhang, University of Wisconsin-Madison.

- 8:30 AM NEST: Nonparametric empirical Bayes smoothing Tweedie's estimator under heteroscedasticity
Wenguang Sun. University of Southern California
- 8:55 AM Random Initialization and Implicit Regularization in Non-convex Phase Retrieval
♦ *Yuxin Chen¹, Cong Ma¹, Yuejie Chi² and Jianqing Fan¹.* ¹Princeton University ²Carnegie Mellon University
- 9:20 AM Tensor SVD: Statistical and Computational Limits
Anru Zhang. University of Wisconsin-Madison
- 9:45 AM Teaching and learning in uncertainty
Varun Jog. University of Wisconsin-Madison
- 10:10 AM Floor Discussion.

Session 97: Recent advances in statistical analysis of high-dimensional biological data (*Invited*)

Room: Conference C (65)

Organizer: Tao He, Department of Mathematics, San Francisco State University.

Chair: Yu Jiang, University of Memphis.

- 8:30 AM A semi-supervised approach for predicting cell type/tissue specific functional consequences of non-coding variation using massively parallel reporter assays
♦ *Zihuai He¹, Linxi Liu, Kai Wang and Iuliana Ionita-Laza.* ¹Columbia University
- 8:55 AM Clustering of Functional Data
♦ *Sneha Jadhav and Shuangge Ma.* Yale University
- 9:20 AM STEPS: An Efficient Prospective Likelihood Approach to Genetic Association analyses of Secondary Traits in Extreme Phenotype
♦ *Guolian Kang¹, Yun Li, Matthew Smeltzer, Guimin Gao and Shengli Zhao.* ¹St. Jude Children's Research Hospital
- 9:45 AM Dissecting the Gene-environment Interactions via Bayesian Hierarchical models
♦ *Yu Jiang¹ and Cen Wu².* ¹University of Memphis ²Kansas State University
- 10:10 AM Floor Discussion.

Session 98: Inference for large complex data (*Invited*)

Room: Conference I (80)

Organizer: Xiangyu Wang, Google, LLC.

Chair: Binyan Jiang, The Hong Kong Polytechnic University.

- 8:30 AM Non-asymptotic goodness-of-fit tests for Stochastic Block Models.
Vishesh Karwa. Ohio State University
- 8:55 AM Simple and Trustworthy Asymptotic t Tests in Difference-in-Differences Regressions
♦ *Cheng Liu¹ and Yixiao Sun*. ¹Wuhan University
- 9:20 AM On Cumulative Slicing Estimation for High Dimensional Data
Cheng Wang. Shanghai Jiao Tong University
- 9:45 AM A feature distributed framework for large-scale sparse regression
♦ *Xiangyu Wang¹, Chenlei Leng and David Dunson*. ¹Google, LLC
- 10:10 AM Floor Discussion.
- Session 99: Data Science Intersecting with Health Policy**
(Invited)
Room: Brunswick B (120)
Organizer: Kelly Zou, Pfizer Inc.
Chair: Shin Ah Oh, Pfizer Inc.
- 8:30 AM Composite Interaction Tree for Simultaneous Learning Optimal Individualized Treatment Rules and Subgroups
Xin Qiu and ♦Yuanjia Wang. Columbia University
- 8:55 AM Text Mining of Policy Documents
♦ *Shin Ah Oh, Kelly Zou, Jason Pan, Ching-Ray Yu and Martin Carlsson*. Pfizer Inc.
- 9:20 AM The future is now, but where we should focus
Haoda Fu. Eli Lilly and Company
- 9:45 AM Floor Discussion.
- Session 100: Causal Inference and Covariate Balance** (Invited)
Room: Garden State B (70)
Organizer: Yeying Zhu, Department of Statistics & Actuarial Science, University of Waterloo.
Chair: Yeying Zhu, Department of Statistics & Actuarial Science.
- 8:30 AM Asymptotic inference of causal effects with observational studies trimmed by the estimated propensity scores
Shu Yang. North Carolina State University
- 8:55 AM Propensity score weighting analysis and treatment effect discovery
Liang Li. MD Anderson Cancer Center
- 9:20 AM Regularized calibrated estimation of propensity scores with model misspecification and high-dimensional data
Zhiqiang Tan. Rutgers University
- 9:45 AM Assessing covariate balance for clustered data with continuous exposures
♦ *Donna Coffman¹ and Megan Schuler²*. ¹Temple University ²RAND Corp
- 10:10 AM Floor Discussion.
- Session 102: Contributed Session 1** (Contributed)
Room: Conference A (65)
Chair: Dipankar Bandyopadhyay, Virginia Commonwealth University.
- 8:30 AM Intensity Estimation of Spatial Point Processes Based on Area-Aggregated Data
♦ *Chi-Wei Lai and Hsin-Cheng Huang*. Institute of Statistical Science, Academia Sinica
- 8:50 AM Bayesian Nonparametric Policy Search with Application to Periodontal Recall Intervals
♦ *Dipankar Bandyopadhyay¹, Brian Reich², Eric Laber² and Qian Guan²*. ¹Virginia Commonwealth University ²North Carolina State University
- 9:10 AM Quadratic Discriminant Analysis by Projection
♦ *Ruiyang Wu and Ning Hao*. University of Arizona
- 9:30 AM Statistical considerations for precision studies that evaluate qualitative assays
Changhong Song. Center for Devices and Radiological Health, FDA
- 9:50 AM Bayesian use of probability for model selection
Yi Mu. CDC
- 10:10 AM Floor Discussion.
- Session 103: Contributed Session 2** (Contributed)
Room: Conference B (65)
Chair: Rongning Wu, City University of New York.
- 8:30 AM Prediction Interval for Autoregressive Time Series via Orally Efficient Estimation of Multi-Step Ahead Innovation Distribution Function
♦ *Lijie Gu¹, Juanjuan Kong and Lijian Yang²*. ¹Soochow University ²Tsinghua University
- 8:50 AM On asymptotic risk of order selection in integrated autoregressive models
Shu-Hui Yu. Institute of Statistics, National University of Kaohsiung
- 9:10 AM Least tail-trimmed absolute deviation estimation for autoregressions with infinite/finite variance
♦ *Rongning Wu¹ and Yunwei Cui²*. ¹City University of New York ²Towson University
- 9:30 AM A Principal Stratification Approach to Evaluate the Causal Effect of A Patient Activation Intervention For Bone Health Outcomes
♦ *Yiyue Lou¹, Michael Jones², Fredric Wolinsky², Peter Cram³ and Stephanie Edmonds⁴*. ¹Vertex Pharmaceuticals ²University of Iowa College of Public Health ³Toronto General Hospital Research Institute (TGHRI) ⁴Woman Centered Health
- 9:50 AM Change Point Detection in High Dimension
♦ *Runmin Wang and Xiaofeng Shao*. University of Illinois at Urbana-Champaign
- 10:10 AM Floor Discussion.

June 17 10:30 AM -12:10 PM**Session 104: Real-time prediction of clinical trial enrollment and event times** (*Invited*)

Room: Garden State B (70)

Organizer: Yu Lan, Sanofi.

Chair: Shuang (Nancy) Li, Southern Methodist University.

10:30 AM Blinded sample size re-estimation in trials with survival outcomes and incomplete information.

Thomas Cook. University of Wisconsin-Madison

10:55 AM Real-time prediction of event times in clinical trials - an overview

Gui-Shuang Ying. University of Pennsylvania

11:20 AM Adaptive parametric prediction of event times in clinical trials

♦ *Lan Yu¹ and Daniel Heitjan².* ¹Sanofi ²Southern Methodist University & University of Texas Southwestern Medical Center

11:45 AM Bayesian Modeling and Prediction of Patient Accrual in Multicenter Clinical Trials with Varying Center Activation Times

♦ *Junhao Liu¹, Jo Wick¹, Yu Jiang², Matthew Mayo¹ and Byron Gajewski¹.* ¹University of Kansas Medical Center ²University of Memphis

12:10 PM Floor Discussion.

Session 105: Analysis of Data from Wearable Devices (*Invited*)

Room: Regency C (80)

Organizer: Robert Krafty, University of Pittsburgh.

Chair: Robert Krafty, University of Pittsburgh.

10:25 AM Robust functional principal components analysis with application to accelerometer data

♦ *Sisheng Liu¹, Chongzhi Di¹ and Fang Han².* ¹Fred Hutchinson Cancer Research Center ²University of Washington

10:55 AM Multilevel variance components model in functional data with application in minute-level accelerometry measures

Haochang Shou. University of Pennsylvania

11:20 AM Gait characteristics extracted from raw accelerometry data collected in free-living settings

Jacek Urbanek. Johns Hopkins School of Medicine

11:45 AM Discussant: Donna Coffman, Temple University

12:10 PM Floor Discussion.

Session 106: New developments in large-scale data analysis (*Invited*)

Room: Regency B (80)

Organizer: Ping-Shou Zhong, Michigan State University.

Chair: Shawn Santo, Michigan State University.

10:30 AM Sorted Concave Penalized Regression

♦ *Long Feng¹ and Cun-Hui Zhang.* ¹Yale University

10:55 AM Deep Learning Approaches for Agricultural Plant Phenotyping Based on RGB Images and Hyperspectral Images

♦ *Zheng Xu, James Schnable and Jennifer Clarke.* University of Nebraska-Lincoln

11:20 AM Homogeneity tests of covariance matrices with high-dimensional longitudinal data

♦ *Shawn Santo¹, Ping-Shou Zhong¹ and Runze Li².* ¹Michigan State University ²Pennsylvania State University

11:45 AM Floor Discussion.

Session 107: Machine Learning for Healthcare Applications (*Invited*)

Room: Garden State C (70)

Organizer: Ping Wang, Insmmed.

Chair: Hongwei Wang, Abbvie, Inc..

10:30 AM Traditional Statistics and Machine Learning using Electronic Health Records Data

♦ *Yirui Hu and H. Lester Kirchner.* Geisinger

10:55 AM Clinical NLP and deep learning for disease classification and reporting in Chest X-rays

Yifan Peng. National Institutes of Health

11:20 AM Transformation in Real World Evidence through Machine Learning

Jyotsna Mehta. founder of KEVA health

11:45 AM Discussant: Hongwei Wang, Abbvie, Inc.

12:10 PM Floor Discussion.

Session 108: Reasonable Possibility is Statistical Science in Drug Safety Monitoring (*Invited*)

Room: Conference I (80)

Organizer: LiAn Lin, Merck & Co., Inc.

Chair: LiAn Lin, Merck & Co., Inc.

10:30 AM Reasonable Possibility in the Pre- vs Post-Approval Settings

Ed Whalen. Pfizer Inc.

10:55 AM Blinded vs Unblinded Analysis for IND safety reporting

Lian Lin. Merck & Co., Inc.

11:20 AM Visual Analytics Tools to Assess Possible Causality of a Drug-Induced Adverse Event of Special Interest

♦ *Krishan Singh¹, Melvin Munsaka² and Kefei Zhou³.* ¹GlaxoSmithKline ²Abbvie, Inc. ³Theravance

11:45 AM Meta-Analysis Techniques and Safety Monitoring

Rositsa Dimova. U.S. Food and Drug Administration

12:10 PM Discussant: Rositsa Dimova, U.S. Food and Drug Administration and William Wang, Merck & Co., Inc.

Floor Discussion.

Session 109: Integrative Statistical Learning in High Dimensional Omics Data Analysis (*Invited*)

Room: Brunswick C (80)

Organizer: Yu Jiang, University of Memphis.

Chair: Cen Wu, Kansas State University.

10:30 AM Integrative Gene-environment Interactions From Multidimensional Omics Data In Cancer Prognosis

♦ *Cen Wu and Yin hao Du.* Kansas State University

10:55 AM Integrated association testing of multiple forms of omics data with an endpoint of interest
♦ *Xueyuan Cao*¹, *Mingjuan Wang*², *Dale Bowman*³, *Stanley Pounds*² and *E. Olusegun George*³. ¹University of Tennessee Health Science Center ²St. Jude Children's Research Hospital ³University of Memphis

11:20 AM A random-effects model for multi-tissue deconvolution to estimate individual-level cell-type-specific gene expression
♦ *Jiebiao Wang*¹, *Bernie Devlin*² and *Kathryn Roeder*¹. ¹Carnegie Mellon University ²University of Pittsburgh

11:45 AM Intensity normalization of MR images across subjects as a pre-processing tool to improve analysis and segmentation results of MS drawn from studying unwanted variation effects in gene expressions
♦ *Abdhi Amitabha Sarkar* and *Russell Shinohara*. University of Pennsylvania

12:10 PM Floor Discussion.

Session 110: Recent advances in machine learning and causal inference (*Invited*)

Room: Regency A (80)

Organizer: Yang Ning, Cornell University.

Chair: Yang Ning, Cornell University.

10:30 AM Speeding Up Latent Variable Gaussian Graphical Model Estimation via Nonconvex Optimization
♦ *Quanquan Gu*¹, *Pan Xu*¹ and *Jian Ma*². ¹University of Virginia ²Carnegie Mellon University

10:55 AM Selective inference for effect modification
♦ *Qingyuan Zhao*¹, *Dylan Small* and *Ashkan Ertefaie*. ¹University of Pennsylvania

11:20 AM Integrative linear discriminant analysis with guaranteed error rate improvement
♦ *Quefeng Li*¹ and *Lexin Li*. ¹University of North Carolina at Charlotte

11:45 AM Iterative Random Forests to discover predictive and stable high-order interactions
Sumanta Basu. Cornell University

12:10 PM Floor Discussion.

Session 111: Statistical Considerations of In-Vitro Bioequivalence or Adhesion Data Analysis (*Invited*)

Room: Brunswick D (80)

Organizer: Yu-Ting Weng, U.S. Food and Drug Administration.

Chair: Mengdie Yuan, U.S. Food and Drug Administration.

10:30 AM In vitro Permeation Testing- A scientific overview
Sarah Ibrahim. U.S. Food and Drug Administration

10:55 AM Application of scaled bioequivalence methods to in vitro permeation testing experiments
♦ *Kimberly Walters* and *Lisa Weissfeld*. Statistics Collaborative, Inc.

11:20 AM Application of mixed models to in vitro permeation testing experiments for the assessment of dose level in transdermal patches
♦ *Lisa Weissfeld* and *Kimberly Walters*. Statistics Collaborative, Inc.

11:45 AM Discussant: Yi Tsong, U.S. Food and Drug Administration.

12:10 PM Floor Discussion.

Session 112: Contributed Session 3 (*Contributed*)

Room: Garden State A (50)

Chair: Jing Xiao, Merck & Co., Inc..

10:30 AM Parallelism Testing Methods and Explorations in Qualification of A Reference Standard
Jing Xiao. Merck & Co., Inc.

10:50 AM Evaluation for Stability Data from Large Number of Batches
♦ *Steve He*¹, *Yijie Dong*¹ and *James Bergum*. ¹Bristol-Myers Squibb

11:10 AM Statistical Considerations for Analytical Method Transfer Equivalence Margin
♦ *Oluyemi Oyeniram*, *Qianqiu Li* and *Jyh-Ming Shoung*. Janssen Research and Development, LLC

11:30 AM Statistical considerations in "Patient in-use" stability modeling
♦ *Monisha Dey* and *Robert Capen*. Merck & Co., Inc.

11:50 AM Floor Discussion.

Session 113: Contributed Session 4 (*Contributed*)

Room: Conference A (65)

Chair: Zifei Han, University of Texas at San Antonio.

10:30 AM Gaussian copula models for spatial count data: estimation and prediction
♦ *Zifei Han*¹ and *Victor Deoliveira*². ¹University of Texas at San Antonio ²Vertex Pharmaceuticals

10:50 AM ICBayes: an R package for Bayesian semiparametric regression analysis of interval-censored data
♦ *Chun Pan*¹, *Bo Cai*, *Lianming Wang* and *Xiaoyan Lin*. ¹Novartis

11:10 AM An R package for model fitting, model selection and the simulation for longitudinal data with dropout missingness
♦ *Cong Xu*¹, *Zheng Li*², *Yuan Xue*³, *Lijun Zhang*² and *Ming Wang*⁴. ¹Vertex Pharmaceuticals ²Pennsylvania State University ³University of International Business and Economics ⁴Pennsylvania State University College of Medicine

11:30 AM Floor Discussion.

Session 114: Contributed Session 5 (*Contributed*)

Room: Conference B (65)

Chair: Tyler Cook, University of Central Oklahoma.

10:30 AM Distance-based and RKHS-based Dependence Metrics in High-dimension
♦ *Changbo Zhu*¹, *Shun Yao*², *Xiayang Zhang*³ and *Xiaofeng Shao*¹. ¹University of Illinois at Urbana-Champaign ²Goldman Sachs, New York City ³Texas A & M University

10:50 AM Pathway and Gene Selection with Guided Regularized Random Forests
♦ *Tyler Cook*¹, *Daniel Brumley*¹ and *Sounak Chakraborty*². ¹University of Central Oklahoma ²University of Missouri

- 11:10 AM Semiparametric Dynamic Adaptive Robust Estimations for Varying High-Dimensional Networks
♦ *Tzu-Chun Wu and Emily Kang*. University of Cincinnati
- 11:30 AM Gaussian Sparse Partial Membership Model with Applications to Cancer Genomics
♦ *Wei Xia, Clint Pazhayidam George and George Michailidis*. University of Florida
- 11:50 AM A Randomized Algorithm for Maximum Likelihood Estimation with Spatial Autoregressive Models Applied on Social Network Data
♦ *Miaoqi Li and Emily Kang*. University of Cincinnati
- 12:10 PM Floor Discussion.
- Session 115: Contributed Session 6** (*Contributed*)
Room: Conference C (65)
Chair: Liang Zhu, UT Health.
- 10:30 AM Variable selection of lipid-environment interactions in longitudinal studies
♦ *Fei Zhou¹, Yu Jiang², Weiqun Wang¹ and Cen Wu¹*.
¹Kansas State University ²University of Memphis
- 10:50 AM Statistical Analysis on Clustered Mixed Recurrent Event data
♦ *Liang Zhu¹, Yimei Li² and Leslie Robison²*. ¹UT Health ²St. Jude Children's Research Hospital
- 11:10 AM On comparing 2 correlated C indices with censored survival data
♦ *Yilong Zhang¹, Xiaoxia Han² and Yongzhao Shao³*.
¹Merck Research Laboratories ²Public Health Sciences Department, Henry Ford Health System ³Department of Population Health, New York University School of Medicine.
- 11:30 AM Avoiding Bias in Internal Pilot Design for Balanced Repeated Measures
♦ *Xinrui Zhang¹ and Yueh-Yun Chi²*. ¹Novartis ²University of Florida
- 11:50 AM Analysis of Generalized Semiparametric Varying-Coefficient Effects Models for Longitudinal Data
♦ *Li Qi¹ and Yanqing Sun²*. ¹Sanofi ²University of North Carolina at Chapel Hill
- 12:10 PM Floor Discussion.

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