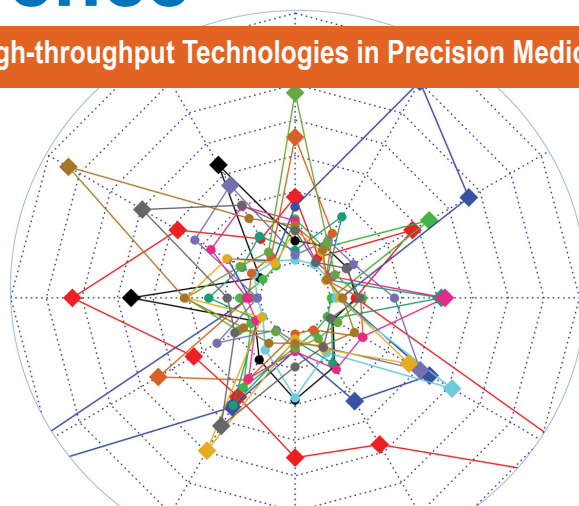


# iBRIGHT 2019 Conference

Integrative Biostatistics Research for Imaging, Genomics, & High-throughput Technologies in Precision Medicine

Nov. 11-13 | Houston Texas

Cancer Biostatistics, Clinical Trials,  
Statistical Genetics, and  
Integrative Biostatistics Methods  
for High-throughput Omic Technologies  
(including Microbiomics)



## AGENDA

Monday, November 11

7:30 – 8:30 AM	<b>Registration, Continental breakfast</b> Hallway
8:30 – 8:40 AM	<b>Introduction – Kim-Anh Do, Ph.D.</b> Professor and Chair, Department of Biostatistics The University of Texas MD Anderson Cancer Center
8:40 – 8:45 AM	<b>Welcome remarks – Giulio Draetta, MD, Ph.D.</b> SrVP, Chief Scientific Officer MD Anderson Cancer Center
8:45 – 9:50 AM	<b>Plenary speaker – Nilanjan Chatterjee, Ph.D.</b> Bloomberg Distinguished Professor of Biostatistics and Medicine Johns Hopkins University  <i>Polygenic Modeling of Complex Traits to Inform Biology, Causality and Prediction</i>
9:50 – 10:15 AM	<b>Break, Refreshments available (coffee, tea, water)</b> Hallway
10:15 – 11:45 AM	<b>Parallel Sessions 1 and 2</b>  <b>Session 1: Network Inference for Complex Biological Data</b> Organizers: Christine Peterson, Ph.D. (MD Anderson Cancer Center) and Min Jin Ha, Ph.D. (MD Anderson Cancer Center)  Adrian Dobra, Ph.D. (University of Washington) <i>Modeling Association in Microbial Communities with Clique Loglinear Models</i>  Marina Vannucci, Ph.D. (Rice University) <i>Spike-and-Slab Priors for Multiple Graphs Estimation</i>  Suprateek Kunda, Ph.D. (Emory University) <i>Estimating Dynamic Brain Functional Networks Using Multi-subject fMRI Data</i>

# AGENDA

## **Session 2: Single Cell Technology**

Organizers: Christina Kendzierski, Ph.D. (University of Wisconsin, Madison) and Jeffrey Morris, Ph.D. (MD Anderson Cancer Center)

Nick Navin, Ph.D. (MD Anderson Cancer Center)  
*Breast Cancer Evolution – Insights from Single Cell Genomics*

Mingyao Li, Ph.D. (University of Pennsylvania)  
*Gene Expression Imputation and Clustering with Batch Effect Removal in Single-cell RNA-seq Analysis by Deep Learning*

Davide Risso, Ph.D. (Weill Cornell Medical College)  
*Efficient Clustering of Large Single-cell Datasets*

**11:45 AM – 12:45 PM**

### **Lunch break**

On your own; see list of campus lunch locations in iBRIGHT program.

**12:45 – 2:45 PM**

### **Parallel Sessions 3 and 4**

#### **Session 3: Triumphs and Challenges in the Design and Conduct of Novel Adaptive Oncology Trials**

Organizer: Jack Lee, Ph.D. (MD Anderson Cancer Center)

Max Parmar, Ph.D. (University College, London)  
*Lessons Learned from Multi-arm, Multi-stage Trials – The STAMPEDE Trial and Beyond*

Mary Redman, Ph.D. (Fred Hutchinson Cancer Research Center)  
*Lessons Learned from Master Protocol Trials – The Lung-MAP Trial and Beyond*

Susan Halabi, Ph.D. (Duke University)  
*Lessons Learned from Cooperative Group Studies and Beyond*

Scott Berry, Ph.D. (Berry Consultants)  
*Lessons Learned from Bayesian Adaptive Trials – The I-SPY2 Trial and Beyond*

#### **Session 4: Pharmacogenomics: Current Challenges and Opportunities**

Organizers: Jeffrey Morris, Ph.D. (MD Anderson Cancer Center) and Veera Baladandayuthapani, Ph.D. (University of Michigan)

Amber Johnson, Ph.D. (MD Anderson Cancer Center)  
*Real-Time Implementation of Precision Oncology Decision Support Demonstrates Improvements in Clinical Trial Matching and Overall Survival*

Brian Athey, Ph.D. (University of Michigan)  
*The Next Generation of Pharmacogenomic Science is Now*

Anil Korkut, Ph.D. (MD Anderson Cancer Center)  
*Discovery of Anticancer Drug Combinations Through Quantitative Pharmacology*

Veera Baladandayuthapani, Ph.D. (University of Michigan)  
*Bayesian Frameworks for Calibrating Individualized Therapeutic Index in Pharmacogenomic Studies*

**2:45 – 3:15 PM**

**Break, Refreshments available (coffee, tea, water, fresh fruit, snack bars)**  
Hallway

## AGENDA

3:15 – 5:15 PM

### Parallel Sessions 5 and 6

#### Session 5: Clinical Trial Designs Using Biomarkers, Pharmacokinetics and/or Pharmacodynamics

Organizer: Yisheng Li, Ph.D. (MD Anderson Cancer Center); Peter Mueller, Ph.D. (The University of Texas at Austin)

Thomas Jaki, Ph.D. (Lancaster University)  
*Optimizing Confirmatory Clinical Trials with Master Protocols*

Satoshi Morita, Ph.D. (Kyoto University)  
*Bayesian Population Finding with Biomarkers in a Randomized Clinical Trial*

Moreno Ursino, Ph.D. (Inserm, Centre de Recherche des Cordeliers)  
*PK/PD Information in Early Phase Dose-finding Trials in Small Populations*

Peter Mueller, Ph.D. (The University of Texas at Austin)  
*A Nonparametric Bayesian Basket Trial Design*

#### Session 6: Cancer Biostatistics and Health Services Research

Organizers: Liang Li, Ph.D. (MD Anderson Cancer Center) and Yu Shen, Ph.D. (MD Anderson Cancer Center)

Ruth Etzioni, Ph.D. (Fred Hutchinson Cancer Research Center)  
*Translating New Biomarkers for Cancer Risk and Early Detection Technologies into Outcomes that Matter*

Rebecca Hubbard, Ph.D. (University of Pennsylvania)  
*Bias Reduction Approaches for Cancer Outcomes Research Conducted Using Electronic Health Records*

James O'Malley, Ph.D. (The Dartmouth Institute)  
*Using Social Network Analysis to Estimate the Effect of Network Position and Peer Effects with Application to the Intensity of End-of-life Care in Cancer*

Tor D. Tosteson, Sc.D. (Dartmouth College)  
*Terminal Trend Models for Censored Quality-of-life Measures, Cost and Survival Data with Applications in Cancer Survivorship and Osteoporosis*

5:15 – 5:45 PM

**Break, Refreshments available (coffee, tea, water)**  
Hallway

5:45 – 9:00 PM

**1 of 2 – Speed Poster Presentations, Poster Sessions**  
**Includes mixer and heavy hors d'oeuvres**

## Tuesday, November 12

8:00 – 8:30 AM

**Registration, Continental breakfast**  
Hallway

8:30 – 9:30 AM

**Plenary speaker: Hongzhe Li, Ph.D.**  
Professor of Biostatistics in Biostatistics and Epidemiology  
University of Pennsylvania

*Shotgun Metagenomics, Functional Microbiome and Its Applications in Cancer and Immunology*

## AGENDA

**9:30 – 9:45 AM**      **Break, Refreshments available (coffee, tea, water)**  
Hallway

**9:45 – 11:45 AM**      **Parallel Sessions 7 and 8**

**Session 7: Integrative Microbiome with Genomics**

Organizers: Kim-Anh Do, Ph.D. (MD Anderson Cancer Center) and Christina Kendzierski, Ph.D. (University of Wisconsin, Madison)

Robert Jenq, MD (MD Anderson Cancer Center)  
*Gut Bacteria and the Intestinal Barrier in Cancer Therapy*

Christine Peterson, Ph.D. (MD Anderson Cancer Center)  
*Bayesian Variable Selection for Microbiome Data*

Michael Wu, Ph.D. (Fred Hutchinson Cancer Research Center)  
*Integrative Analysis of Microbiome and Other Genomic Data Types*

Zhengzheng Tang, Ph.D. (University of Wisconsin, Madison)  
*Statistical Methods for Analysis of Microbiome Data*

**Session 8: Practical Bayesian Precision Medicine: Design and Analysis**

Organizer: Peter Thall, Ph.D. (MD Anderson Cancer Center)

Thomas Murray, Ph.D. (University of Minnesota)  
*Utility-based Design for Randomized Trials with Ordinal Outcomes and Prognostic Subgroups: Application to Pre-surgery Nutritional Prehabilitation in Esophageal Cancer Patients*

Juhee Lee, Ph.D. (University of California, Santa Cruz)  
*Optimizing Natural Killer Cell Doses for Heterogeneous Cancer Patients Based on Multiple Event Times*

Andrew Chapple, Ph.D. (Louisiana State University)  
*Subgroup-specific Dose Optimization in Phase I Trials Based on Time to Toxicity with Adaptive Subgroup Combination*

Yanxun Xu, Ph.D. (Johns Hopkins University)  
*Bayesian Nonparametric Survival Regression for Optimizing Precision Dosing of Intravenous Busulfan in Allogeneic Stem Cell Transplantation*

**11:45 AM – 12:45 PM**      **Lunch break**  
On your own; see list of campus lunch locations in iBRIGHT program.

**12:45 – 1:45 PM**      **Plenary speaker: Suchi Saria, Ph.D.**  
Assistant Professor of Machine Learning and Healthcare  
Johns Hopkins University  
  
*Machine Learning for Identifying Sepsis in Cancer*

**1:45 – 2:00 PM**      **Break, Refreshments available (coffee, tea, water, fresh fruit, snack bars)**  
Hallway

## AGENDA

2:00 – 4:00 PM

### Parallel Sessions 9 and 10

#### **Session 9: Novel Adaptive Designs and Statistical Methods to Accelerate Development of Immunology**

Organizer: Ying Yuan, Ph.D. (MD Anderson Cancer Center)

Sumithra Mandrekar, Ph.D. (Mayo Clinic)

*Statistical Considerations for Immunotherapy Trials in Cancer*

Suyu Liu, Ph.D. (MD Anderson Cancer Center)

*A Bayesian Phase I-II Design for Immunotherapy Trials*

Ying Lu, Ph.D. (Stanford University)

*Sequential Interim Analysis for Immunotherapy Oncology Trials with Restricted Mean Survival Time Endpoint*

Robert Beckman, MD (Georgetown University)

*Design Concept for a Confirmatory Basket Trial*

#### **Session 10: Integrative High-throughput Omics**

Organizers: Jeffrey Morris, Ph.D. (MD Anderson Cancer Center) and Veera Baladandayuthapani, Ph.D. (University of Michigan)

Jeffrey Morris, Ph.D. (MD Anderson Cancer Center)

*Top-down Integrative Genomics for Colon Cancer Precision Therapeutics*

George Tseng, Sc.D. (University of Pittsburgh)

*Precision Medicine via Robust Nonparametric Machine Learning and Outcome-guided Clustering with Multi-omics Data Integration*

Wei Sun, Ph.D. (Fred Hutchinson Cancer Research Center)

*Cell Type-specific Differential Expression and eQTLs*

Eric Lock, Ph.D. (University of Minnesota)

*Integrative Factorization of Bidimensionally Linked Matrices*

4:00 – 4:15 PM

### **Break, Refreshments available (coffee, tea, water)**

Hallway

4:15 – 5:45 PM

### Parallel Sessions 11 and 12

#### **Session 11: Integrative Genomics and Metabolomics**

Organizers: Peng Wei, Ph.D. (MD Anderson Cancer Center) and Christina Kendzierski, Ph.D. (University of Wisconsin, Madison)

Bing Yu, Ph.D. (UT Health)

*Genetics, Metabolomics and Cardiovascular Disease*

Qiongshi Lu, Ph.D. (University of Wisconsin, Madison)

*IPost-GWAS Data Integration Identifies Novel Risk Factors for Alzheimer's Disease*

Guanghua Xiao, Ph.D. (UT Southwestern Medical Center)

*Deep Learning and Spatial Modeling in Pathology Image Analysis*

## AGENDA

### Session 12: Statistical Genetics

Organizers: Xihong Lin, Ph.D. (Harvard School of Public Health) and Sanjay Shete, Ph.D. (MD Anderson Cancer Center)

Chris Amos, Ph.D. (Baylor College of Medicine)  
*Machine Learning Methods with Applications to Genetic Analysis*

Paul Scheet, Ph.D. (MD Anderson Cancer Center)  
*Statistical Genomics of Clonal Mosaicism*

Jaya Satagopan, Ph.D. (Memorial Sloan Kettering Cancer Center)  
*Measuring Inter-individual Variation in Risk due to Genetic and Environmental Factors – Applications in Epidemiology of Nevi*

**5:45 – 6:00 PM**      **Break, Refreshments available (coffee, tea, water)**  
Hallway

**6:00 – 9:00 PM**      **2 of 2 - Speed Poster Presentations, Poster Sessions**  
**Includes mixer and Mediterranean buffet**

## Wednesday, November 13

**8:00 – 8:30 AM**      **Registration, Continental breakfast**  
Hallway

**8:30 – 9:30 AM**      **Plenary speaker: David Balding, Ph.D.**  
Professor of Statistical Genomics  
University of Melbourne  
  
*Genome-wide Models for Heritability and Prediction*

**9:30 – 9:45 AM**      **Break, Refreshments available (coffee, tea, water)**  
Hallway

**9:45 – 11:15 AM**      **Parallel Sessions 13**

### Session 13: Electronic Health Records (EHR) Research

Organizers: Liang Li, Ph.D. (MD Anderson Cancer Center) and Sanjay Shete, Ph.D. (MD Anderson Cancer Center)

Qi Long, Ph.D. (University of Pennsylvania)  
*Distributed learning from multiple EHR databases for predicting medical events*

Haoda Fu, Ph.D. (Eli Lilly)  
*Individualized Treatment Recommendation (ITR) for Survival Outcomes*

Jiajie Zhang, Ph.D. (UT Health)  
*The AI Revolution is Coming to Medicine*

**11:15 AM**      **Closing Remarks – Kim-Anh Do, Ph.D.**