DBEI & CCEB RESEARCH DAY

A JOINT PROJECT OF
The Department of Biostatistics, Epidemiology and Informatics
AND
The Center for Clinical Epidemiology and Biostatistics

March 21, 2019 | 2nd ANNUAL EVENT
#2019ResearchDay

Biomedical Research Building (BRB)
Gaulton Auditorium
421 Curie Boulevard
Philadelphia, PA

PROGRAM
Welcome

Thank you for joining us at the second annual DBEI & CCEB Research Day! This event offers a snapshot of the latest research by the Department of Biostatistics, Epidemiology and Informatics and the Center for Clinical Epidemiology and Biostatistics and features this year’s Brian L. Strom Visiting Professorship Lecture.

The DBEI distinctively brings together expertise in biostatistics, epidemiology and informatics, to advance its mission:

*To discover, teach and promote impactful ways to preserve health, manage chronic disease and treat acute illness, by capitalizing on synergies across our three scientific disciplines.*

The CCEB is an interdisciplinary and interdepartmental program that links clinical epidemiology and biostatistics within the Perelman School of Medicine, the University of Pennsylvania Health System, and the Penn community to advance its mission:

*To foster research and training in clinical epidemiology and biostatistics, and serve as a resource to the clinical-research community.*
Peter J. Embi, MD, MS, FACP, FACMI, will deliver Leveraging Informatics to Enable Evidence-Generating Medicine and Create Learning Health Systems, the Brian L. Strom Visiting Professorship lecture. He is President and CEO of the Regenstrief Institute, Inc.; Leonard Betley Professor of Medicine and Associate Dean for Informatics & Health Services Research, Indiana University (IU) School of Medicine; Associate Director, Indiana Clinical and Translational Sciences Institute; and Vice President for Learning Health Systems, IU Health.

Dr. Embi is an internationally recognized researcher, educator and leader in the field of clinical and translational research informatics—specifically, clinical and translational research informatics. During this lecture, he will review the need for a new research-practice paradigm, driven by informatics, to create learning health systems. He will describe current approaches, challenges and opportunities to enable an evidence-generating-medicine model that complements evidence-based medicine, with the goal of improving care and enabling discovery through practice. Dr. Embi will also describe how his research, experiences and roles have informed ongoing efforts to bridge academic and operational informatics, to realize a learning health system.

He has published numerous peer-reviewed publications and presentations describing his innovations in the field. He has served in various leadership positions at The Ohio State University (OSU), including Interim Chair of Biomedical Informatics, Informatics Director of the OSU Center for Clinical and Translational Science, and Chief Research Information Officer at the OSU Wexner Medical Center. Prior to that, he was on the faculty of the University of Cincinnati College of Medicine, where he was the founding director of the UC Center for Health Informatics. Among his numerous awards and recognitions, Dr. Embi is a Fellow of the American College of Physicians and a Fellow of the American College of Medical Informatics, and he is Chair of the Board of Directors of the American Medical Informatics Association.
7:30 a.m.  Registration and Breakfast

8:30 a.m.  Welcome and Opening Remarks
Harold I. Feldman, MD, MSCE  
Chair, DBEI / Director, CCEB  
Hongzhe Li, PhD  
Professor of Biostatistics / Vice Chair for Integrative Research, DBEI

8:45 a.m.  Featured Research Presentations

*Food and Nutrition Environments: Is There an Elephant in the Room?*
Karen Glanz, PhD, MPH  
George A. Weiss University Professor

*Data Integration for Translational Research*
Dokyoon Kim, PhD  
Assistant Professor of Informatics

*Single-Cell Transcriptomics: Challenges, Opportunities, and Beyond*
Mingyao Li, PhD  
Professor of Biostatistics

9:45 a.m.  Flash Talks!

Xiaohui Yao —  Abstract #5  
Jiaxin Fan —  Abstract #11  
Thomas Hanff —  Abstract #13  
Ari Klein —  Abstract #19  
William La Cava —  Abstract #21  
Wenli Sun —  Abstract #32  
Alessandro Testori—  Abstract #33  
Alessandra Valcarcel —  Abstract #34  
Lingjiao Zhang —  Abstract #38  
Meijia Zhou—  Abstract #39
10:45 a.m.  Break

11:15 a.m.  DBEI Distinguished Faculty Presentations

Clinical Trial Simulation Studies to Inform Development of Pragmatic Trials in Psoriatic Arthritis
Alexis Ogdie-Beatty, MD, MSCE
Assistant Professor of Medicine and Epidemiology
Alisa Stephens-Shields, PhD
Assistant Professor of Biostatistics

Rethinking MRI Biomarkers in Multiple Sclerosis
Russell T. Shinohara, PhD
Associate Professor of Biostatistics

The Experimental Kickoff Rule and Concussions in Ivy League Football
Douglas Wiebe, PhD
Professor of Epidemiology

12:30 p.m.  Poster Session and lunch

2:00 p.m.  Keynote Address

Leveraging Informatics to Enable Evidence-Generating Medicine and Create Learning Health Systems
Peter J. Embi, MD, MS, FACP, FACMI
The Brian L. Strom Visiting Professorship lecturer
President & CEO, Regenstrief Institute, Inc.
Leonard Betley Professor of Medicine, Indiana University School of Medicine

3:00 p.m.  Please stay to enjoy refreshments and meet Dr. Embi.
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<td>Spike-and-Slab Group LASSOs for Grouped Regression and Sparse Generalized Addictive Models</td>
<td>R Bai, G Moran, J Antonelli, Y Chen, M Boland</td>
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<td>2</td>
<td>Harmonization of Multi-Site Longitudinal MRI Neuroimaging Data</td>
<td>J Beer, R Shinohara, K Linn</td>
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<td>3</td>
<td>A Semi-Parametric Approach to Analyzing Error-Prone Failure Time Outcomes and Exposures</td>
<td>L Boe, P Shaw</td>
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<td>4</td>
<td>Mapping Regional Effects of Exposure to Hydraulic Fracturing Fluid and Linking with Information on Toxicity</td>
<td>M Boland, C DeVoto</td>
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<td>5*</td>
<td>GWAS of Hippocampal Subfield and Neighboring Cortical Structure Volumes Identifies an ERC1 Locus Using ADNI High-Resolution MRI Data</td>
<td>S Cong, X Yao, K Nho, SL Risacher, AJ Saykin, L Shen</td>
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<td>6</td>
<td>Differences in Reported Symptom Type and Time to Recover Among Women and Men in the Ivy League-Big Ten Epidemiology of Concussion Study</td>
<td>B D’Alonzo, C Esopenko, D Smith, D Wiebe</td>
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<td>Integration of ChIP-Seq Data Identifies Global and Cell-Specific Glucocorticoid Receptor-Mediated Transcriptomic Changes</td>
<td>A Diwadkar, M Kan, B Himes</td>
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<td>A Local Group Differences Test for Subject-Level Multivariate Density Neuroimaging Outcomes</td>
<td>J Dworkin, K Linn, T Satterthwaite, A Raznahan, R Bakshi, R Shinohara</td>
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<td>Regularized Prediction Modeling in Small Samples with Application to Predicting Toxicity in a CAR T-Cell Immunotherapy Trial</td>
<td>M Edmondson, D Teachey, P Shaw</td>
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<td>Exploring Virtual Reality for Older Adults</td>
<td>C Fairman, S Oh, P Cacchione, G Demiris</td>
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<td>Assessing the Course of Organ Dysfunction Using Joint Longitudinal and Time-to-Event Modeling in the Vasopressin and Septic Shock Trial</td>
<td>M Harhay, S Ratcliffe, J Russell</td>
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<td>Transfer Learning for Clustering Analysis from Single-Cell RNA-seq data</td>
<td>J Hu, X Li, G Hu, M Li</td>
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<td>Understanding Regression to the Mean Bias in the Context of Synthetic Controls</td>
<td>N Illenberger, D Small, P Shaw</td>
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<td>A Jordan, A Bleakley, D Lazovich, A Strasser, C La Rochelle, K Glanz</td>
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<td>Social Media Mining for Studying Patient-Reported Birth Defect Outcomes</td>
<td>A Klein, A Sarker, H Cai, D Weissenbacher, G Gonzalez-Hernandez</td>
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<td>The Influence of Geographic Dispersion on Outcomes of Hospitalized Medicine Service Patients</td>
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<td>Protective Equipment and Concussion in Women’s and Men’s Lacrosse: Findings from the Ivy League-Big Ten Epidemiology of Concussion Study</td>
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CCEB Centers of Excellence

Each of these specialized centers employs deep expertise and asks new questions to improve population health.

Center for Causal Inference

www.cceb.med.upenn.edu/cci

The mission of the CCI is to be a leading center for research and training in the development and application of causal inference theory and methods. The CCI was founded in 2017 by the Center for Clinical Epidemiology and Biostatistics (CCEB) and now operates through a partnership between the Department of Biostatistics, Epidemiology and Informatics at the Perelman School of Medicine at Penn; the Department of Biostatistics and Epidemiology at Rutgers School of Public Health; and the Department of Statistics at the Wharton School.

Center for Health Behavior Research (CHBR)

www.cceb.med.upenn.edu/chbr

The Center for Health Behavior Research is an institution-wide collaborative effort dedicated to conducting health behavior research, fostering advances in measurement of health behaviors, advancing the use of health behavior theory, and promoting collaboration among faculty, fellows, and students. Through theory-based research and a broad focus on measurement of health behavior, the CHBR contributes to both fundamental and applied research to help individuals, populations, and clinicians improve health behaviors and outcomes.
Center for Pharmacoepidemiology Research and Training (CPeRT)  
www.cceb.med.upenn.edu/cpert

CPeRT’s mission is to:
• Provide an intellectual home for pharmacoepidemiology at Penn
• Promote the conduct of applied and methodologic pharmacoepidemiology research
• Foster training of the next generation of pharmacoepidemiologists
• Expand the number of Penn faculty members performing pharmacoepidemiology research

Center for Statistics in Big Data (CSBD)  
www.cceb.med.upenn.edu/csbd

CSBD focuses on significantly advancing the state of the art in statistical inferential and computational methods for transforming large, heterogeneous, high-dimensional big data sources into predictive models for biomedicine and precision medicine. Big data appear in all aspects of modern biomedical research; the goal of CSBD is to develop novel statistical inference and computational methods for big data encountered in population health sciences research through close collaborations with investigators at Penn.

Center for Therapeutic Effectiveness Research (CTER)  
www.cceb.med.upenn.edu/cter

The objective of CTER is to improve public health and patient-centered outcomes by enhancing the effectiveness of currently available therapies and improving care within health systems. This is accomplished through multidisciplinary research efforts targeted at several goals:
• understanding the reasons for limited effectiveness
• developing methods to improve effectiveness
• rigorously testing these methods
• determining strategies to implement these methods in practice
CCEB Research Services Centers

*These centers provide top biostatistical analysis and clinical research computing for investigators across all biomedical fields.*

**Biostatistics Analysis Center**
[www.cceb.med.upenn.edu/bac](http://www.cceb.med.upenn.edu/bac)

The Biostatistics Analysis Center (BAC) is staffed by professionally trained biostatisticians, biostatistical programmers and data managers, and provides a wide range of biostatistical and epidemiological consulting services to the University’s biomedical research community and externally. We welcome the opportunity to learn more about your research and to explore how we can best support your research goals.

**Clinical Research Computing Unit**
[www.cceb.med.upenn.edu/crcu](http://www.cceb.med.upenn.edu/crcu)

The CRCU provides the full range of services essential for the conduct of clinical research projects, including Phase I-IV, multi-center, randomized clinical trials, registry, and cohort studies, utilizing state-of-the-art technology and tools to ensure superior data quality. The CRCU specializes in study design and development, site management and training, data collection and processing, quality control, regulatory requirements and reporting, database development, administration, security, data storage and proposal development.
The Research Day Committee is especially grateful to the members of the Office of the Chair — Lisbeth Dennis, Eileen Fisher, Jennifer Forbes-Nicotera, Anna Le and Rebecca Lerario — for their invaluable contributions to the organization and success of this second annual event.

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