The Second International Molecular Pathological Epidemiology (MPE) Meeting

December 4-5, 2014
Jimmy Fund Auditorium, Dana-Farber Cancer Institute
December 4th, 2014

Dear Colleagues,

WELCOME to The Second International Molecular Pathological Epidemiology (MPE) Meeting!

As the Conference Chair, I welcome you to this unique meeting! The number of registrants has exceeded 100, from about 15 countries, and 15 US States! I hope that you find this transdisciplinary meeting to be an active and informative forum for exchanging viewpoints and generating new ideas. I hope that you will talk to many attendees, who are experts and have great visions for our future.

On April 24 (my 50th birthday), 2013, The First International MPE Meeting was held in Boston as a closed meeting. We regret that we could not invite most of you at that time. The purpose of the first meeting was to discuss and get a consensus on how to make a strategic plan in this emerging area. It was agreed that we would launch the open meeting series. We have been working to realize the open meeting since then.

For this second meeting, you can see that discussion topics span from pathology, epidemiology, biostatistics and bioinformatics. It is increasingly common to characterize molecular features of disease (particularly, cancer) in routine clinical practice and epidemiologic research. It provides us with challenges as well as enormous opportunities. We hope that, even if we cannot be an expert in all of these areas, we can work together to address the challenges and take advantages of the opportunities.

As one specific project which will be discussed, there is no research guideline specific in this MPE field. I have started working with the STROBE group, which has been successful in publishing the STROBE guideline and STROBE-ME (molecular epidemiology) guideline. Over the next few meetings, we can consider to make the "STROBE-MPE" guideline.

I would like to thank all of the members of the Program Committee, all of the speakers, moderators and discussants, the members of my MPE laboratory, and the Dana-Farber Cancer Institute (which provides the Jimmy Fund Auditorium as our venue). Without the supports of all of these contributors, this meeting would not have been possible. In particular, I would thank Dr. Zhi Rong (Ziron) Qian, Dr. Tingting Li and Ms. Tracy Baker, who compiled this program book.

Wishing you a very productive and enjoyable meeting for the two days!

Best regards,

Shuji Ogino
Conference Chair
The Second International Molecular Pathological Epidemiology (MPE) Meeting
Acknowledgements

Dana-Farber Cancer Institute (Edward J. Benz, Jr., MD, President and CEO) (in particular, for providing morale support and the meeting venue)

Department of Pathology, Brigham and Women's Hospital (Jeffrey A. Golden, MD, Department Chair) (in particular, for providing lunch for speakers, moderators and committee members, as well as providing morale support and helping in announcements)

Department of Epidemiology, Harvard School of Public Health (Michelle A. Williams, ScD, Department Chair) (in particular, for providing morale support, and helping in announcements)

Dana-Farber Harvard Cancer Center (Giovanni Parmigiani, PhD, Leader of Biostatistics and Computational Biology Program; Meir J Stampfer, MD, DrPH, and Lorelei Mucci, ScD, Leader and Co-Leader of Cancer Epidemiology Program) (in particular, for providing morale support, and helping in announcements)

Enzymatics for sponsoring coffee and water for the meeting

Program Committee

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<th>Shuji Ogino</th>
<th>Andrew Beck</th>
<th>Colin Begg</th>
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<td>Peter Campbell</td>
<td>Kathryn Fitzgerald</td>
<td>Edward Giovannucci</td>
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<td>Kentaro Inamura</td>
<td>Rafael Irizarry</td>
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<td>Akihiro Nishi</td>
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<td>Kana Wu</td>
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Poster Referees

Peter Campbell, Paul Lochhead, Hongmei Nan, Amanda Phipps, Zhi Rong Qian

Meeting Secretary: Tracy Baker (tracy_baker@dfci.harvard.edu)

Program book design: Zhi Rong Qian, Tingting Li, Tracy Baker
The Second International Molecular Pathological Epidemiology (MPE) Meeting is a meeting open to research community around the world, with free registration. We expect the implementation of Annual (or "1.5 yearly") International MPE Meeting. The First International MPE Meeting was held as a closed meeting in Boston, MA on April 24, 2013, and it went very successfully.

The most important premise of epidemiology is that individuals with the same disease name have similar causes, and can be expected to exhibit a similar disease evolution. In the past two decades, our knowledge on disease pathogenesis has improved considerably, and disease classification has also transformed, incorporating molecular mechanisms of disease. Most epidemiology studies including molecular epidemiology studies have still relied on disease data from clinical records, which have been collected without detailed assessment of molecular pathology. In a minority of epidemiology studies in the past decades, molecular pathology techniques have been used, typically under the umbrella term of "molecular epidemiology". This has hindered the development of not only specific methodologies to analyze disease heterogeneity and pathogenesis, but also standardized research guidelines. In fact, STROBE-ME (molecular epidemiology) guidelines do not adequately address molecular pathology and heterogeneity of disease.

To advance integrative molecular and population-level health science and address the unique research challenges specific to the field of MPE requires bringing together experts in various fields including molecular pathology, epidemiology, biostatistics, bioinformatics, and nutritional and environmental sciences. This effort of integrating seemingly divergent fields can lead to a greater understanding of heterogeneity of the pathogenic process, and the impact of environmental, dietary, lifestyle, and genetic factors and their interactions on that process. Brainstorming and discussion fostered by the MPE Meeting will lead to the development of new methodologies to address the unique research questions and challenges in this emerging field. Our specific aims of the MPE Meeting are:

1. To develop conceptual and practical framework of MPE
2. To cultivate and expand opportunities in MPE
3. To address challenges in MPE
4. To initiate effort of making guidelines in MPE research ("STROBE-MPE")

This unique meeting can provide an unprecedented opportunity for interdisciplinary collaboration and integration of multiple diverse fields. Eventually, we aim to establish the MPE Meeting as a regular annual science forum, where we can advance population science, and optimize our training and education systems for 21st century medicine and public health.
Meeting Agenda

December 4

7:30-8:20  Registration

8:20-9:05  Overview (moderator: Hongmei Nan)
  8:20-8:35  Meeting aims; opportunities and challenges in MPE  Shuji Ogino
  8:35-8:50  MPE enhances evidence for causality  Edward Giovannucci
  8:50-9:05  Discussion

9:05-9:15  Break

9:15-10:15  Colorectal and breast cancers (moderator: Kana Wu)
  9:15-9:30  MPE of obesity and colorectal cancer  Peter Campbell
  9:30-9:45  Aspirin and risk of colorectal cancer: molecular epidemiological insights  Andrew Chan
  9:45-10:00  Etiologic heterogeneity of breast cancer  Montserrat Garcia-Closas
  10:00-10:15  Discussion

10:15-10:25  Break

10:25-11:15  Special topics session (moderator: Shuji Ogino)
  10:25-10:40  Cancer tissue microbiome  Matthew Meyerson
  10:40-10:50  Discussion  TCGA
  10:50-11:05  TCGA gastric cancer study: using comprehensive genomic data to refine a cancer classification schema  Adam Bass
  11:05-11:15  Discussion

11:15-11:25  Break

11:25-11:45  Breast cancer, continued (moderator: Kana Wu)
  11:25-11:40  Integration of molecular pathology and epidemiology: interdisciplinary approach to understanding the pathogenesis of breast cancer  Rulla Tamimi
  11:40-11:45  Discussion

11:45-12:20  MPE pooling projects (moderator: Liam Murray)
  11:45-12:00  Pooling data to disentangle the etiologies of lymphoma subtypes  Lindsay Morton
  12:00-12:10  Integration of the Tumor Genome into the Genetics and Epidemiology of Colorectal Cancer Consortium (GECCO)  Ulrike Peters
  12:10-12:20  Panel discussion  Lindsay Morton, Ulrike Peters, Stephanie Smith-Warner, and Piet van den Brandt

Lunch and networking
Speakers, moderators, committee members and up to 10 others can have space at:
Mayer 4F Conference Room (20 people)
Lab conf room 380H, Amory bldg, 3rd fl. (10-15 people)
CMOP conf room Jimmy Fund 2FL (10 people)

12:20-1:15

1:15-3:00  Statistical opportunities and challenges in MPE (moderator: Donna Spiegelman)
  1:15-1:30  Etiologic heterogeneity: a conceptual framework for statistical analysis  Colin Begg
  1:30-1:45  Statistical methods to study disease heterogeneity: using categorical, ordinal, and multi-marker classifiers  Molin Wang
  1:45-2:00  Discussion
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| 2:00-2:15| Discovering and characterizing associations in presence of etiologic heterogeneity  
            *Nilanjan Chatterjee*  
            Assessing associations between breast cancer outcomes and risk factors in a multiple tumor marker setting: the issue of correlated and missing tumor marker data  
            *Bernard Rosner & Kathryn Fitzgerald*  
            Some methodological considerations in the face of outcome heterogeneity  
            *Eric Tchetgen Tchetgen* |
| 2:15-2:30| Discussion                                                              |
| 2:30-2:45| **3:00-3:15** Break                                                     |
| 3:15-4:15| **High dimensional data and cellular heterogeneity (moderator: Reiko Nishihara)**  
            3:15-3:30 Title TBD  
            *Rafael Irizarry*  
            DNA methylation biomarkers of human immune cells  
            *Karl Kelsey*  
            Computational methods for significance testing on ’omics data from heterogeneous populations  
            *Andrew Beck* |
| 3:30-3:45| 4:00-4:15 Discussion                                                  |
| 4:15-4:30| **Break**                                                              |
| 4:30-5:15| **Pathology and pathogenesis (moderator: Paul Lochhead)**  
            4:30-4:45 Pregnancy & the postpartum period: etiologic clues and possibilities for breast cancer prevention  
            *Mark Sherman*  
            Molecular characteristics of cancer-adjacent normal: associations with tumor characteristics and survival  
            *Melissa Troester* |
| 4:45-5:00| 5:00-5:15 Discussion                                                  |
| 5:15-5:30| **Group photos (all attendees are invited)**                         |
| 5:45-------| **Group dinner #1, Longwood Grille and Bars, Boston (Bookded for 30)** |
December 5

8:30-9:30  Various cancers (moderator: Amanda Phipps)
8:30-8:45  Renal cell carcinoma  Piet van den Brandt
8:45-9:00  Integrating tissue biomarker data in prostate cancer epidemiology studies  Lorelei Mucci
9:00-9:15  An epidemiological approach to understanding tumor heterogeneity in ovarian cancer  Shelley Tworoger
9:15-9:30  Discussion

9:30-9:45  Break

9:45-11:25  Open discussions of opportunities and issues relevant to MPE
9:45-10:10  Interdisciplinary education and training  led by Lorelei Mucci and Melissa Troester
10:10-10:35  Study design and statistical methods  led by Molin Wang and Aya Kuchiba
10:35-11:00  Routine collection of molecular pathology data  led by Andrew Beck and Mark Sherman
11:00-11:25  Issues in pooling MPE data  led by Lindsay Morton, Ulrike Peters, Stephanie Smith-Warner, and Piet van den Brandt

Lunch and networking
Speakers, moderators, committee members can have space at:
Dana 1130 (30 people)
Conference Moderators and Poster Referees (6 people)
Mayer 4F Conference Room

11:25-12:25  Announcements of Award Winners

12:30-2:30  Future plans
12:30-12:50  Research guideline development (STROBE-MPE)  led by Shuji Ogino
12:50-1:10  Possible collaboration projects  led by Molin Wang and Edward Giovannucci
1:10-1:30  Relationships with other societies  led by Peter Campbell, Piet van den Brandt, and Liam Murray
1:30-2:00  Planning Third International MPE Meeting  led by Amanda Phipps, Elizabeth Poole, and Shuji Ogino
2:00-2:10  R13 meeting grant  led by Shuji Ogino and Peter Campbell
2:10-2:30  Meeting proceeding writing and publication  led by Reiko Nishihara and Shuji Ogino

2:30  Meeting Adjourn

2:30-2:40  Group photos (speakers, moderators, committee members)