AAPM FOREM on Imaging Genomics
All sessions take place in the Duncan Building, CPB8 conference room on the 8th Floor, Texas Medical Center

Agenda -- September 30 - October 1, 2014, Houston, Texas

Chairs: Maryellen Giger (The University of Chicago), Sandy Napel (Stanford University), John Hazle (MD Anderson), Paul Kinahan (University of Washington)

Tuesday, September 30, 2014

12:15pm – 12:30pm Hotel shuttle departs from the Hilton Houston Plaza/Medical Center
1:00 Registration
1:30 Welcome and Introduction of Goals of FOREM (Giger – 15 minutes)
  • To appreciate the field of imaging genomics
  • Why imaging genomics
    o To aid in discovery along with our colleagues from biology
    o To aid in developing predictive models with our clinical colleagues
    o To ensure the quality of the image-based phenotypes
    o To ensure the use of the image-based phenotypes
  • To determine the role of AAPM in the field of imaging genomics
  • Strategic planning & breakout groups
1:45 Overview of current research in radiomics and in imaging genomics/radiogenomics (Robert Gillies – 30 minutes)
2:15 Lessons learned from clinical aspects of genomics research (Lynda Chin – 45 minutes)
3:00 Lessons learned from computational aspects of genomics research (Nancy Cox – 45 minutes)
3:45 Lessons learned from QIBA and quantitative imaging research (Paul Kinahan – 20 minutes)
4:05 Lessons learned from CAD and LIDC research (Sam Armato – 20 minutes)
4:25 15-minute break
4:40 Role of Medical Physicists in Harmonization (“standardization”) (moderated by Kinahan, Gillies)
  • What challenges and opportunities exist?
  • What is sufficient standardization?
  • What evaluation metrics exist?
5:40 20-minute break
6 Dinner & talk - View of imaging genomics from NCI/other funding agencies (Larry Clarke 30 minutes)
7:30 Hotel shuttle returns guests to the Hilton Houston Plaza/Medical Center
Wednesday, October 1, 2014

7:15 – 7:30am Hotel shuttle departs from the Hilton Houston Plaza/Medical Center

8  Breakfast

9-10 Standard of care vs. controlled standardized studies (i.e., Quantity vs. Quality) (moderated by Giger (Grossman), Cox, Napel)
   • Harmonization (“standardization”) vs. Standard of care
   • Role of idealized datasets
   • Need for consensus on standards
   • Science of big data vs. science of small data (Bob Grossman)
   • What is needed for the field?

10-11 How do/should imaging researchers collaborate with genomic researchers? (Hazle, Chin)
   • What value do genomic researchers see in image-based phenotypes?
   • Not just another numerical phenotype
   • Sharing of data, image-extraction software, association/evaluation software
   • Culture

11-12:30 What is the role of AAPM in the field of imaging genomics? (moderators John Boone, Larry Clarke)
   • Accreditation for standardization of image-based phenotypes
   • Should medical physicists be “credentialed” like radiologists
   • Role & relationships of TAC, QIN, QIBA
   • What is needed to have international collaborations?
   • Role of industry?
   • Role of FDA?
   • Medical Physicists are involved in assessing image quality, in setting standards, in development of quantitative image analysis (CAD history), in evaluation, etc
   • Will we be able to conduct meta-analysis studies with the collected data?
   • How do we get image data from PACS?

12:30-1:30 Lunch

1:30-3:00 Breakout groups to plan role of AAPM in imaging genomics (three groups)
   • How to achieve standardization (harmonization) (Napel)
   • How to evaluate performance (Giger)
     o of imaging system output
     o of image-based phenotypes
     o of merged phenotypes (i.e., classifier training/testing)
   • How to conduct large-scale validation studies (Boone)

3:00-3:15 Break

3:15-3:45 Report from Breakout Groups (1 slide each; lots of discussion)

3:45-5 Future? White paper?

5 – 5:30pm Hotel shuttle returns guests to the Hilton Houston Plaza/Medical Center