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DEPARTMENT OF STATISTICS AND BIostatISTICS
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Seminar

- Speaker: **Professor Veera Baladandayuthapani**
Department of Biostatistics
University of Texas MD Anderson Cancer Center
- Title: **Bayesian nonparametric functional models for high-dimensional genomics and imaging data**
- Time: **3:20 – 4:20pm, Wednesday, September 16, 2015**
- Place: **552 Hill Center**

Abstract

Due to rapid technological advances, various types of genomic, epigenomic, transcriptomic and proteomic data with different sizes, formats, and structures have become available. These experiments typically yield data consisting of high-resolution genetic changes of hundreds/thousands of markers across the whole chromosomal map.

Modeling and inference in such studies is challenging, not only due to high dimensionality, but also due to presence of structured dependencies (e.g. serial and spatial correlations). Using genome continuum models as a general principle we present a class of Bayesian methods to model these genomic profiles using functional data analysis approaches. Our methods allow for simultaneous characterization of these high-dimensional functions using non-parametric basis functions, joint modeling of spatially correlated functional data and detection of local features in spatially heterogeneous functional data – to answer several important biological questions. We illustrate our methodology by using several real and simulated datasets and propose methods to integrate various types of genomics and imaging data as well.

**** Refreshments will be served @2:50pm in Room 502 Hill Center ***