BOSTON UNIVERSITY

BOSTON UNIVERSITY STATISTICS AND PROBABILITY SEMINAR SERIES

Modeling Dependent Expression Data

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Mathematics and Computer Science (MCS) Building, Room 149
111 Cummington Street, Boston
Tea and Cookies at 3:30pm in MCS 153

Abstract: We consider modeling dependent high throughput expression data arising from different molecular interrogation technologies. Dependence between molecules is introduced via the explicit consideration of informative prior information associated with available pathways, representing known biochemical regulatory processes. The important features of the proposed methodology are the ease of representing typical prior information on the nature of dependencies, model-based parsimonious representation of the signal as an ordinal outcome, and the use of coherent probabilistic schemes over both, structure and strength of the conjectured dependencies. As part of the inference we reduce the recorded data to a trinary response representing underexpression, average expression and overexpression. Inference in the described model is implemented through Markov chain Monte Carlo (MCMC) simulation, including posterior simulation over conditional dependence and independence. The latter involves a variable dimensional parameter space. We use a reversible jump MCMC scheme. The motivating example are data from ovarian cancer patients.

For directions and maps, please see *http://math.bu.edu/research/statistics/statseminar.html.*