Research Talk

Candidate for Spousal Hire in Statistics, joint with Div. of Genetics (Medicine)

Speaker: Dr. Yildiz Yilmaz
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Date: Thursday, February 14, 2013
Time: 11:00 a.m.
Room: SN-2036

Title: **Methods for Analyzing Sequential Survival Times with Applications in Cancer Studies**

Abstract: Sequentially observed survival times are of interest in many studies. For example, one may be interested in time to recurrence and subsequent time to death following initial treatment for cancer. There are difficulties in analyzing such data using nonparametric or semiparametric methods. First, when the duration of followup is limited and the times for a given individual are not independent, induced dependent censoring arises for the second and subsequent survival times. Non-identifiability of the marginal survival distributions for second and later times is another issue, since they are observable only if preceding survival times for an individual are uncensored. In addition, in some studies a significant proportion of individuals may never have the first event. Fully parametric models can deal with these features, but robustness is a concern. We introduce a new approach to address these issues. We model the joint distribution of the successive survival times by using copula functions, and provide semiparametric estimation procedures in which copula parameters are estimated without parametric assumptions on the marginal distributions. This provides more robust estimates and checks on the fit of parametric models. The methodology is applied to a motivating example involving relapse and survival following colon cancer treatment.

Finally, this talk will discuss statistical methods for modeling complex time-to-event phenotypes in genetic association studies, and current issues in identifying novel genes involved in cancer recurrence following breast cancer treatment.