

# Biomarkers for Treatment Selection in Precision Medicine - Statistical Perspectives

Presented by

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### Abstract

*Precision medicine applies molecular technologies and statistical methods to identify biomarkers that indicate differential disease outcomes or treatment responses for better matching of disease with specific therapies to optimize treatment assignment. The success of precision medicine lies in the development of biomarker-based treatment selection strategy to identify right patients for the right treatment, or vice versa. This presentation describes statistical methods to develop biomarker-based treatment selection strategy to identify patient subgroups for which a particular therapy is "optimal" for a patient subgroup and enhance study efficiency for detecting treatment effect on the selected patients. The strategy consists of three components: 1) biomarker identification, 2) subgroup selection, and 3) clinical utility assessment. Biomarker identification involves statistical test procedures to identify sets of potential biomarkers from a large set of measurements. Subgroup selection develops biomarker-based classifiers to partition patients into subgroups that are homogeneous with respect to disease outcomes or treatment effects. Clinical utility assessment refers to improvement of accuracy of patient treatment assignments and enhancement of study power to detect treatment effect. Some statistical issues and challenges, including statistical models and tests to identify biomarkers, classifier development to identify subgroups, and classification of imbalanced subgroup sizes, will be discussed.*

# BIostatISTICS JOURNAL CLUB

## WHEN:

TUESDAY  
FEBRUARY 7<sup>TH</sup>  
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NOON - 1:00PM

## WHERE:

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