BIOS 221/STATS 366: Modern Statistics for Modern Biology

Summer Quarter 2013

This type of plot is used to show which genomic loci are significantly associated with a phenotype such as Type 2 Diabetes.

**Announcements**

- For those taking the class credit/no credit or for a letter grade: Important midterm and final paper information you need is [here](#).
- New lab schedule for Thursday (6/27) and Friday (6/28): Thursday 1-3 LKSC 120, Friday 2-4 LKSC 101.
- Please complete the following survey to obtain the permission code for joining the class: [Class Survey](#).
- In preparation for the course, please follow the [download instructions](#).

**Schedule and Location**

- Lecture: 06/24/2013 - 07/12/2013 MTWThF, 10:00 AM - 11:50 AM
- Location: Depends on day, full schedule [here](#).
- Labs: Week 1: TWThF, Week 2: MTW, Week 3: MTWTh
- Location and Times: Depends on day, full schedule [here](#).

**Instructors & TAs**

**Instructors**

Susan Holmes
- Office: Sequoia Hall 102
- Phone: (650) 725 [hyphen] 1925

Trevor Martin
- Office: Herrin Hall 309
- E-Mail: trevorm [at] stanford [dot] edu
- Phone: (650) 723 [hyphen] 1849

**TAs**

Austen Head
- Office: Sequoia Hall 208
- E-Mail: ahead [at] stanford [dot] edu
Course Goals and Prerequisites

Course Goals

- Learn useful probabilistic tools for generative modeling
  - Random variables
  - Simulations
  - Mixture Models
- Learn the statistical tools for analyzing large complex data sets
  - Data transformations
  - Multivariate analyses
  - Bootstrap
- Learn to use R and Bioconductor to do statistical analyses
  - Genomic, proteomic, images, flowcytometry and ecological data sets
  - Visualization of large data sets
  - Network and Tree Analysis

Prerequisites

- Permission of instructors
- Basic knowledge of R programming
  - Alternatively, willingness to learn R prior to the course (See BIOS205)
    - Achieving Level 6 of TryR would provide adequate background
      (http://tryr.codeschool.com/)