BIRS Workshop
Statistical Science for Genome Biology
August 14-19, 2004
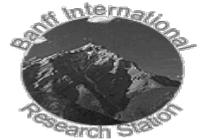
Organizers:
Jenny Bryan (University of British Columbia, Statistics)
Sandrine Dudoit (UC Berkeley, Biostatistics)
Mark van der Laan (UC Berkeley, Biostatistics and Statistics)

The main objective for this workshop is to facilitate the development and dissemination of statistical methods for the analysis of genomic data. Methodological topics of interest include: cluster analysis, graph theory, image analysis, model selection, multiple testing, prediction, statistical computing. Biological applications to be discussed include: gene annotation, genetic mapping, microarray data analysis, nucleotide and protein sequence analysis.

MEALS
Breakfast (Continental): 7:00 – 9:00 am, 2nd floor lounge, Corbett Hall, Sunday – Thursday
*Lunch (Buffet): 11:30 am – 1:30 pm, Donald Cameron Hall, Sunday – Thursday
*Dinner (Buffet): 5:30 – 7:30 pm, Donald Cameron Hall, Saturday – Wednesday
Coffee Breaks: As per daily schedule, 2nd floor lounge, Corbett Hall
*Please remember to scan your meal card at the host/hostess station in the dining room for each lunch and dinner.

MEETING ROOMS

All lectures are held in the main lecture hall, Max Bell 159 (accessible across the bridge from the 2nd floor of Corbett Hall).
Please note that the meeting space designated for BIRS is the lower level of Max Bell, Rooms 155-159. Please respect that all other space has been contracted to other Banff Centre guests, including any Food and Beverage in those areas.

PROGRAM

*All talks at least one hour in length should include 10 minutes for questions; shorter talks should include 5 minutes for questions.

*The three 1h 15min talks (Days 1, 2, and 3) should use some of the extra time for overview/introduction.

Workshop website:
http://www.stat.berkeley.edu/~sandrine/Public/BIRS04

Day 1 - Sunday, August 15 (lectures in Max Bell 159)
Prediction, model selection, cluster analysis

7:00-8:45:   Continental Breakfast, 2nd floor lounge, Corbett Hall
8:45-9:00:   **Andrea Lundquist**: Introduction and Welcome to
BIRS, Max Bell 159
9:00-10:15:   **Mark van der Laan**: Loss Based Cross-Validated
          Deletion/Substitution/Addition Algorithms in Learning:
          Applications in Genomics and Epidemiology.
10:15-10:45:   Coffee Break, 2nd floor lounge, Corbett Hall
10:45-11:45:   **Peter Bühlmann**: Graphical Modeling for Many
          Variables, and an application to Genetic Regulatory
          Subnetworks.
11:45-13:15:   Buffet Lunch, Donald Cameron Hall
13:15-14:15:   **Ingo Ruczinski**: Logic Regression in SNP association
studies.
14:15-14:45:   Coffee Break, 2nd floor lounge, Corbett Hall
14:45-15:45:   **Blythe Durbin**: Optimizing Neural Network
          Architecture Using the Deletion/Substitution/Addition
          Algorithm.
15:45-16:15:   Discussion moderated by **Jane Fridlyand**
17:30-19:30:   Buffet Dinner, Donald Cameron Hall
20:00-21:30:   Evening **Poster Session**, 2nd floor lounge, Corbett Hall

Day 2 - Monday, August 16 (lectures in Max Bell 159)
Statistical computing

7:00-9:00:   Continental Breakfast, 2nd floor lounge, Corbett Hall
9:00-10:15:   **Robert Gentleman**: Bioconductor: An Overview and
New Challenges.
10:15-10:45:   Coffee Break, 2nd floor lounge, Corbett Hall
10:45-11:45:   **John Quackenbush**
11:45-13:15:   Buffet Lunch, Donald Cameron Hall
13:15-14:15:   **Vincent Carey**: Semantic web concepts and tools for
bioinformatics.
14:15-14:45:   Coffee Break, 2nd floor lounge, Corbett Hall
14:45-15:45:   **Duncan Temple Lang**
15:45-16:15:   Discussion moderated by **Thomas Lumley**
17:30-19:30:   Buffet Dinner, Donald Cameron Hall
20:00-21:30:   Evening **Software Demo Session**

Day 3 - Tuesday, August 17 (lectures in Max Bell 159)
Multiple testing, differential gene expression

7:00-9:00:   Continental Breakfast, 2nd floor lounge, Corbett Hall
9:00-10:15:   **Katherine Pollard**: Multiple hypothesis testing for
             high dimensional biological data.
10:15-10:45:   Coffee Break, 2nd floor lounge, Corbett Hall
10:45-11:45:   **Michael Newton**
11:45-12:30:   **Uri Keich**: Another look at an ancient problem:
             finding the p-value of the llr statistic for multinomial
             distribution.
12:30-12:45:   Group Photo; meet on front steps of Corbett Hall
12:45-13:30:   Buffet Lunch, Donald Cameron Hall
13:30-17:30: Free Afternoon
17:30-19:30: Buffet Dinner, Donald Cameron Hall

Day 4 - Wednesday, August 18 (lectures in Max Bell 159)
**Integrated data analysis: Microarray data analysis, nucleotide and
protein sequence analysis, genetic mapping**

7:00-9:00:   Continental Breakfast, 2nd floor lounge, Corbett Hall
9:00- 9:45:   **Lior Pachter**: Efficient Algorithms for Bayesian
             Approaches to Sequence Alignment.
9:45-10:30:   **David Allison**
10:30-11:00:   Coffee Break, 2nd floor lounge, Corbett Hall
11:00-11:45:   **Sündüz Keles**: Multiple Testing Methods For ChIP-
             Chip High Density Oligonucleotide Array Data.
11:45-13:15:   Buffet Lunch, Donald Cameron Hall
13:15-14:00:   **Rafal Kustra**: Using GeneOntology structure and
              annotations in microarray analysis
14:00-14:45:   **Shelley Bull**: Improving the Reliability of Results from
             Genome-Wide Studies.
14:45-15:15:   Coffee Break, 2nd floor lounge, Corbett Hall
15:15-16:00:   **Alan Hubbard**: A combination of gene expression and
             proteomic data in brain tissue samples of Alzheimer
             patients: using multiple testing and clustering on to find
             subsets of diseased subjects with anomalous gene/protein
             expressions.
16:00-16:30:   Discussion moderated by **Jenny Bryan**
17:30-19:30:   Buffet Dinner, Donald Cameron Hall

Day 5 - Thursday, August 19 (lectures in Max Bell 159)
Experimental design and pre-processing in microarray experiments

7:00-9:00:   Continental Breakfast, 2nd floor lounge, Corbett Hall
9:00- 9:45:   **Susan Holmes**: Statistics of Microarray Data for
            Understanding the Immune System and Cancer.
9:45-10:30:   **Christina Kendziorski**: To Pool or Not to Pool: A
            Question of Microarray Experimental Design.
10:30-11:00:   Coffee Break, 2nd floor lounge, Corbett Hall
11:00-11:45:   **David Rocke**: Variability and Data Transformation for
            Gene Expression, Proteomics, and Metabolomics Data.
11:45-12:00:   Closing remarks - Organizers
12:00-13:30:   Buffet Lunch, Donald Cameron Hall

Checkout by 12 noon.

Invited Speakers

David Allison
Peter Bühlmann
Shelley Bull
Vincent Carey
Blythe Durbin
Robert Gentleman
Susan Holmes
Alan Hubbard
Uri Keich
Sündüz Keles
Christina Kendziorski
Rafal Kustra
Mark van der Laan
Michael Newton
Lior Pachter
Katherine Pollard
John Quackenbush
David Rocke
Ingo Ruczinski
Duncan Temple Lang