



Banff International Research Station

for Mathematical Innovation and Discovery

Emerging Statistical Challenges and Methods For Analysis of Massive Genomic Data in Complex Human Disease Studies

June 22-27, 2014

MEALS

*Breakfast (Buffet): 7:00 – 9:30 am, Sally Borden Building, Monday – Friday

*Lunch (Buffet): 11:30 am – 1:30 pm, Sally Borden Building, Monday – Friday

*Dinner (Buffet): 5:30 – 7:30 pm, Sally Borden Building, Sunday – Thursday

Coffee Breaks: As per daily schedule, in the foyer of the TransCanada Pipeline Pavilion (TCPL)

***Please remember to scan your meal card at the host/hostess station in the dining room for each meal.**

MEETING ROOMS

All lectures will be held in the lecture theater in the TransCanada Pipelines Pavilion (TCPL). An LCD projector, a laptop, a document camera, and blackboards are available for presentations.

SCHEDULE

Sunday, June 22

16:00 Check-in begins (Front Desk – Professional Development Centre - open 24 hours)

17:30-19:30 Buffet Dinner

20:00 Informal gathering in 2nd floor lounge, Corbett Hall
Beverages and small assortment of snacks are available on a cash honor system.

Monday, June 23

7:00-8:45 Breakfast

8:45-9:00 Introduction and Welcome by BIRS Station Manager, TCPL

9:00-11:30 Lecture Session 1: Rare-Variant Analysis I
9:00-9:30: Dan Nicolae: 'GWAS to WGAS-A Difficult Permutation'

9:30-10:00: Yun Li: 'Design of Sequencing-Based Studies'

10:00-10:30 Coffee Break, TCPL

10:30-11:00: Glen Satten: 'Testing Association Without Calling Genotypes Allows for Systematic Differences in Read Depth and Sequencing Error Rate Between Cases and Controls'

11:00-11:30: Jung-Ying Tzeng: 'A Collapsing Method Based on Mixed-Effect Modeling for Rare CNV Analysis'

11:30-13:00: Lunch

13:00-14:00 Guided Tour of The Banff Centre; meet in the 2nd floor lounge, Corbett Hall

14:00 Group Photo; meet in foyer of TCPL

14:00-15:30 Lecture Session 2: Analysis of Genetic and Genomic Data I

14:00-14:30: Liming Liang: 'Effective Adjustment of Differential Cell Populations in Epigenome-Wide Association Studies'

14:30-15:00: Karen Conneely: 'DNA Methylation, Gene Expression, and Aging'

15:00-15:30: Xihong Lin: 'Integrative Mediation Analysis of Genetic and Genomic Data in Genetic Association Studies'

15:30-18:30 Break

18:30-19:30 Dinner

19:30-21:00 Discussion

Tuesday, June 24

7:00-8:30 Breakfast

8:30-10:00 Lecture Session 3: Rare-Variant Analysis II

8:30-9:00: Iuliana Ionita-Laza: 'Empirical Bayes Scan Statistics for Detecting Clusters of Disease Risk Variants in Genetic Studies'

9:00-9:30: Fabrice Larribe: 'Mapping Rare Variants by the Coalescent'

9:30-10:00: Lisa Strug: 'Case-Control Genetic Association Studies with Next-Generation Sequence Data and External Controls: The Robust Variance Score Statistic'

10:00-10:30 Coffee Break, TCPL

10:30-12:00: Lecture Session 4: GWAS and Beyond I

10:30-11:00: Timothy Thornton: 'Mixed-Model Association Mapping in Admixed Populations'

11:00-11:30: Eleazar Eskin: 'Known and Unknown Confounders in Genetic Studies'

11:30-12:00: Ian Barnett: "The generalized higher criticism for testing SNP sets in genetic association studies"

12:00-13:00 Lunch

13:00-15:30 Lecture Session 5: Analysis of Genetic and Genomic Data II

13:00-13:30: Steve Horvath: 'Empirical evaluation of prediction- and correlation network methods applied to genomic data'

13:30-14:00: Nancy Cox: 'New approaches to large-scale data integration: Across -omics

and across variant types'

14:00-14:30: Coffee Break, TCPL

14:30-15:00: Heather Cordell: 'Moving Forward from GWAS through Analysis of Multiple Data Types'

15:00-15:30: Chris Amos: 'Characterizing SNPs Using Genomic Information'

15:30-18:30 Break

18:30-19:30 Dinner

19:30-21:00: Discussion

Wednesday, June 25

7:00-9:00 Breakfast

9:00-10:30 Lecture Session 6: Risk Prediction and Classification

9:00-9:30: Nilanjan Chatterjee: 'Statistical Issues in Development and Evaluation of Genetic Risk Prediction Models'

9:30-10:00: Jessica Minnier: 'Risk Classification with an Adaptive Naïve Bayes Kernel Machine Model'

10:00-10:30: Jiahua Chen: 'Building a Classification Model Based on miRNA Data'

10:30-11:00 Coffee Break, TCPL

11:00-12:30 Lecture Session 7: GWAS and Beyond II

11:00-11:30: John Witte: 'Methods for Evaluating Pleiotropy'

11:30-12:00: Hongyu Zhao: "Statistical Methods to Prioritize GWAS Results by Integrating Pleiotropy and Annotation"

12:00-12:30: Shelley Bull: 'Sampling Strategies in Two-Stage Regional Fine Mapping of a Quantitative Trait'

12:30-13:30 Lunch

13:30-18:30 Free Time

18:30-19:30 Dinner

19:30-21:00 Discussion

Thursday, June 26

7:00-8:30 Breakfast

8:30-10:00 Lecture Session 8: Rare-Variant Analysis III

8:30-9:00: Andrew Allen: 'Utilizing Population Controls in Rare-Variant Case-Parent Association Tests'

9:00-9:30: Sebastian Zoellner: 'Robust and powerful sibpair test for rare variant association'

9:30-10:00: Michael Epstein: 'Statistical Approaches for Rare-Variant Testing in Affected Sibships'

10-10:30 Coffee Break, TCPL

10:30-12:30 Lecture Session 9: Interactions and Imprinting

10:30-11:00: Janet Sinsheimer: 'Screening for Intergenerational Genetic Effects'

11:00-11:30: Michael Wu: 'Gene and Region Based Testing of Gene-Gene Interactions for Quantitative Traits with the SNP-Set Kernel Interaction Test (SKIT)'

11:30-12:00 Laurent Briollas: 'Detection of Gene by Gene and Gene by Environment Interactions in GWAS through Bayesian Graphical Models'

12:00-12:30 Bhramar Mukherjee: 'The role of environmental heterogeneity in meta-analysis of gene-environment interactions'

12:30-13:30 Lunch

13:30-15:00 Lecture Session 10: Pedigree Analysis

13:30-14:00: Ellen Wijsman: 'Genotype Imputation from Sequence Data in Pedigrees: Rare and Common Variants in Complex Traits'

14:00-14:30: Dan Schaid: 'Whole-Exome Sequence Scan in Pedigrees and Controls: Applications and Co-Segregation Methods'

14:30-15:00: Duncan Thomas: "Approaches to modeling precursor lesions in cancer etiology: applications to testicular and colorectal cancers"

15:00-18:30 Break

18:30-19:30 Dinner

19:30-21:00: Discussion

Friday, June 27

7:00-9:00 Breakfast

9:00-11:30 Free Time

11:30-13:30 Lunch (Checkout at 12)

Checkout by 12 noon.

** 5-day workshop participants are welcome to use BIRS facilities (BIRS Coffee Lounge, TCPL and Reading Room) until 3 pm on Friday, although participants are still required to checkout of the guest rooms by 12 noon. **

Abstracts to follow (if desired) in alphabetical order by last name of speaker.