

**Submittee:** Erica Moodie

**Date Submitted:** 2016-10-31 11:22

**Title:** Statistical Causal Inference and its Applications to Genetics

**Event Type:** Conference-Workshop

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**Location:**

Centre de recherche mathématique, Montreal Quebec

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**Dates:**

25 July, 2016 - 19 August, 2016

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**Topic:**

Causal inference attempts to learn about the causal structure underlying a data generating mechanism, to understand relevant scientific processes, and to predict the effect of future interventions. This is particularly relevant when experiments are infeasible because of impracticality, expense, or ethical considerations. In genetics this is particularly relevant, since although experiments are sometimes possible (and becoming easier due to emerging technologies) they are often expensive, therefore working with cheap observational data is extremely beneficial. The purpose of this program was to bring together researchers in statistics and genetics to discuss the current state-of-the-art of causal inference, the most pressing problems relevant to it, and to start to solve them.

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**Methodology:**

Week 1: Lectures and poster sessions, case studies (data analysis) competition

Weeks 2-4: Focused small group research

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**Scientific Highlights:**

Several new collaborative research projects were initiated; to date, no publications have resulted.

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**Organizers:**

Robin Evans, University of Oxford, [evans@stats.ox.ac.uk](mailto:evans@stats.ox.ac.uk)

Chris Holmes, University of Oxford, [cholmes@stats.ox.ac.uk](mailto:cholmes@stats.ox.ac.uk)

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Caroline Uhler, IST Austria, [caroline.uhler@ist.ac.at](mailto:caroline.uhler@ist.ac.at)

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**Speakers:**

Frederick Eberhardt (Caltech)  
Peter Spirtes (Carnegie Mellon University)  
Elias Bareinboim (Purdue University)  
Steffen Lauritzen (University of Copenhagen)  
Shohei Shimizu (Osaka University)  
Tom Claassen (Radboud University Nijmegen)  
Jin Tian (Iowa State University)  
John Marioni (EMBL-EBI)  
Karen Sachs (Stanford University)  
Kerstin Meyer (CRUK Cambridge Institute)  
Lawrence McCandless (Simon Fraser University)  
Garvesh Raskutti (WID)  
Sunduz Keles (University of Wisconsin Madison)  
Hyunseung Kang (Stanford University)  
Oliver Stegle (European Molecular Biology Laboratory)  
Sisi Ma (New York University)  
Simon Gravel (McGill University)  
Daniel Marbach (Universite de Lausanne)  
Luis Barreiro (Universite de Montreal)  
Alan Hubbard (University of California at Berkeley)  
Vanessa Didelez (University of Bremen)  
Dylan Small (The Wharton School, University of Pennsylvania)  
Sonja Swanson (Erasmus Medical Centre)  
Po-Ling Loh (University of Wisconsin-Madison)  
Olli Saarela (University of Toronto)  
Celia Greenwood (Lady Davis Institute for Medical Research)  
James Robins (Harvard School of Public Health)  
Genevieve Lefebvre (Universite du Quebec a Montreal)  
Michael Eichler (Maastricht University)  
Samantha Kleinberg (Stevens Institute of Technology)

All abstracts and slides for most speakers are available at the meeting website.

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**Links:**

[http://www.crm.umontreal.ca/2016/Genetics16/index\\_e.php](http://www.crm.umontreal.ca/2016/Genetics16/index_e.php)

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**File Uploads:**

Additional Upload 1:

[http://www.pims.math.ca/files/final\\_report/ActivityReport-CRM-CausalMeeting.pdf](http://www.pims.math.ca/files/final_report/ActivityReport-CRM-CausalMeeting.pdf)

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