

UNIVERSITY OF TORONTO McLAUGHLIN CENTRE PRS TEAM

**POLYGENIC RISK SCORE (PRS)
BEST PRACTICES WORKSHOP**

MAY 25

**Polygenic Risk Score (PRS)
Best Practices Workshop**

by Dalla Lana School of Public Health
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This is a multi-pedagogical approach PRS best practices workshop that includes didactic, hands-on and discussion.

Date and time Tue, May 25, 2021 (9:00 AM – 5:00 PM EDT)

Polygenic Risk Score (PRS) Best Practices Local Workshop

University of Toronto McLaughlin Centre PRS Team

In this workshop, the PRS team will introduce present-day PRS Best Practices. The team will present the construction, assumptions, validation, and calibration of PRS tools, share real-life users FAQ & solutions, along with the team's perspective on methodological gaps that are limiting the robustness and scope of current PRS applications.

Zoom link will be e-mailed to registrants on the day of the event.

Course materials will be available for registered hands-on participants to download prior to the workshop. An email will be sent with a link and instructions.

Admission

1. General Admission will be open to all and limited to 100 participants
2. Admission - Hands-on - This type of admission will allow you to participate in the hands-on exercises and will be limited to 20 participants.

The Polygenic Risk Score (PRS), sometimes known as a genetic risk score (GRS) or genome-wide polygenic score (GPS), is a weighted sum of the effect sizes of genetic variants on a given trait as estimated from a genome wide association study (GWAS). As a tool for prediction and early prevention of diseases, PRS has captivated the imagination of all aspiring to improve patient and population health. So has the potential of PRS as a tool in assessing causality or improving statistical power for new genetic discoveries.

Since its early appearance in the mid 2000's, in the form of simple Genetic Risk Score constructed from genotype data, PRS tools have been increasingly popular and applied to a wide range of health outcomes and contexts. The University of Toronto McLaughlin Centre PRS

team is dedicated to developing and applying sophisticated and robust approaches, built on more realistic model assumptions that better reflect the complex etiology of health outcomes.

In this workshop, the PRS team will introduce present-day PRS Best Practices. The team will describe the construction, assumptions, validation, and calibration of PRS tools, along with the team's perspective on methodological gaps that are limiting the robustness and scope of current PRS applications. The workshop will close with a presentation on clinical implications and general discussion.

Co-Instructors

The instructors are PIs from the McLaughlin Centre PRS Team:

Laurent Briollais, Ph.D., Vanessa Goncalves, Ph.D., Andrew Paterson, MB, ChB., BSc., Lei Sun, Ph.D., Linbo Wang, Ph.D.

In collaboration with

Arun Tiwari MSc., Ph.D., Clement Zai, Ph.D., Jennifer Brooks, Ph.D., Shelley Bull, Ph.D., France Gagnon, MSc., Ph.D., Lisa Strug, Ph.D., Wei Deng, Ph.D. candidate, Delnaz Roshandel MD, Ph.D., YanYan Zhao, Post-doctoral Fellow

Targeted audience

Graduate students, post-doctoral fellows, and principal investigators with prior experience with the analysis and interpretation of GWAS studies. No prior experience with PRS is required.

Goals & Learning Outcomes

This workshop builds mainly on PRS methodologies in risk prediction, but also provide a glimpse of PRS methodologies in causal inference. The workshop is focused on providing background on the PRS frameworks, current best practices in the construction and application of PRS tools with acknowledgement of analytic gaps and implementation challenges.

The learning outcomes are to:

1. Understand PRS frameworks and underlying concepts and describe how PRS are constructed
2. Know the key principles in PRS application and describe how these influence their interpretation
3. Know the main limitations of PRS and describe how to assess PRS validity in view of these limitations
4. Gain practical experience applying PRS methodologies to a dataset
5. Gain perspective on the future of PRS methodologies

Learning resources Hands-on manual

Agenda

The workshop will run introductory content from 9:00 AM-12:00 PM and more advanced topics and clinical implications 3:00 PM-5:00PM. The hands-on component will run from 1:00 PM-3:00PM.