

**“(I) Structural Equation Models with Applications to Quantitative  
Genetics  
&  
(II) Learning from Complex Traits in a Genomic Era”**

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**Abstract:**

The presentation will cover two topics: (I) Structural Equation Models (SEMs) with applications to Quantitatively Genetics; and, (II) Predicting Genetic Values in a Genomic Era.

In the first half of the presentation, after a brief introduction to SEMs, I will discuss three articles that use SEMs and factor analytic models to study the relationships between production and disease traits in two species.

In the second module I will focus on prediction of genetic values using dense markers and pedigrees. Two methodologies will be discussed: (a) parametric regression of genetic values on marker co-variates; and, (b) non-parametric regression using Reproducing Kernel Hilbert spaces methods. The methods will be illustrated with two empirical studies. One of them evaluates the impact of considering markers for prediction of genetic values in two populations (a collection of pure-lines of wheat, and an outcross population of mice). The second one focuses on the problem of designing a low-density assay that may be useful as a (low-cost) first diagnostic test.