



4th year colloquium

# Modelling the genetic basis of human complex traits

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Host: Beatriz Vicoso

Abstract: A basic principle of genetics is that observable characteristics result from two sources: the expression of an individual's DNA and the environment that they experience. Identifying the DNA regions involved and accurately estimating their influence across lifespan is key to understanding how DNA shapes disease outcomes. However, genetic effects reflect multiple underlying biological processes, and they are likely small, with a large number of associated regions dispersed widely across the DNA, which makes their quantification difficult. Our group develops theory and analysis methods for large-scale high-dimensional genomics data that we hope can provide insights into long-standing questions in quantitative genetics. In this talk, I will present a series of work that we have conducted over the past four years which is aimed at enhancing prediction of disease outcomes from the DNA and improving association testing between the DNA and electronic health record data. I will provide evidence that the genetic basis of age-at-menopause is predominantly age-specific and also show how graphical modelling can lead to novel insight into how DNA associations change through life. Finally, I will then describe how trait variation is shaped by potentially complex relationships between the DNA effects of children and their parents, and discuss our ongoing work to understand whether their separation and quantification is possible in human population data.

**Friday, April 26, 2024 11:00am - 12:00pm**

RLH



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<https://ista.ac.at/en/campus/how-to-get-here/> The ISTA Shuttle bus is marked ISTA Shuttle (#142) and has the Institute Logo printed on the side.