

CIHR STAGE

*Strategic Training
for Advanced Genetic
Epidemiology*



**Lunenfeld-Tanenbaum
Research Institute**
Sinai Health System

The **Lunenfeld-Tanenbaum
Research Institute** is a proud
partner of **CIHR STAGE** and jointly
presents:



Dr. Augustine Kong

Professor of Statistical Genetics
Nuffield Department of Medicine
Big Data Institute
University of Oxford

The Nature of Nurture: Effects of Parental Genotypes

**Friday
October 5, 2018
12:00 – 1:00 pm**

The Fields Institute
Room 230, Second Floor
222 College Street, Toronto, ON

Abstract:

How the human genome (nature) and the environment (nurture) work together to shape members of our species is a fundamental question. In a recent publication (Science, Jan, 2018), we demonstrated that the DNA in the parents, both the halves that were transmitted to the offspring (the proband) and the halves that were not transmitted, can impact the fate of the proband through their effects on the parents' characteristics/behaviour which in turn affect the nurture received by the proband. We call this phenomenon genetic nurture. <https://www.nytimes.com/2018/01/25/science/children-parents-genes-education.html>. Because the DNA in the proband inherited/transmitted from the parents would have both the standard direct genetic effect and the genetic nurturing effect, statistically, to decompose the two effects would require DNA data on the parents in addition to that of the child. Using population-scale data from Iceland collected by deCODE Genetics, it was revealed that genetic nurture plays a substantial role in education-related traits, fertility traits and general health. While the paternal and maternal effects are of similar magnitude for educational attainment, mothers contribute more to general health than fathers. There is suggestive evidence that siblings also contribute to genetic nurture. Recognizing these phenomena can affect the Nature versus Nurture debate, and how we think about many problems in quantitative genetics. This should also affect data-gathering strategies, e.g. more data on families, and the development of new statistical models and methodologies for data analyses.

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