COLUMBIA | ENGINEERING
The Fu Foundation School of Engineering and Applied Science

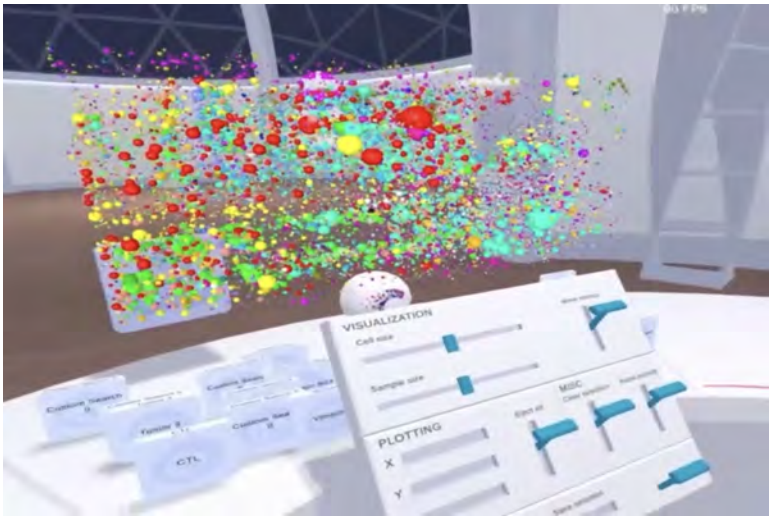
Distinguished Colloquium in Interdisciplinary & Applied Mathematics

Simon Tavaré

Director, Irving Institute for Cancer Dynamics
Departments of Statistics and Biological Sciences
Columbia University

"Adventures in modeling cancer evolution"

Understanding the past and future evolution of tumors is a challenging experimental and mathematical problem. Cancer is described as a disease of the genome, so my focus will be on mutations in DNA and what they tell us about tumor evolution. I will focus on aspects of tumor heterogeneity, the DNA sequence variation observed between tumors and within them. I will outline some of the issues, illustrating the interplay between molecular data obtained from tumors and the statistical and stochastic modeling used for inference. I will conclude with a glimpse of where technology is taking us in this quest, and the sort of quantitative problems that are just around the corner.



Simon Tavaré obtained his PhD in Probability and Statistics in 1979 from the University of Sheffield, and began his research career in the USA. After an informal postdoc with Sam Karlin in Stanford, he held positions in Mathematics at the University of Utah, Statistics at Colorado State University, and Mathematics at the University of Southern California. He held the Kawamoto Chair in Biological Sciences at USC from 1998 to 2014. His research there included work in population genetics, computational statistics, bioinformatics, probabilistic combinatorics and inference for stochastic processes.

In 2003, Simon moved to the University of Cambridge, as Professor of Cancer Research in the Department of Oncology, a group leader in the Cambridge Research Institute from 2006, and a Professor in the Department of Applied Mathematics and Theoretical Physics. From February 2013 to January 2018 he was Director of the Cancer Research UK Cambridge Institute, which became a department of the University of Cambridge in January 2013. His group there focuses on statistical bioinformatics and computational biology, particularly evolutionary approaches to understanding cancer biology. In 2009 Simon was elected a Fellow of the Academy of Medical Sciences (FMedSci), in 2011 a Fellow of the Royal Society (FRS) and in 2015 a member of EMBO. He gave the American Mathematical Society's Einstein Lecture in 2015, and was one of the invited speakers at ICIAM2015 in Beijing. He was President of the London Mathematical Society from 2015 to 2017, and was elected a Fellow of the American Mathematical Society in 2018.

In 2018, Simon moved to Columbia, where he is Herbert and Florence Irving Professor of Cancer Research in the Departments of Statistics and Biological Sciences, and Director of the new Irving Institute for Cancer Dynamics. He was elected as a foreign associate of the US National Academy of Sciences in 2018.

Tuesday, April 23, 2019

1:30 pm, 750 CEPSR, Costa Engineering
530 West 120th Street
(Refreshments in 200 Mudd at 1:00 PM)

Organizing Committee:
Qiang Du (APAM)
Don Goldfarb (IEOR)
Eitan Grinspun (Computer Science / APAM)
Ioannis Karatzas (Mathematics)
Andrei Okounkov (Mathematics)
Michael I. Weinstein (APAM / Mathematics)

https://apam.columbia.edu/distinguished-colloquium-series-interdisciplinary-and-applied-mathematics