GATERSLEBEN LECTURE

Speaker: Erez S. Lieberman Aiden, PhD.
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Bio

Erez Lieberman Aiden received his PhD from Harvard and MIT in 2010. After several years at Harvard's Society of Fellows and at Google as Visiting Faculty, he became Assistant Professor of Genetics at Baylor College of Medicine and of Computer Science and Applied Mathematics at Rice University.

Dr. Aiden's inventions include the Hi-C method for three-dimensional DNA sequencing, which enables scientists to examine how the two-meter long human genome folds up inside the tiny space of the cell nucleus (Lieberman-Aiden & Van Berkum et al., *Science*, 2009). In 2014, his laboratory reported the first comprehensive map of loops across the human genome, mapping their anchors with single-base-pair resolution (Rao & Huntley et al., *Cell*, 2014). In 2015, his lab showed that these loops form by extrusion, and that it is possible to add and remove loops and domains in a predictable fashion using targeted mutations as short as a single base pair (Sanborn & Rao et al., *PNAS*, 2014). In 2017, his lab showed that it is possible to use 3D maps, generated using Hi-C, to assemble mammalian genomes, entirely from scratch, from short reads alone, at a total cost of under $10,000 (Dudchenko et al., *Cell*, 2014). Using this methodology, the Aiden lab reported the first end-to-end genome of the Aedes aegypti genome, which carries the Zika virus. Assembling the Aedes aegypti genome from end-to-end had been highlighted as essential to the worldwide Zika response by a front page article in the *New York Times*.

In addition, together with Jean-Baptiste Michel, Dr. Aiden also developed the Google Ngram Viewer, a tool for probing cultural change by exploring the frequency of words and phrases in books over the centuries. Now a product at Google, the Ngram Viewer is used every day by millions of people worldwide.

Dr. Aiden's research has won numerous awards, including recognition for one of the top 20 "Biotech Breakthroughs that will Change Medicine", by Popular Mechanics, membership in Technology Review's 2009 TR35, recognizing the top 35 innovators under 35; and in Cell's 2014 40 Under 40. His work has been featured on the front page of the *New York Times*, the *Boston Globe*, the *Wall Street Journal*, and the *Houston Chronicle*. One of his talks has been viewed over 1 million times at *TED.com*. Three of his research papers have appeared on the cover of Nature and Science. In 2012, he received the President's Early Career Award in Science and Engineering, the highest government honor for young scientists, from Barack Obama. In 2014, *Fast Company* called him "America's brightest young academic." In 2015, his laboratory was recognized on the floor of the US House of Representatives for its discoveries about the structure of DNA.