

Department of Mathematics

Applied Mathematics Seminar

Dr. Kevin Schilling

Title: Mathematics in Cutting Edge Biotech

Abstract:

As low-hanging molecular fruit disappear, the process of drug discovery is becoming increasingly complex. With this complexity comes the need to employ a wide range of mathematical techniques. From combinatorial chemical synthesis to statistical models for potency prediction, we trace the path of candidate molecules through the discovery phase of drug development, and explore the mathematical treatments they receive along the way. Combinatorics, Fourier transformations, hidden Markov models, principle component analysis, linear block codes for DNA sequence error correction, nested probability distributions, the Plackett-Luce model, and machine learning are some of the topics that will be covered.

About the speaker:

Dr. Kevin Schilling graduated from Cal Poly San Luis Obispo (BS Chemistry 2015, Statistics minor) and UC Santa Cruz (PhD Chemistry 2021). He now works at the drug discovery startup 1859 Inc, using a broad range of mathematical tools in the design of algorithms for the analysis of DNA-encoded combinatorial chemical libraries.