

Aaron Brooks



Graduate Institution: University of Washington
(Institute for Systems Biology)

Location: Seattle, WA

Graduate Discipline: Systems/Synthetic Biology

Hometown: Rio Rancho, NM

Research Interests:

Microbes are enormously powerful. Natural selection in microbial populations has generated solutions to difficult problems that are unrivaled by human engineering: microorganisms thrive in extreme environments once thought inhospitable to life; they produce products that are commercially and medically valuable; and they transform their environments in dramatic ways. Natural microbial communities, however, have been severely understudied. Some of the most elegant solutions to pressing social and environmental problems are likely found within the molecular machinery of these systems. To harness the power of natural biological systems, we need predictive models of cellular physiology that enable rational reengineering. Towards that goal, I develop methodological and computational tools to recover high-resolution, kinetic models predictive of transcriptional dynamics from finely-resolved single-cell reporter data.

Key words: systems/synthetic biology, complexity science, evolution, microbiology

About me:

I'm fascinated by nature. My fundamental research goal is to better understand the principles that craft living systems. At the same time, I'm compelled to make tangible contributions to our world. Fortunately, these two ambitions are compatible. By creating synthetic systems and studying their evolution in the lab, we will both deepen our understanding of the principles that shape our world and establish the framework for biology-inspired innovations that will transform our lives. In the long-term, I'd like to participate in efforts to leverage synthetic microbial communities for a diverse set of goals, including bioremediation, the synthesis of rare chemical commodities, and the production of next-generation, sustainable energy resources. These are big problems that must be engaged by collections of researchers with diverse, interdisciplinary expertise. Together, we can gain unprecedented insights into the complex processes that define life – this is an exciting time to study biological systems.

Hobbies: mountaineering, reading, brewing beer, philosophizing.



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