Evolution of Cooperation through a Quantitative Lens: A Personal Journey

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Friday, November 1, 2019
3:05 p.m., SCOB 228

Abstract

We want to understand how phenotypes of cooperators determine the robustness of a cooperative community against perturbations, and how community robustness might change as members evolve. Such understanding is important if we want to engineer robust cooperative communities for biotechnology. I will introduce an engineered yeast cooperation-cheating system and describe what we have learned from it. I will also illustrate the power of quantitative thinking in biology.

Bio-Sketch

Dr. Shou is an Associate Member at the Basic Sciences Division in the Fred Hutchinson Cancer Research Center. Dr. Shou uses experimental and computational model systems to study how organisms balance cooperation and competition. She received her Ph.D. degree in biology from California Institute of Technology in 2001. After her postdoctoral research at the Rockefeller University and the Memorial Sloan Kettering Cancer Research Center, Dr. Shou joined Fred Hutchinson Cancer Research Center as an Assistant Member in 2007. Dr. Shou held several awards including an NIH Director’s New Innovator Award, Amersham Biosciences/Science Young Scientist Prize, and Ferguson Award for the Best Biology Thesis.