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Fluctuation effects and evolution in bacterial populations on a chip JAAN MANNIK, JUAN E. KEYMER, CEES DEKKER, Delft University of Technology — Fluctuation effects are ubiquitous in physics. Relatively little is known what role these effects play in systems involving biological organisms. How do random fluctuations originating from the environment and from the biological organisms itself affect the population dynamics and evolution? Here, we address this question using an experimental approach where we grow a large number of independent E. coli populations on a microfluidic silicon chip designed to evolve the body size distribution. We provide the same environmental conditions for different populations and follow their evolution in real time measuring number of bacteria in different colonies. We analyze fluctuations in these numbers and how the body size distribution of bacteria changes.

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