

FIRST WORKSHOP

"DYNAMICAL SYSTEMS APPLIED TO
BIOLOGY AND NATURAL SCIENCES "

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ABSTRACT | Isabel Gordo

Title

Experimental evolution in bacteria

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Abstract

Estimates of rates and effects of mutations in bacteria will have a profound impact on our understanding of their biology, their diversity, their rate of speciation and in our health. Adaptive mutations are rare, hard to detect in experimental settings and difficult to infer from DNA sequence data of natural populations. Here we have study the process of adaptation in a controlled laboratory environment using a powerful marker system to detect adaptive events in *Escherichia coli*. We obtained an estimate of the rate of mutation towards beneficial alleles of 0.00002 with a mean effect of 1%. We also measured the level of epistasis between deleterious mutations (which confer resistance to antibiotics) and found evidence for pervasive positive epistasis.