

Mutation dynamics and fitness effects followed in single cells

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Mutations have been investigated for more than a century but never witnessed in action in single cells, thus preventing direct characterization of their dynamics and reliable estimation of the distribution of their fitness effects. Such estimates have wide application and are critical for most evolutionary models/studies. We accomplished this in *Escherichia coli* by employing microfluidics, time-lapse imaging, and by visualizing mutations in single cells by using a fluorescent tag of the Mismatch Repair System. I will present our results obtained for strains having a wide range of mutation rates and growing under controlled condition in the absence of exogenous stress.

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