Assumptions

Strong Selection Weak Mutation regime

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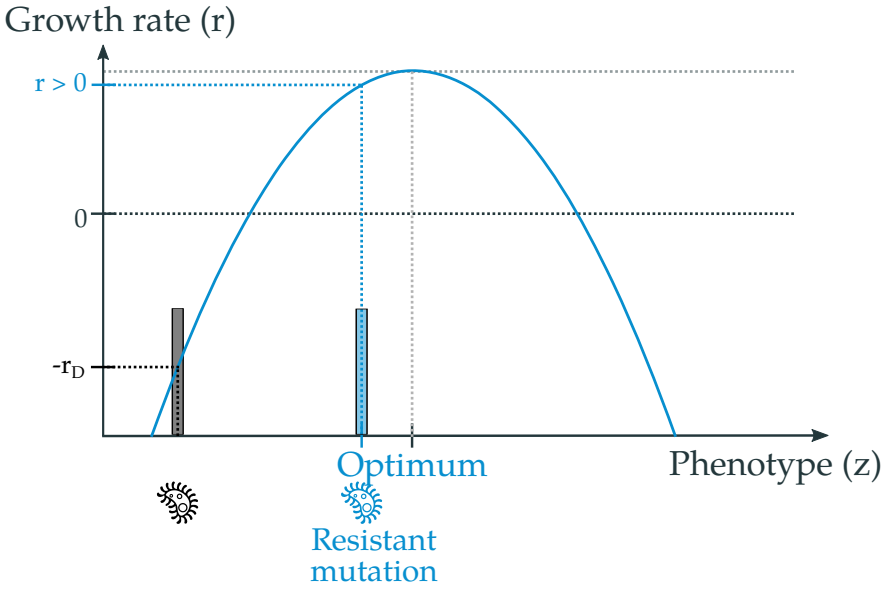

Adaptation from a single mutation emerging from a distribution of random mutants

Both the demography and the evolutionary dynamic are stochastic

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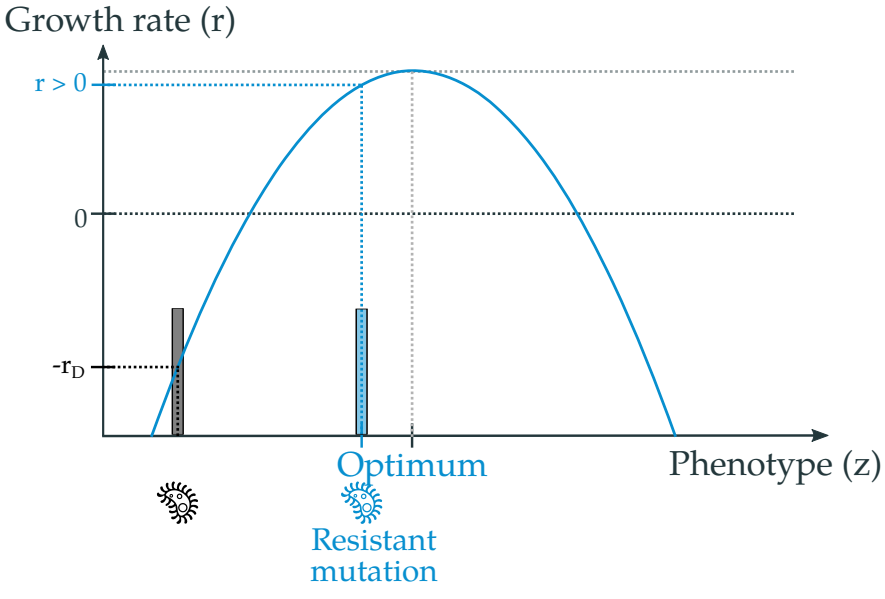

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$$P_{Rescue} = 1 - exp(-\frac{N_0\,U}{r_D}\,f(r_D, r_{max}, \lambda, \theta))$$

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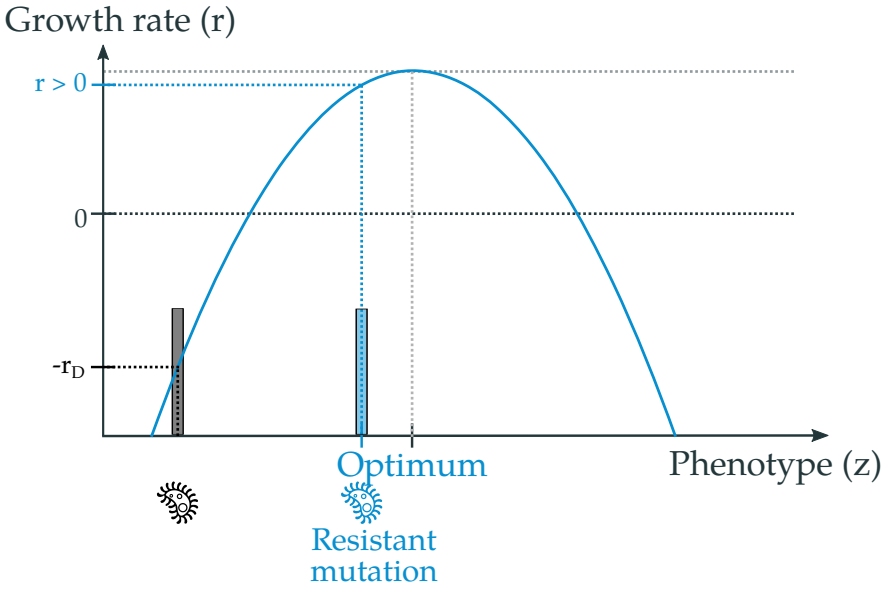

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Probability of ER → P_{Rescue}

Number of mutants appearing before extinction → $\frac{N_0\,U}{r_D}$

Proportion of resistant mutants among random mutations escaping stochastic loss → $f(r_D, r_{max}, \lambda, \theta)$