

**Figure S1** The fitness distribution of a population adapting at many loci is Gaussian. The figure shows the fitness distribution measured using our computational model for different ratios  $r/\sigma$ . Only at  $r/\sigma = 0.1$  or 0.2, one sees (slight) deviations from the Gaussian. Our analysis applies in the range  $1 > r/\sigma > 1/V\log N$ , where the fitness distribution is Gaussian all the way into the tails.