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Supplementary Material.

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1 Posterior distributions

In the main document we present a series of ABC posterior distributions that are constructed using the top 10,000 samples from a total of 1,000,000 prior samples, giving $u = 0.01$. In this supplementary material document we present equivalent posterior distributions that are constructed using the top 20,000 of the same 1,000,000 samples, giving $u = 0.02$. Results in Fig S1-S2 correspond to the results in Fig 3–5 in the main document. Both a qualitative and quantitative comparison of these two sets of results shows that the results are insensitive to our choice of setting $u = 0.01$.

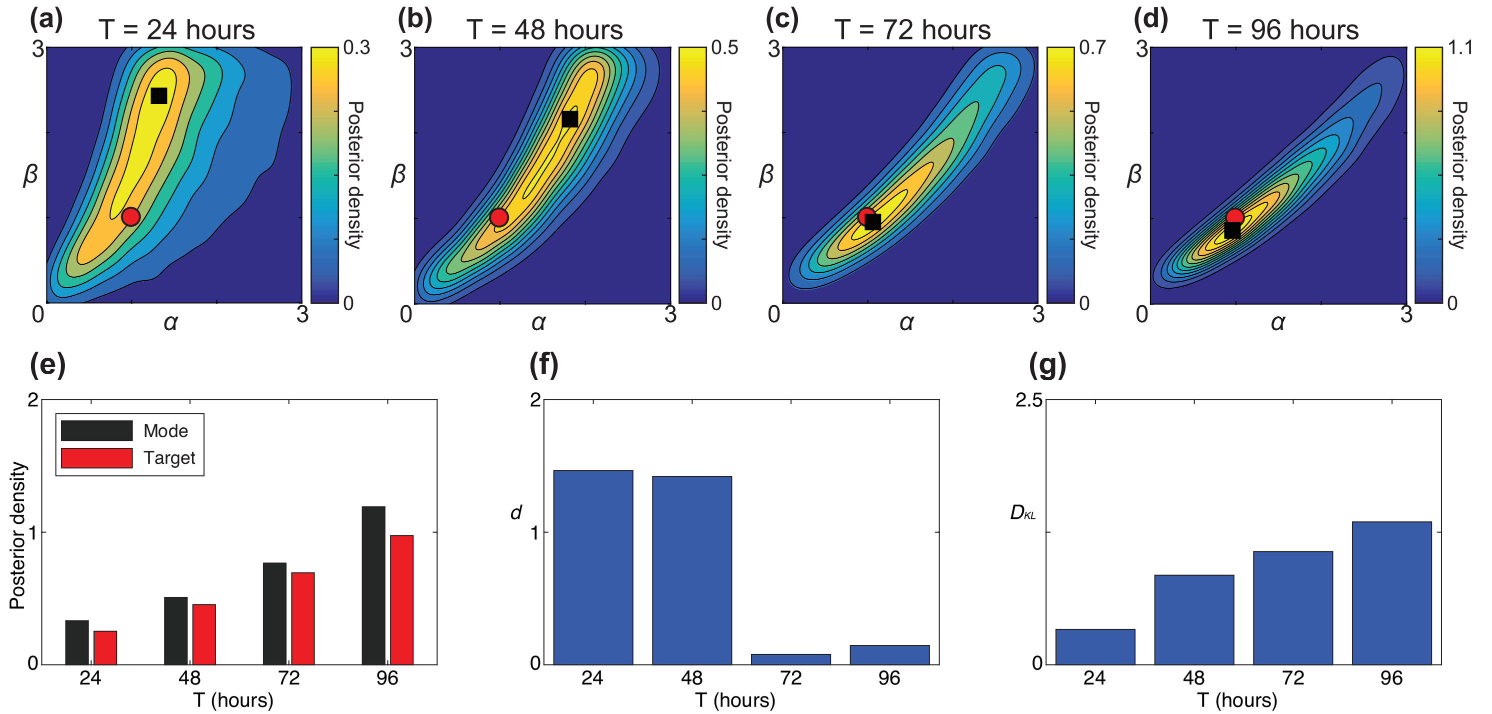

Fig. S1. Posterior distributions for Case 1: $(\alpha, \beta) = (1, 1)$. (a)-(d) ABC posterior distributions for: (a) $T = 24$ hours; (b) $T = 48$ hours; (c) $T = 72$ hours and (d) $T = 96$ hours. The posterior distribution is approximated using the best 20,000 samples from 1,000,000 prior samples ($u = 0.02$), as measured by ρ. The red circles shows the location of the target parameters used to generate the observed data ($\alpha = 1$, $\beta = 1$). The black squares indicate the mode of the posterior density. The modes are (1.32, 2.43), (1.82, 2.16), (1.06, 0.95) and (0.96, 0.86) in (a)-(d), respectively. (e)-(g) Show measures of accuracy and precision. (e) Quantitatively compares the posterior density at the mode and the target parameter values. (f) Shows d, the Euclidean distance between the mode and target parameter values. (g) Shows D_{KL}, the Kullback-Leibler divergence from the prior, for each posterior distribution.

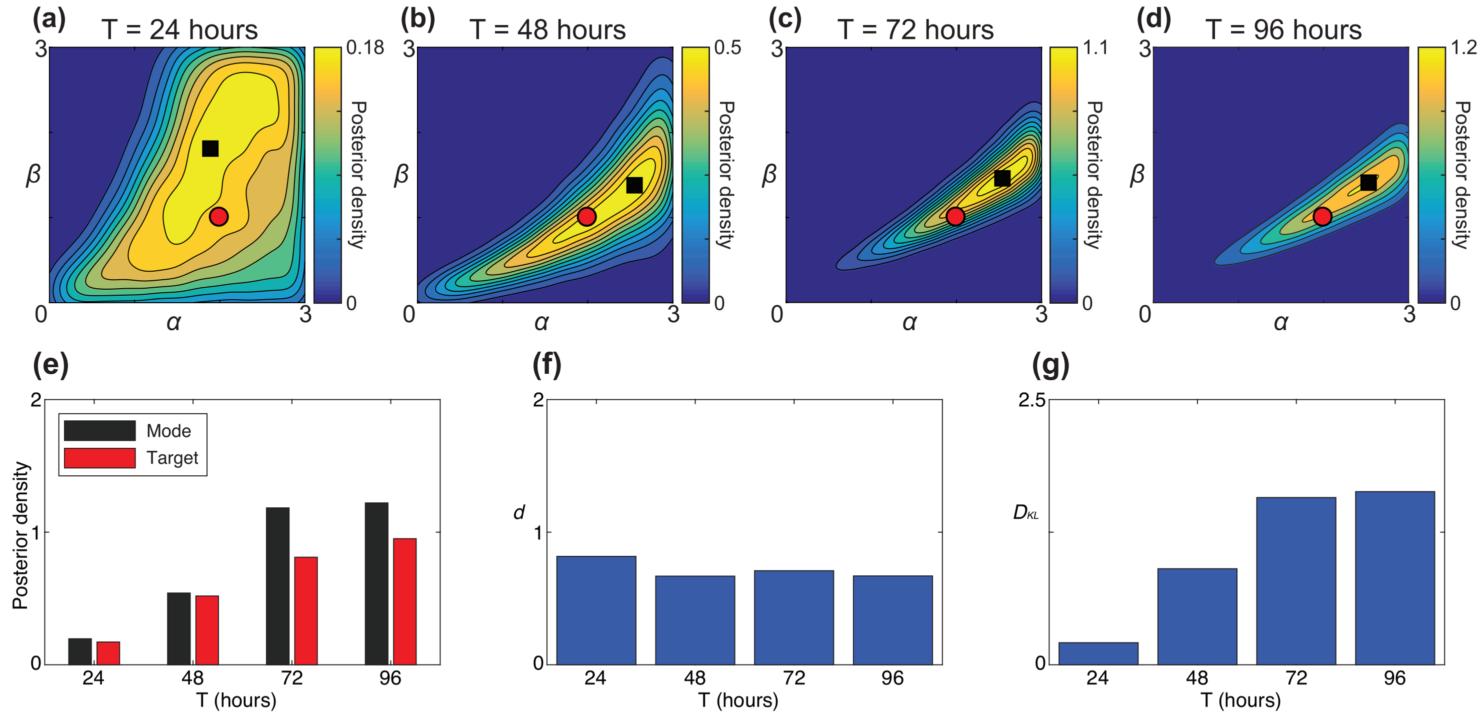

Fig. S2. Posterior distributions for Case 1: $(\alpha, \beta) = (2, 1)$. (a)-(d) ABC posterior distributions for: (a) $T = 24$ hours; (b) $T = 48$ hours; (c) $T = 72$ hours and (d) $T = 96$ hours. The posterior distribution is approximated using the best 20,000 samples from 1,000,000 prior samples ($u = 0.02$), as measured by ρ. The red circles shows the location of the target parameters used to generate the observed data ($\alpha = 2$, $\beta = 1$). The black squares indicate the mode of the posterior density. The modes are (1.89, 1.81), (2.55, 1.38), (2.54, 1.46) and (2.53, 1.41) in (a)-(d), respectively. (e)-(g) Show measures of accuracy and precision. (e) Quantitatively compares the posterior density at the mode and the target parameter values. (f) Shows d, the Euclidean distance between the mode and target parameter values. (g) Shows D_{KL}, the Kullback-Leibler divergence from the prior, for each posterior distribution.

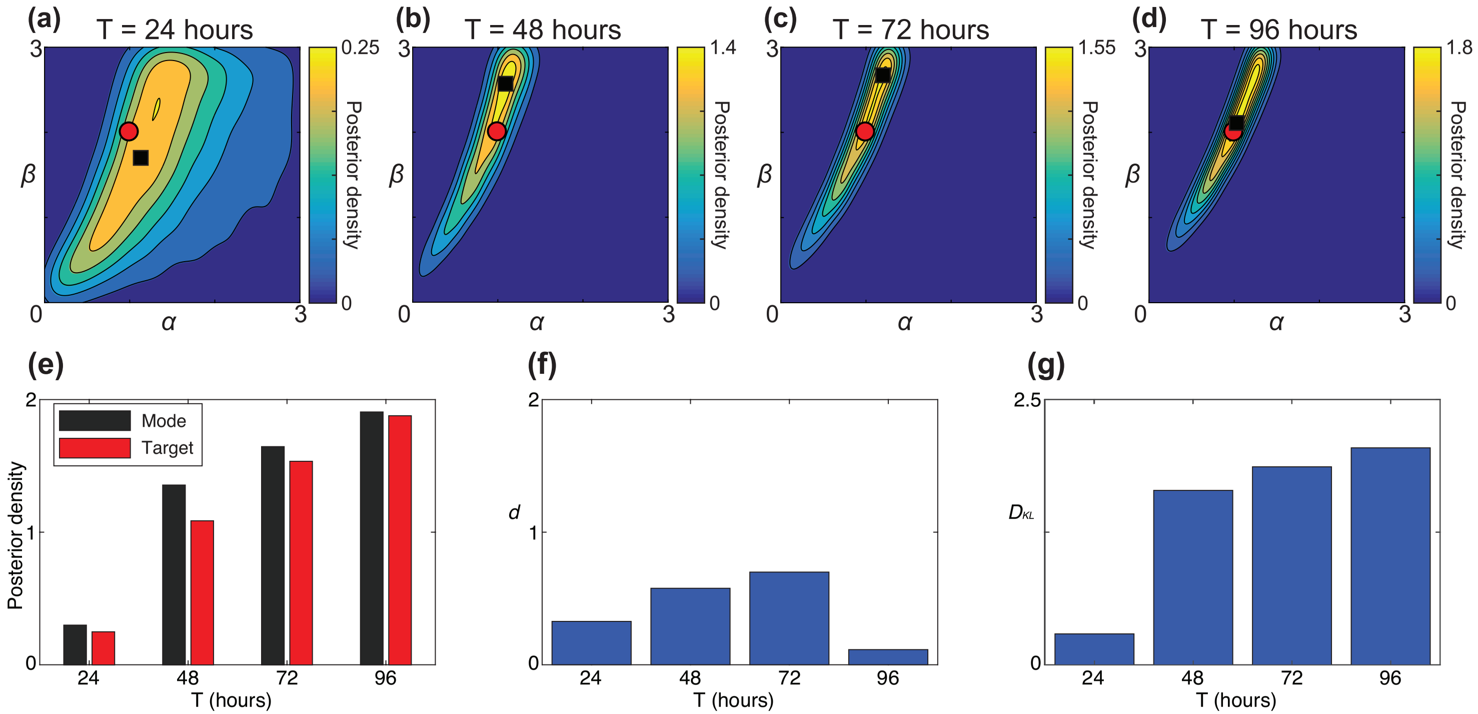

Fig. S3. Posterior distributions for Case 1: $(\alpha, \beta) = (1, 2)$. (a)-(d) ABC posterior distributions for: (a) $T = 24$ hours; (b) $T = 48$ hours; (c) $T = 72$ hours and (d) $T = 96$ hours. The posterior distribution is approximated using the best 20,000 samples from 1,000,000 prior samples ($u = 0.02$), as measured by ρ. The red circles shows the location of the target parameters used to generate the observed data ($\alpha = 1$, $\beta = 2$). The black squares indicate the mode of the posterior density. The modes are (1.13, 1.70), (1.09, 2.57), (1.20, 2.67) and (1.03, 2.11) in (a)-(d), respectively. (e)-(g) Show measures of accuracy and precision. (e) Quantitatively compares the posterior density at the mode and the target parameter values. (f) Shows d, the Euclidean distance between the mode and target parameter values. (g) Shows D_{KL}, the Kullback-Leibler divergence from the prior, for each posterior distribution.