

**Table S2: Range of bond spring constants tested to calibrate the computational model for the SV40-GM1 system.** For each pair ( $k_f^0, k_b^0$ ) of rate constants (Table S1) we simulated 11 different values of bond spring constants ( $\sigma, \sigma_{TS}$ ). The final values of the optimized parameters are shown in bold.

$\sigma$ [ $1.2 \times 10^{-3}$ N/m]	10 <sup>-2</sup>	10 <sup>-2</sup>	10 <sup>-1</sup>	10 <sup>-1</sup>	10 <sup>0</sup>	<b>10<sup>0</sup></b>	10 <sup>0</sup>	10 <sup>1</sup>	10 <sup>1</sup>	10 <sup>2</sup>	10 <sup>1</sup>
$\sigma_{TS}$ [ $1.1 \times 10^{-3}$ N/m]	10 <sup>-3</sup>	10 <sup>-2</sup>	10 <sup>-2</sup>	10 <sup>-1</sup>	10 <sup>-1</sup>	<b>0.5</b>	10 <sup>0</sup>	10 <sup>0</sup>	10 <sup>1</sup>	10 <sup>1</sup>	10 <sup>2</sup>