S1 Text: Comparison of off rate with steric trap experiments

The off rate from simulations was estimated to be 2×10^3 s^{-1}. However, even with the force field adjustment to stabilize the native state, the dimer is somewhat less stable than in experiment, having $K_d \approx 10^{-3}$ molecules.nm^{-2} ($\Delta G \approx 4.1$ kcal.mol^{-1}), compared with the esimate from steric trap experiments of $K_d \approx 1.3{\times}10^{-9}$ molecules.nm^{-2} ($\Delta G \approx 12.1$ kcal.mol^{-1}) [1]. If we assume that the on rate k_{on} is unaffected by changes in stability, since it is effectively diffusion-limited, then any change of stability or dissociation constant $K_d = k_{\mathrm{off}}/k_{\mathrm{on}}$ must arise from variations in the off rate k_{off}. Thus, since K_d is 10^6 smaller in experiment, k_{off} would be expected to be 10^6 smaller also, i.e. 2×10^{-3} s^{-1}.

References

[1] Hong H, Blois TM, Cao Z, Bowie JU. Method to measure strong protein-protein interactions in lipid bilayers using a steric trap. Proc Natl Acad Sci USA. 2010 Nov;107(46):19802–19807.