Supplementary Information

Slip-catch-slip binding of SARS-CoV-2 spike variants to ACE2

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Supplementary Equations

$$N(t) = N_0 \cdot \exp\left(-\frac{t}{\tau}\right), \tag{1}$$

$$k(F) = k_-^0 \cdot \exp\left(\frac{F \cdot x_\beta}{k_B T}\right) \tag{2}$$

$$Z(F) = \exp\left(\frac{E_{12} - F \cdot x_{12}}{k_B T}\right) + \exp\left(\frac{E_{21} - F \cdot x_{21}}{k_B T}\right) \tag{3}$$

$$p_1(F) = \left(1 + \exp\left(-\frac{(\Delta E - F \cdot \Delta x)}{k_B T}\right)\right)^{-1} \tag{4}$$

$$p_2(F) = \left(1 + \exp\left(\frac{(\Delta E - F \cdot \Delta x)}{k_B T}\right)\right)^{-1}. \tag{5}$$

$$k(F) = p_1(F) \cdot k_1 \cdot \exp\left(\frac{F \cdot x_1}{k_B T}\right) + p_2(F) \cdot k_2 \cdot \exp\left(\frac{F \cdot x_2}{k_B T}\right) \tag{6}$$

Supplementary Data

Publicly available SARS-CoV-2/ACE2 interaction datasets were analyzed, including binding affinity and structural data. Raw data are accessible via PUB publication repository: https://doi.org/10.4119/unibi/3007299