chemical stress (denoted by the pink box) causes proteins in the periplasm of *Escherichia coli* to unfold. The stress induces the production of Spy, which rapidly associates with its substrate proteins, thereby preventing their aggregation. Once the stress is removed (denoted by the light blue box), dilution of Spy through cell growth or degradation lowers the Spy concentration, allowing the native substrate protein to be released.

Supplementary movie. Energy plot for Im7 after stress. During butanol or tannin stress, the concentration of Spy in the periplasm of *E. coli* is upregulated 500-fold to ~2 mM[10,12,13]. Immediately after the protein unfolding stress is removed, the concentration of Spy would still be ~2 mM. At this concentration of Spy, the most energetically favorable state of Im7 is the $Im7_N$–Spy complex, which can be populated directly without Im7 having to dissociate from Spy. As the Spy concentration is lowered through cell growth or degradation, unbound $Im7_N$ becomes the most energetically favorable state, and the $Im7_N$ bound to Spy is released. A frequency factor of 4.8×10^8 s^{-1} was used to calculate the energy of the transition states.[16]