

Supplementary Material

Protein engineering. N6C was designed and constructed based on a full consensus sequence of ANK repeats (S. Wetzel, K. Binz & A. Plückthun, manuscript in preparation). It was expressed according to published methods (1). The N- and C-terminal caps are the same as in ref. 1, and the consensus ANK repeat is DKDGYTPLHLAAREGHLEIVEVLLKAGADVNAK.

Atomic force microscopy. Details of the custom-made AFM apparatus have been described (2, 3). Calibration of the cantilevers (Si_3N_4 from Digital Instruments, Inc.) is done in solution using the equipartition theorem (4). The typical string constant is $\approx 40 \text{ mN m}^{-1}$, and the typical pulling rate is $0.4 \mu\text{m s}^{-1}$. All experiments have been performed in phosphate buffered saline at room temperature.

References

1. Kohl, A., Binz, H. K., Forrer, P., Stumpp, M. T., Plückthun, A. & Grütter, M. G. (2003) *Proc. Natl. Acad. Sci. USA* **100**, 1700-1705.
2. Carrion-Vazquez, M., Oberhauser, A. F., Fowler, S. B., Marszalek, P. E., Broedel, S. E., Clarke, J. & Fernandez, J. M. (1999) *Proc. Natl. Acad. Sci. USA* **96**, 3694-3699.
3. Marszalek, P. E., Lu, H., Li, H., Carrion-Vazquez, M., Oberhauser, A. F., Schulten, K. & Fernandez, J. M. (1999) *Nature (London)* **402**, 100-103.
4. Florin, E. L., Rief, M., Lehmann, H., Ludwig, M., Dornmair, C., Moy, V. T. & Gaub, H. E. (1995) *Biosens. Bioelectr.* **10**, 895-901.