***eLife’s* transparent reporting form**

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**Sample-size estimation**

* You should state whether an appropriate sample size was computed when the study was being designed
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* If no explicit power analysis was used, you should describe how you decided what sample (replicate) size (number) to use

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Sample sizes are not relevant for this study. Power analysis was not performed.

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* You should report how often each experiment was performed
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Experiments were carried out in duplicate or more as stated in the figure legends. Experiments were performed using protein samples obtained from multiple independent purifications. Kinetic assays were carried out in the presence of different substrate concentrations, thereby providing statistical reliability. No data for any substrate or denaturant concentration were excluded. All the enzyme progress curves decrease in a monotonic fashion so a small number of raw data points that deviated from that trend were excluded.

**Statistical reporting**

* Statistical analysis methods should be described and justified
* Raw data should be presented in figures whenever informative to do so (typically when N per group is less than 10)
* For each experiment, you should identify the statistical tests used, exact values of N, definitions of center, methods of multiple test correction, and dispersion and precision measures (e.g., mean, median, SD, SEM, confidence intervals; and, for the major substantive results, a measure of effect size (e.g., Pearson's r, Cohen's d)
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* Indicate how samples were allocated into experimental groups (in the case of clinical studies, please specify allocation to treatment method); if randomization was used, please also state if restricted randomization was applied
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Source data are provided for Figures 2, 3, 4, 5, Figure 4 – Supplementary Figure 1, Figure 4 – Supplementary Figure 2 and Figure 5 – Supplementary Figure 1.