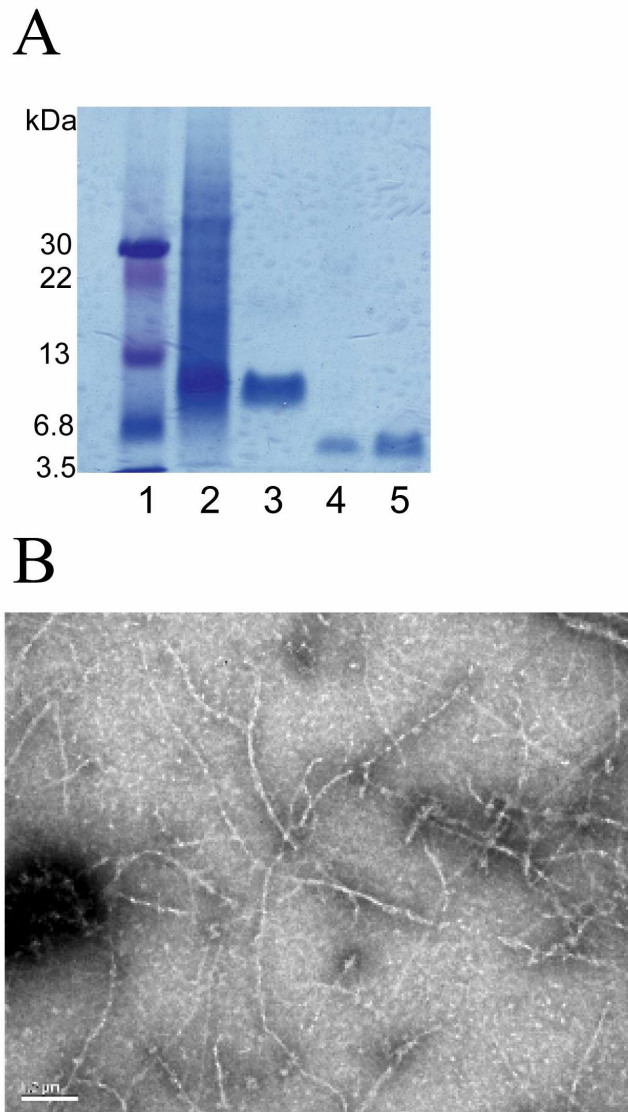


Supplemental

Table S1. Intrinsic Exchange Rates (1/s)			
Residue	DMSO pH* 5	H ₂ O pH 3.0	H ₂ O pH 7.5
G89			
Q90	1.1E-03	4.9E-02	3.1E+02
G91	8.0E-05	2.9E-03	6.4E+01
G92*	2.4E-04	3.1E-03	6.0E+01
G93*	2.4E-04	3.1E-03	6.0E+01
T94	3.0E-05	1.7E-03	2.7E+01
H95	7.0E-05	7.6E-03	3.1E+01
N96	9.6E-05	1.5E-02	1.0E+02
Q97	1.6E-04	2.5E-03	5.2E+01
W98	6.0E-05	1.3E-03	1.3E+01
N99	9.7E-05	2.5E-03	5.2E+01
K100	2.2E-04	2.2E-03	4.1E+01
L101	4.0E-05	1.1E-03	7.5E+00
S102	2.9E-04	1.9E-03	3.1E+01
K103	4.0E-05	2.1E-03	3.9E+01
P104			
K105	4.2E-04	1.2E-03	1.1E+01
T106	3.0E-05	1.6E-03	2.4E+01
N107	9.0E-06	4.2E-03	1.1E+02
L108	1.0E-03	1.2E-03	1.2E+01
K109	8.0E-06	1.2E-03	1.2E+01
H110	2.0E-05	6.5E-03	2.6E+01
V111	7.6E-05	1.7E-03	6.6E+00
A112	4.0E-05	1.5E-03	1.6E+01
G113	3.0E-06	2.3E-03	4.0E+01
A114	3.0E-05	2.5E-03	3.2E+01
A115	1.6E-04	1.9E-03	2.2E+01
A116	3.3E-04	1.9E-03	2.2E+01
A117	3.0E-05	1.9E-03	2.2E+01
G118	5.0E-05	2.3E-03	4.0E+01
A119	6.0E-05	2.5E-03	3.2E+01
V120	1.0E-05	9.8E-04	4.3E+00
V121	4.0E-05	9.0E-04	3.1E+00
G122	1.3E-04	1.8E-03	2.9E+01
G123*	2.4E-04	3.1E-03	6.0E+01
L124	1.2E-04	1.2E-03	8.4E+00
G125	1.4E-04	1.7E-03	2.5E+01
G126*	2.4E-04	3.1E-03	6.0E+01
Y127	2.8E-04	1.6E-03	1.7E+01
M128	1.5E-04	1.6E-03	2.4E+01
L129	1.4E-04	1.1E-03	7.3E+00
G130	9.0E-05	1.7E-03	2.5E+01
S131	5.0E-05	3.4E-03	7.5E+01
A132	9.7E-05	2.3E-03	4.3E+01
M133	3.8E-04	1.5E-03	2.1E+01
S134	3.0E-05	2.9E-03	6.5E+01
R135	2.2E-04	2.5E-03	5.2E+01
P136			
M137	2.0E-05	1.2E-03	1.2E+01
L138	3.2E-05	9.6E-04	5.2E+00
H139	3.0E-06	3.3E-03	1.2E+01
F140	3.0E-06	3.5E-03	1.9E+01
G141	5.0E-05	2.3E-03	4.6E+01
S142	6.0E-05	3.4E-03	7.5E+01
D143	1.0E-03	2.3E-03	3.4E+01

Table S1

Experimental amide exchange rates for all the residues of DMSO-denatured PrP(89-143, P101L) and, for comparison, the calculated exchange rates in water at pH 3.0 where exchange rate is at the minimum (1) and at pH 7.5. It is evident that the quenching in DMSO is much more efficient than in water.

**Figure S1**

A) SDS-PAGE of the PrP(89-143, P101L) purification process (**Lane 1**) Protein molecular weight standards, MW in KDa, given on the left side next to the corresponding band (**Lane 2**) Whole, lysed *E. coli* cells after induction. (**Lane 3**) PrP(89-143, P101L) eluted from the nickel column prior to TEV cleavage (**Lane 4**) PrP(89-143, P101L) after TEV proteolysis to remove the 6-His tag (**Lane 5**) PrP(89-143, P101L) after removal of TEV and the 6-His tag **B)** Electron micrograph of PrP(89-143, P101L) fibrils, the bar represents 1.2 μm

1. Bai, Y. W., Milne, J. S., Mayne, L., and Englander, S. W. (1993) *Proteins-Structure Function and Genetics* **17**, 75-86