

**Table S1:** Block averaged helicity of poly-alanine as a function of selected temperatures during three simulation intervals.

$\epsilon$	T in K	I: 10.5-21.75 ns	II: 21.75-33 ns	III: 33-44.25 ns
80	464.8	0.01	0.02	0.01
	401.7	0.04	0.09	0.08
	347.1	0.57	0.76	0.83
	300.0	0.84	0.89	0.94
20	464.8	0.03	0.05	0.04
	401.7	0.22	0.35	0.35
	347.1	0.66	0.82	0.82
	300.0	0.95	0.91	0.93
5	464.8	0.61	0.58	0.53
	401.7	0.82	0.80	0.81
	347.1	0.91	0.89	0.91
	300.0	0.96	0.94	0.96

**Table S2:** Block averaged cluster populations of melittin during three simulation intervals.

$\epsilon$	time	cluster 1	cluster 2	cluster 3	cluster 4	cluster 5
5	37.5-52.5 ns	99.3	0.8	0.0	0.0	0.0
	52.5-67.5 ns	93.3	6.8	0.0	0.0	0.0
	67.5-82.5 ns	100.0	0.0	0.0	0.0	0.0
20	37.5-52.5 ns	29.4	0.0	27.3	35.4	8.0
	52.5-67.5 ns	33.3	0.1	31.1	27.0	8.3
	67.5-82.5 ns	48.1	0.0	33.7	10.1	7.6
40	37.5-52.5 ns	44.9	23.0	16.8	14.7	0.1
	52.5-67.5 ns	33.4	7.3	48.0	11.1	0.0
	67.5-82.5 ns	21.5	0.0	64.1	14.0	0.0
80	37.5-52.5 ns	0.1	5.4	73.6	13.4	0.0
	52.5-67.5 ns	0.0	0.0	88.4	7.6	2.9
	67.5-82.5 ns	0.0	0.0	80.7	11.3	7.1