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Anomeric DNA quadruplexes: modified thrombin aptamers

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SUPPORTING INFORMATION

[1] Deceased on October 24, 2012.

SUPPLEMENTARY FIGURE LEGENDS

Fig. S1. UV melting profiles of aptamer A12 at 295 nm. (A) Effect of sample annealing rate and KCl concentration on the high-temperature transition. (B) Effect of aptamer concentration on the high-temperature transition.

Fig. S2. Dependence of the T_m value on aptamer concentration in 10 mM sodium cacodylate (pH 7.2) and 100 mM KCl for oligonucleotides A2 and A12. Melting temperatures were determined for slow annealed samples as the minimum of the first derivative of the denaturation profile. Only the major low-temperature transition was analyzed for aptamer A12.

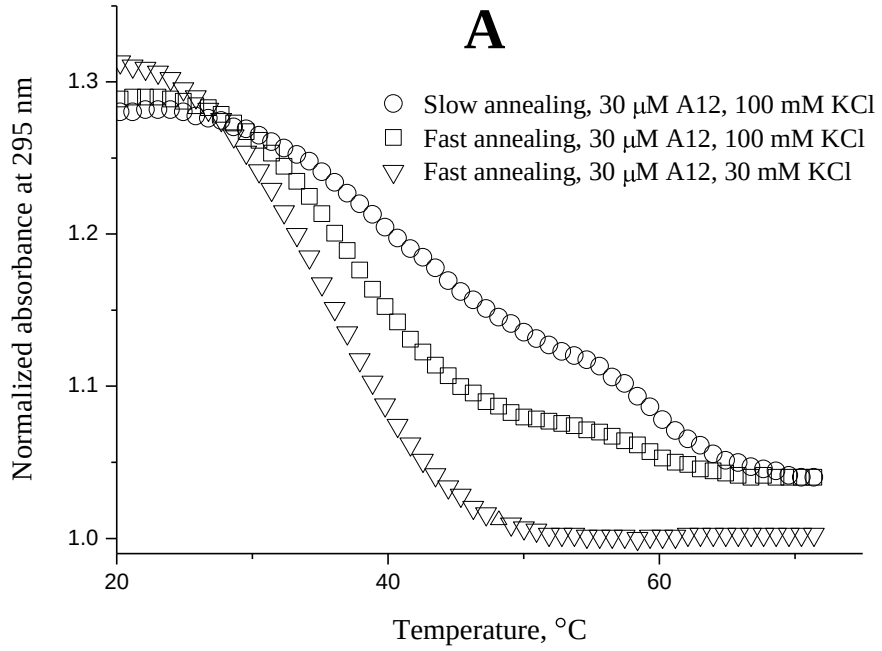
Fig. S3. Thermal difference spectra (80°C *vs*. 20°C) of TBA and selected modified aptamers in 10 mM sodium cacodylate (pH 7.2) and 100 mM KCl.

Fig. S4. CD spectra of TBA and selected modified aptamers at 20°C in 10 mM sodium cacodylate (pH 7.2) and 100 mM KCl.

Fig. S5. PEG calibration graph and experimental points from diffusion ordered NMR spectroscopy (DOSY) experiments.

Fig. S6. The plot of thrombin activity *vs*. aptamer concentration.

Fig. S7. Calibration curve for converting thrombin time values into thrombin activity. A series of thrombin dilutions was prepared and mixed with blood plasma. Clotting times were measured. Each thrombin time value is an average of three measurements.


A
Slow annealing, 30 μM A12, 100 mM KCl
Fast annealing, 30 μM A12, 100 mM KCl
Fast annealing, 30 μM A12, 30 mM KCl
Normalized absorbance at 295 nm
1.3
1.2
1.1
1.0
20
40
60
Temperature, °C

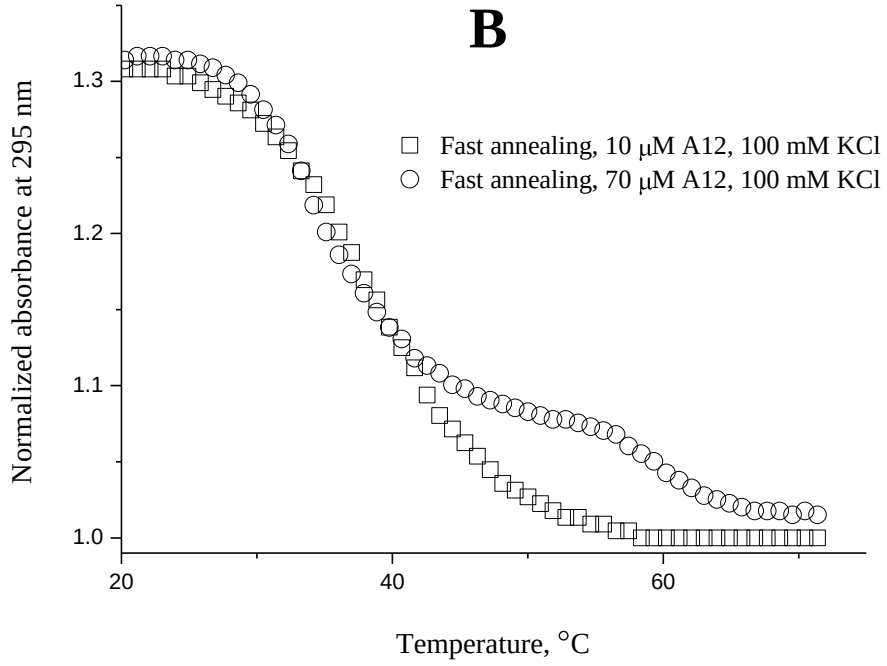

B
Fast annealing, 10 μM A12, 100 mM KCl
Fast annealing, 70 μM A12, 100 mM KCl
Normalized absorbance at 295 nm
1.3
1.2
1.1
1.0
20
40
60
Temperature, °C

FIGURE S1

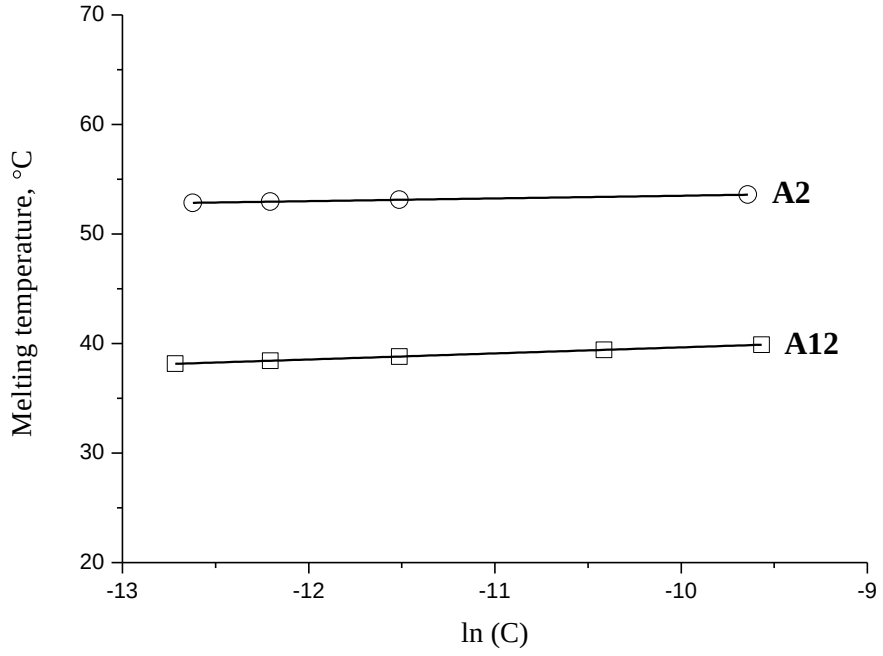


FIGURE S2

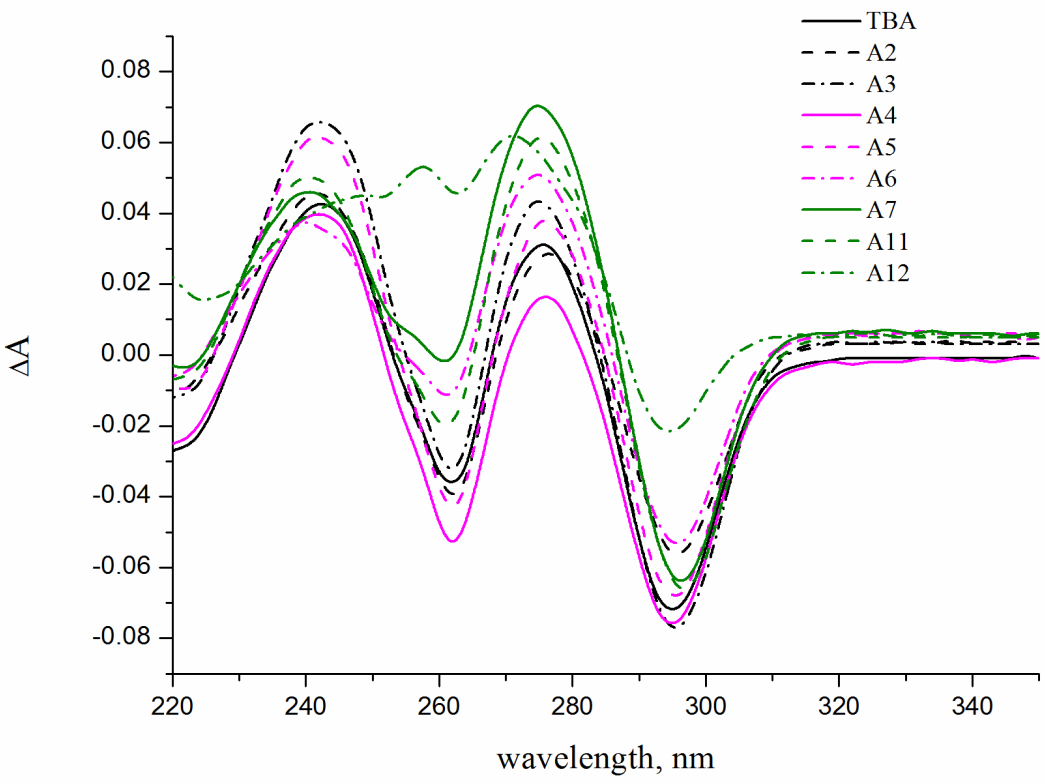

TBA
A2
A3
A4
A5
A6
A7
A11
A12
0.08
0.06
0.04
0.02
0.00
-0.02
-0.04
-0.06
-0.08
ΔA
220
240
260
280
300
320
340
wavelength, nm

FIGURE S3

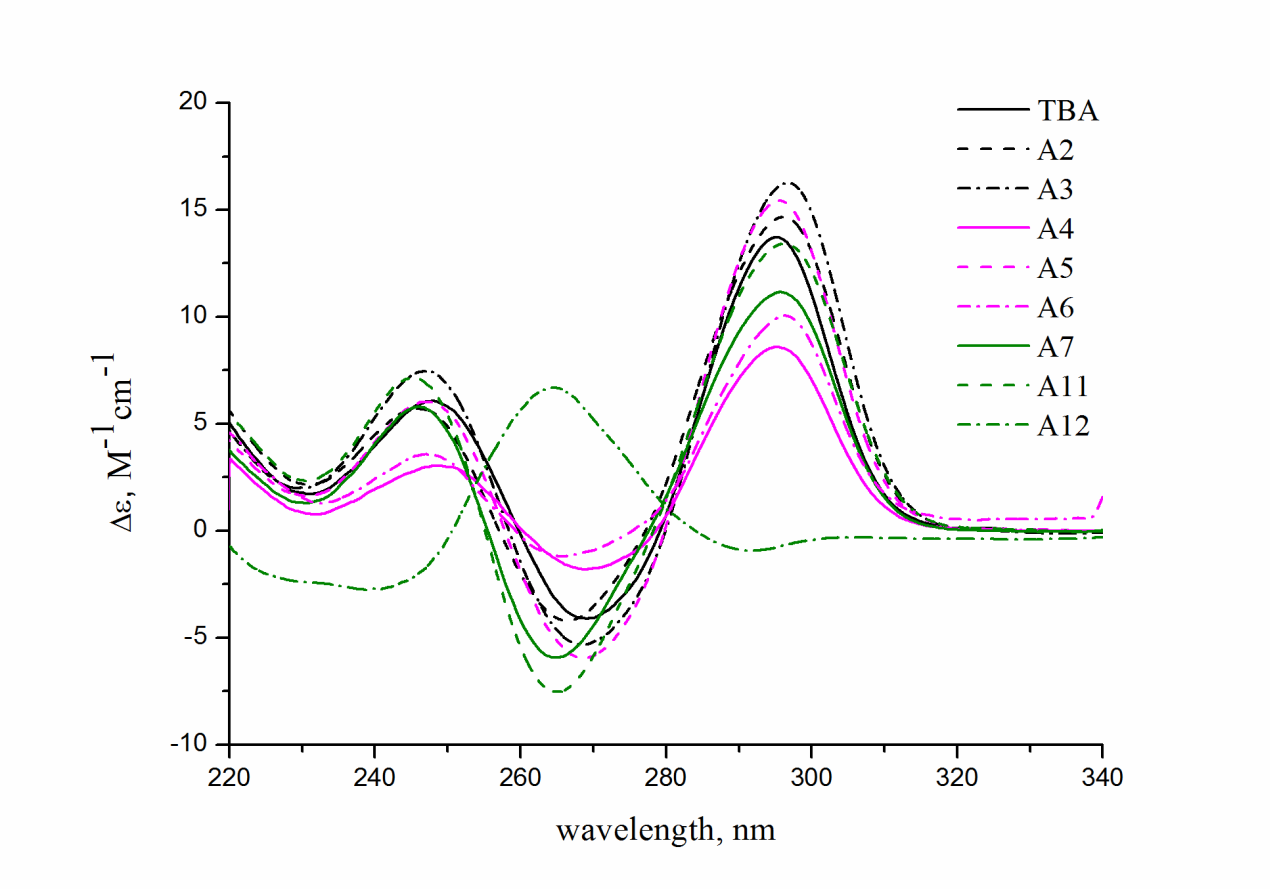

TBA
A2
A3
A4
A5
A6
A7
A11
A12
Δε, M-1cm-1
wavelength, nm
20
15
10
5
0
-5
-10
220
240
260
280
300
320
340

FIGURE S4

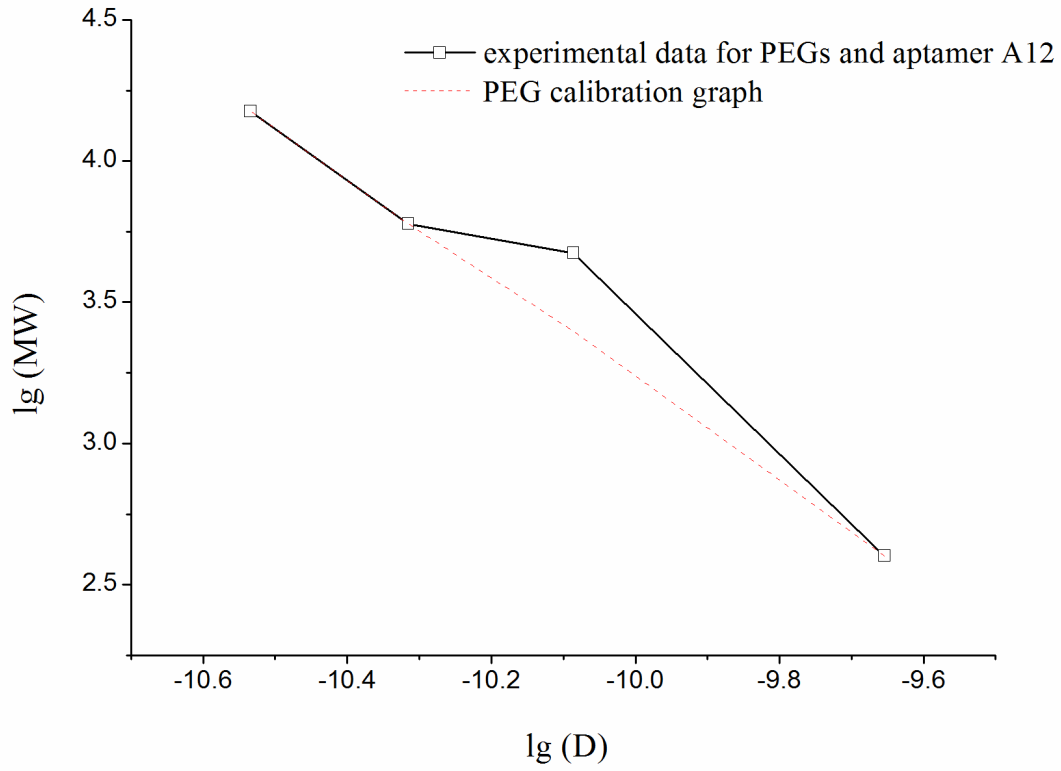

experimental data for PEGs and aptamer A12
PEG calibration graph
lg (MW)
lg (D)
4.5
4.0
3.5
3.0
2.5
-10.6
-10.4
-10.2
-10.0
-9.8
-9.6

FIGURE S5

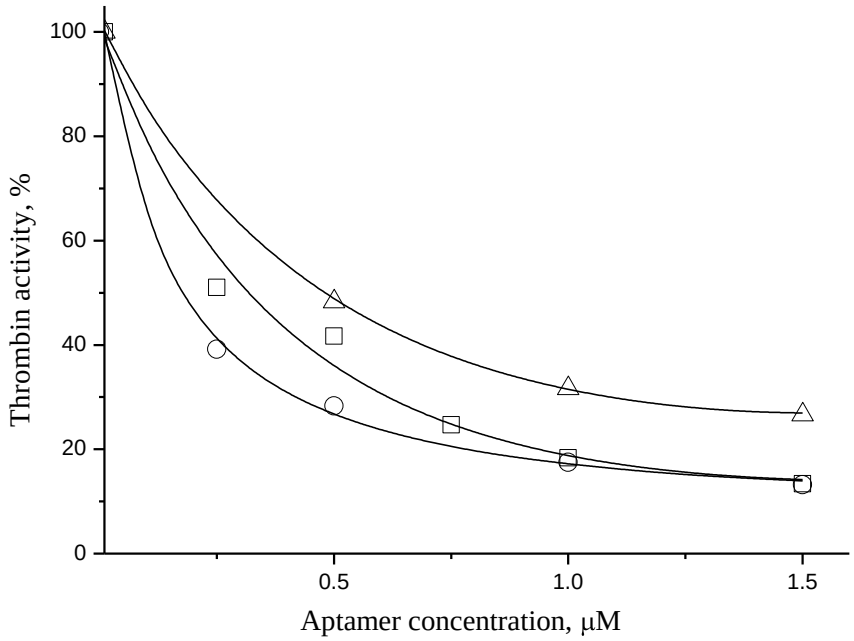

100
80
60
40
20
0
Thrombin activity, %
0.5
1.0
1.5
Aptamer concentration, μM

FIGURE S6

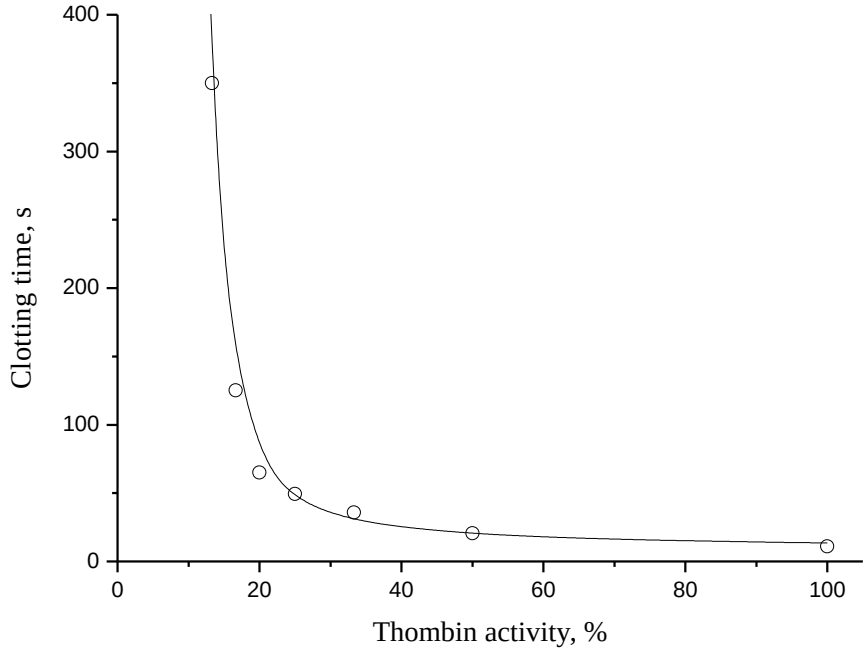

400
300
200
100
0
Clotting time, s
0
20
40
60
80
100
Thombin activity, %

FIGURE S7