Electronic supplementary information (ESI)

RNA selective cross-pairing of backbone extended pyrrolidine-amide oligonucleotide mimics (bePOMs).

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Contents

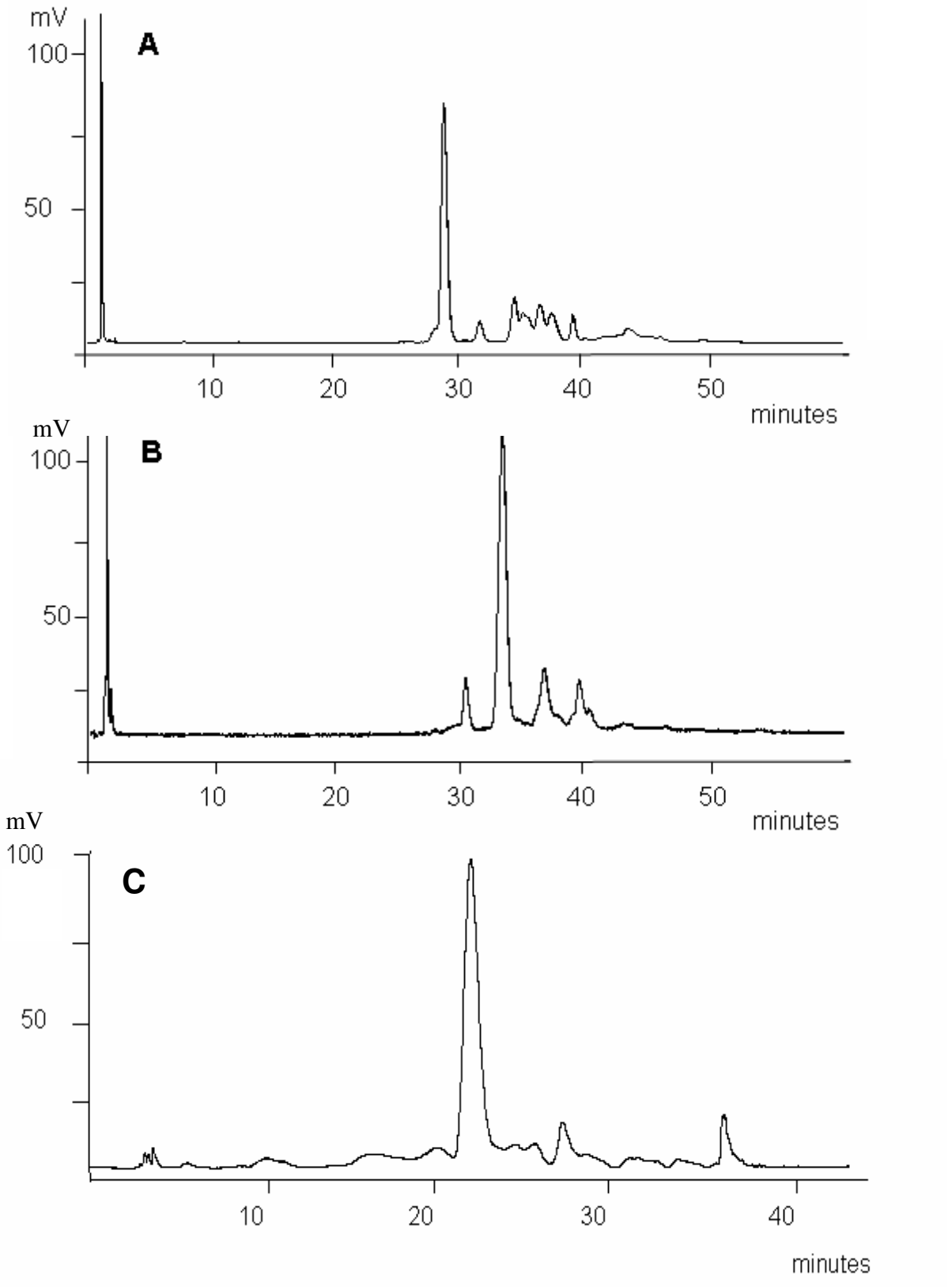

Figure S1. HPLC trace of crude: **(A)** POM Lys-$(T)_8$-NH_2 **27**; **(B)** bePOM I Lys-$(T)_8$-NH_2 **28; (C)** bePOM II Lys-$(T)_8$-NH_2 **29**.

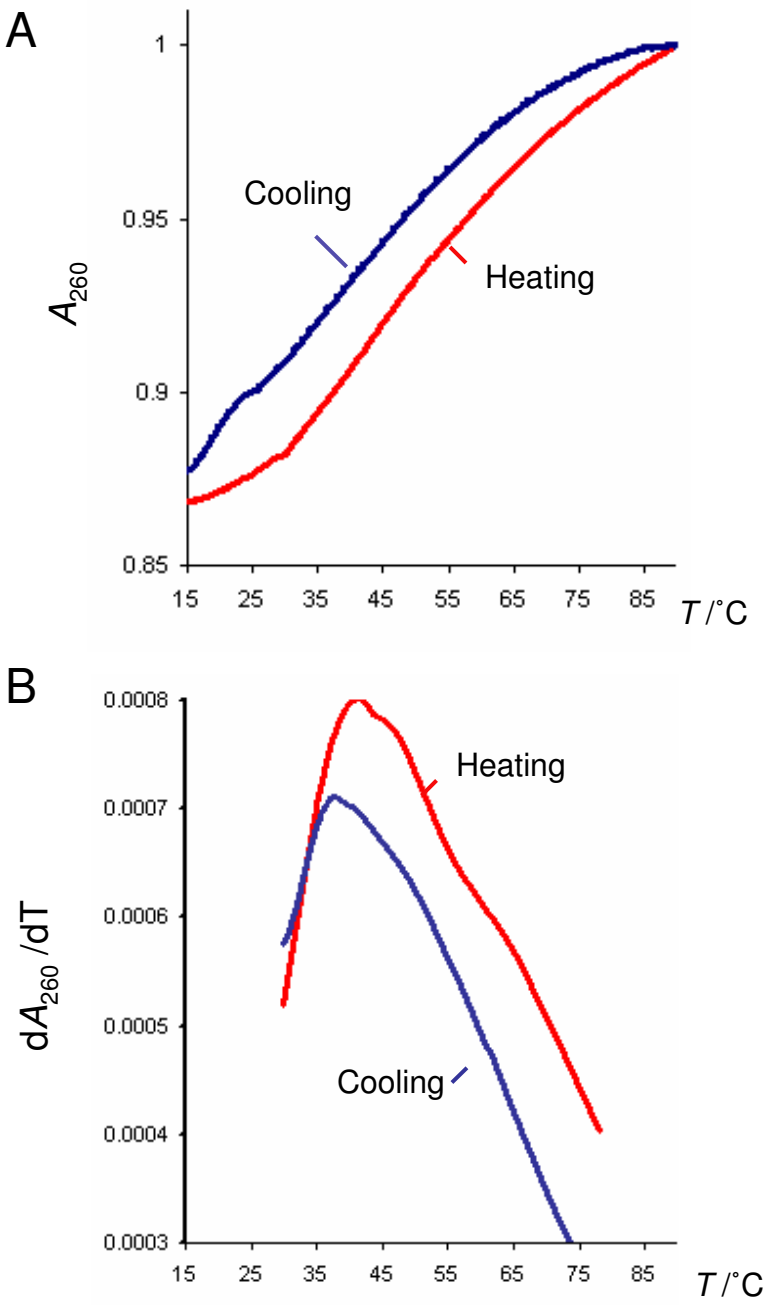

Figure S2. UV thermal denaturation/renaturation curves and first derivatives for POM Lys-$(T)_8$-NH_2 **27** *vs.* r($CGCA_8CGC$) at 7.6 μM (total conc. in strands, 1:1 ratio of strands) and 10 mM K_2HPO_4, 0.12 M K^+, pH 7.0 (total volume 1.0 cm^3): (**A**) slow heating (denaturation) curves and cooling (renaturation) curves for POM **27** *vs.* r($CGCA_8CGC$); (**B**) the corresponding first derivatives for POM **27** *vs.* r($CGCA_8CGC$).

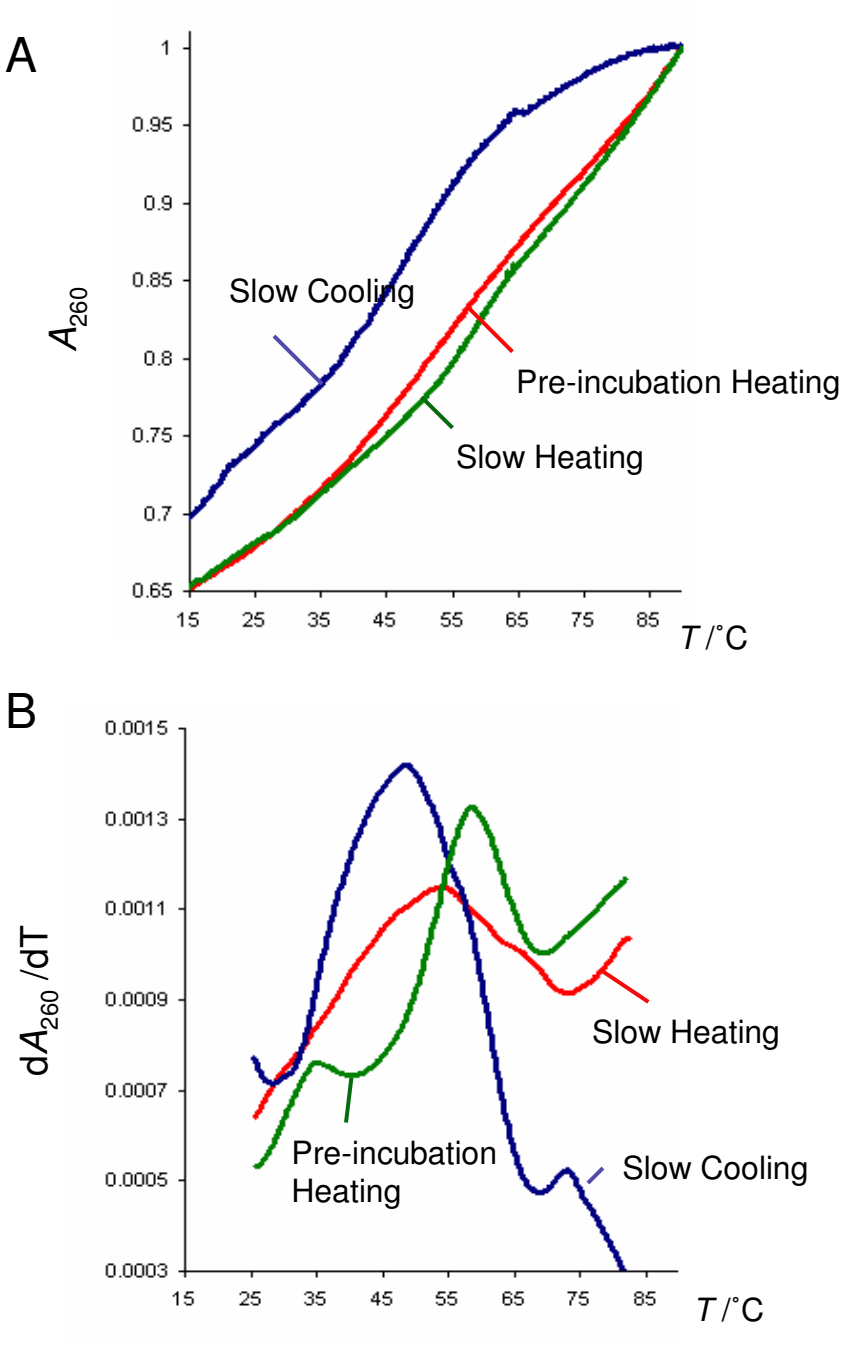

Figure S3. UV thermal denaturation/renaturation curves and first derivatives for POM Lys-$(T)_8$-NH_2 **27** *vs*. poly (rA) at 7.6 μM (total conc. in strands, 1:1 ratio of strands) and 10 mM K_2HPO_4, 0.12 M K^+, pH 7.0 (total volume 1.0 cm^3): (**A**) shows slow heating (denaturation) in green and slow cooling (renaturation) curves in blue (0.2 °C/min). The slow heating (denaturation) (0.2 °C/min) curve following pre-incubation at room temperature for 24 h is shown in red for POM **27** *vs*. poly(rA); (**B**) the corresponding first derivatives for POM **27** *vs*. poly(rA).

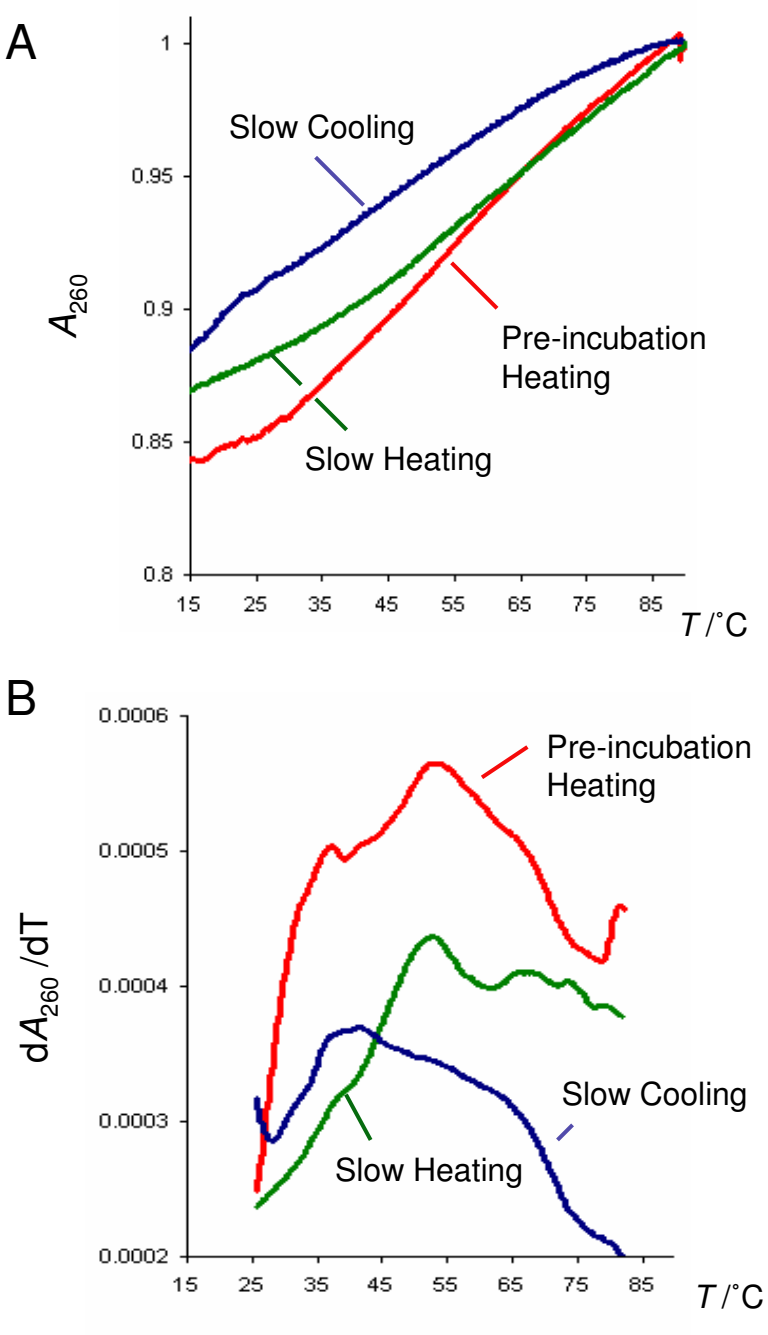

Figure S4. UV thermal denaturation/renaturation curves and first derivatives for POM Lys-$(T)_8$-NH_2 **27** *vs*. poly (dA) at 7.6 μM (total conc. in strands, 1:1 ratio of strands) and 10 mM K_2HPO_4, 0.12 M K^+, pH 7.0 (total volume 1.0 cm^3): (**A**) shows slow heating (denaturation) in green and slow cooling (renaturation) curves in blue (0.2 °C/min). The slow heating (denaturation) (0.2 °C/min) curve following pre-incubation at room temperature for 24 h is shown in red for POM **27** *vs*. poly(dA); (**B**) the corresponding first derivatives for POM **27** *vs*. poly(dA).

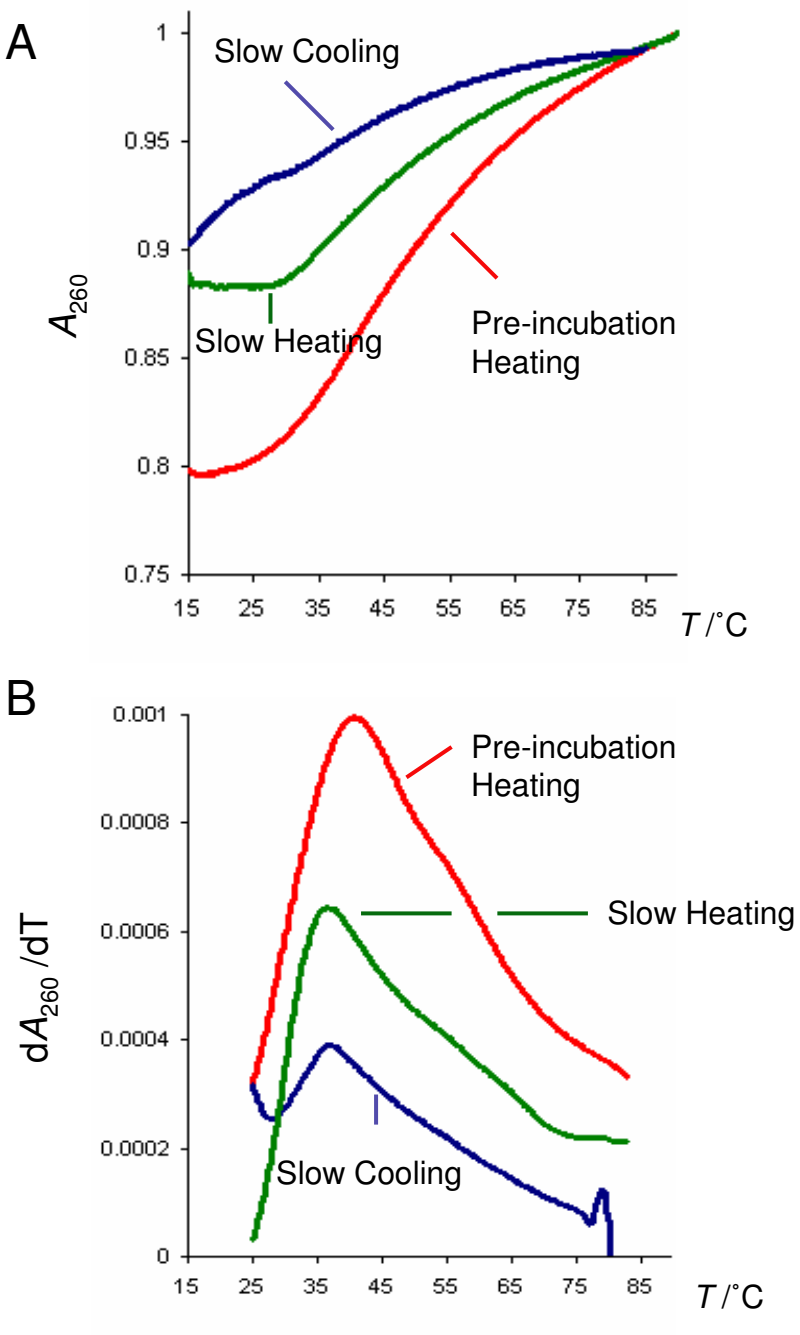

Figure S5. UV thermal denaturation/renaturation curves and first derivatives for POM Lys-$(T)_8$-NH_2 **27** *vs*. d($CGCA_8CGC$) at 7.6 μM (total conc. in strands, 1:1 ratio of strands) and 10 mM K_2HPO_4, 0.12 M K^+, pH 7.0 (total volume 1.0 cm^3): (**A**) shows slow heating (denaturation) in green and slow cooling (renaturation) curves in blue (0.2 °C/min). The slow heating (denaturation) (0.2 °C/min) curve following pre-incubation at room temperature for 24 h is shown in red for POM **27** *vs*. d($CGCA_8CGC$); (**B**) the corresponding first derivatives for POM **27** *vs*. d($CGCA_8CGC$).

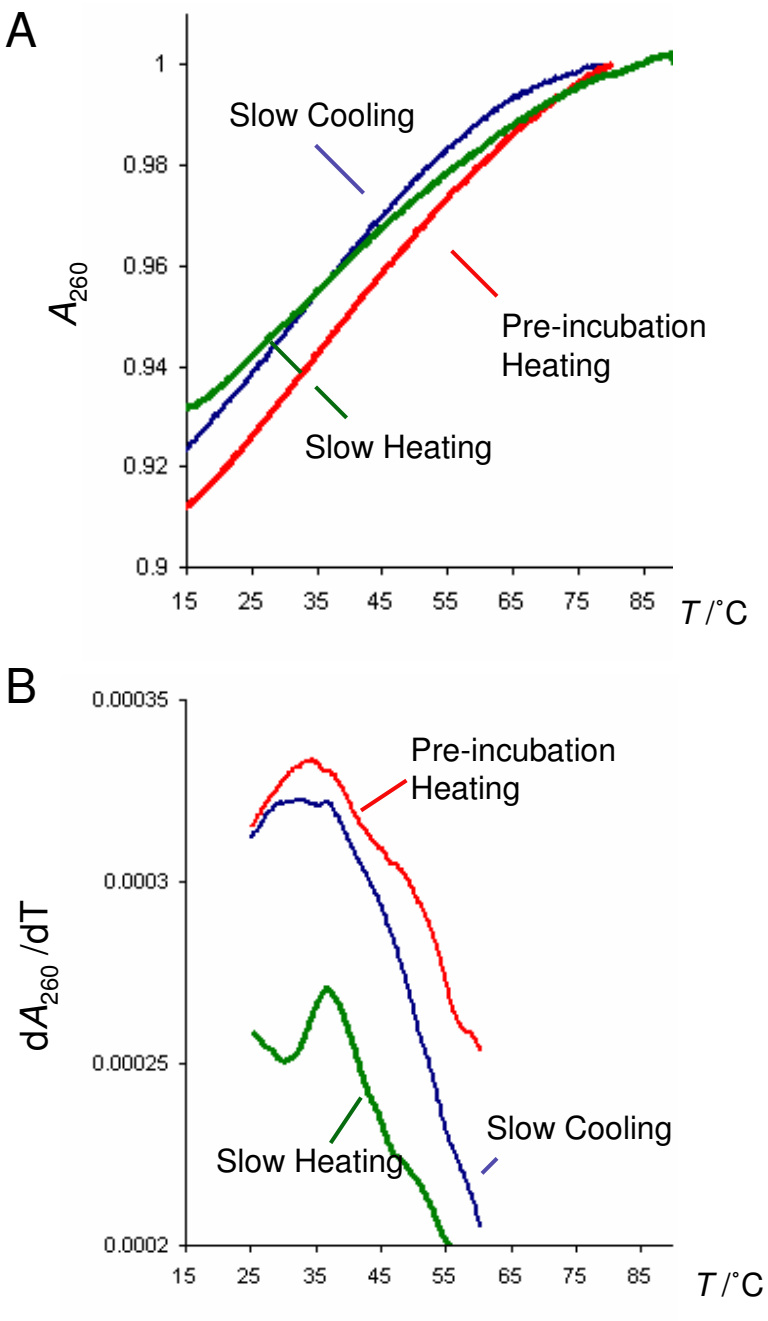

Figure S6. UV thermal denaturation/renaturation curves and first derivatives for bePOM I Lys-$(T)_8$-NH2 **28** *vs*. r(CGCA_8CGC) at 7.6 μM (total conc. in strands, 1:1 ratio of strands) and 10 mM K_2HPO_4, 0.12 M K^+, pH 7.0 (total volume 1.0 cm^3): (**A**) shows slow heating (denaturation) in green and slow cooling (renaturation) curves in blue (0.2 °C/min). The slow heating (denaturation) (0.2 °C/min) curve following pre-incubation at room temperature for 24 h is shown in red for POM **28** *vs*. r(CGCA_8CGC); (**B**) the corresponding first derivatives for POM **28** *vs*. r(CGCA_8CGC).

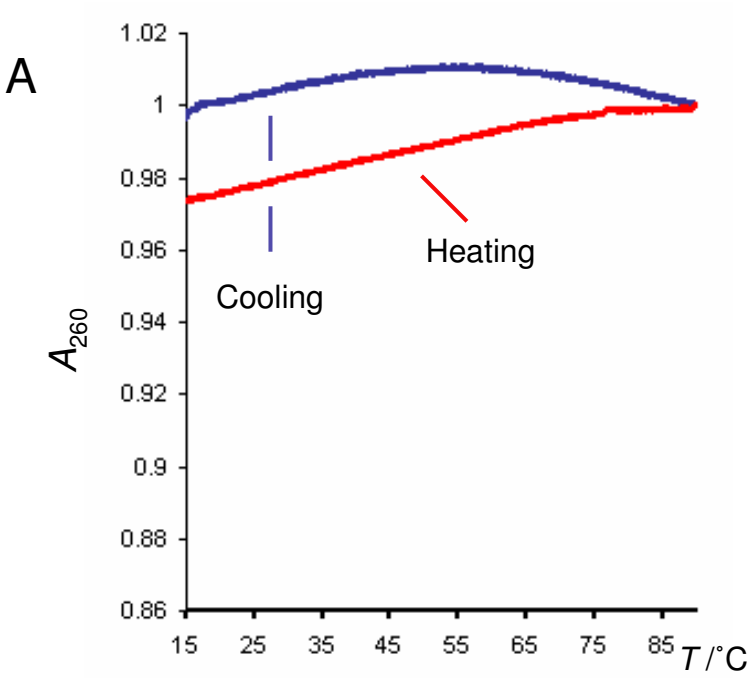

Figure S7. UV thermal denaturation/renaturation curves for bePOM I Lys-$(T)_8$-NH_2 **28** *vs.* d($CGCA_8CGC$) at 7.6 µM (total conc. in strands, 1:1 ratio of strands) and 10 mM K_2HPO_4, 0.12 M K^+, pH 7.0 (total volume 1.0 cm^3): (**A**) slow heating (denaturation) curves after 24 hr incubation, cooling (renaturation) curves for POM **28** *vs.* d($CGCA_8CGC$). Transitions are not evident and no 1st derivatives could be calculated.

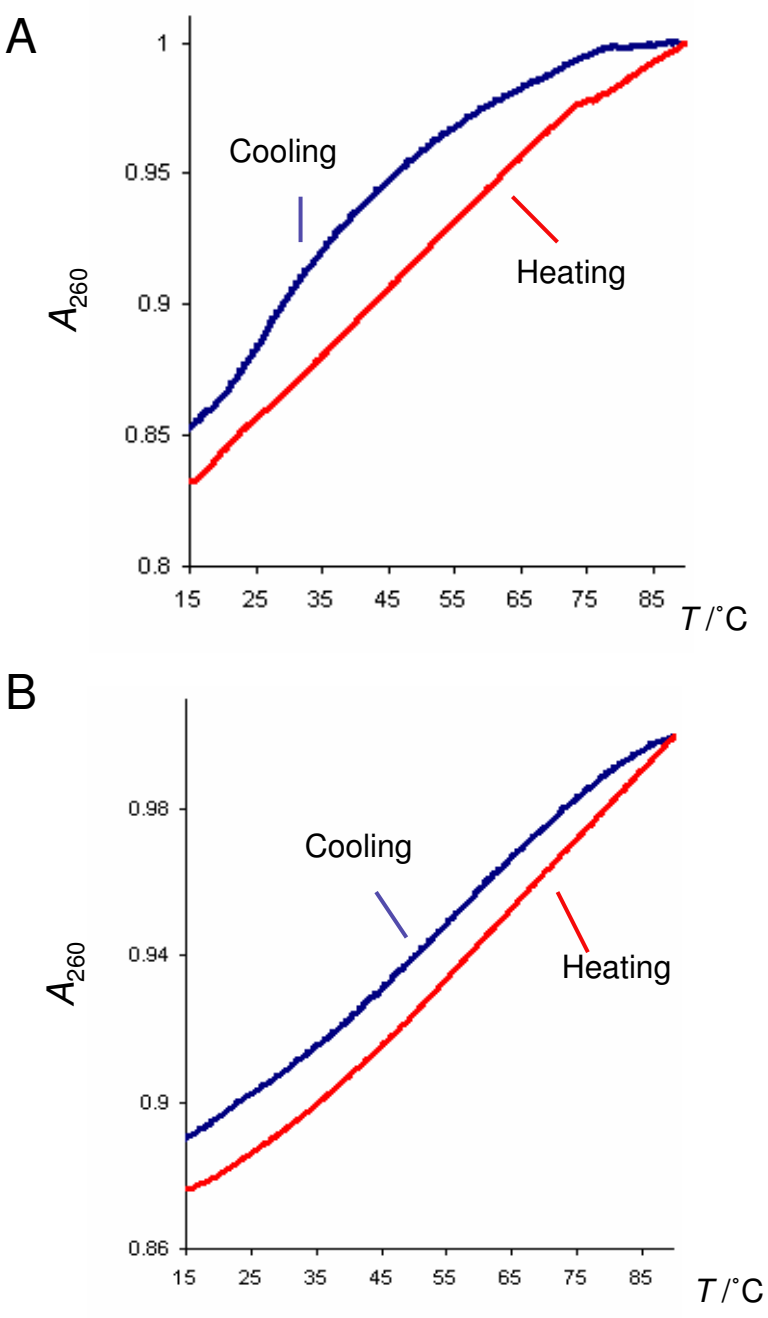

Figure S8. UV thermal denaturation/renaturation curves bePOM I Lys-$(T)_8$-NH_2 **28** *vs*.poly(rA) and poly (dA) at 7.6 μM (total conc. in strands, 1:1 ratio of strands) and 10 mM K_2HPO_4, 0.12 M K^+, pH 7.0 (total volume 1.0 cm^3): (**A**) slow heating (denaturation) curves after 24 hr incubation, cooling (renaturation) curves for POM **28** *vs*. poly(rA); (**B**) slow heating (denaturation) curves after 24 hr incubation, cooling (renaturation) curves for POM **28** *vs*. poly(dA). Transitions are not evident and no 1st derivatives could be calculated.

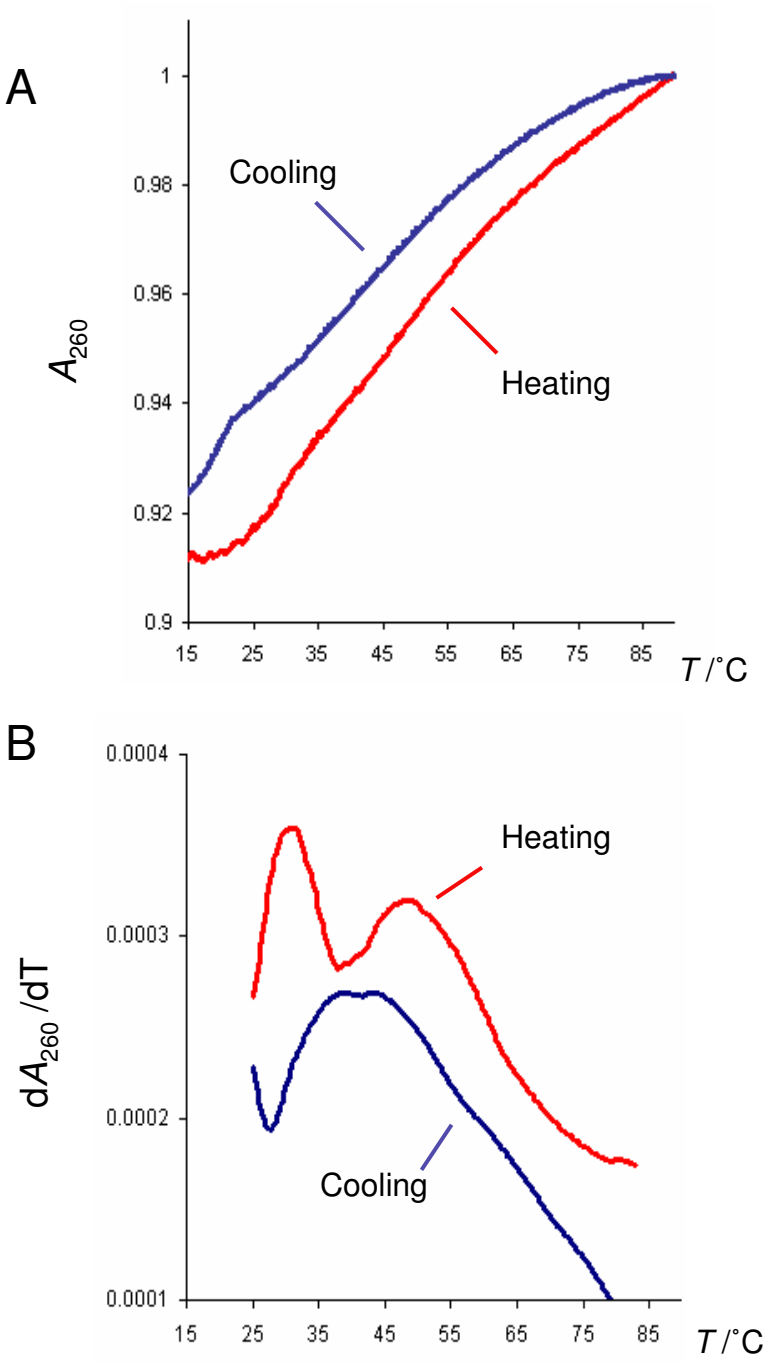

Figure S9. UV thermal denaturation/renaturation curves and first derivatives for bePOM II Lys-$(T)_8$-NH_2 **29** *vs*. r($CGCA_8CGC$) at 7.6 μM (total conc. in strands, 1:1 ratio of strands) and 10 mM K_2HPO_4, 0.12 M K^+, pH 7.0 (total volume 1.0 cm^3): (**A**) slow heating (denaturation) curves and cooling (renaturation) curves for POM **29** *vs*. r($CGCA_8CGC$); (**B**) the corresponding first derivatives for POM **29** *vs*. r($CGCA_8CGC$).

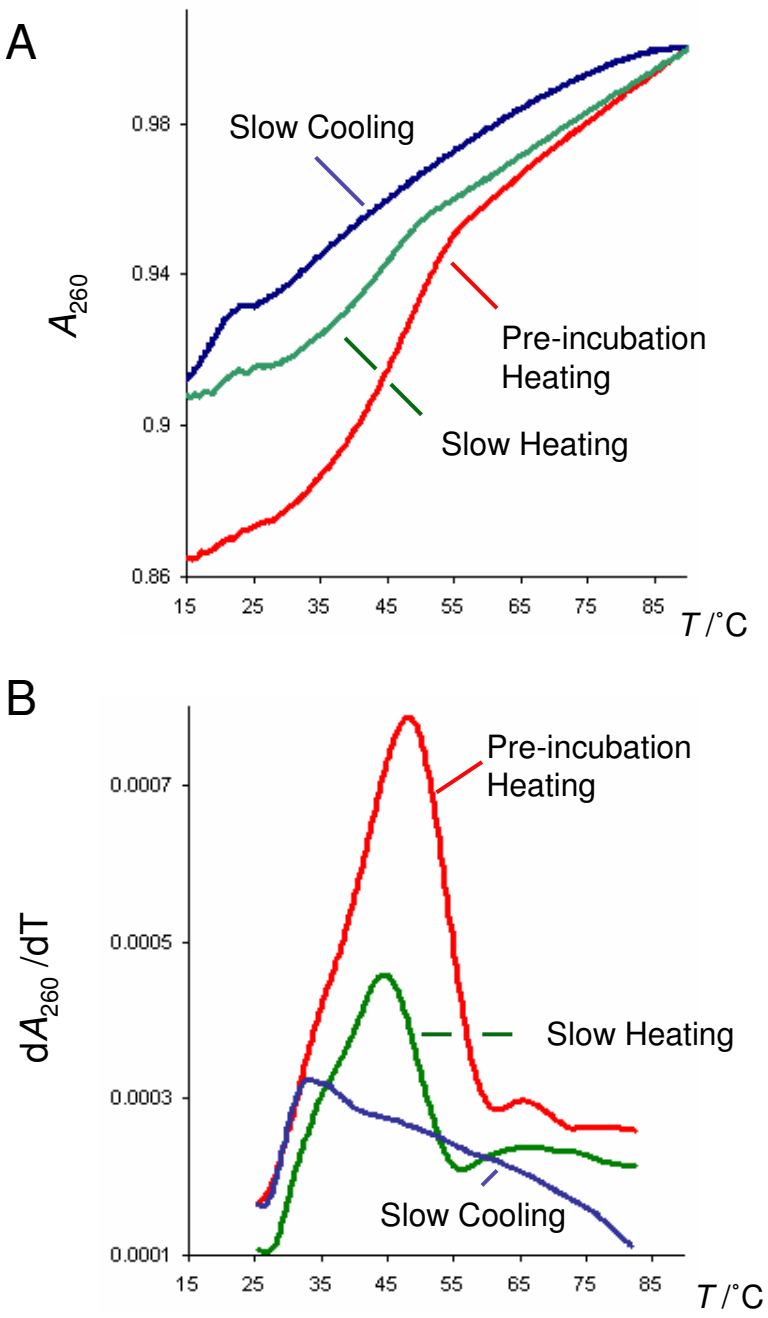

Figure S10. UV thermal denaturation/renaturation curves and first derivatives for bePOM II Lys-$(T)_8$-NH_2 **29** *vs*. poly(rA) at 7.6 μM (total conc. in strands, 1:1 ratio of strands) and 10 mM K_2HPO_4, 0.12 M K^+, pH 7.0 (total volume 1.0 cm^3): (**A**) shows slow heating (denaturation) in green and slow cooling (renaturation) curves in blue (0.2 °C/min). The slow heating (denaturation) (0.2 °C/min) curve following pre-incubation at room temperature for 24 h is shown in red for POM **29** *vs*. poly(rA); (**B**) the corresponding first derivatives for POM **29** *vs*. poly(rA).

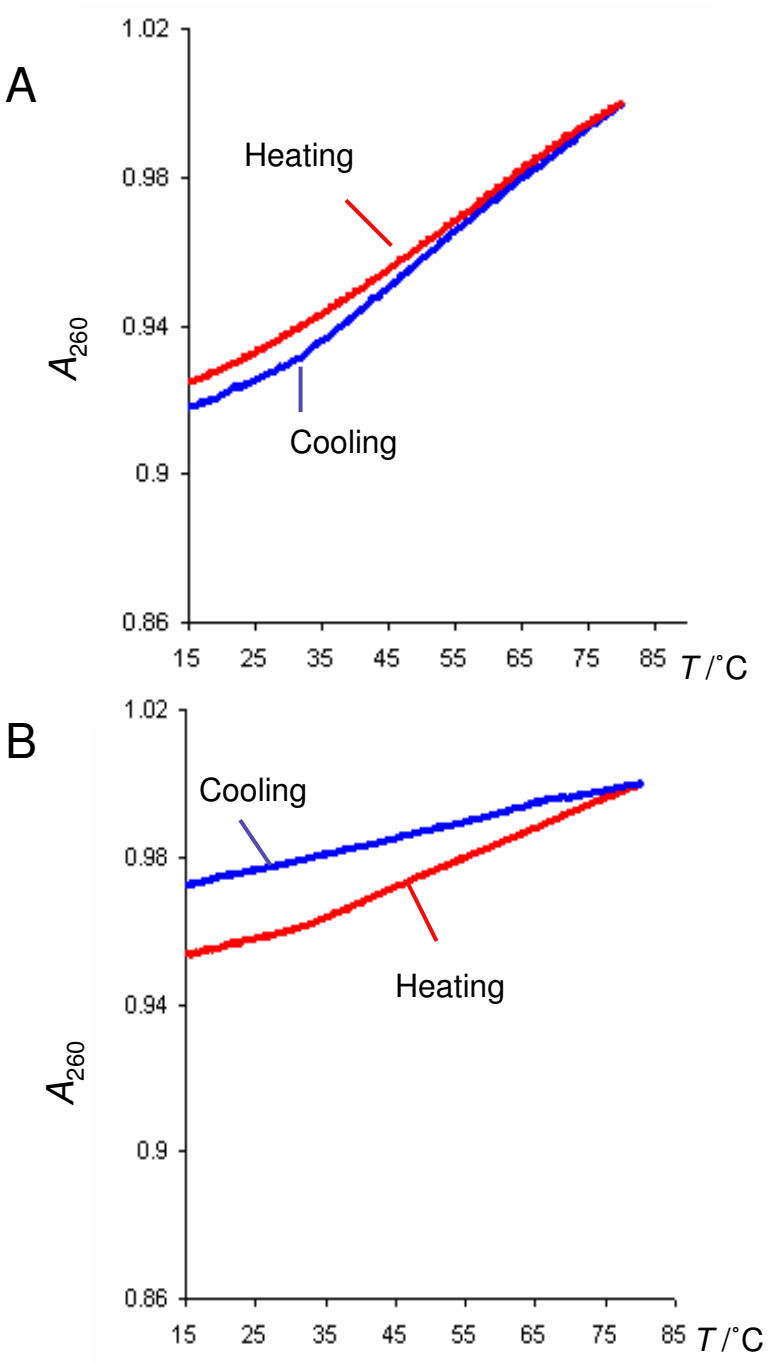

Figure S11. UV thermal denaturation/renaturation curves bePOM II Lys-$(T)_8$-NH2 **29** *vs*. poly(dA) and d($CGCA_8CGC$) at 7.6 μM (total conc. in strands, 1:1 ratio of strands) and 10 mM K_2HPO_4, 0.12 M K^+, pH 7.0 (total volume 1.0 cm^3): (**A**) slow heating (denaturation) curves after 24 hr incubation and cooling (renaturation) curves for POM **29** *vs*. poly(rA); (**B**) slow heating (denaturation) and cooling curves (renaturation) curves for POM **29** *vs*. d($CGCA_8CGC$). Transitions are not evident and no 1st derivatives could be calculated.

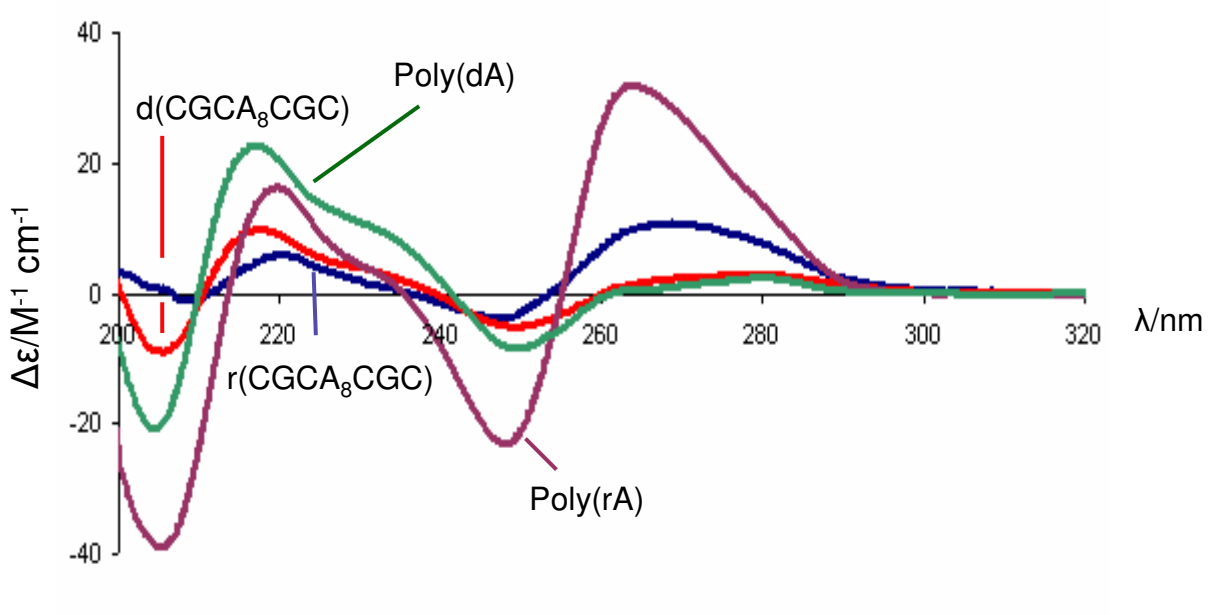

Figure S12. CD spectra single strands of poly(rA), poly(dA), d($CGCA_8CGC$) and r($CGCA_8CGC$) at 7.6 μM and 10 mM K_2HPO_4, 0.12 M K^+, pH 7.0 (total volume 1.0 cm^3).

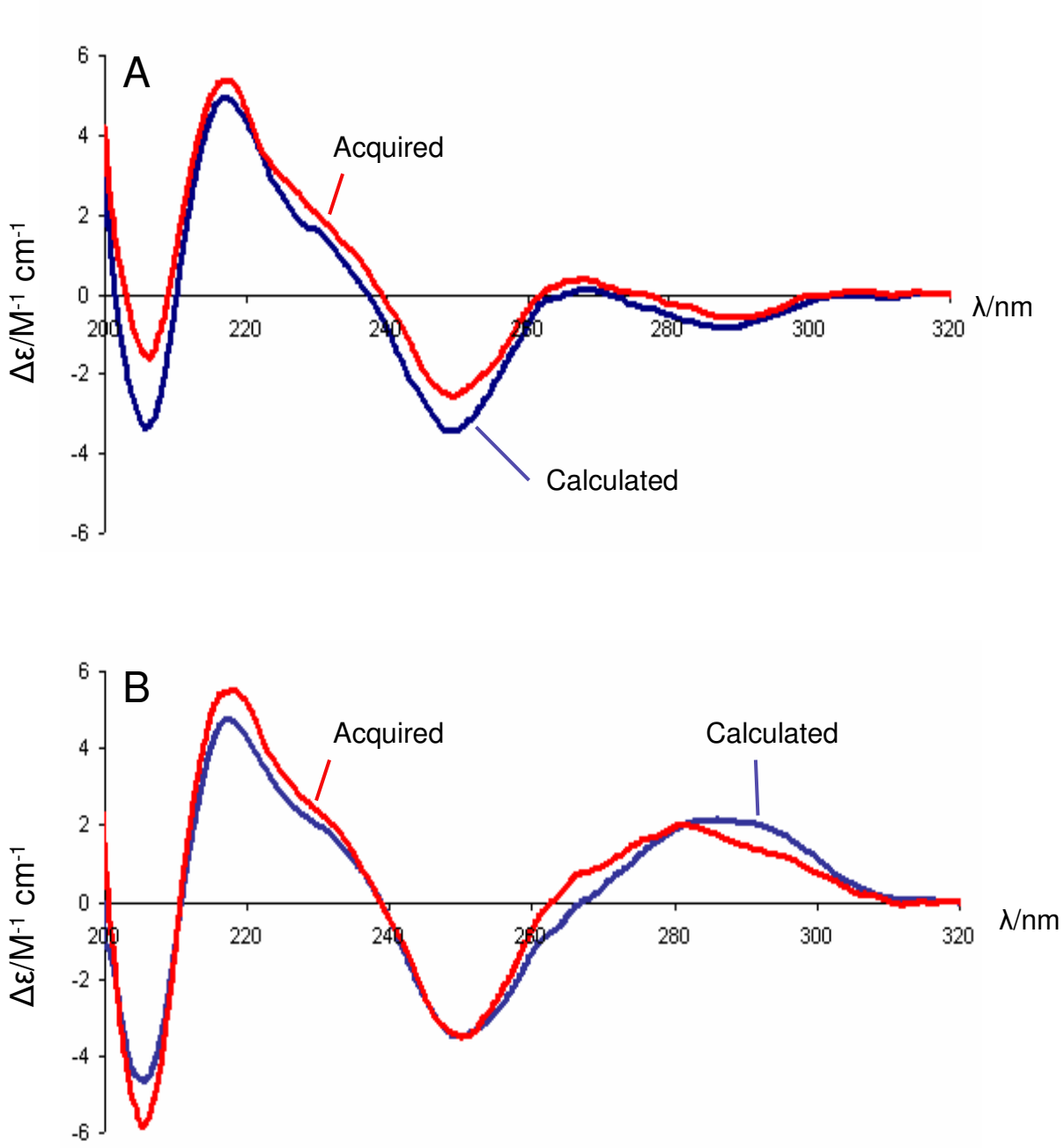

Figure S13. CD spectra for bePOM I Lys-$(T)_8$-NH_2 **28** and bePOM II Lys-$(T)_8$-NH_2 **29** *vs*. d(CGCA_8CGC) at 7.6 µM (total conc. in strands, 1:1 ratio of strands) and 10 mM K_2HPO_4, 0.12 M K^+, pH 7.0 (total volume 1.0 cm^3): (**A**) CD spectra of acquired and calculated for POM **28** *vs*. d(CGCA_8CGC); (**B**) CD spectra of acquired and calculated for POM **29** *vs*. d(CGCA_8CGC).