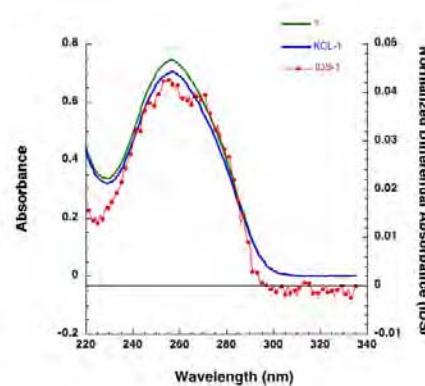


Name: Mito 1

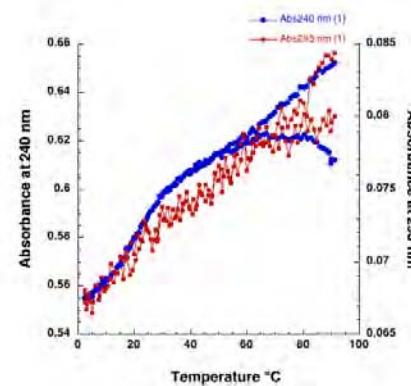
Sequence: *5' GCATTTGGTATTTCGTCTGGGGGGTGTGACACGCGATAGCATTG 3'*

Score: 0.66

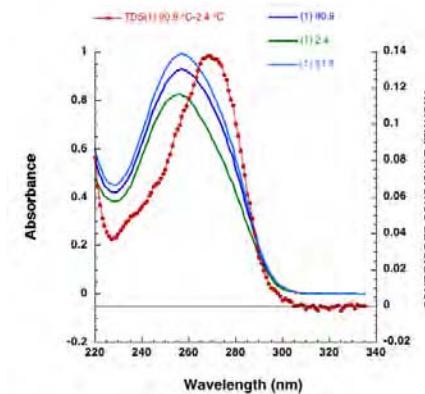
(a)



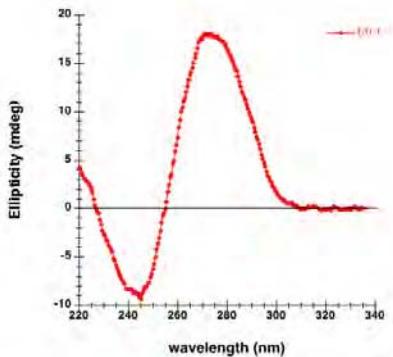
(b)



(c)

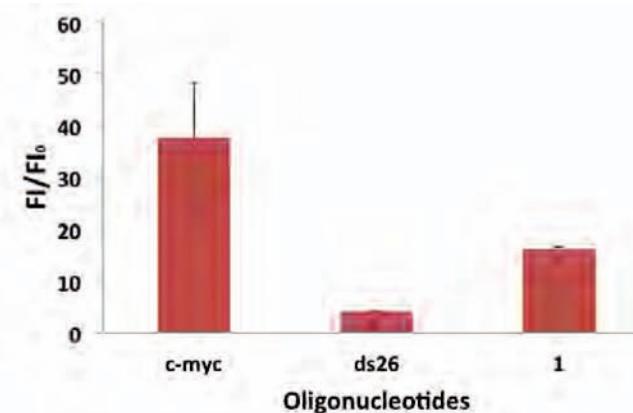


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a**) Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b**) Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c**) Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d**) Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e**) 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f**) Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

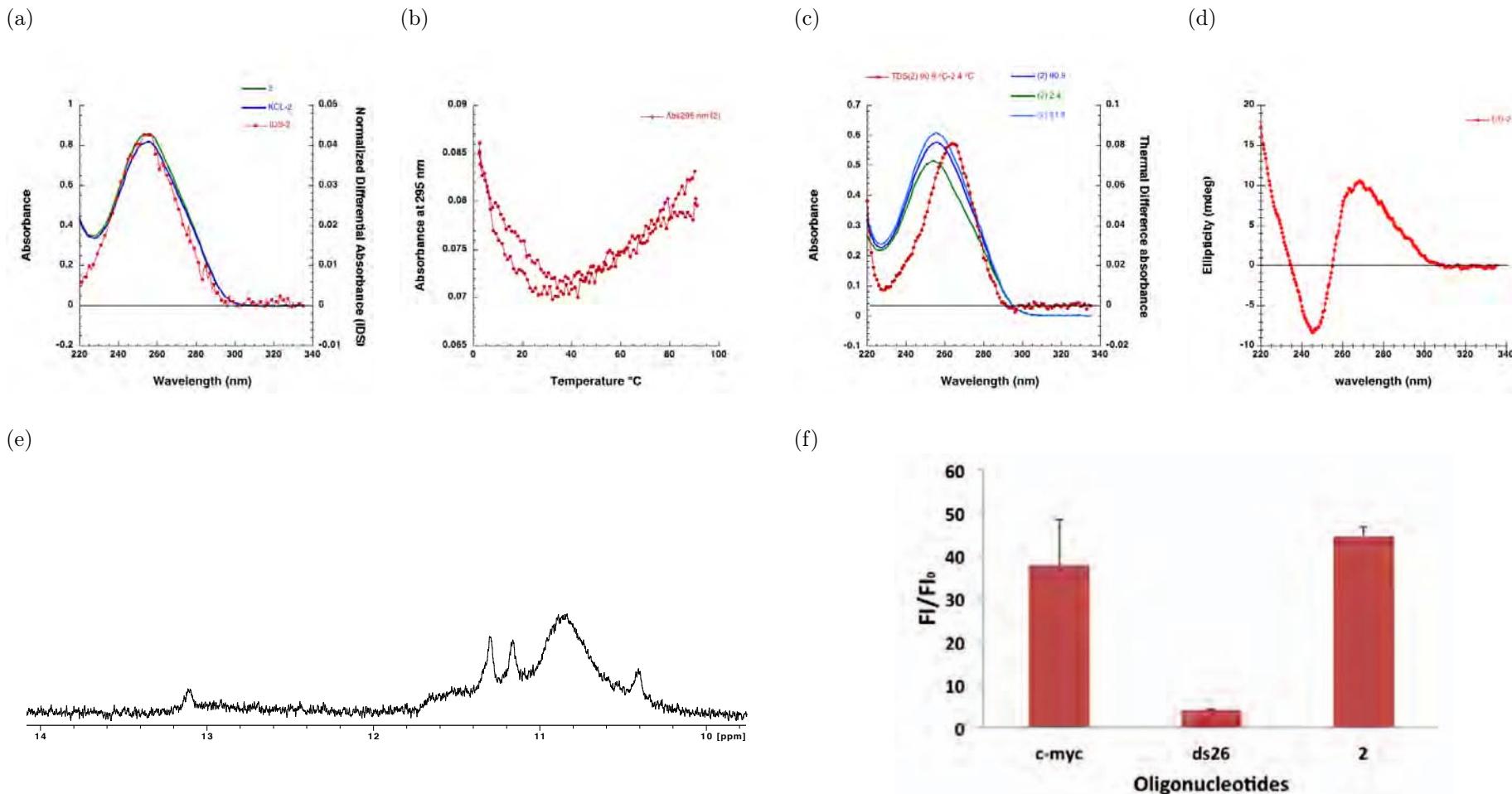
Table 3: Results interpretation of Mito 1

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	+	Not G4

Name: Mito 2

Sequence:  $5' A\textcolor{red}{GGTGC}GATAAATAATA\textcolor{red}{GGATGGGG} 3'$

Score: 1



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 4: Results interpretation of Mito 2

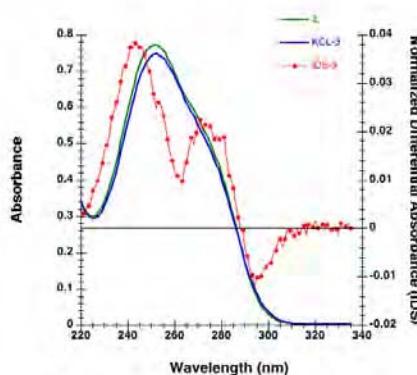
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	Yes	No	No	Yes	+++	<b>G4 (Unstable)</b>

Name: Mito 3

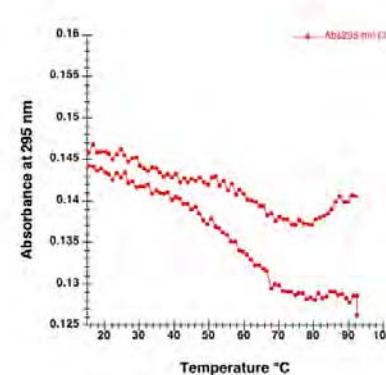
Sequence:  $5' C G G G G G G A G G G G G G G T T T G G T G G A 3'$

Score: 2.46

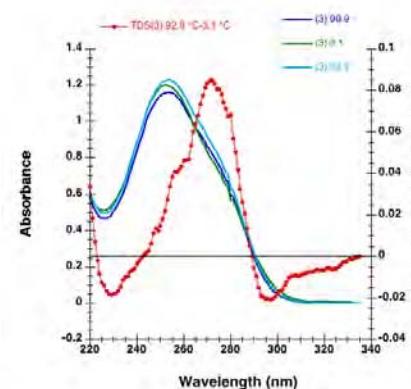
(a)



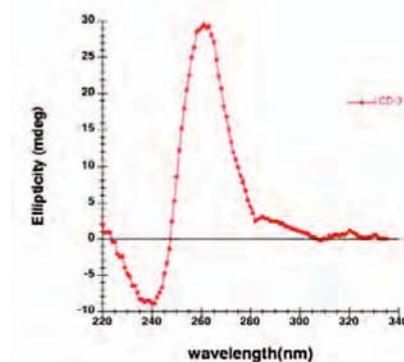
(b)



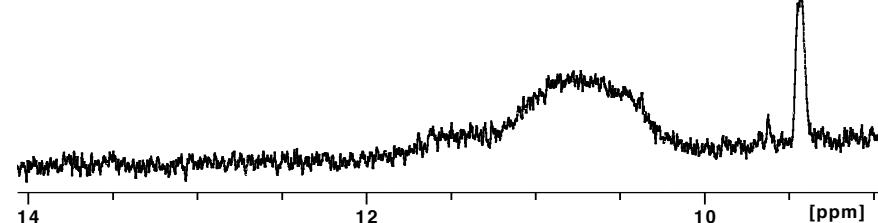
(c)



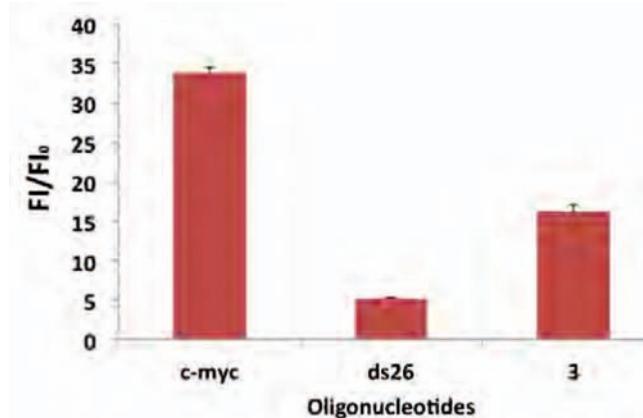
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a**) Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b**) Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c**) Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d**) Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e**) 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f**) Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

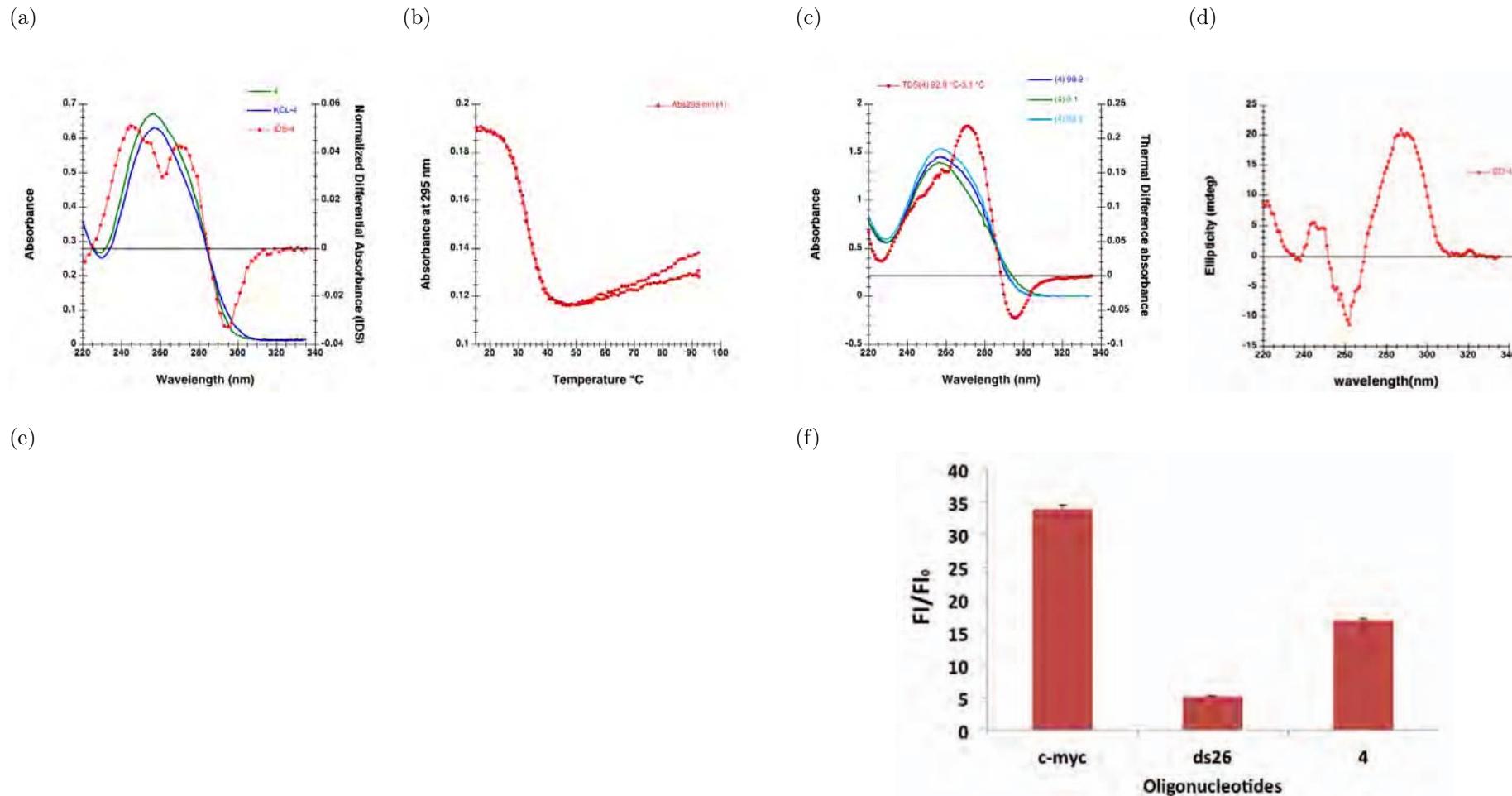
Table 5: Results interpretation of Mito 3

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Inconclusive	Yes	Parallel	Yes	++	G4

Name: Mito 4

Sequence:  $5' TGT\textcolor{red}{TTA}GGGTTCTT\textcolor{red}{GTTTTT}GGGGTTTGG 3'$

Score: 1.1



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 6: Results interpretation of Mito 4

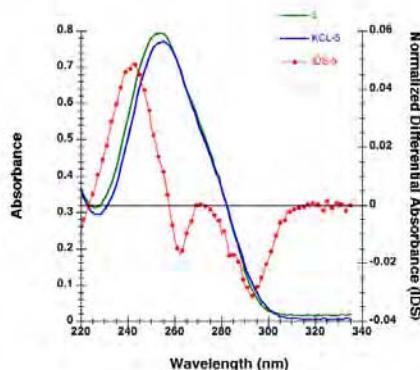
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes (< 37°C)	Yes	Antiparallel	Not done	++	<b>G4 (Unstable)</b>

Name: Mito 5

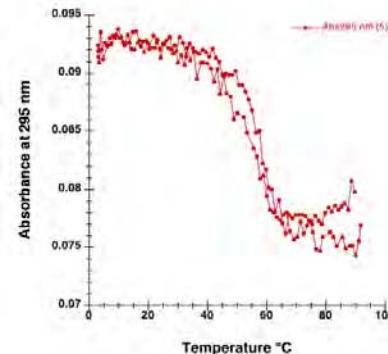
Sequence:  ${}^5' T G G G A G T G G G A G G G G A A A A T A T G T G T T A G T T C G G G G G C T G {}^3'$

Score: 1.57

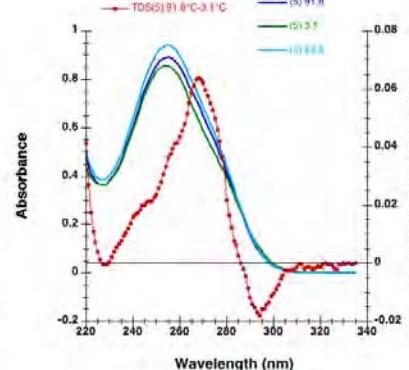
(a)



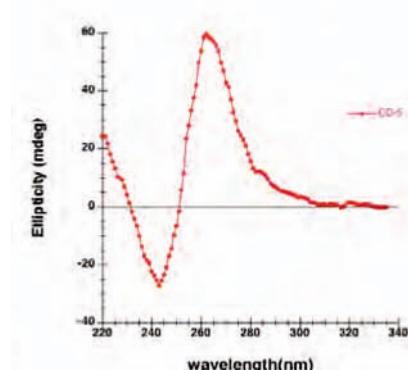
(b)



(c)

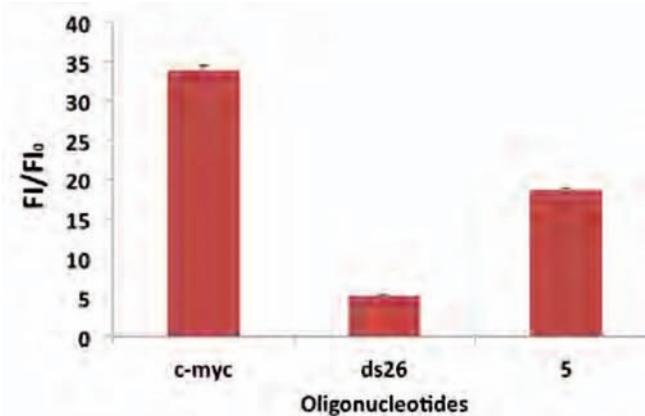


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

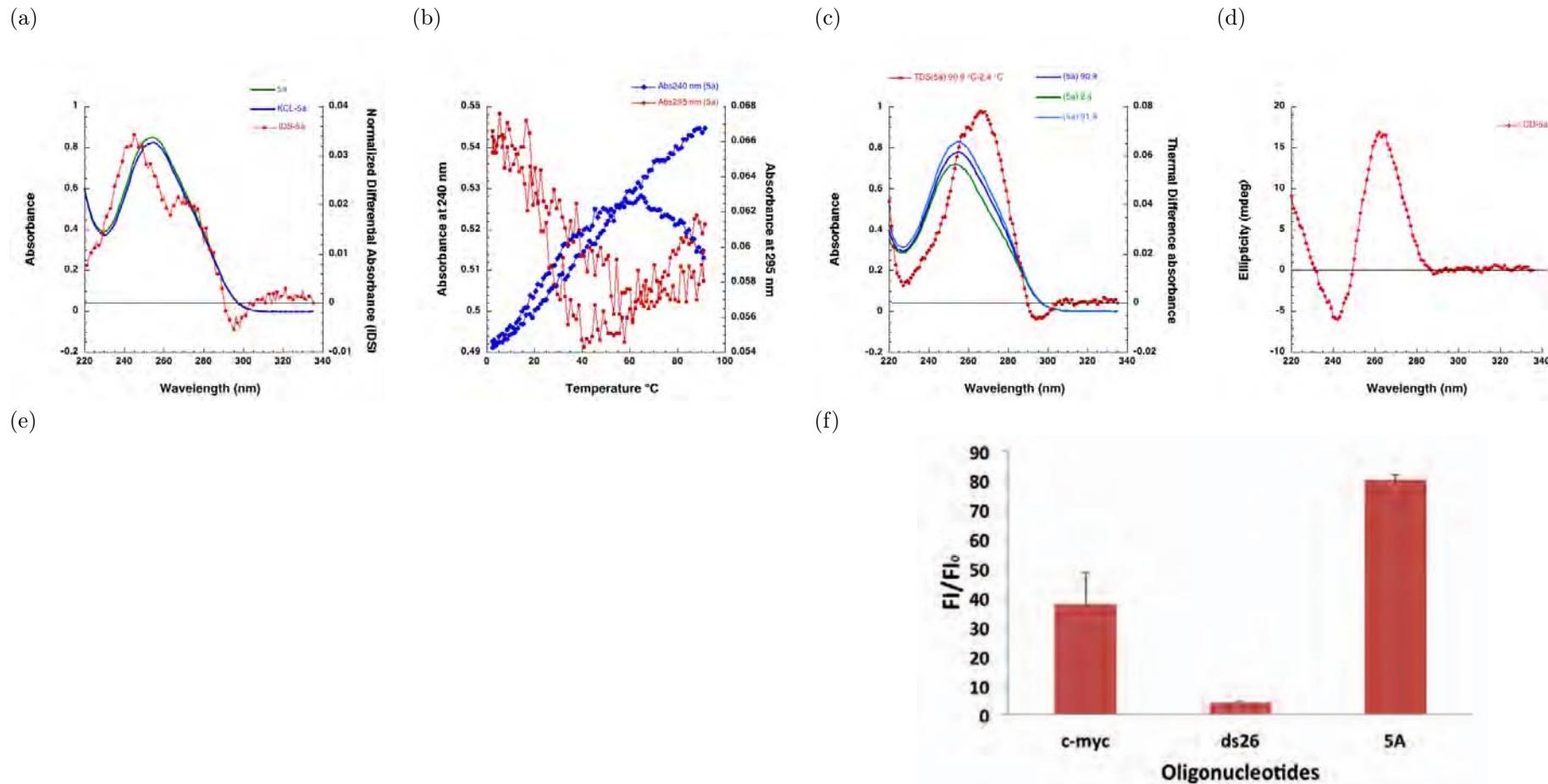
Table 7: Results interpretation of Mito 5

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Parallel	Not done	++	G4

Name: Mito 5A

Sequence:  $5' \text{GAGATTAGTATGGAGTGGGG} 3'$

Score: 1.39



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

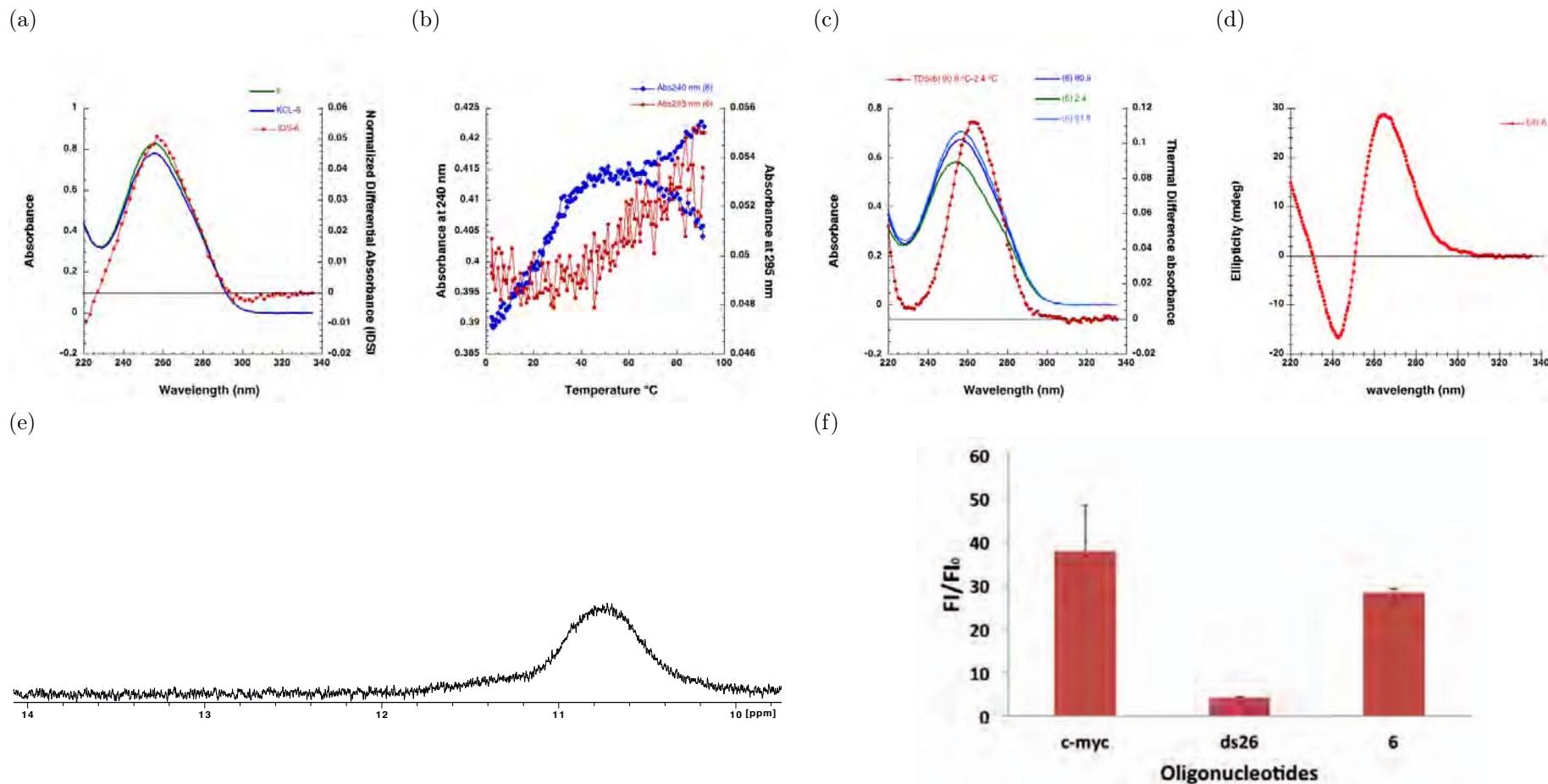
Table 8: Results interpretation of Mito 5A

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes (-)	Yes (-)	Yes (-)	Parallel	Not done	+++	G4

Name: Mito 6

Sequence:  $5' \text{GGGGGTTGTATTGATGAGATTAGTA} 3'$

Score: 1



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

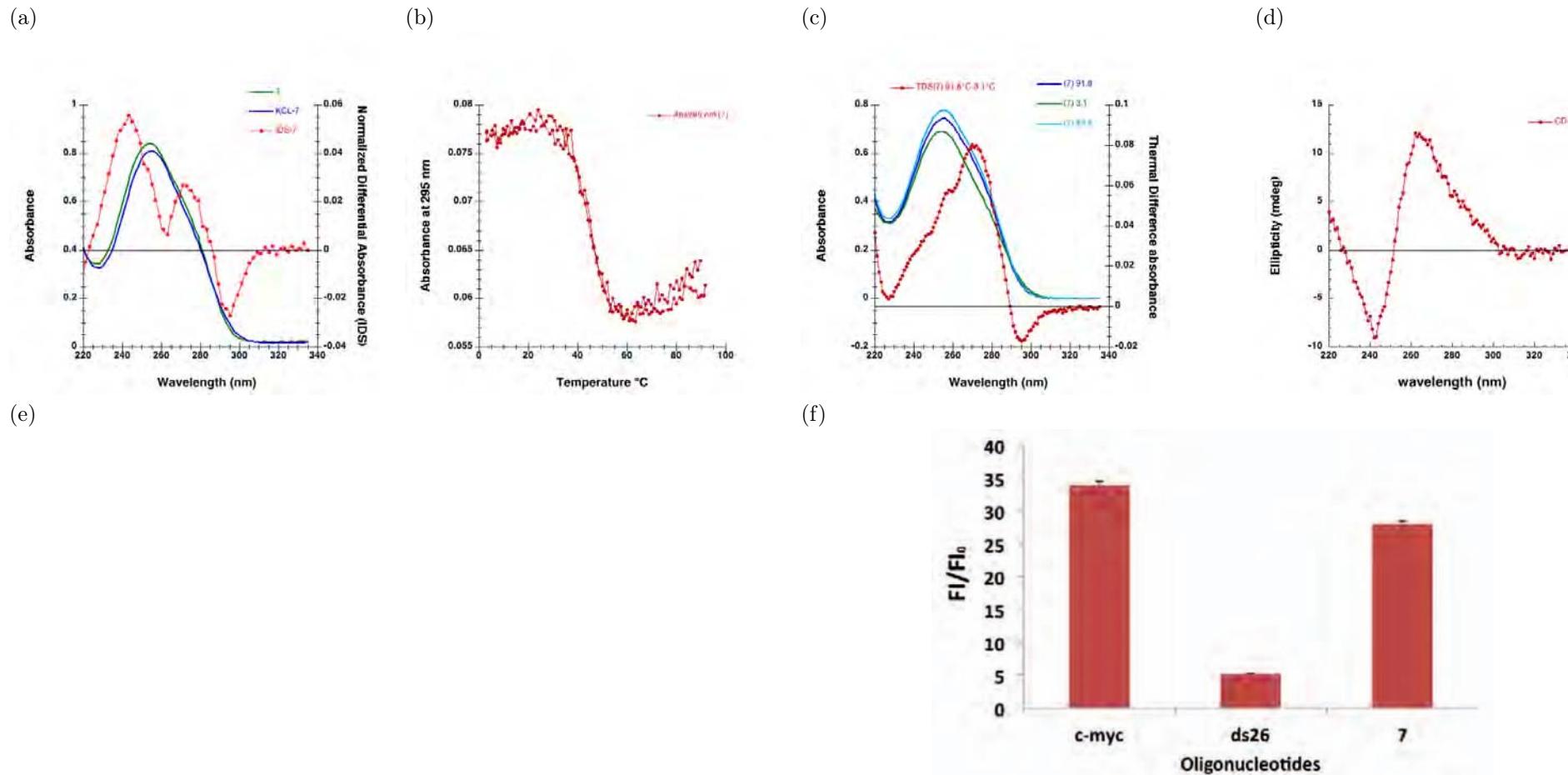
Table 9: Results interpretation of Mito 6

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	Parallel	Yes	++	G4 (Unstable) <sup>a</sup>

<sup>a</sup>Probably tetramolecular

Name: Mito 7

Sequence: *5' GGTGTTGTTGGCTGGTA GGATGGCGGGGGTTGATTGATGAGATTAG 3'* Score: 1.08



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence (right).

Table 10: Results interpretation of Mito 7

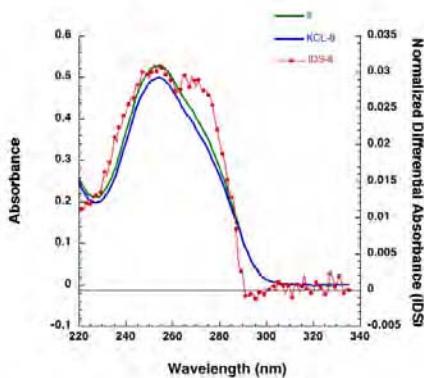
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Parallel	Not done	++	G4

Name: Mito 8

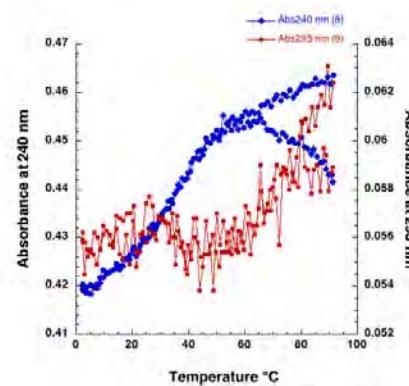
Sequence:  $5' TGGGGTTAGCA GCGGTG TG TG TG 3'$

Score: 1

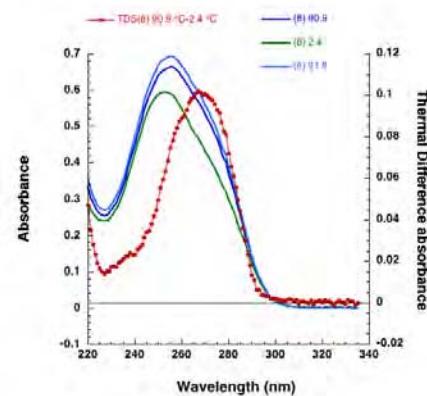
(a)



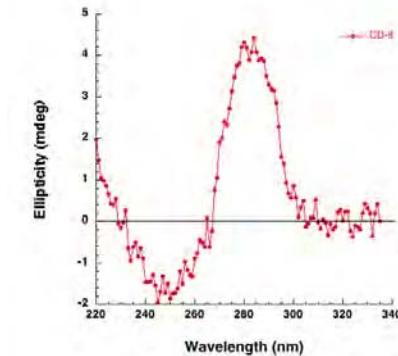
(b)



(c)

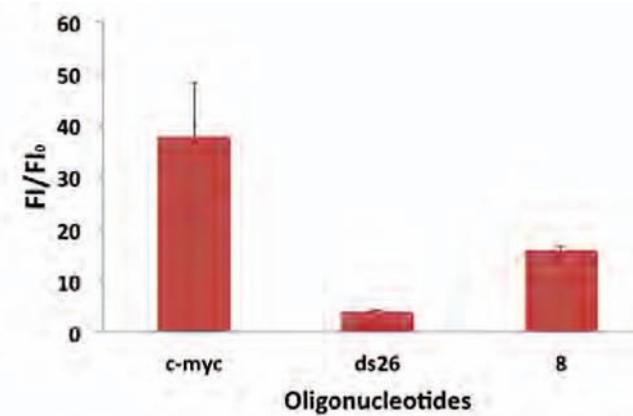


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

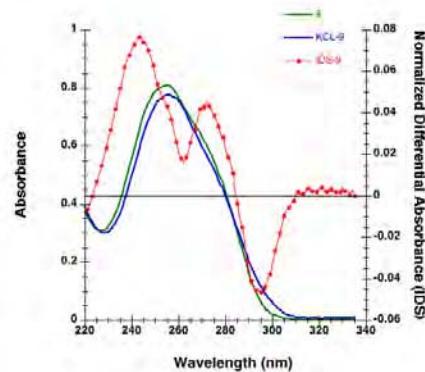
Table 11: Results interpretation of Mito 8

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	+	Not G4

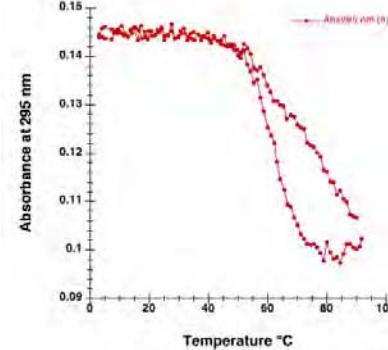
Name: Mito 9

Sequence:  $5' TGGGGGGTGTCTTTGGGGTTTGTTGGTCGGGTATGGGG 3'$  Score: 1.88

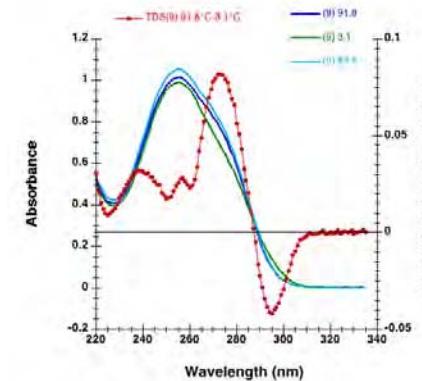
(a)



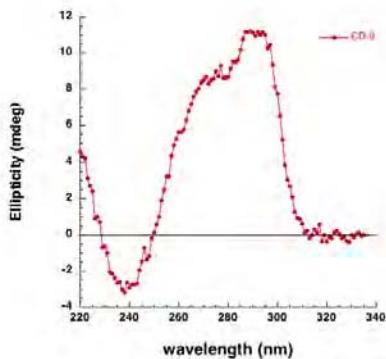
(b)



(c)

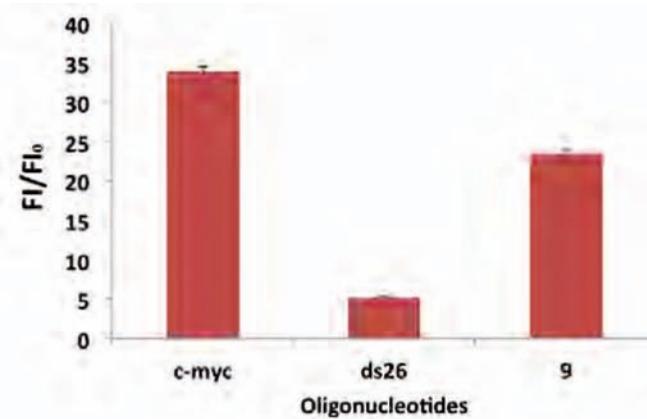


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 12: Results interpretation of Mito 9

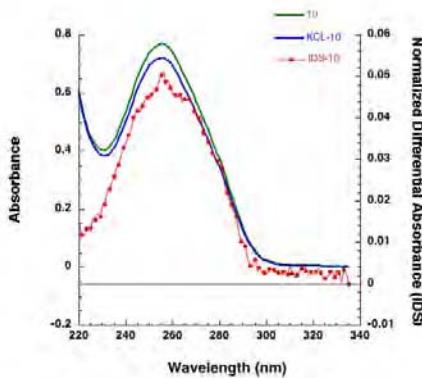
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Mixed	Not done	++	G4

Name: Mito 10

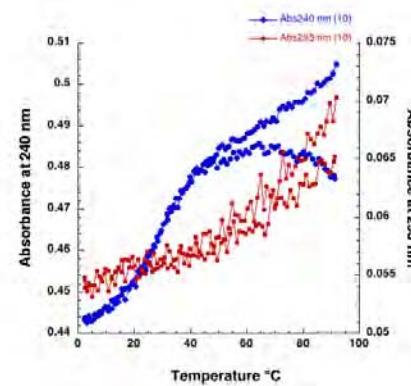
Sequence: *5' GGTAAGCTACATAAAACTGTGGGGGT 3'*

Score: 1.04

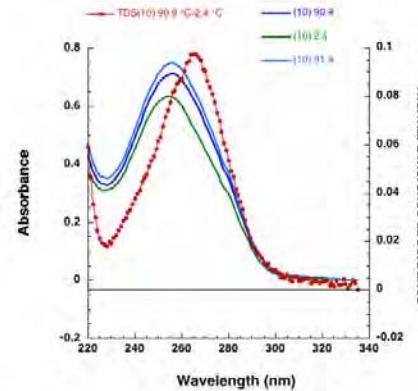
(a)



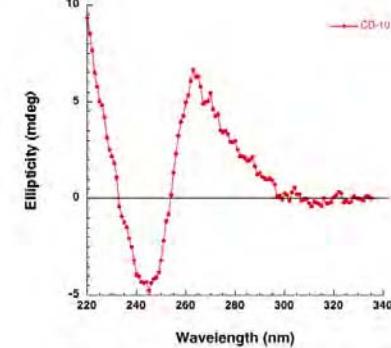
(b)



(c)

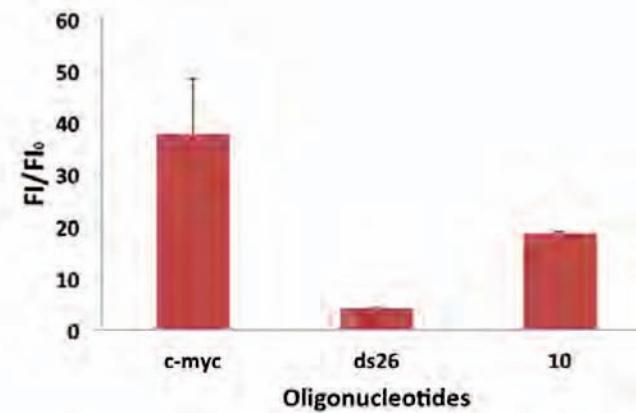


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalized differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence (right).

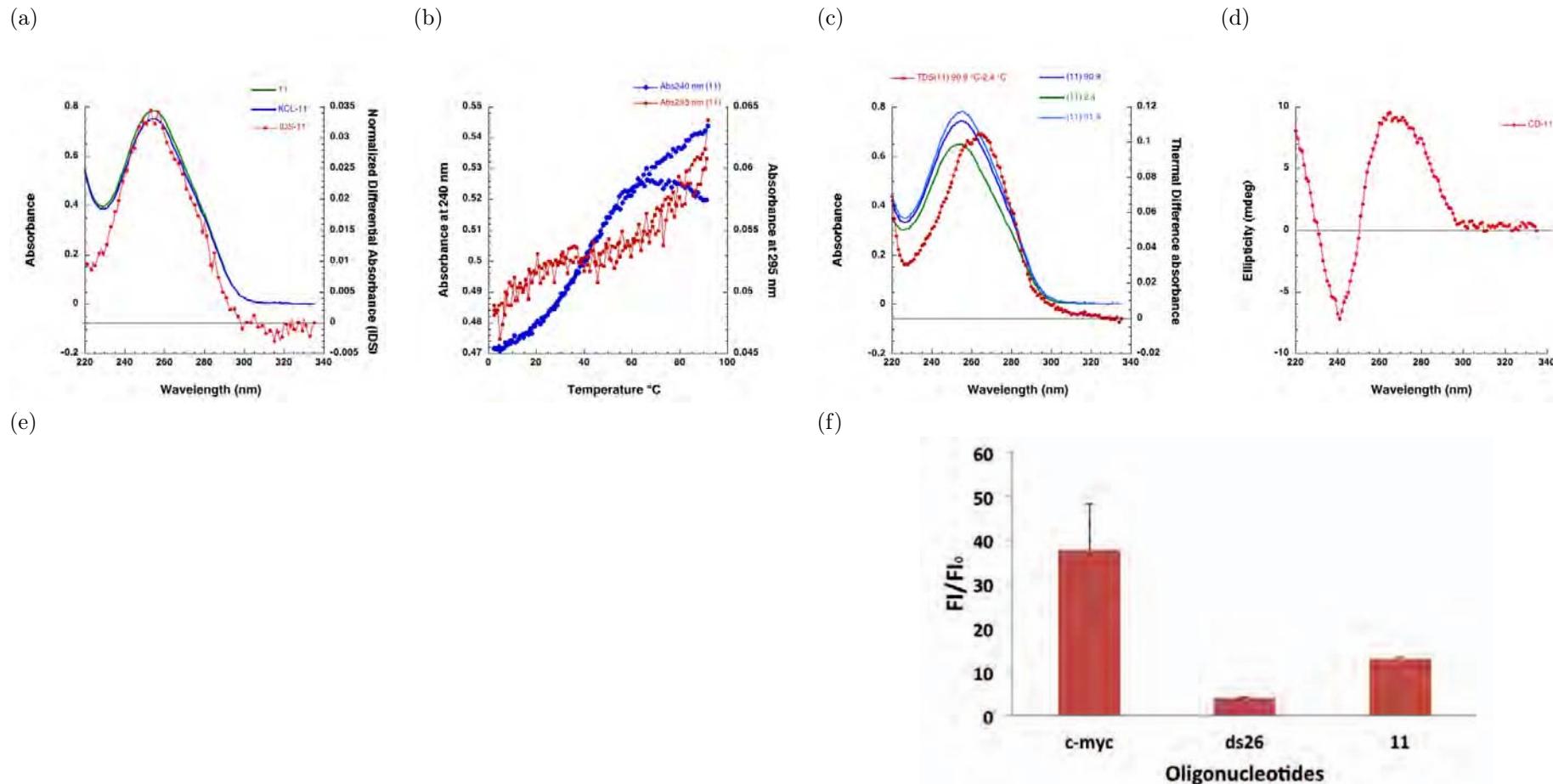
Table 13: Results interpretation of Mito 10

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	+	Not G4

Name: Mito 11

Sequence:  $5' A G A G G G T G A A C T C A C T G G A A C G G G G 3'$

Score: 1.08



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 14: Results interpretation of Mito 11

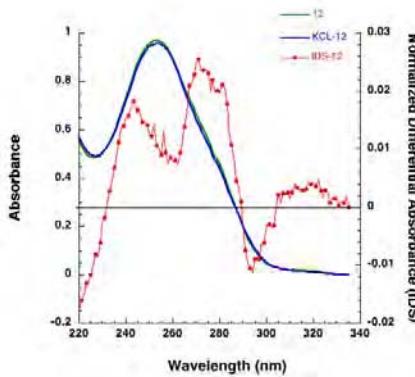
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	+	Not G4

Name: Mito 12

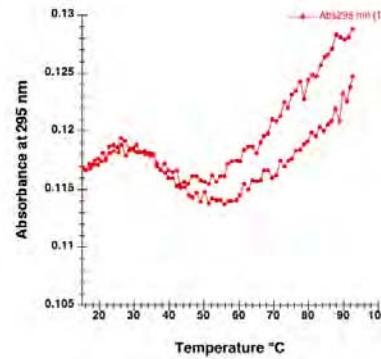
Sequence:  ${}^5' T G G G G G T G T G G C T A G G C T A A G C G {}^3'$

Score: 1.22

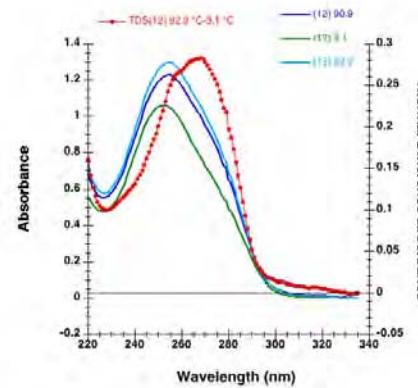
(a)



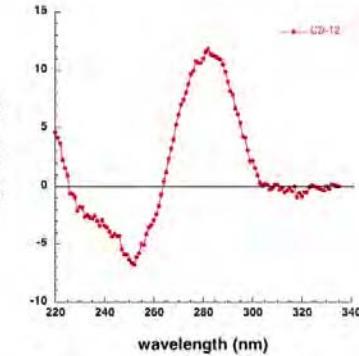
(b)



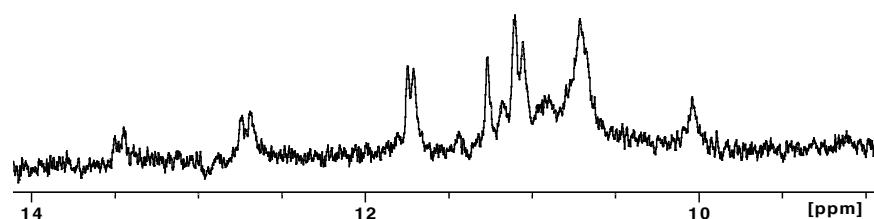
(c)



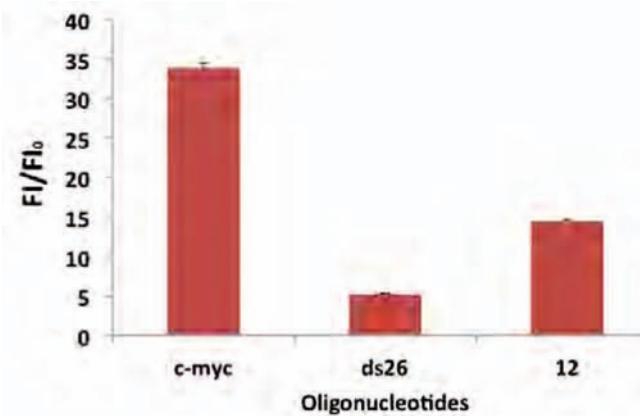
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

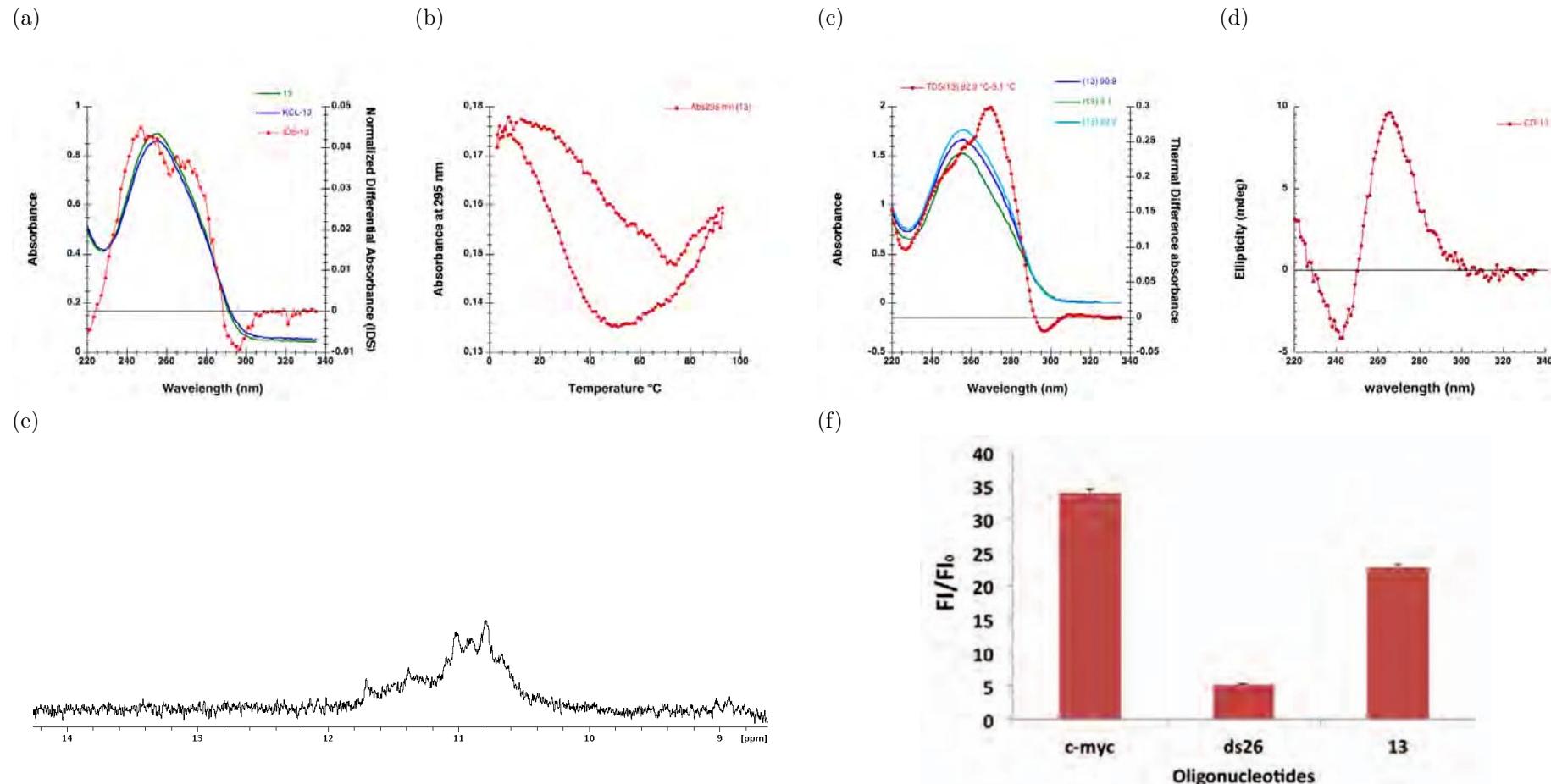
Table 15: Results interpretation of Mito 12

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	No	No	Yes	++	G4

Name: Mito 13

Sequence:  $5' GGTGAGTTTTAGCTTTATTGGGGAGGGGGT 3'$

Score: 1.4



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence (right).

Table 16: Results interpretation of Mito 13

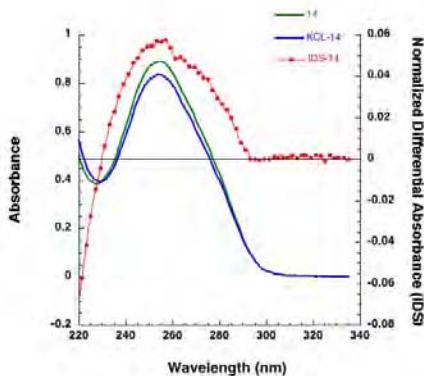
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes (-)	Parallel	Yes	++	G4

Name: Mito 14

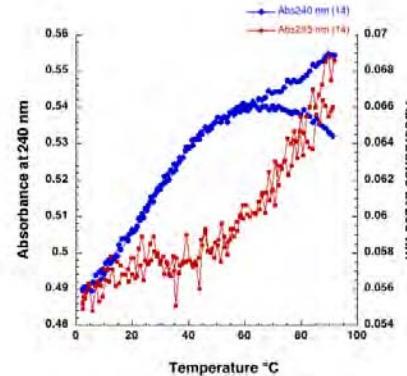
Sequence:  $5' \text{GA} \text{GGTTTA} \text{GGGCTAA} \text{GCATA GTGGGG} 3'$

score: 1.15

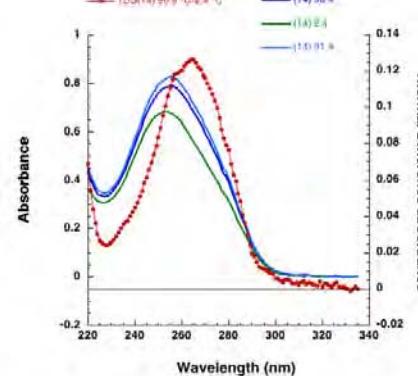
(a)



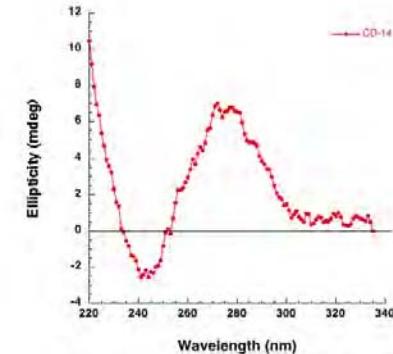
(b)



(c)

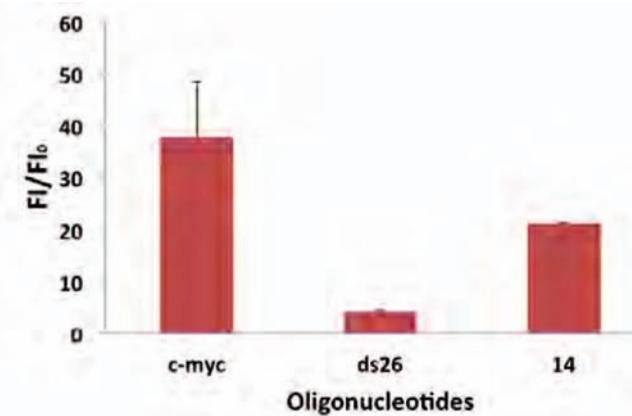


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

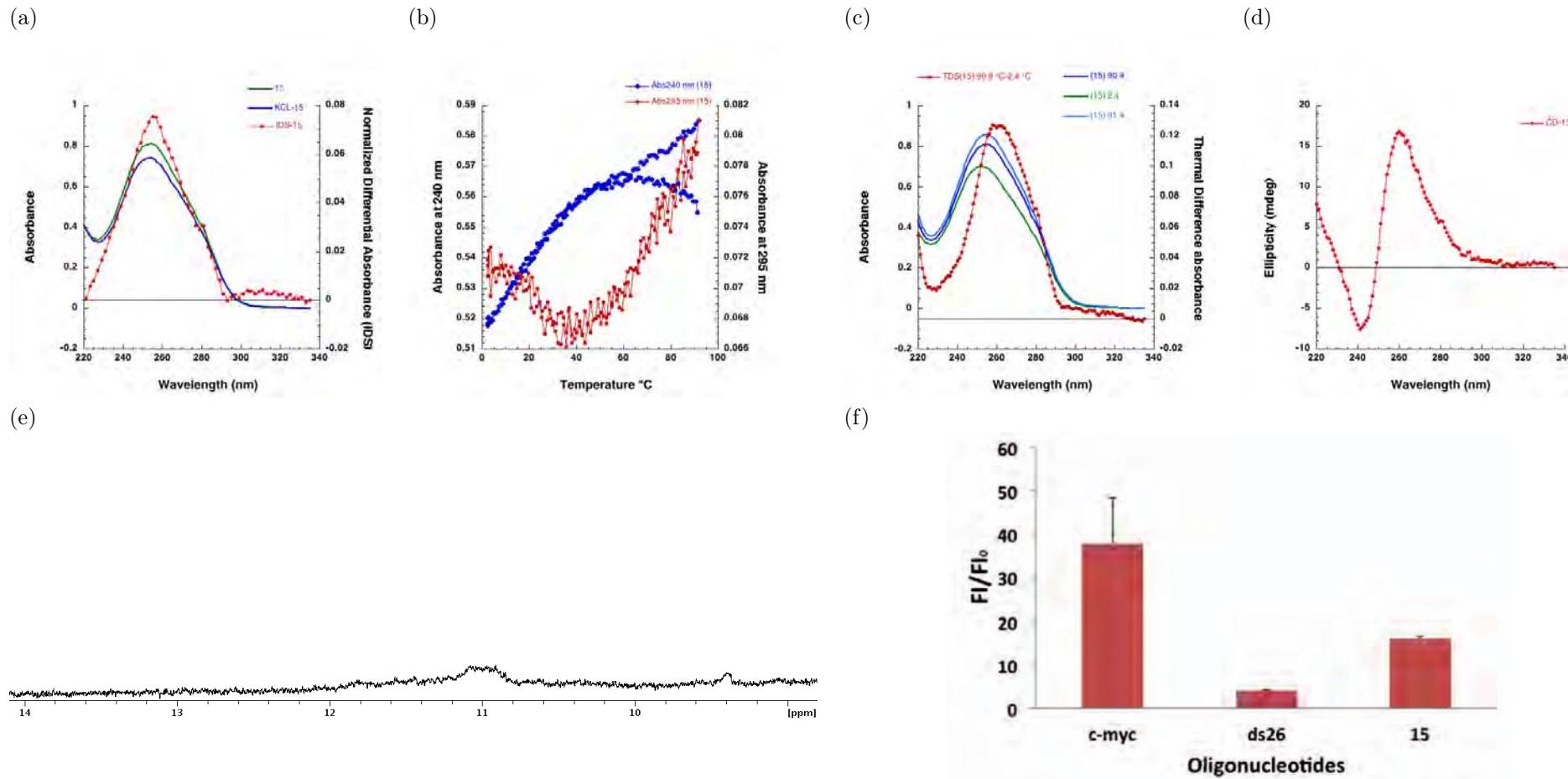
Table 17: Results interpretation of Mito 14

Technique	IDS	TM	TDS	CD	RMN	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	++	Not G4

Name: Mito 15

Sequence: 5' GCAAGAGGTGGTGAAGGTTGATCGGGGT 3'

Score: 1.11



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 18: Results interpretation of Mito 15

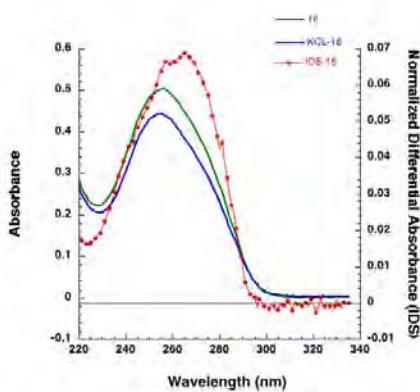
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	Yes	No	Parallel	No	+	Not G4

Name: Mito 16

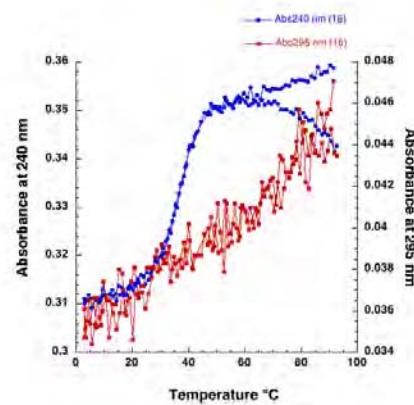
Sequence:  $5' \text{GGGCTATCGTAGTTTCTGGGTAG} 3'$

Score: 1

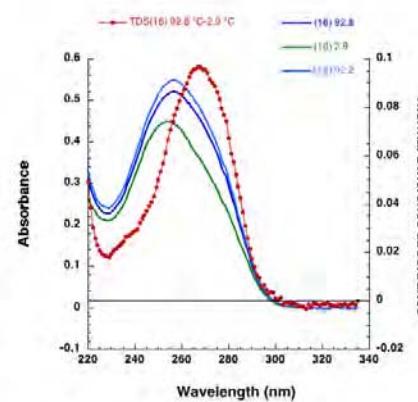
(a)



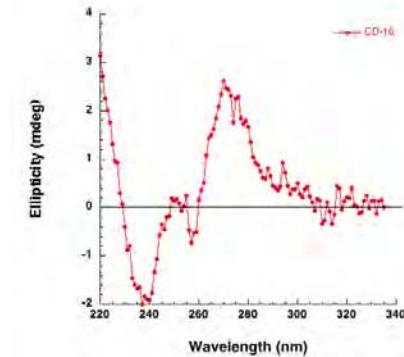
(b)



(c)

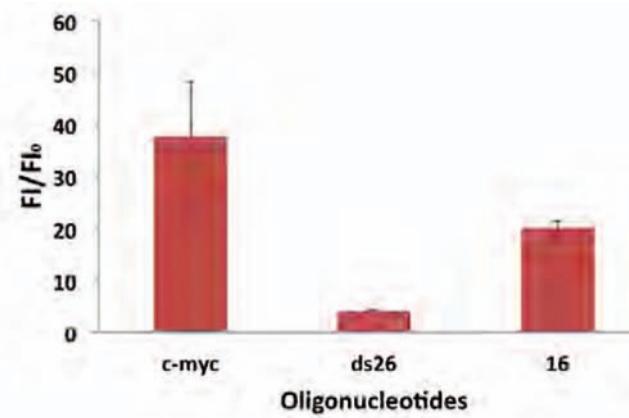


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a**) Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b**) Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c**) Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d**) Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e**) 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f**) Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

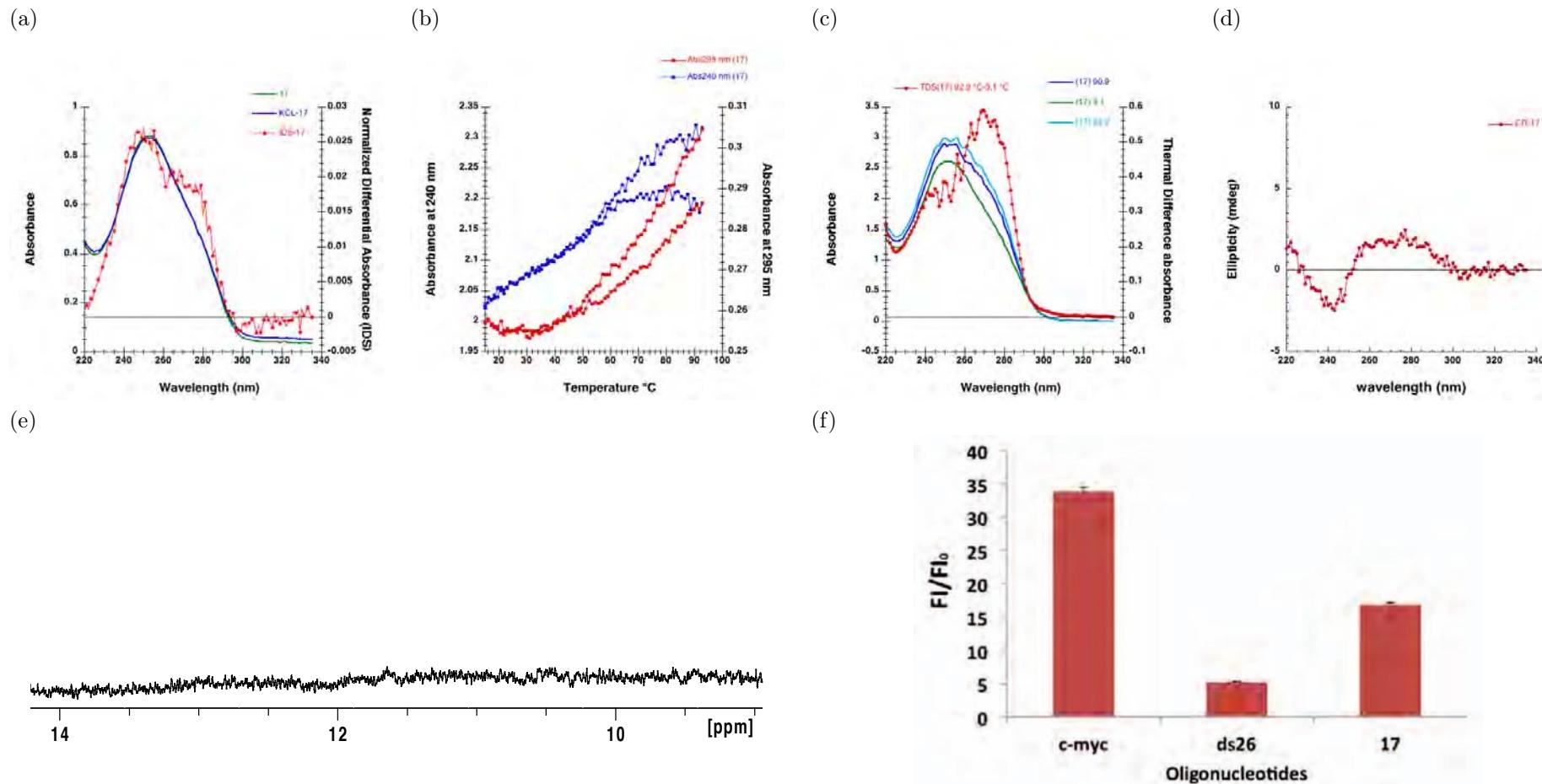
Table 19: Results interpretation of Mito 16

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	++	<b>Not G4</b>

Name: Mito 17

Sequence:  $5' \text{GAGGA} \text{GGGTGACGGGC} \text{GGTGTG} \text{TACGCG} 3'$

score: 1.0



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 20: Results interpretation of Mito 17

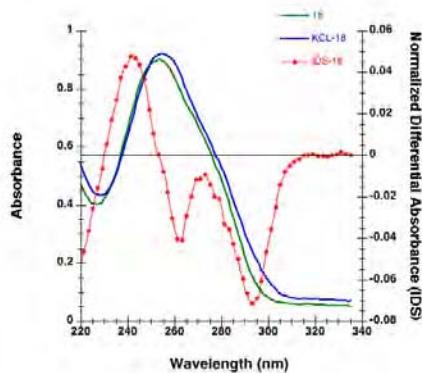
Technique	IDS	TM	TDS	CD	RMN	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	No	++	Not G4

Name: Mito 18

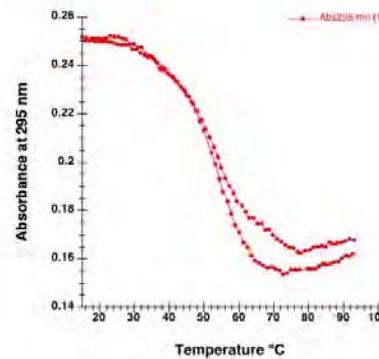
Sequence:  $5' A\textcolor{red}{GGTGGGGTGGGTTTTGGGGCTA} GGT 3'$

Score: 1.92

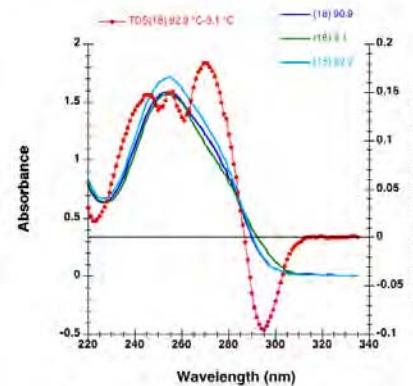
(a)



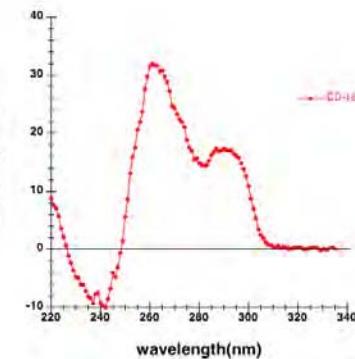
(b)



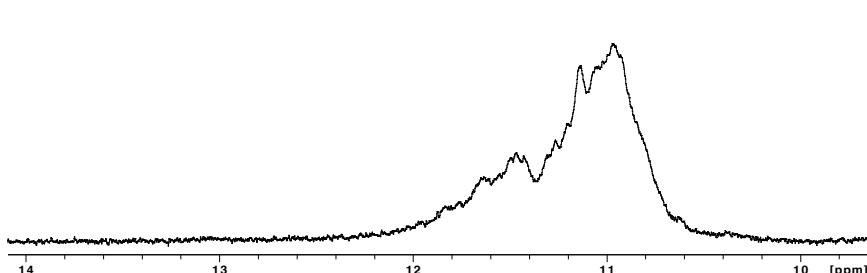
(c)



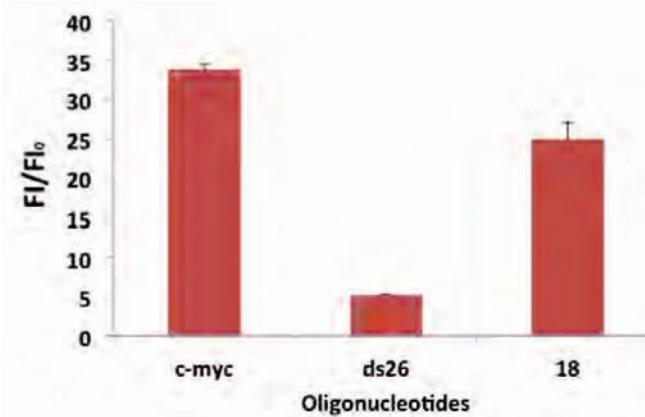
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 21: Results interpretation of Mito 18

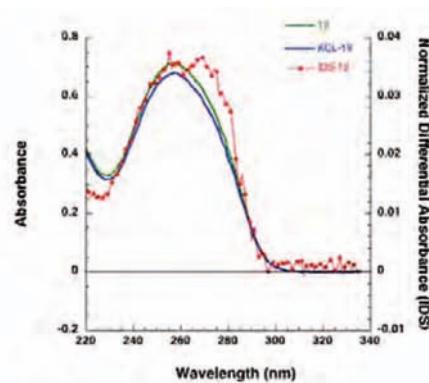
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Mixed	Yes	++	G4

Name: Mito 19

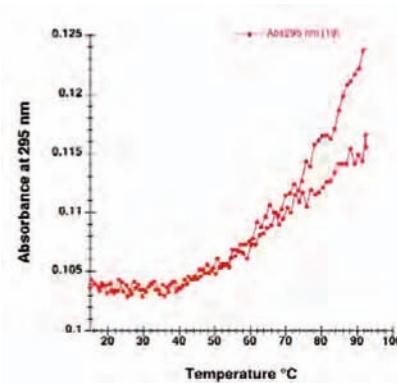
Sequence:  ${}^5' CTGGTTTCGGGGGTCTTA GCTTTGGCT {}^3'$

Score: 0.89

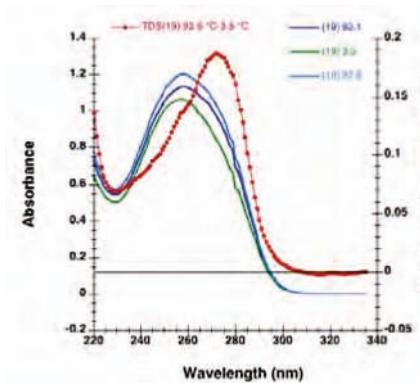
(a)



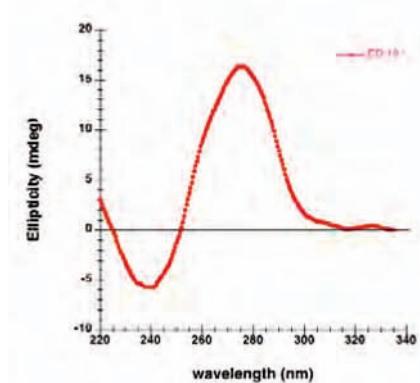
(b)



(c)

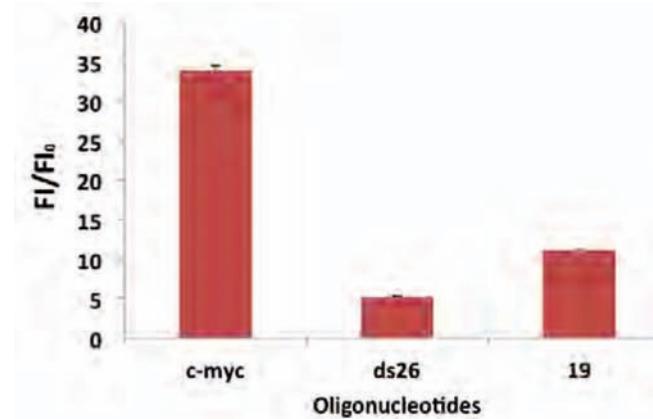


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 22: Results interpretation of Mito 19

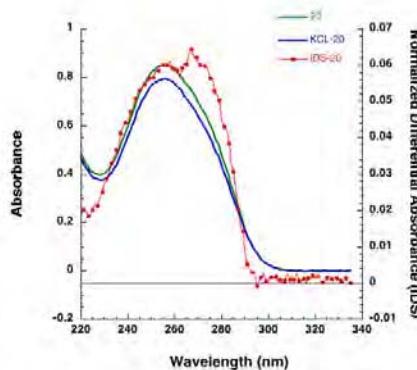
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	+/-	not G4

Name: Mito 20

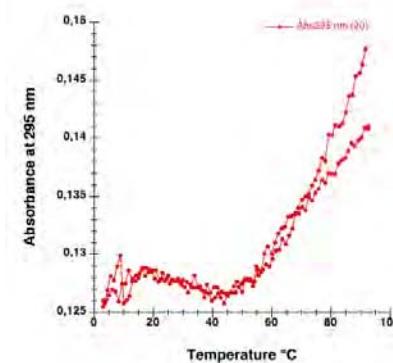
Sequence:  $5' TA\textcolor{red}{GGTAGCTCGTCTGGTTTCGGGGGTC} 3'$

Score: 0.93

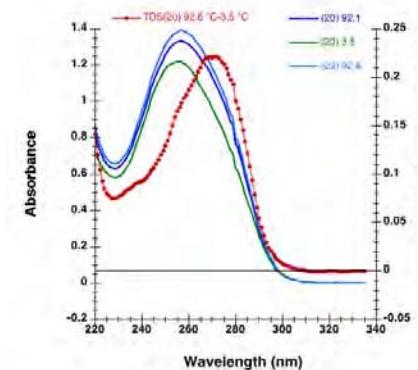
(a)



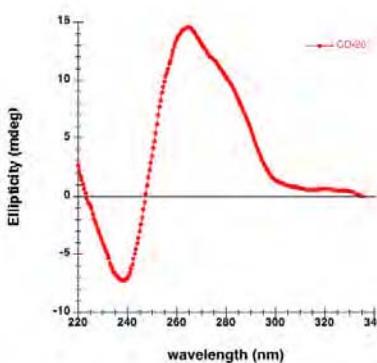
(b)



(c)

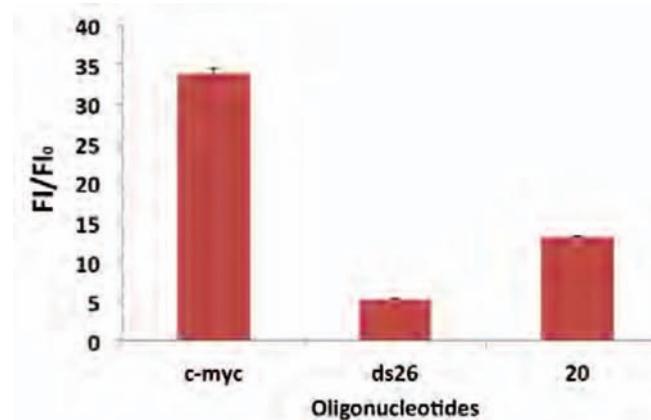


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

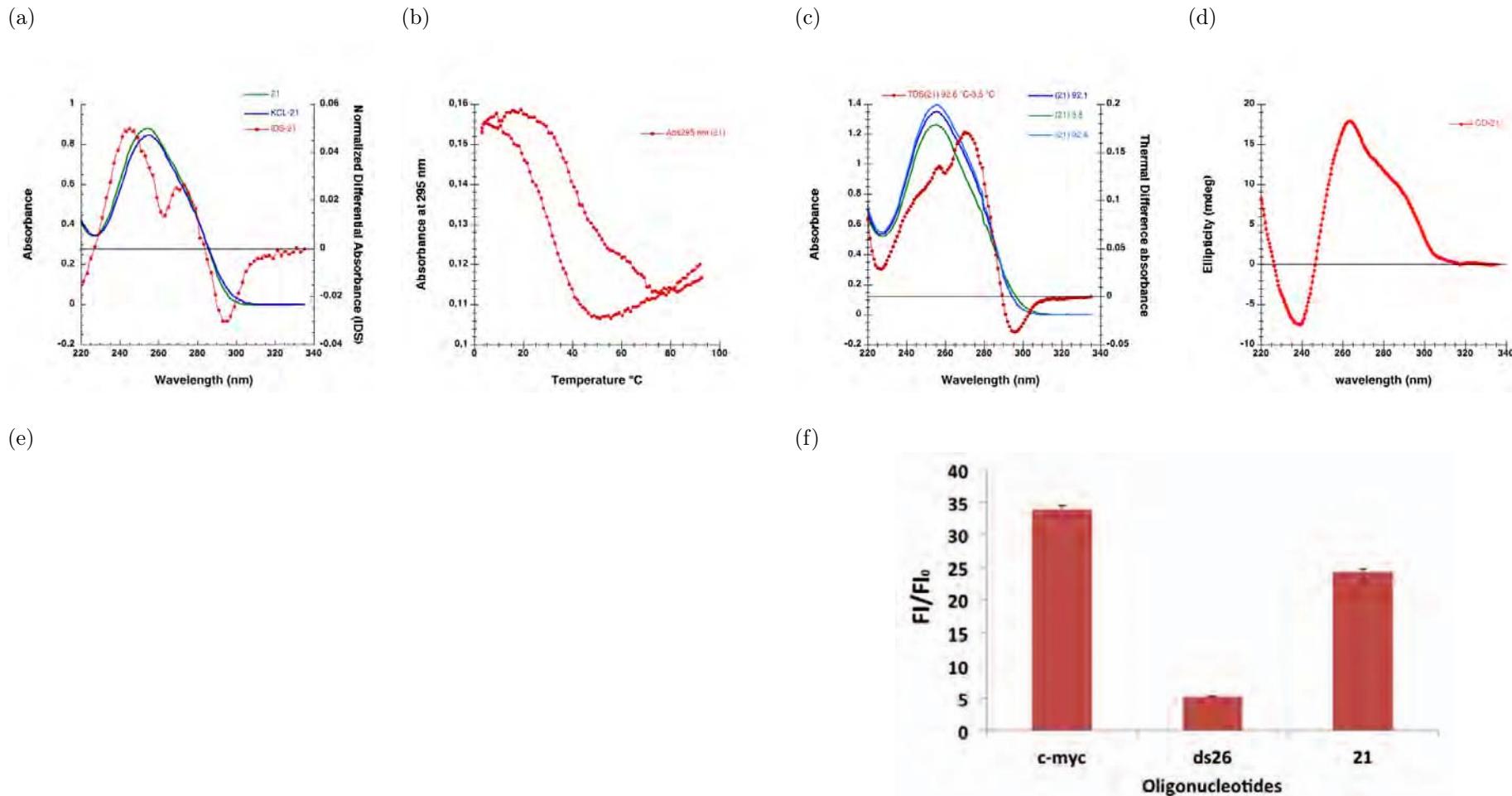
Table 23: Results interpretation of Mito 20

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	Mixed	No	+	<b>Not G4</b>

Name: Mito 21

Sequence: 5' GGGGATTAGA**GA**GGGTTCT**GT**GGG 3'

Score: 1.52



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence (right).

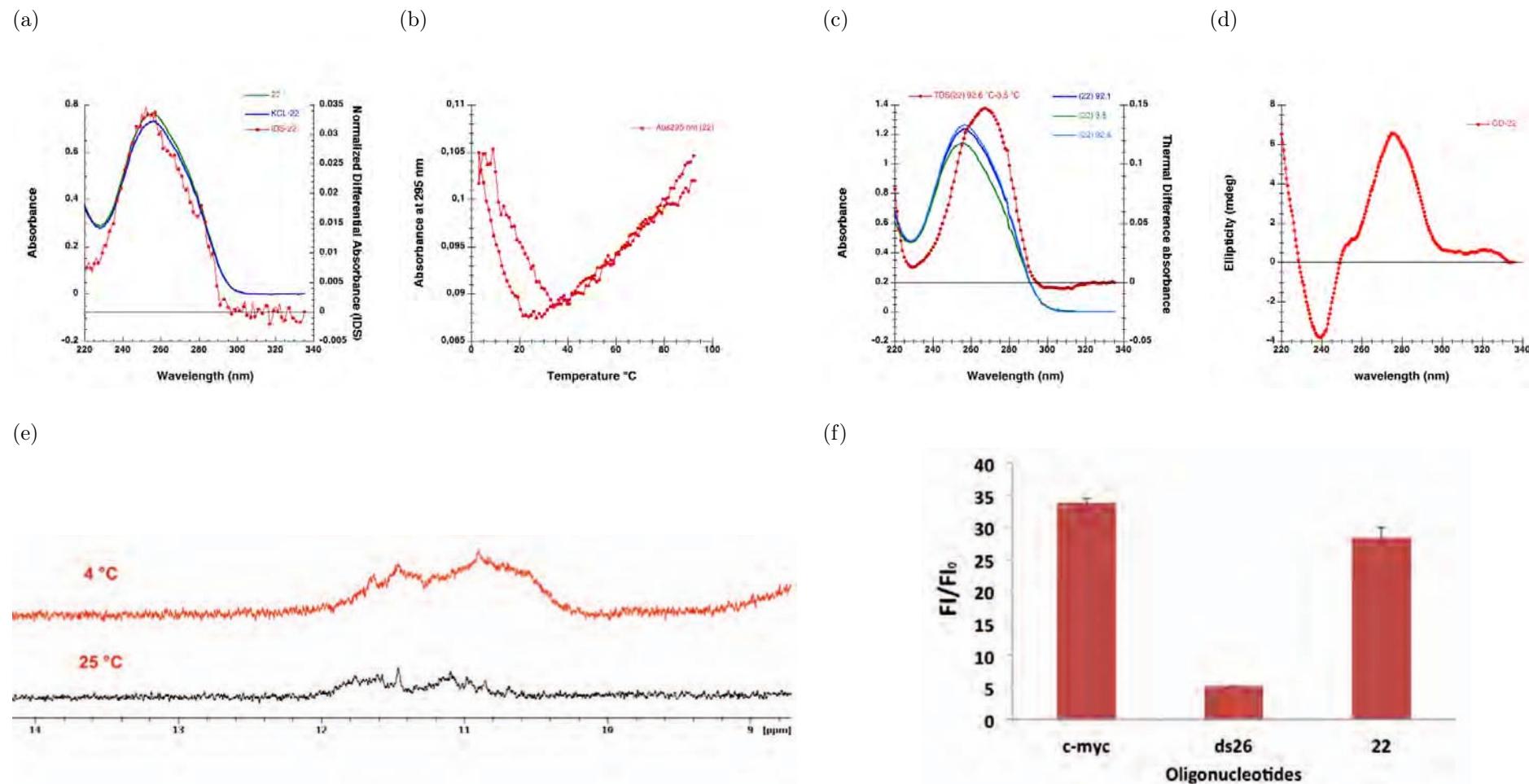
Table 24: Results interpretation of Mito 21

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Mixed	Not done	++	G4

Name: Mito 22

Sequence: 5' GGGATTTTTA GGTAGTGGTGTTG 3'

Score: 1.0



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

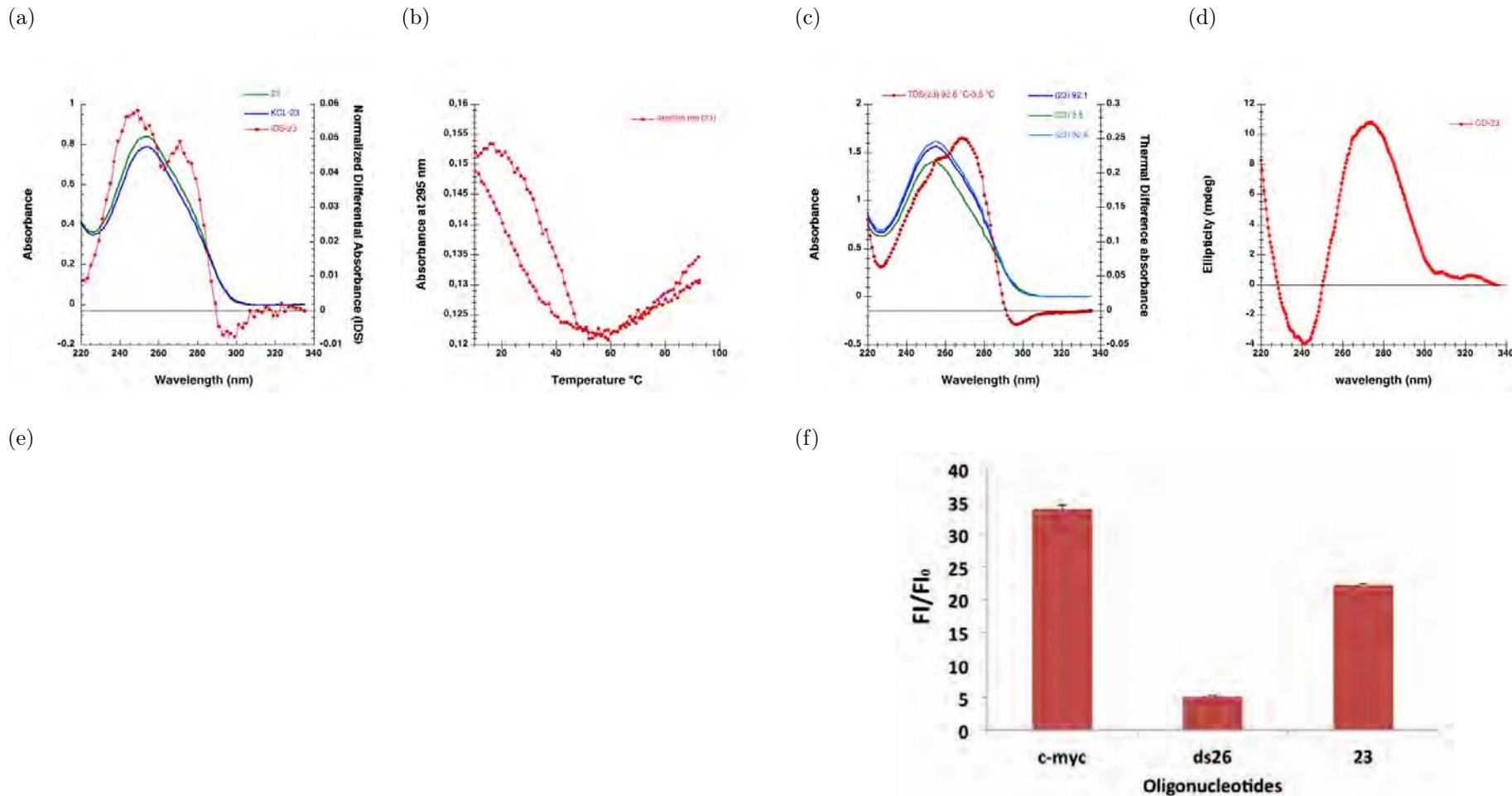
Table 25: Results interpretation of Mito 22

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	Yes (<37°C)	No	No	Yes	++	G4 (Unstable)

Name: Mito 23

Sequence:  $5' CGGGGGAAAGGCCTTGTAAGTAGG 3'$

Score: 1.12



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

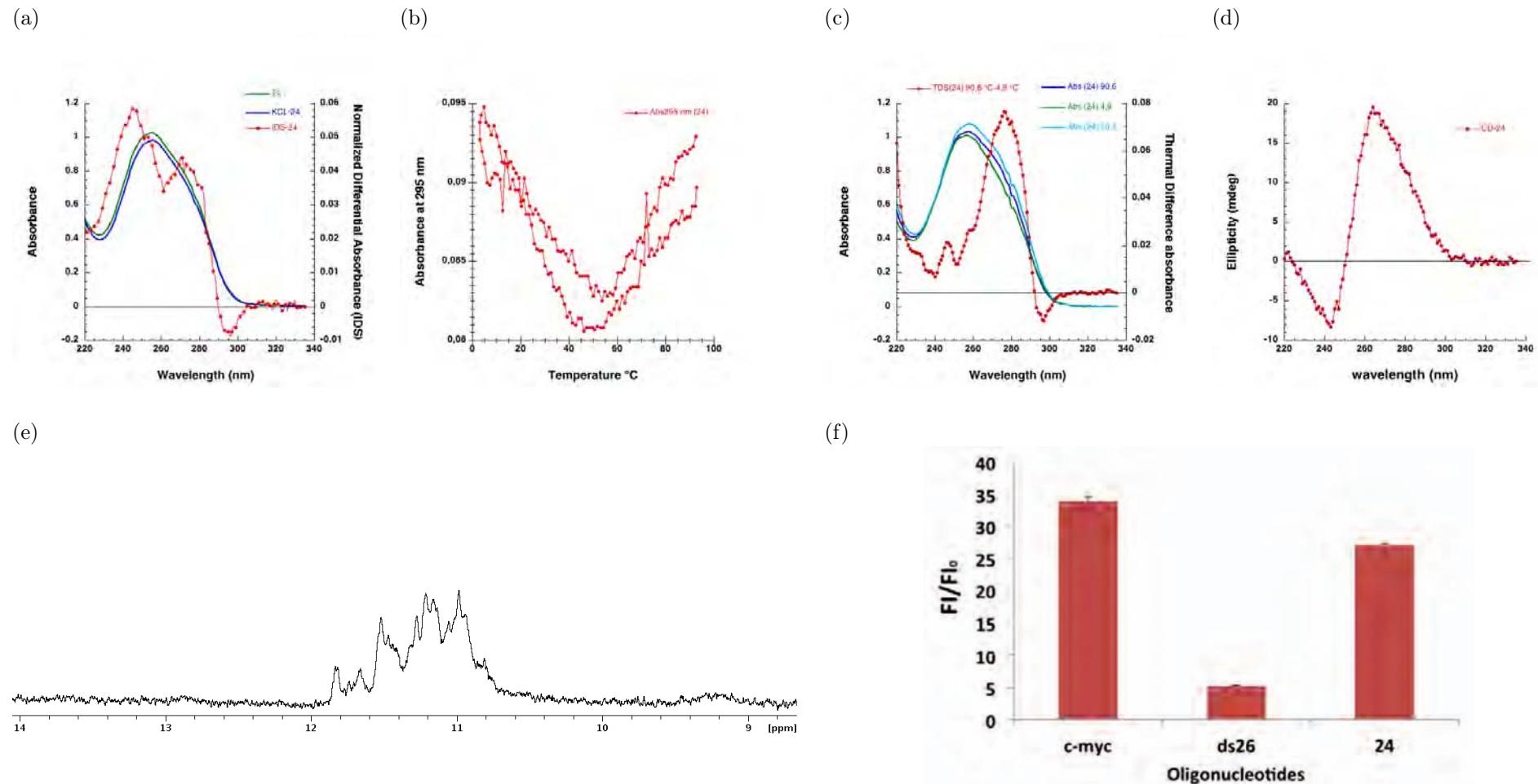
Table 26: Results interpretation of Mito 23

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes (<37°C)	Yes (-)	Mixed	Not done	++	G4 (Unstable)

Name: Mito 24

Sequence:  ${}^5' T G T T C T T G G G T G G G T G T G G G T {}^3'$

Score: 1.33



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

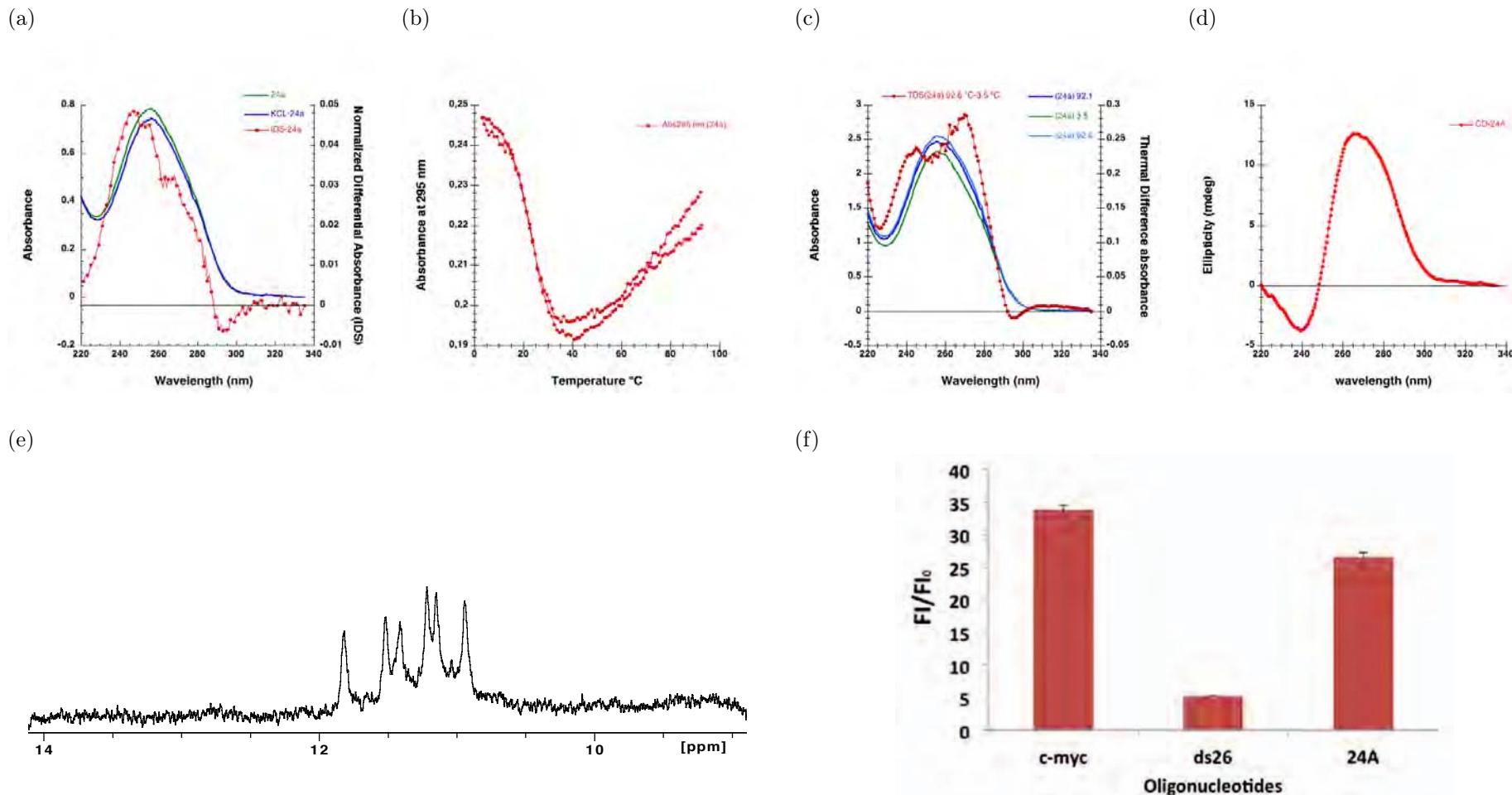
Table 27: Results interpretation of Mito 24

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes (<37°C)	Yes	Parallel	Yes	++	G4 (Unstable)

Name: Mito 24A

Sequence: *5' TGTTCTTGGGTGGGTGTGGGTATAATACTAAAG 3'*

Score: 0.88



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

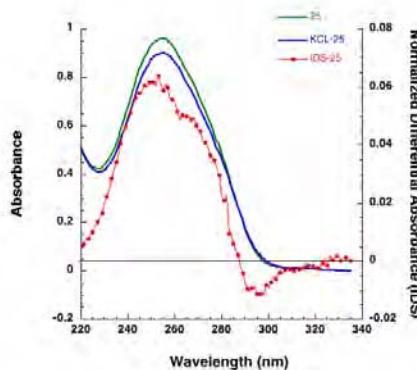
Table 28: Results interpretation of Mito 24A

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes (<37°C)	Yes (-)	Parallel	Yes	++	G4 (Unstable)

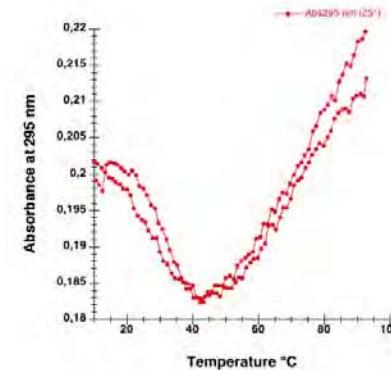
Name: Mito 25

Sequence: *5' GATGGTA GATGTGCCGGGTTTA GGGGCTCTT GGTGAAGA 3'* Score: 0.95

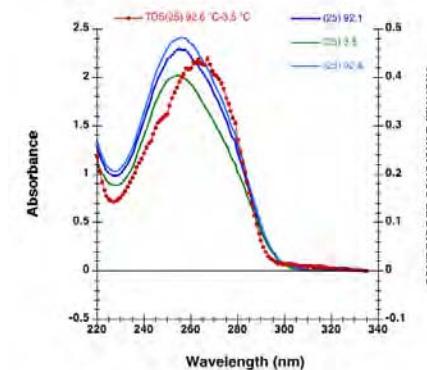
(a)



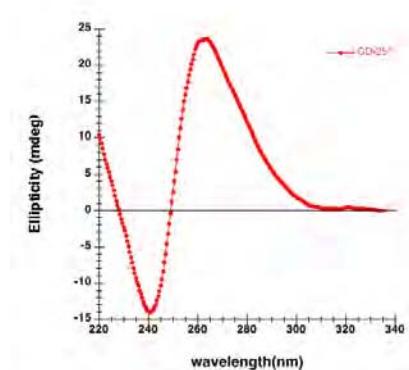
(b)



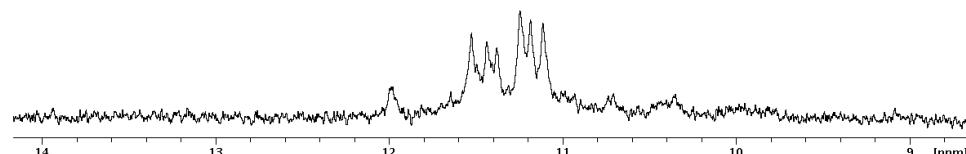
(c)



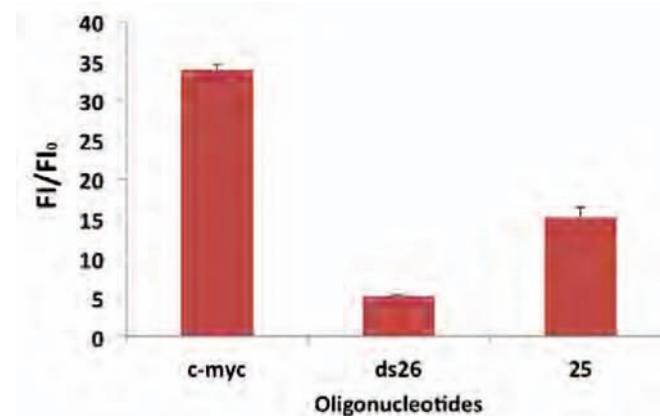
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

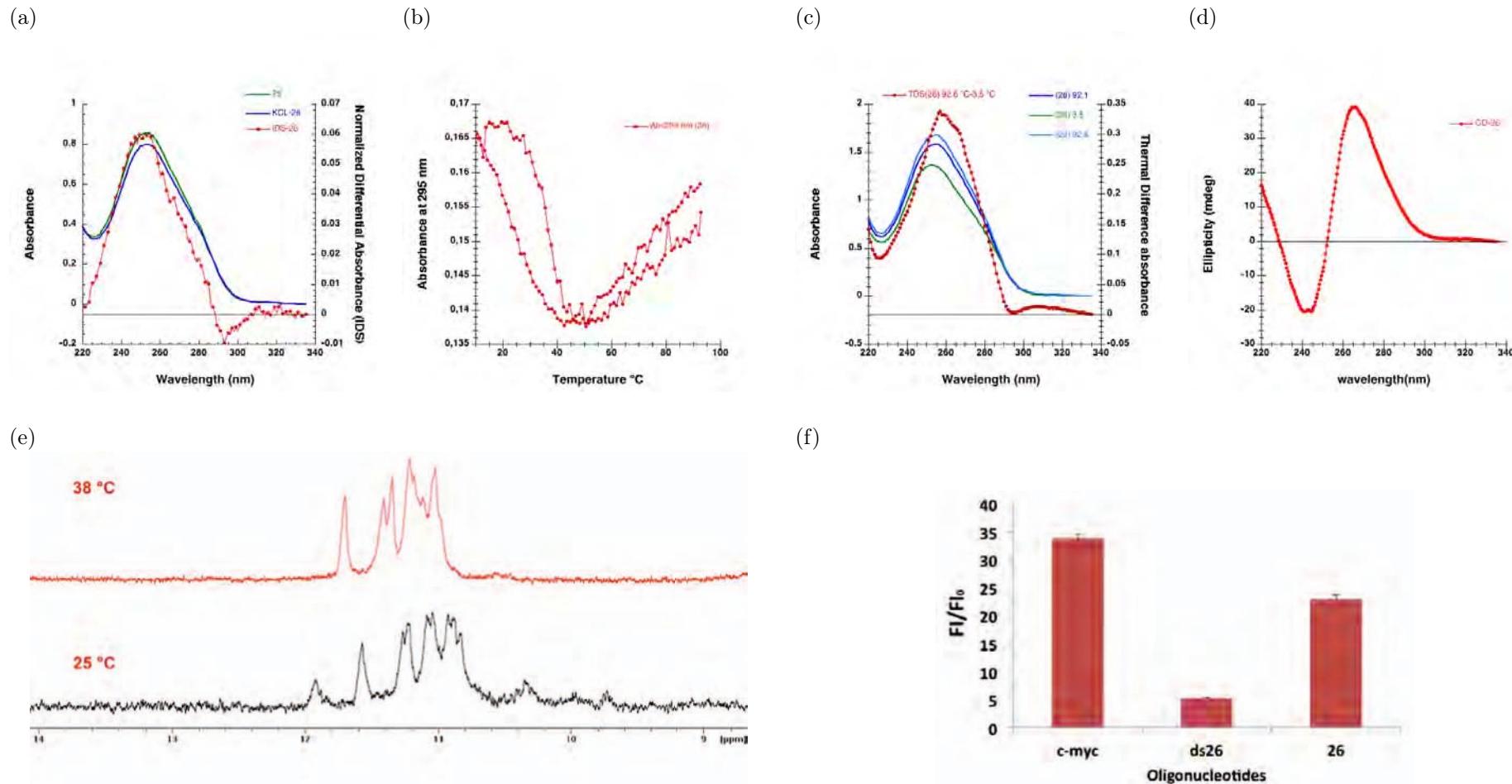
Table 29: Results interpretation of Mito 25

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes (<37°C)	No	Parallel	Yes	++	G4 (Unstable)

Name: Mito 26

Sequence:  $5' A\textcolor{red}{GGGTGATGGTAGATGTGGCGGG} 3'$

Score: 1.16



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 30: Results interpretation of Mito 26

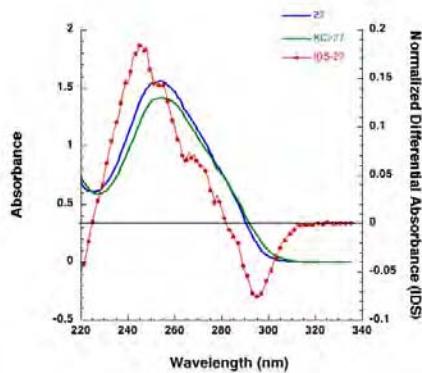
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes (-)	Yes (<37°C)	No	Parallel	Yes	++	<b>G4</b>

Name: Mito 27

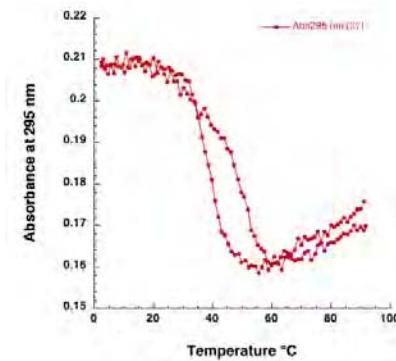
Sequence:  $5' AGGTCGGGGCGGTGATGTAAGGGTGATGGT 3'$

Score: 1.26

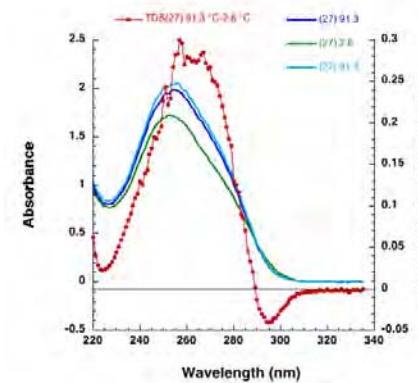
(a)



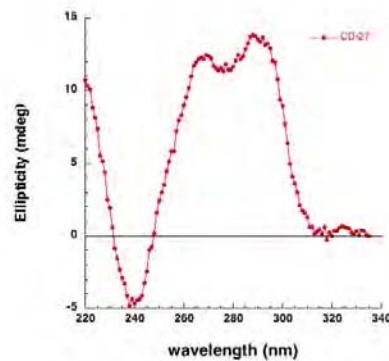
(b)



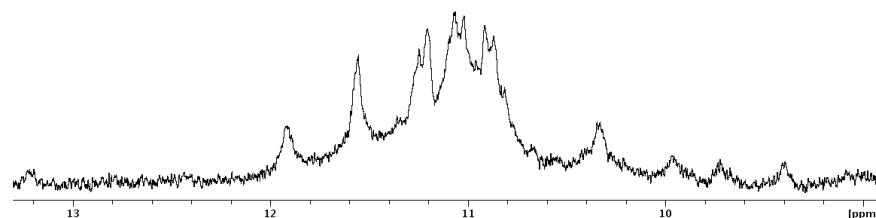
(c)



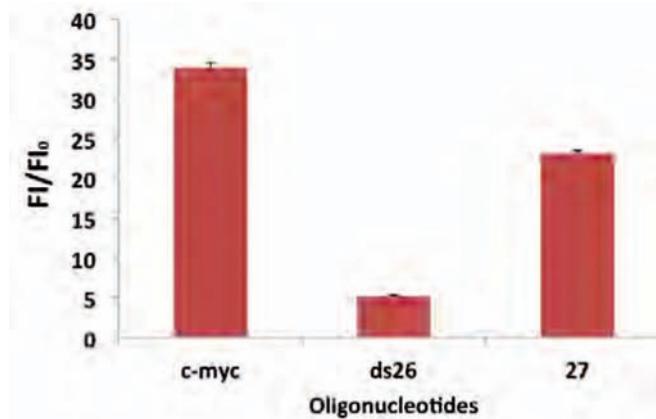
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a**) Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b**) Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c**) Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d**) Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e**) 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f**) Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

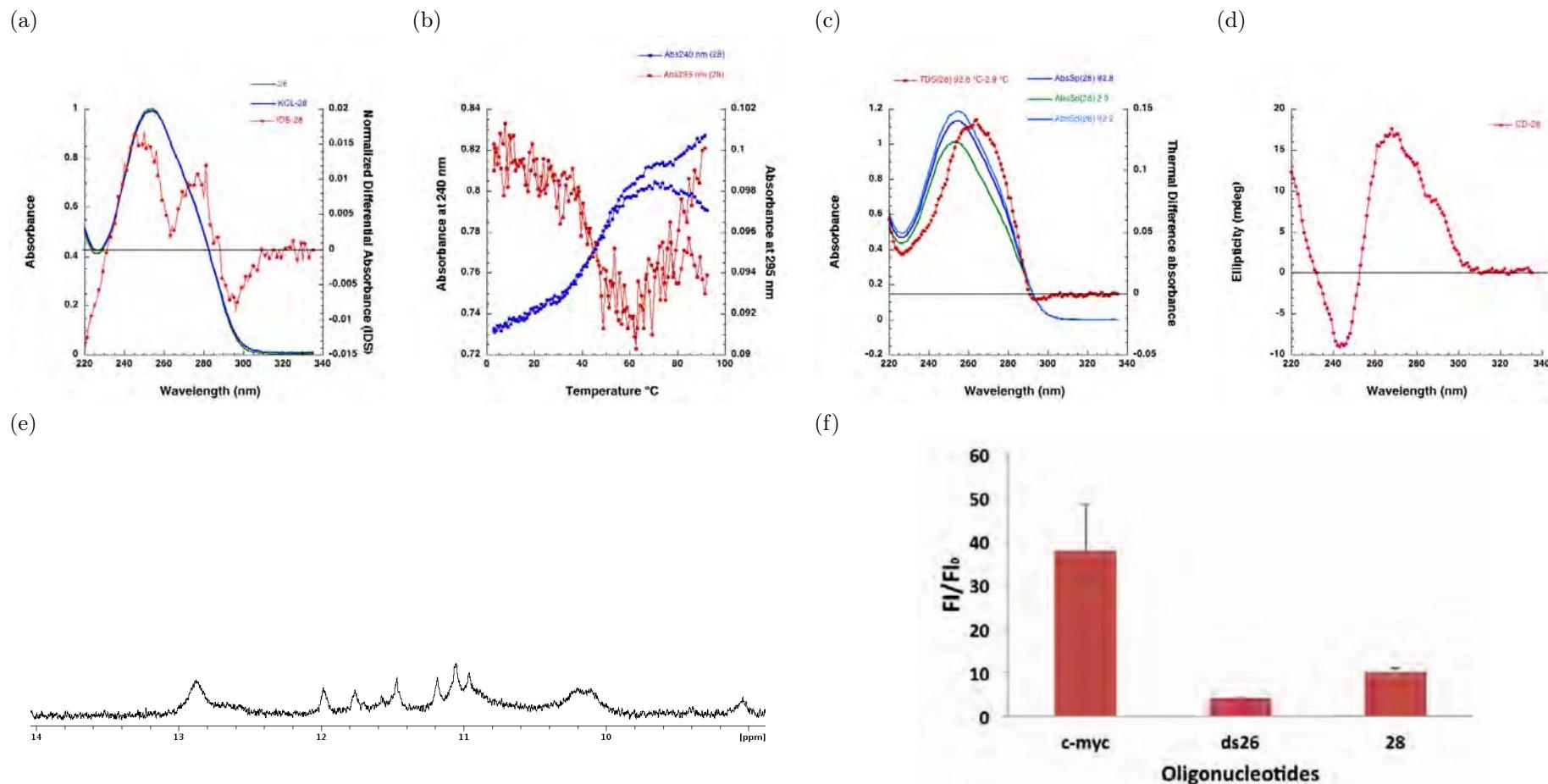
Table 31: Results interpretation of Mito 27

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Mixed	Yes	++	G4

Name: Mito 28

Sequence: *5' GCGATGGTGAGAGCTAAGGTCGGGG 3'*

Score: 1.04



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 32: Results interpretation of Mito 28

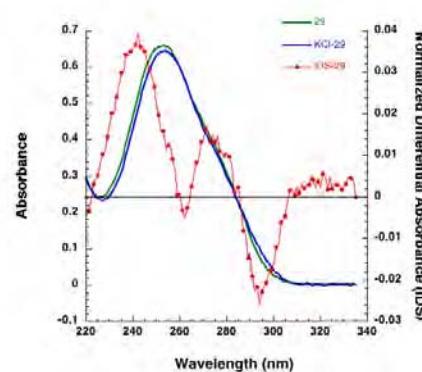
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	No	Mixed	Yes	+/-	G4

Name: Mito 29

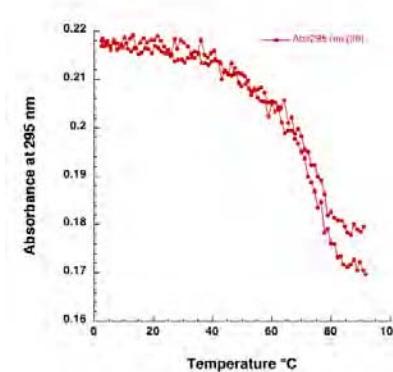
Sequence:  $5' A\textcolor{red}{GGGGGTTGGGTATGGGA}GGGGGGT 3'$

Score: 2.65

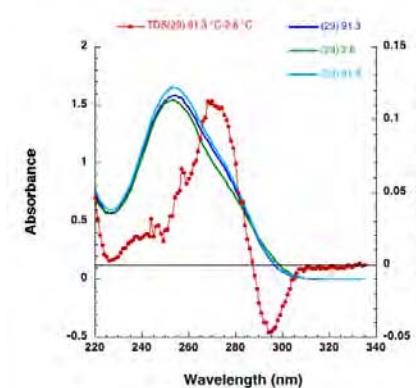
(a)



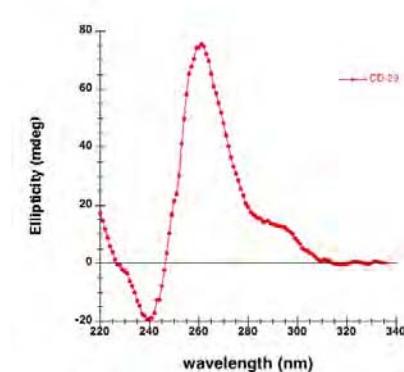
(b)



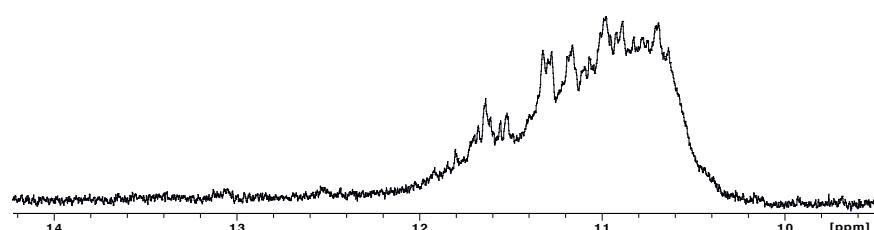
(c)



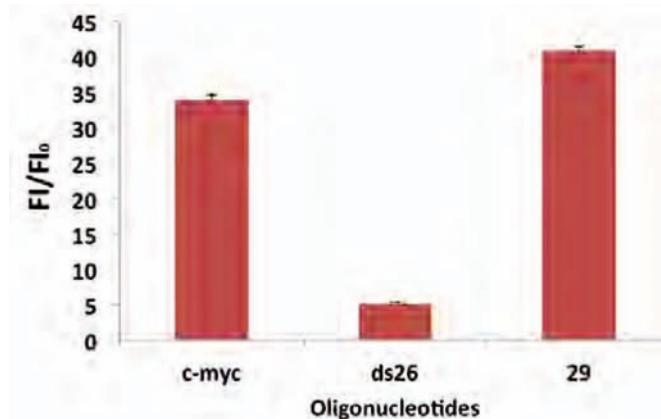
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

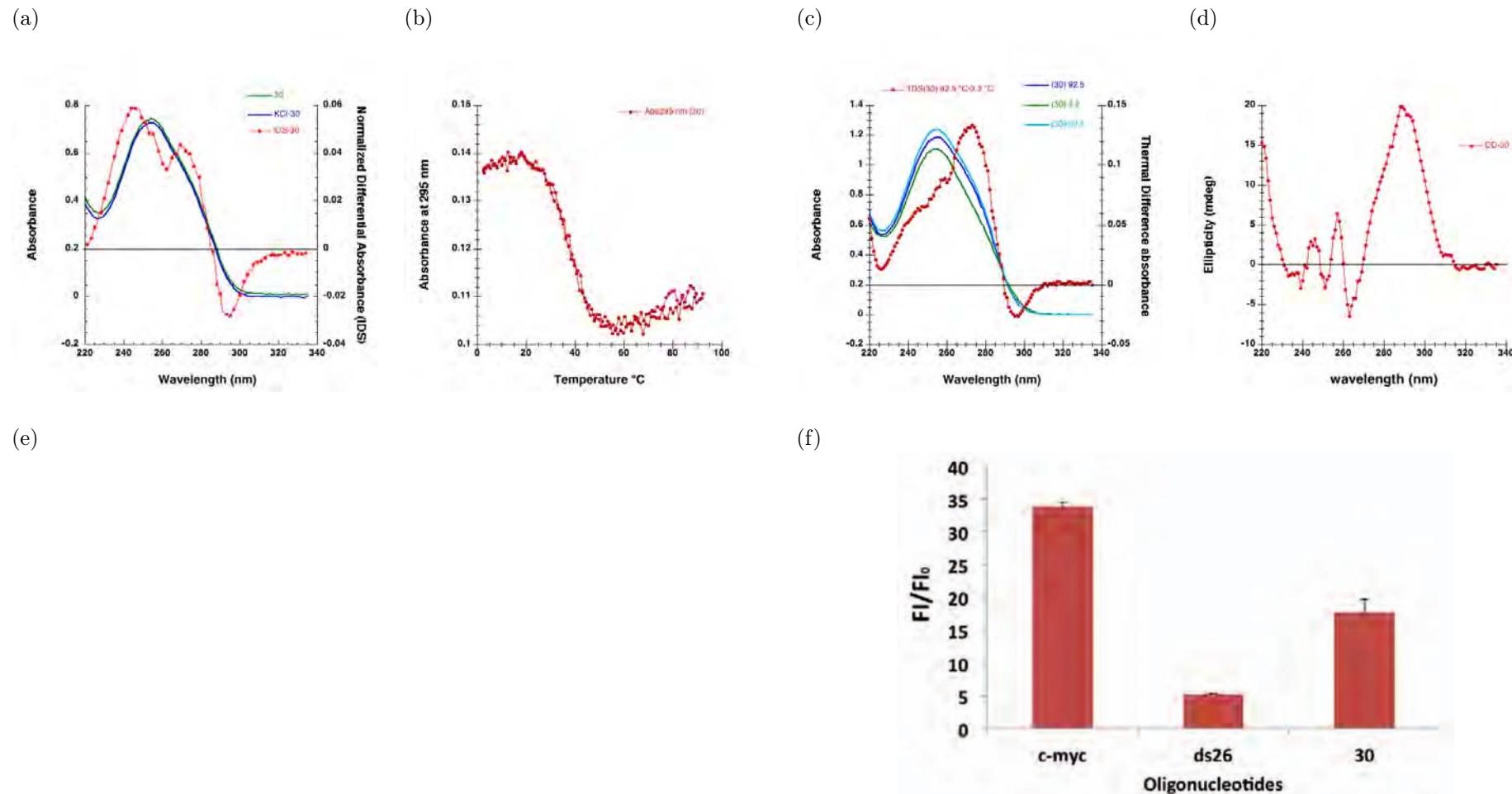
Table 33: Results interpretation of Mito 29

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Mixed	Yes	+++	G4 <sup>+</sup>

Name: Mito 30

Sequence: *5' CGGCAAGGTCTGAAGGGGGTTCGGTTGGT 3'*

Score: 1.18



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

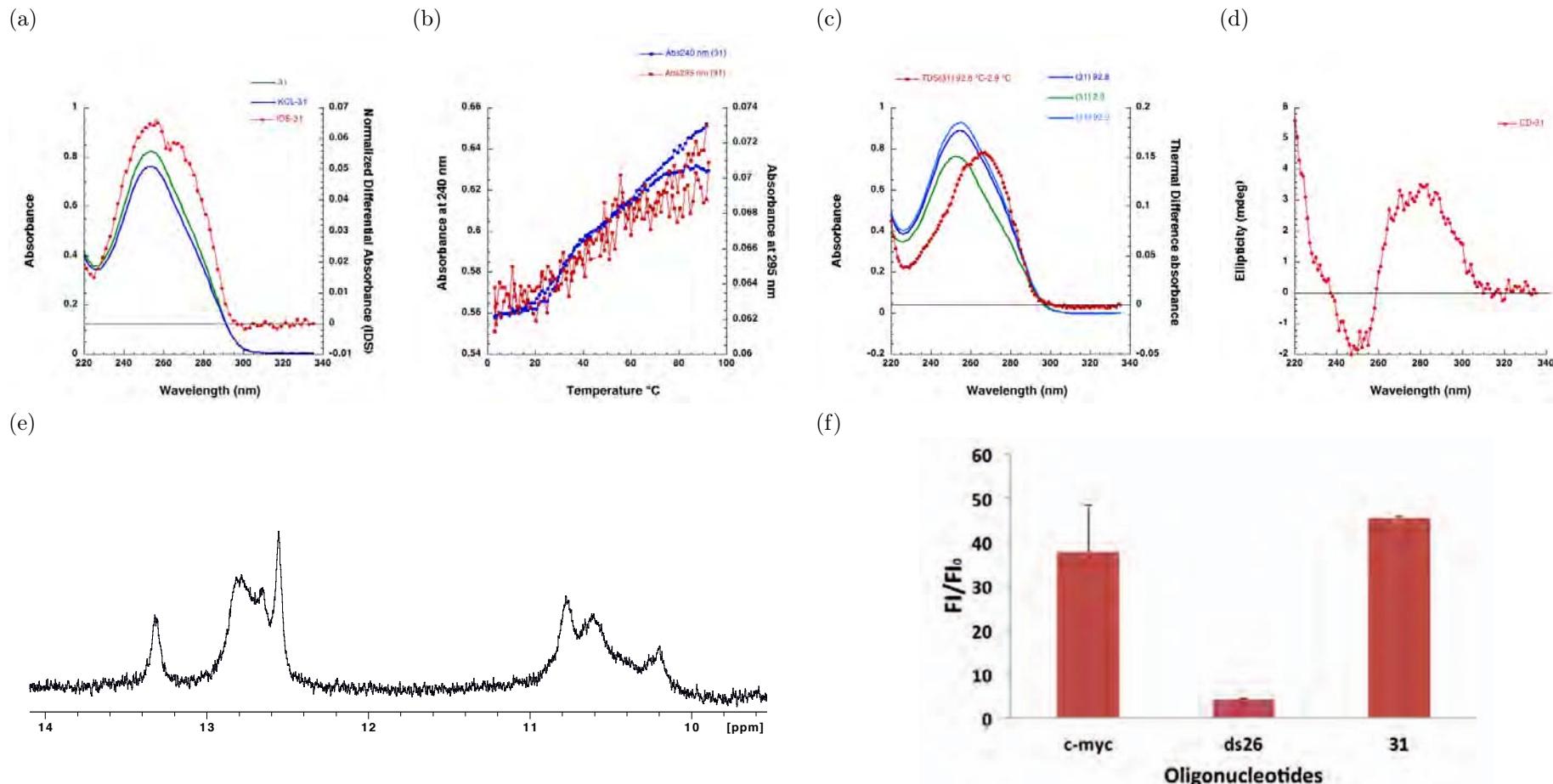
Table 34: Results interpretation of Mito 30

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Antiparallel	Not done	++	G4

Name: Mito 31

Sequence: *5' GAAGAATAGGCGAAAGGGGCTGCAGCGT 3'*

Score: 0.93



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

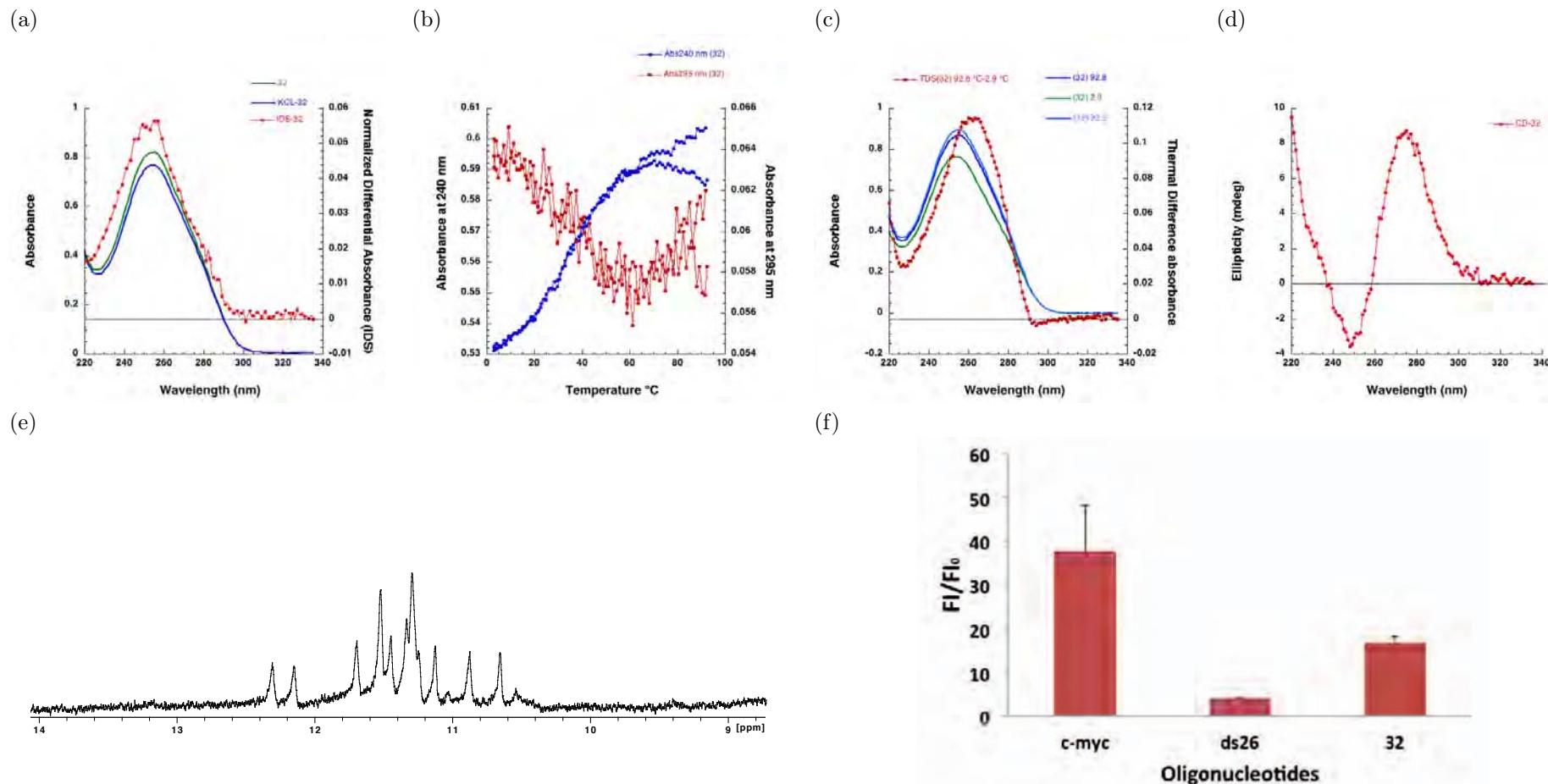
Table 35: Results interpretation of Mito 31

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Competition	+++	Not G4

Name: Mito 32

Sequence:  $5' \text{ CGGCTATGAAGAATAGGCGAAAGGGG } 3'$

Score: 1.12



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 36: Results interpretation of Mito 32

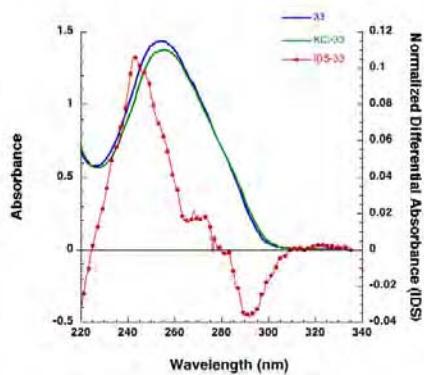
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Yes	++	G4

Name: Mito 33

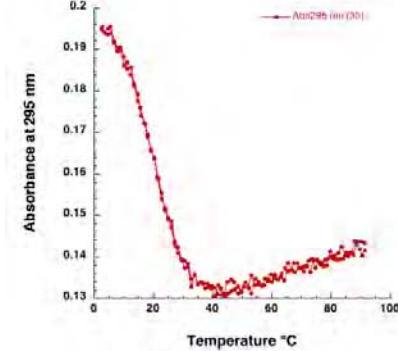
Sequence:  $5' A\textcolor{red}{GGGAGGTTA}GAAGTA\textcolor{red}{GGGTCTTGGTG} 3'$

Score: 1.04

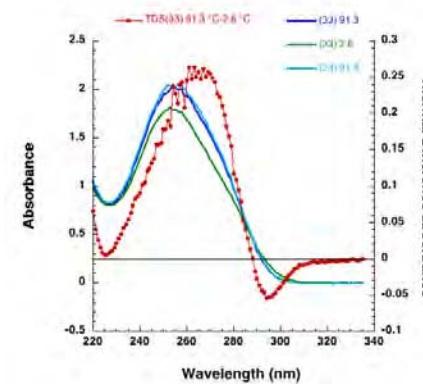
(a)



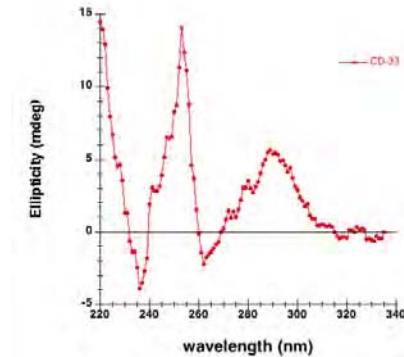
(b)



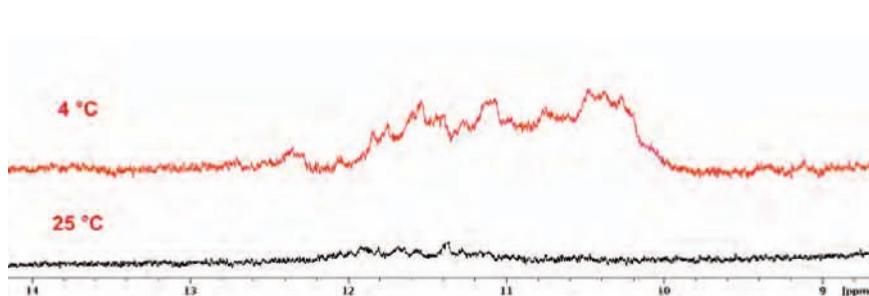
(c)



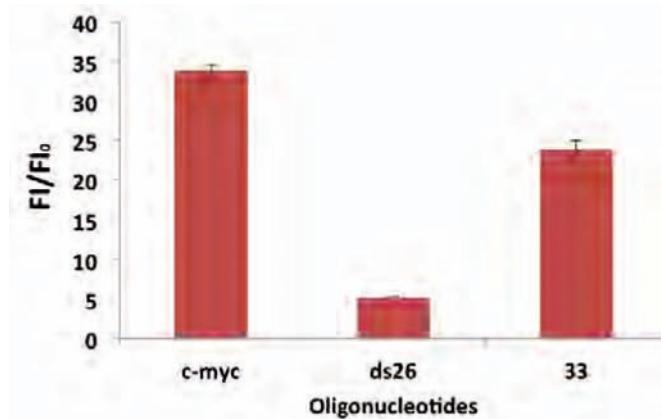
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

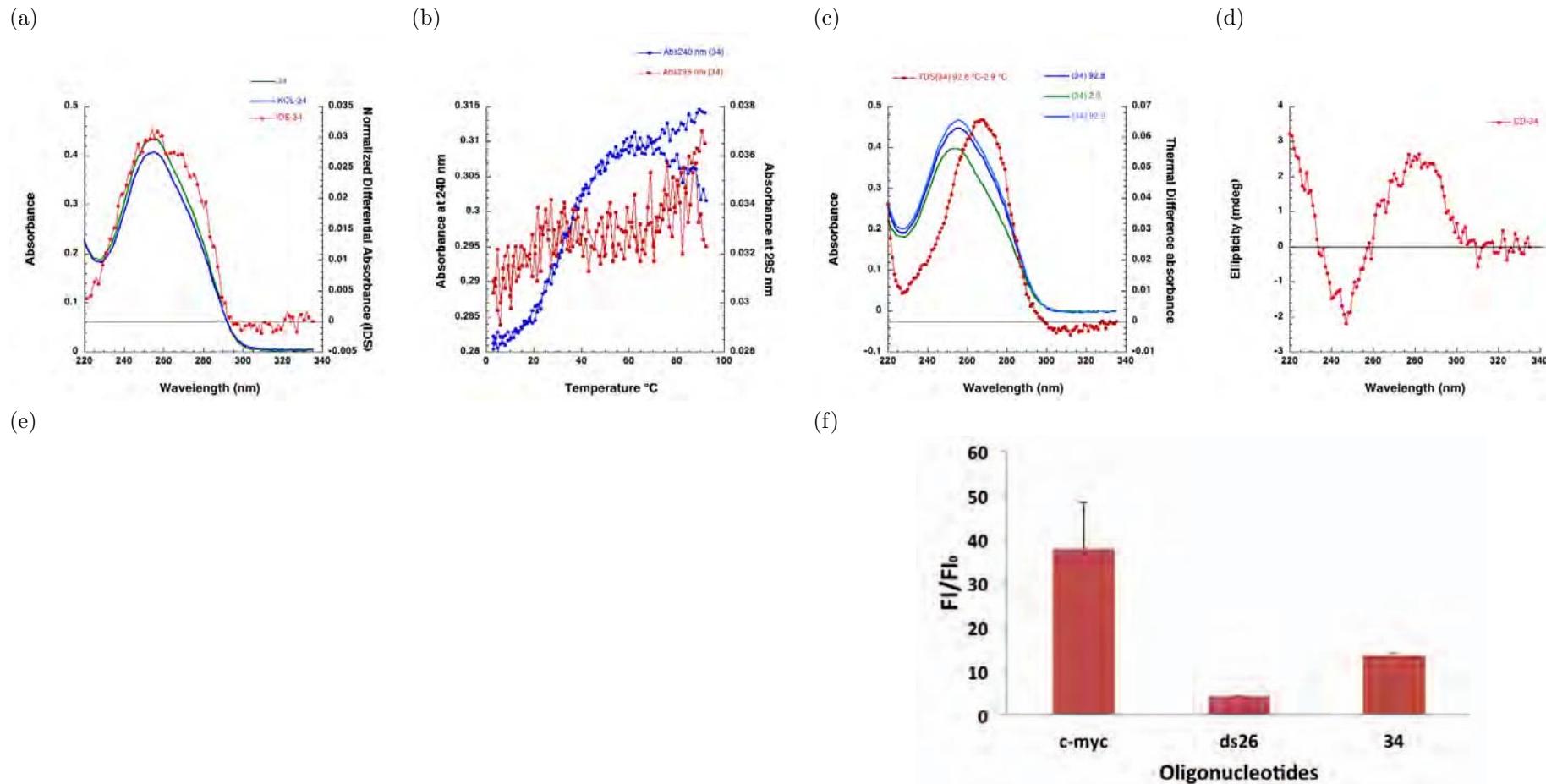
Table 37: Results interpretation of Mito 33

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes (< 37°C )	Yes	Antiparallel	Yes	++	<b>G4 (Unstable)</b>

Name: Mito 34

Sequence:  $5' \text{ GTAGCGGAATC} \text{GGGGGTATGCTGT } 3'$

Score: 1.04



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 38: Results interpretation of Mito 34

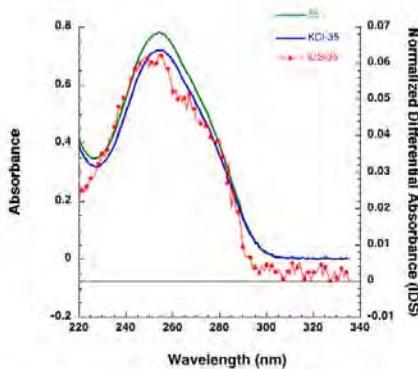
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	+	Not G4

Name: Mito 35

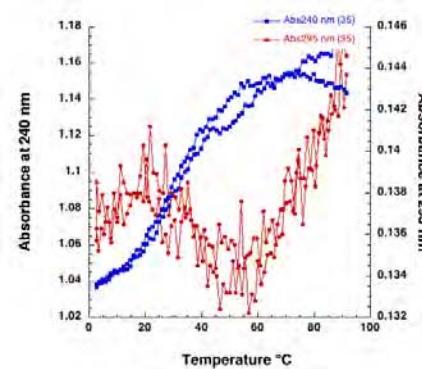
Sequence:  $5' GAGTTGGTCGTA GC GGAATC GGGG TATG 3'$

Score: 1.03

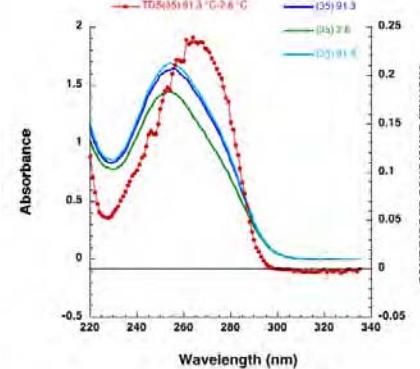
(a)



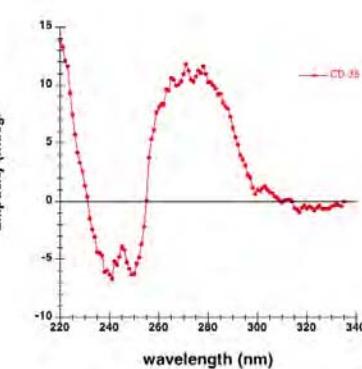
(b)



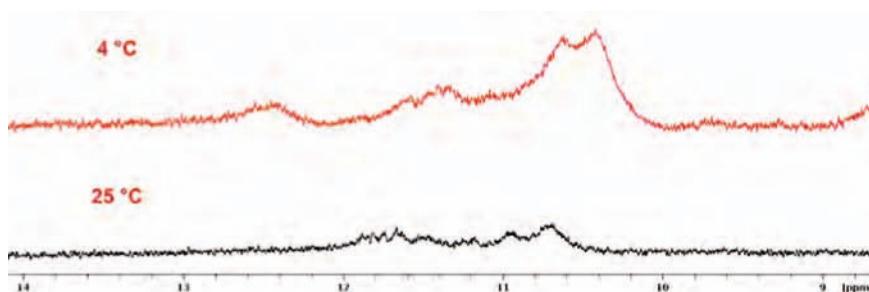
(c)



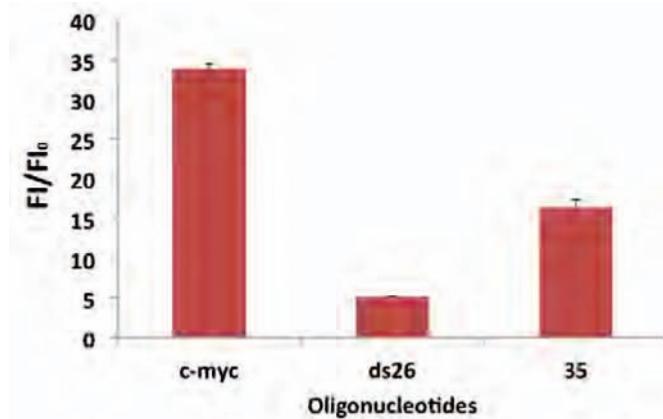
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

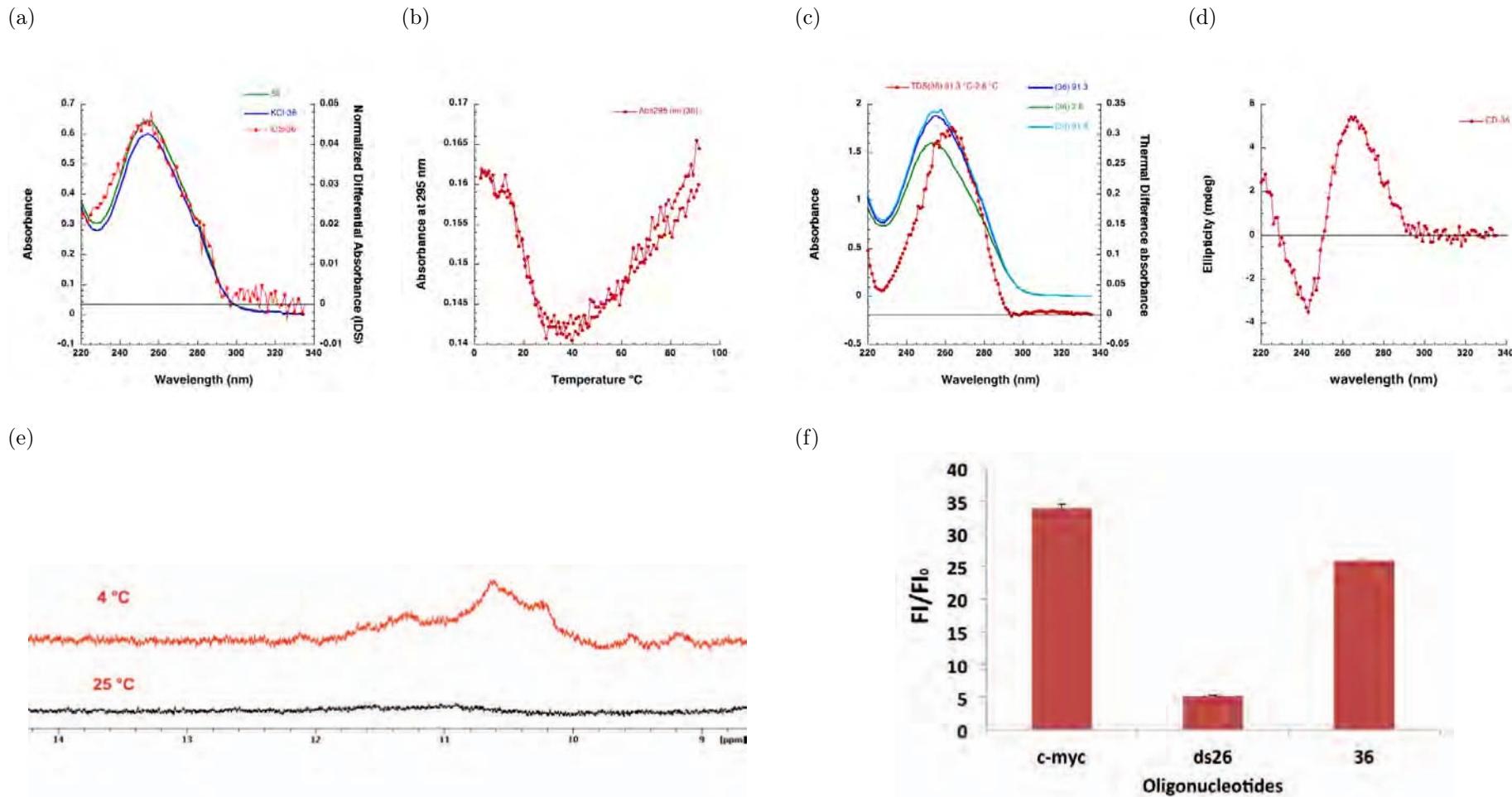
Table 39: Results interpretation of Mito 35

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	Yes (-)	No	No	Yes	++	<b>G4 (Unstable)</b>

Name: Mito 36

Sequence:  $5' AGGTTTGA\textcolor{red}{GGGGGAATGCTGGAGATTGTAATGGGT} 3'$

Score: 1.14



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

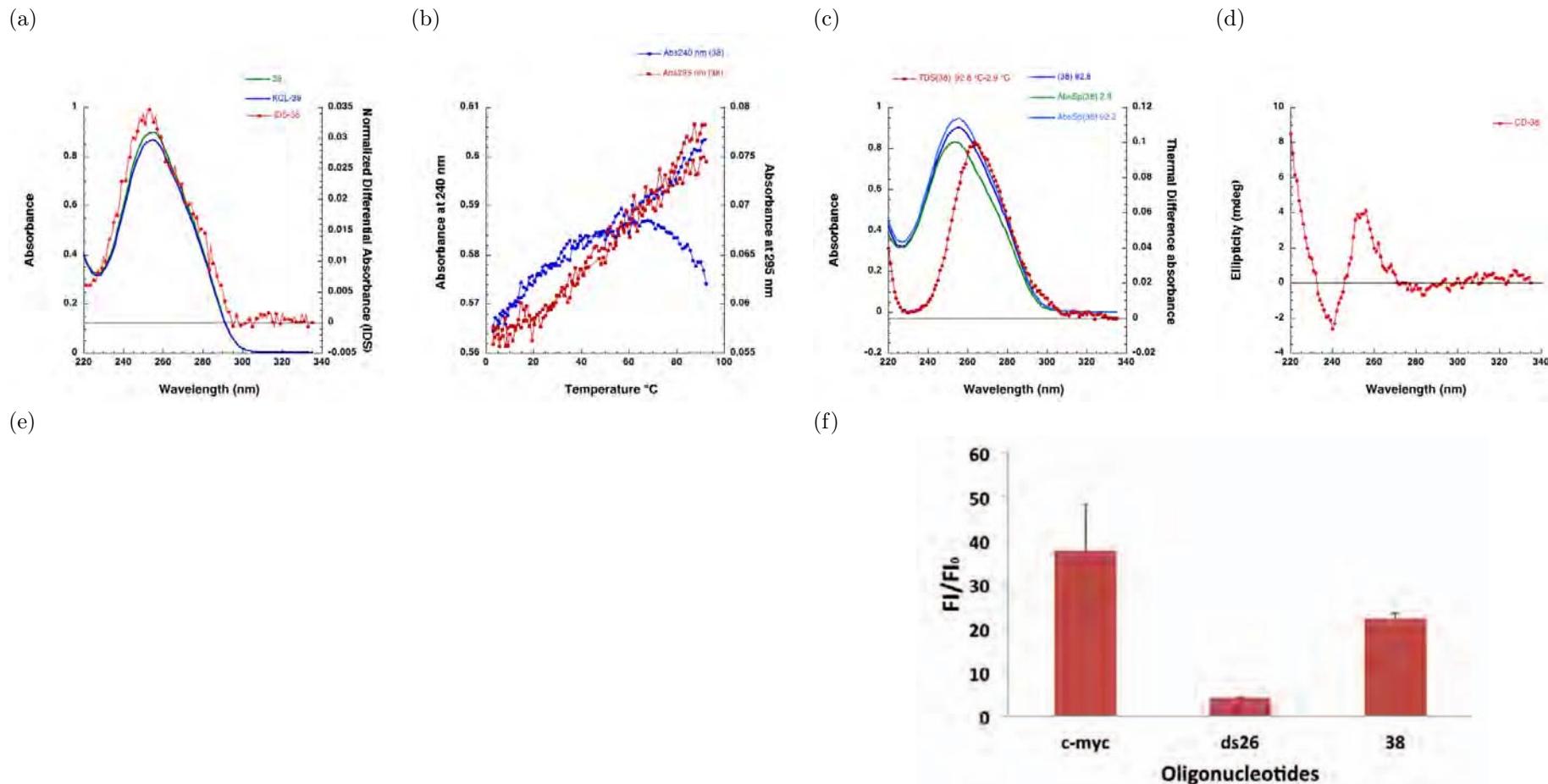
Table 40: Results interpretation of Mito 36

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	Yes (< 37°C)	No	Parallel	Yes	++	<b>G4 (Unstable)</b>

Name: Mito 38

Sequence:  $5' \text{ TAGGTTTGA} \text{GGGGGAAATG} 3'$

Score: 1.44



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

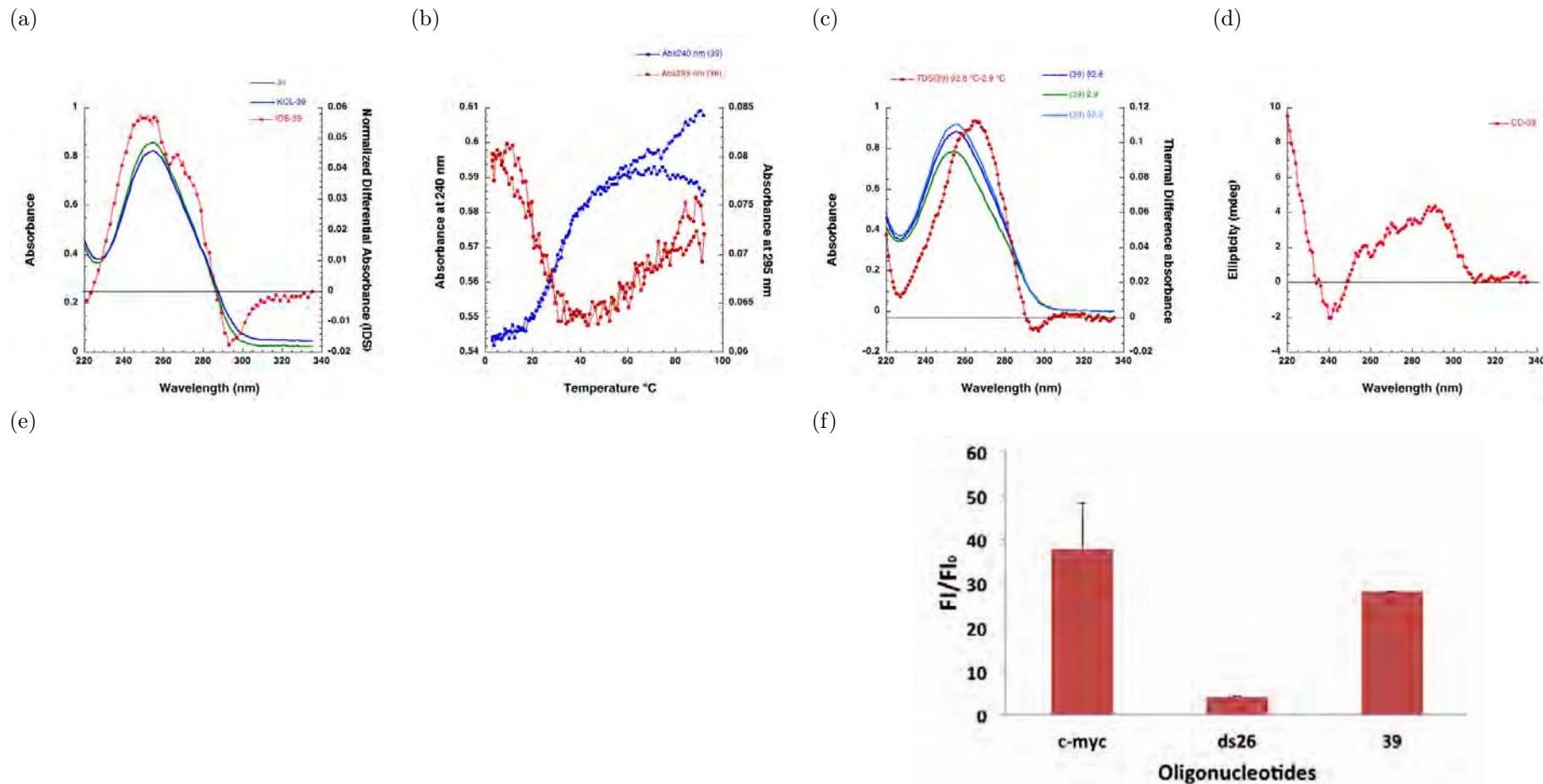
Table 41: Results interpretation of Mito 38

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	++	<b>Not G4</b>

Name: Mito 39

Sequence: *5' TAGGATGGGTGTGATAGGTGGCACGGAGAAT 3'*

Score: 1.03



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence (right).

Table 42: Results interpretation of Mito 39

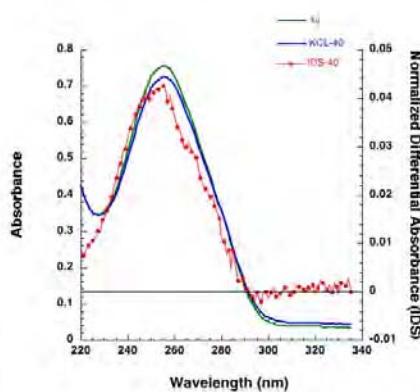
Technique	IDS	TM	TDS	CD	RMN	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes (< 37°C)	Yes (-)	No	Not done	++	G4 (Unstable)

Name: Mito 40

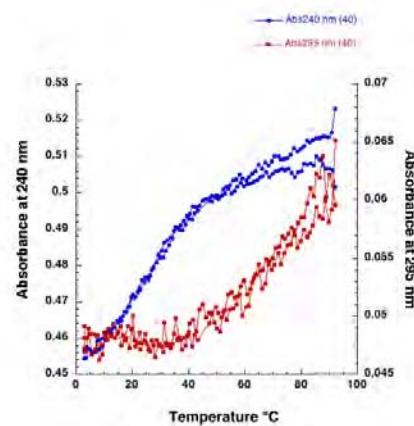
Sequence:  $5' CA\textcolor{red}{GGGG}ATTAATTA\textcolor{red}{GTAC}GGGAA\textcolor{red}{GGGTAT} 3'$

Score: 1.14

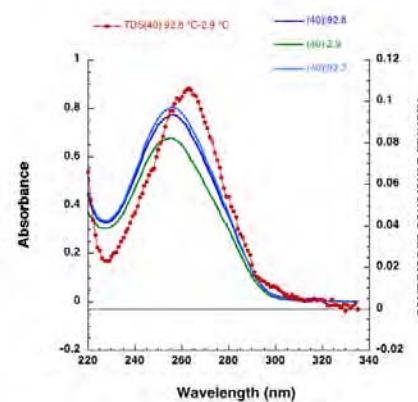
(a)



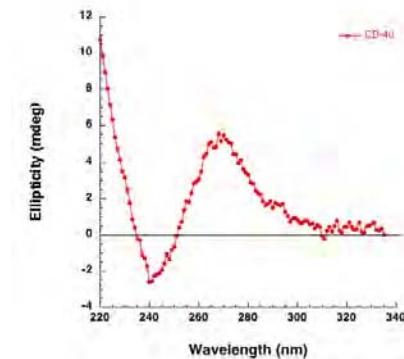
(b)



(c)

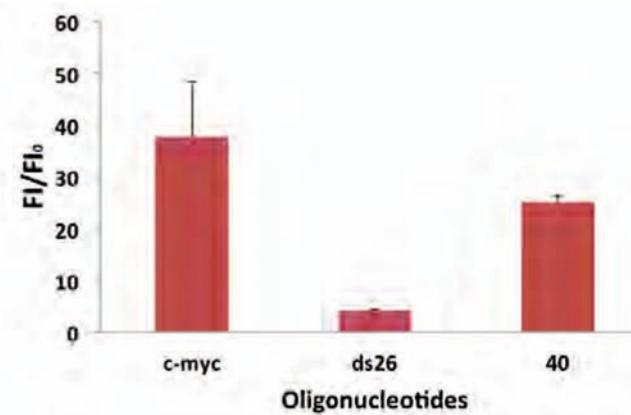


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a**) Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b**) Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c**) Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d**) Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e**) 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f**) Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

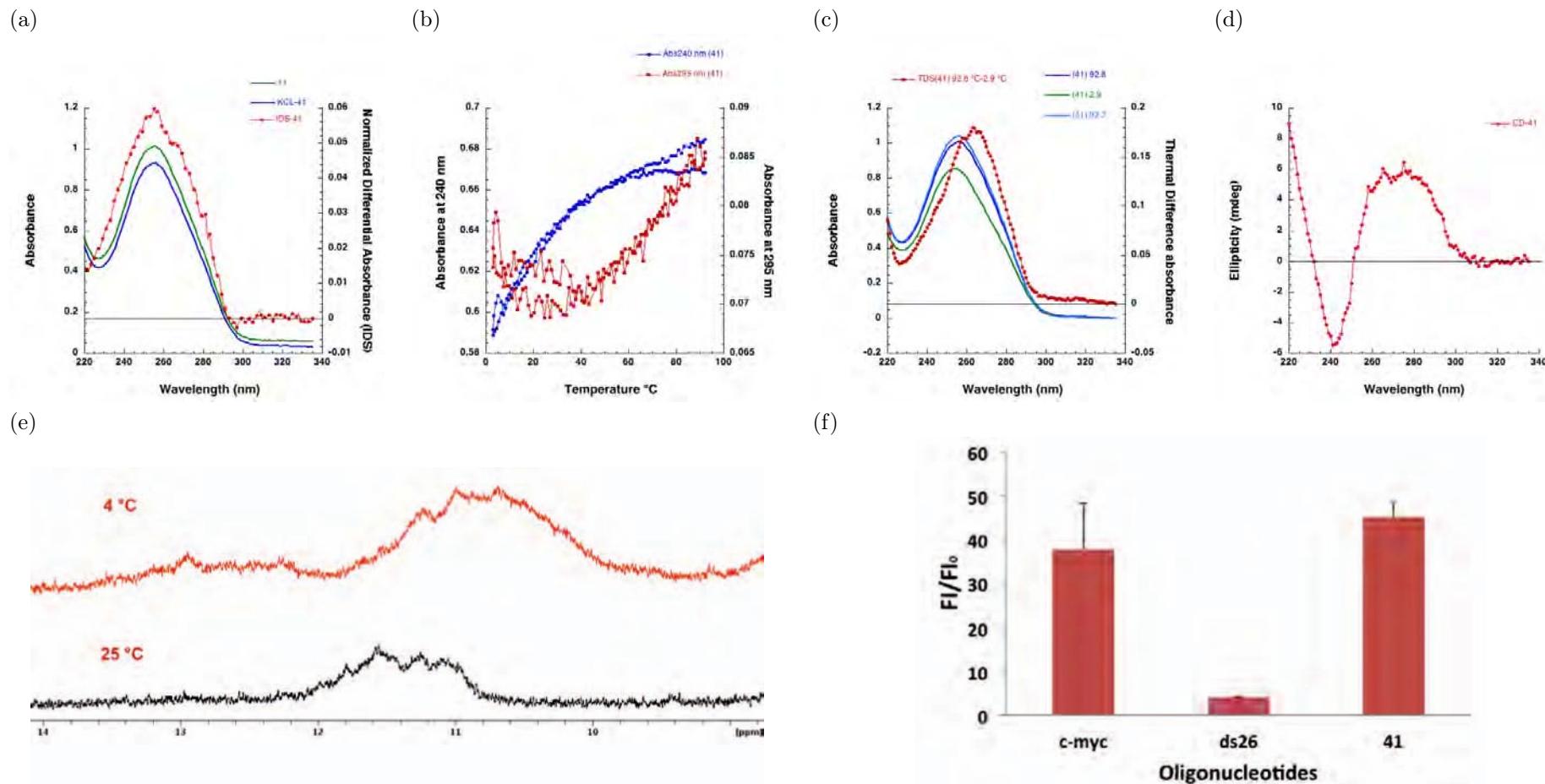
Table 43: Results interpretation of Mito 40

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	++	<b>Not G4</b>

Name: Mito 41

Sequence:  $5' \text{TGGGCCA} \text{GGGGATTAATTA} \text{GTACGGGA} 3'$

Score: 1.11



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 44: Results interpretation of Mito 41

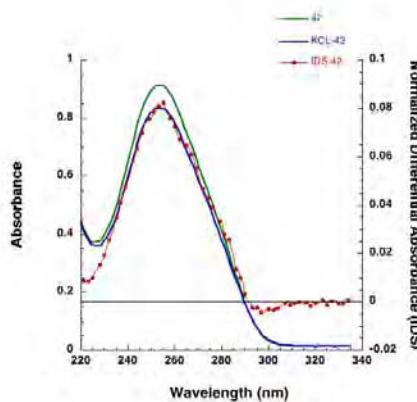
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Yes	+++	G4 (Unstable)

Name: Mito 42

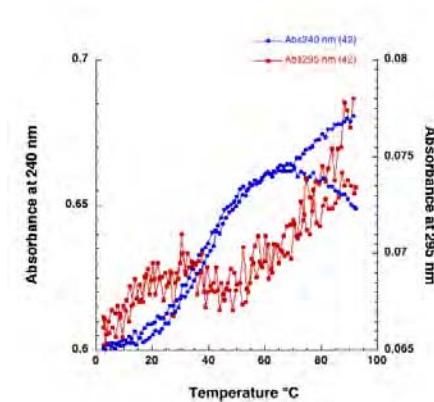
Sequence:  $5' \text{A} \textcolor{red}{GAGTA} \text{GATGAT} \textcolor{red}{GGGTT} \text{GGGCCA} \textcolor{red}{GGGGA} \text{3'}$

Score: 1.21

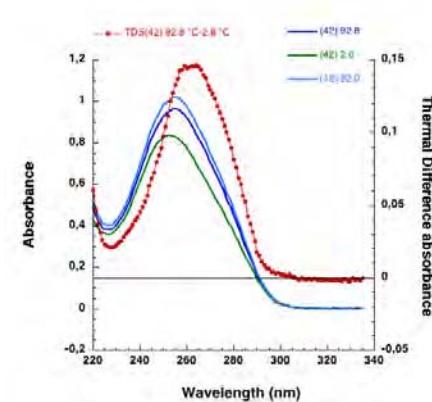
(a)



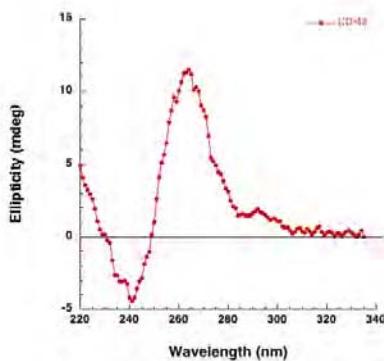
(b)



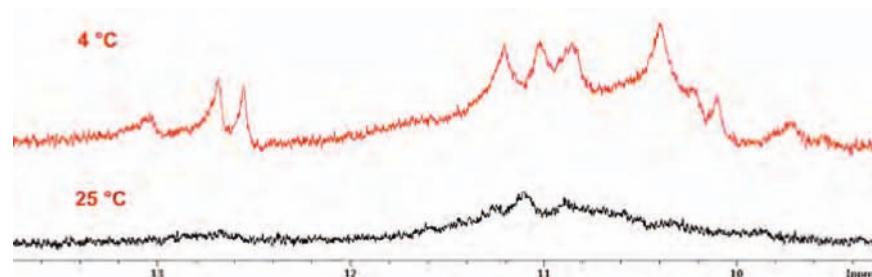
(c)



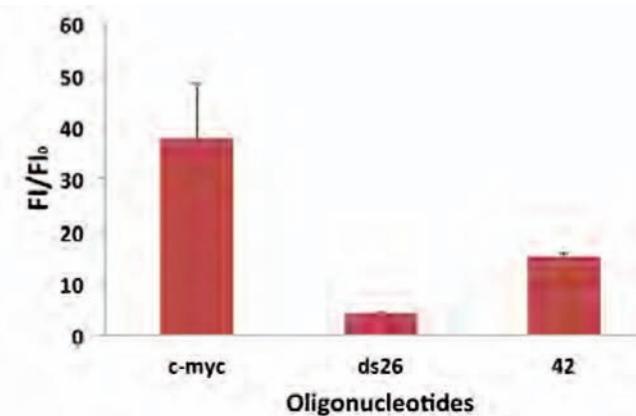
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a**) Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b**) Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c**) Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d**) Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e**) 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f**) Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

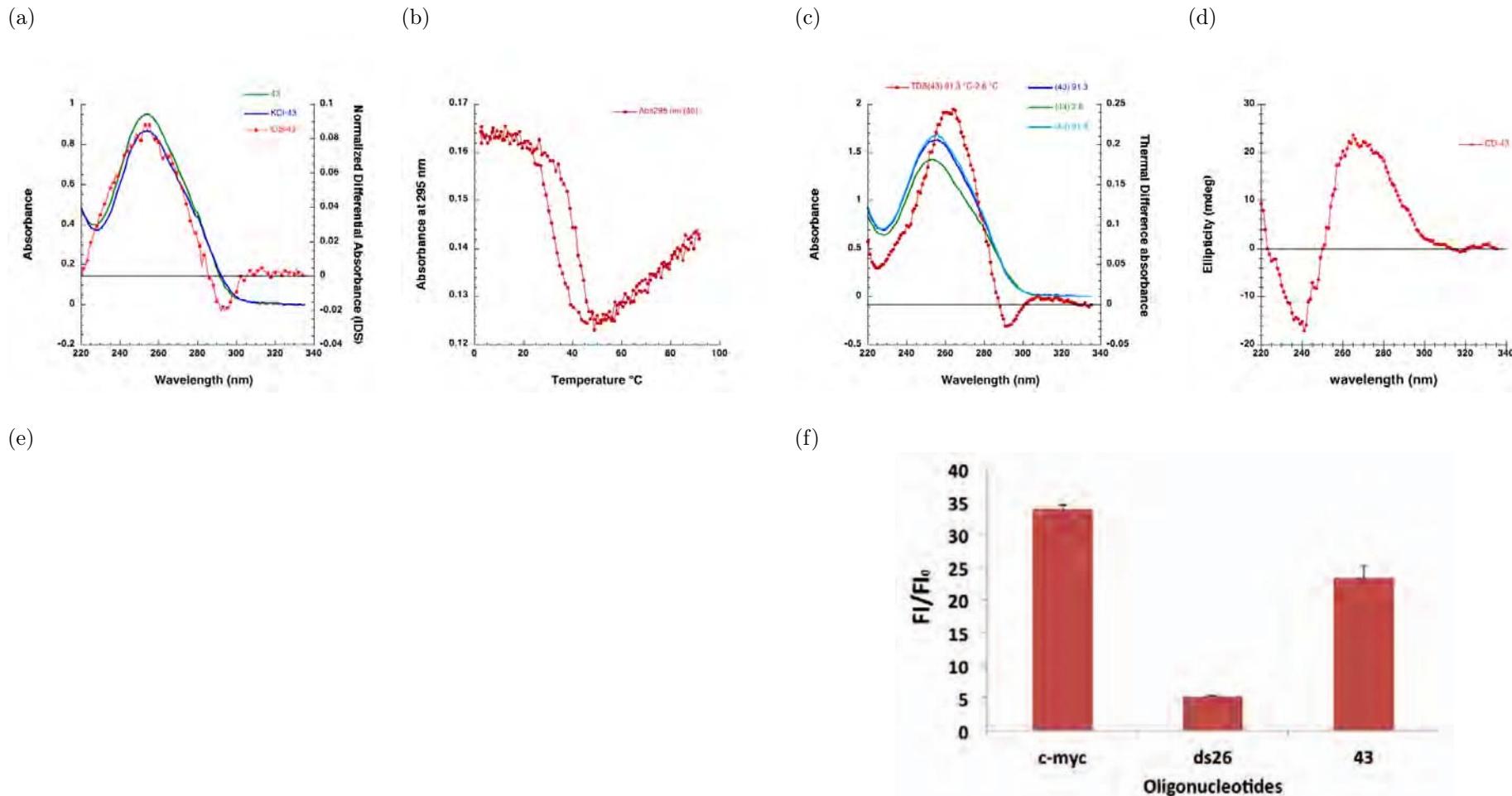
Table 45: Results interpretation of Mito 42

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	Yes (-)	No	Parallel	Yes	+	<b>G4 (Unstable)</b>

Name: Mito 43

Sequence:  $5' TGGTA\textcolor{red}{GAGTAGATGATGGGTTGGG} 3'$

Score: 1.08



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 46: Results interpretation of Mito 43

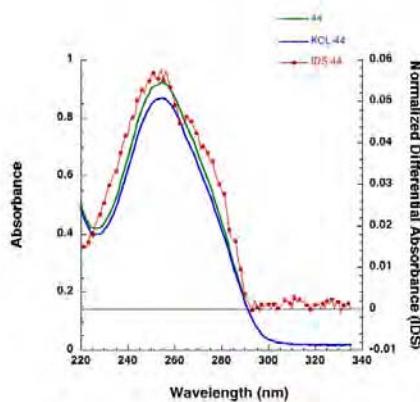
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Parallel	Not done	++	<b>G4</b>

Name: Mito 44

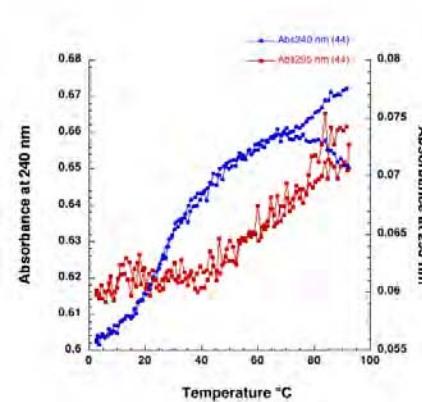
Sequence:  $5' TGGGACTCA\textcolor{red}{GAAGT}GAAA\textcolor{red}{GGGGG}CT 3'$

Score: 1.16

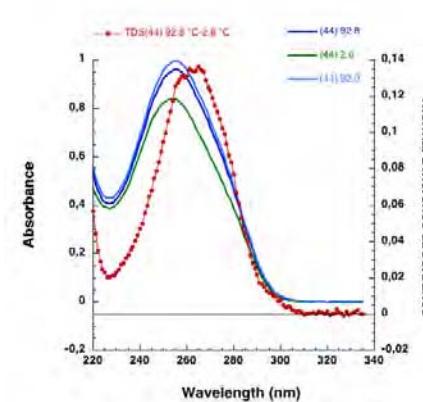
(a)



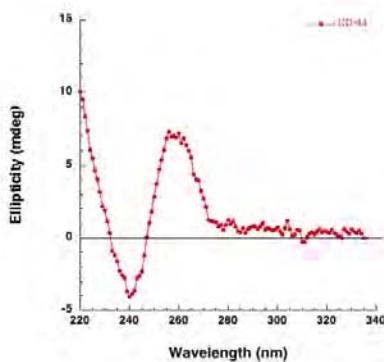
(b)



(c)

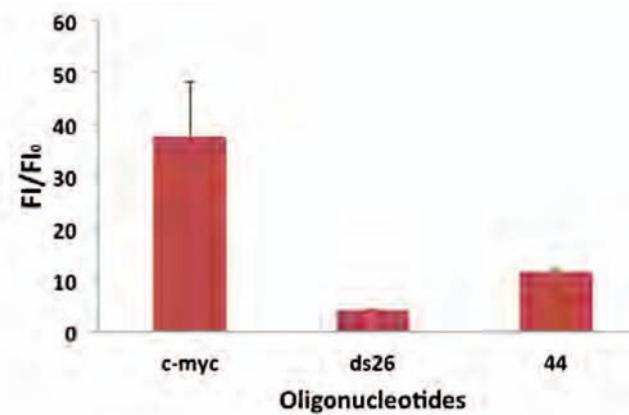


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

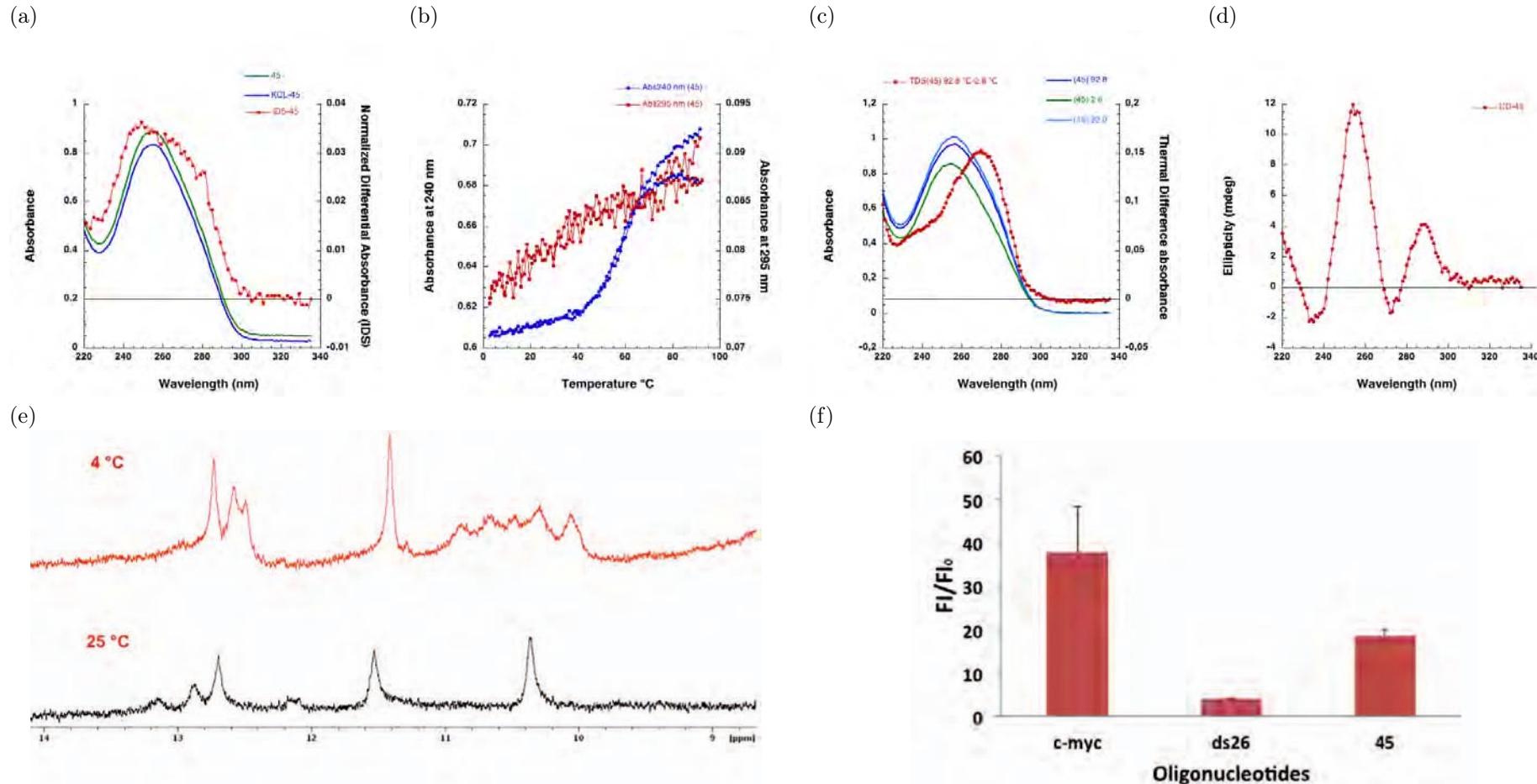
Table 47: Results interpretation of Mito 44

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	+/-	<b>Not G4</b>

Name: Mito 45

Sequence:  $5' \text{AGGGGTGCCTTGGGTAACCTCTGGGA} 3'$

Score: 1



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 48: Results interpretation of Mito 45

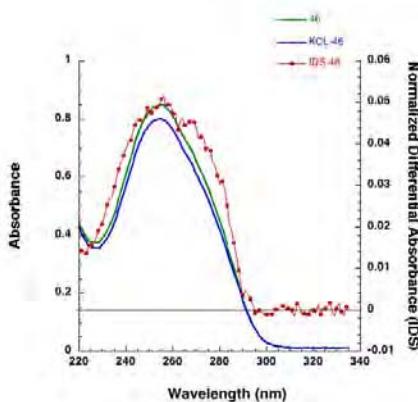
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	??	+	Not G4

Name: Mito 46

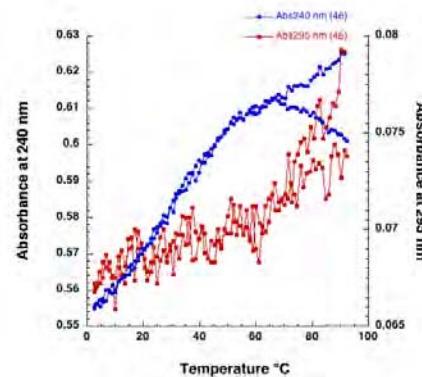
Sequence:  $5' C G G A T G T C A G A G G G G T G C C T T G G G T 3'$

Score: 1.04

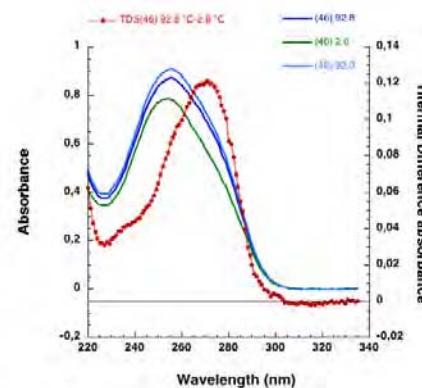
(a)



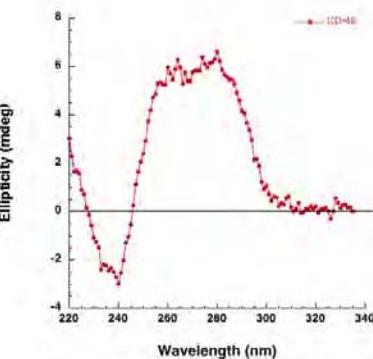
(b)



(c)



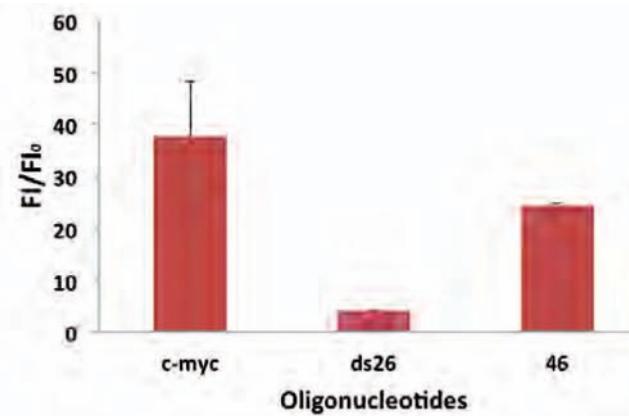
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

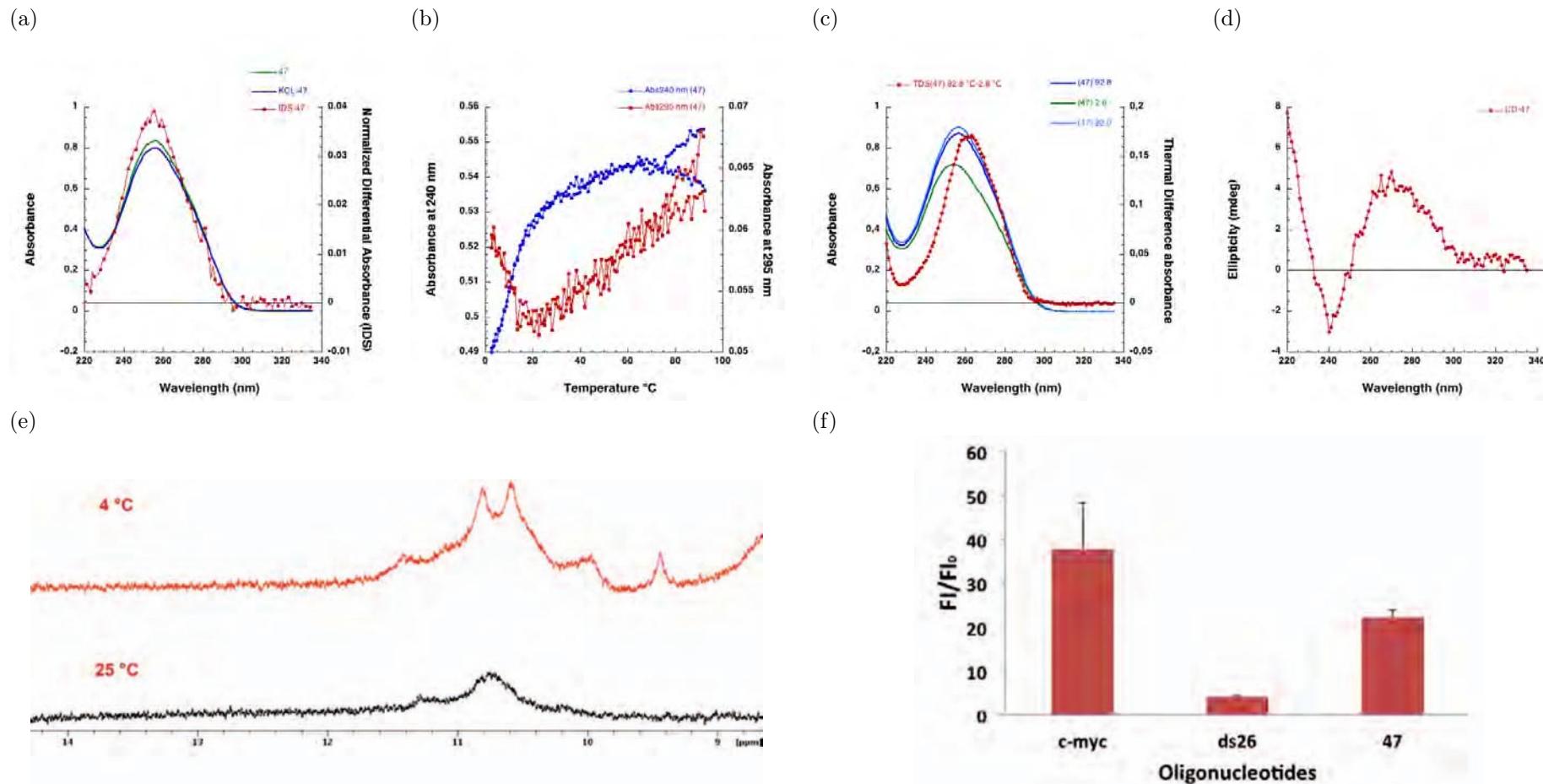
Table 49: Results interpretation of Mito 46

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	No	++	Not G4

Name: Mito 47

Sequence:  $5' TGGTATATGATTGAGATGGGGCTAGT 3'$

Score: 1



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 50: Results interpretation of Mito 47

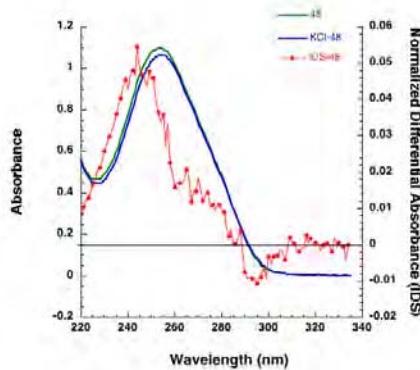
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	Yes (<37°C)	No	No	Yes	+	G4 (Unstable)

Name: Mito 48

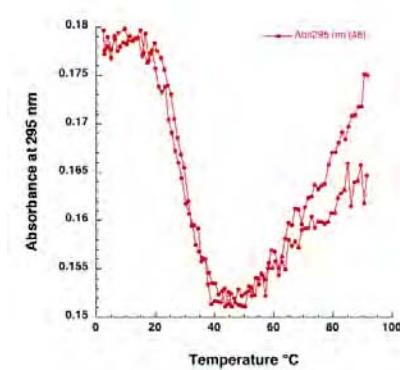
Sequence:  $5' A\textcolor{red}{GGGAGAGGA} GGGTGGATGGAATTAA\textcolor{red}{GGGTGTTAGT} 3'$

Score: 1.17

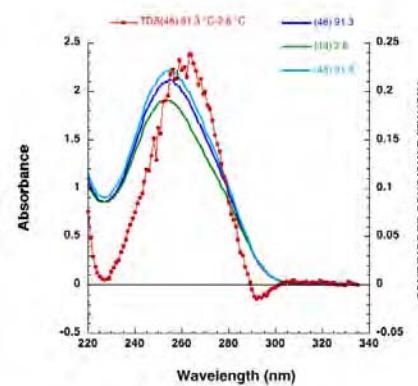
(a)



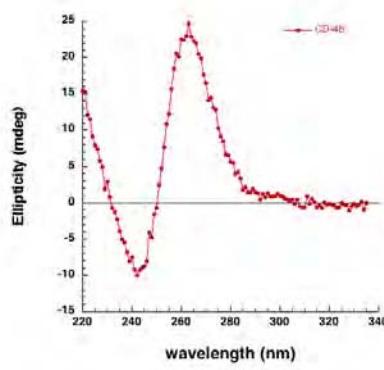
(b)



(c)

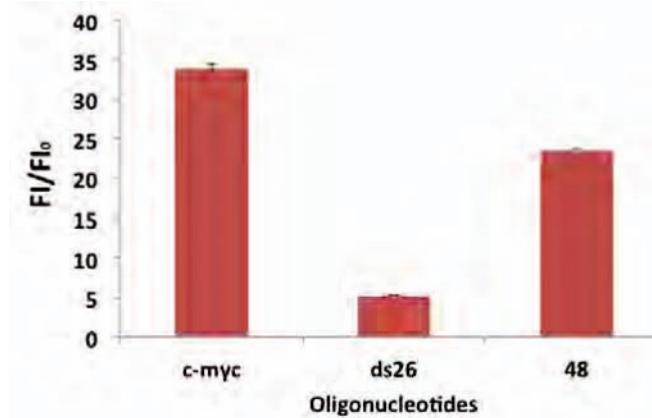


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a**) Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b**) Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c**) Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d**) Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e**) 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f**) Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

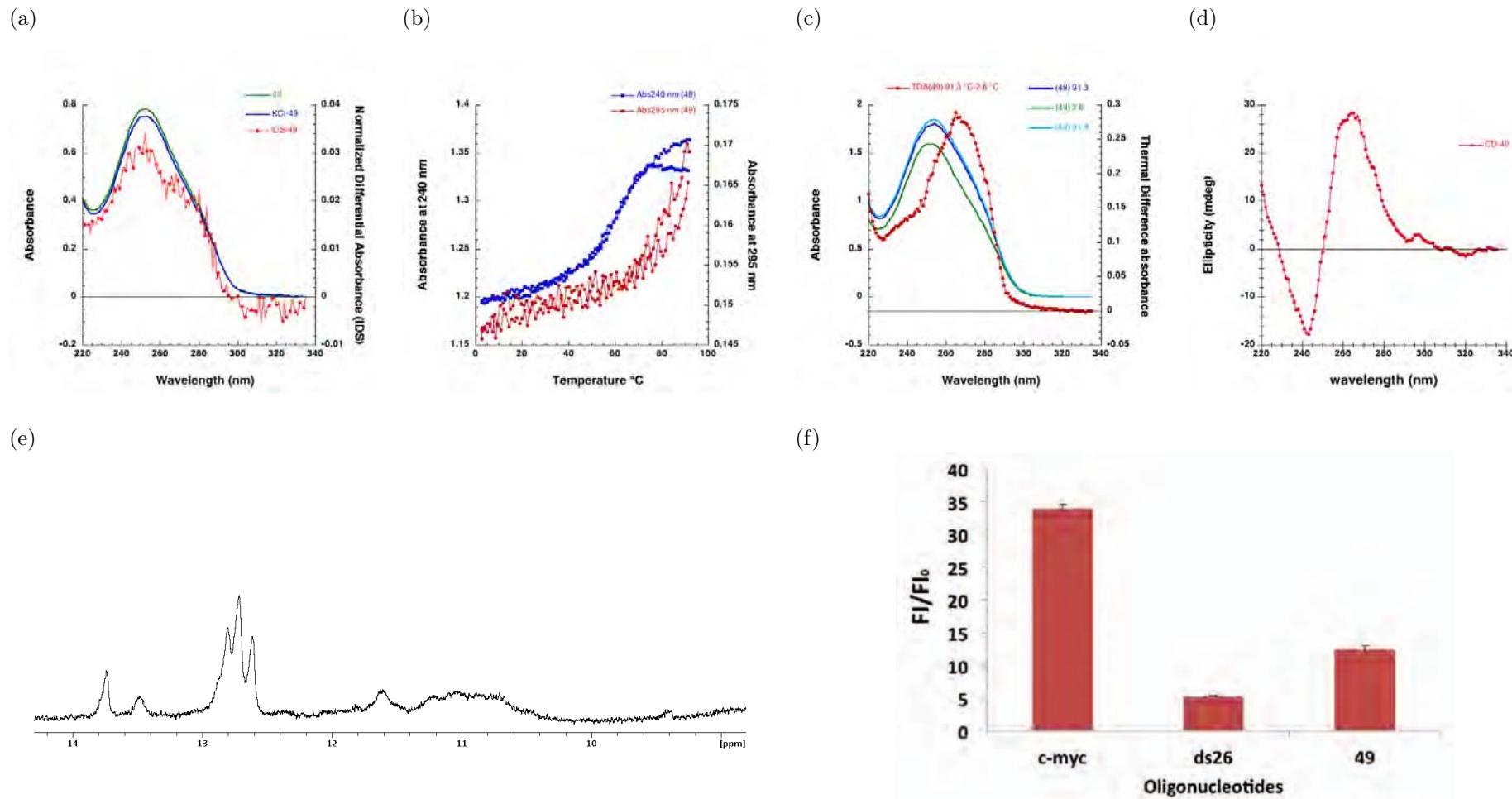
Table 51: Results interpretation of Mito 48

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes (-)	Yes (< 37°C)	Yes (-)	Parallel	Not done	++	<b>G4 (Unstable)</b>

Name: Mito 49

Sequence:  $5' A G C G G G G G C A G G C C T C C T A G G G A G A G G A G G G 3'$

Score: 1.23



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 52: Results interpretation of Mito 49

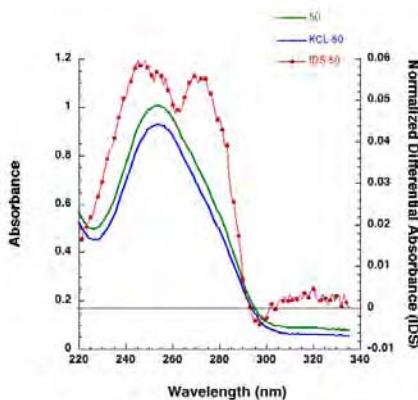
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	No/ GC-AT	+	Not G4

Name: Mito 50

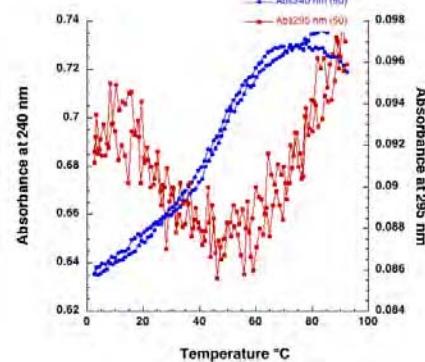
Sequence:  $5' \text{GGTTAGCGGGGGCAAGGCCTCCTA} \text{GGG} 3'$

Score: 1.08

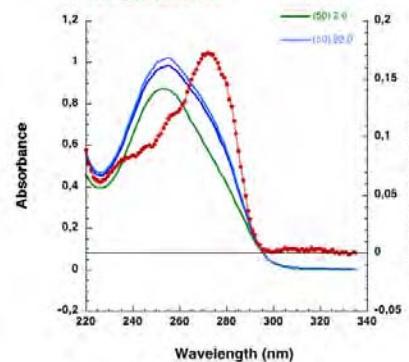
(a)



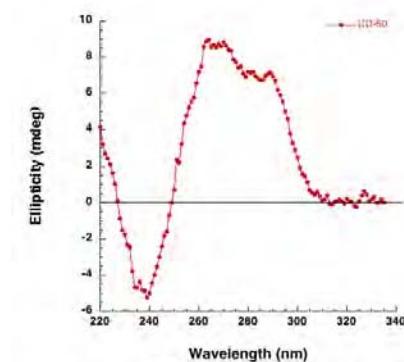
(b)



(c)



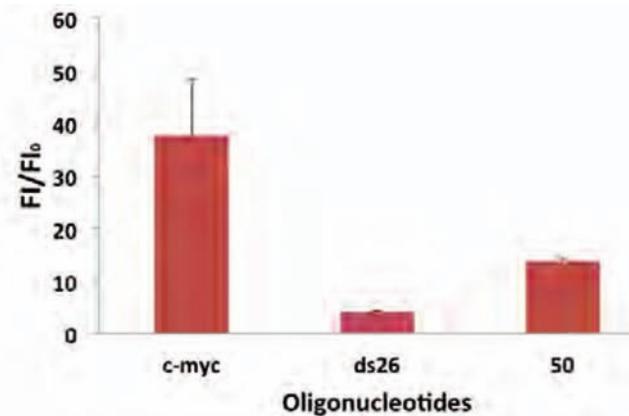
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 µM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 µM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 µM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 µM oligonucleotides and 0.5 µM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

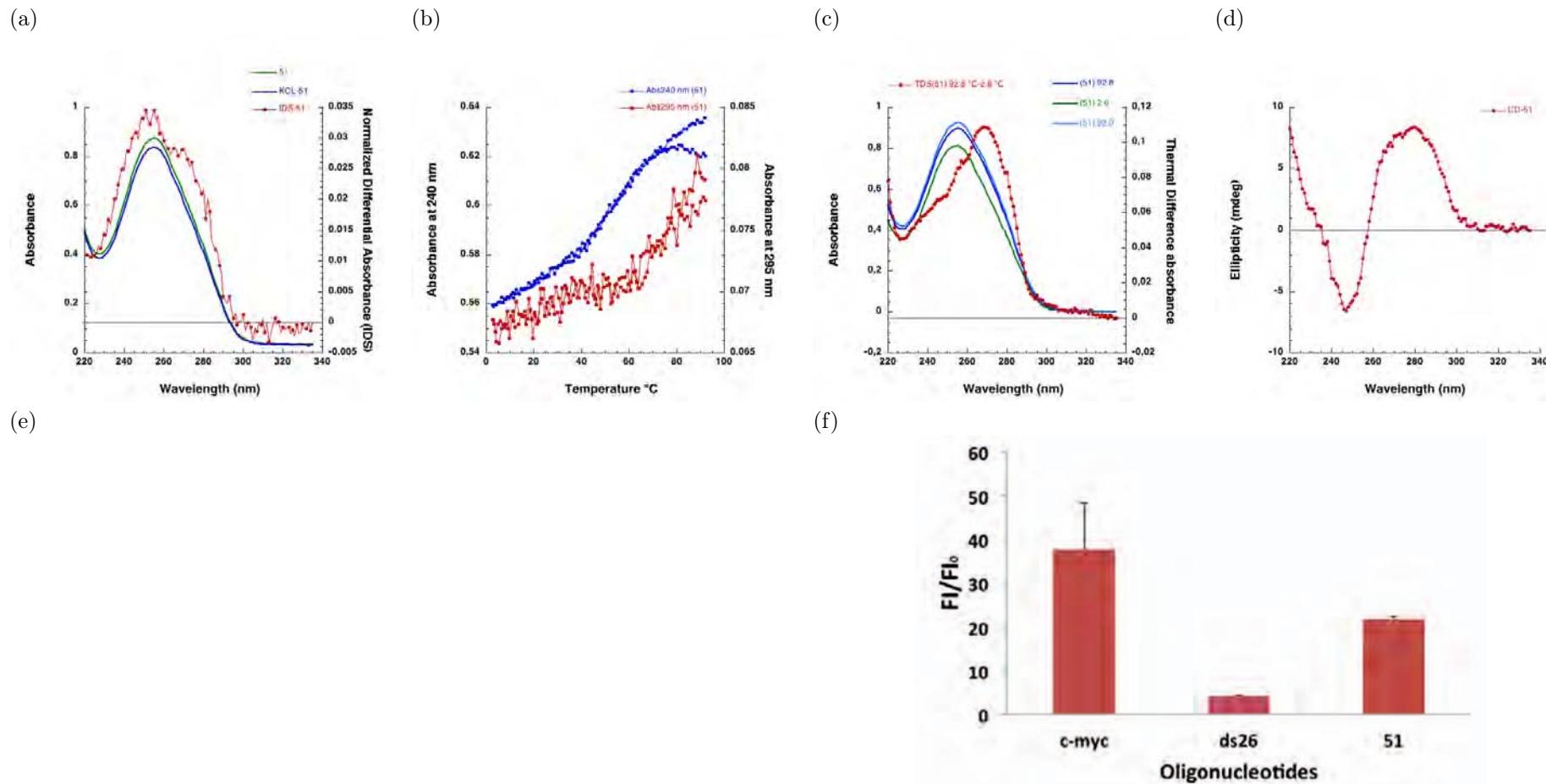
Table 53: Results interpretation of Mito 50

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes (-)	Yes(-)	No	Mixed	Yes/ GC	+	G4 (Competition/ Unstable)

Name: Mito 51

Sequence:  $5' TT\textcolor{red}{GGG}CAAAAA\textcolor{red}{GCCGGTTA}GC\textcolor{red}{GGGGG}CA 3'$

score: 1.0



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

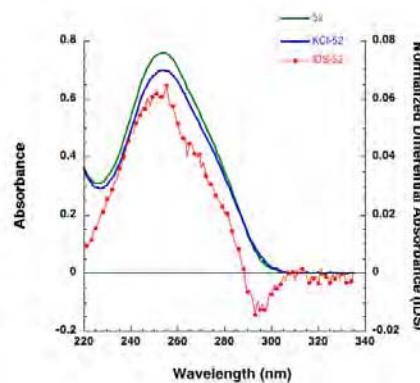
Table 54: Results interpretation of Mito 51

Technique	IDS	TM	TDS	CD	RMN	Thioflavine	G4
Result (G4 ?)	No	No	No	No	Not done	++	<b>Not G4</b>

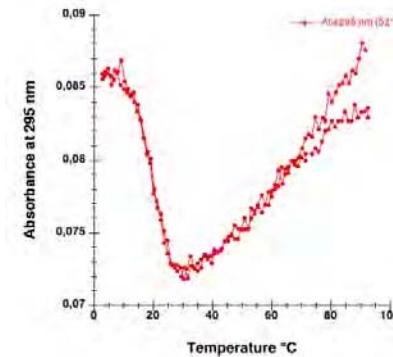
Name: Mito 52

Sequences:  $5' A\textcolor{red}{GGAGGGT GATGG TGGCTATGATGGT GGGGATGATGAGGC} 3'$  Score: 1.18

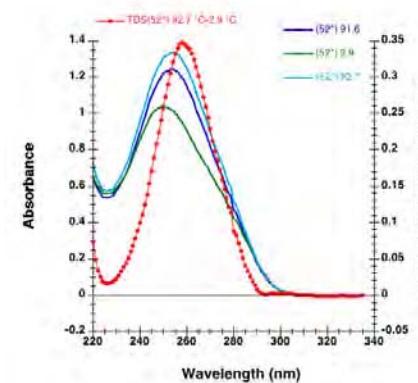
(a)



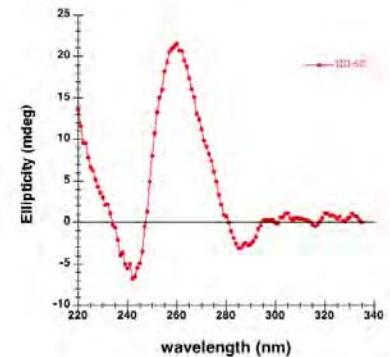
(b)



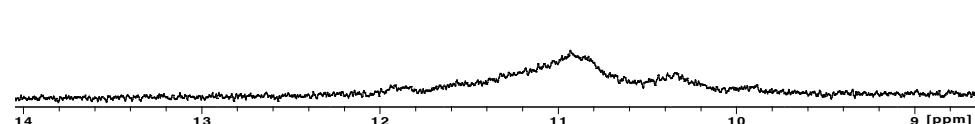
(c)



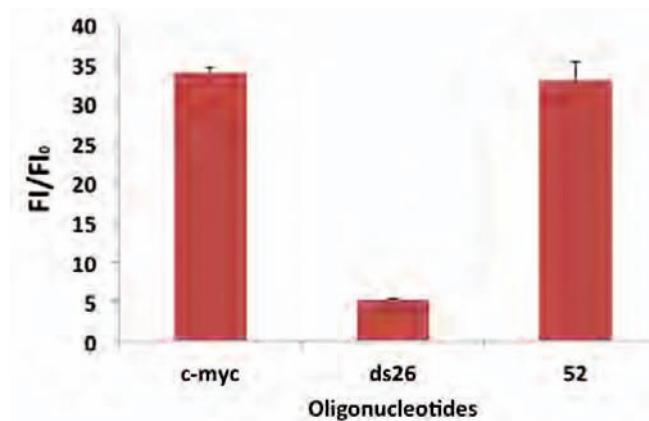
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

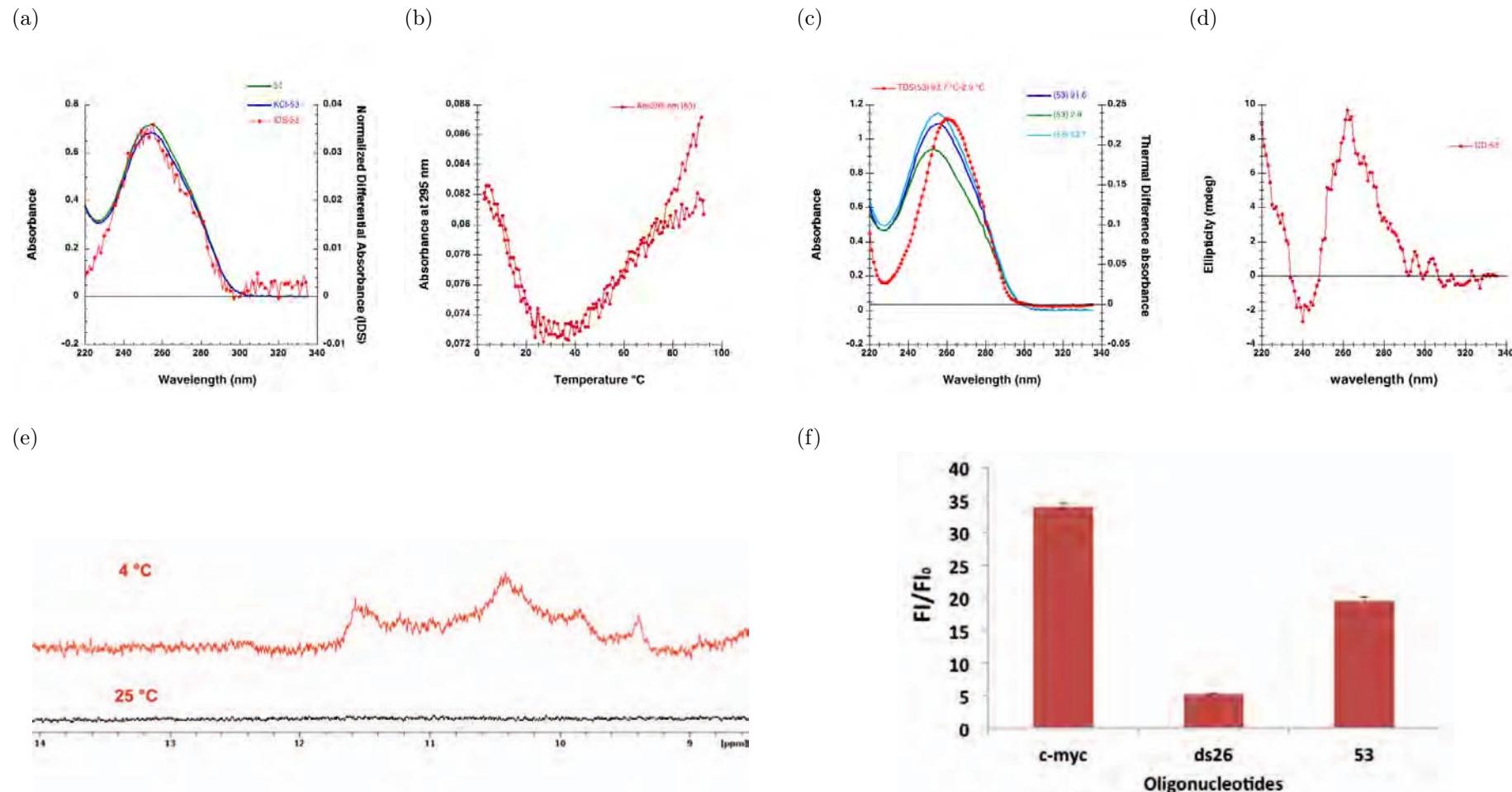
Table 55: Results interpretation of Mito 52

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes (< 37°C )	No	Parallel	Yes (-)	+++	<b>G4 (Unstable)</b>

Name: Mito 53

Sequence:  $5' \text{ GTAGAGGTTAAGGA } \textcolor{red}{GGGTGATGGTGGCTAT} 3'$

Score: 0.9



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

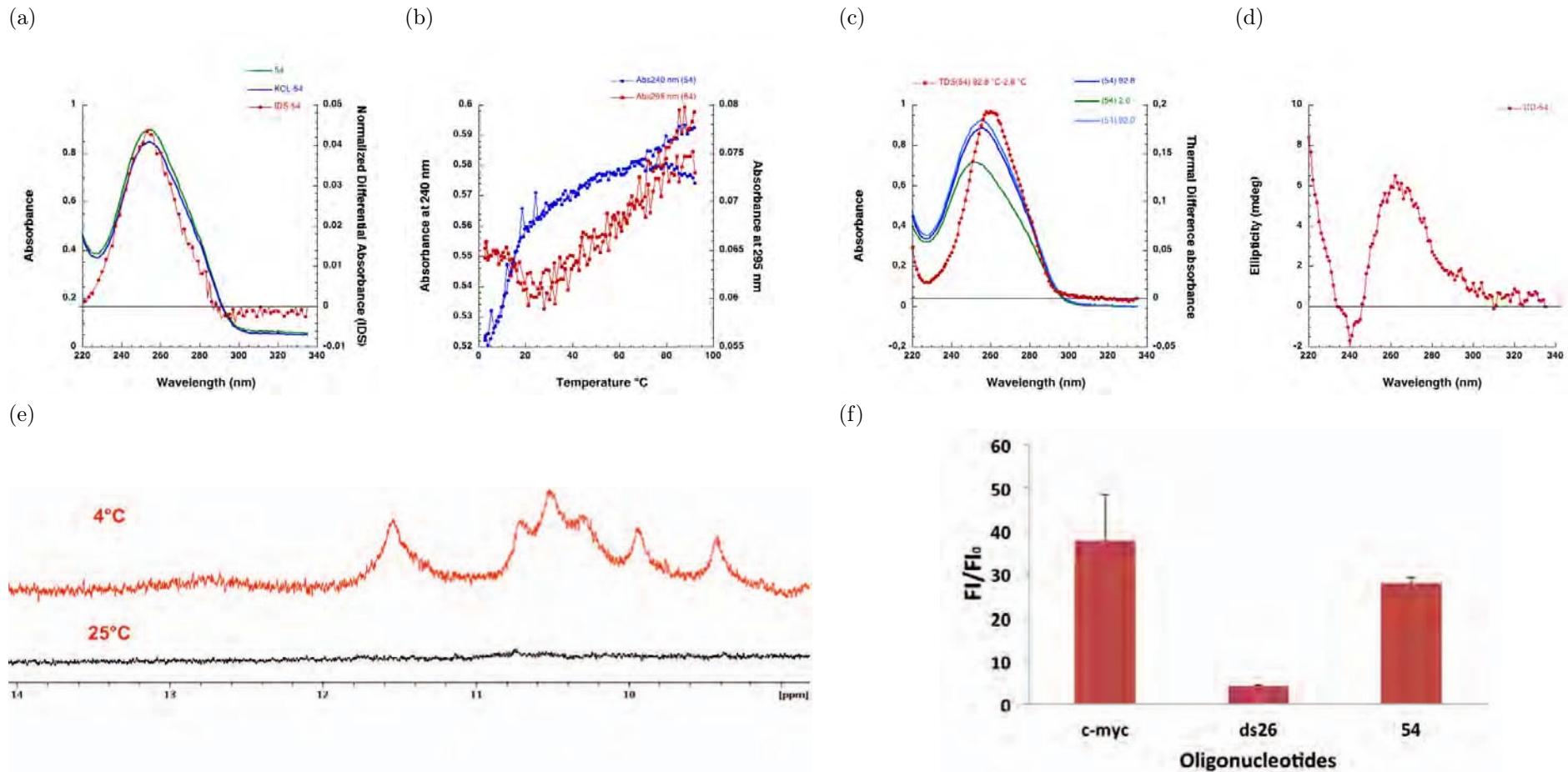
Table 56: Results interpretation of Mito 53

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	Yes (< 37°C )	No	No	Yes	++	<b>G4 (Unstable)</b>

Name: Mito 54

Sequence:  $5' GATATGGGA GTAGTGTGATTGAGGTGGAGT 3'$ 

Score: 1.0



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

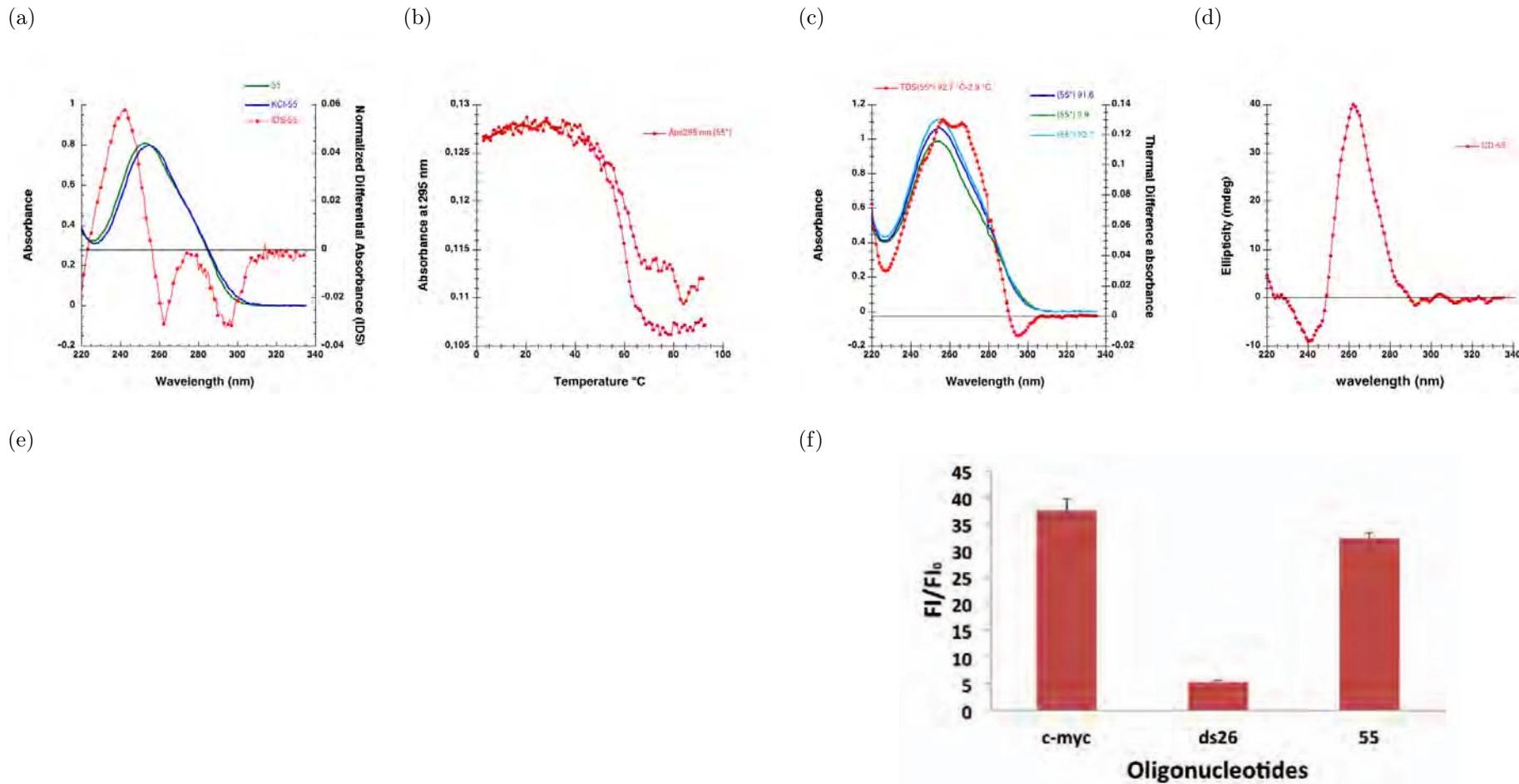
Table 57: Results interpretation of Mito 54

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	Yes (< 37°C)	No	No	Yes (< 4°C)	++	G4 (Unstable)

Name: Mito 55

Sequence:  $5' A\textcolor{red}{GGGCGATGA} GTGTGGGGAGGAATGGGGTGGG T 3'$

Score: 1.73



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 58: Results interpretation of Mito 55

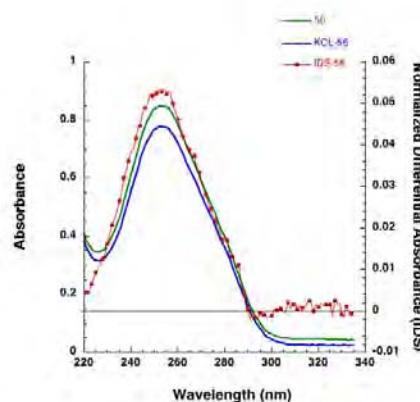
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Parallel	Not done	++	<b>G4</b>

Name: Mito 56

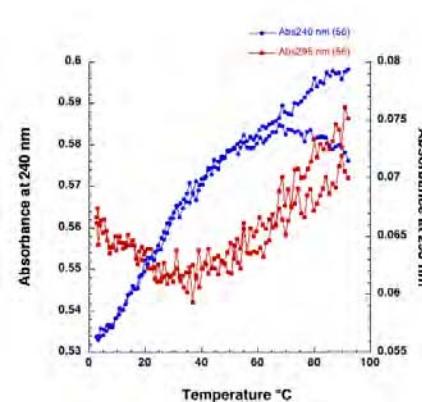
Sequence:  $5' A\textcolor{red}{GGGGAGATAGGTAGGAGTAGCCTGGT} 3'$ 

Score: 1.15

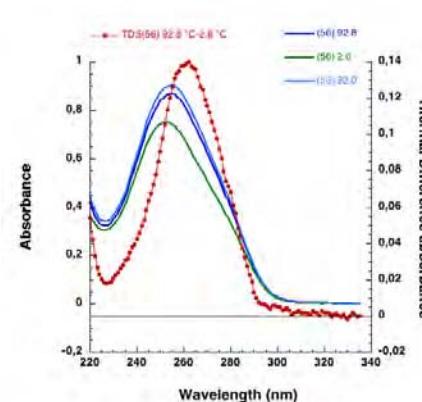
(a)



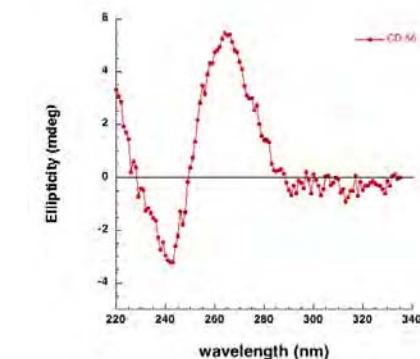
(b)



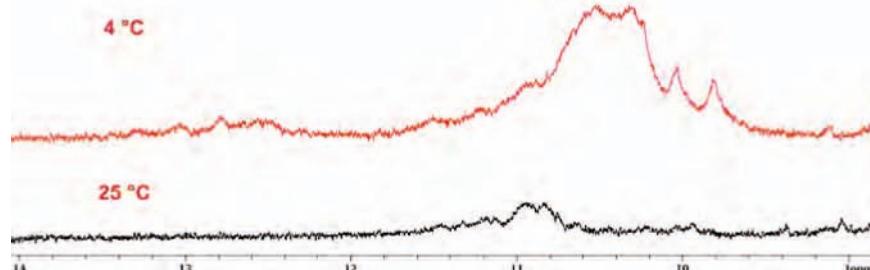
(c)



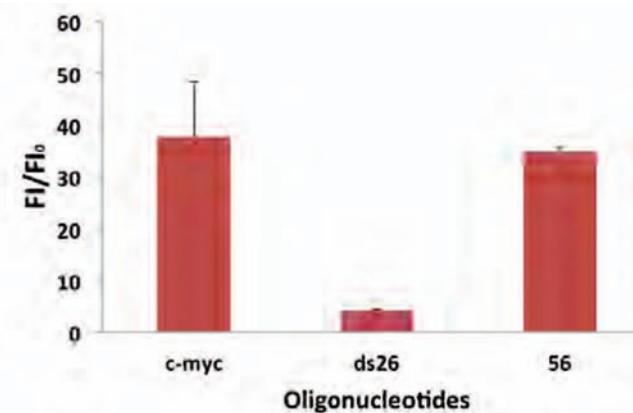
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

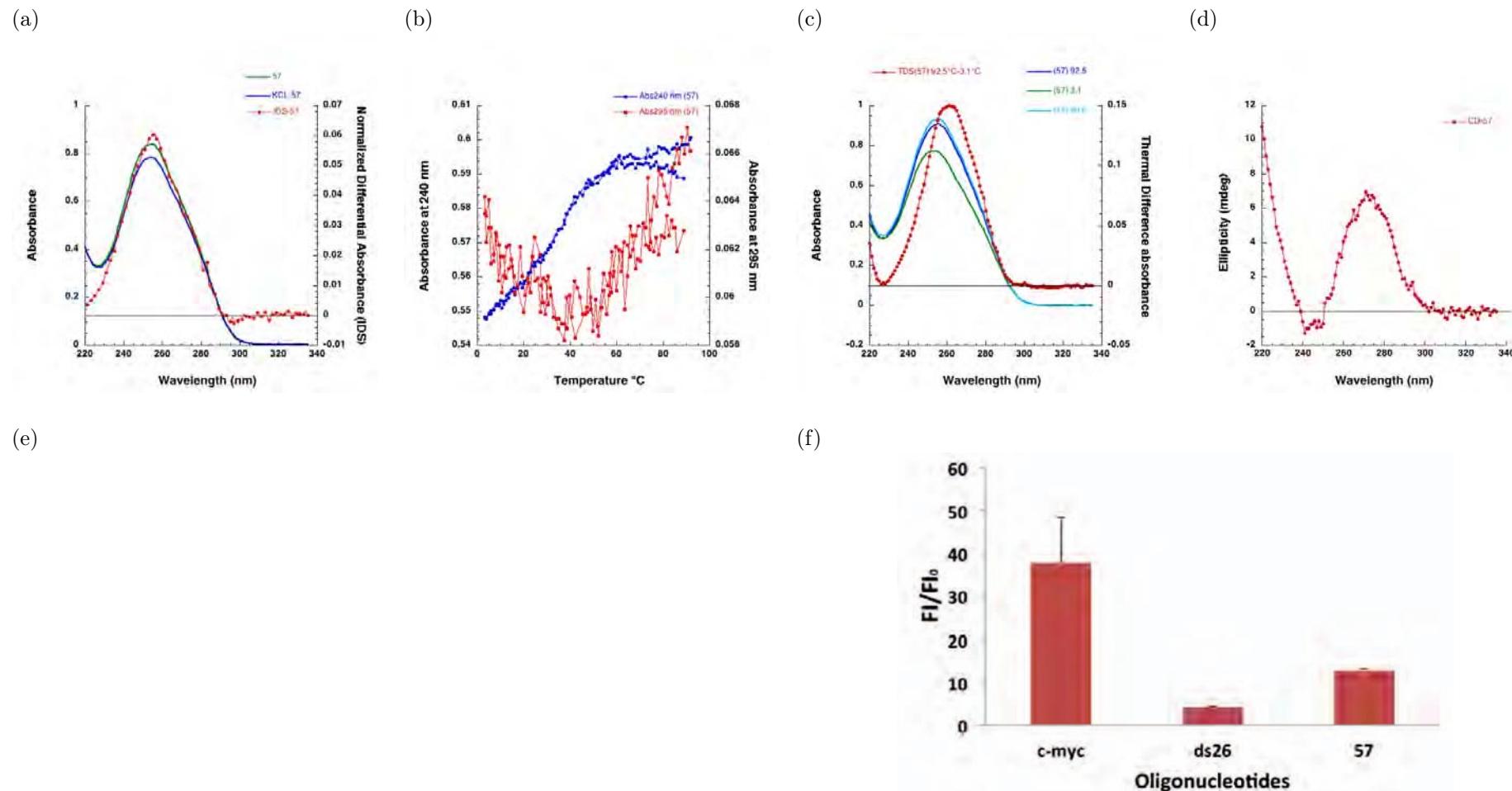
Table 59: Results interpretation of Mito 56

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Yes	++	<b>G4 (Unstable)</b>

Name: Mito 57

Sequence:  $5' \text{ A GTGGGGGTGAGGTAAAATGGCTGA GTGA } 3'$

Score: 1.1



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

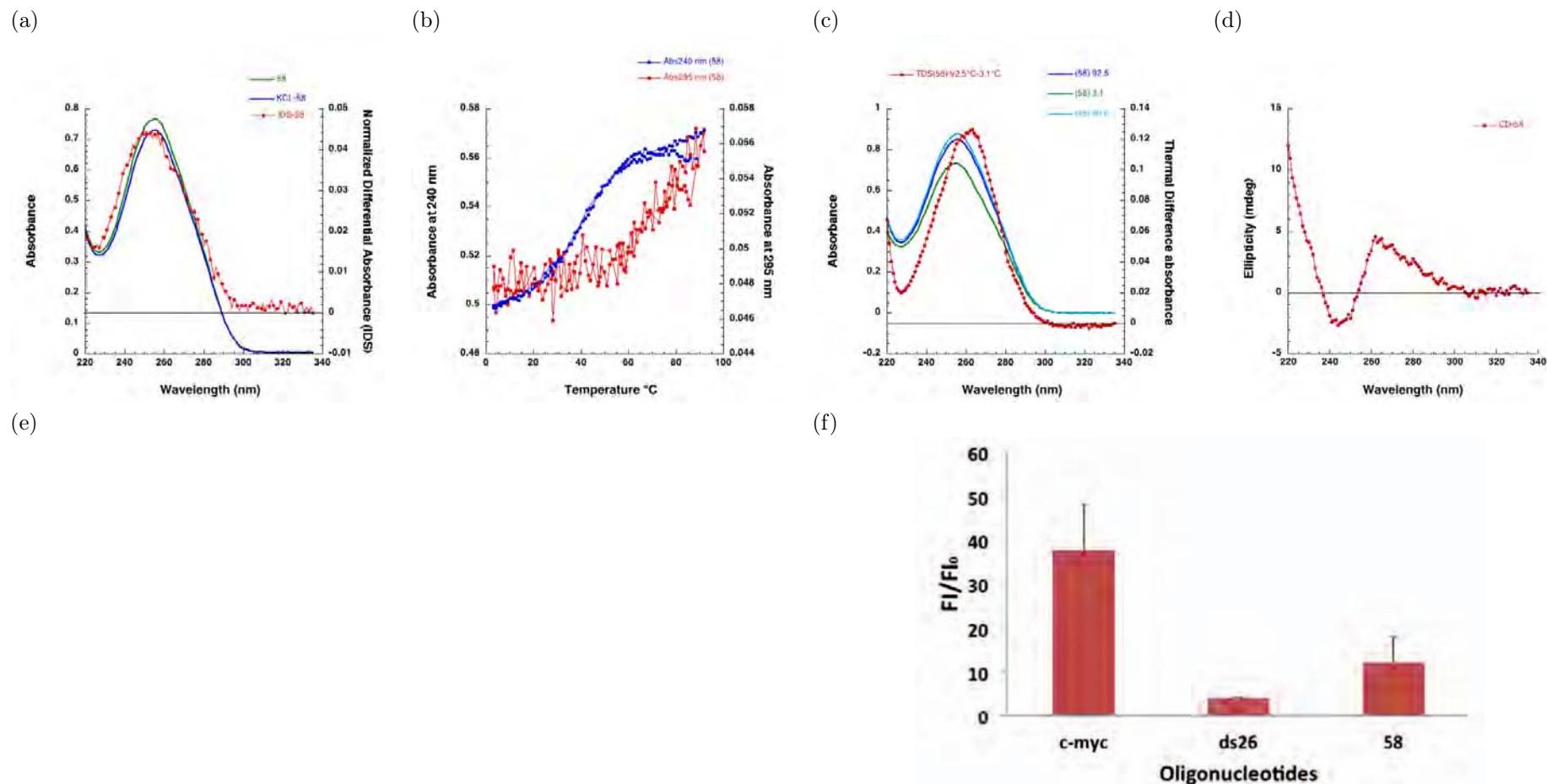
Table 60: Results interpretation of Mito 57

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	+	<b>Not G4</b>

Name: Mito 58

Sequence:  $5' \text{GAACATCA} \textcolor{red}{GTGGGGTGAGG} \text{TAAAAA} 3'$

Score: 1.0



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

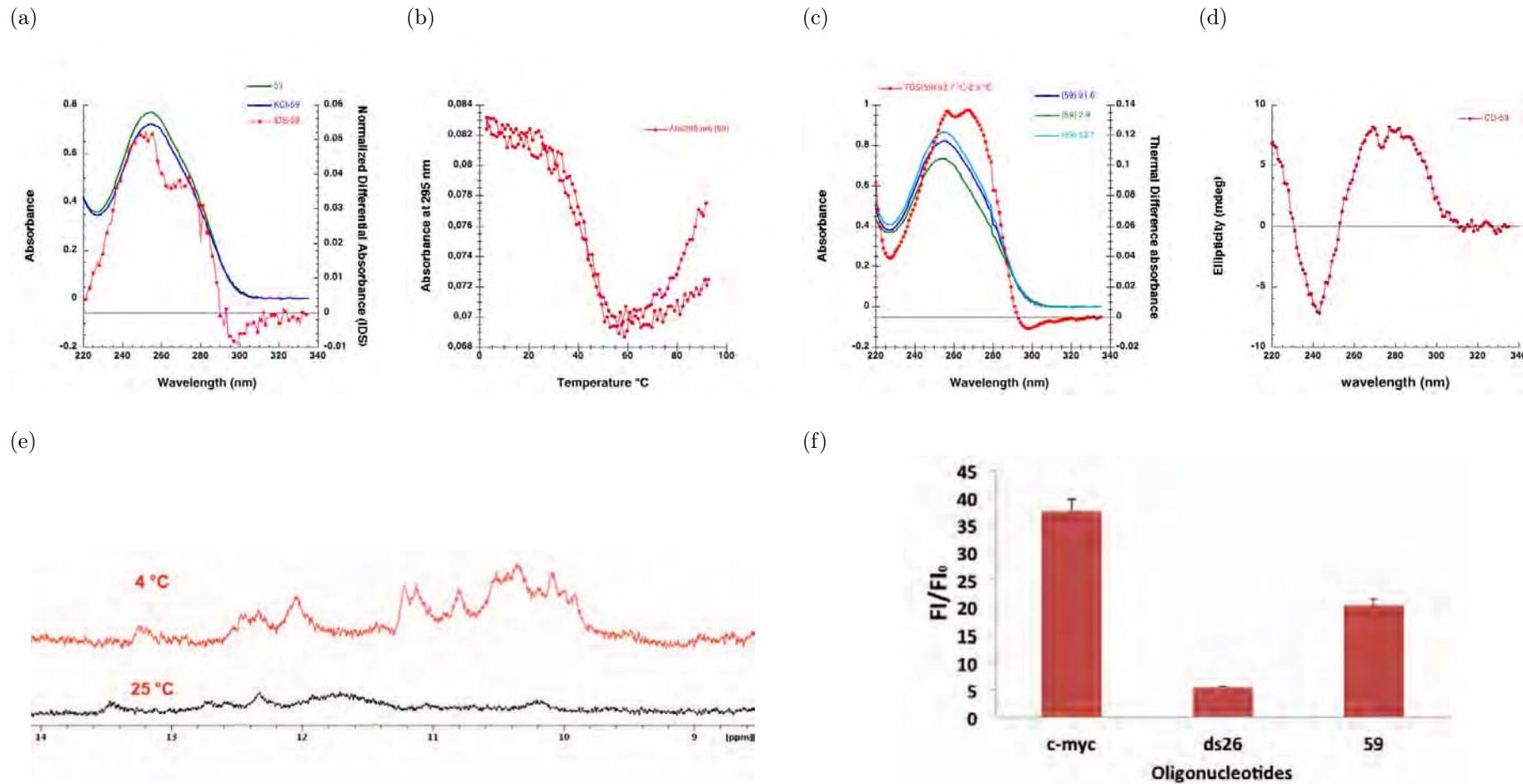
Table 61: Results interpretation of Mito 58

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	+	<b>Not G4</b>

Name: Mito 59

Sequence:  $5' C G G T C G G C G A A C A T C A G T G G G G G T G A G G T 3'$

Score: 1.03



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 62: Results interpretation of Mito 59

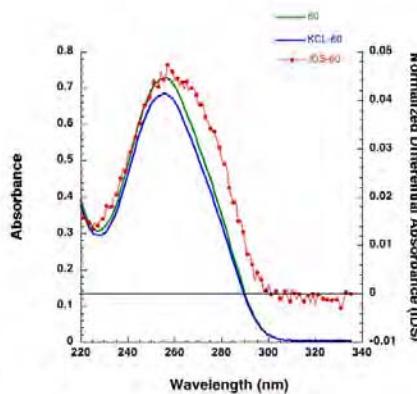
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes (-)	Yes	Yes (-)	Mixed	Yes	++	G4

Name: Mito 60

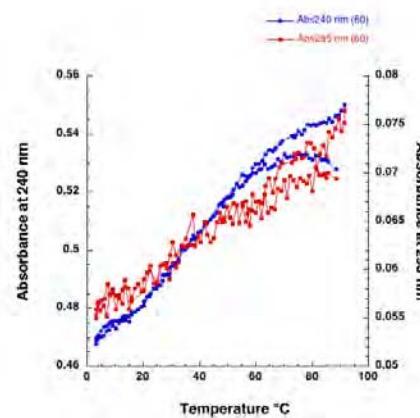
Sequence:  $5' \text{TCGGGGCACCGATTATTA} \text{GGGA} 3'$

score: 1.29

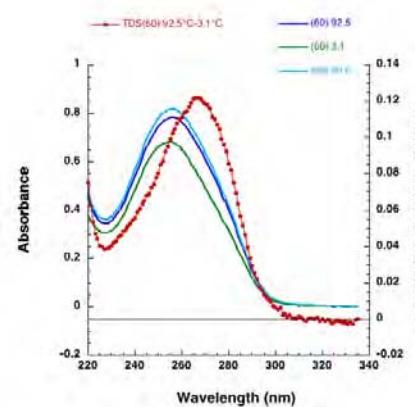
(a)



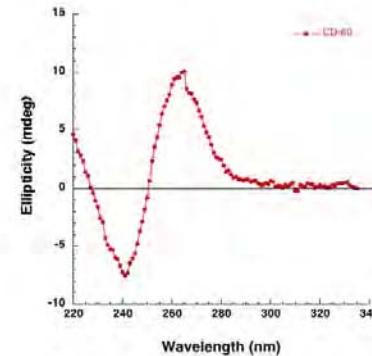
(b)



(c)

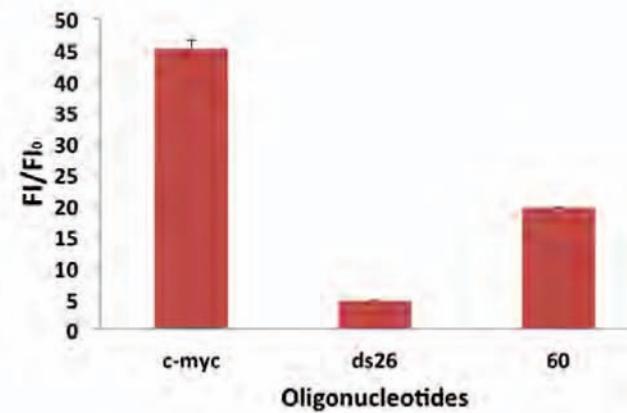


(d)



(e)

(f)



In vitro characterization of the selected candidates: **a**) Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b**) Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c**) Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d**) Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e**) 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f**) Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

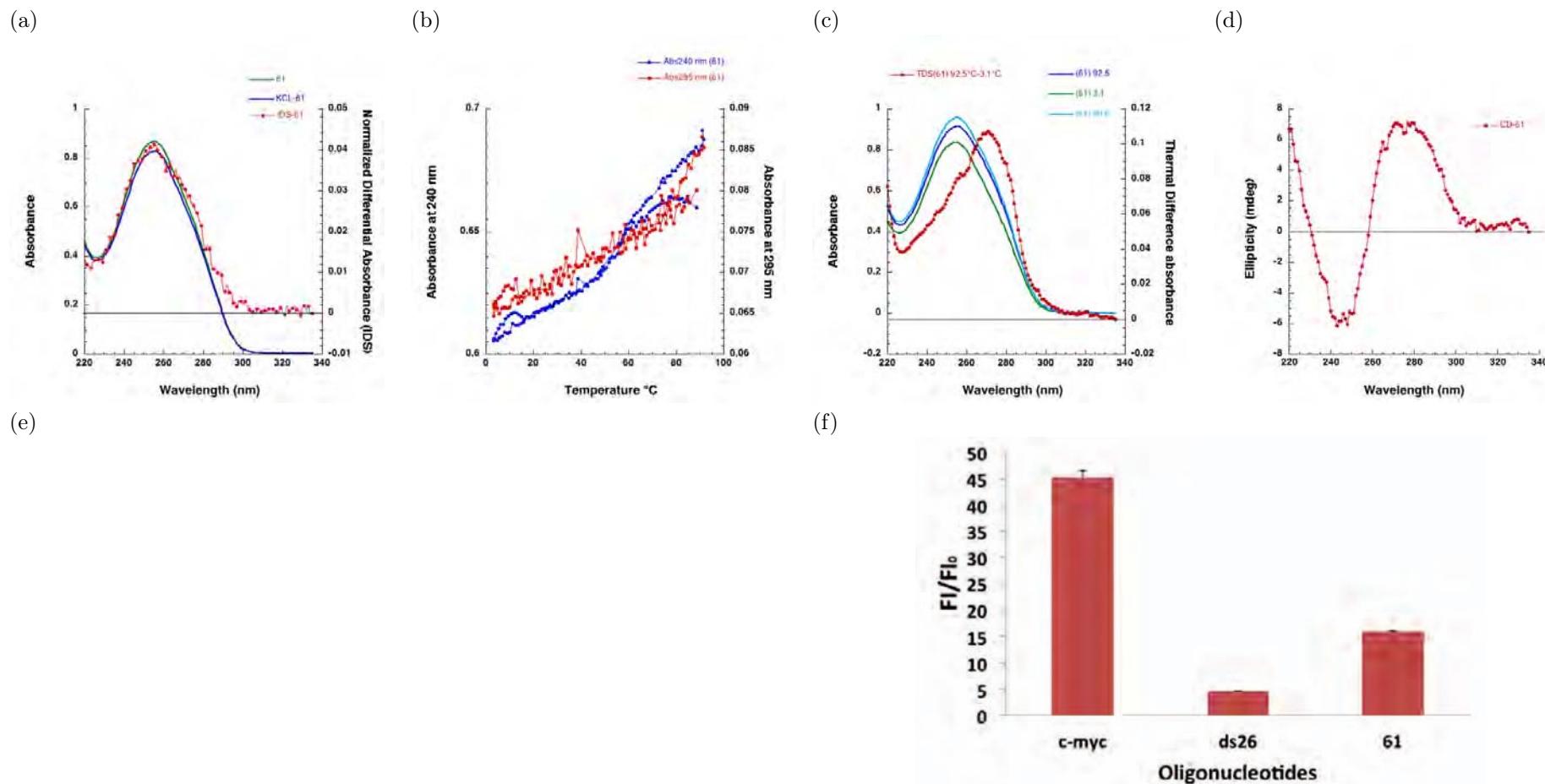
Table 63: Results interpretation of Mito 60

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	Parallel	Not done	++	Not G4

Name: Mito 61

Sequence:  $5' TGC\textcolor{red}{GGGGAAACGCCATATC} GGGGGC 3'$

score: 1.2



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 64: Results interpretation of Mito 61

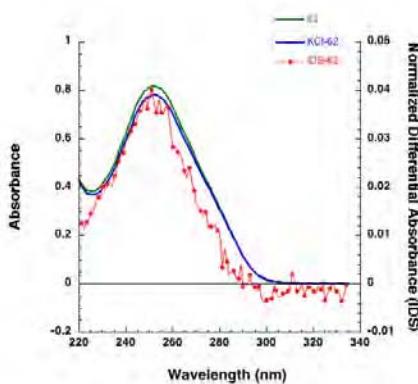
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	+	<b>Not G4</b>

Name: Mito 62

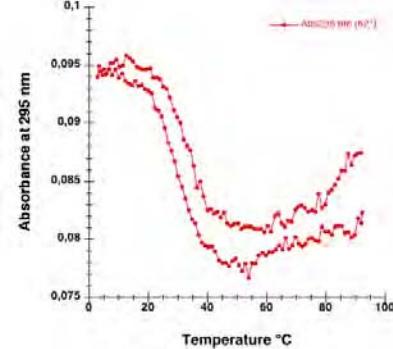
Sequence:  $5' A\textcolor{red}{GGAGTA}GGAGAGAGGGAGGTAAGA\textcolor{red}{G} 3'$

Score: 1.0

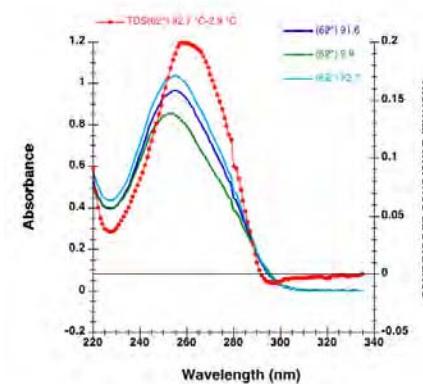
(a)



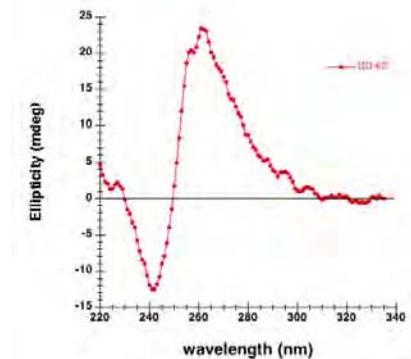
(b)



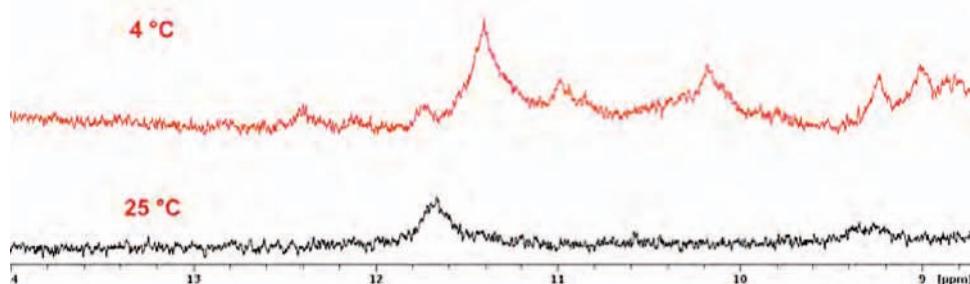
(c)



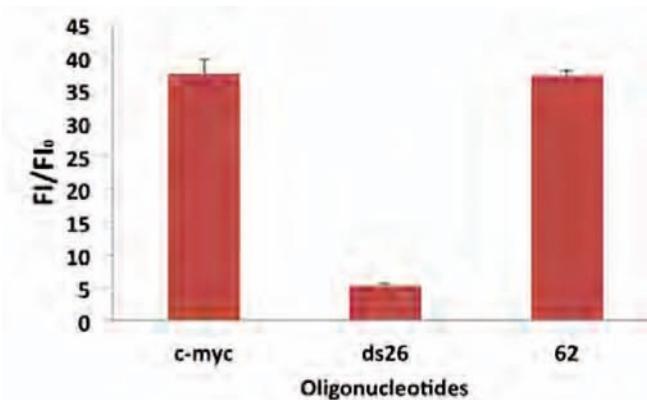
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a**) Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b**) Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c**) Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d**) Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e**) 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f**) Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

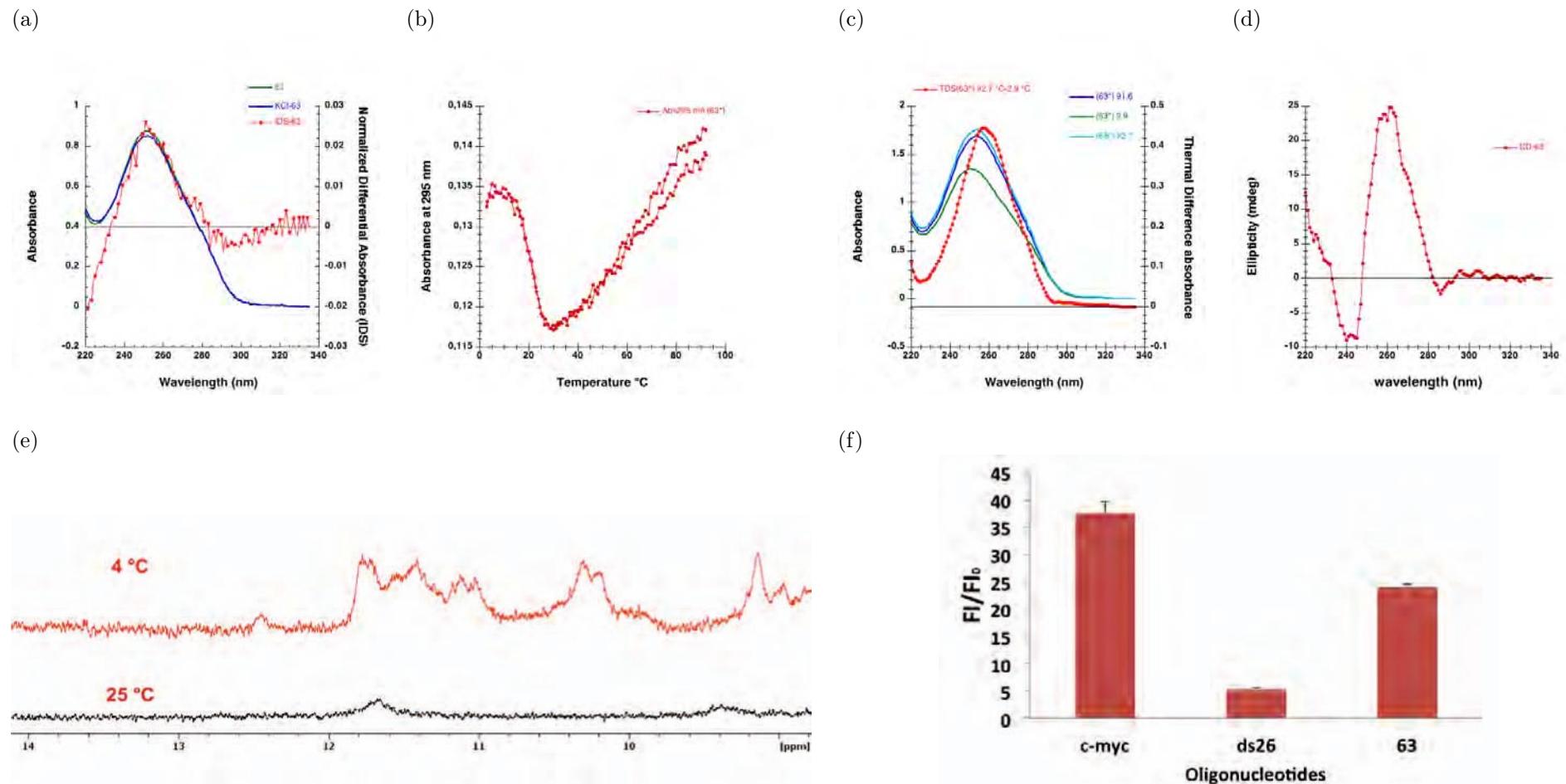
Table 65: Results interpretation of Mito 62

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	Yes (< 37°C )	No	Parallel	Yes (-)	+++	<b>G4 (Unstable)</b>

Name: Mito 63

Sequence:  $5' \text{ GAGCAGGAGTAGGAGAGAAGGGAGGT } 3'$

Score: 1.0



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 66: Results interpretation of Mito 63

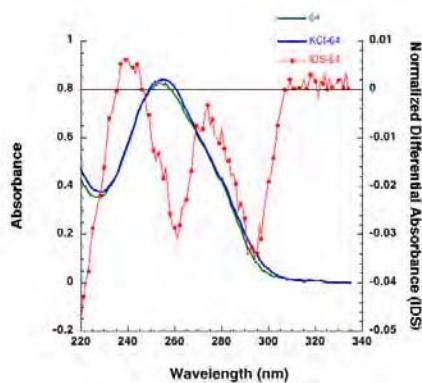
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	Yes (< 37°C )	No	Parallel	Yes (-)	++	<b>G4 (Unstable)</b>

Name: Mito 64

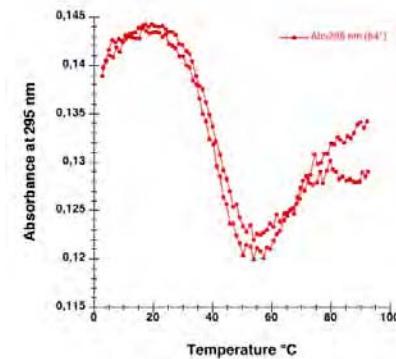
Sequence:  $5' \text{AGGGGCGTTTGGTATTGGTTATGGCA} \text{GGGGGT} 3'$

Score: 1.58

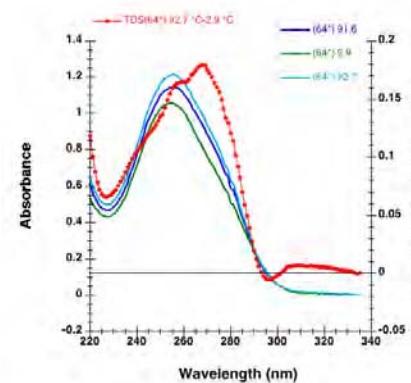
(a)



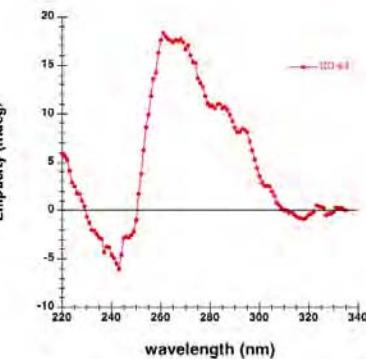
(b)



(c)

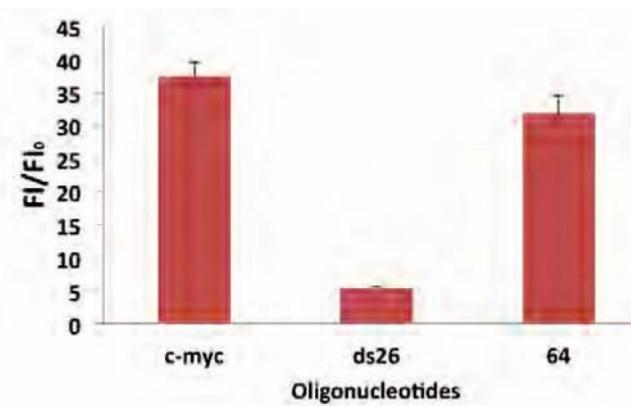


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a**) Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b**) Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c**) Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d**) Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e**) 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f**) Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

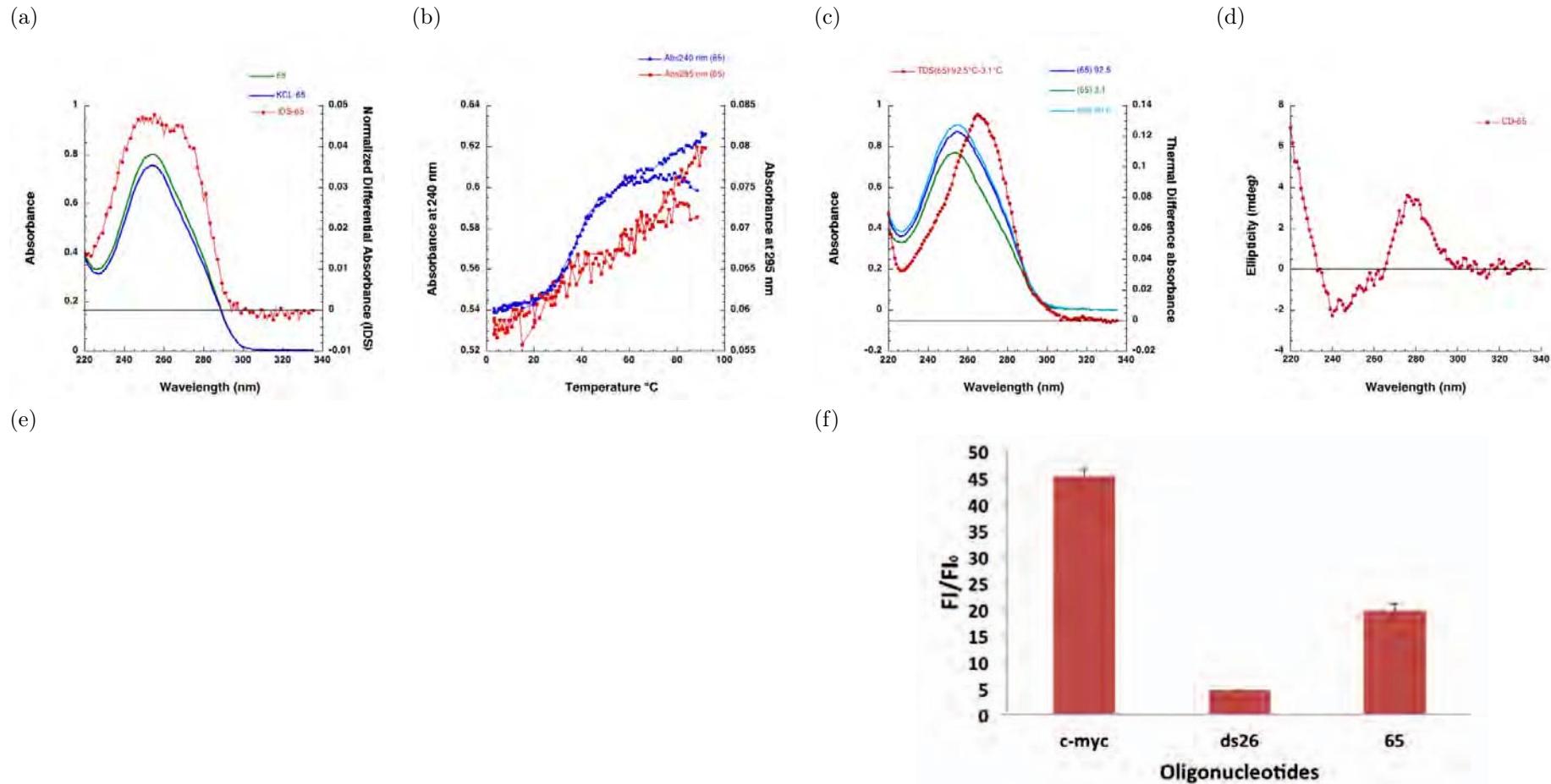
Table 67: Results interpretation of Mito 64

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	No	Mixed	Not done	Yes	G4

Name: Mito 65

Sequence:  $5' \text{GGATCA GACGAA GA GGGGC GTT GG} 3'$

Score: 1.0



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu\text{M}$  strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu\text{M}$  strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu\text{M}$  strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu\text{M}$  oligonucleotides and 0.5  $\mu\text{M}$  Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 68: Results interpretation of Mito 65

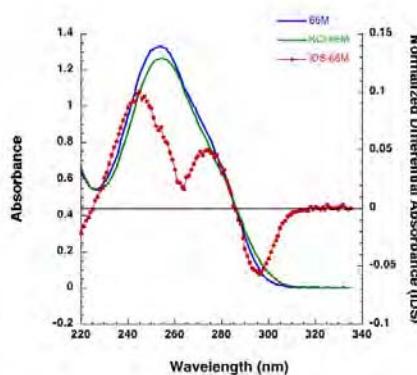
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	++	Not G4

Name: Mito 66

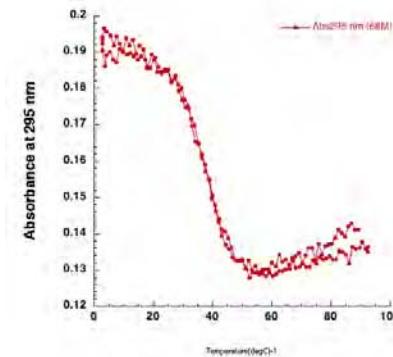
Sequence:  $5' GGCGGGGTCGAAAGAAGGTGGTGGTGAAGG 3'$

Score: 1.21

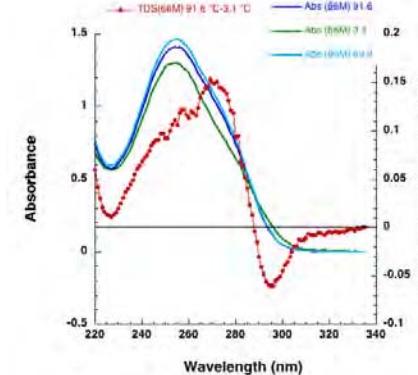
(a)



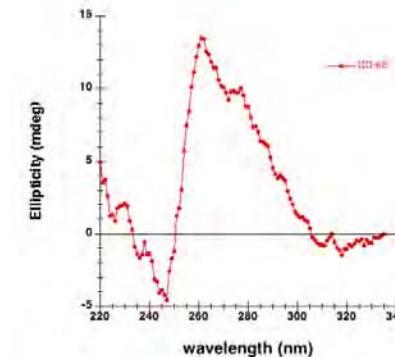
(b)



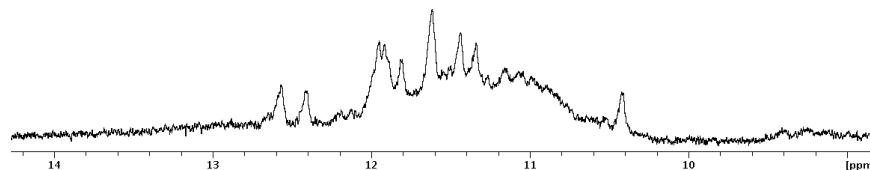
(c)



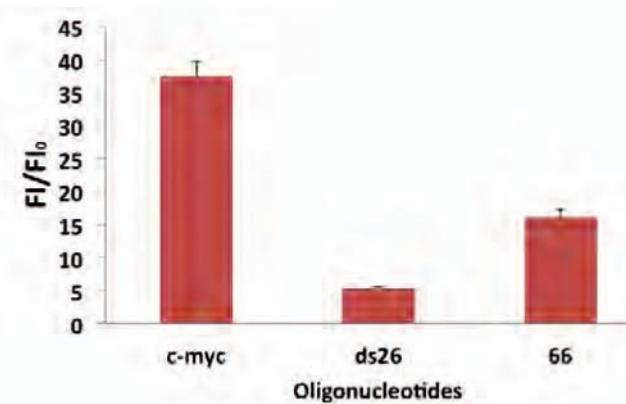
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4  $\mu\text{M}$  strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalized differential spectra (TDS) in the 220 and 335 nm region (4  $\mu\text{M}$  strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu\text{M}$  strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu\text{M}$  oligonucleotides and 0.5  $\mu\text{M}$  Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence (right).

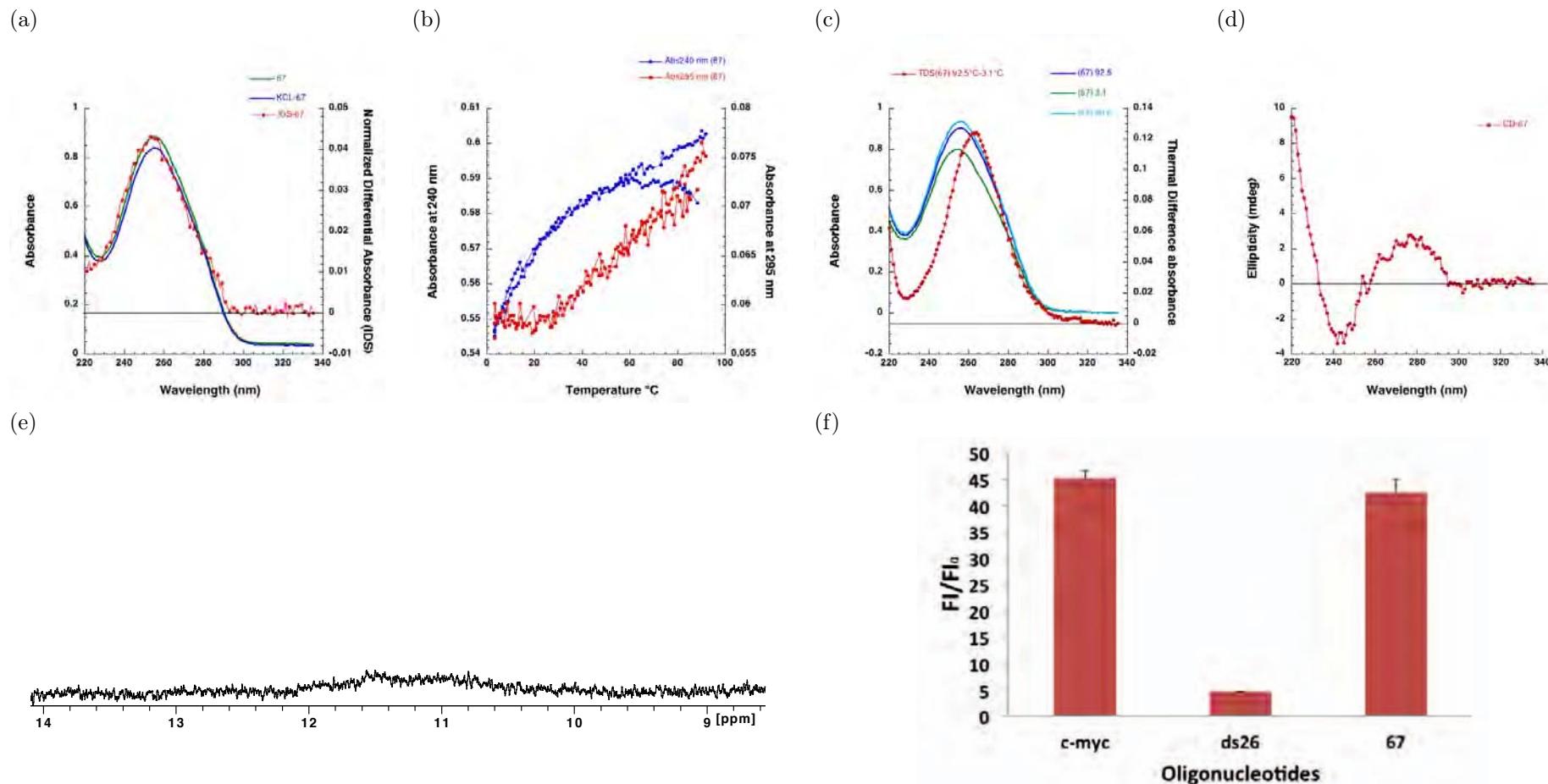
Table 69: Results interpretation of Mito 66

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Mixed	Yes	++	G4

Name: Mito 67

Sequence:  $5' \text{GAATAGGTGTGTTGGTATAGAATGGGGTCT} 3'$

Score: 0.93



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu\text{M}$  strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu\text{M}$  strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu\text{M}$  strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu\text{M}$  oligonucleotides and 0.5  $\mu\text{M}$  Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 70: Results interpretation of Mito 67

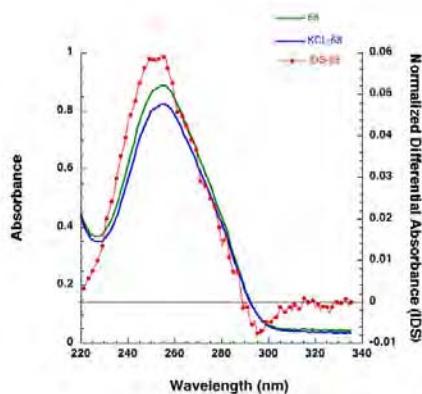
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	No	+++	Not G4

Name: Mito 68

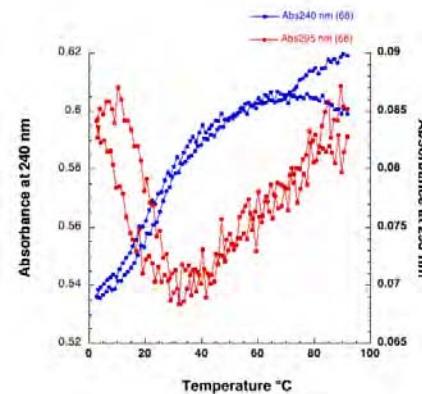
Sequence:  ${}^5' GGTGGGGATACCGATGATTATGGTAG {}^3'$

score: 1.04

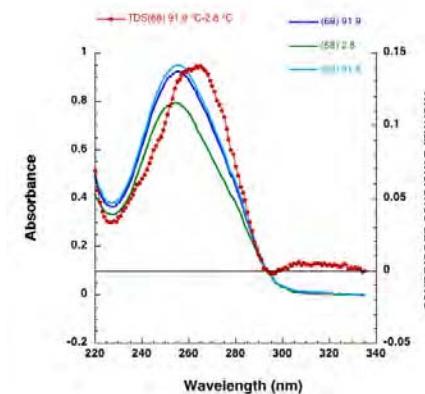
(a)



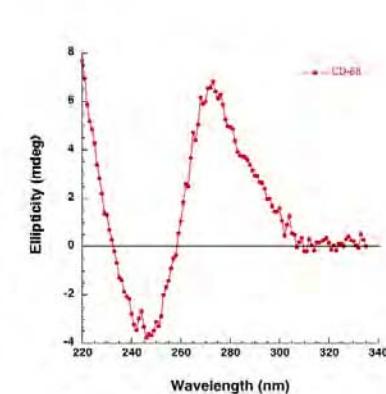
(b)



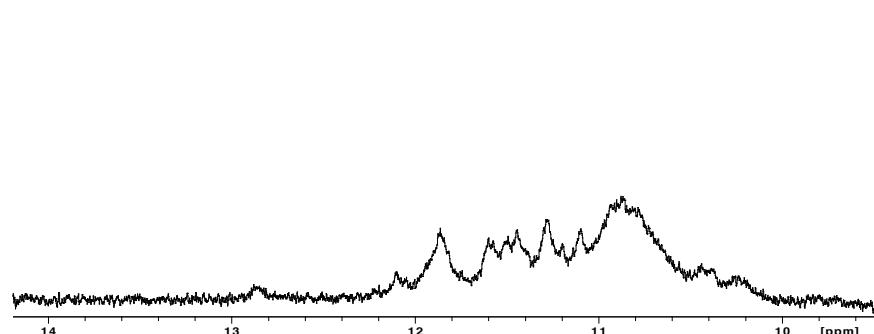
(c)



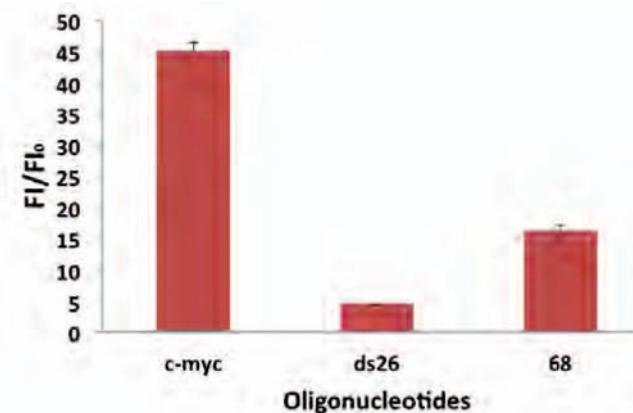
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 µM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 µM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 µM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 µM oligonucleotides and 0.5 µM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

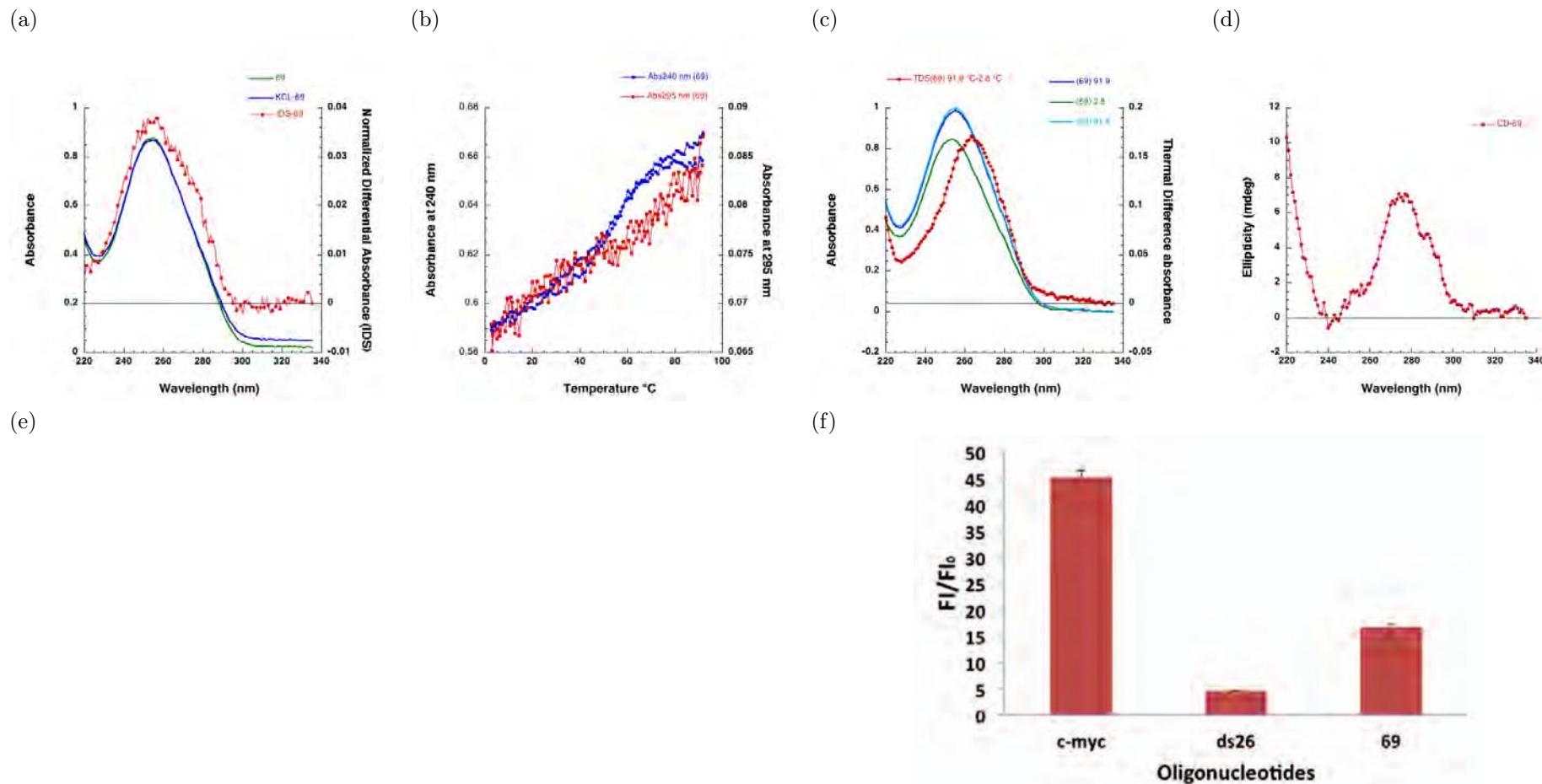
Table 71: Results interpretation of Mito 68

Technique	IDS	TM	TDS	CD	RMN	Thioflavine	G4
Result (G4 ?)	Yes (-)	Yes (< 37°C)	No	No	Yes	+	<b>G4 (Unstable)</b>

Name: Mito 69

Sequence:  ${}^5' TA\textcolor{red}{GGGTGTA}GCCTGA\textcolor{red}{GAATA}GGGGAA {}^3'$

score: 0.96



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 72: Results interpretation of Mito 69

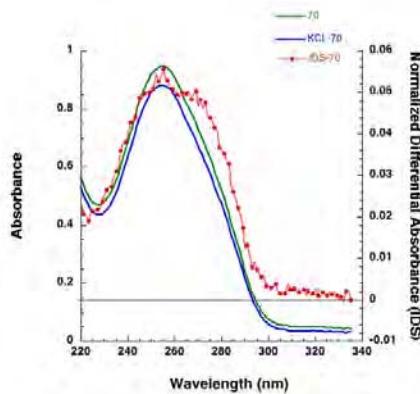
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	+	<b>Not G4</b>

Name: Mito 70

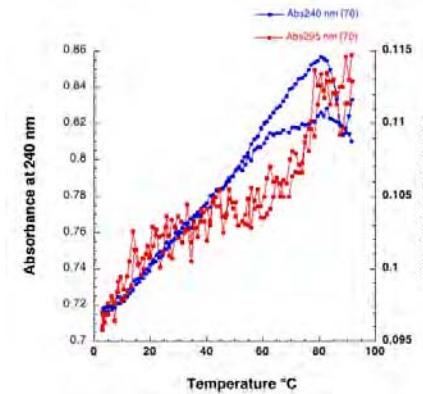
Sequence:  $5' \text{TCGGGTAGTCCGAGTAACGTCGGGC} 3'$

score: 1.04

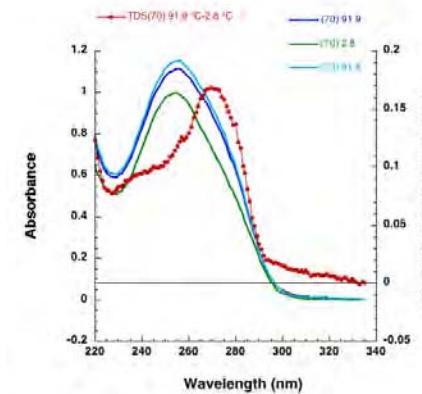
(a)



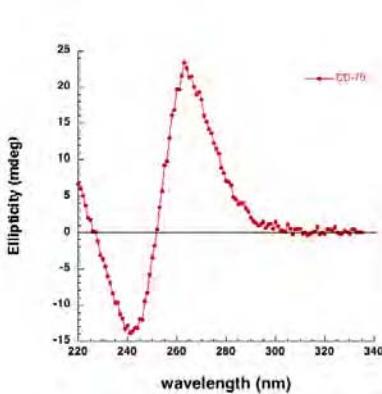
(b)



(c)

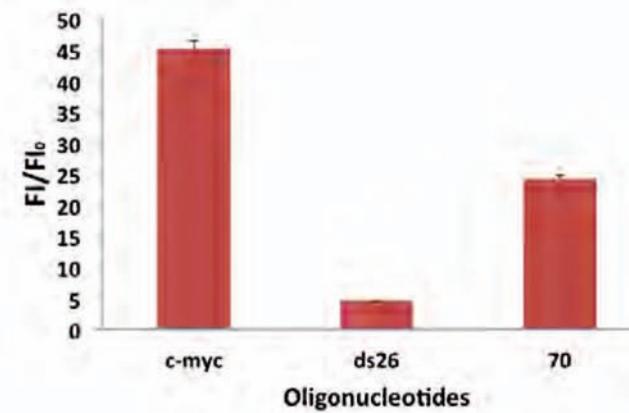


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

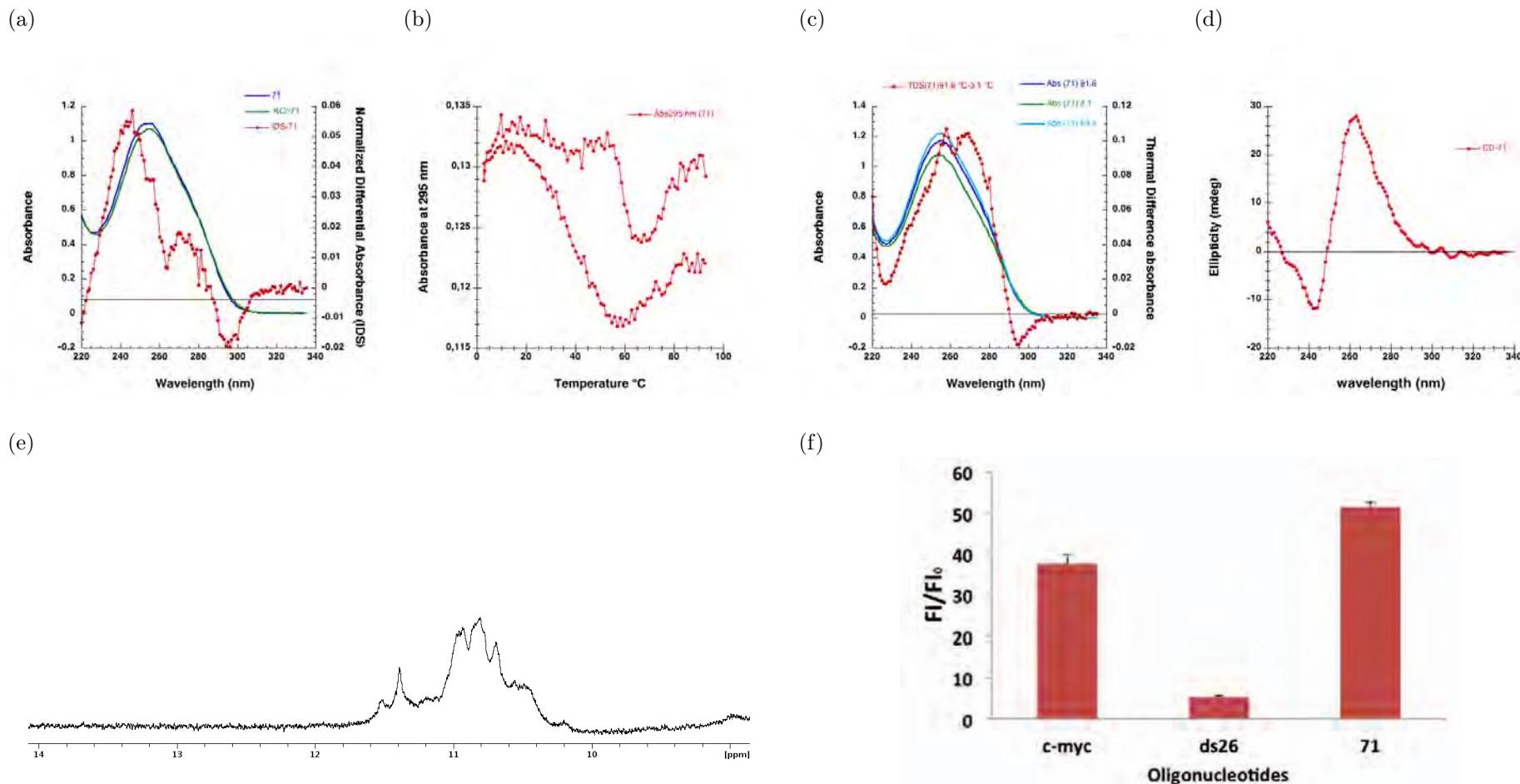
Table 73: Results interpretation of Mito 70

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	Parallel	Not done	++	Not G4

Name: Mito 71

Sequence:  $5' CGAATGTGTGGTA GGTTGGGGGGCA 3'$

Score: 1.52



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence (right).

Table 74: Results interpretation of Mito 71

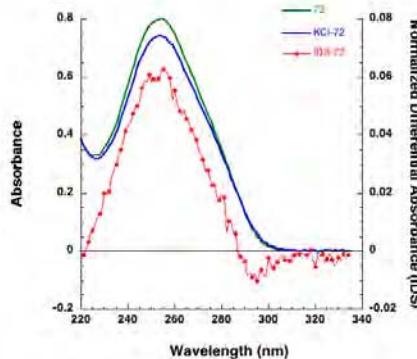
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Parallel	Yes	+++	G4

Name: Mito 72

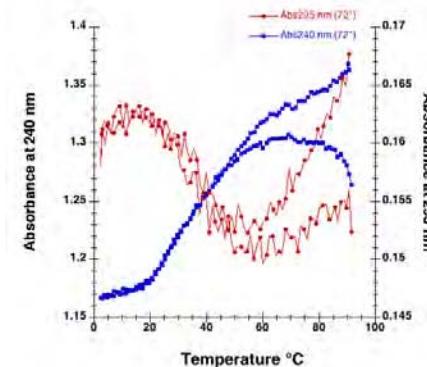
Sequence: 5' A<sup>GGATGCGTA</sup>G<sup>GGATGGGA</sup>G<sup>GGCGATGAGGACTA</sup>G<sup>GATGA</sup> 3'

Score: 1.02

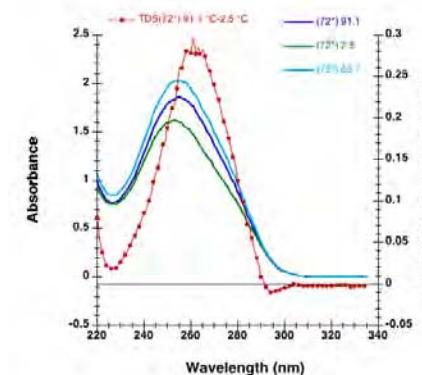
(a)



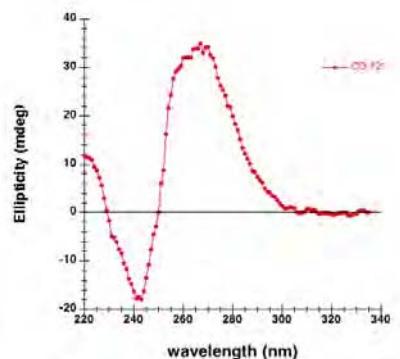
(b)



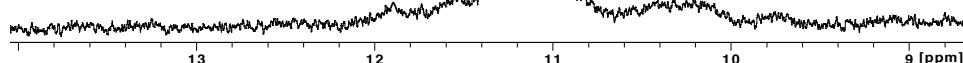
(c)



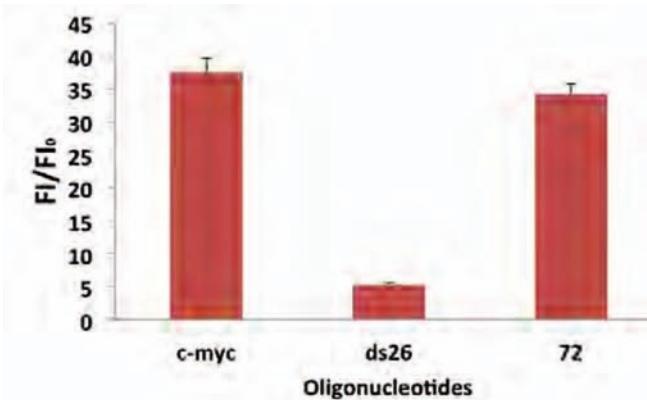
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

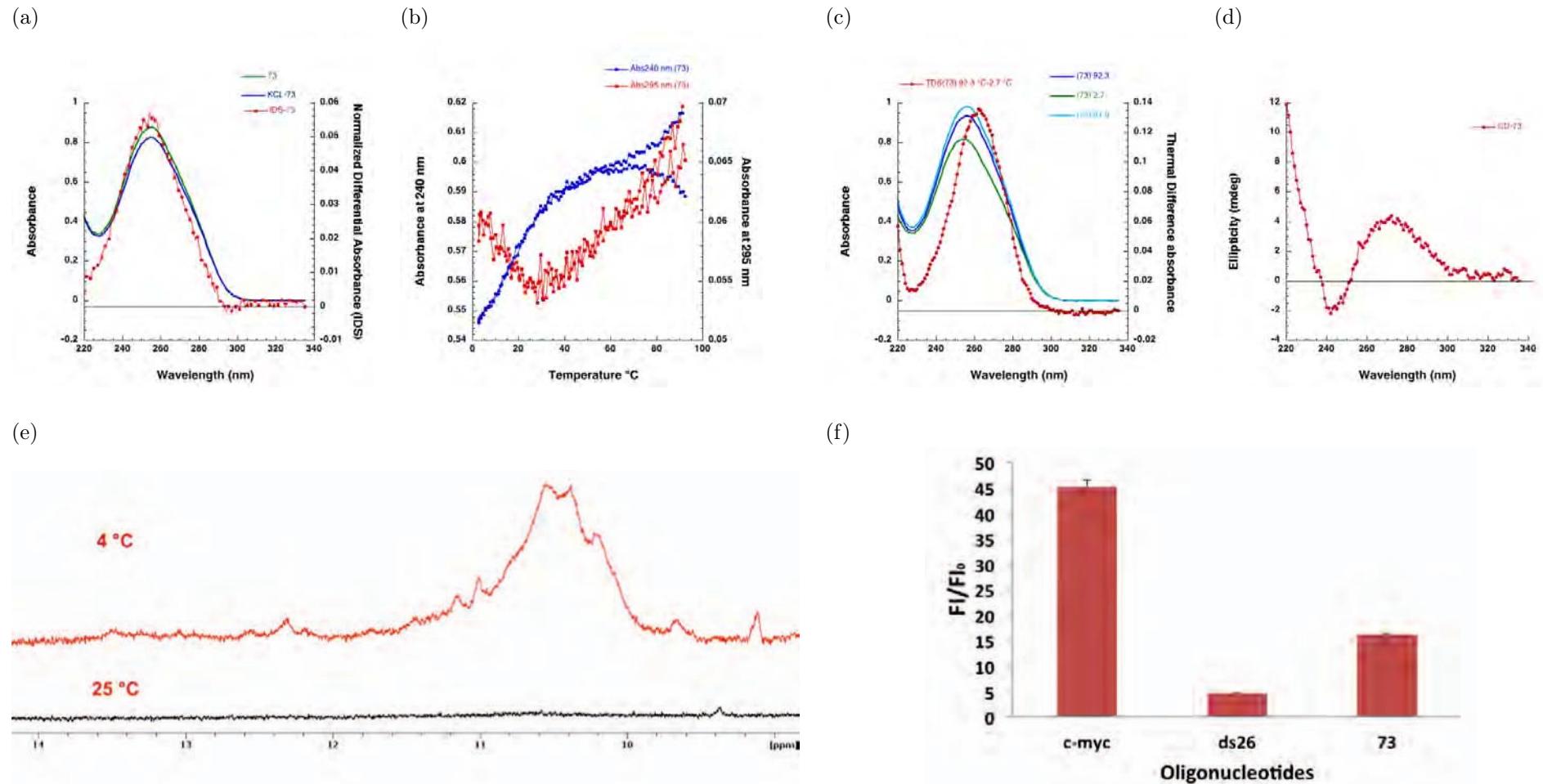
Table 75: Results interpretation of Mito 72

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	Yes (?)	No	Parallel	Yes (?)	++	G4

Name: Mito 73

Sequence:  $5' TGGTTCTA GGAATAAT GGGGGAAAGTATGTA GGAGG 3'$ 

Score: 1.0



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

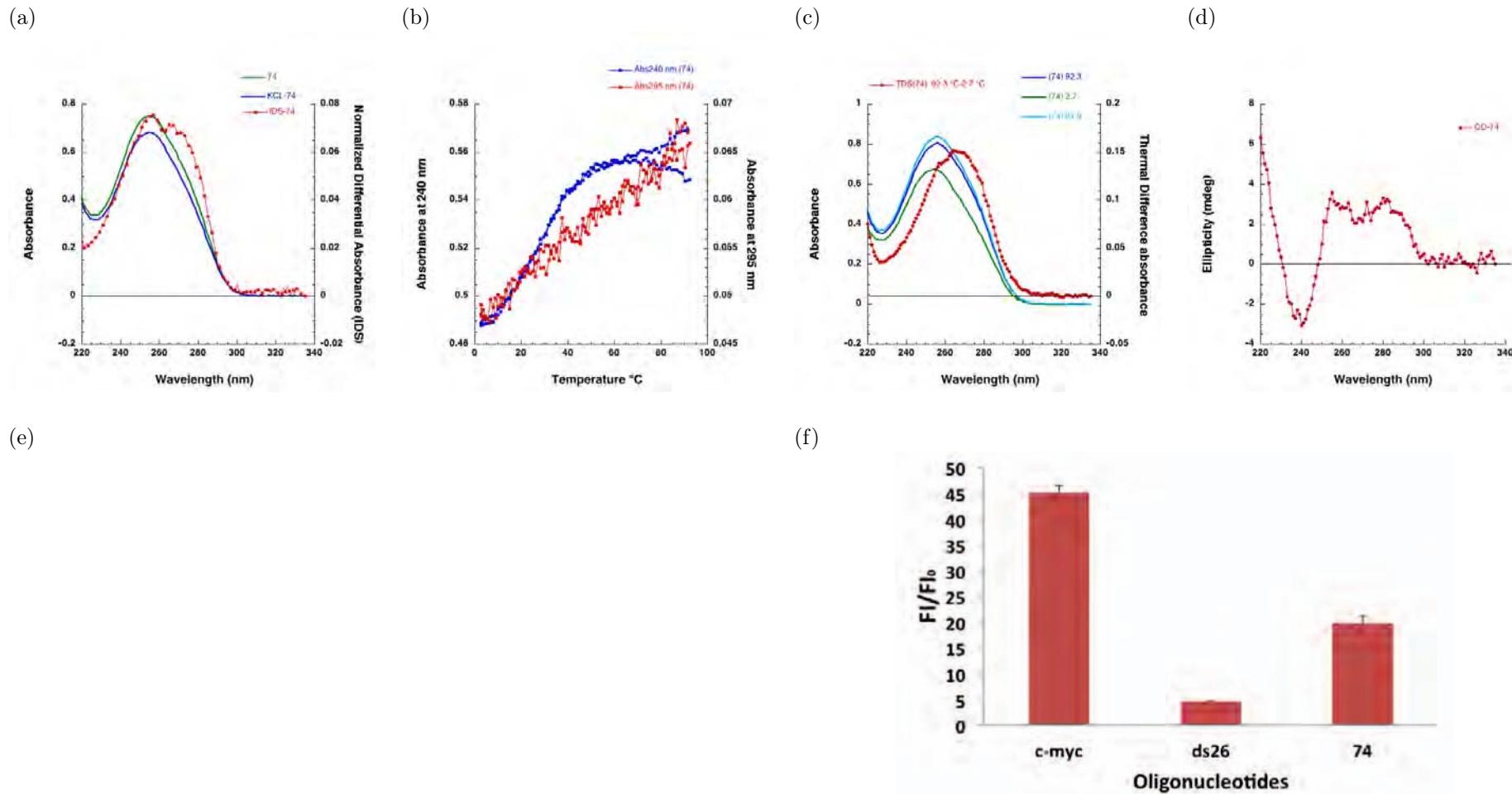
Table 76: Results interpretation of Mito 73

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	Yes (<37°C )	No	No	Yes	+	G4 (Unstable)

Name: Mito 74

Sequence:  $5' CGAAT\textcolor{red}{GGGGGCTTCAATCGGGAGT} 3'$

Score: 1.13



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

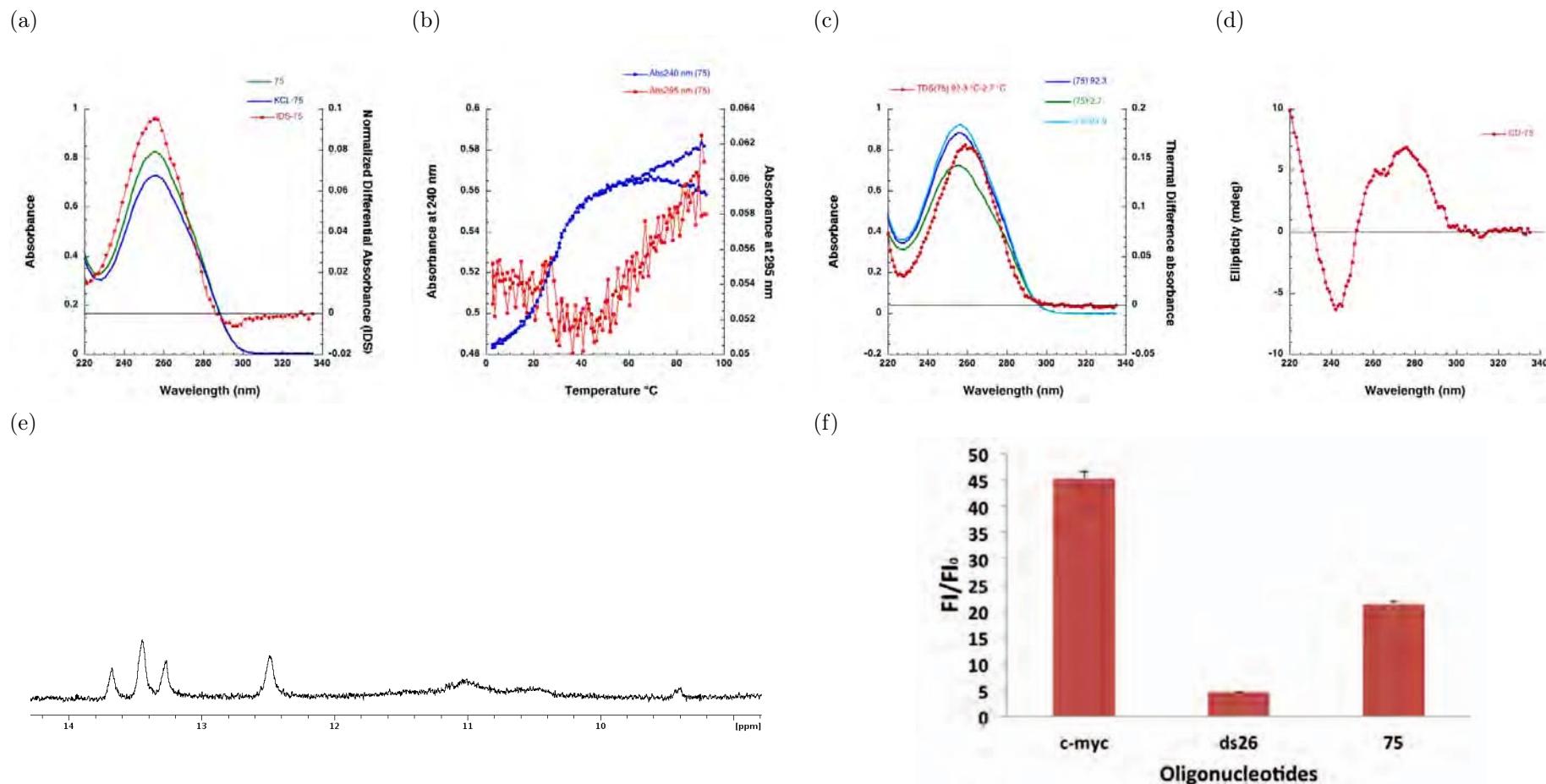
Table 77: Results interpretation of Mito 74

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	+	<b>Not G4</b>

Name: Mito 75

Sequence:  $5' A\textcolor{red}{GGGGAATTAAATTCTA} GGACGAT\textcolor{red}{GGG} 3'$

Score: 1.08



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 78: Results interpretation of Mito 75

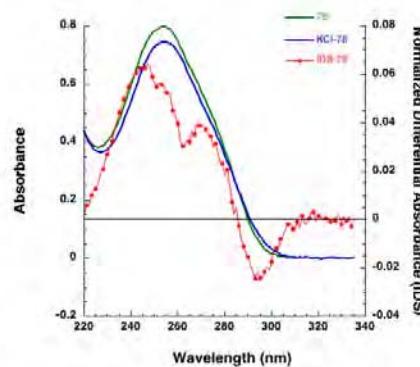
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	No	+	<b>Not G4</b>

Name: Mito 76

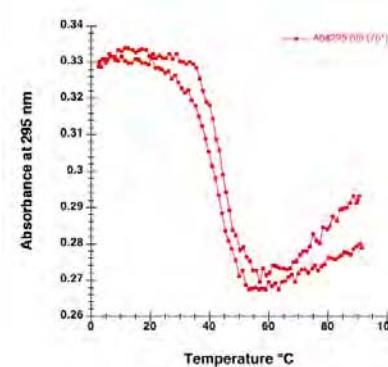
Sequence:  $5' \text{ TGGGCTCTA } \text{GA} \text{GGGGGTAGA} \text{GGGGGTGCTATA} \text{GGGTAATAAC} \text{GGGC } 3'$

Score: 1.41

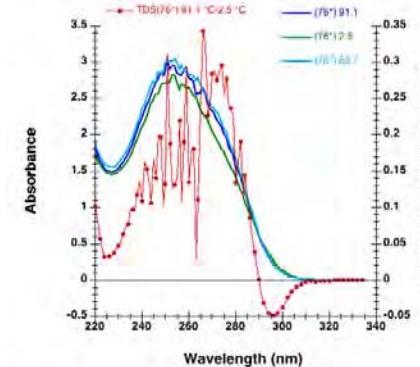
(a)



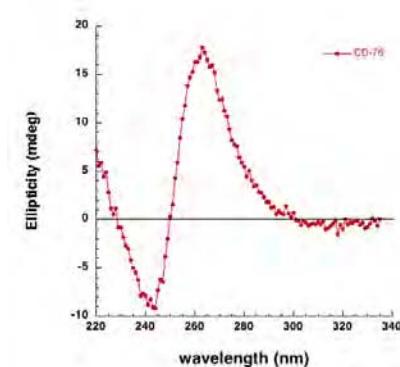
(b)



(c)

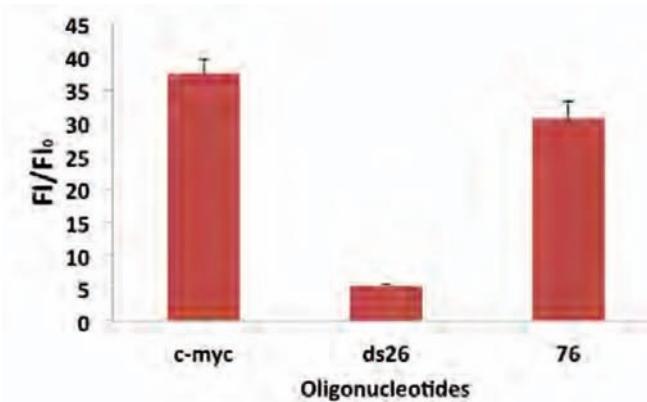


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

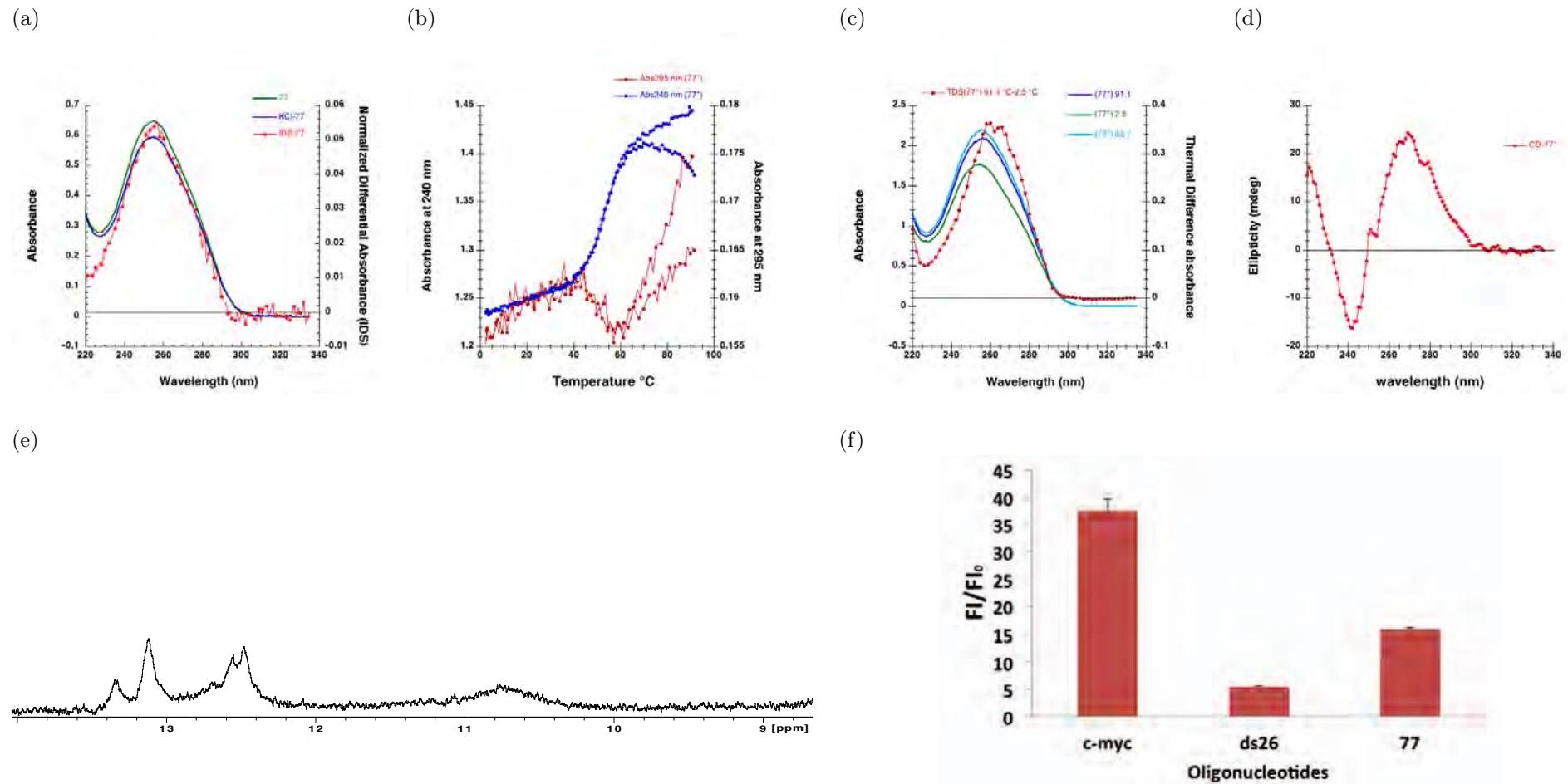
Table 79: Results interpretation of Mito 76

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Parallel	Not done	++	G4

Name: Mito 77

Sequence:  $5' A\textcolor{red}{GGAGTATGGGGTAATTATGGTGGGCCATACGG} 3'$

Score: 1.09



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 80: Results interpretation of Mito 77

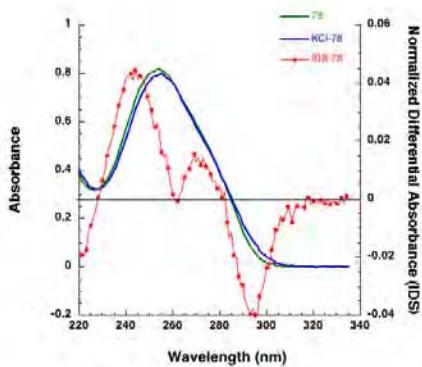
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	Yes(-)	No	No	No	+	<b>Not G4</b>

Name: Mito 78

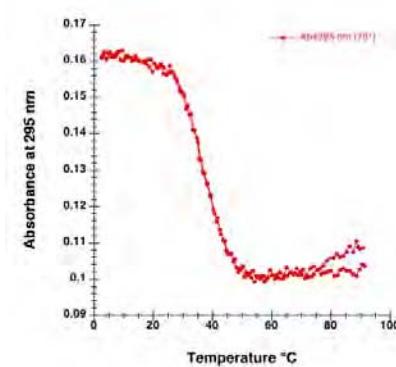
Sequence:  $5' ATGGGTTTGGTGAGGGAGGTA GGTGGT 3'$

Score: 1.3

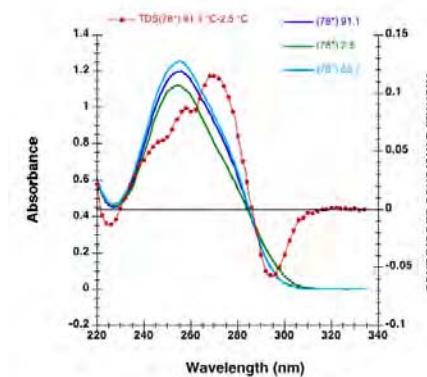
(a)



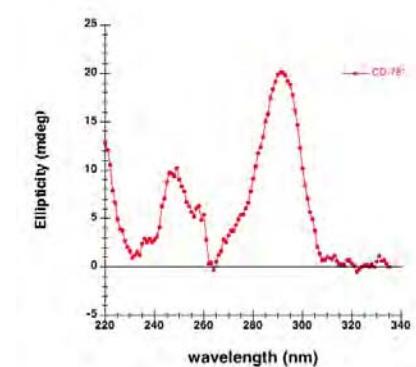
(b)



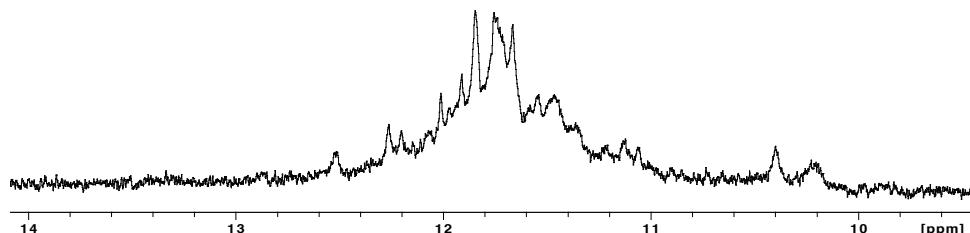
(c)



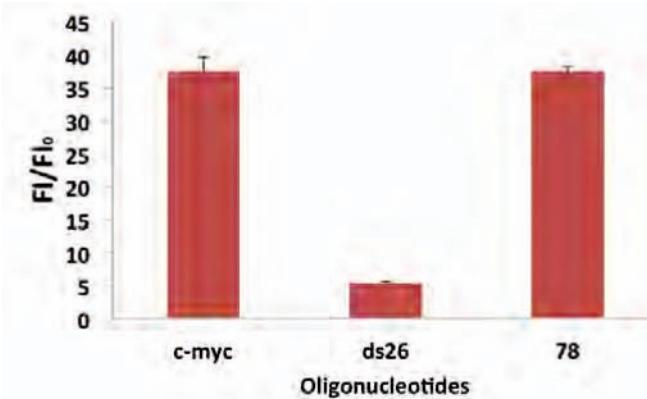
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a**) Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b**) Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c**) Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d**) Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e**) 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f**) Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

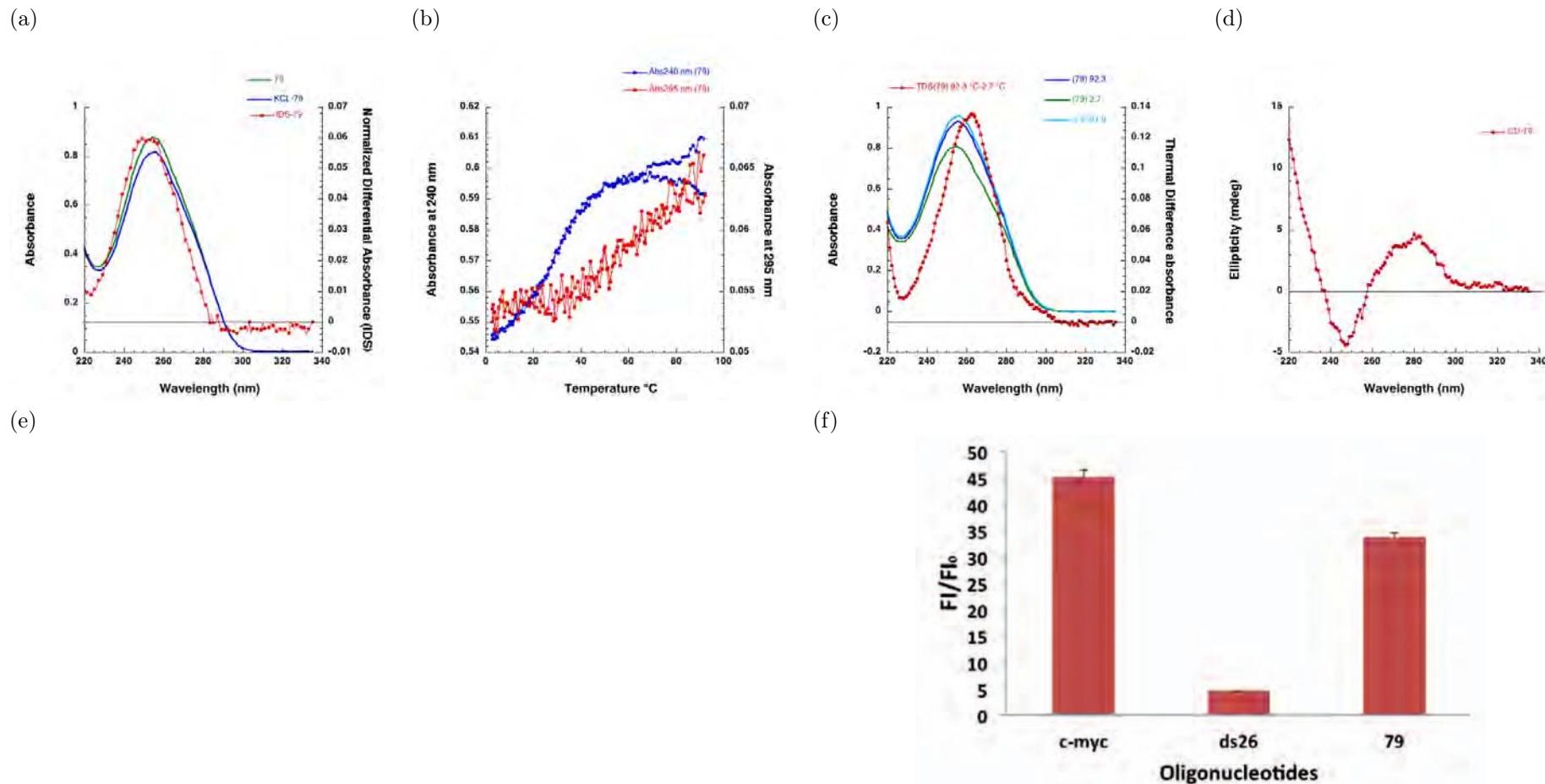
Table 81: Results interpretation of Mito 78

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Antiparallel	Yes	+++	G4

Name: Mito 79

Sequence:  ${}^5' TA GGATT GT GGGGG CAAT GAAT GAA G {}^3'$

Score: 1.04



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 82: Results interpretation of Mito 79

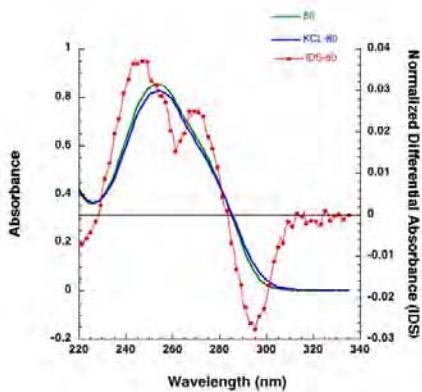
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	++	Not G4

Name: Mito 80

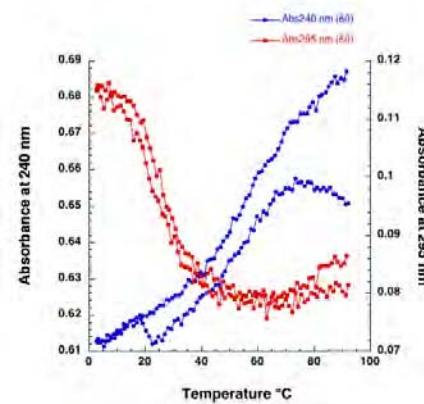
Sequence:  $5' \text{GC}GGCGGGTA\text{AGG}CCTA\text{GGATTGTGGGGGC} 3'$

Score: 1.24

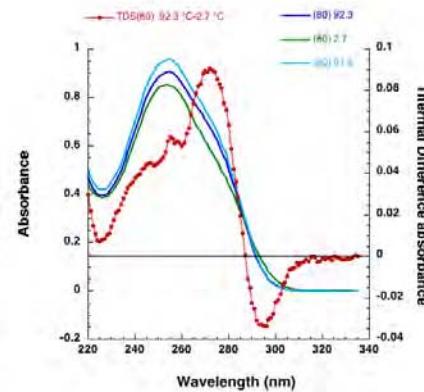
(a)



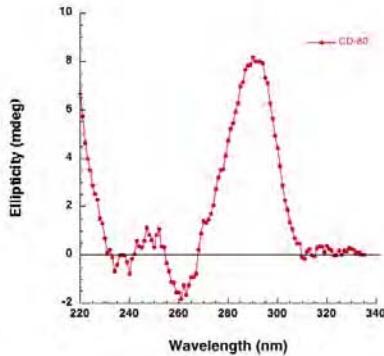
(b)



(c)

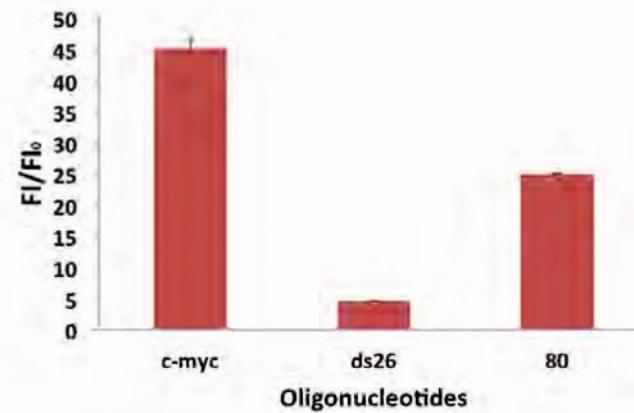


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

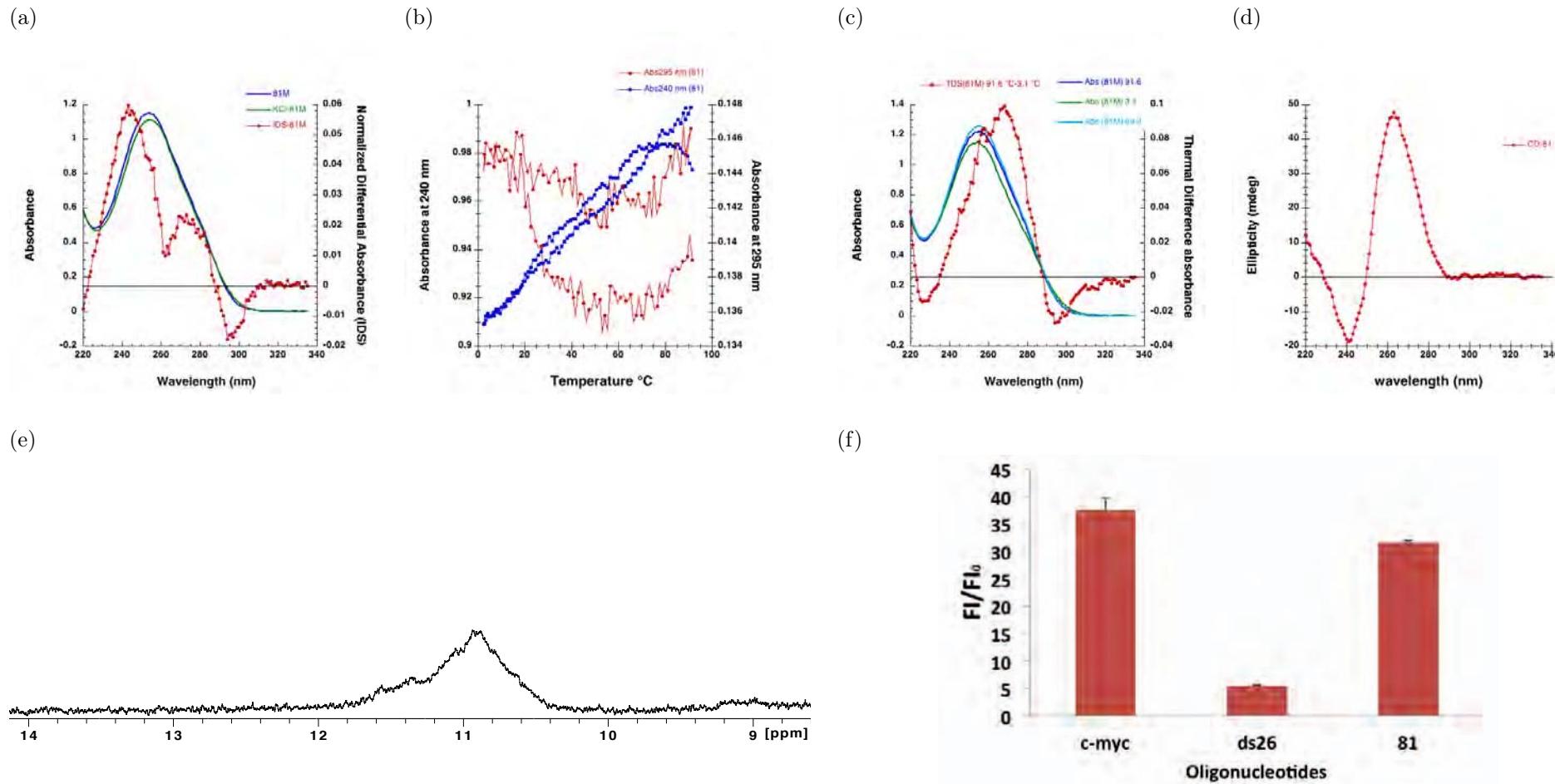
Table 83: Results interpretation of Mito 80

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes (<37°C)	Yes	Antiparallel	Not done	++	G4 (Unstable)

Name: Mito 81

Sequence: 5' TTGGAGGTGGGGATCAATAGA<sup>GGGGG</sup>A 3'

Score: 1.63



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 84: Results interpretation of Mito 81

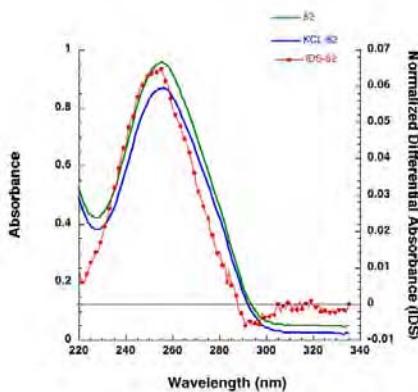
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Parallel	Yes	++	G4

Name: Mito 82

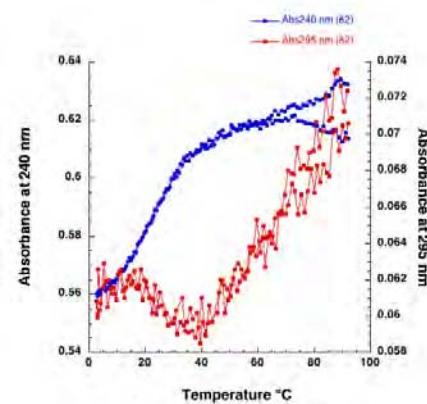
Sequence: *5' GATATTGGAGGTGGGGATCAATA G 3'*

Score: 1.0

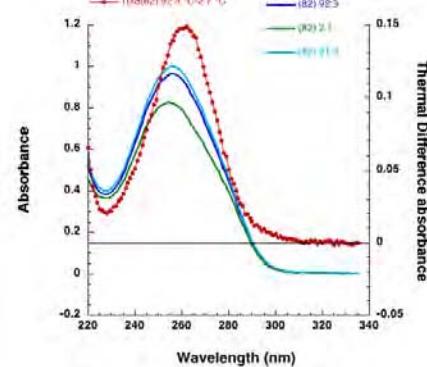
(a)



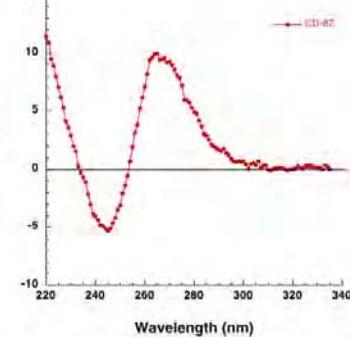
(b)



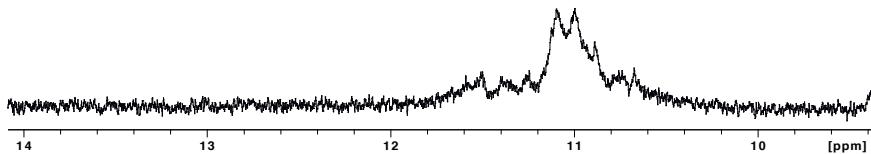
(c)



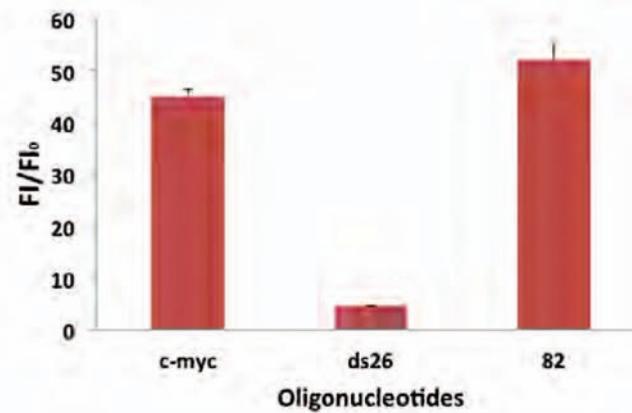
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 µM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 µM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 µM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 µM oligonucleotides and 0.5 µM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

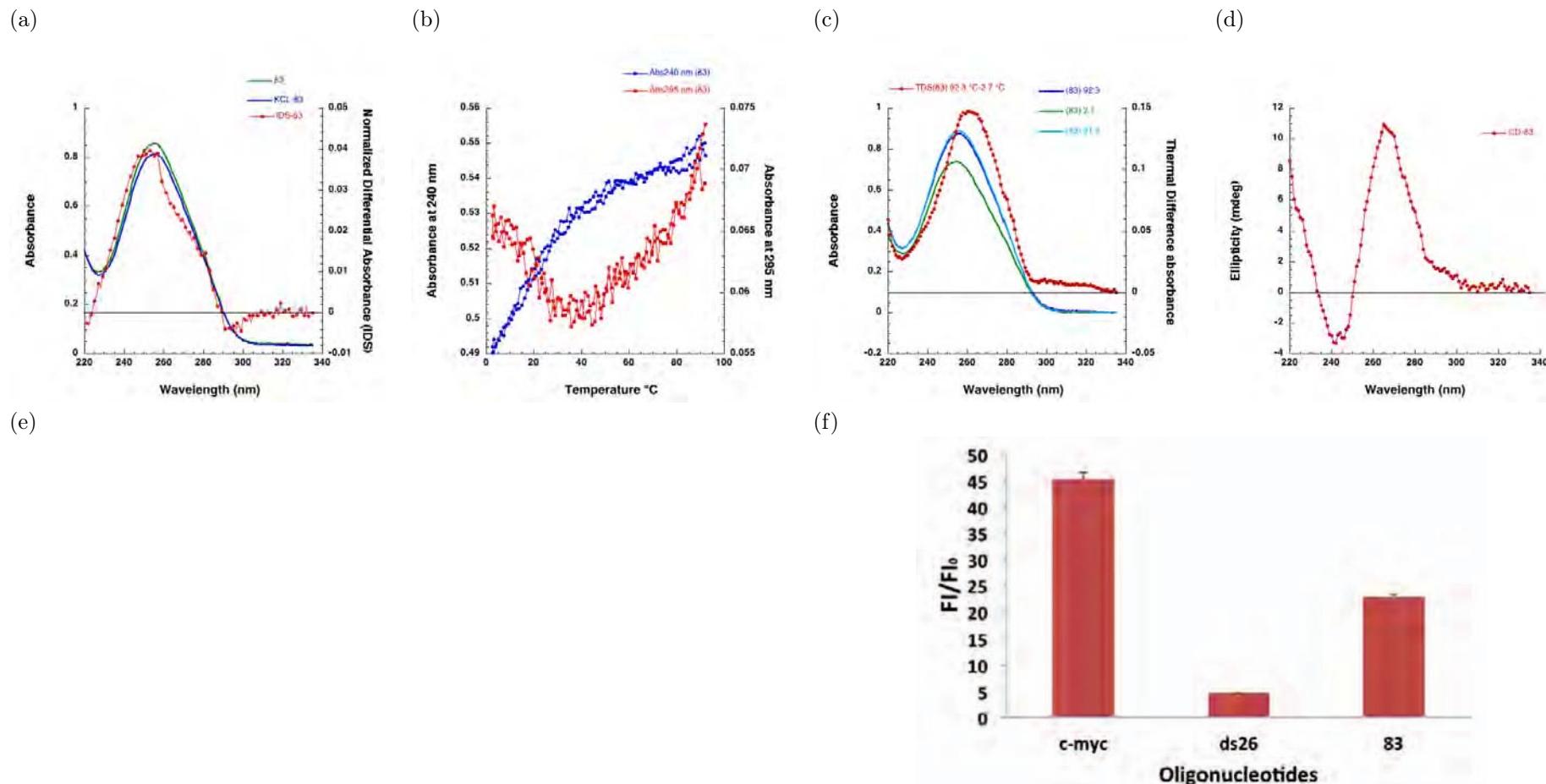
Table 85: Results interpretation of Mito 82

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	Yes? (<37°C)	No	Parallel	Yes	+++	G4 (Unstable)

Name: Mito 83

Sequence:  ${}^5' T G A T G A G A T A T T T G G A G G T G G G G A {}^3'$

Score: 1.12



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

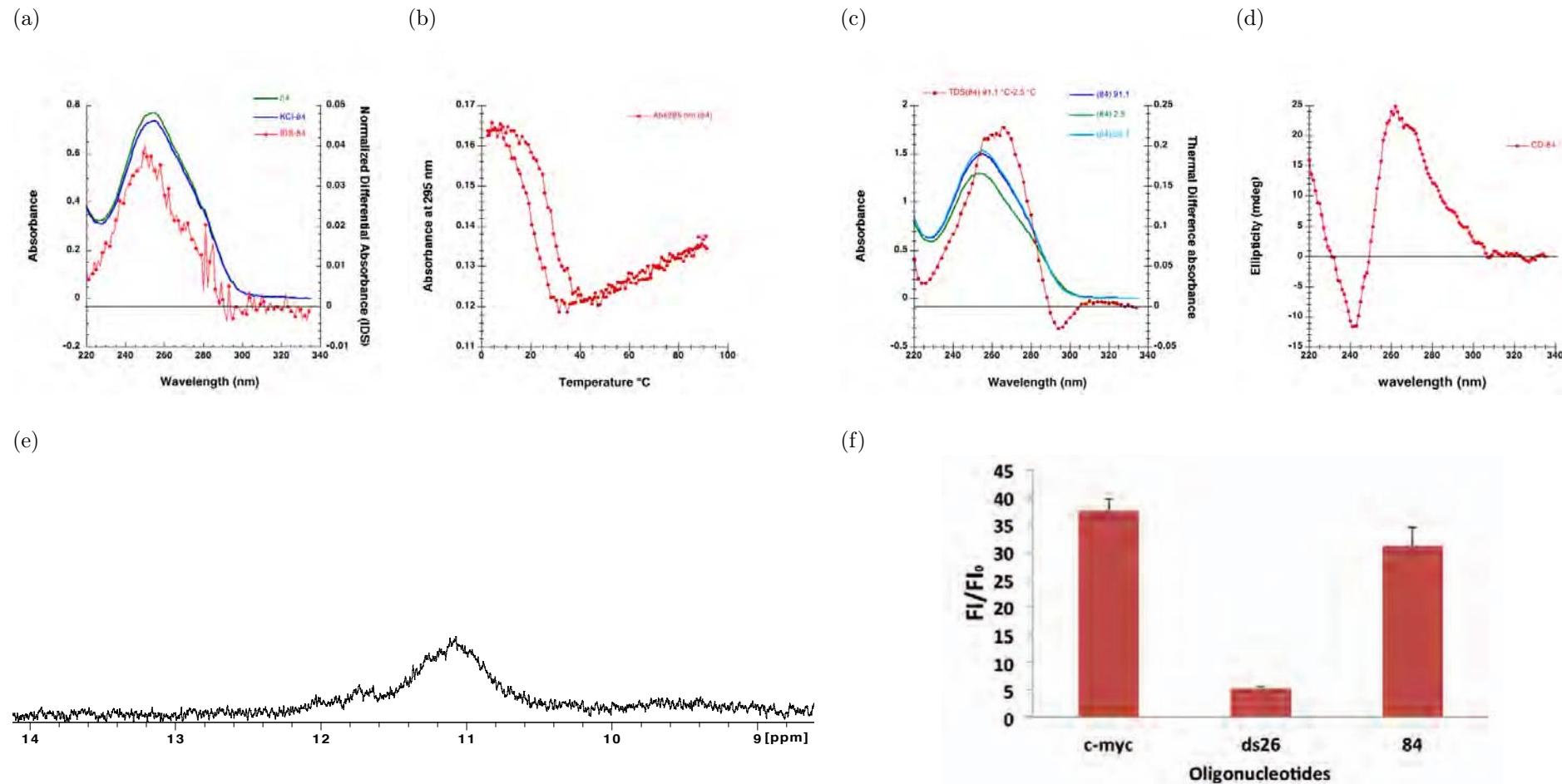
Table 86: Results interpretation of Mito 83

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	Yes? (<37°C)	No	Parallel	Not done	++	<b>Not G4</b>

Name: Mito 84

Sequence:  $5' \text{GGGTGGTTGGTGTAAATGAGTGAAGG} 3'$

Score: 1.0



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

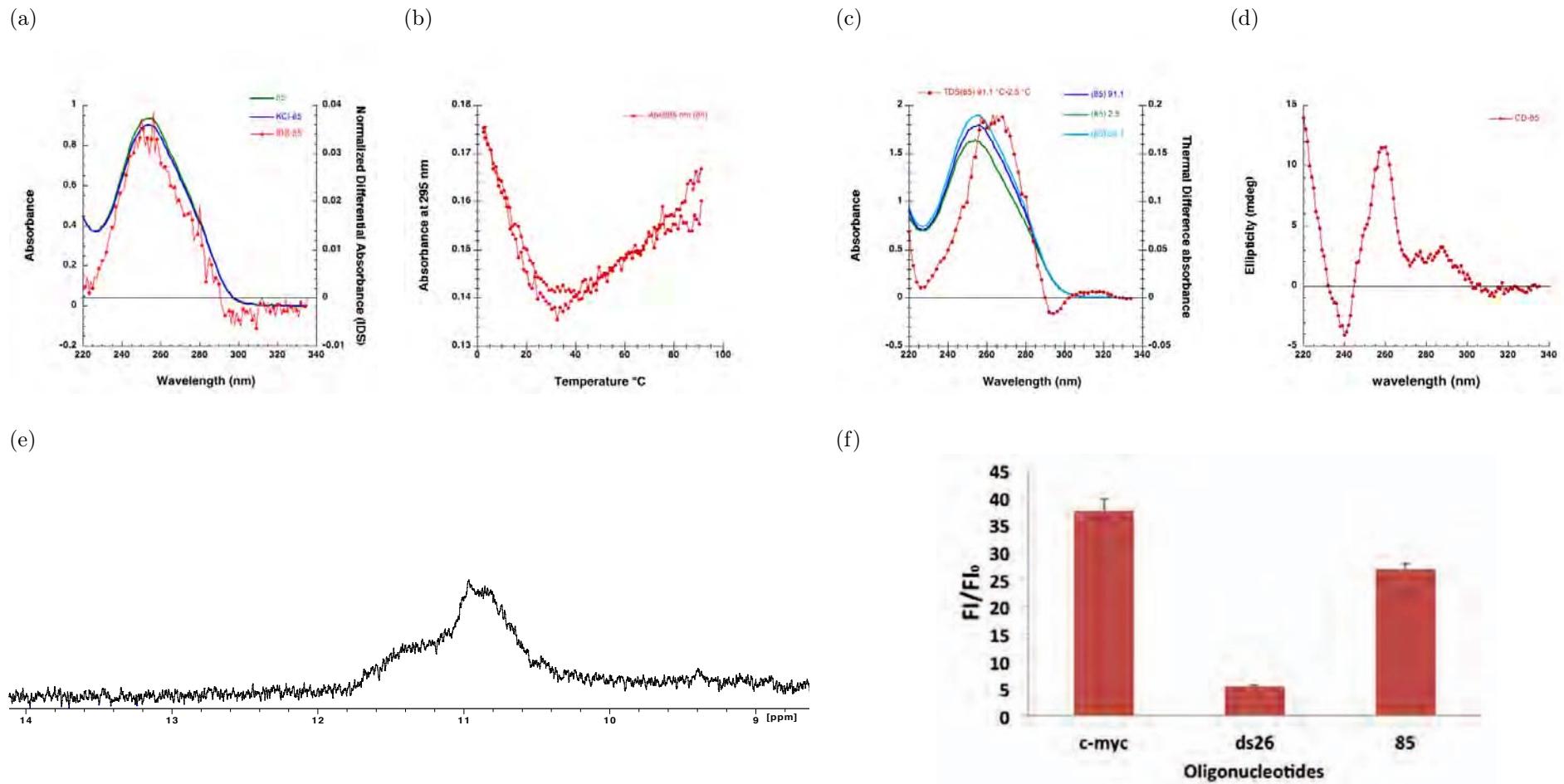
Table 87: Results interpretation of Mito 84

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	Yes (<37°C)	Yes	Parallel	Yes	++	G4 (Unstable)

Name: Mito 85

Sequence:  $5' A\textcolor{red}{GTATGGGGATAA} GGGGTGTA\textcolor{red}{GGTGTG} 3'$

Score: 1.48



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 88: Results interpretation of Mito 85

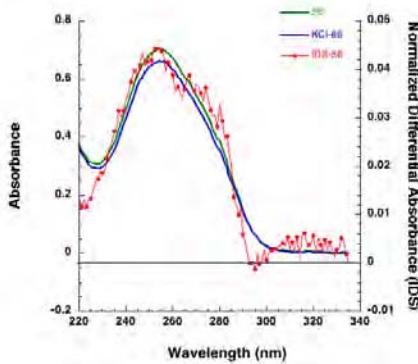
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	Yes (<37°C)	Yes (-)	?	Yes	++	<b>G4 (Unstable)</b>

Name: Mito 86

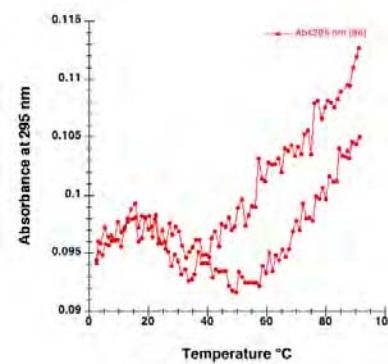
Sequence:  $5' TGT\textcolor{red}{TTA}GGGGTCATGGGCTGGG 3'$

Score: 1.5

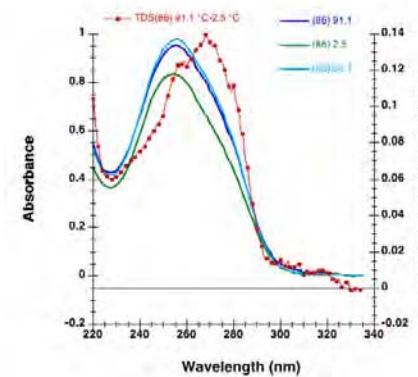
(a)



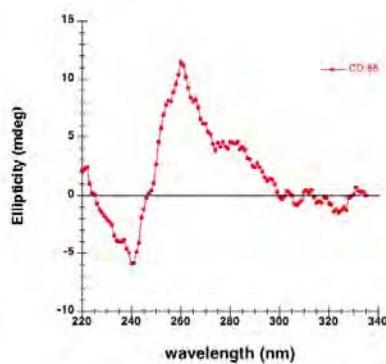
(b)



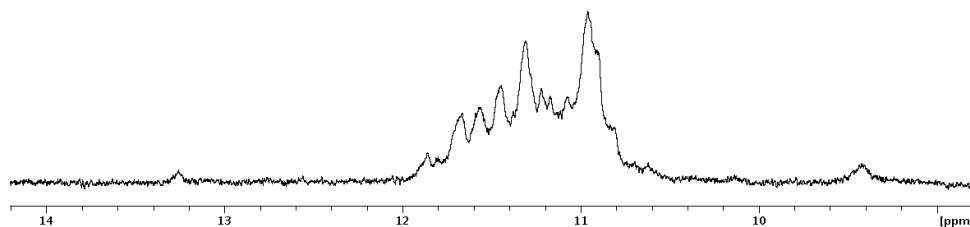
(c)



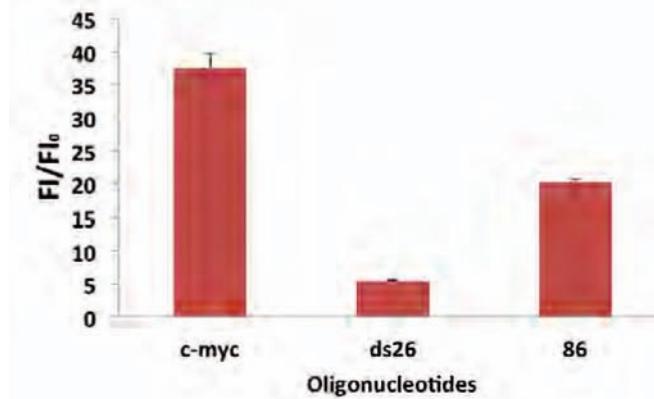
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

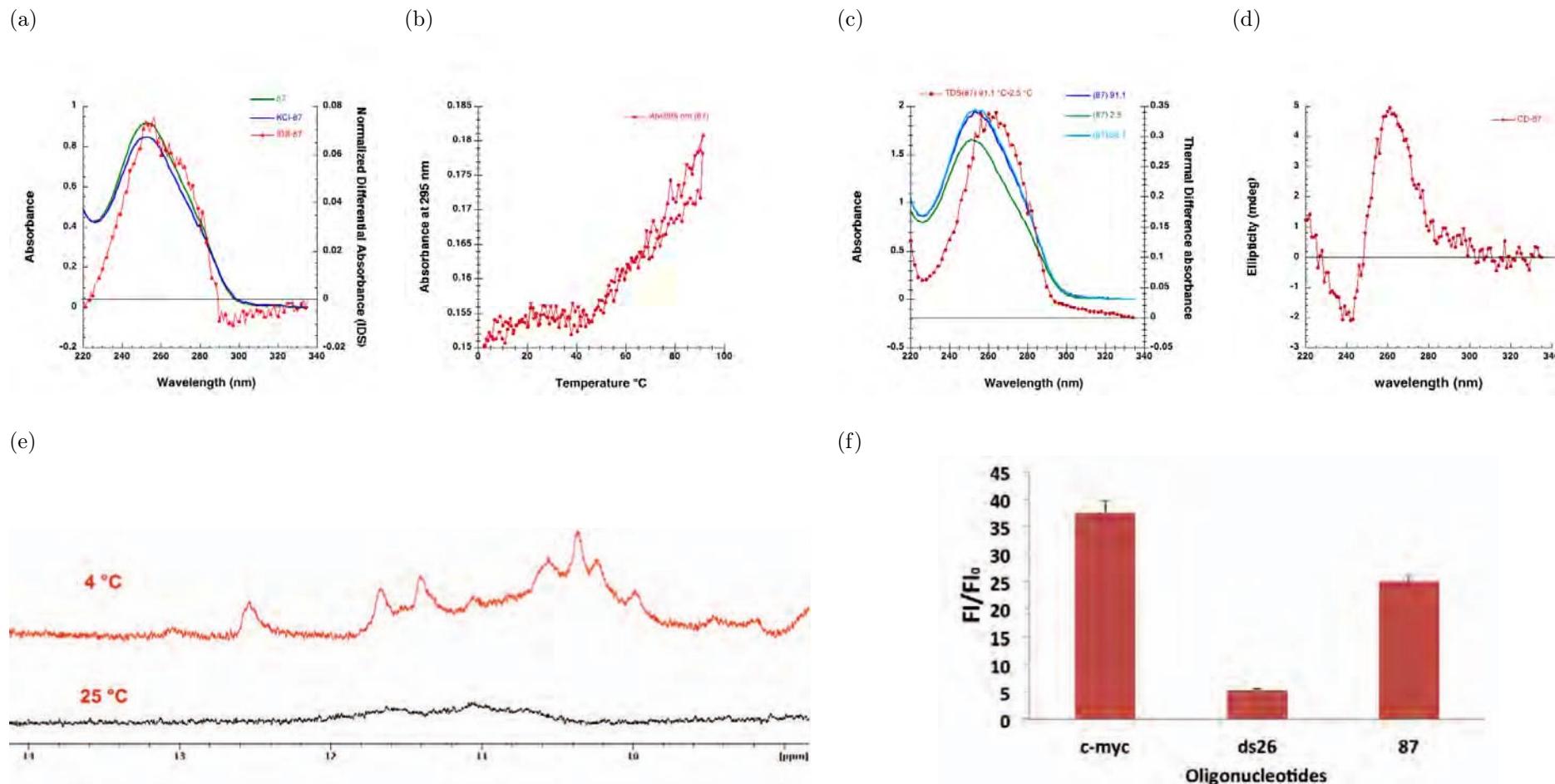
Table 89: Results interpretation of Mito 86

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	Yes (<37°C)	No	??	Yes	++	<b>G4 (Unstable)</b>

Name: Mito 87

Sequence: *5' GGAGGTTCATTA<sup>GGAGGGCTGAGAGGG</sup> 3'*

Score: 1.15



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 µM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 µM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 µM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 µM oligonucleotides and 0.5 µM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

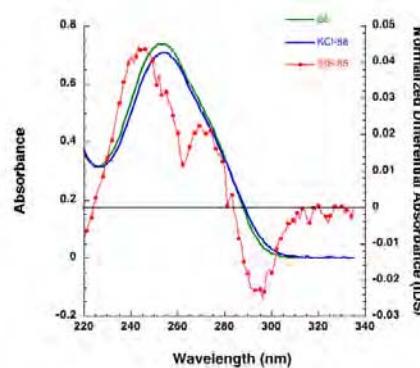
Table 90: Results interpretation of Mito 87

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	Parallel	Yes	++	G4 (Unstable)

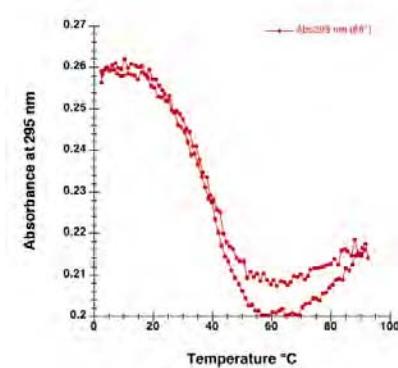
Name: Mito 88

Sequence:  $5' A\textcolor{red}{GTTGGGGGGTAGGGGCTAGGCTGGAGTGGTAAAAGGC} 3'$  Score: 1.45

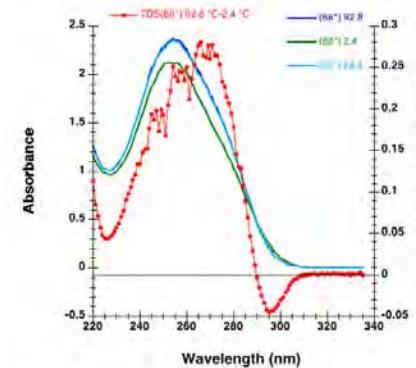
(a)



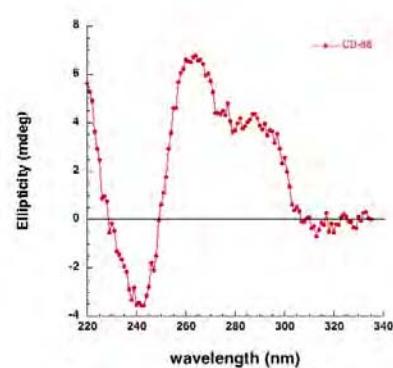
(b)



(c)

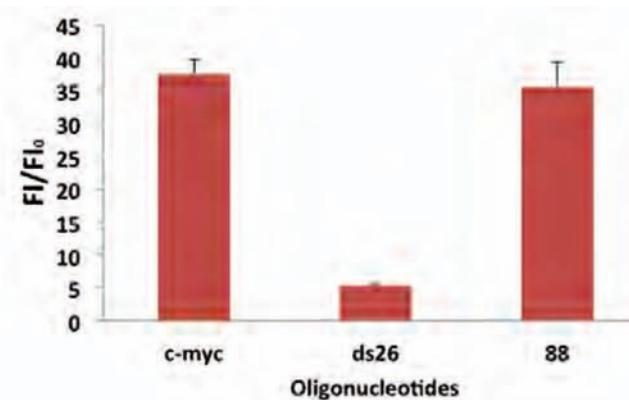


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a**) Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b**) Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c**) Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d**) Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e**) 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f**) Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

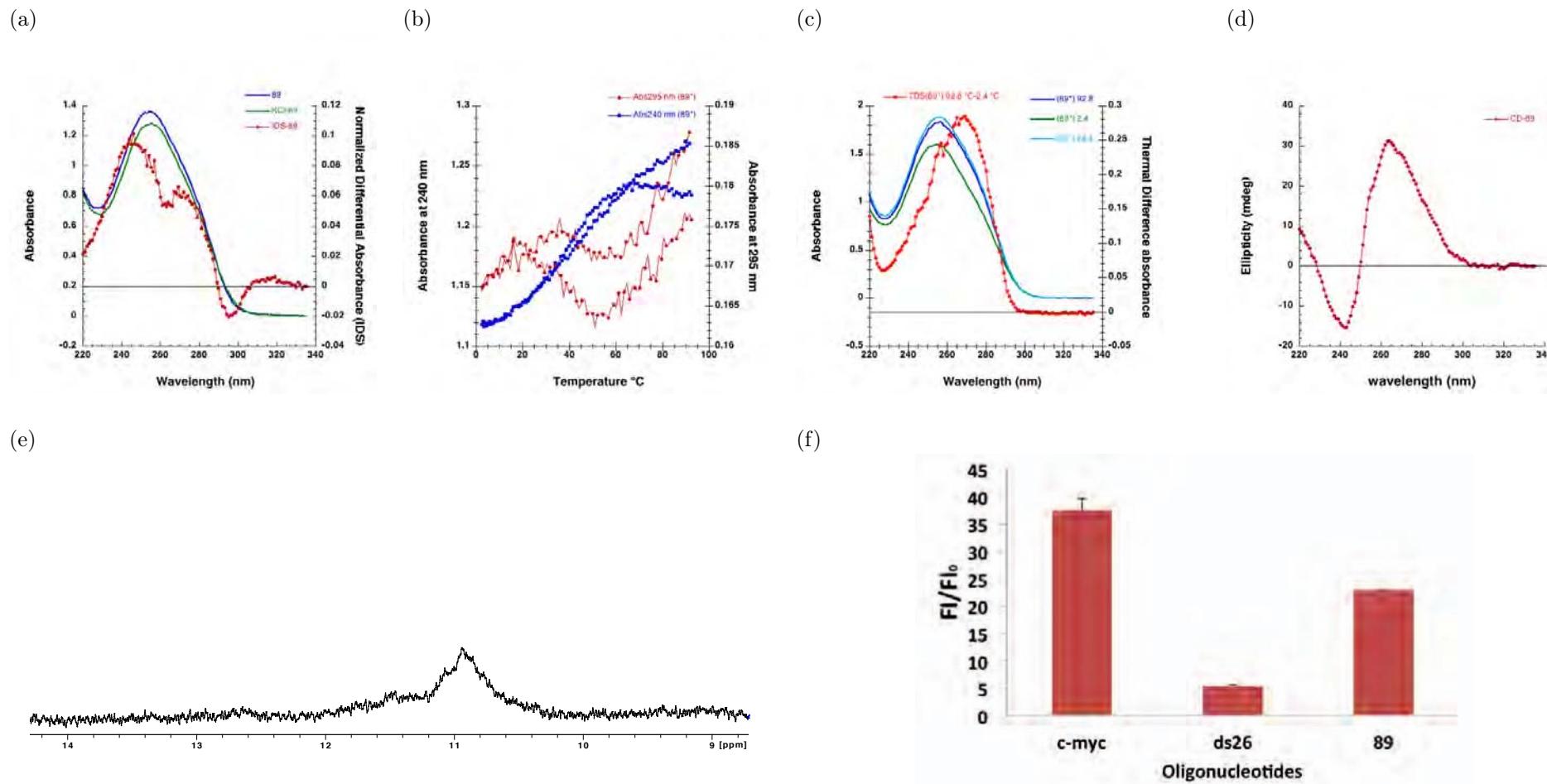
Table 91: Results interpretation of Mito 88

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Mixed	Not done	+++	G4

Name: Mito 89

Sequence: *5' TAGGA GTGGGACTTCTA GGGGATTAA GC GGGGTGATGCCTGTTGGGGC 3'*

Score: 1.27



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 92: Results interpretation of Mito 89

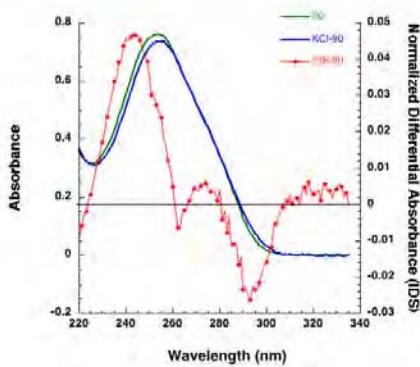
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	No	Parallel	Yes	++	G4

Name: Mito 90

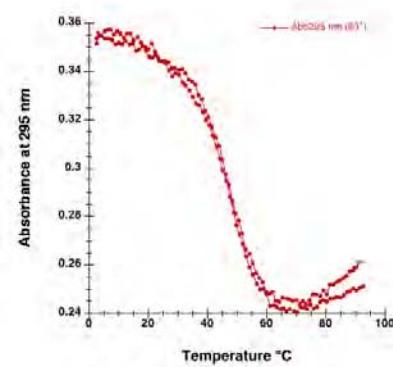
Sequence:  ${}^5' TGGAGAAA GGGACGC GGCG C GGGGG ATATA GGGT {}^3'$

Score: 1.52

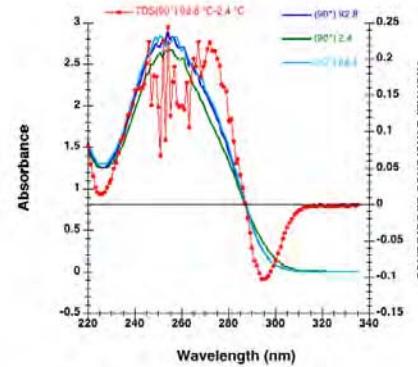
(a)



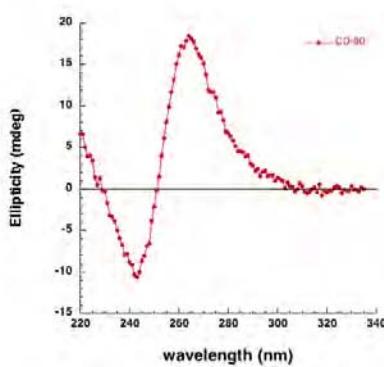
(b)



(c)

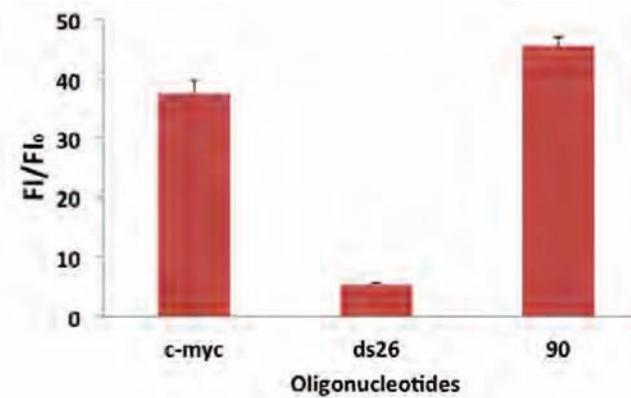


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

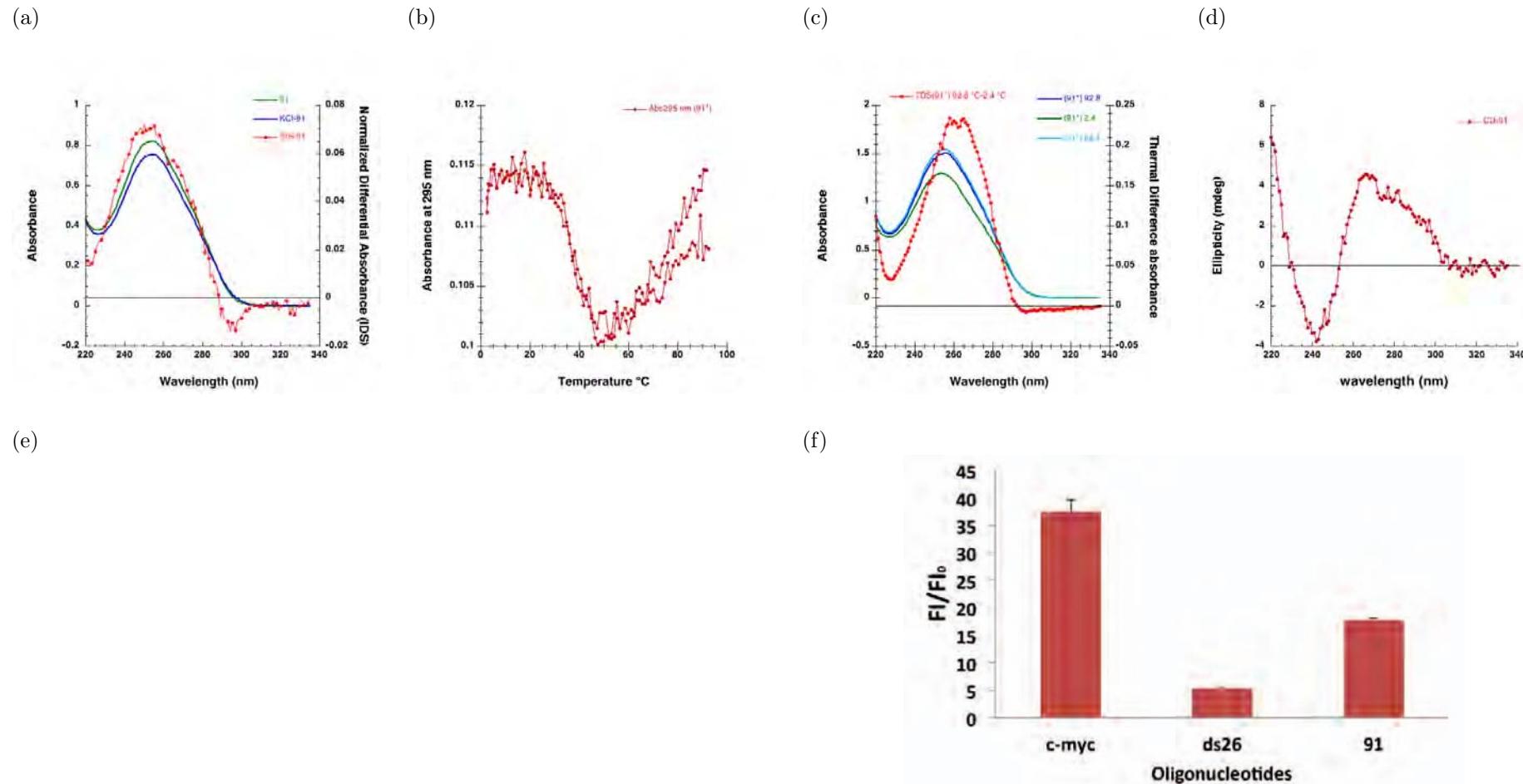
Table 93: Results interpretation of Mito 90

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Mixed	Not done	+++	G4

Name: Mito 91

Sequence: 5' A<sup>G</sup><sub>3</sub>GGGCTCATGGTA<sup>G</sup><sub>4</sub>GGGTAAAA<sup>G</sup><sub>2</sub>GA<sup>G</sup><sub>2</sub>GGCA 3'

Score: 1.3



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

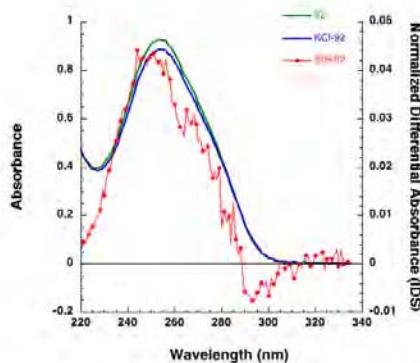
Table 94: Results interpretation of Mito 91

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes (-)	Yes	No	Mixed	Not done	++	<b>G4</b>

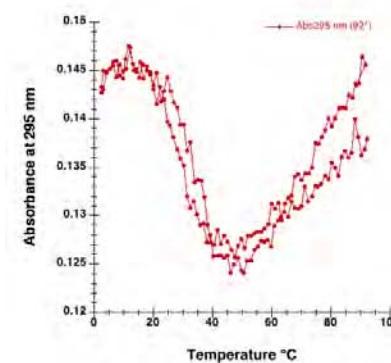
Name: Mito 92

Sequence:  $5' TGGCTAACAGGGAGTGGGTGTTGAGGGTTATGAGAG 3'$  Score: 1.03

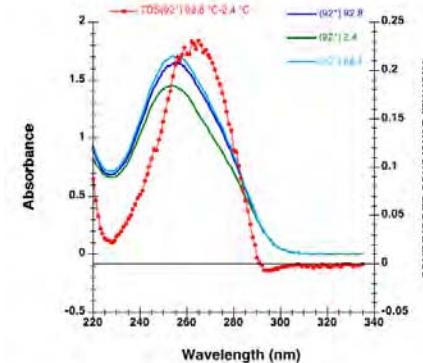
(a)



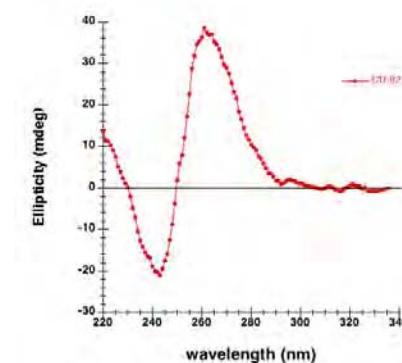
(b)



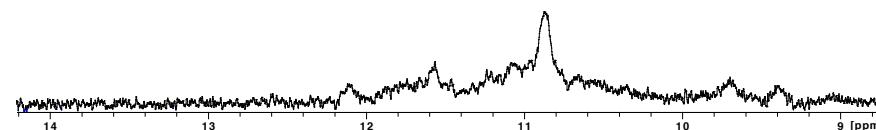
(c)



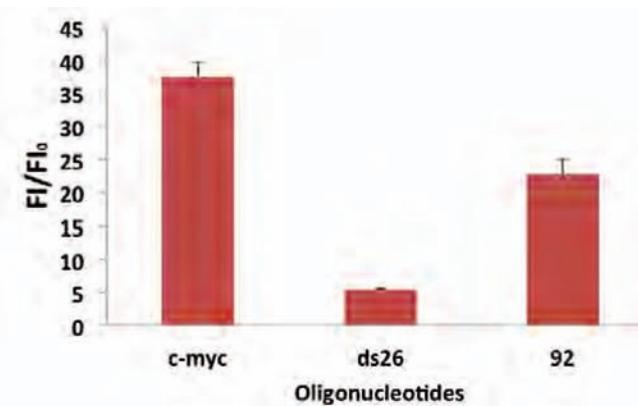
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

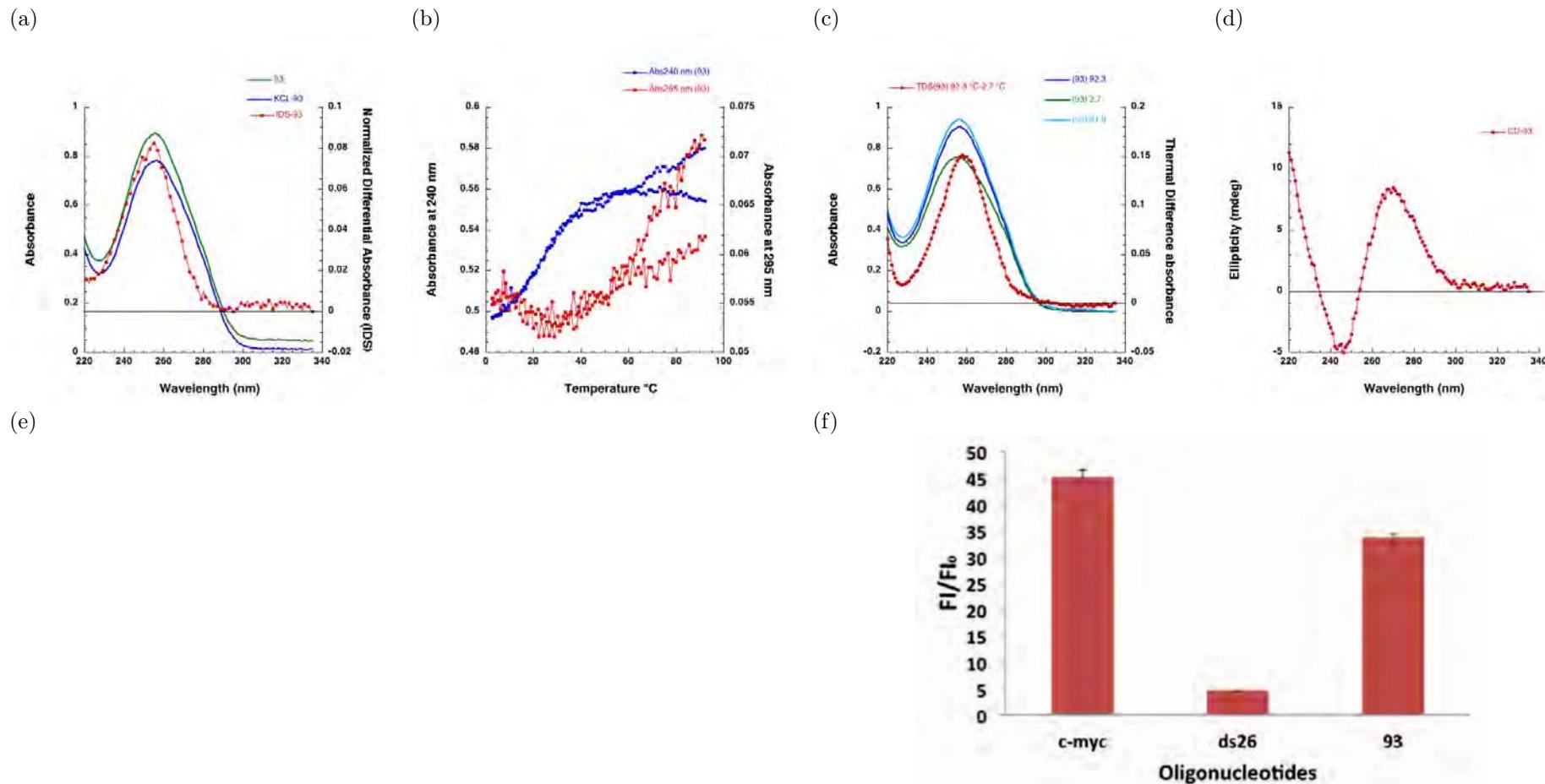
Table 95: Results interpretation of Mito 92

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes (-)	Yes (<37°C)	No	Parallel	Yes (-)	++	G4 (Unstable)

Name: Mito 93

Sequence:  $5' TA\textcolor{red}{GGGGGATGATGCTAATAATTAGG} 3'$

score: 1.0



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 96: Results interpretation of Mito 93

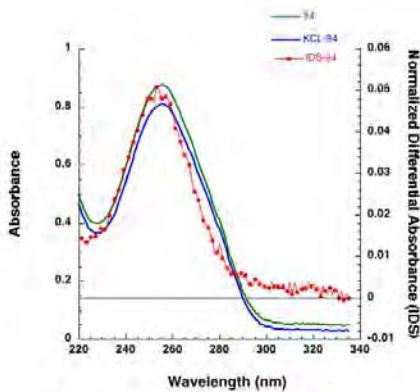
Technique	IDS	TM	TDS	CD	RMN	Thioflavine	G4
Result (G4 ?)	No	No	No	No	Not done	++	<b>Not G4</b>

Name: Mito 94

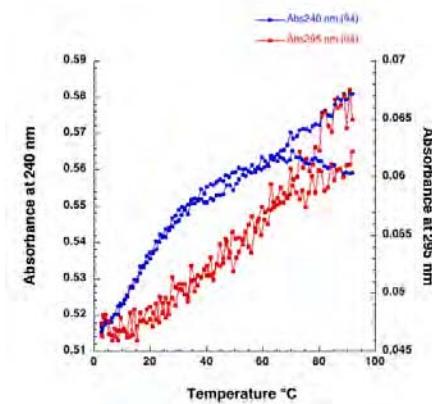
Sequence:  $5' GATTTGGTTAAAAAATA GTA GGGGGATGATG 3'$

score: 0.9

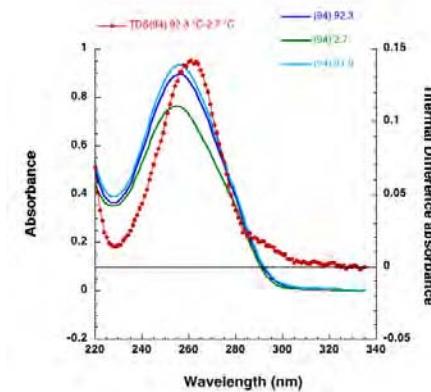
(a)



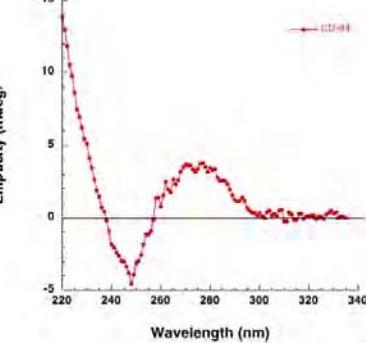
(b)



(c)

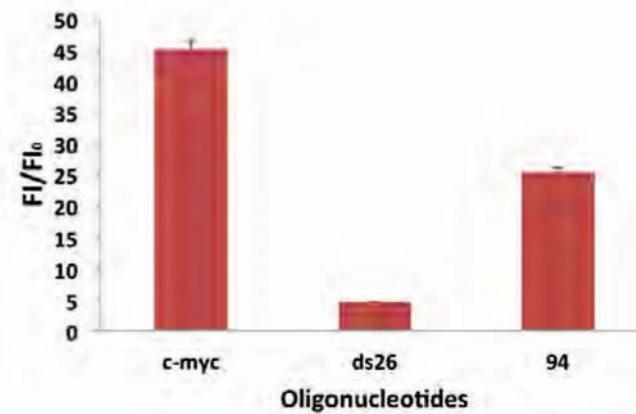


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

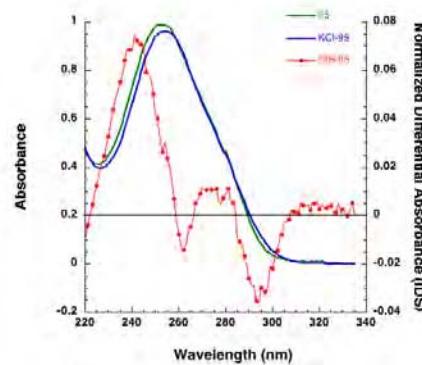
Table 97: Results interpretation of Mito 94

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	++	Not G4

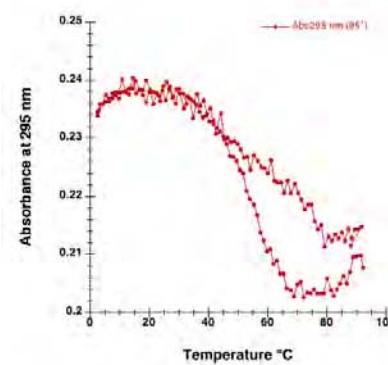
Name: Mito 95

Sequence: *5' AGGAGGGGGTTGTTAAGGGGTCGGAGGAAAAAGGTTGGGA 3'* Score: 1.85

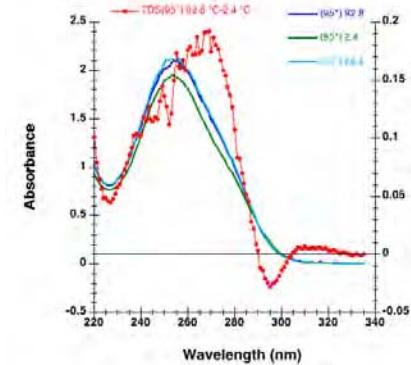
(a)



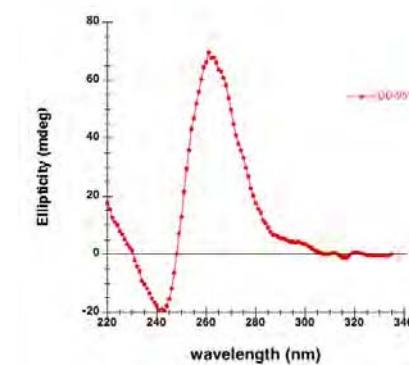
(b)



(c)

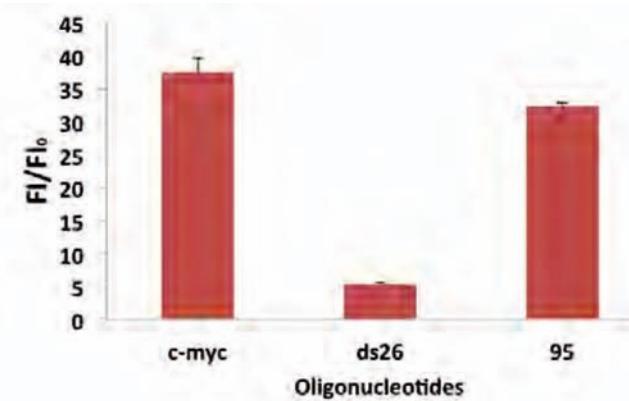


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 98: Results interpretation of Mito 95

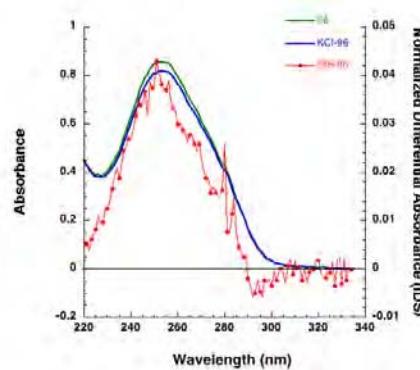
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Parallel	Not done	++	G4

Name: Mito 96

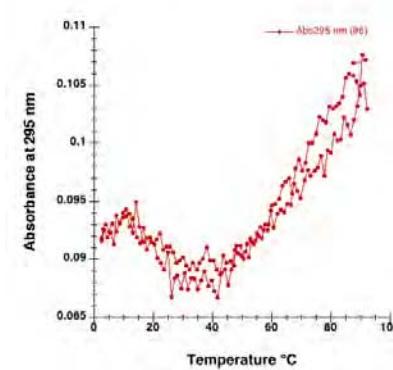
Sequence:  $5' TGTGA GGGG TAGGAGTCA GGT 3'$

Score: 1.24

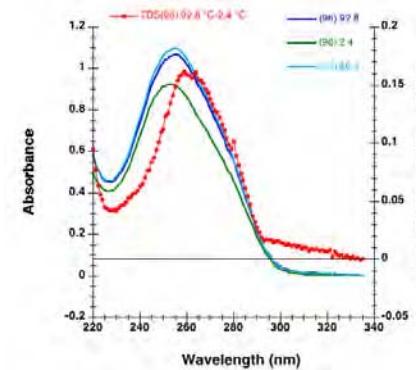
(a)



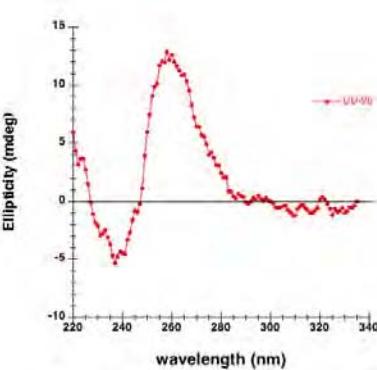
(b)



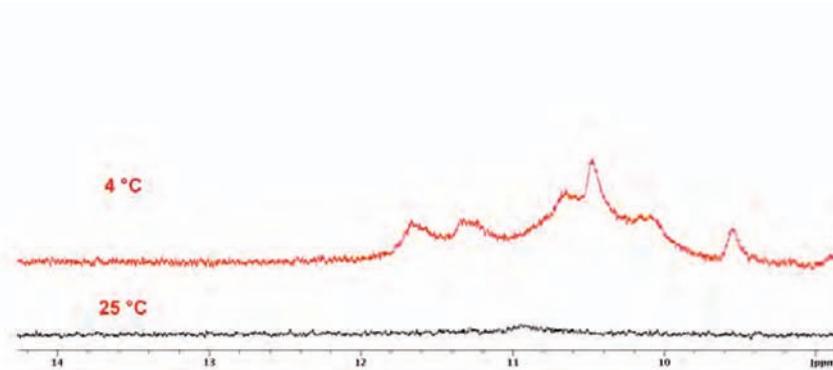
(c)



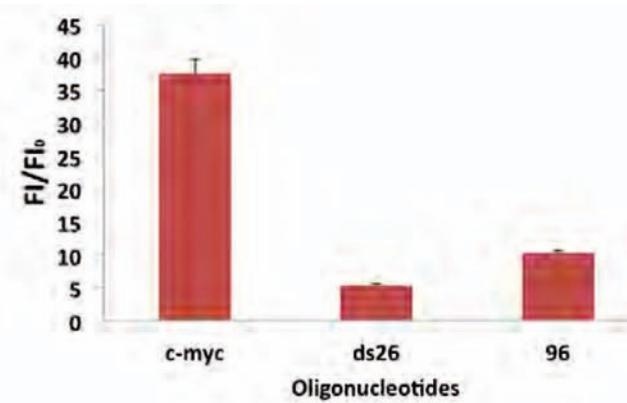
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

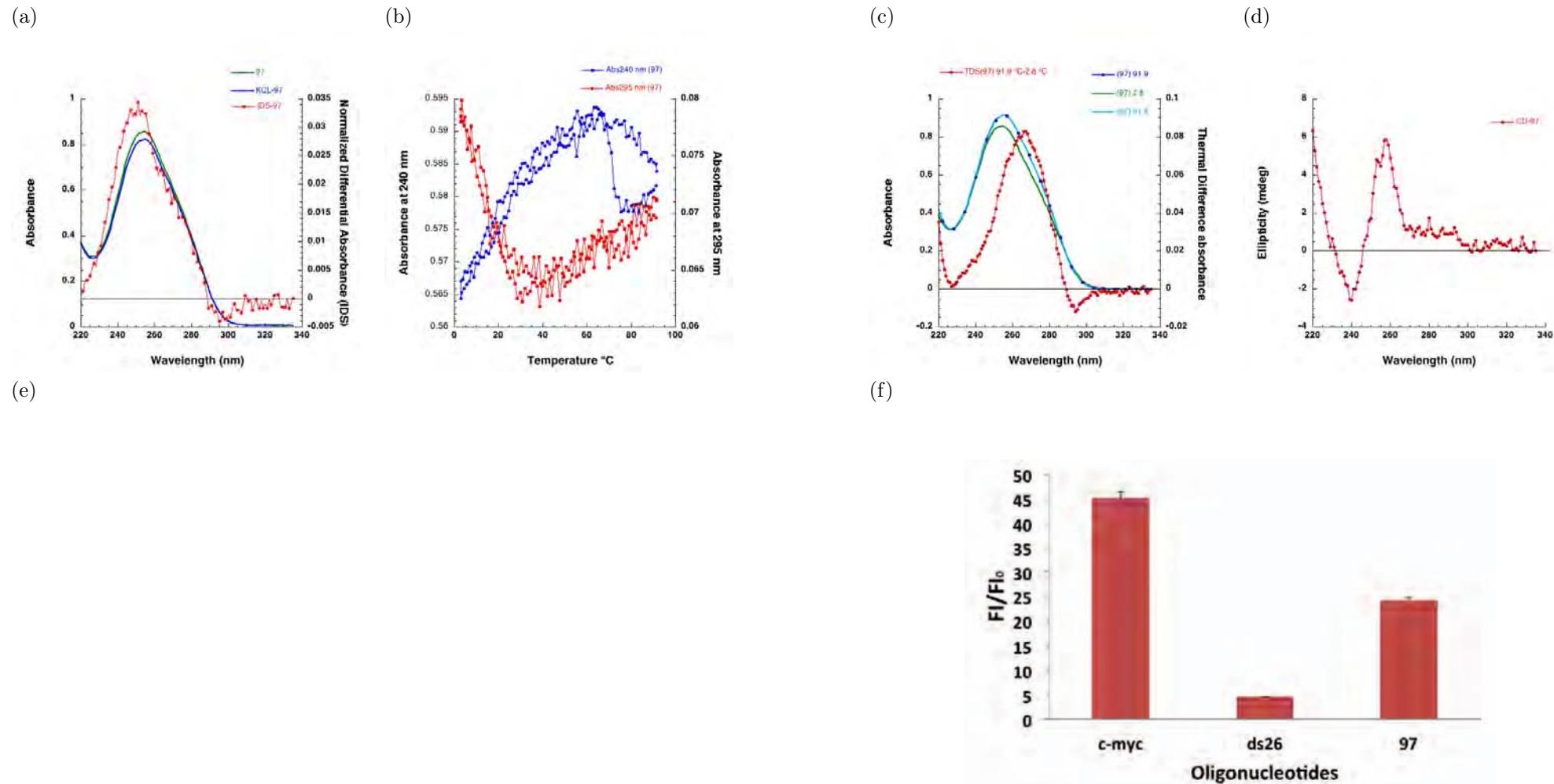
Table 99: Results interpretation of Mito 96

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	Yes (<37°C)	No	??	Yes	+/-	G4 (Unstable)

Name: Mito 97

Sequence:  $5' A\textcolor{red}{GGTGGGGATAA} GTGTGGT 3'$ 

Score: 1.37



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 100: Results interpretation of Mito 97

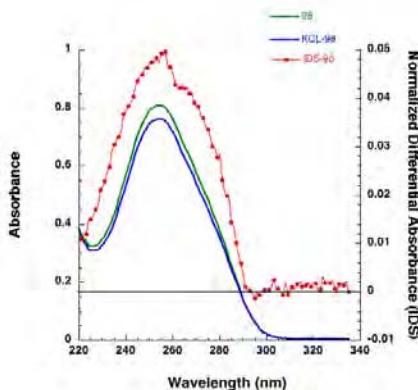
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	Yes (<37°C)	Yes	Parallel	Not done	++	<b>G4 (Unstable)</b>

Name: Mito 98

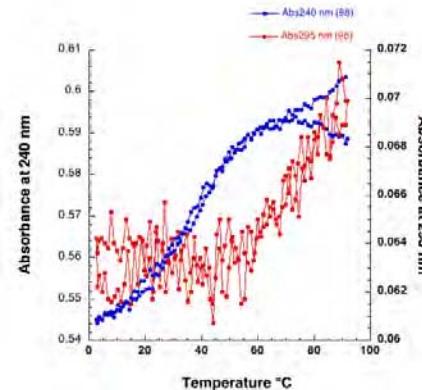
Sequence:  $5' C G G G T G A T G A T A G C C A A G G T G G G G A 3'$

Score: 1.08

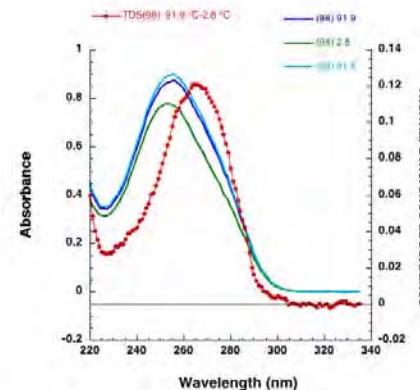
(a)



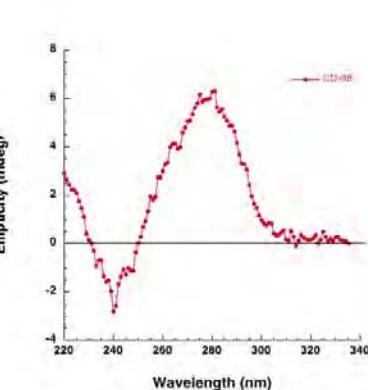
(b)



(c)

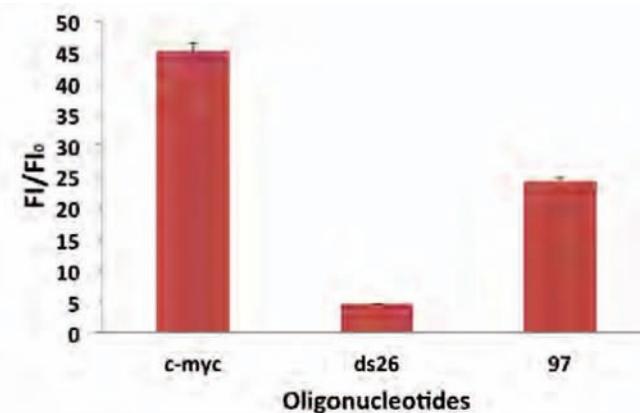


(d)



(e)

(f)



In vitro characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

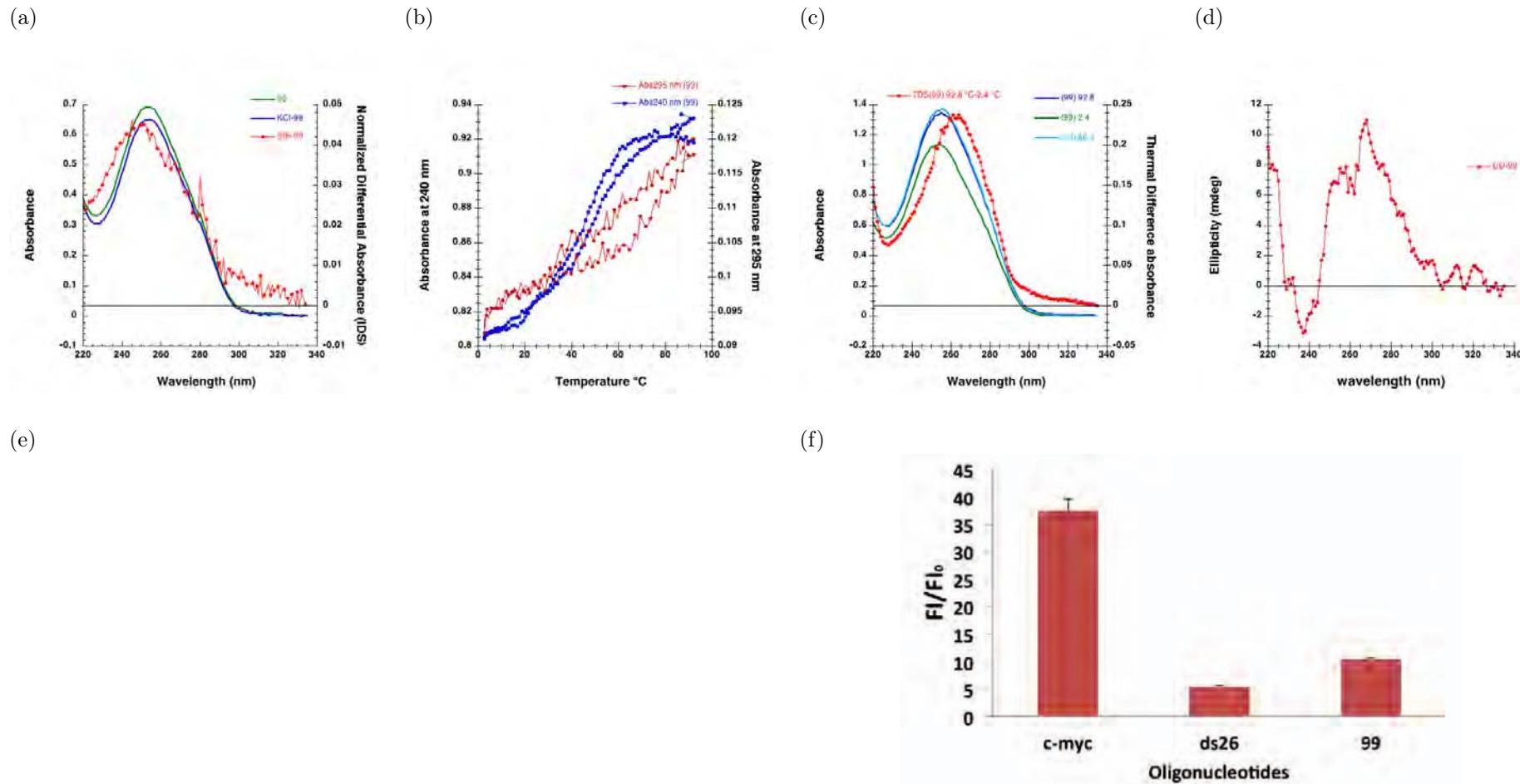
Table 101: Results interpretation of Mito 98

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	++	Not G4

Name: Mito 99

Sequence: 5' TGAGTA~~GGGGAA~~GGGAGCCTACTA~~GGT~~ 3'

Score: 1.14



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence (right).

Table 102: Results interpretation of Mito 99

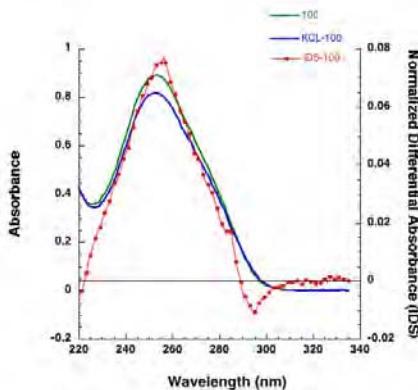
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	+/-	<b>Not G4</b>

Name: Mito 100

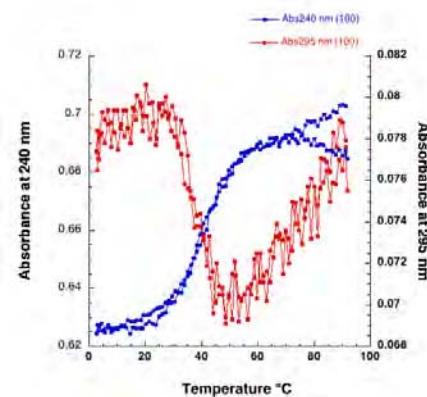
Sequence:  $5' A GTGC GAT GAG TA GGG GAA GGG AGC 3'$ 

score: 1.16

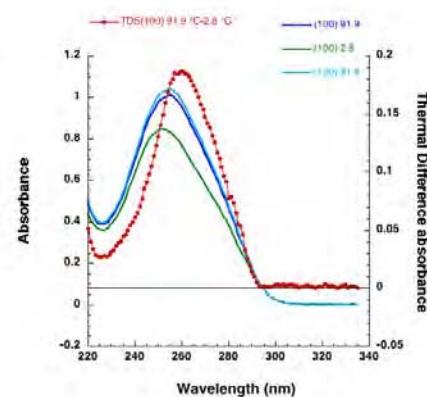
(a)



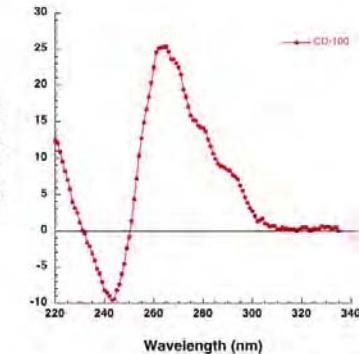
(b)



(c)

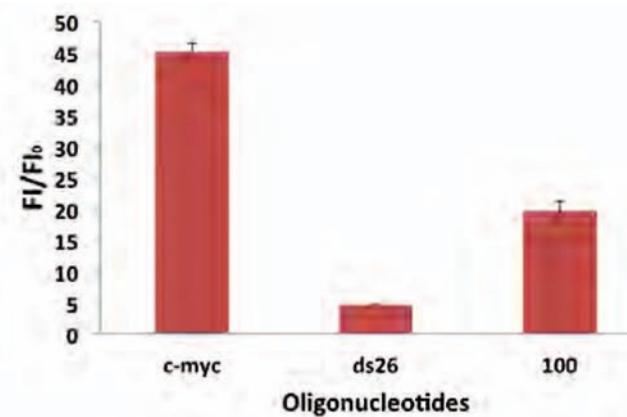


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

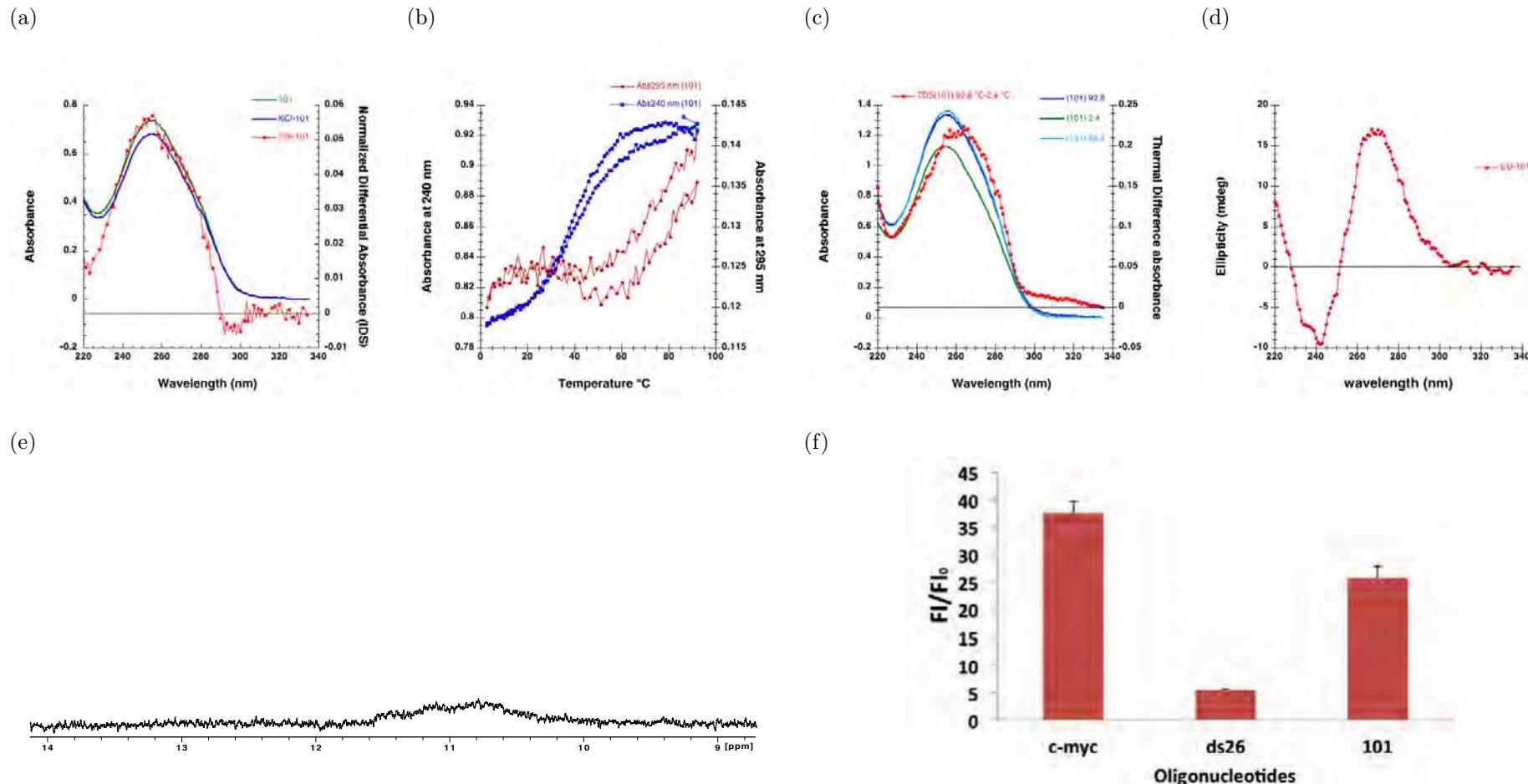
Table 103: Results interpretation of Mito 100

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes (-)	Yes	No	Mixed	Not done	++	G4

Name: Mito 101

Sequence:  $5' \text{ GCGATGGGGCTTCGACATGGGCTTTAGGGAG } 3'$

Score: 1.16



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 104: Results interpretation of Mito 101

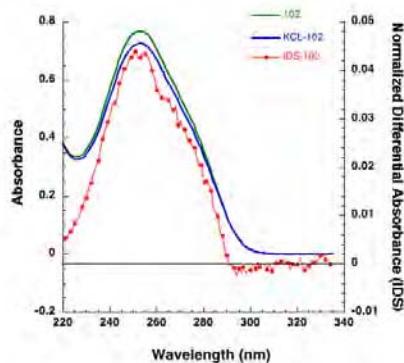
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	No	++	Not G4

Name: Mito 102

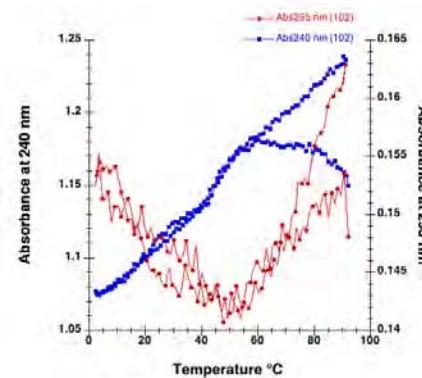
Sequence:  $5' GTCAGGGGTTGAGAATGAGTGTGAGGGC 3'$

Score: 1.03

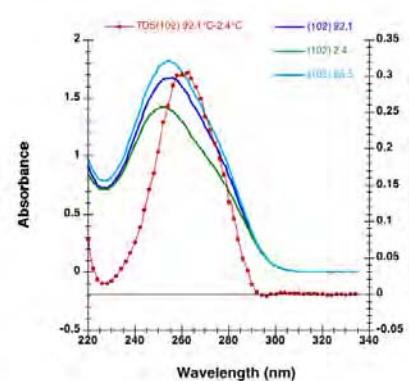
(a)



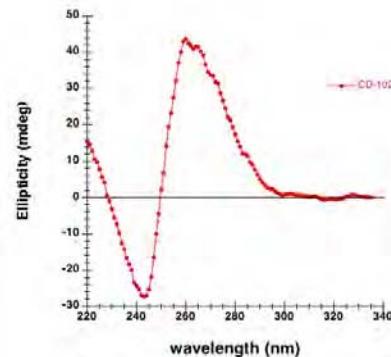
(b)



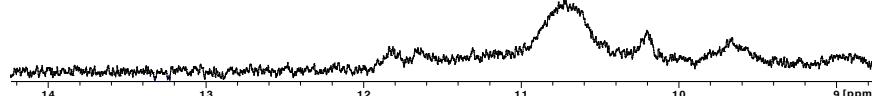
(c)



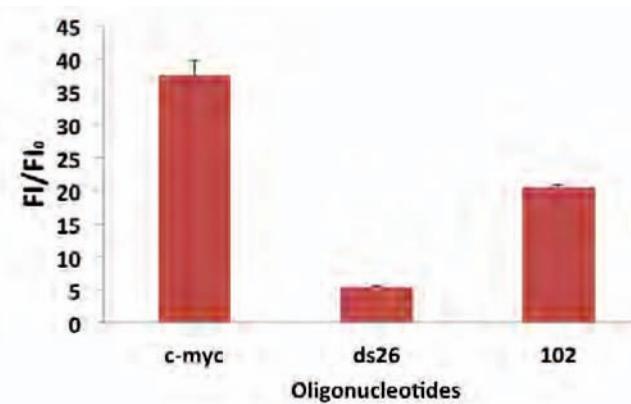
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

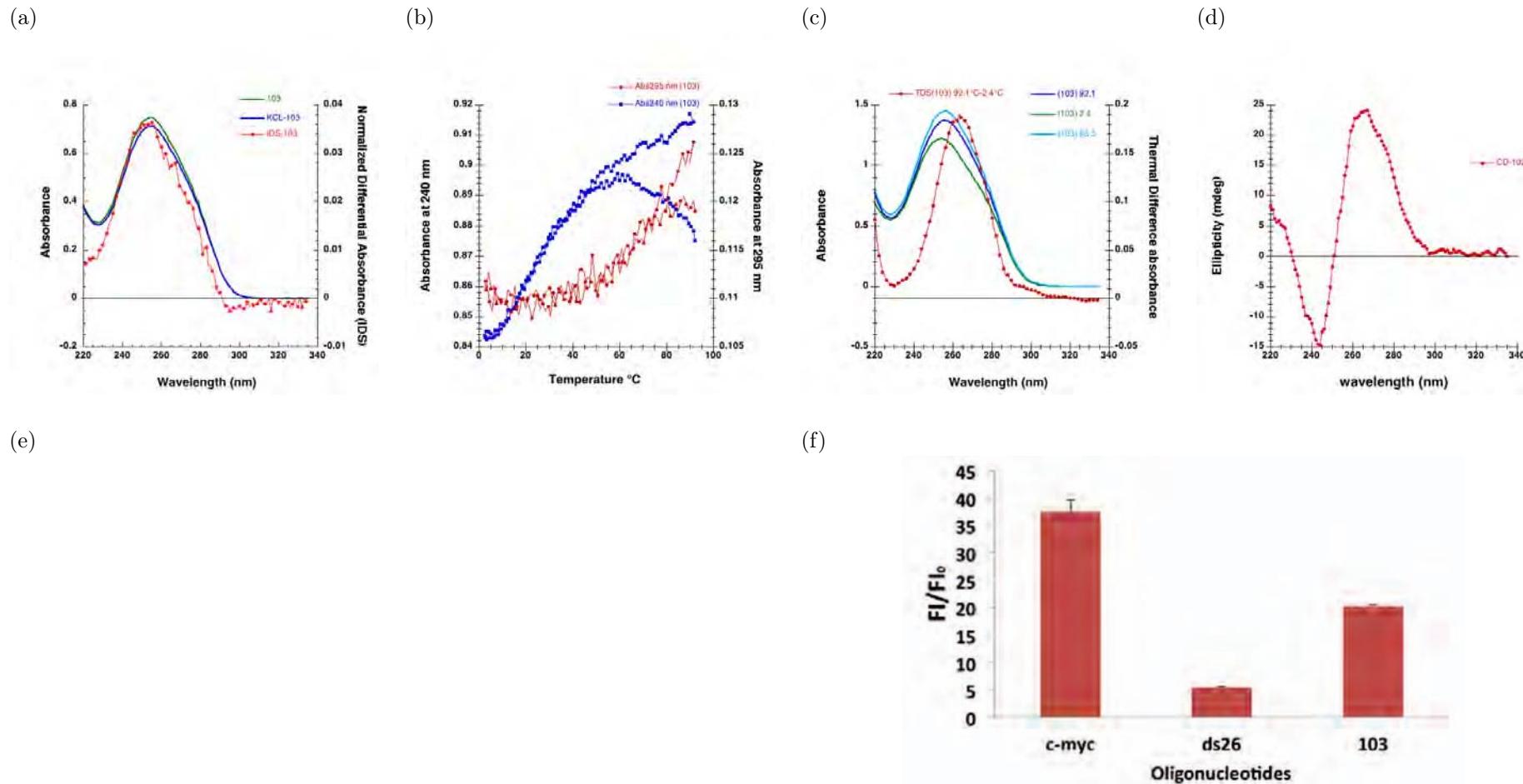
Table 105: Results interpretation of Mito 102

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	Yes (<37°C)	No	Parallel	Yes	++	G4 (Unstable)

Name: Mito 103

Sequence:  $5' GTGTTTGTCA GGGGGTTGA GAATGA G 3'$

Score: 0.96



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 106: Results interpretation of Mito 103

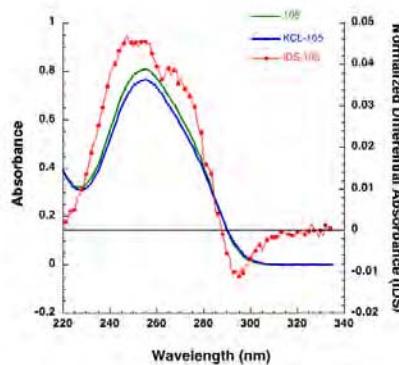
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	Parallel	Not done	++	Not G4

Name: Mito 105

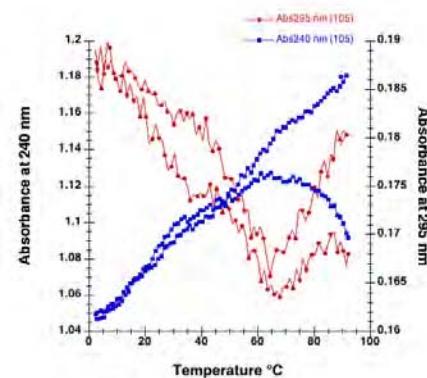
Sequence:  $5' A\textcolor{red}{GGGGTA}GGCTATGTGTTTGTCAGGGGGTTG 3'$

Score: 1.31

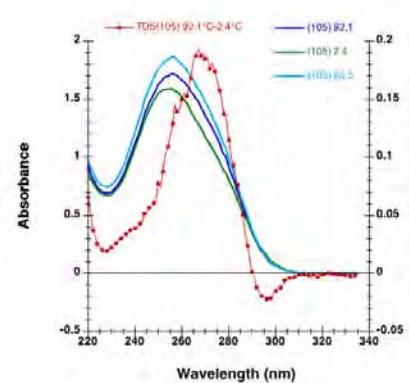
(a)



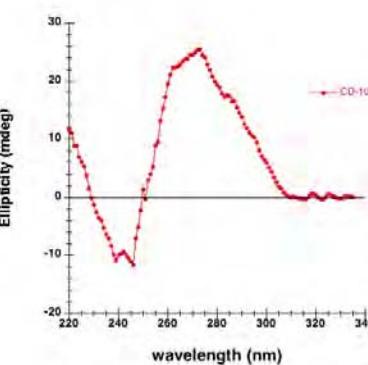
(b)



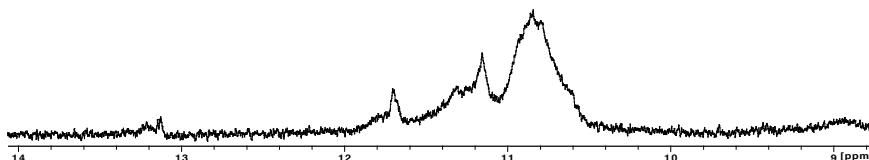
(c)



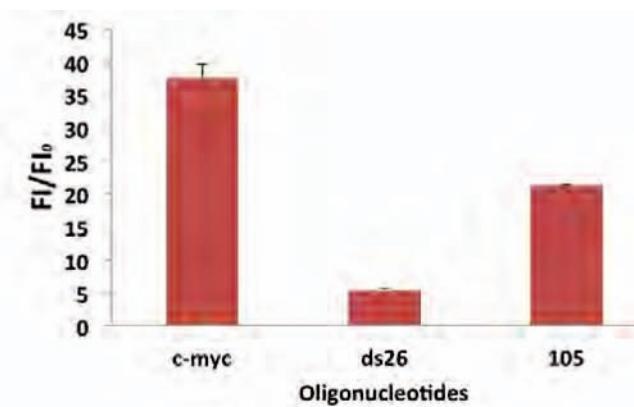
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

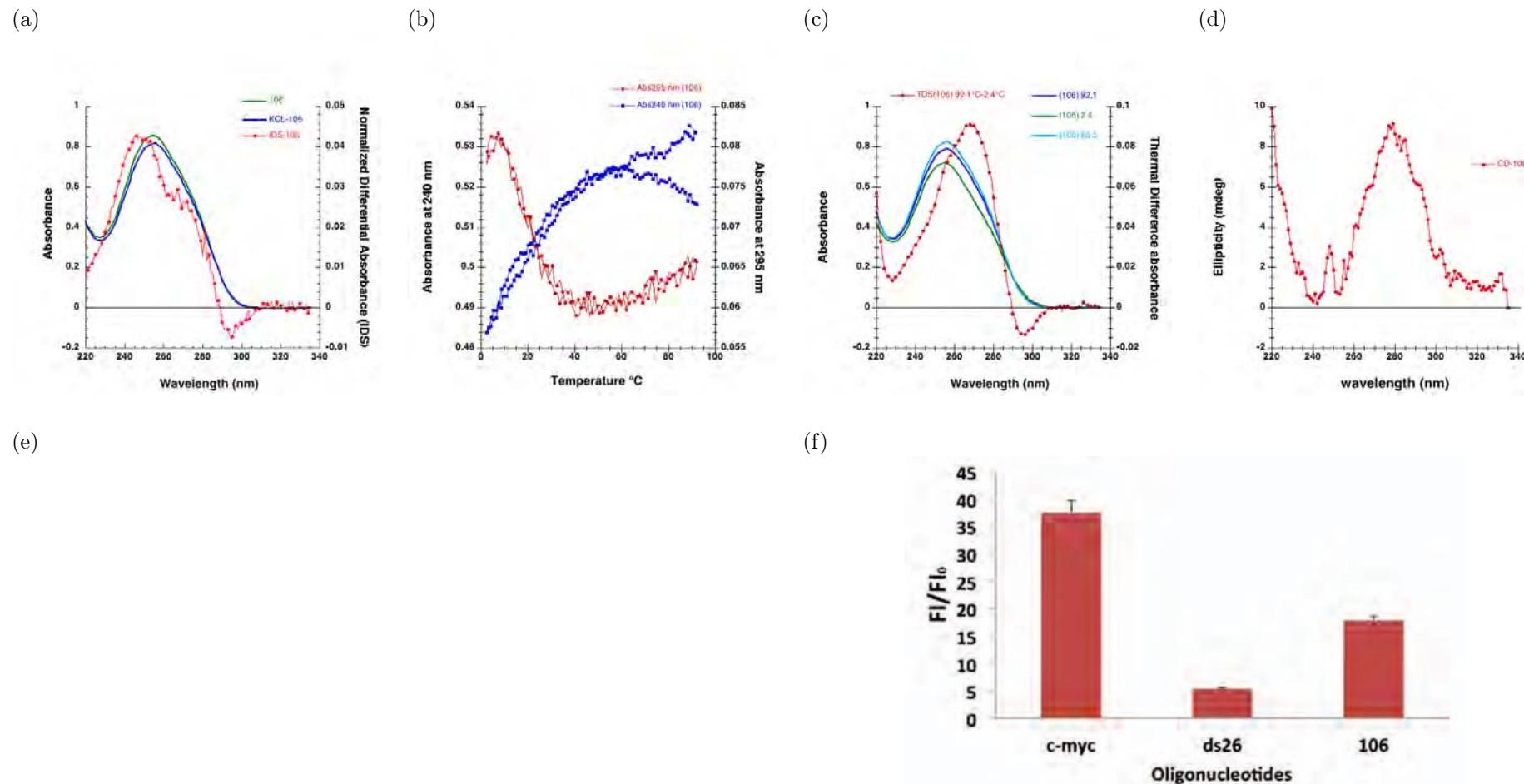
Table 107: Results interpretation of Mito 105

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Mixed	Yes	++	<b>G4</b>

Name: Mito 106

Sequence:  $5' \text{GGAA} \textcolor{red}{GGGGTAGGCTATGTGTTTG} 3'$

Score: 1.08



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

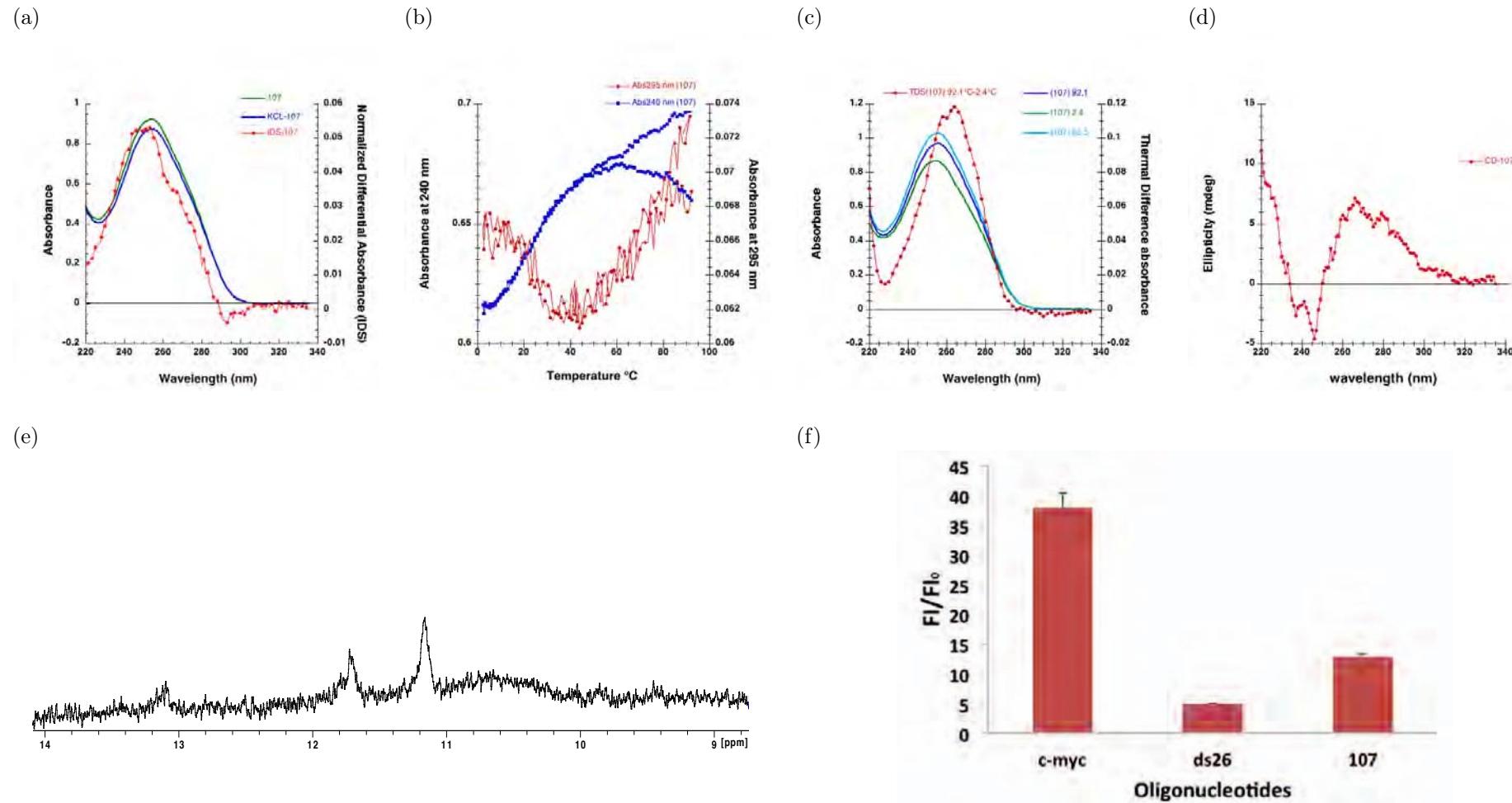
Table 108: Results interpretation of Mito 106

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes (<37°C)	Yes	No	Not done	++	<b>G4 (Unstable)</b>

Name: Mito 107

Sequence:  $5' GTACAA GGAA GGGG TAGGCTAT GTG 3'$

Score: 1.0



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

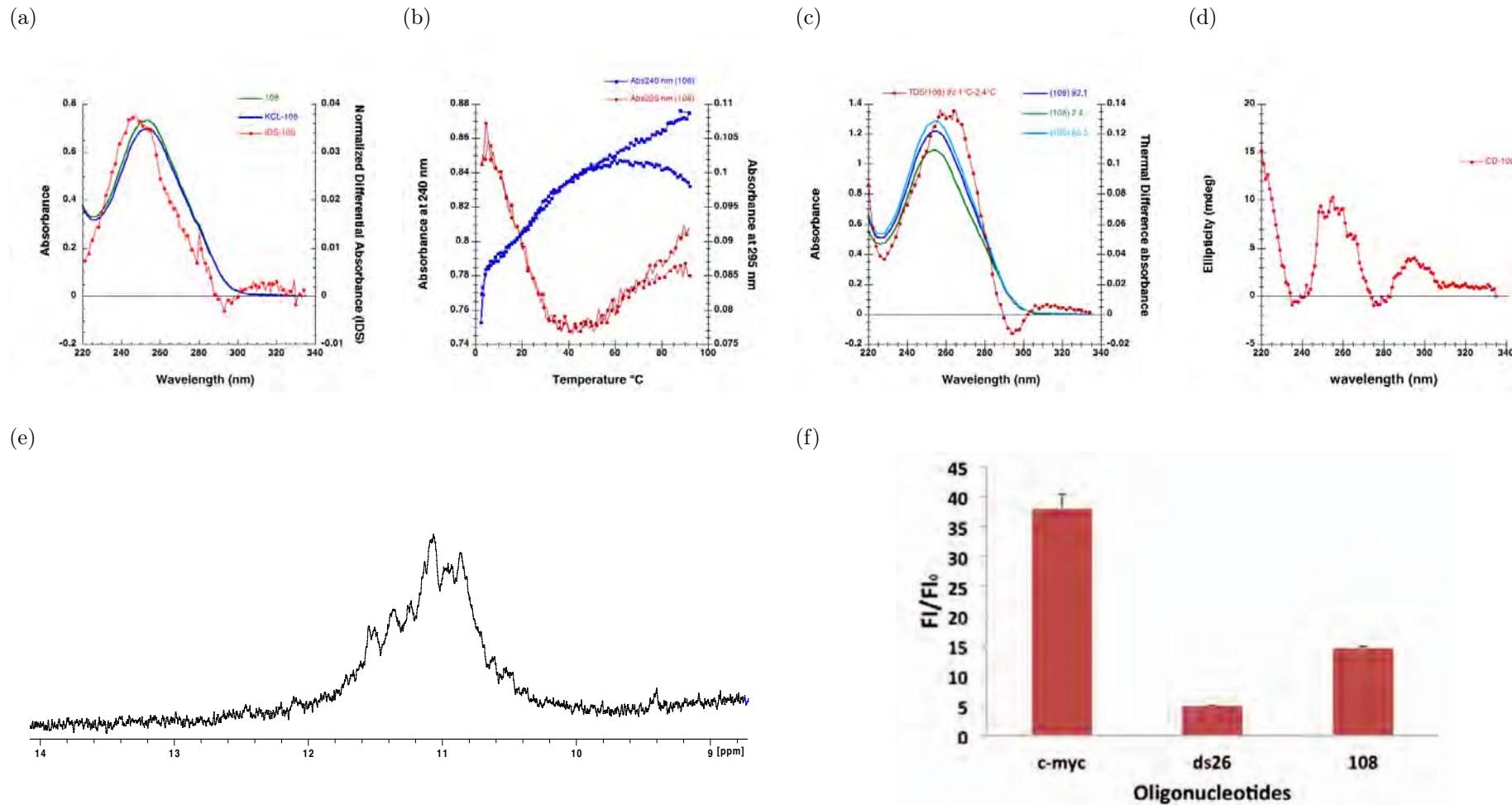
Table 109: Results interpretation of Mito 107

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes (-)	Yes (<37°C )	No	No	No	+	Not G4

Name: Mito 108

Sequence:  $5' \text{A} \textcolor{red}{GGGATA} \text{G} \text{TACAA} \text{G} \text{GAAGGGG} \text{T} \text{A} \text{G} \text{G} \text{3'}$

Score: 1.32



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu\text{M}$  strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu\text{M}$  strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu\text{M}$  strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu\text{M}$  oligonucleotides and 0.5  $\mu\text{M}$  Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 110: Results interpretation of Mito 108

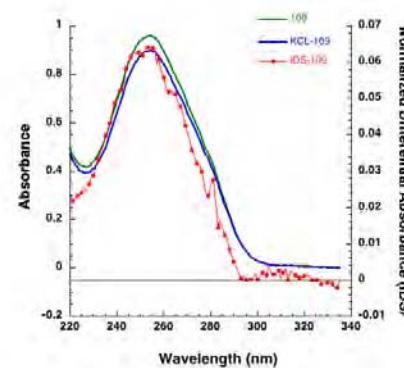
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	Yes (<37°C )	Yes	No	Yes	++	<b>G4(Unstable)</b>

Name: Mito 109

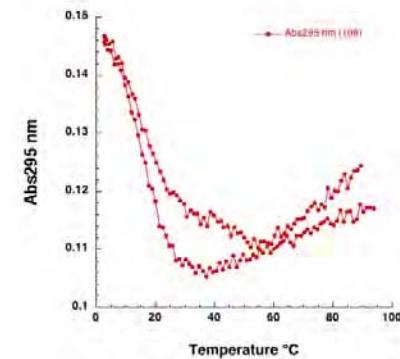
Sequence:  $5' GGTGAA GCTTCAGGGGGTTTGGATGAGAATGG 3'$

Score: 1.06

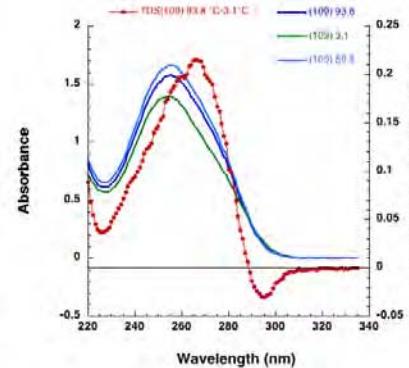
(a)



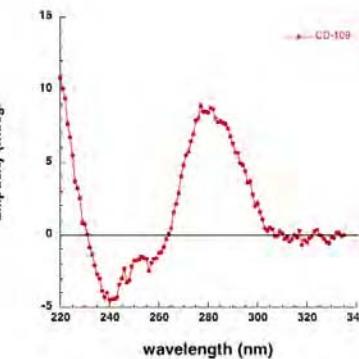
(b)



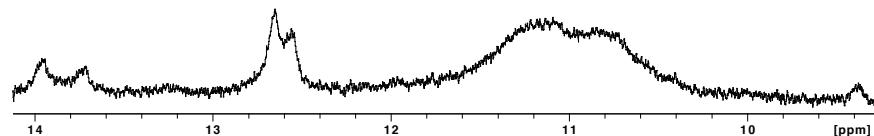
(c)



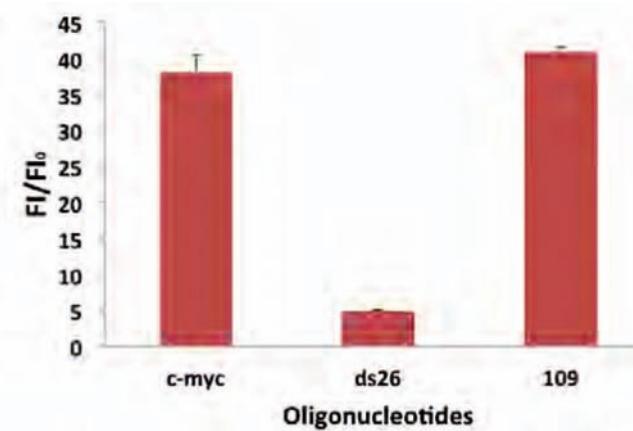
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

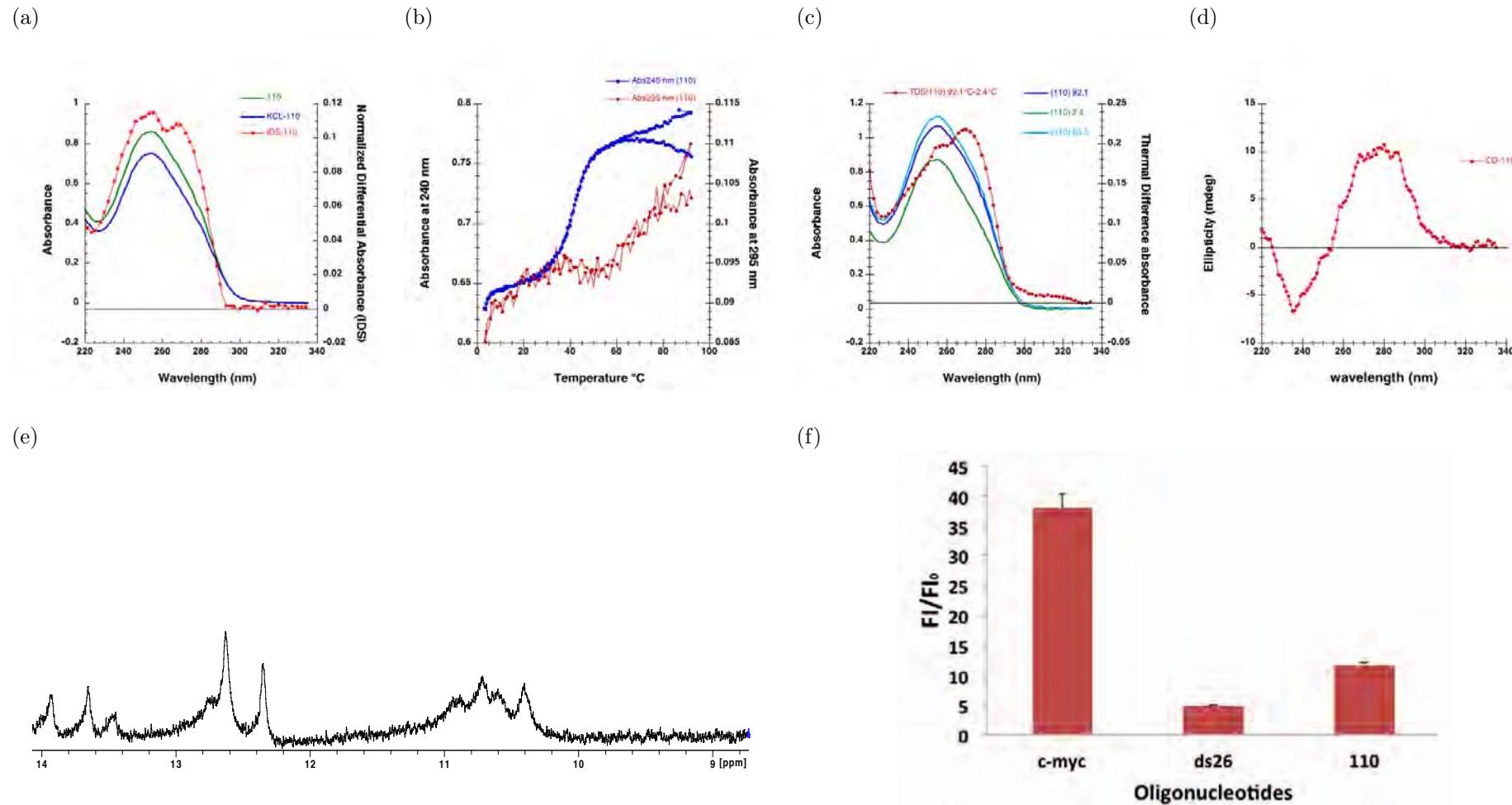
Table 111: Results interpretation of Mito 109

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	Yes (<37°C )	Yes	No	Yes	+++	G4 (Unstable)

Name: Mito 110

Sequence:  $5' \text{GCCGGTGAAGCTTCA} \text{GGGGGTTTGG} 3'$

Score: 1.0



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu\text{M}$  strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu\text{M}$  strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu\text{M}$  strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu\text{M}$  oligonucleotides and 0.5  $\mu\text{M}$  Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

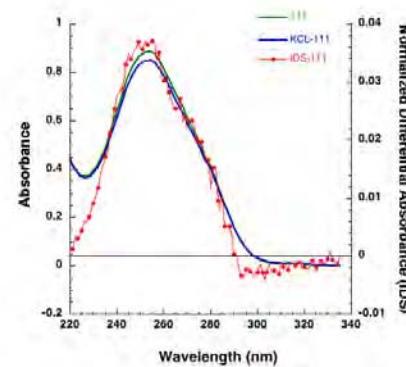
Table 112: Results interpretation of Mito 110

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Yes/ AT-CG	+	<b>Not G4 (Competition)</b>

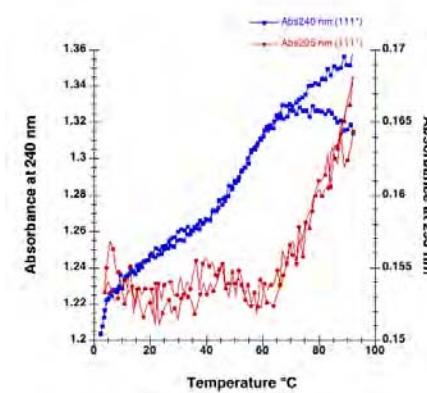
Name: Mito 111

Sequence: *5' GTAGGTTAATA GTGGGGGG TAA GGC GAG GTTA GCG AGG 3'* Score: 1.13

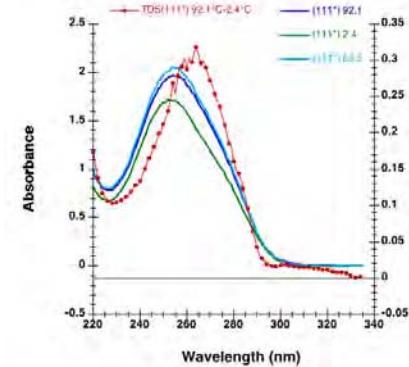
(a)



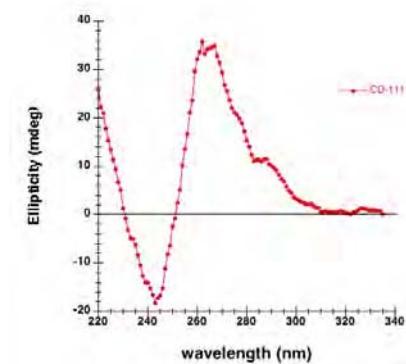
(b)



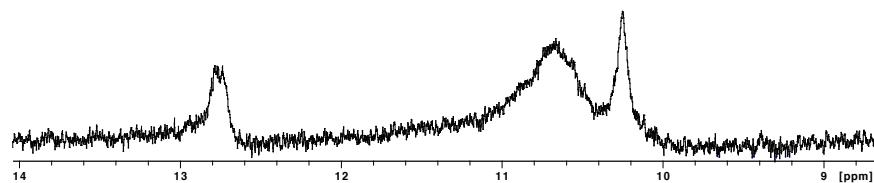
(c)



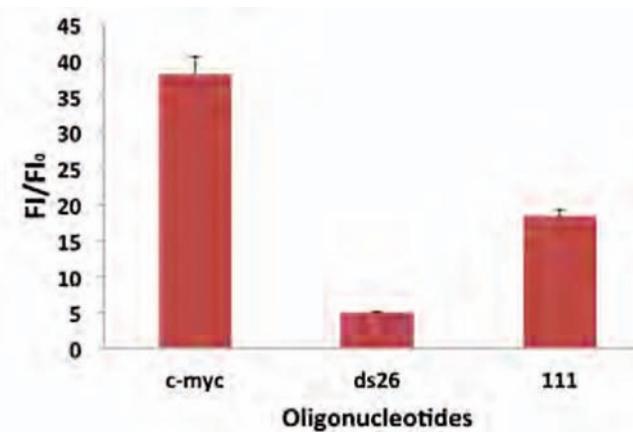
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

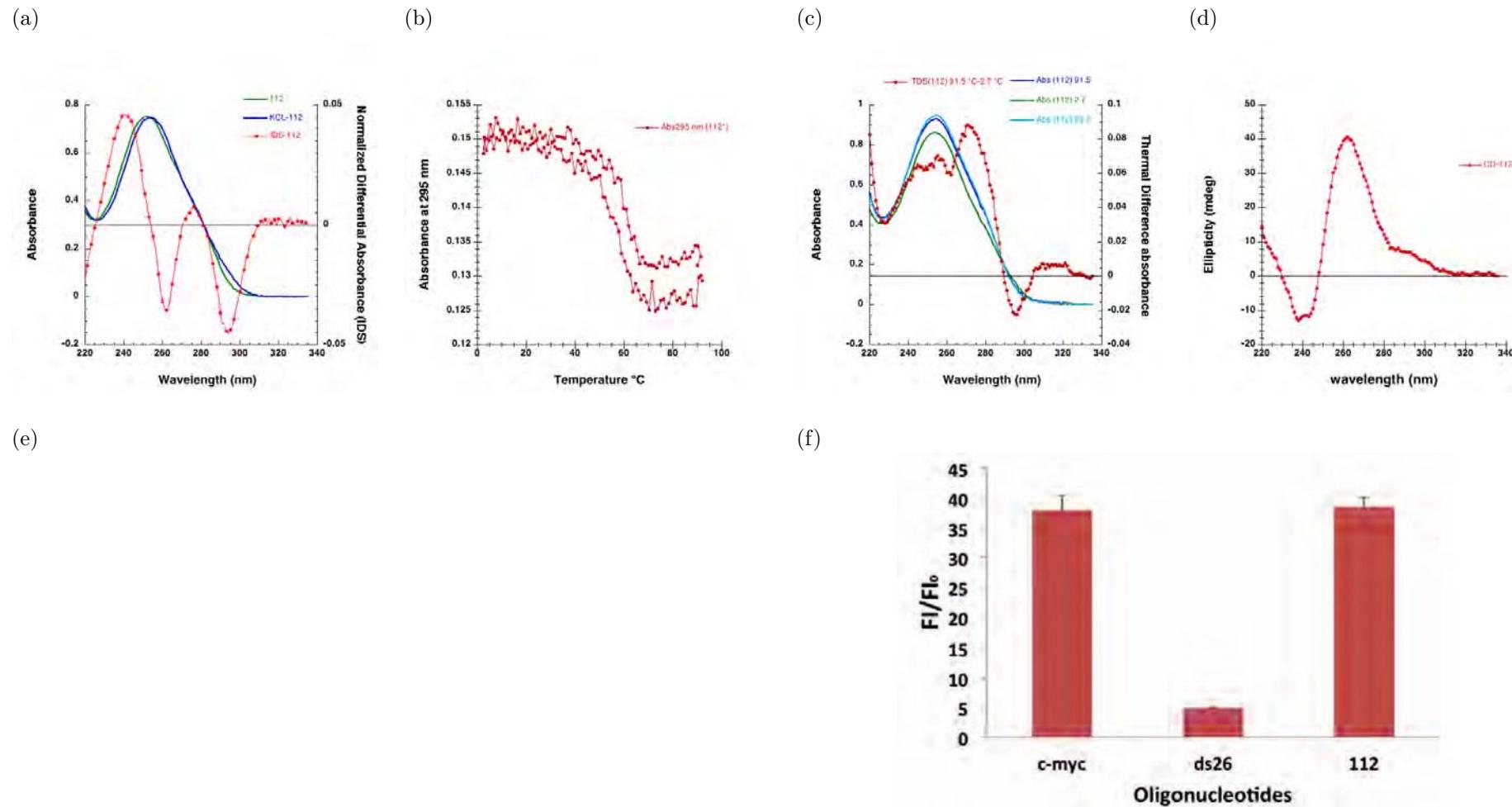
Table 113: Results interpretation of Mito 111

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	Parallel	Yes	++	Not G4 (Competition)

Name: Mito 112

Sequence: *5' GGGGTTGA GGGATA GGAGGA GAATGGGG 3'*

Score: 1.9



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 µM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 µM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 µM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 µM oligonucleotides and 0.5 µM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 114: Results interpretation of Mito 112

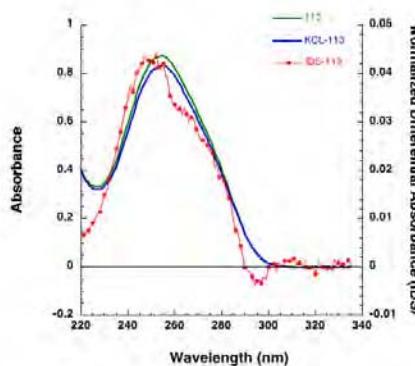
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Parallel	Not done	+++	G4

Name: Mito 113

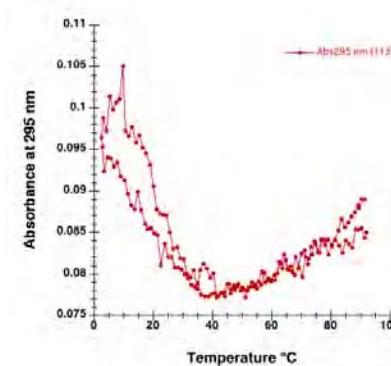
Sequence:  $5' A\textcolor{red}{GGGTTA}GGGTGGTATA\textcolor{red}{GTA}GTGTG 3'$

Score: 1.0

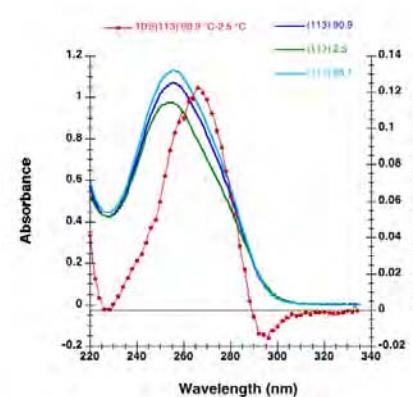
(a)



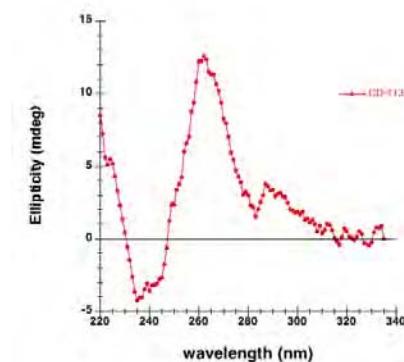
(b)



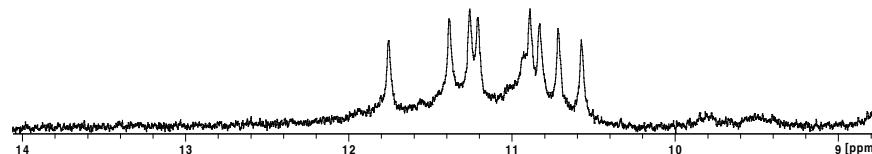
(c)



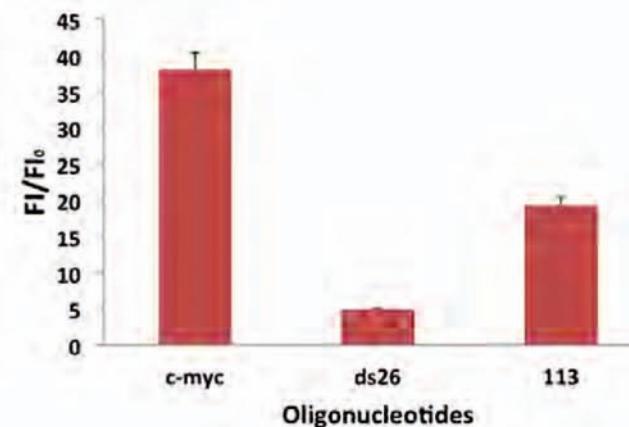
(d)



(e)



(f)



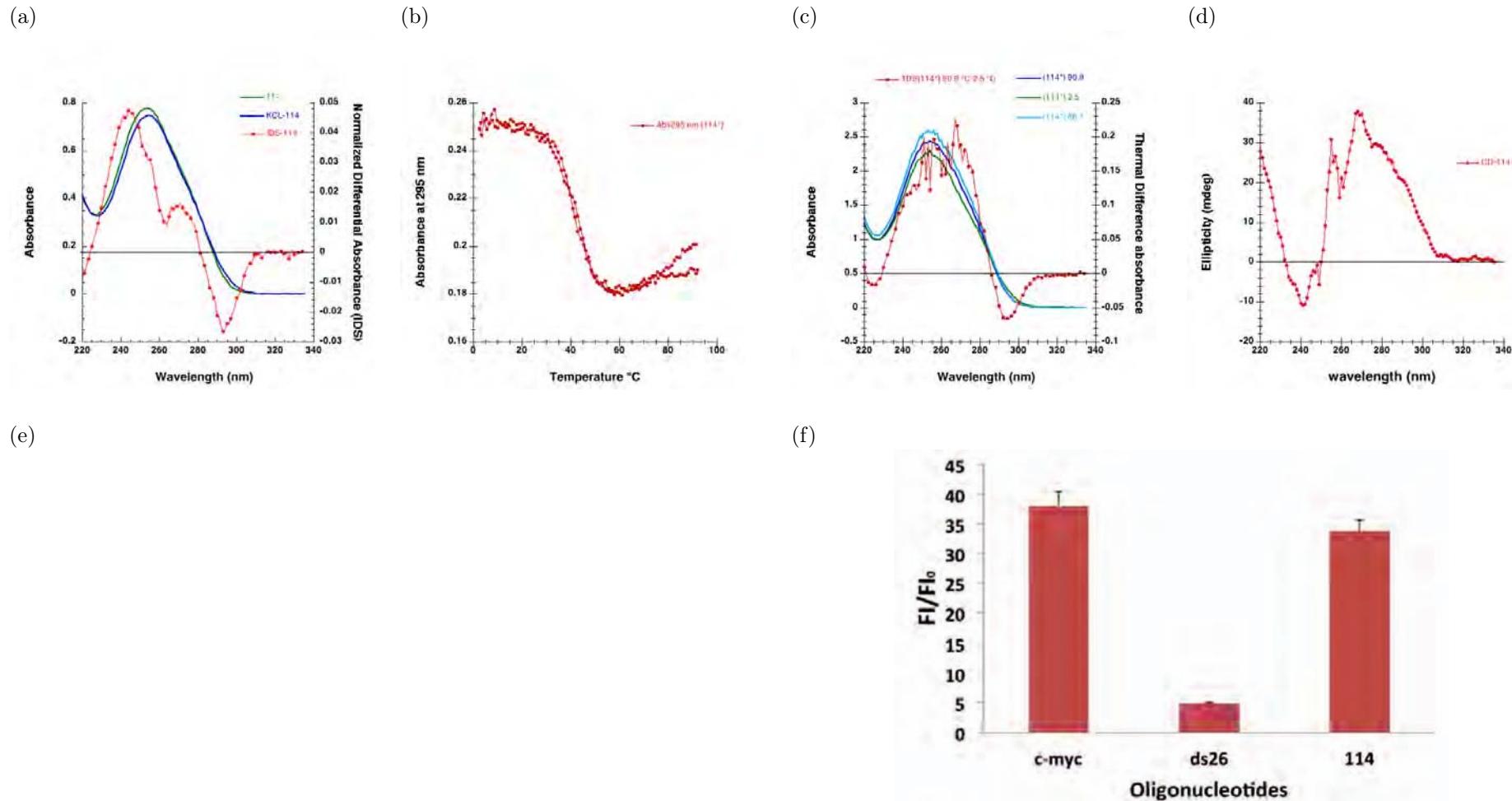
*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 115: Results interpretation of Mito 113

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes (< 37°C)	Yes	Mixed	Yes	++	<b>G4 (Unstable)</b>

Name: Mito 114

Sequence:  $5' \text{AGGGTTAACGAGGGTGGTAAGGATGGGGGGAAATTA} \text{GGGAA GTCA} \text{GGGTTA} \text{GGGT} \text{3'}$  Score: 1.43



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 116: Results interpretation of Mito 114

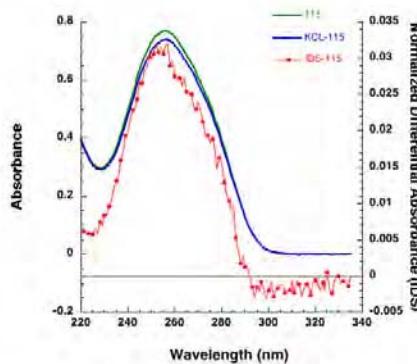
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Mixed	Not done	++	G4

Name: Mito 115

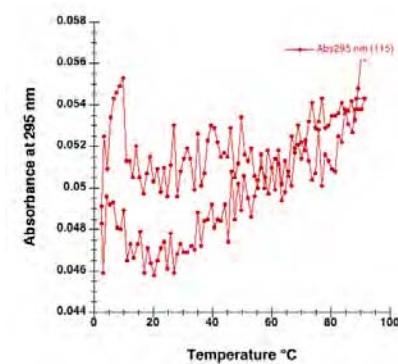
Sequence:  $5' TGGGGGATAGTTTTTTTGTAGGG 3'$

Score: 1.19

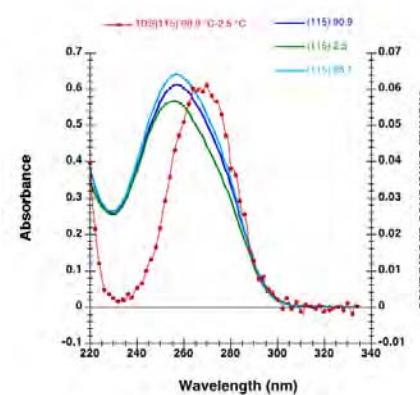
(a)



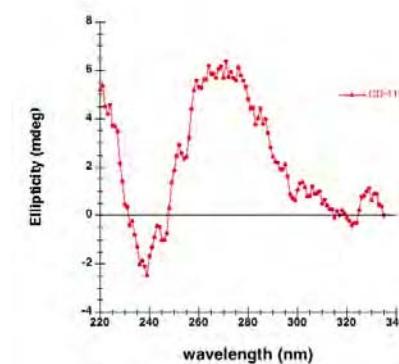
(b)



(c)

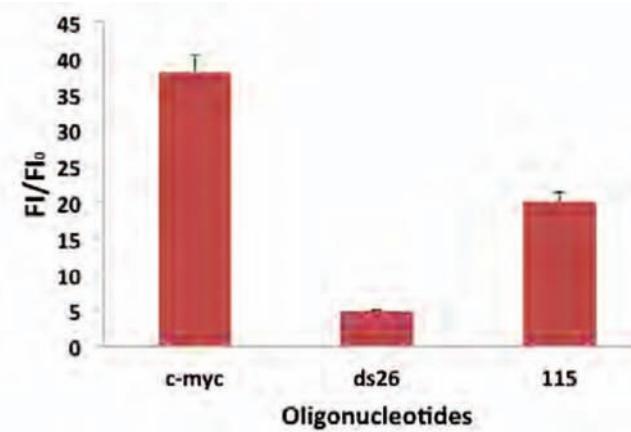


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

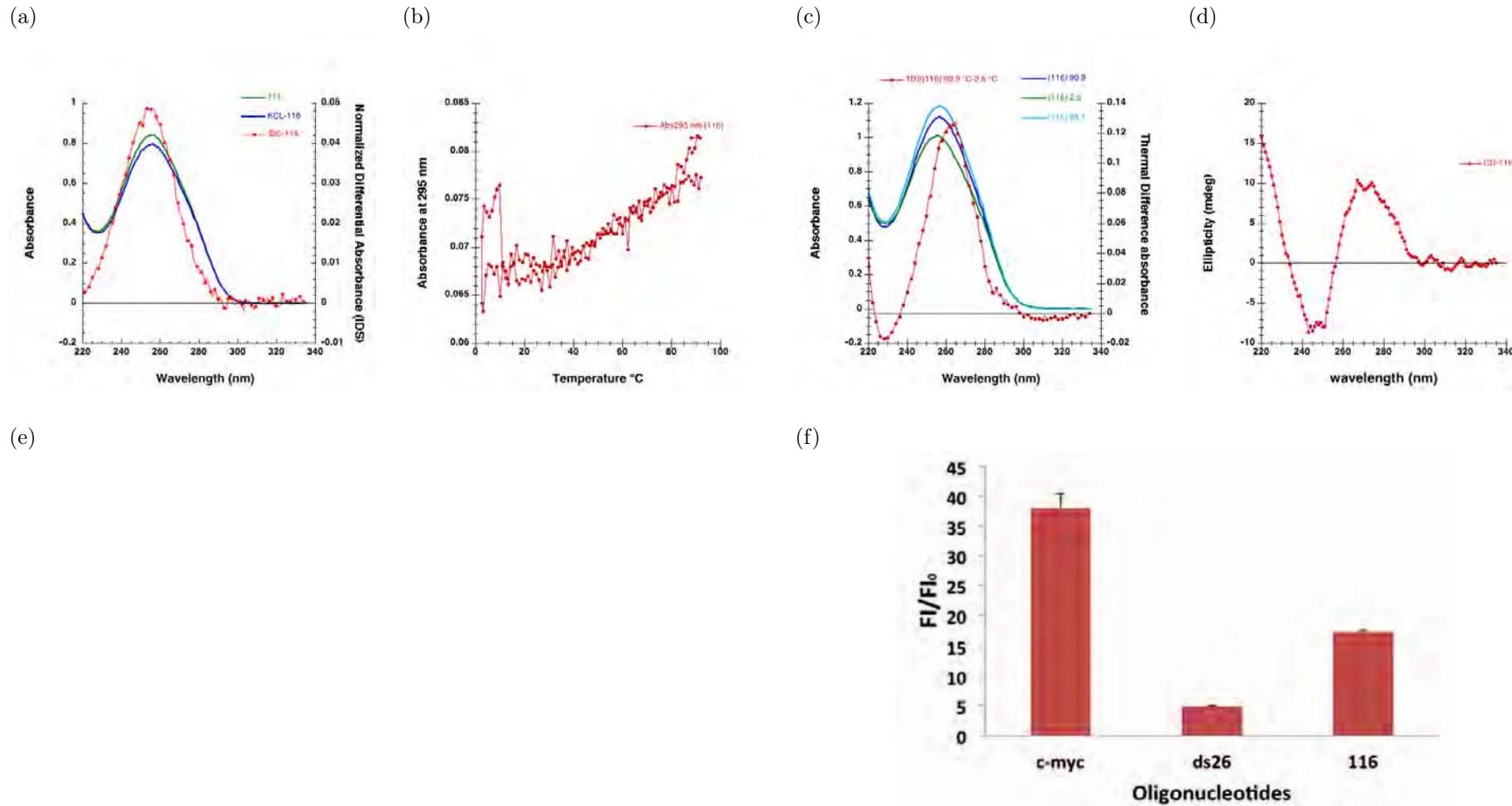
Table 117: Results interpretation of Mito 115

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	++	Not G4

Name: Mito 116

Sequence:  $5' \text{GGATTACATAATGGGGTATGAG} 3'$

Score: 1.0



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 118: Results interpretation of Mito 116

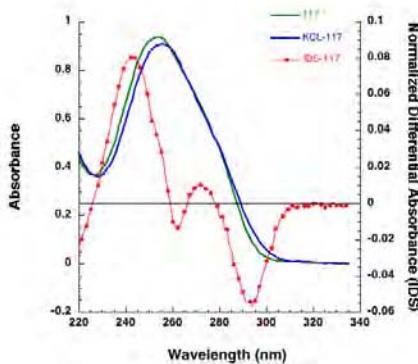
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	++	Not G4

Name: Mito 117

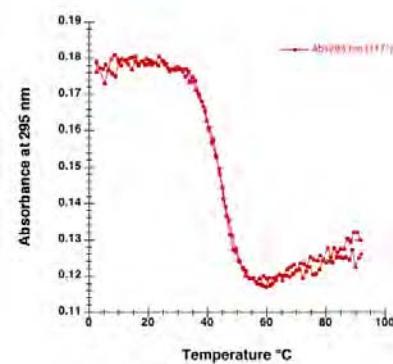
Sequence:  $5' A\textcolor{red}{GGGAGAGCTGGGTTGTTGGGTTGTGG} 3'$

Score: 1.21

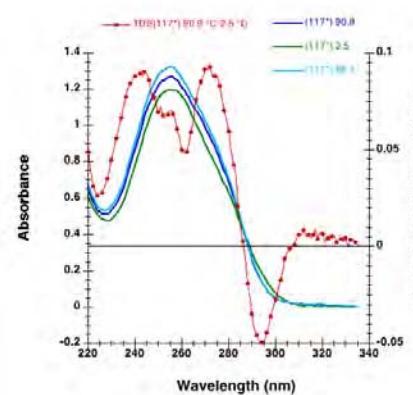
(a)



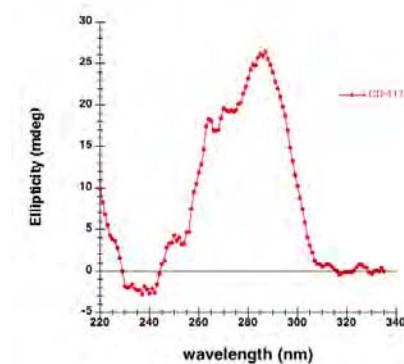
(b)



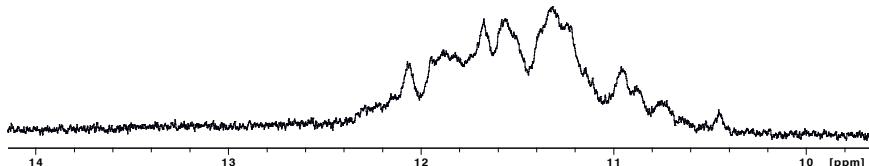
(c)



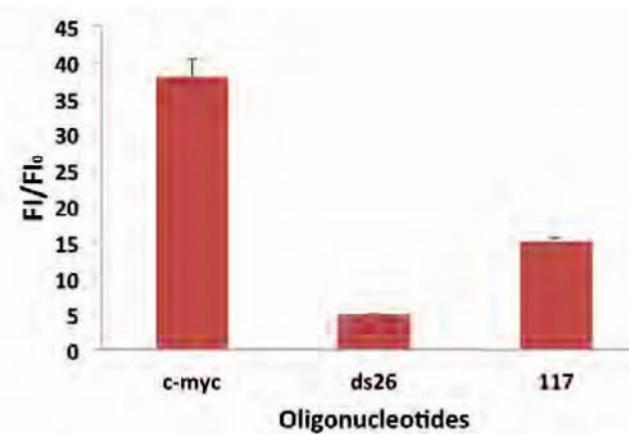
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

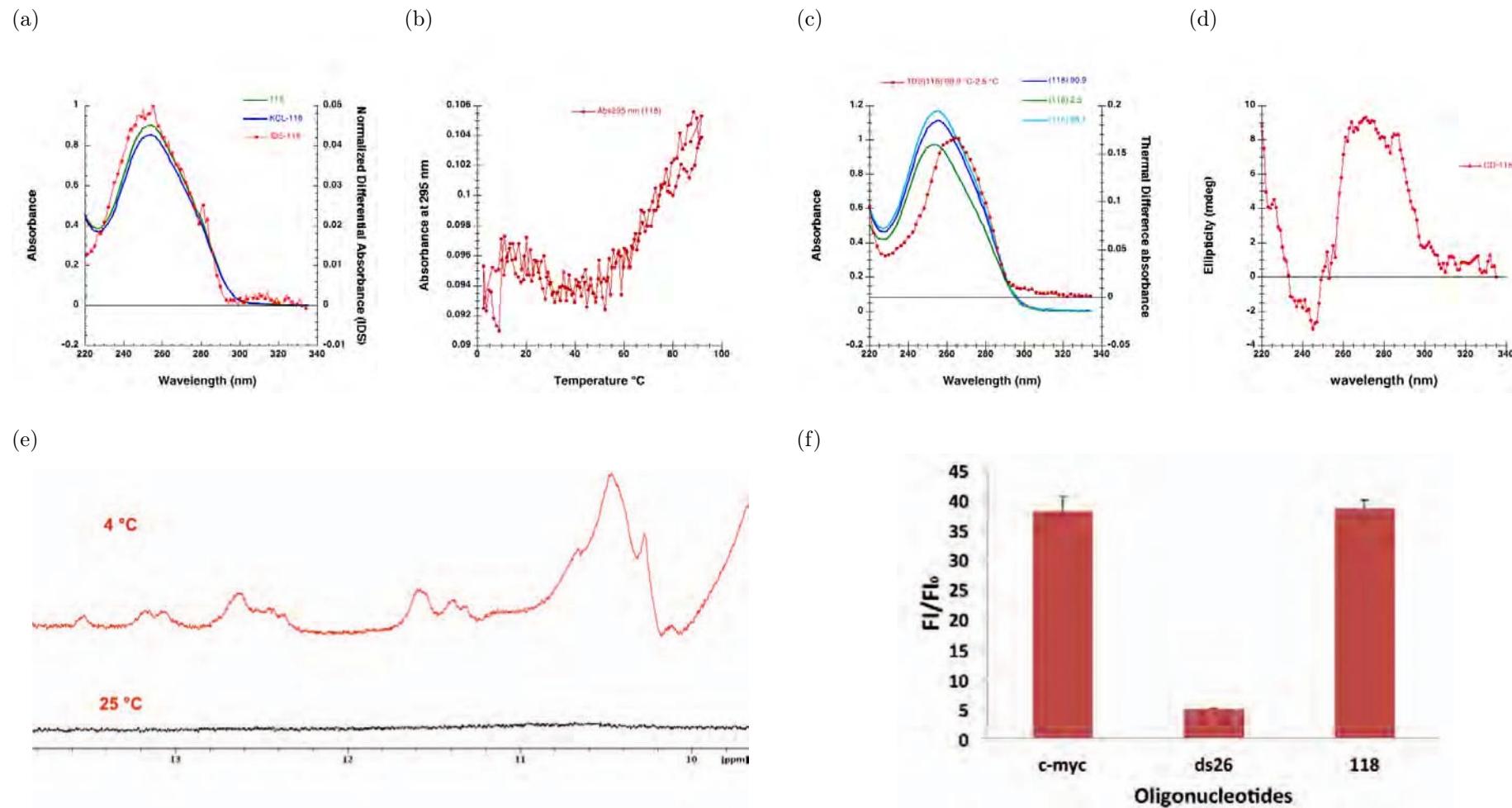
Table 119: Results interpretation of Mito 117

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Mixed	Yes	++	<b>G4</b>

Name: Mito 118

Sequence:  $5' A\textcolor{red}{GTA GTGGGGTGAGGCTTGGATTAGCG} 3'$

Score: 1.0



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 120: Results interpretation of Mito 118

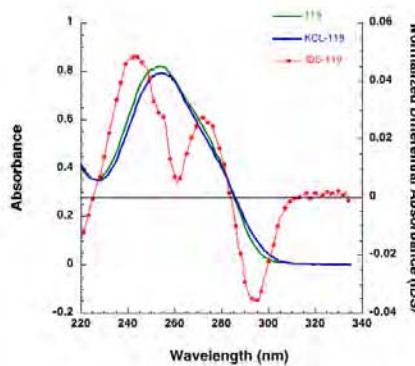
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Yes (4°C)	+++	<b>Not G4</b>

Name: Mito 119

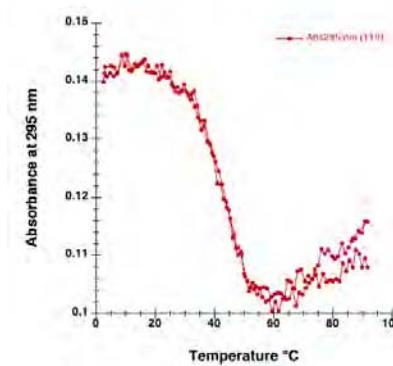
Sequence:  $5' GGCCTAGTA GTGGGGTGA GGCTTGG 3'$

Score: 1.04

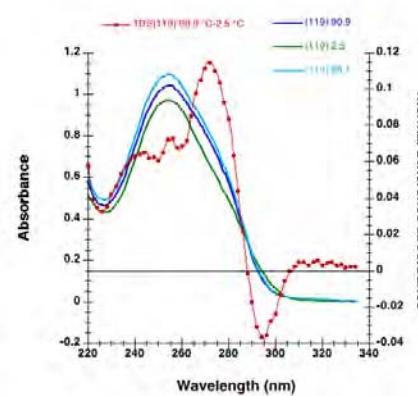
(a)



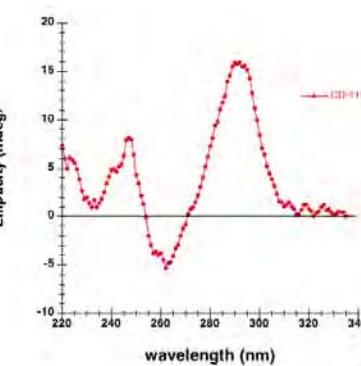
(b)



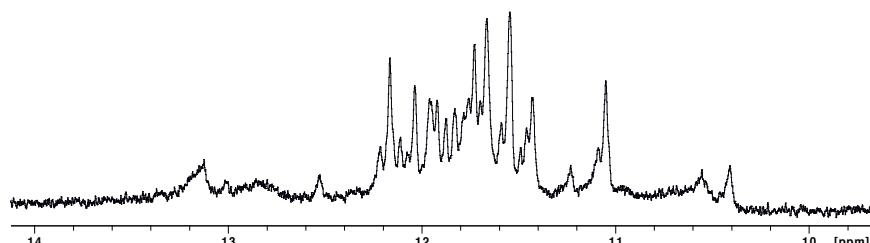
(c)



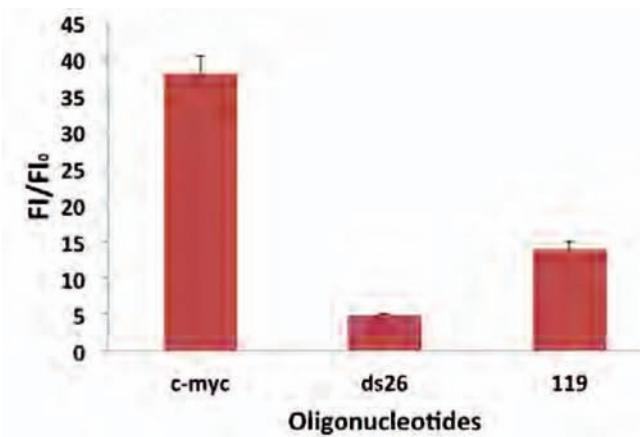
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

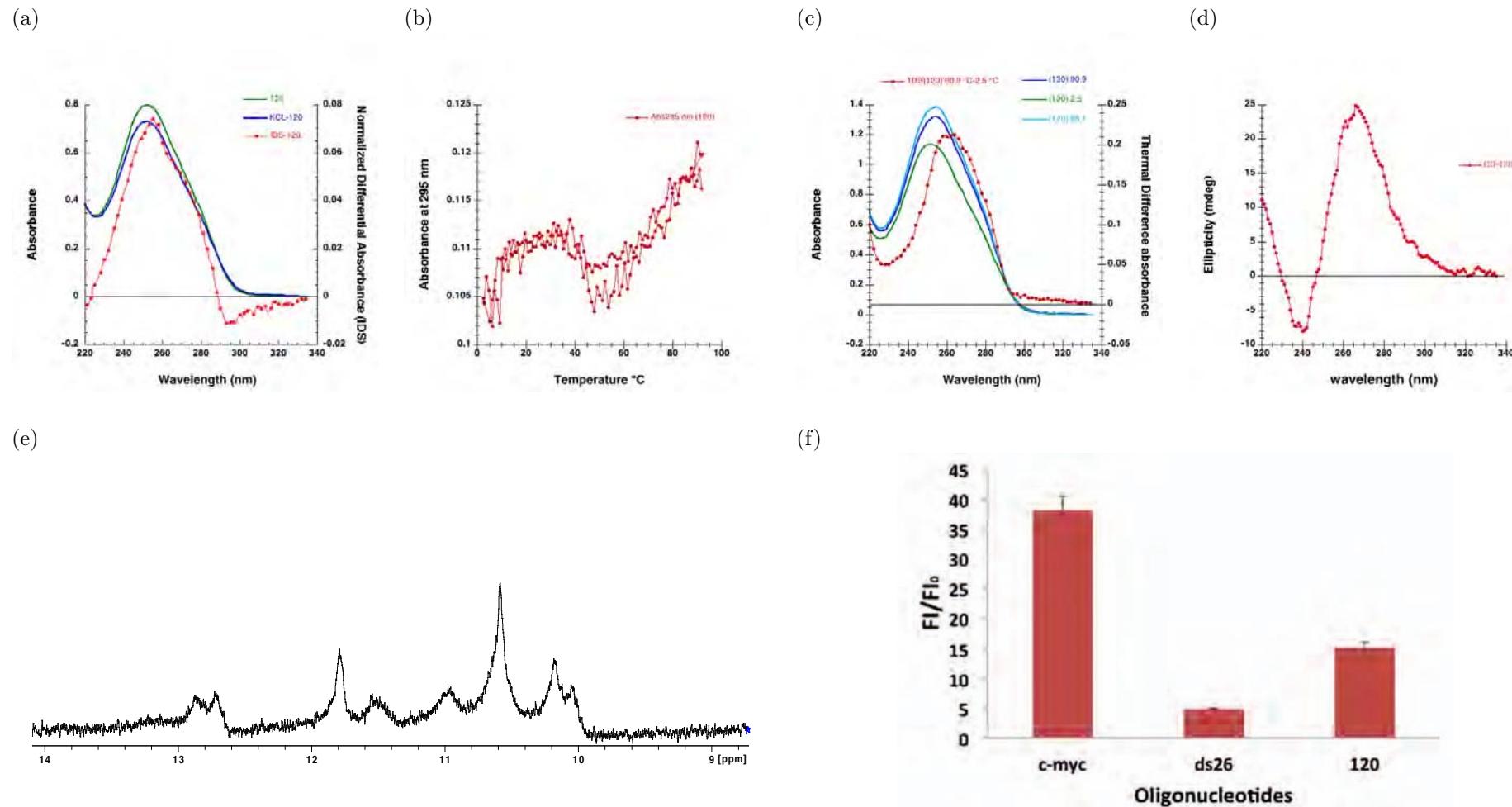
Table 121: Results interpretation of Mito 119

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Antiparallel	Yes	++	G4

Name: Mito 120

Sequence: *5' AGGA GGA GGCCTA GTA GTGGGGTGA GG 3'*

Score: 1.15



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 µM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 µM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 µM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 µM oligonucleotides and 0.5 µM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

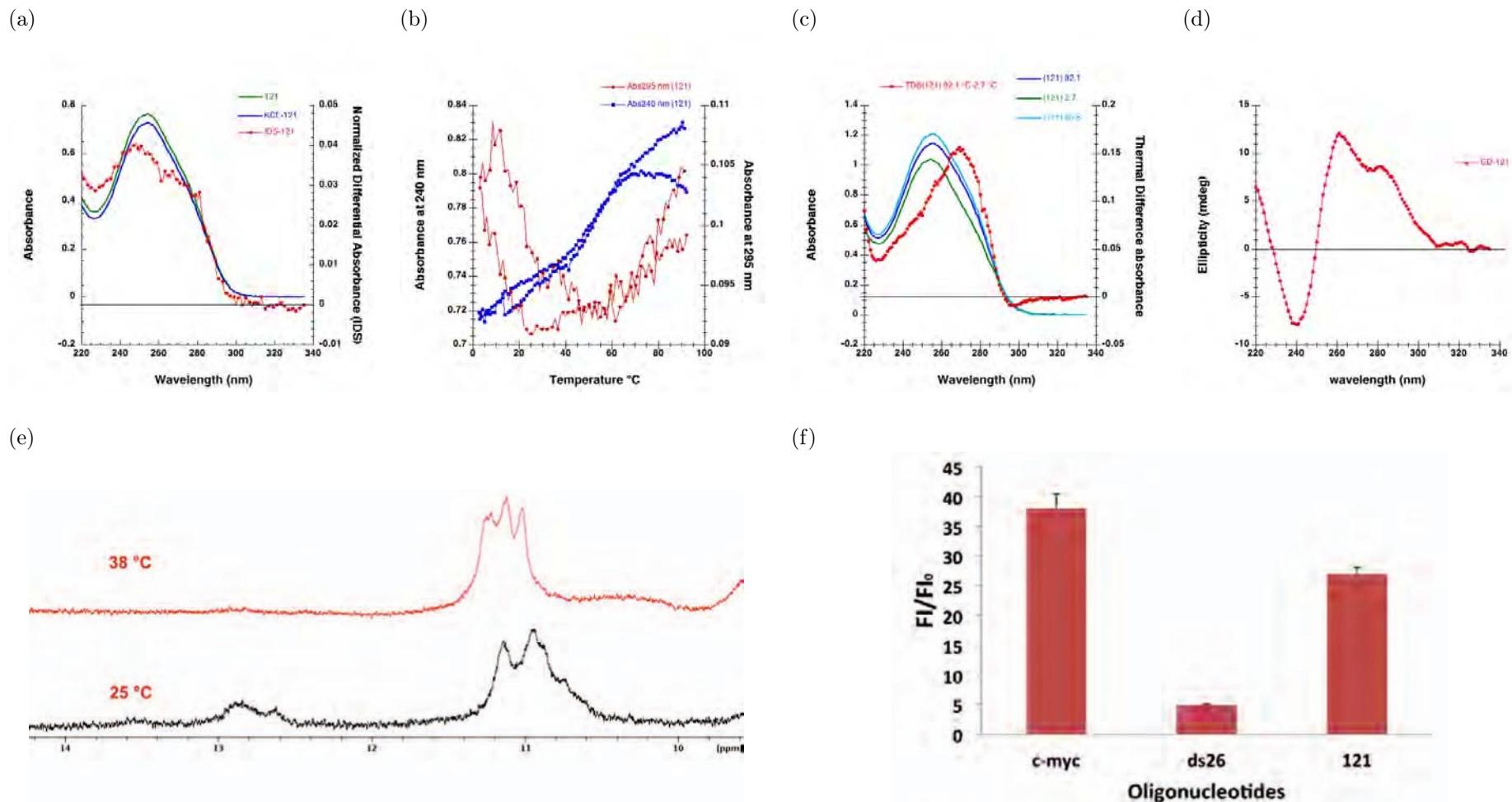
Table 122: Results interpretation of Mito 120

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes (-)	No	No	Parallel	Yes / CG	++	<b>G4 (Competition/Unstable)</b>

Name: Mito 121

Sequence:  $5' GGGGTGGA GACCTAATT GGGCTG 3'$

Score: 1.13



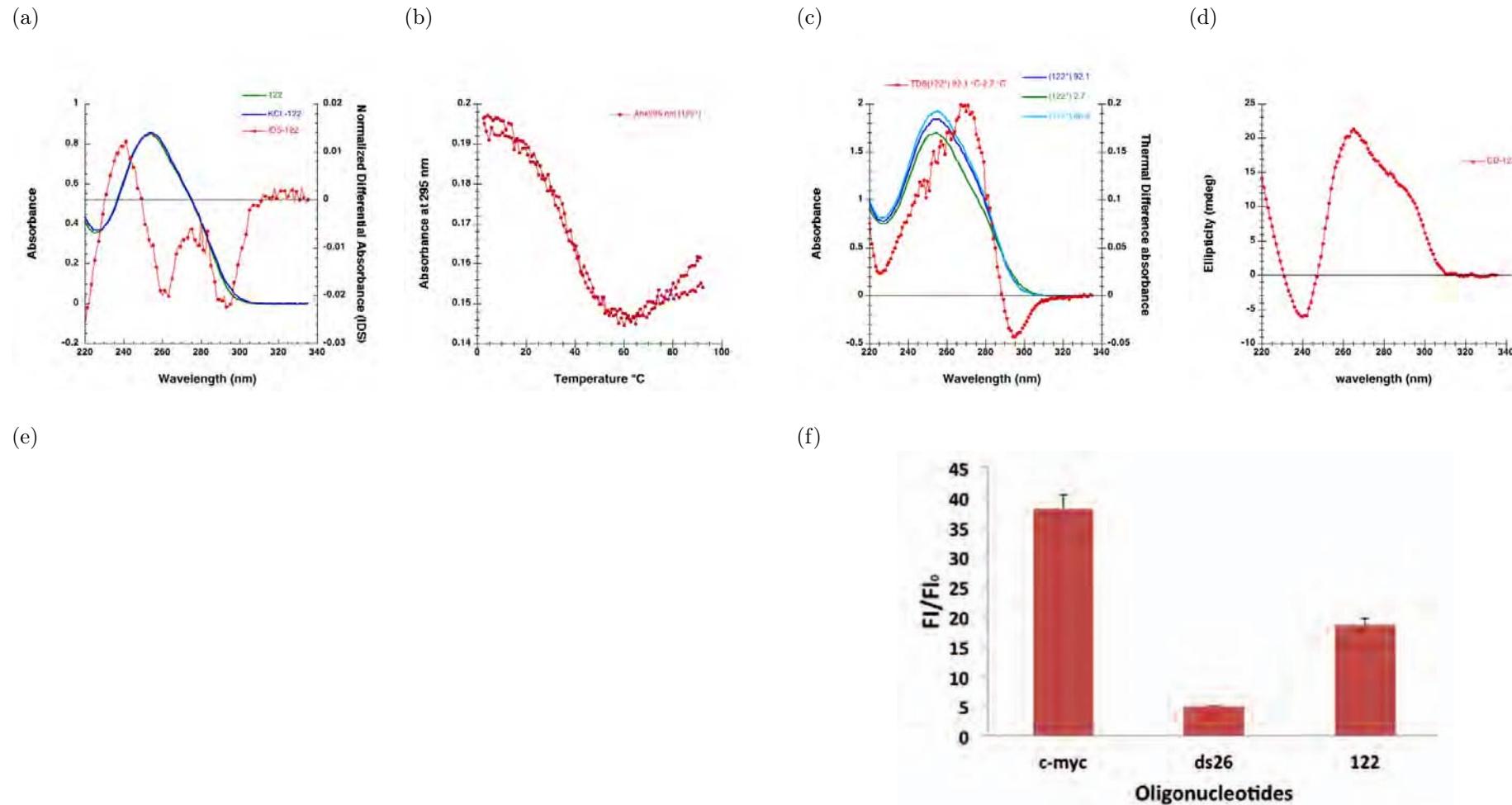
*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 µM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 µM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 µM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 µM oligonucleotides and 0.5 µM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 123: Results interpretation of Mito 121

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	Yes	No	Mixed	Yes	++	<b>G4</b>

Name: Mito 122

Sequence: *5' TGGCTGA***GGGGAGTCAGGGGTGGAGACCTAATTGGG 3'** Score:1.28



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

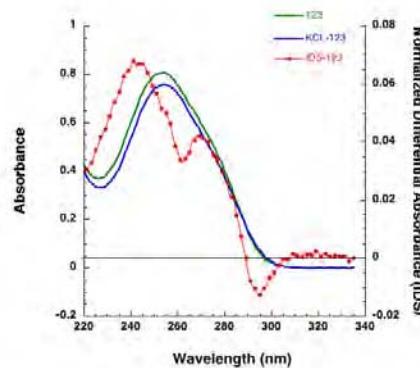
Table 124: Results interpretation of Mito 122

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Mixed	Not done	++	G4

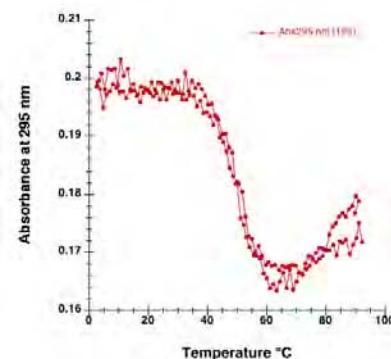
Name: Mito 123

Sequence:  $5' \text{TGAGTGGA} \text{GTA} \text{GGGCTGAGACTGGGGTGGGGCCTTCTATGGCTATGGCTGA} \text{GGGG} \text{3'}$  Score: 1.29

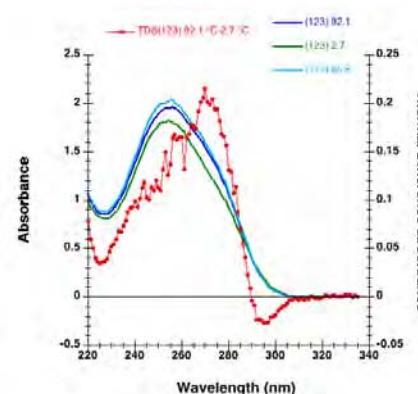
(a)



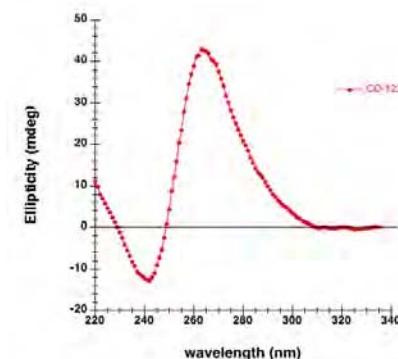
(b)



(c)

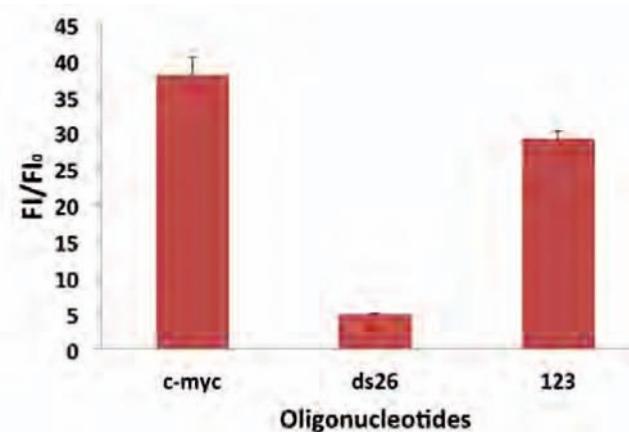


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

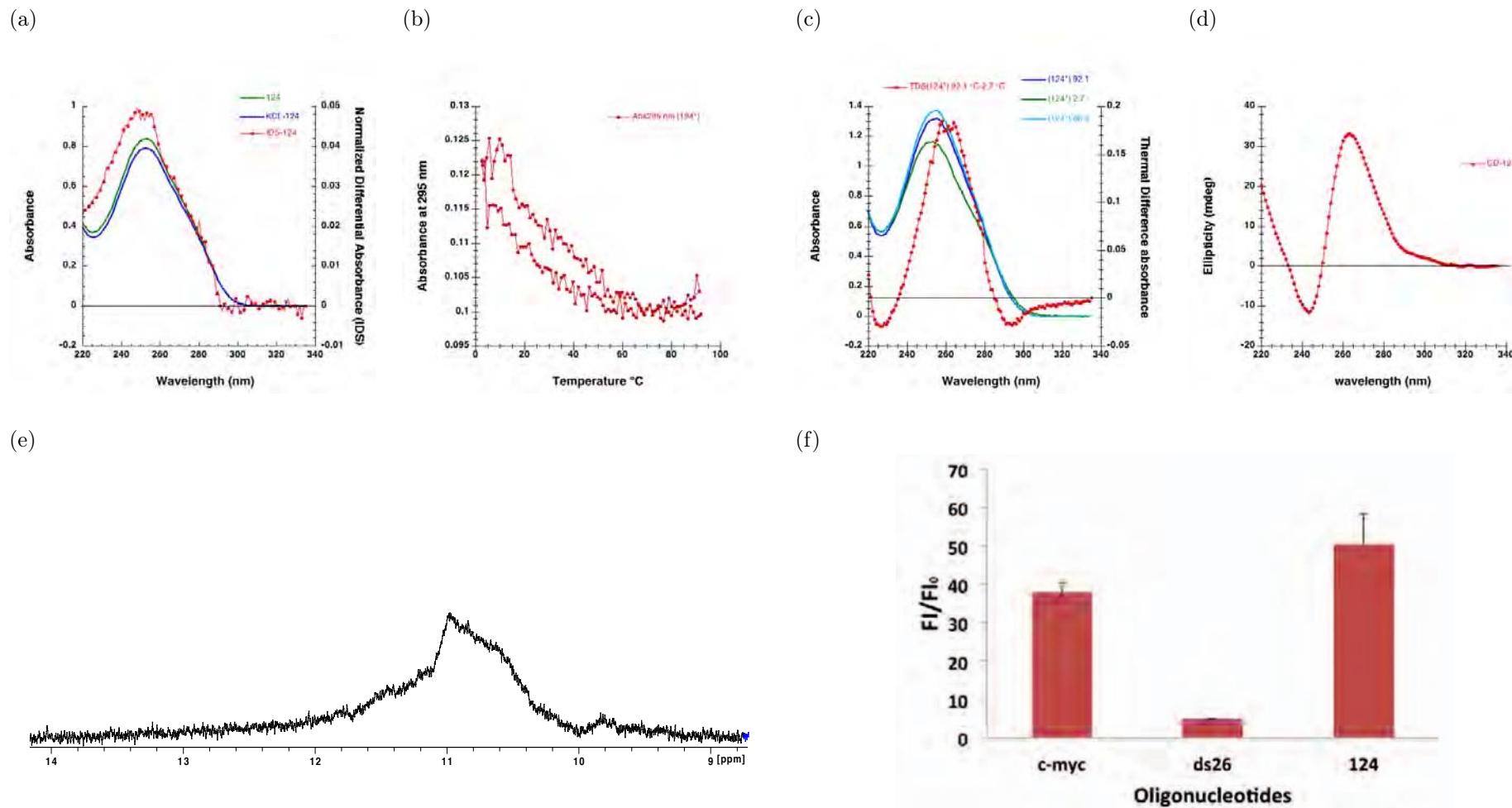
Table 125: Results interpretation of Mito 123

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Parallel	Not done	++	G4

Name: Mito 124

Sequence:  $5' \text{GGGGGGTGGAA GCGGATGAGTAAGAAG} 3'$

Score: 1.23



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 126: Results interpretation of Mito 124

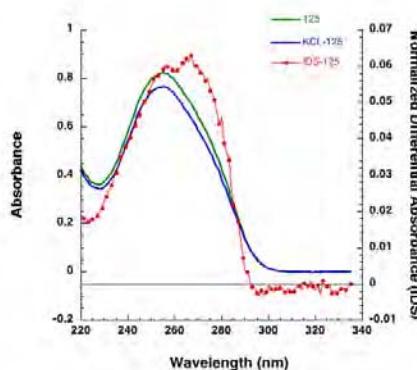
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	Yes (-)	Parallel	Yes	+++	G4

Name: Mito 125

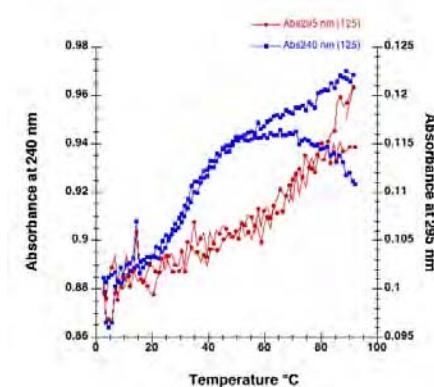
Sequence:  $5' TGGGCTATTTCTGCTA GGGGGTGGAAAG 3'$ 

Score: 1.14

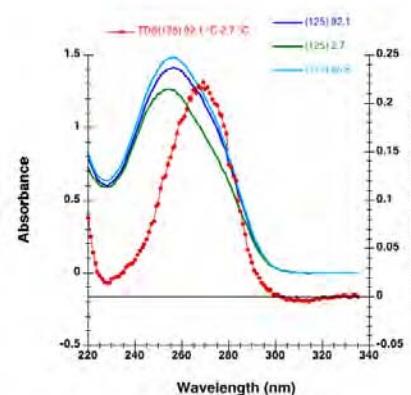
(a)



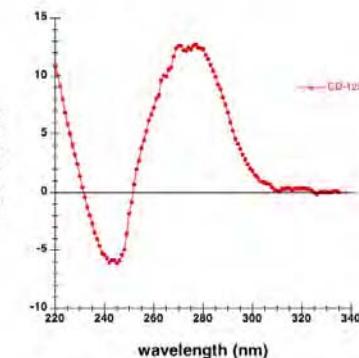
(b)



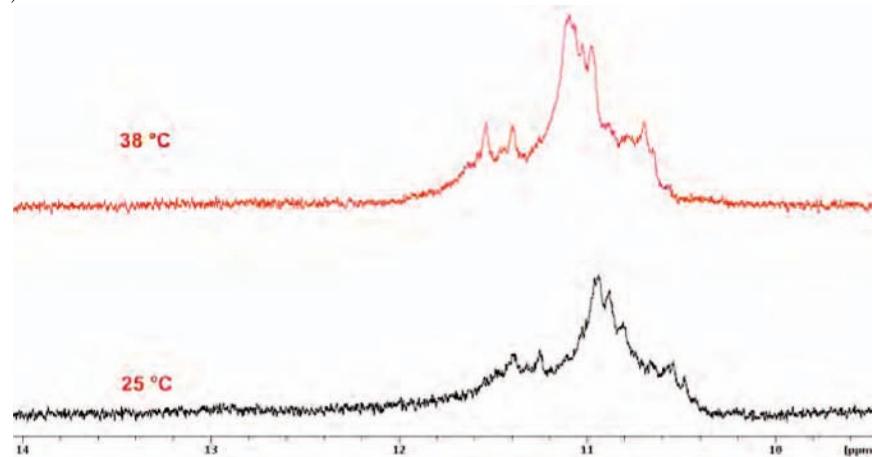
(c)



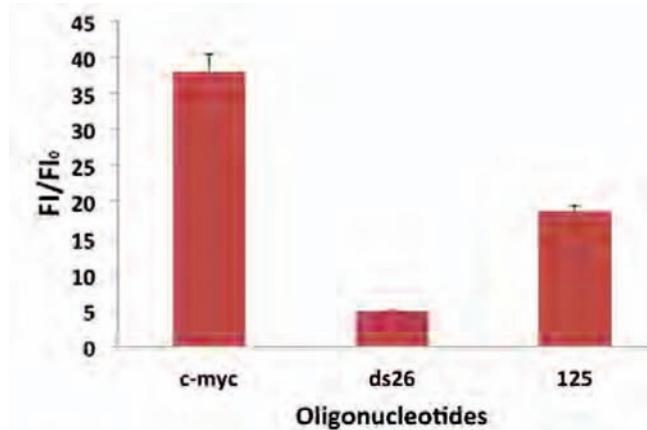
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 127: Results interpretation of Mito 125

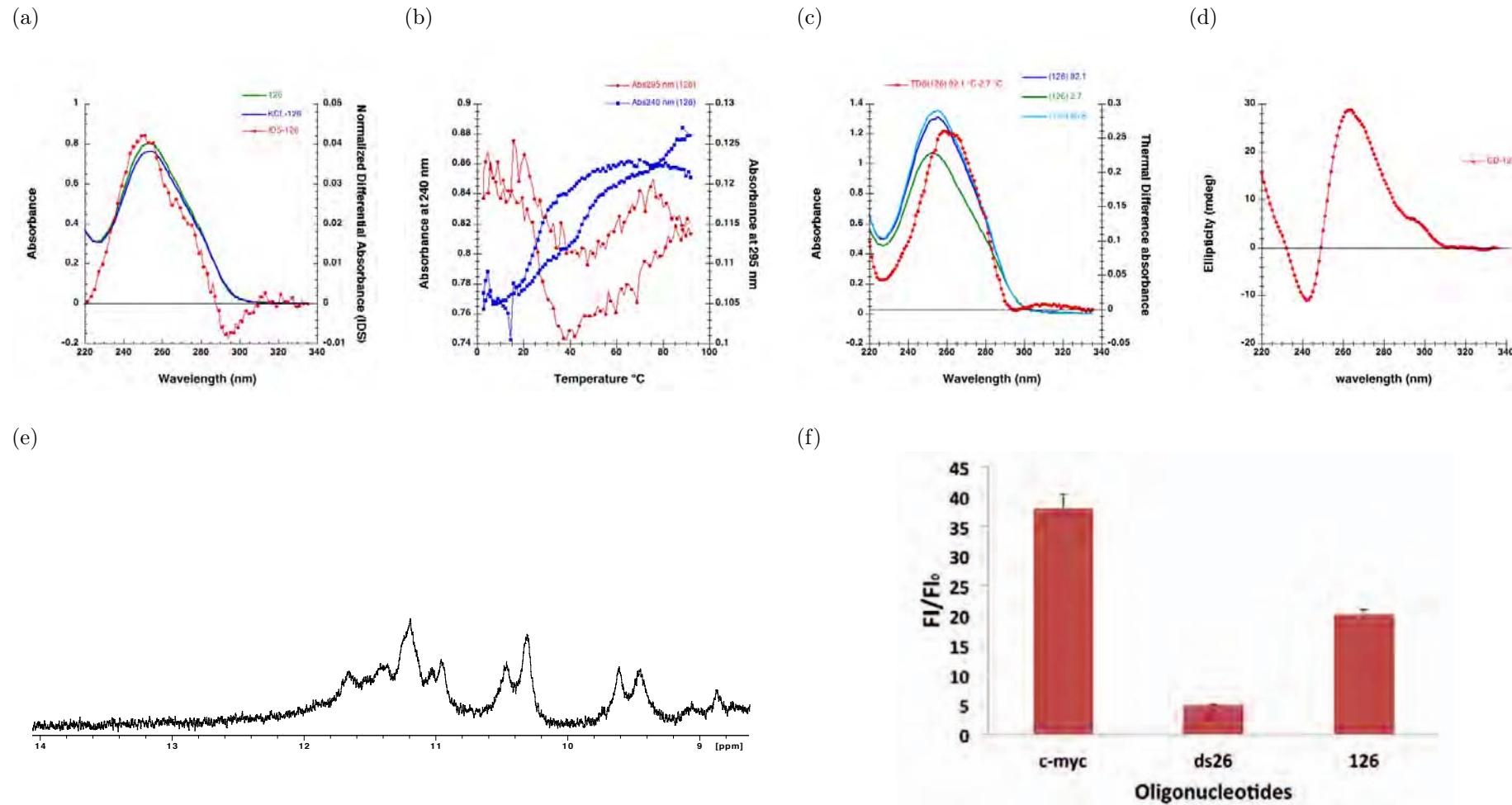
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Yes	++	G4 <sup>a</sup>

<sup>a</sup> conclusion based on NMR data

Name: Mito 126

Sequence:  $5' GGGAGGTTGAAAGTGAAGAGGTATGGT 3'$

Score: 1.0



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 128: Results interpretation of Mito 126

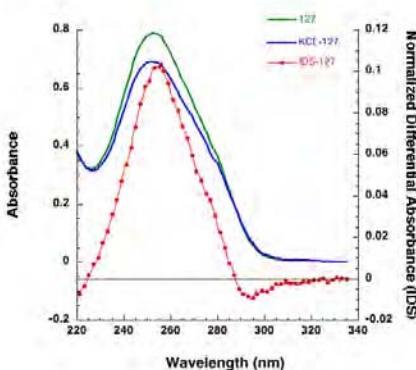
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes (-)	No	No	Parallel	Yes	++	<b>G4</b>

Name: Mito 127

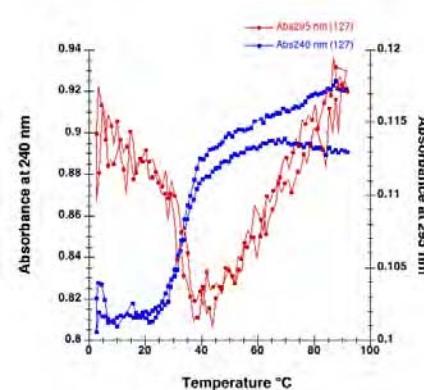
Sequence:  $5' TGGTGA GGGAGGTTGAAGTGAGAGGT 3'$

Score: 1.0

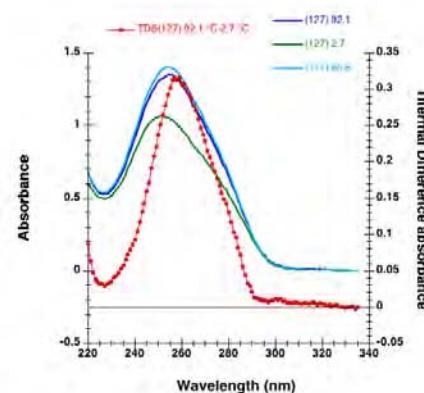
(a)



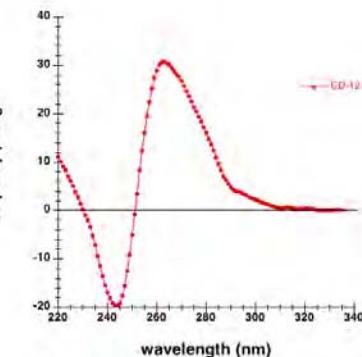
(b)



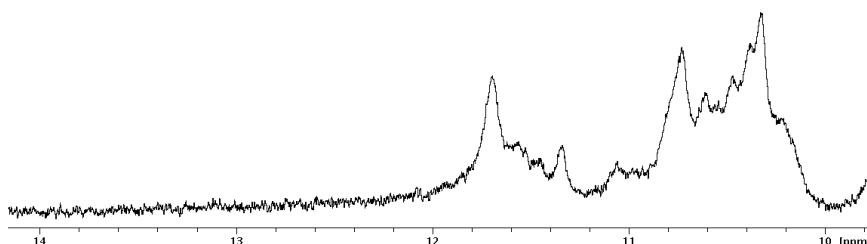
(c)



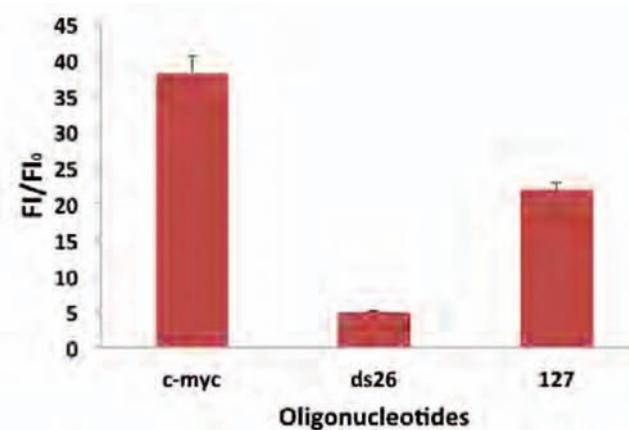
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 129: Results interpretation of Mito 127

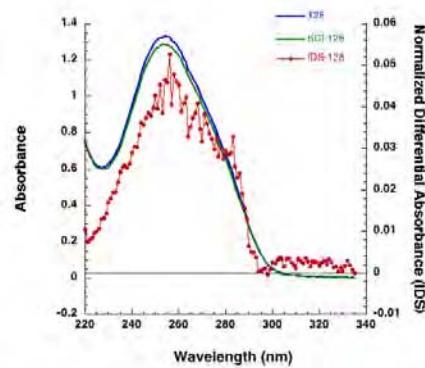
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	Yes	No	Parallel	Yes	Yes	<b>G4 (Unstable)</b>

Name: Mito 128

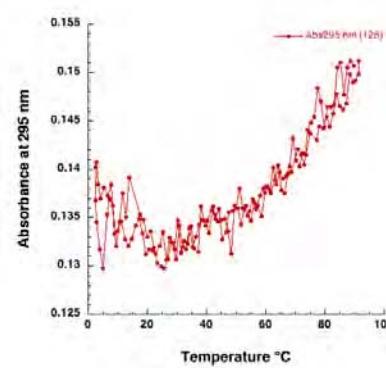
Sequence: *5' GGGGAA***GCGA***GGTTGACCTGTTA***GG** *3'*

Score: 0.92

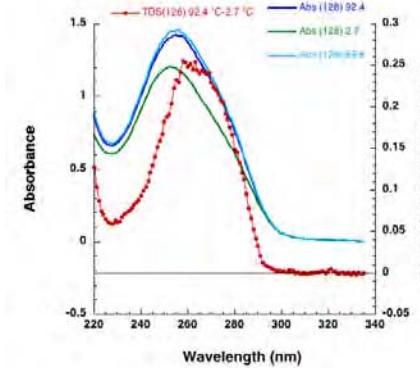
(a)



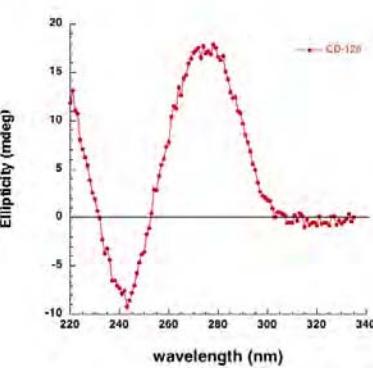
(b)



(c)

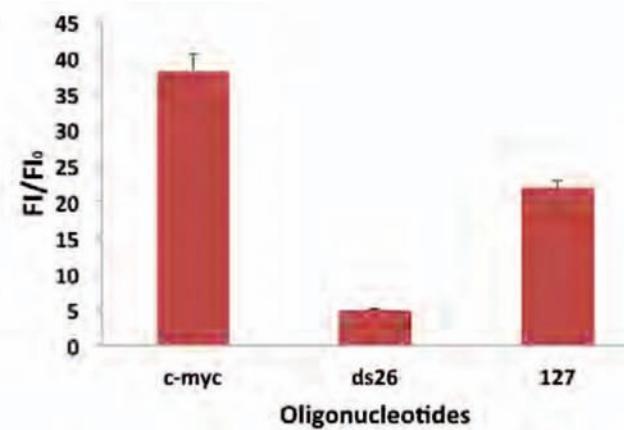


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

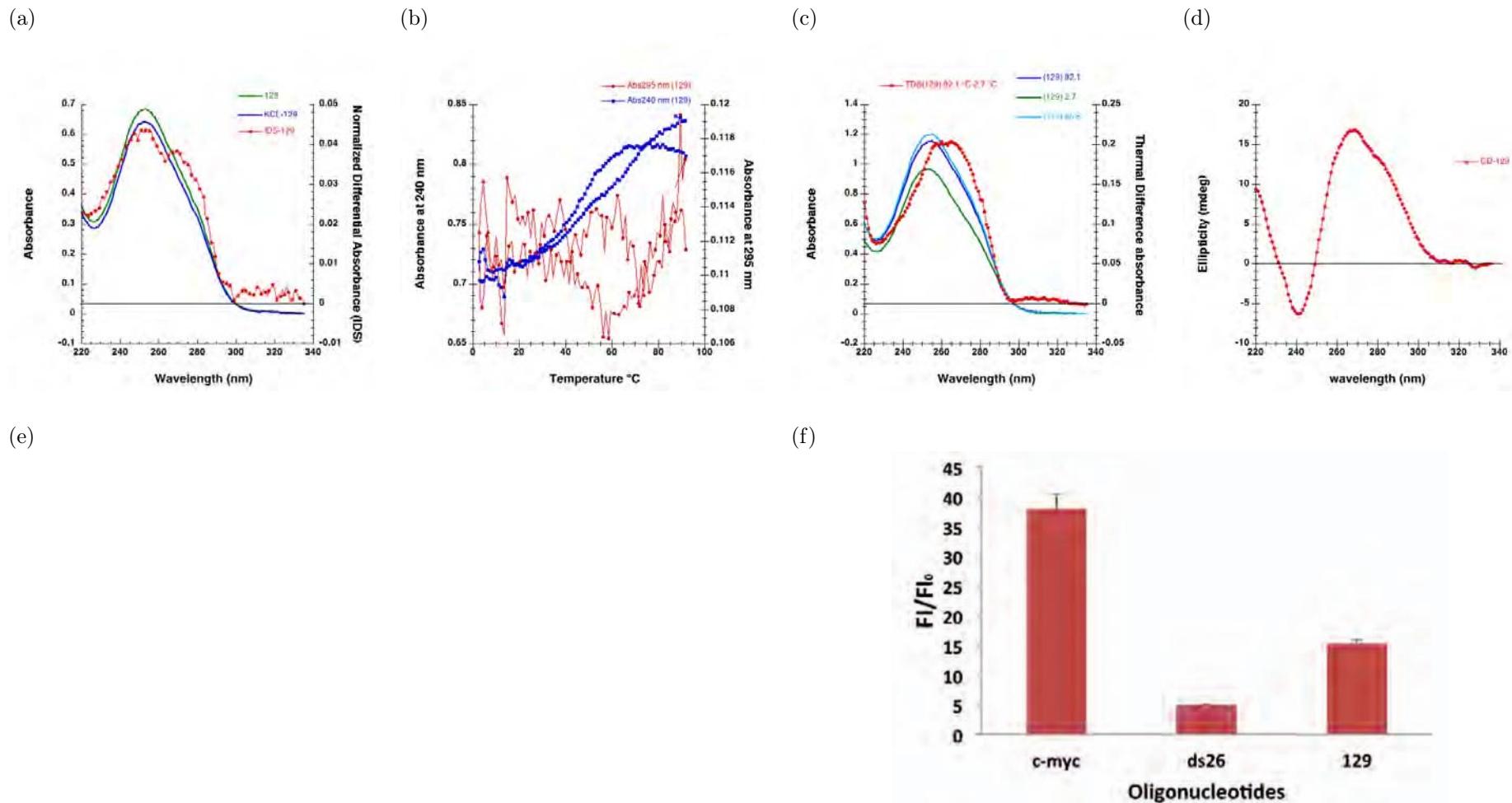
Table 130: Results interpretation of Mito 128

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	++	Not G4

Name: Mito 129

Sequence:  $5' GGGTGGGAAAGCGAGGTTGACCTG 3'$

Score: 1.17



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

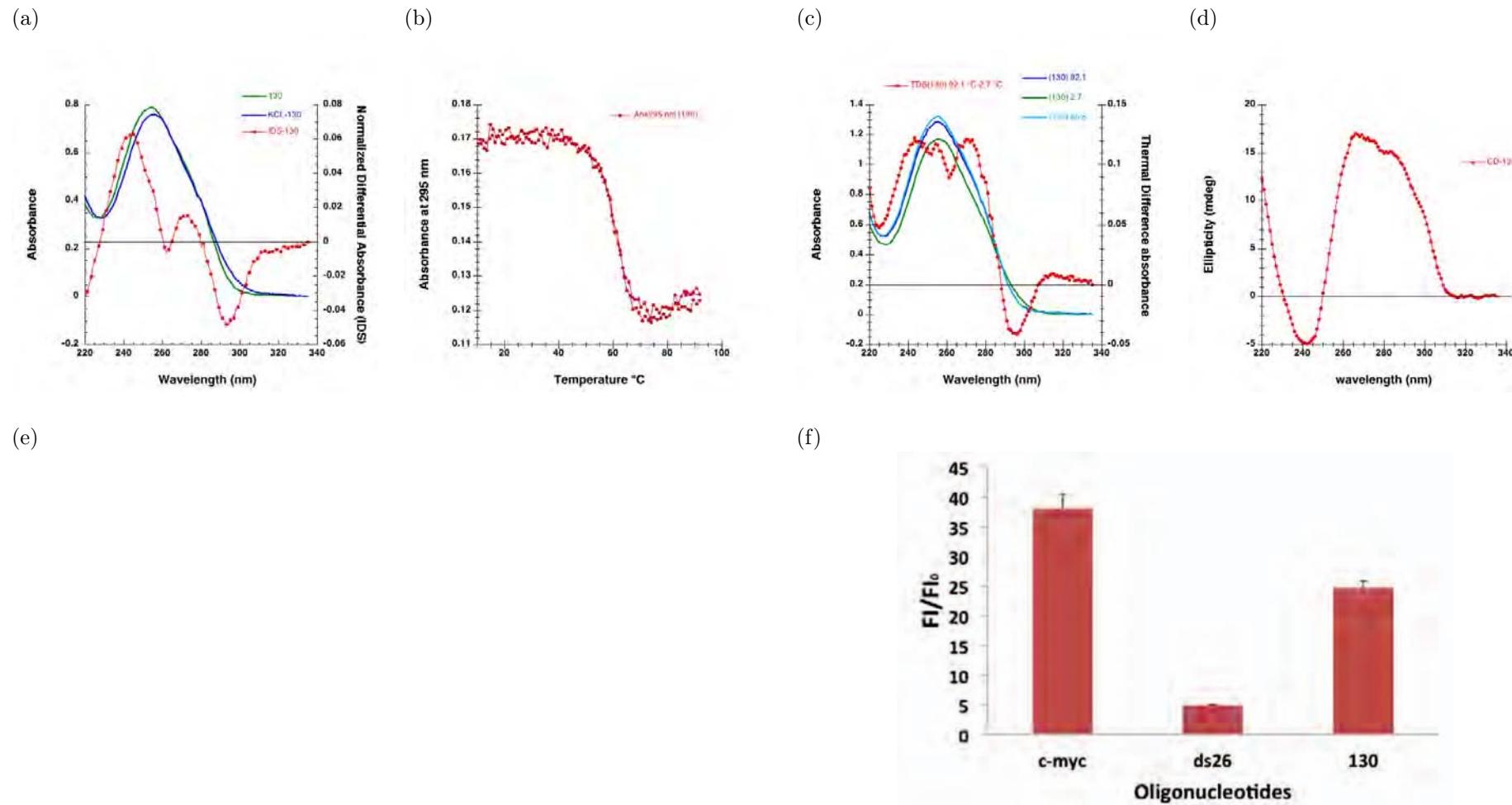
Table 131: Results interpretation of Mito 129

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	Mixed	Not done	++	<b>Not G4</b>

Name: Mito 130

Sequence:  $5' TGGCGTTAATGGGGTTA GTAGGGT GGGG 3'$

Score: 1.59



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

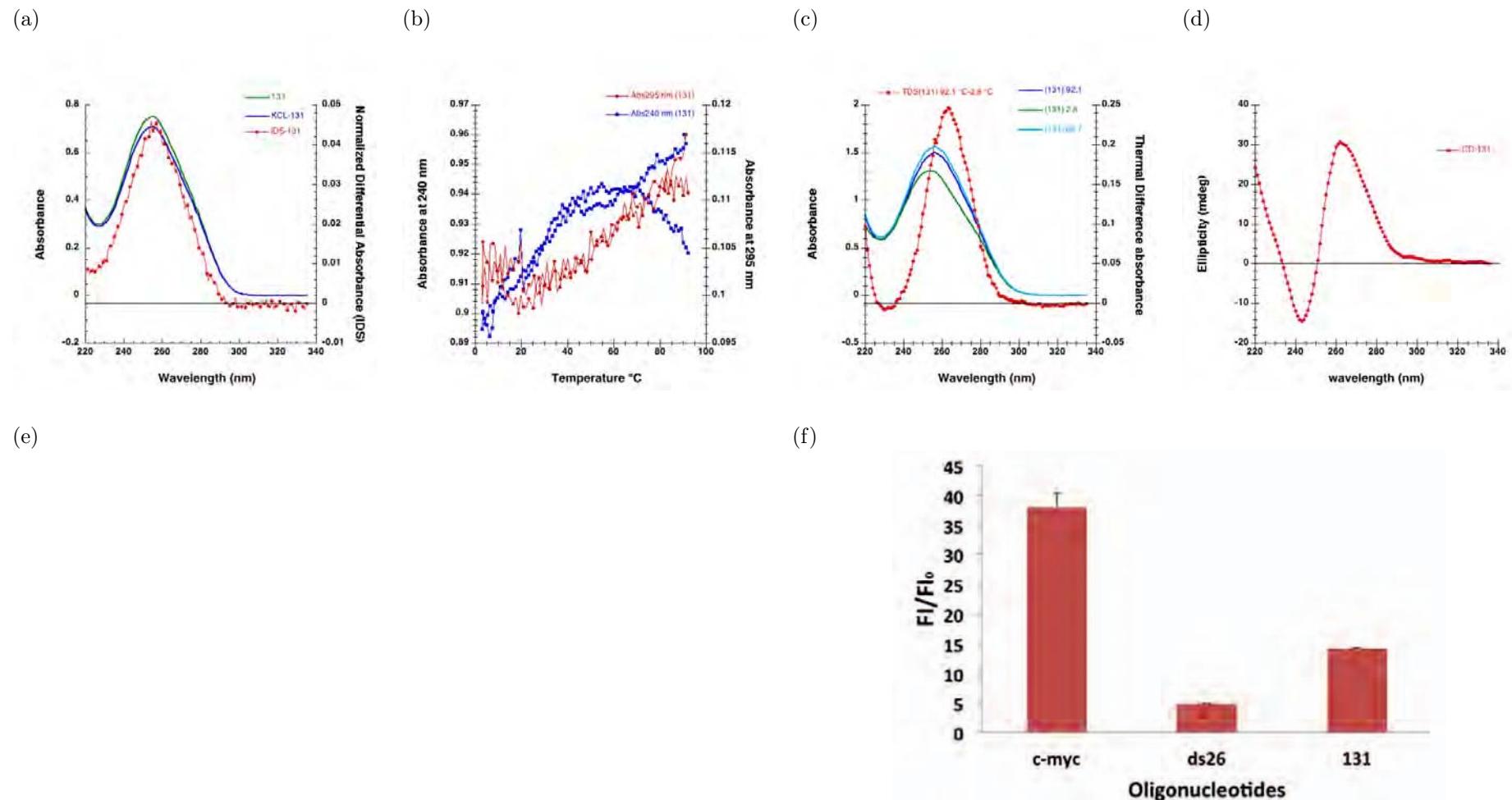
Table 132: Results interpretation of Mito 130

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Mixed	Not done	++	G4

Name: Mito 131

Sequence:  $5' \text{GGGGAAATGTTGTTAGTAATGAGA} 3'$

Score: 1.0



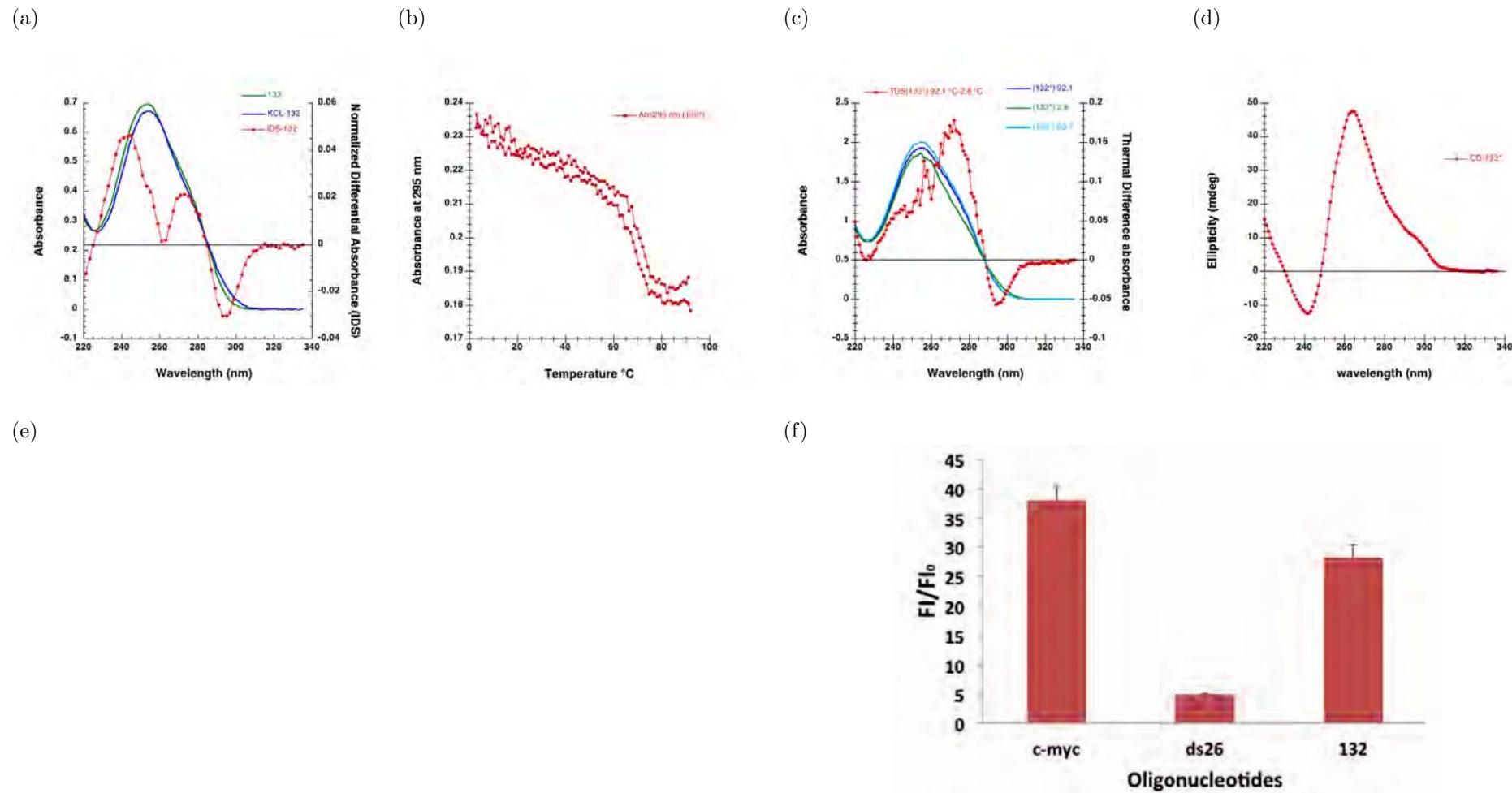
*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 133: Results interpretation of Mito 131

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	Parallel	Not done	++	Not G4

Name: Mito 132

Sequence: *5' GGTAAGGGGGATTGTTGTTGGAAGGGGATGCGGGGG 3'* Score: 1.82



*In vitro* characterization of the selected candidates: a) Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. b) Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). c) Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). d) Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). e) 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. f) Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 134: Results interpretation of Mito 132

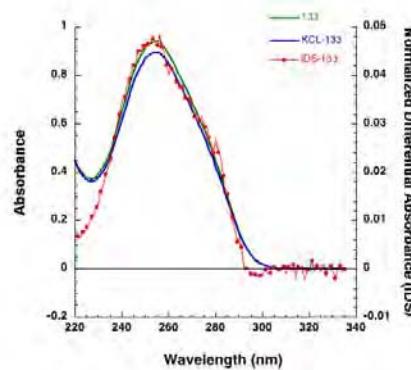
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Parallel	Not done	++	G4

Name: Mito 133

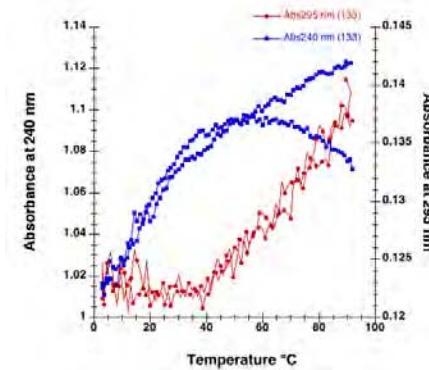
Sequence:  $5' TAGATA GGGGATT GTGC GG TGATG 3'$

Score: 0.93

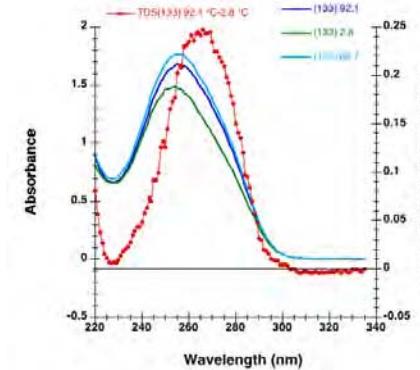
(a)



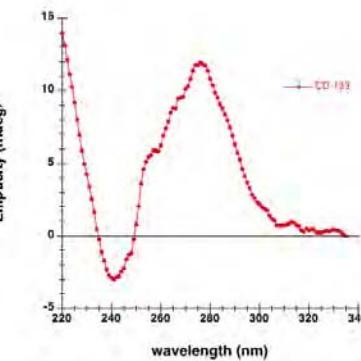
(b)



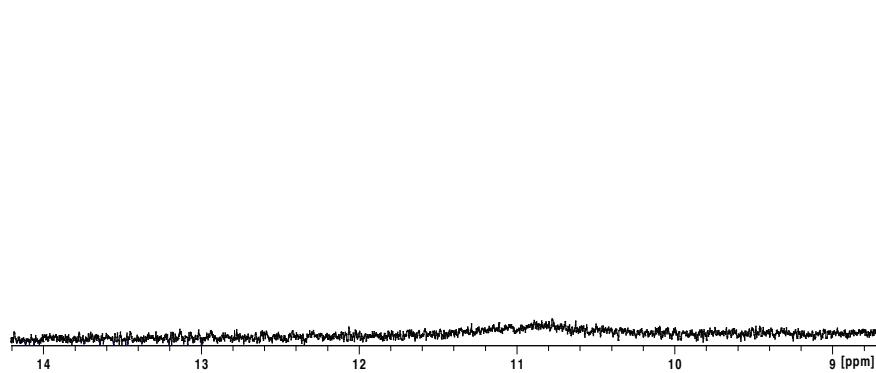
(c)



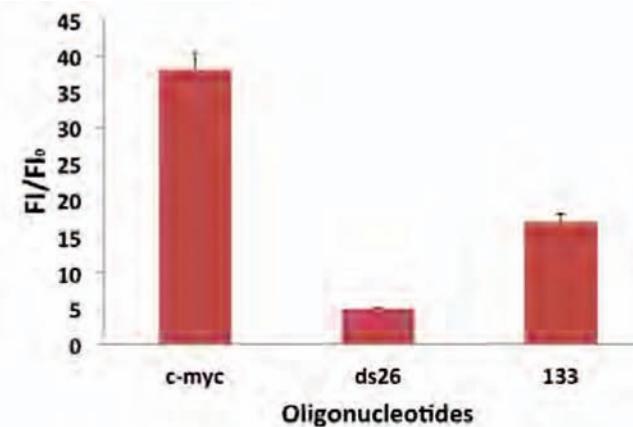
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 µM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 µM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 µM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 µM oligonucleotides and 0.5 µM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

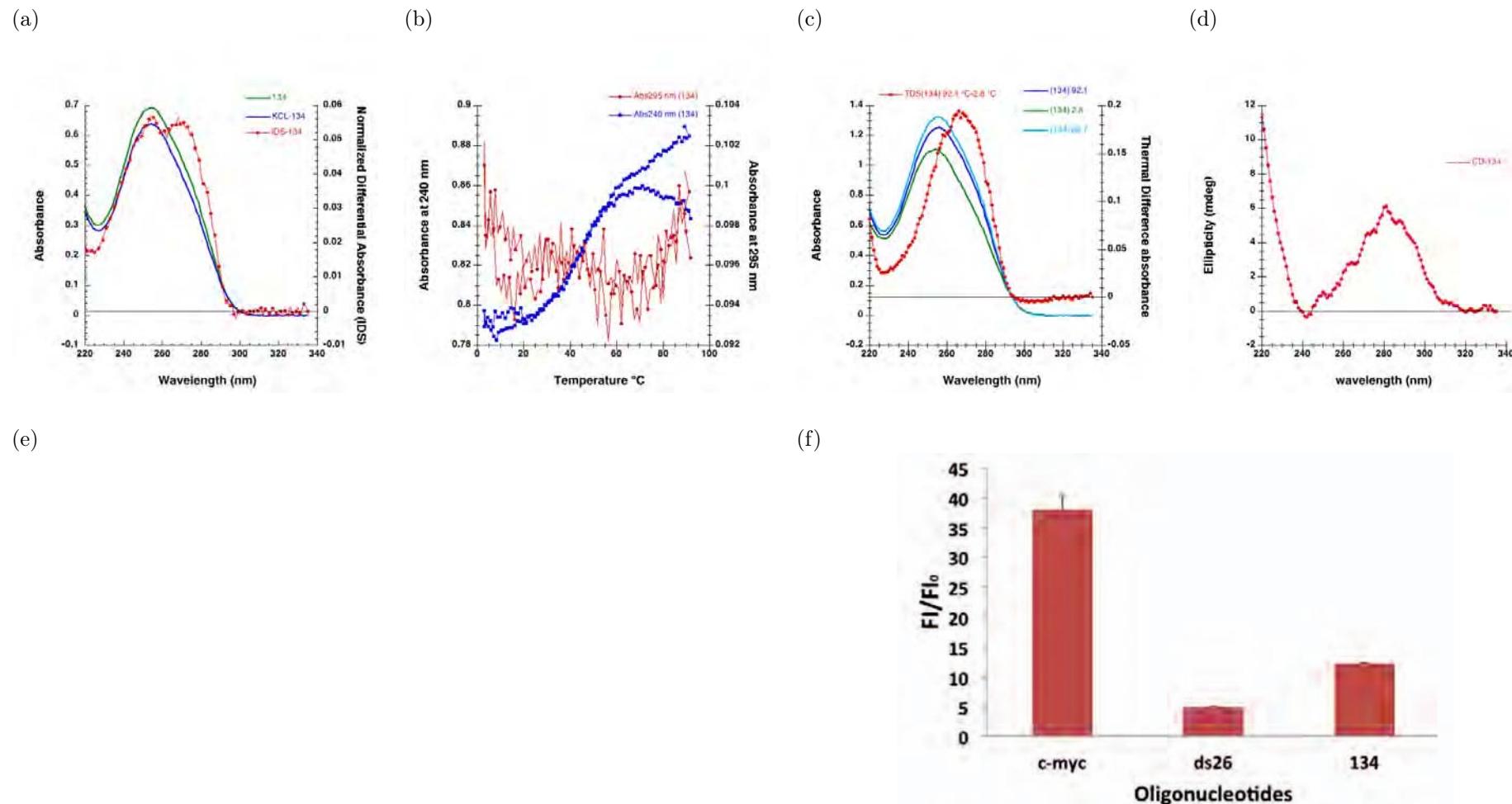
Table 135: Results interpretation of Mito 133

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	No	++	Not G4

Name: Mito 134

Sequence:  $5' TGGGGCA\textcolor{red}{GGTTTTGGCTCGTAAGAAAG} 3'$ 

Score: 0.96



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 136: Results interpretation of Mito 134

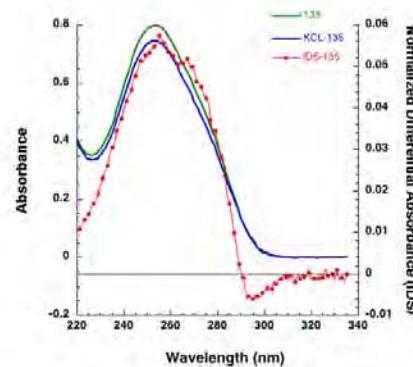
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	+	Not G4

Name: Mito 135

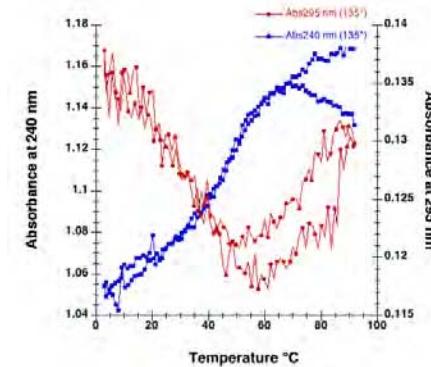
Sequence:  $5' A\textcolor{red}{GGTCTA}GGAGGA GTAGGGCAGGTTTGCTCG 3'$

Score: 1.0

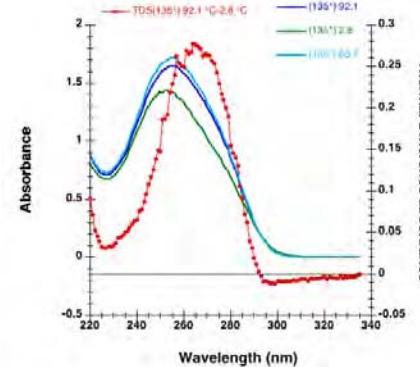
(a)



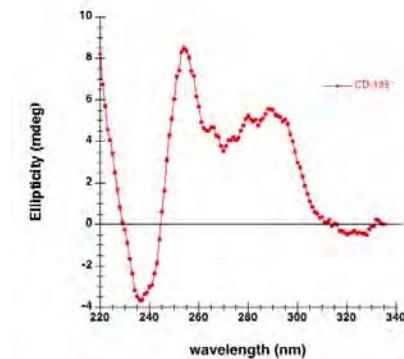
(b)



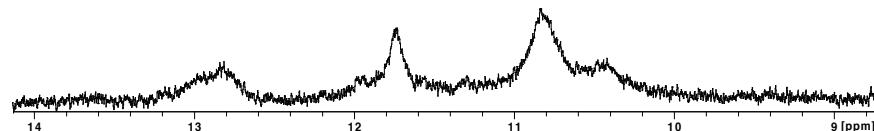
(c)



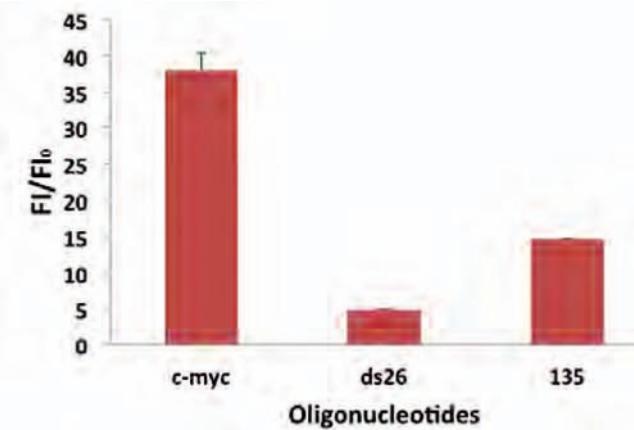
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

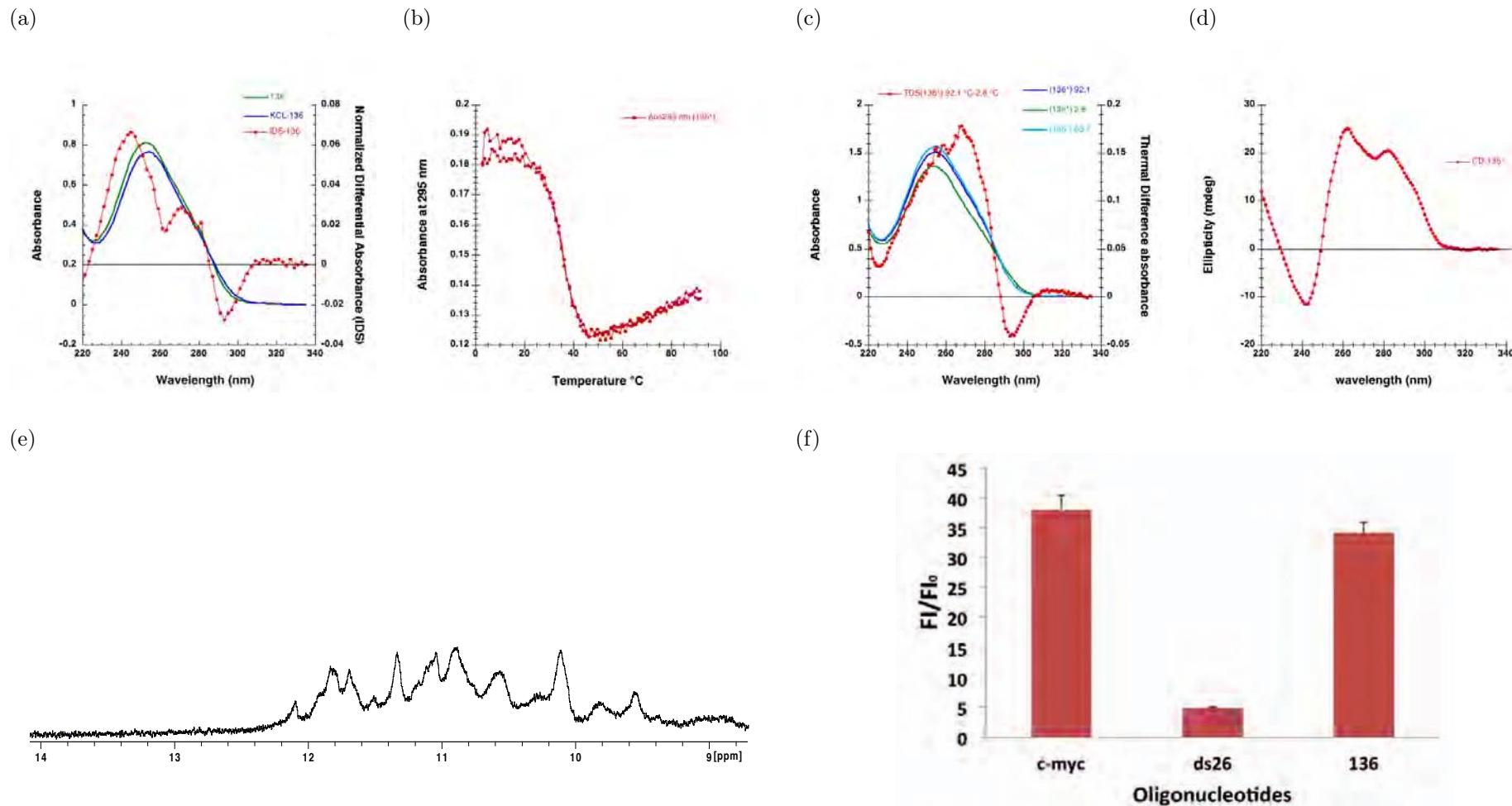
Table 137: Results interpretation of Mito 135

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes (-)	Yes (<37°C)	No	Mixed	??	++	<b>G4</b>

Name: Mito 136

Sequence: *5' TGGGTTGA GGTGATGATGGAGGGTGGAG 3'*

Score: 1.12



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 138: Results interpretation of Mito 136

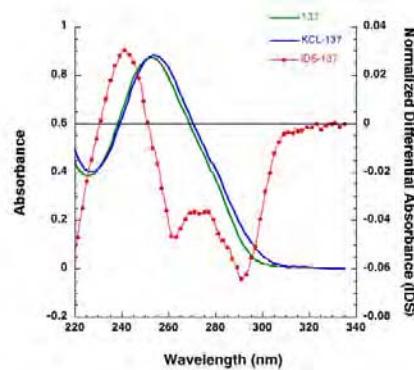
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Mixed	Yes	++	G4

Name: Mito 137

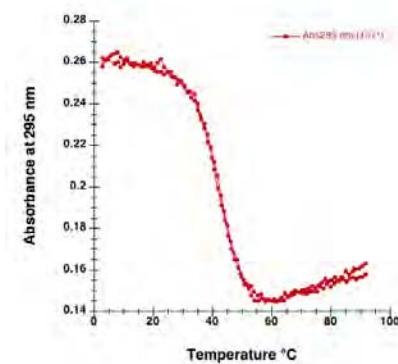
Sequence:  ${}^5' \text{GGAGTA} \text{GGGTTA} \text{GGATGAGT} \text{GGGAAGAA} \text{G} {}^3'$

Score: 1.07

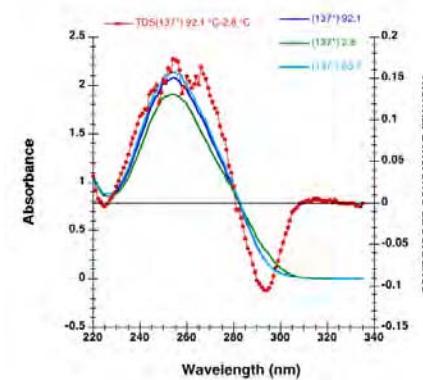
(a)



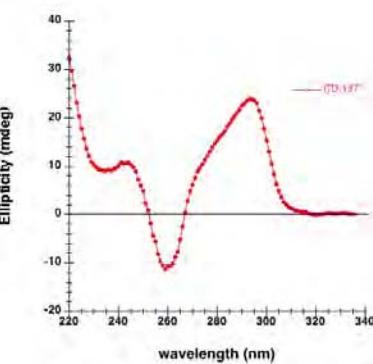
(b)



(c)

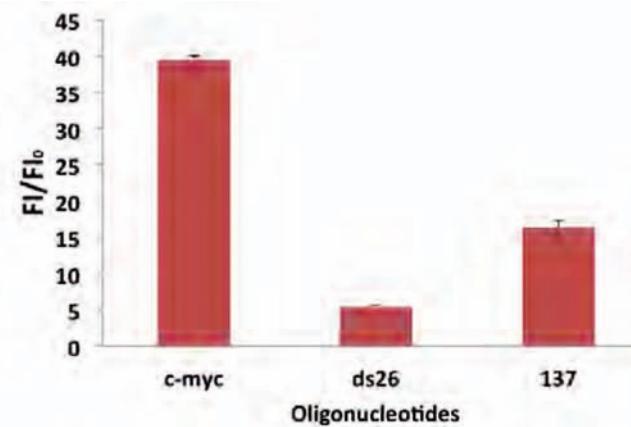


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

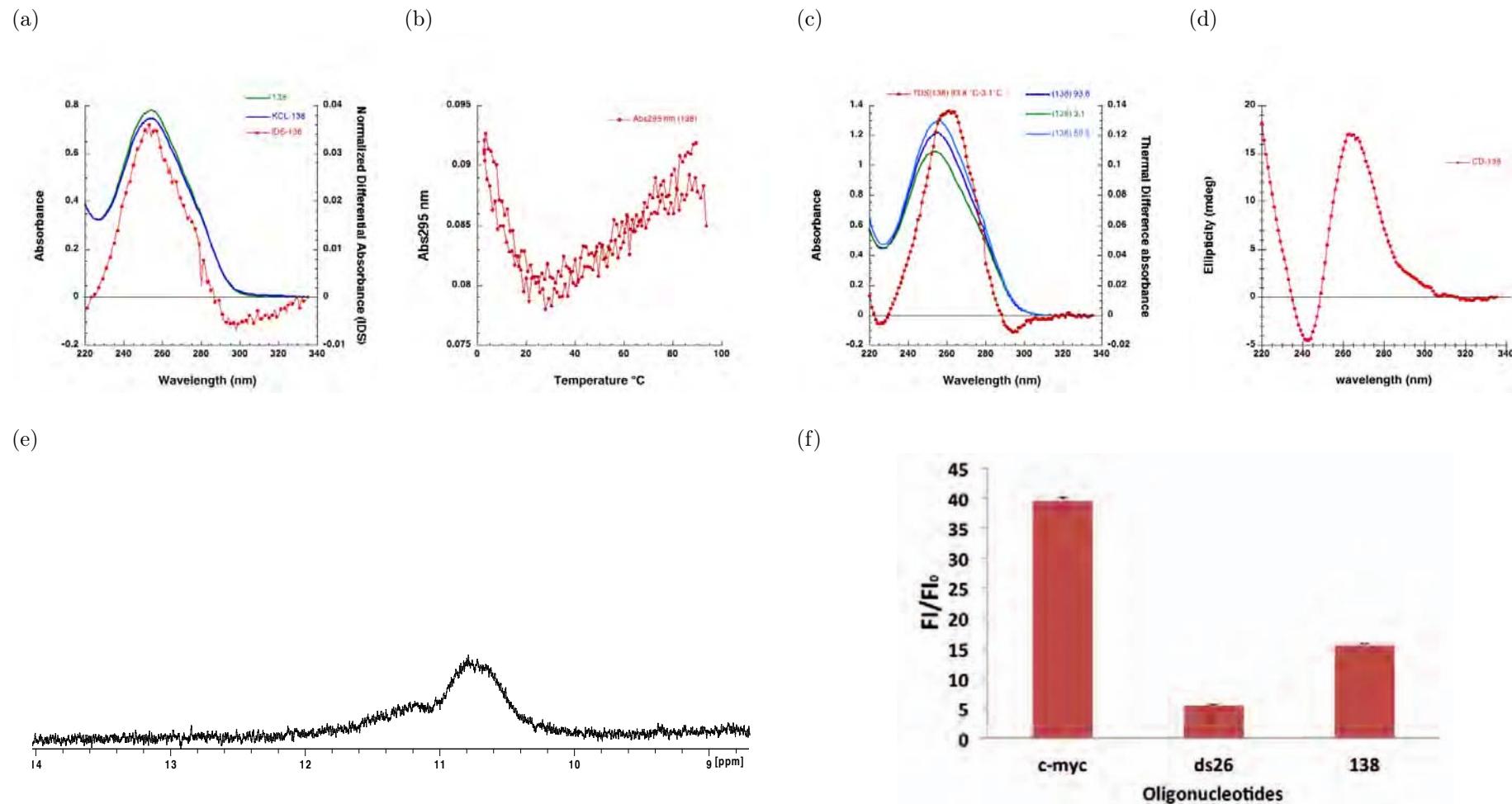
Table 139: Results interpretation of Mito 137

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Antiparallel	Not done	++	G4

Name: Mito 138

Sequence:  $5' \text{GGGGGAAATAGGTTATGTGATTAGGAGG} 3'$

Score: 1.19



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 140: Results interpretation of Mito 138

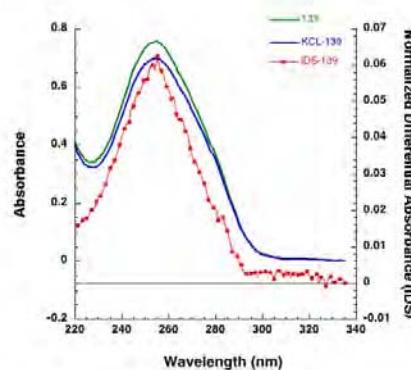
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	Yes (<37°C)	Yes(-)	Parallel	Yes	++	G4 (Unstable)

Name: Mito 139

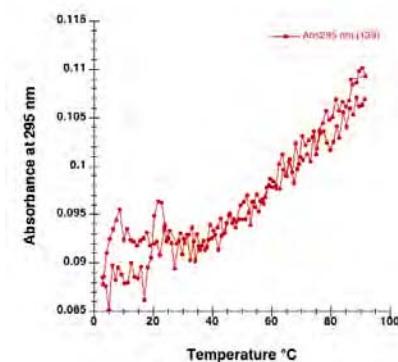
Sequence:  $5' \text{GAGATTGCTCGGGGAATAGGTTATGTG} 3'$

Score: 0.96

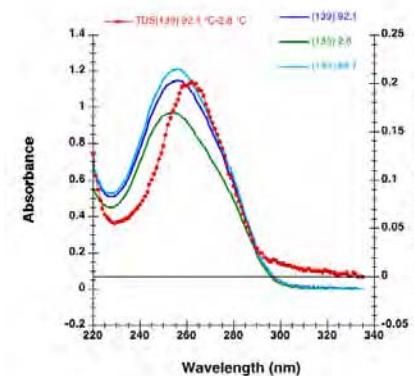
(a)



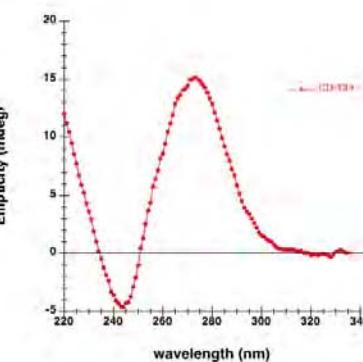
(b)



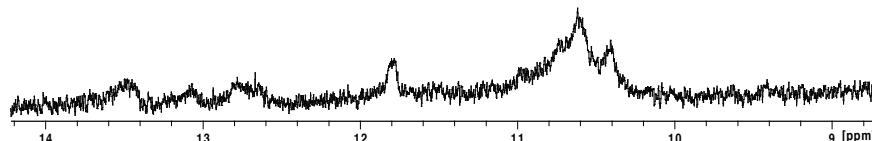
(c)



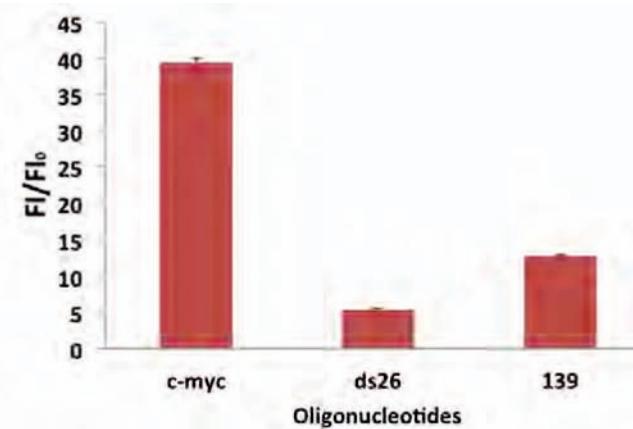
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

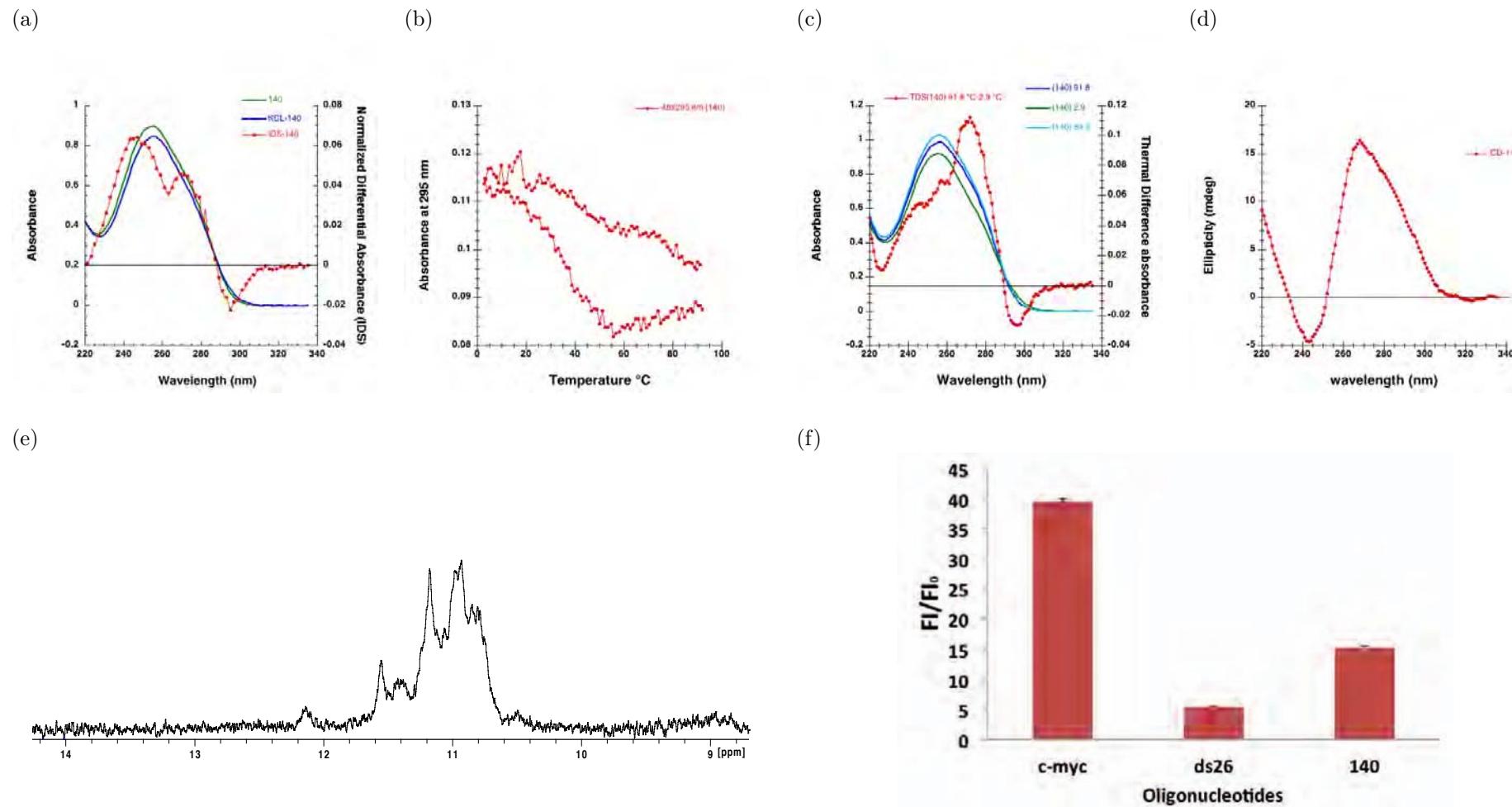
Table 141: Results interpretation of Mito 139

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	No	+	Not G4

Name: Mito 140

Sequence: *5' GGTGCGGGGGCTTTGTATGATTATGGCGC 3'*

score: 1.17



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 142: Results interpretation of Mito 140

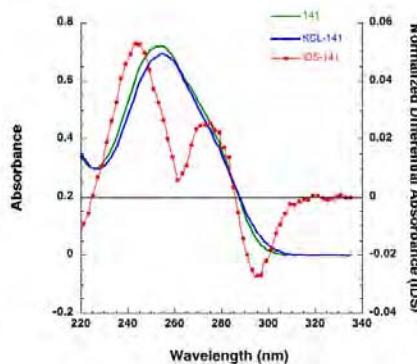
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes (< 37°C)	Yes	Mixed	Yes	++	<b>G4</b>

Name: Mito 141

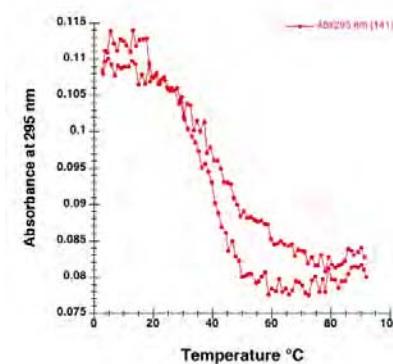
Sequence:  $5' \text{GGGAGGATCCTATTGGTGC} \text{GGGGG} 3'$

score: 1.38

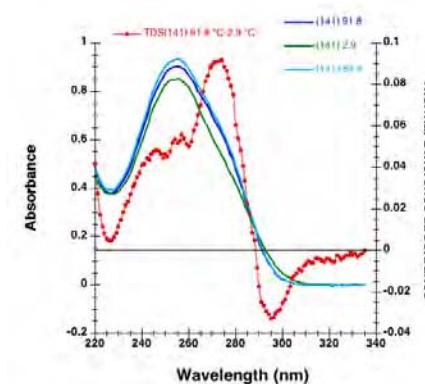
(a)



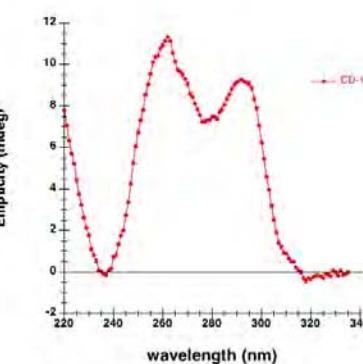
(b)



(c)

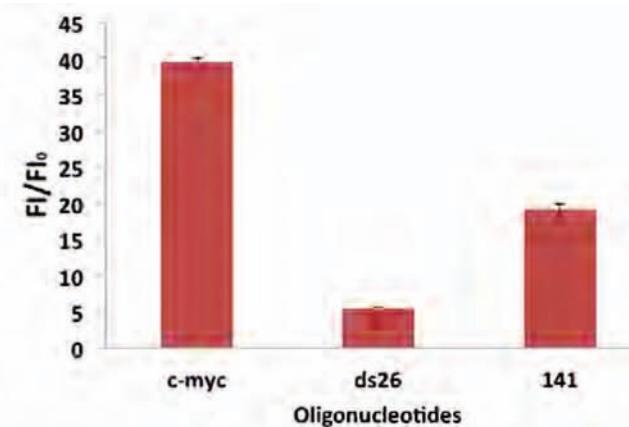


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

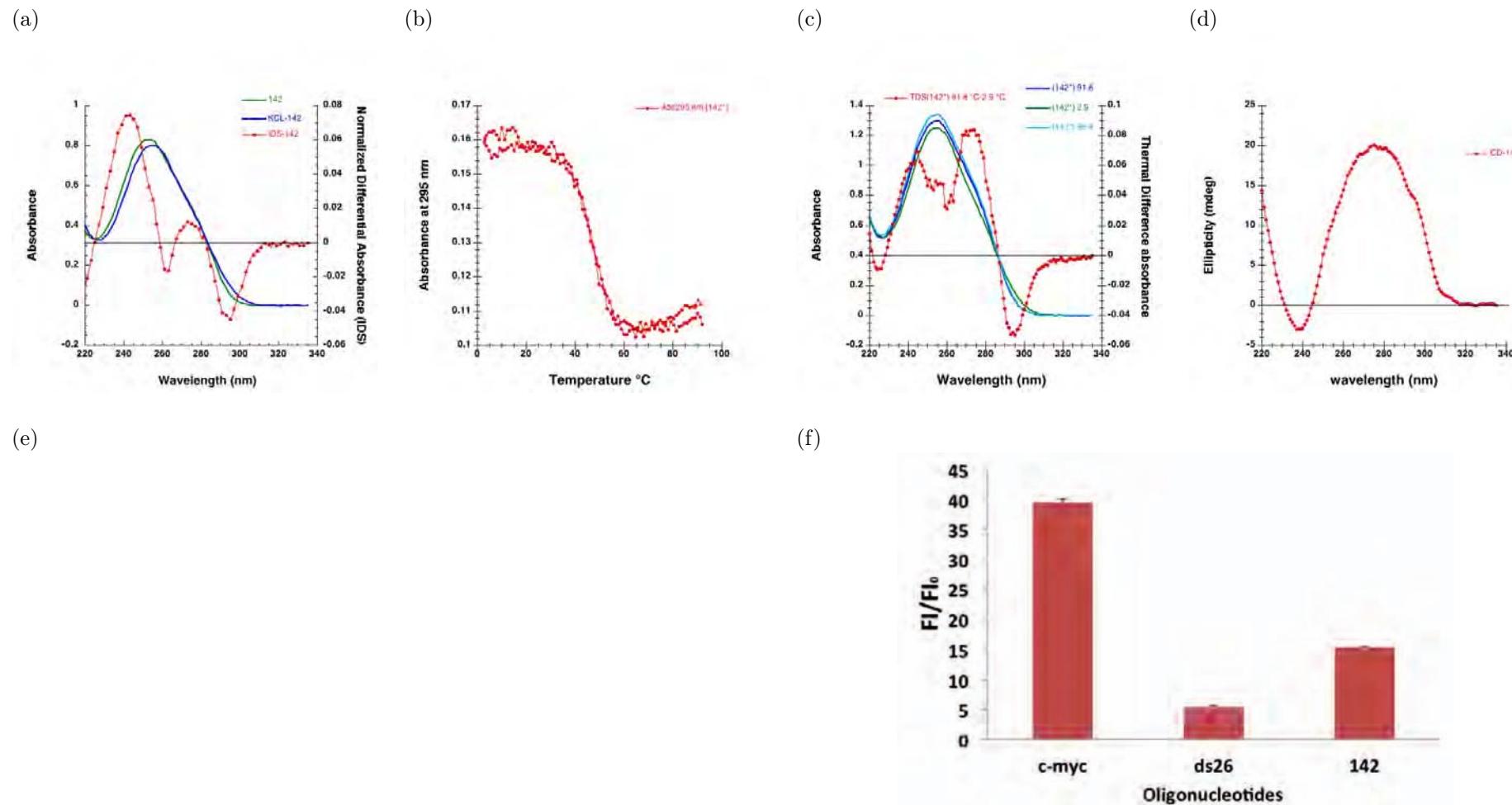
Table 143: Results interpretation of Mito 141

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Mixed	Not done	++	G4

Name: Mito 142

Sequence: *5' GGA GA GGGGTCA GGGTTGATTGAGG 3'*

score: 1.5



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 144: Results interpretation of Mito 142

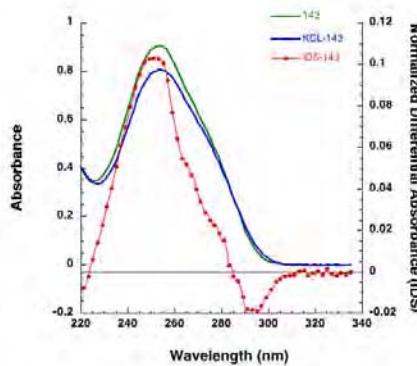
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Mixed	Not done	++	G4

Name: Mito 143

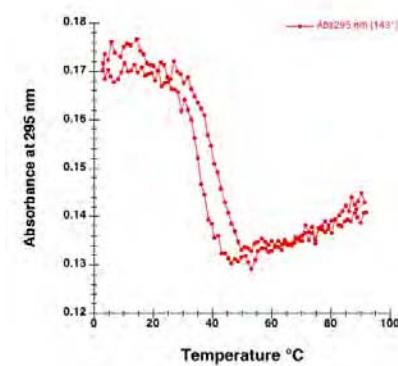
Sequence:  ${}^5' GTGGGGTGAAAAGAGTATGATGGGGTGGTGG {}^3'$

score: 1.31

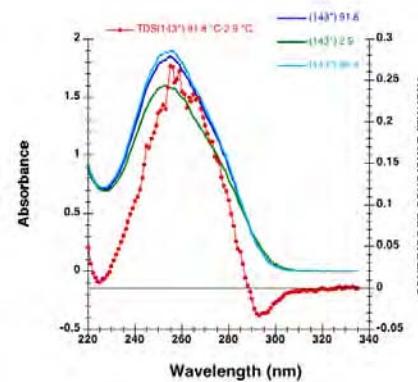
(a)



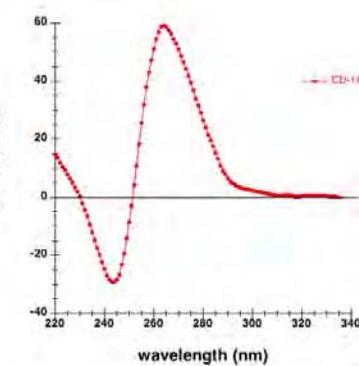
(b)



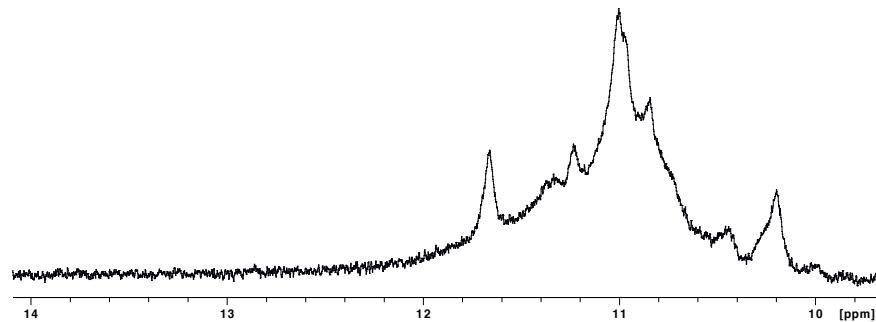
(c)



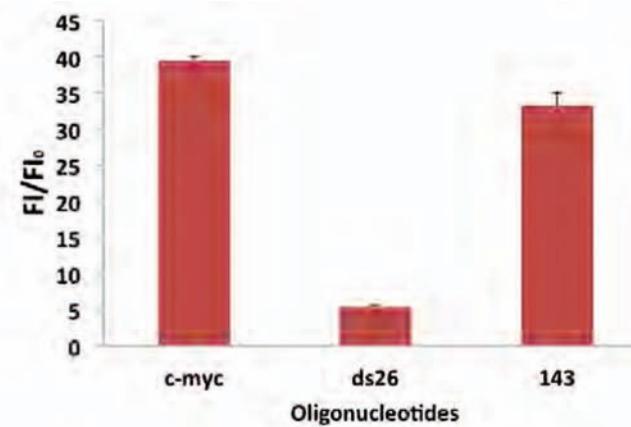
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

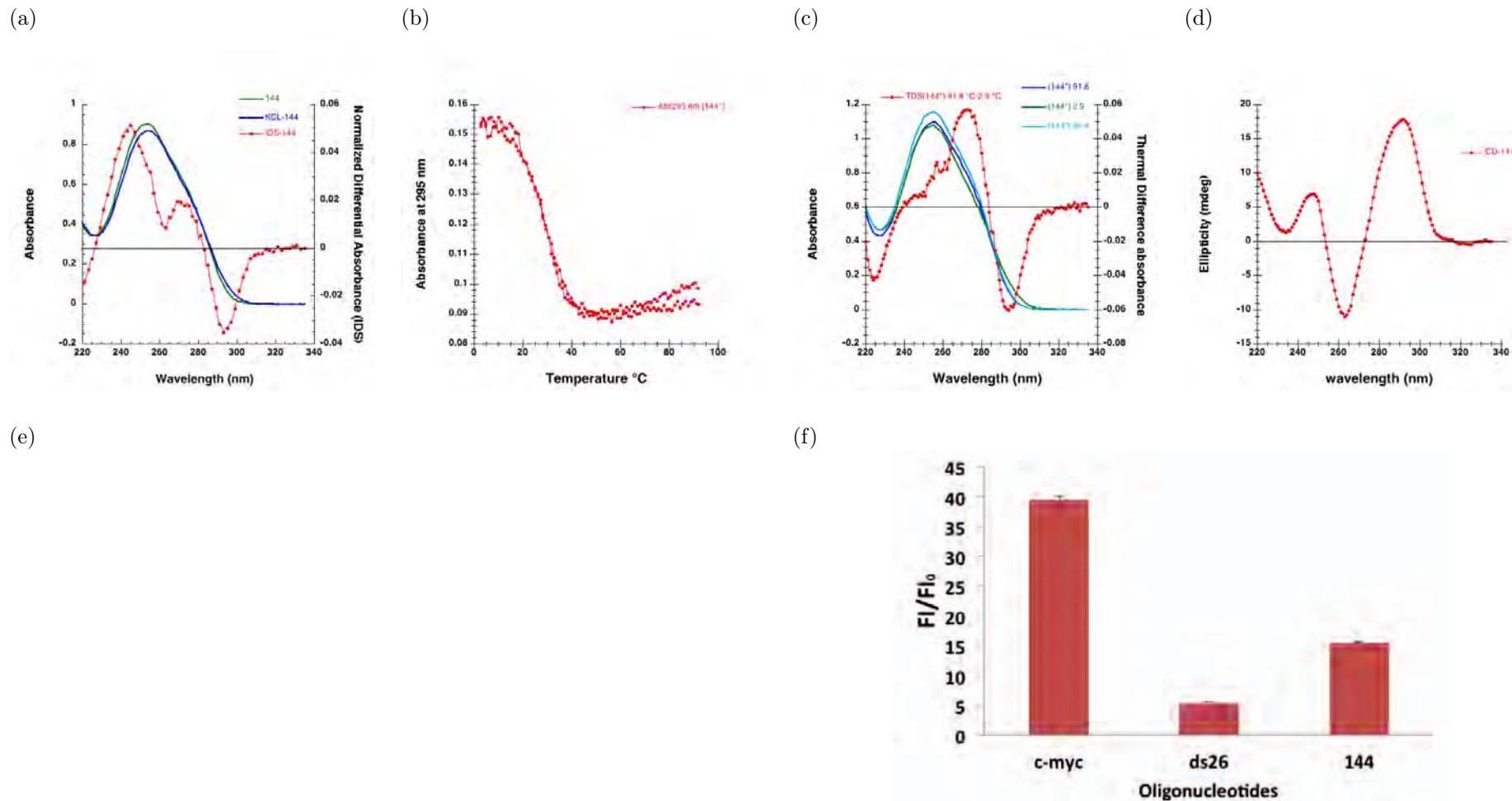
Table 145: Results interpretation of Mito 143

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Parallel	Yes	++	G4

Name: Mito 144

Sequence: 5' GGAGGTA GGATT GGTGCT GTGGGTG 3'

score: 1.08



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 µM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 µM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 µM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 µM oligonucleotides and 0.5 µM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 146: Results interpretation of Mito 144

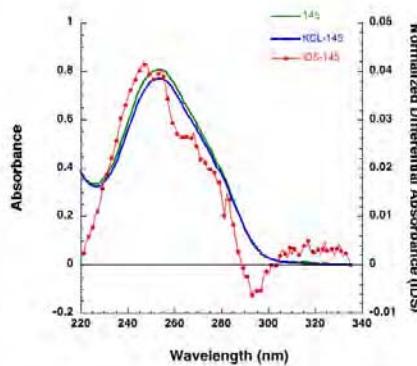
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes (<37°C)	Yes	Antiparallel	Not done	++	G4 (Unstable)

Name: Mito 145

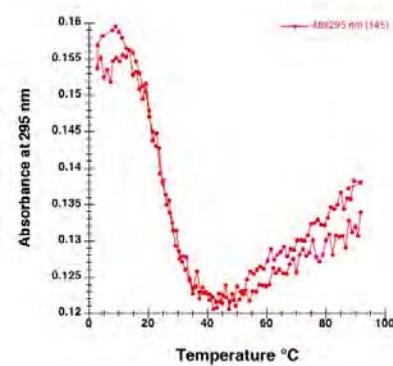
Sequence:  $5' GTGGGGTTA GCGATGGAGGTAGGATTGG 3'$

score: 1.21

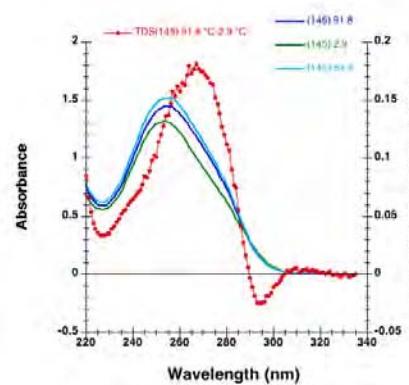
(a)



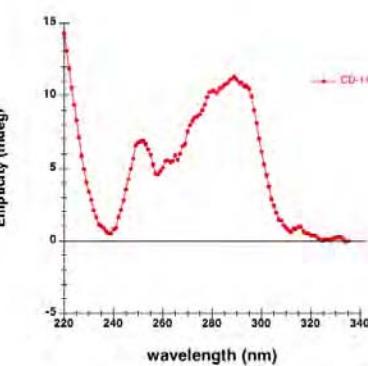
(b)



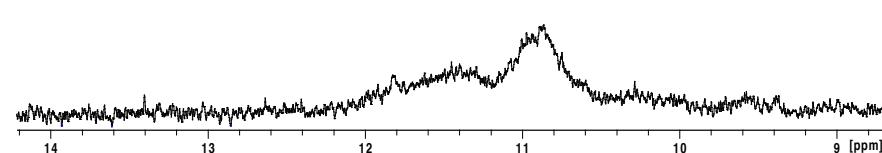
(c)



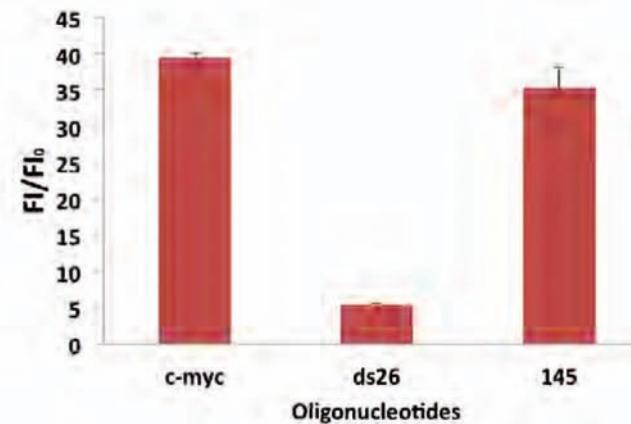
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

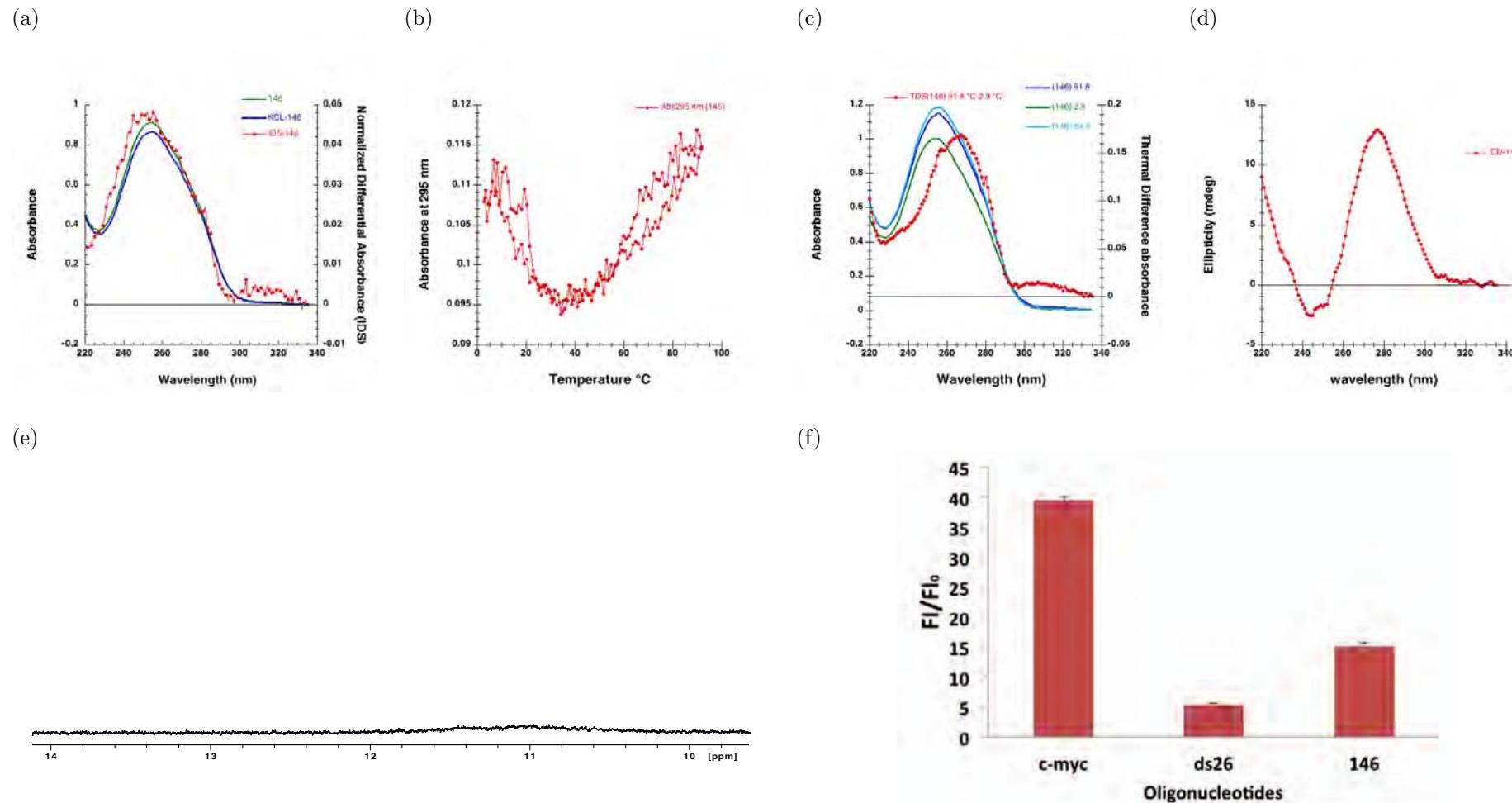
Table 147: Results interpretation of Mito 145

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes (-)	Yes (< 37°C)	Yes	Mixed	Yes	+++	G4 (Unstable)

Name: Mito 146

Sequence: 5' GGTGA GTGTTTA GTGGGGTTA GCG 3'

score: 1.0



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 148: Results interpretation of Mito 146

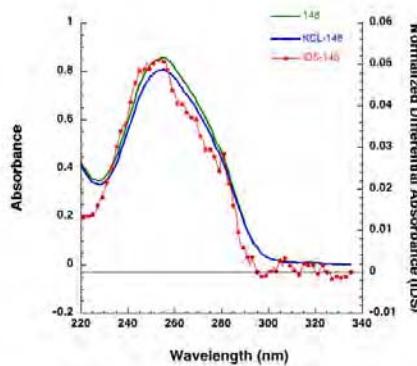
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	Yes (?< 37°C)	No	No	No	++	Not G4

Name: Mito 148

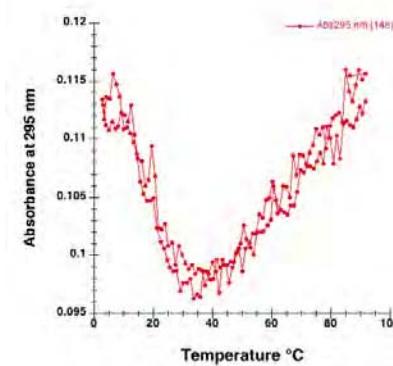
Sequence:  $5' GGTCTTGGTGA GTGTTTA GTGGGG 3'$

score: 1.08

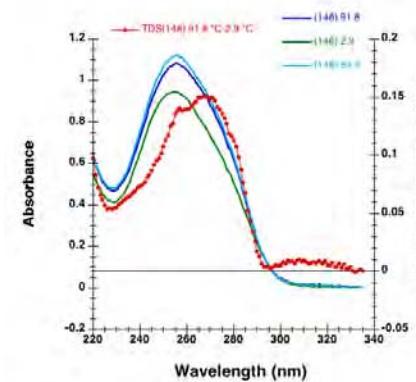
(a)



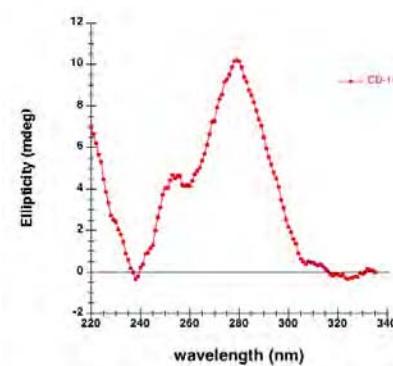
(b)



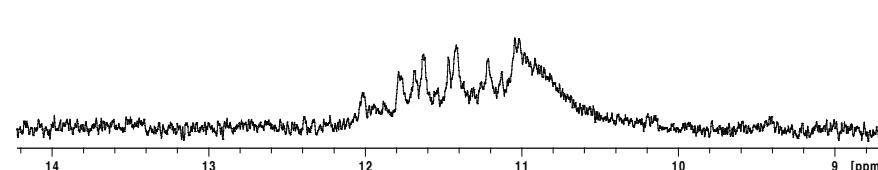
(c)



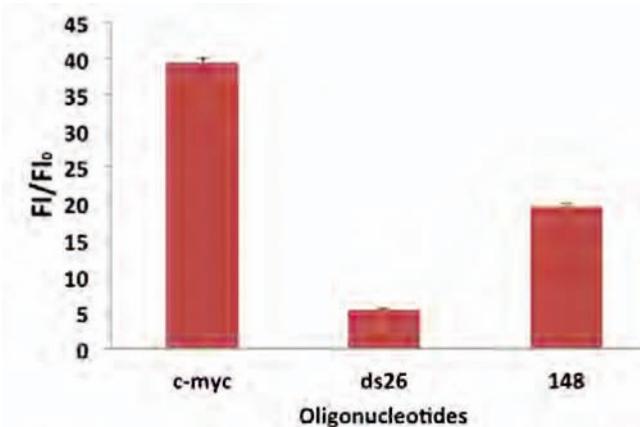
(d)



(e)



(f)



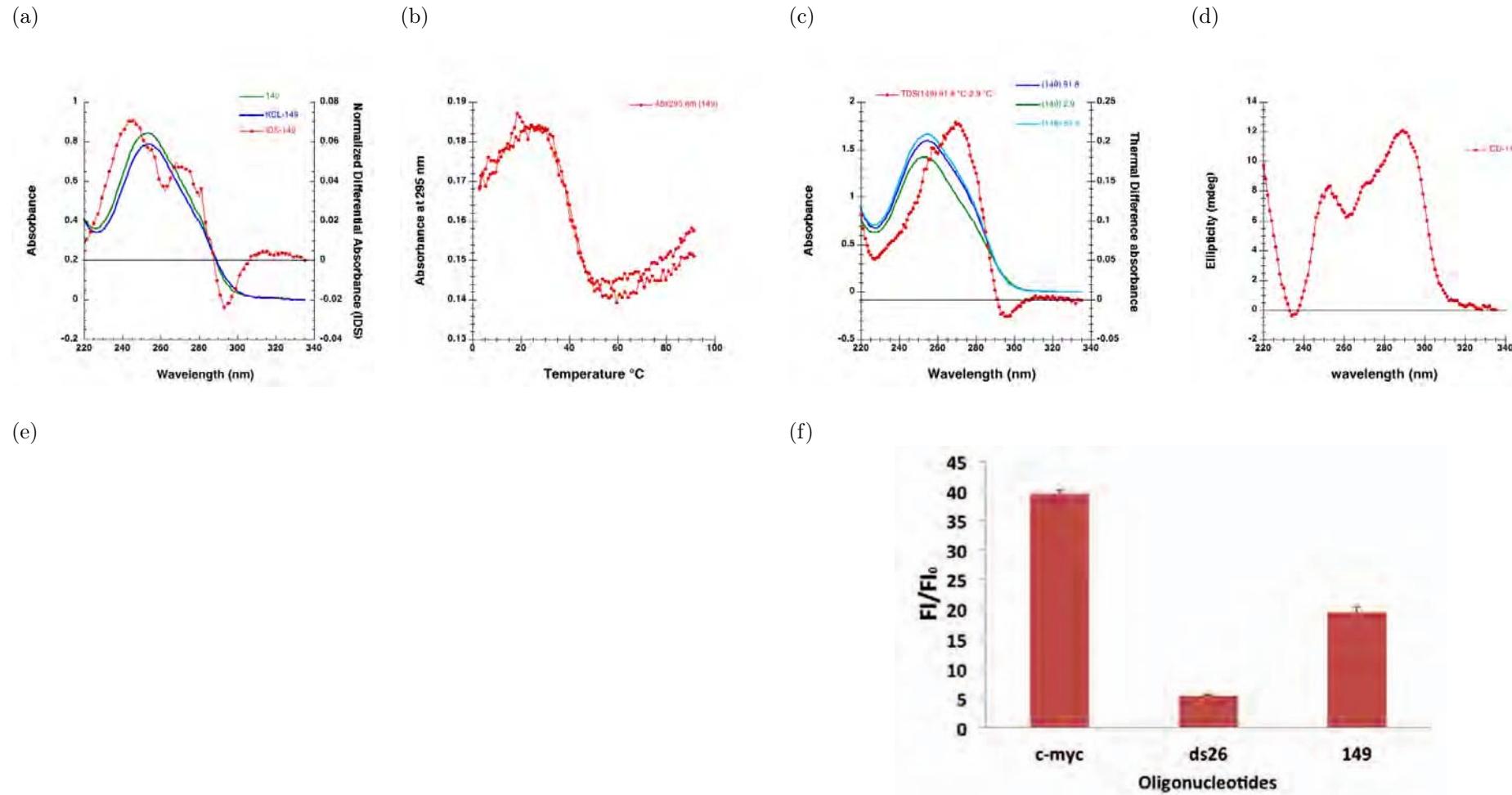
*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 149: Results interpretation of Mito 148

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	Yes (< 37°C)	No	Mixed	Yes	++	G4 (Unstable)

Name: Mito 149

Sequence: 5' *GAGGCATGGGGTCAGGGTTGAGGTCTTGGTGA* GTG 3' score: 1.35



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

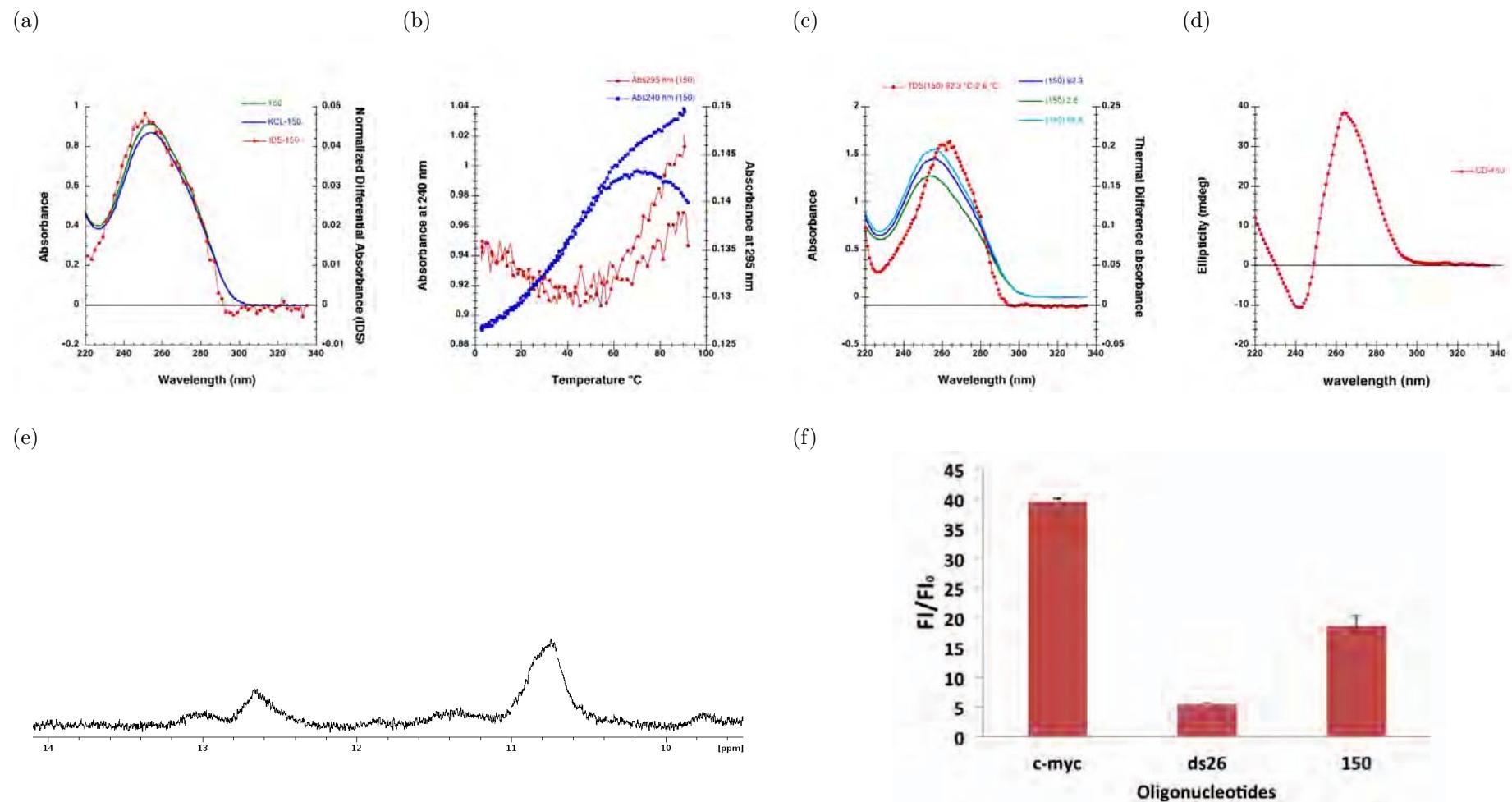
Table 150: Results interpretation of Mito 149

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Mixed	Not done	++	<b>G4</b>

Name: Mito 150

Sequence:  $5' TGA GGAGTATCCTGAGGCATGGGGGT 3'$

score: 1.0



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

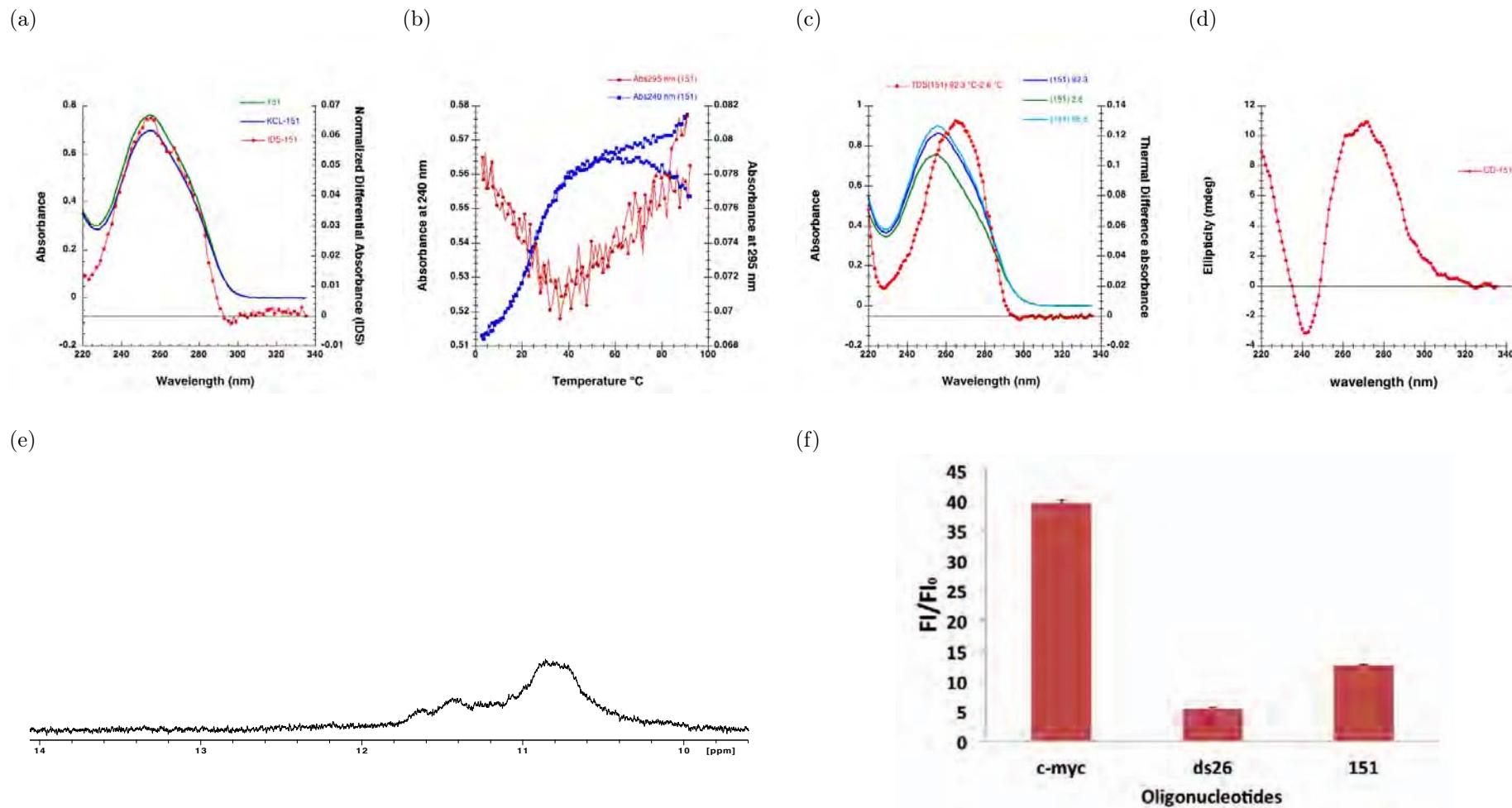
Table 151: Results interpretation of Mito 150

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	Parallel	Yes	++	NotG4

**Name:** Mito 151

**Sequence:** 5' GGGGGAATGATGGTTGTCTTGG 3'

**score:** 1.26



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

**Table 152:** Results interpretation of Mito 151

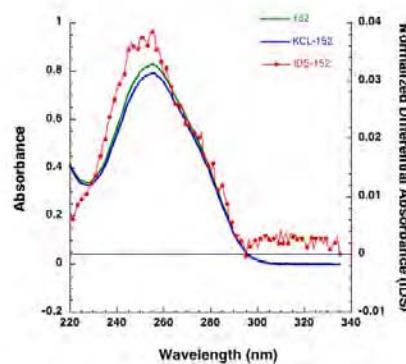
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	Yes (<37°C)	No	Parallel	Yes	+	G4 (Unstable)

Name: Mito 152

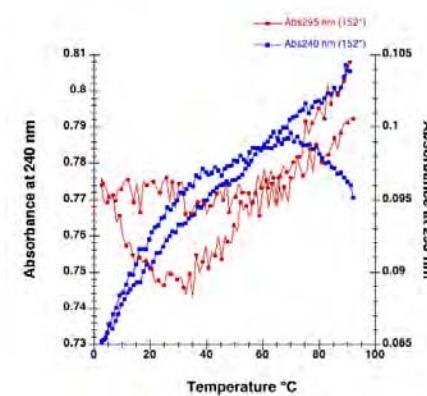
Sequence:  $5' GAATTTCGGGGAGGTTATATGGG 3'$

score: 1.42

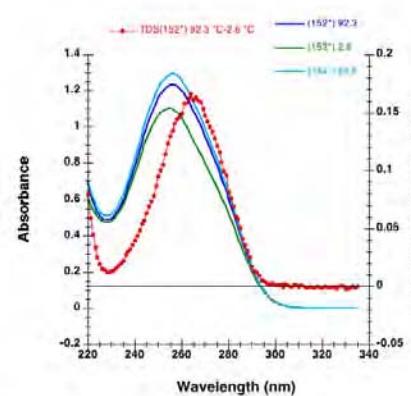
(a)



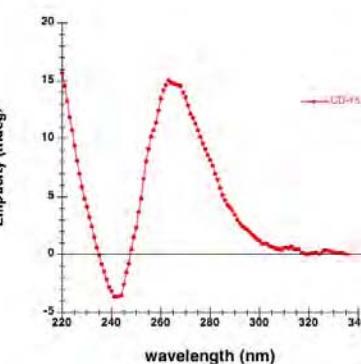
(b)



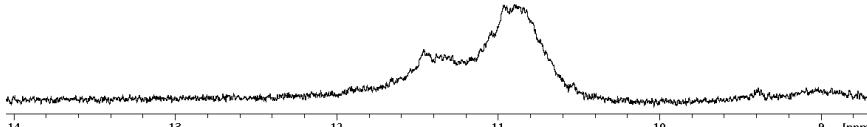
(c)



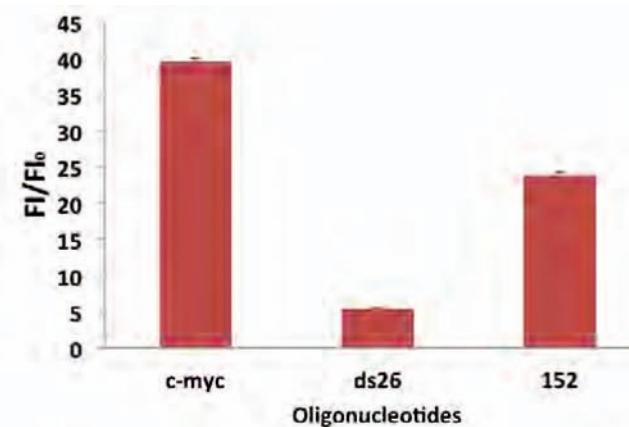
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

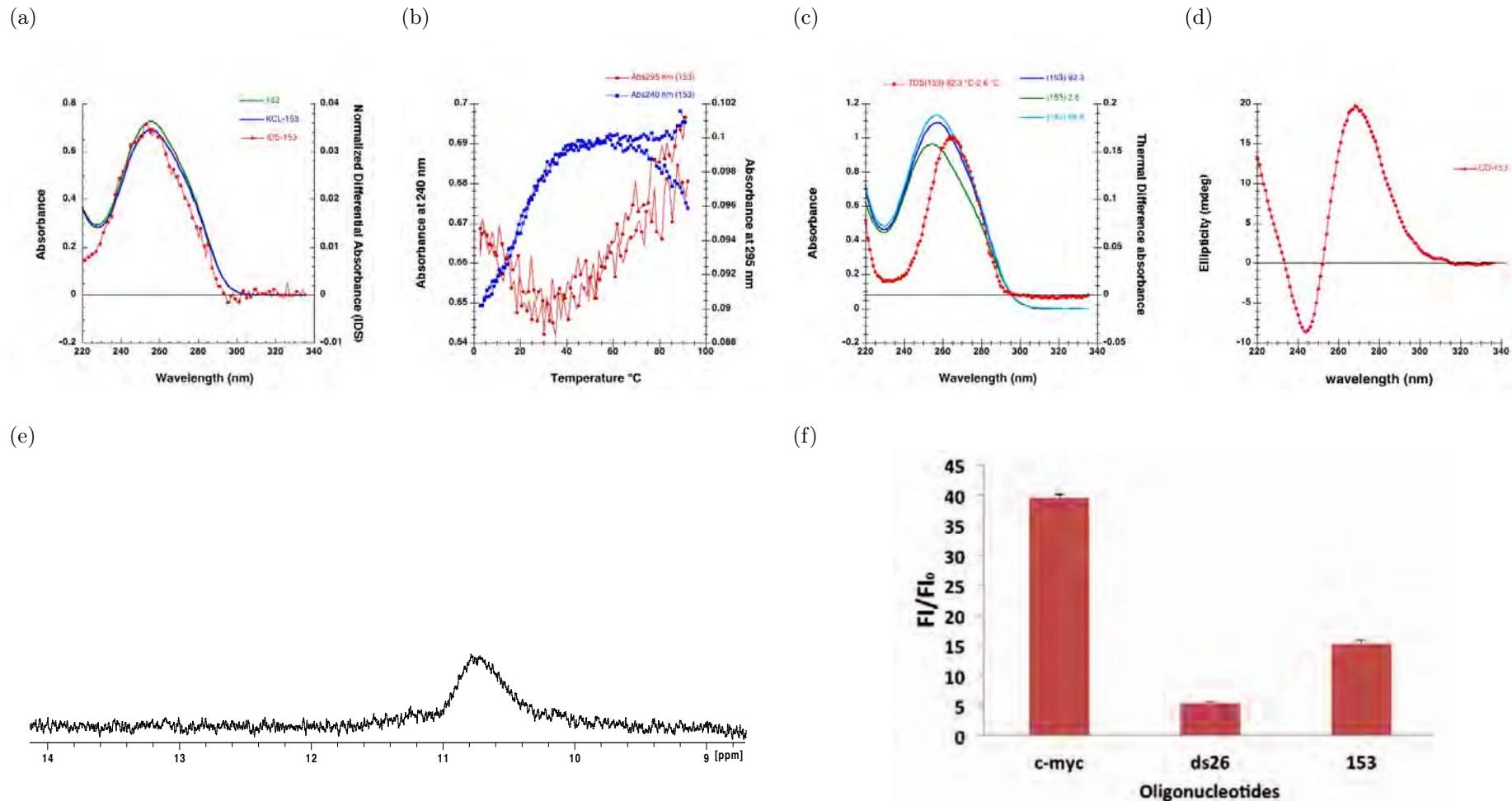
Table 153: Results interpretation of Mito 152

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	Parallel	Yes	++	G4

Name: Mito 153

Sequence: *5' GGGGGTTA GTATTGATTGTTAGCG 3'*

score: 0.96



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 154: Results interpretation of Mito 153

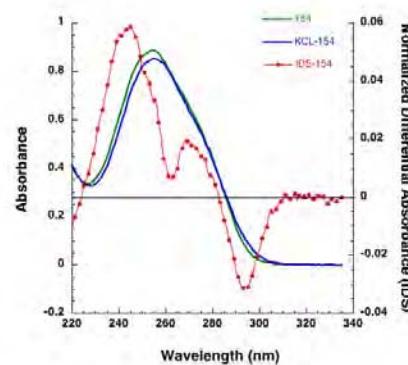
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Yes ??	++	G4 (Unstable)

Name: Mito 154

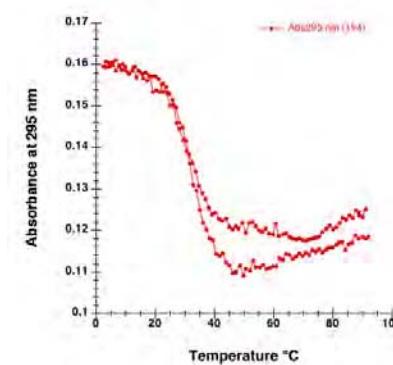
Sequence:  ${}^5' GAGTGTGGGTTAGTAATGGGGGTTTGTGGGG {}^3'$

score: 1.48

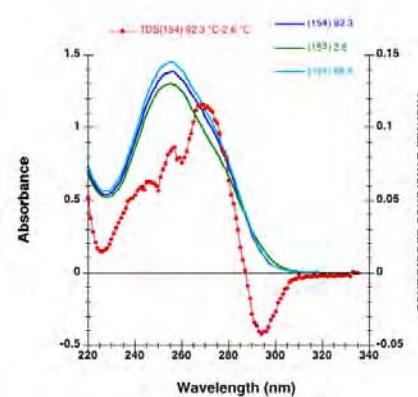
(a)



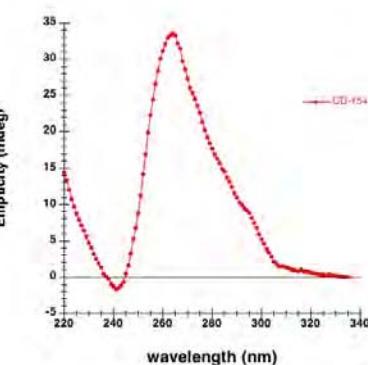
(b)



(c)

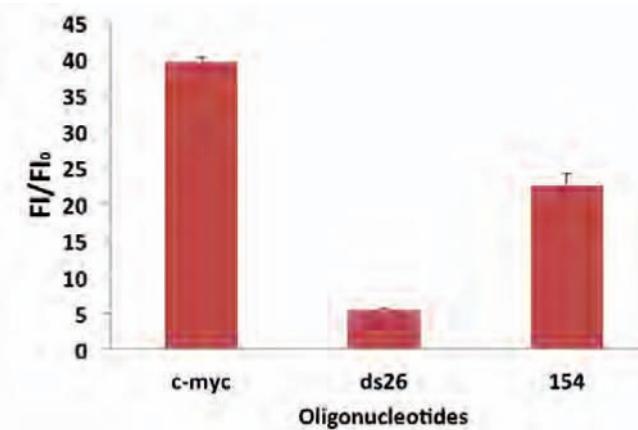


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

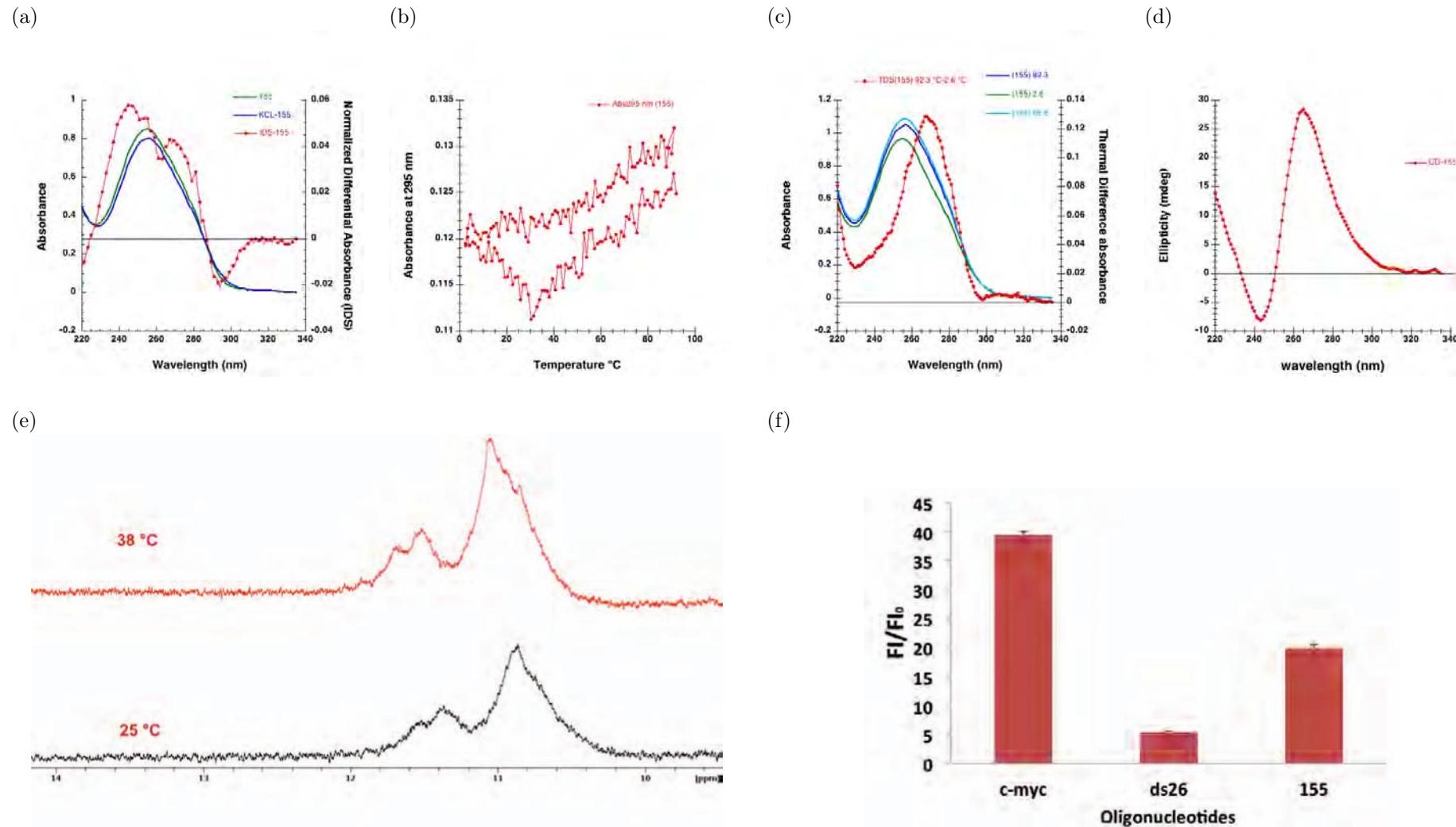
Table 155: Results interpretation of Mito 154

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Mixed	Not done	Yes	G4

Name: Mito 155

Sequence:  $5' \text{GGGGGTTAATTTGC GTATTGGGG} 3'$

score: 1.54



In vitro characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 156: Results interpretation of Mito 155

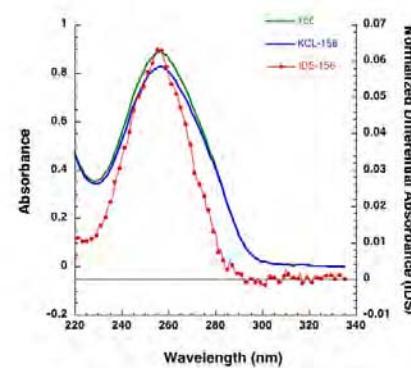
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	No	No	Parallel	Yes	++	G4

Name: Mito 156

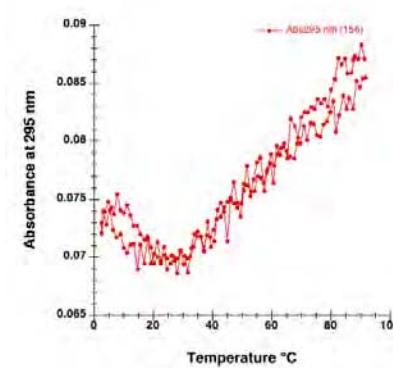
Sequence:  $5' GTGGTTAACCAATTATTAGGGG 3'$

score: 1.0

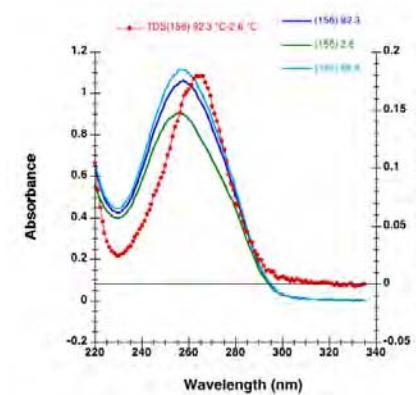
(a)



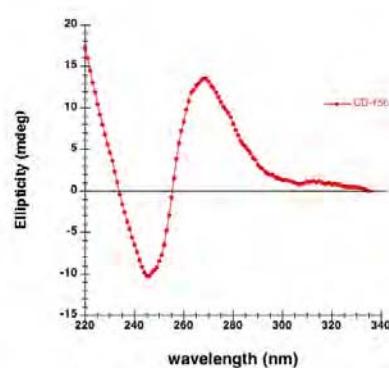
(b)



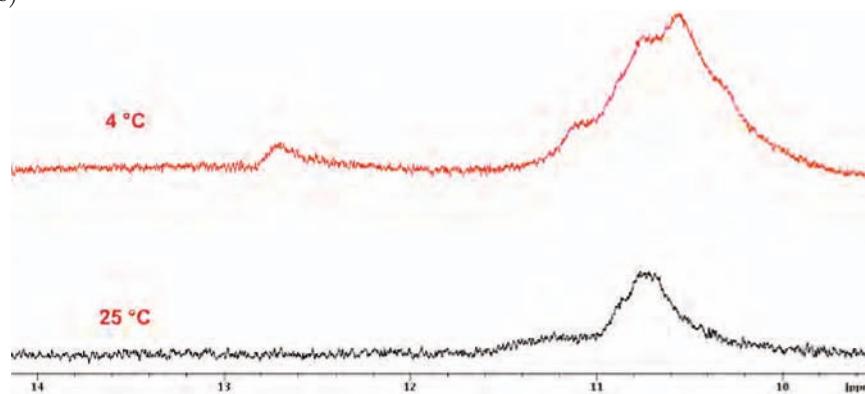
(c)



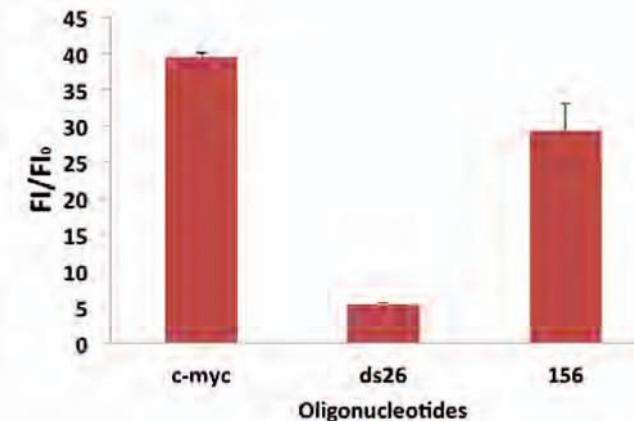
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

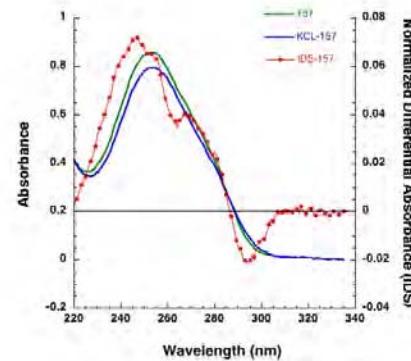
Table 157: Results interpretation of Mito 156

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Yes	++	G4 (Unstable)

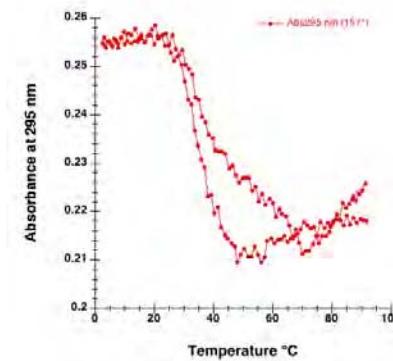
Name: Mito 157

Sequence: *5' GC GG AG AT GT TGG AT GGG GT GGG GAGG TCG AT GA AT GAG TGG 3'* score: 1.26

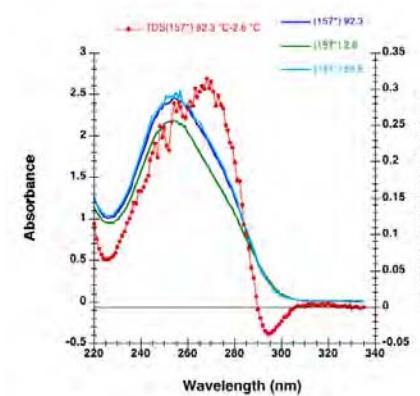
(a)



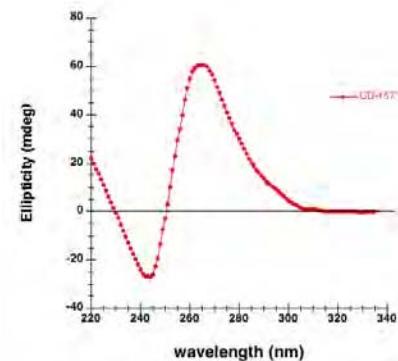
(b)



(c)

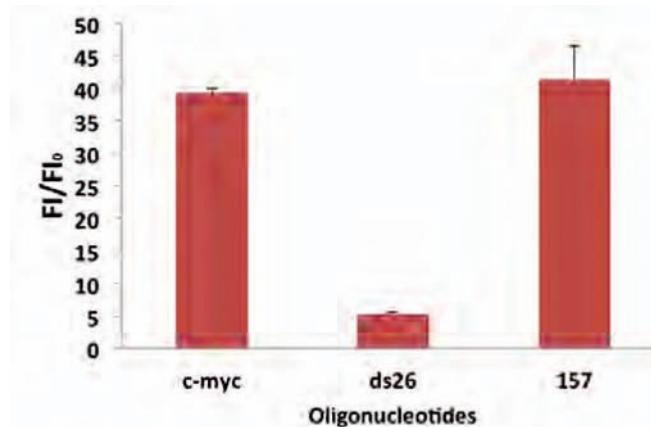


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 158: Results interpretation of Mito 157

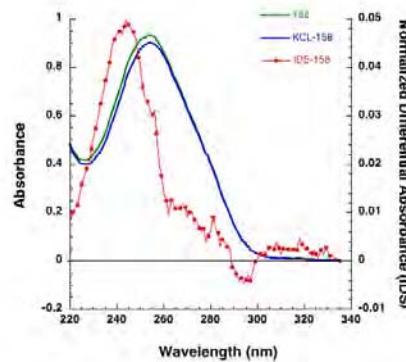
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Parallel	Not done	+++	<b>G4</b>

Name: Mito 158

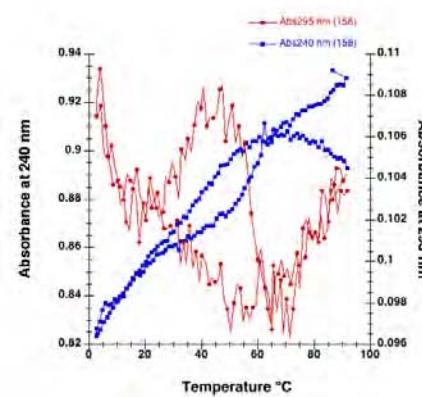
Sequence:  $5' A G G T A A A G A A A T C G T G T G A G G G T G G G A 3'$

score: 0.96

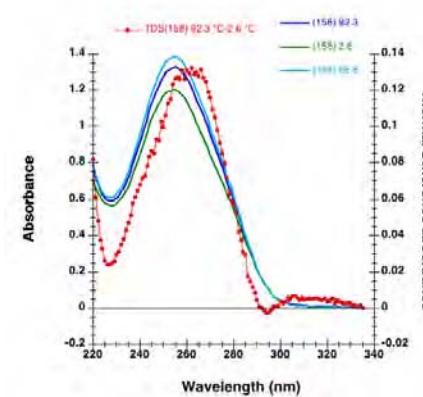
(a)



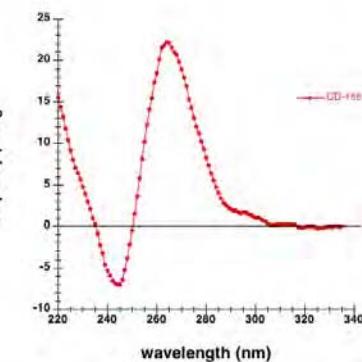
(b)



(c)

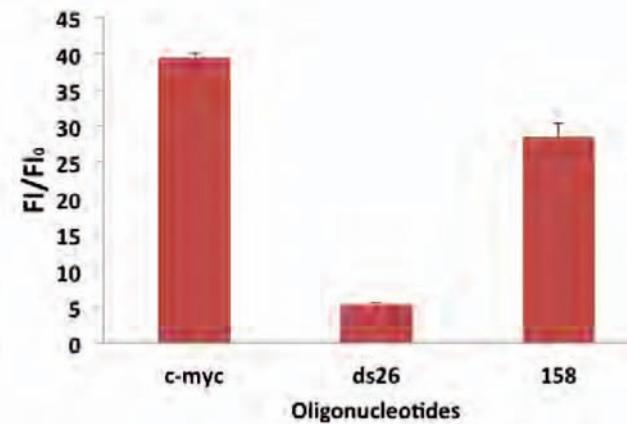


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

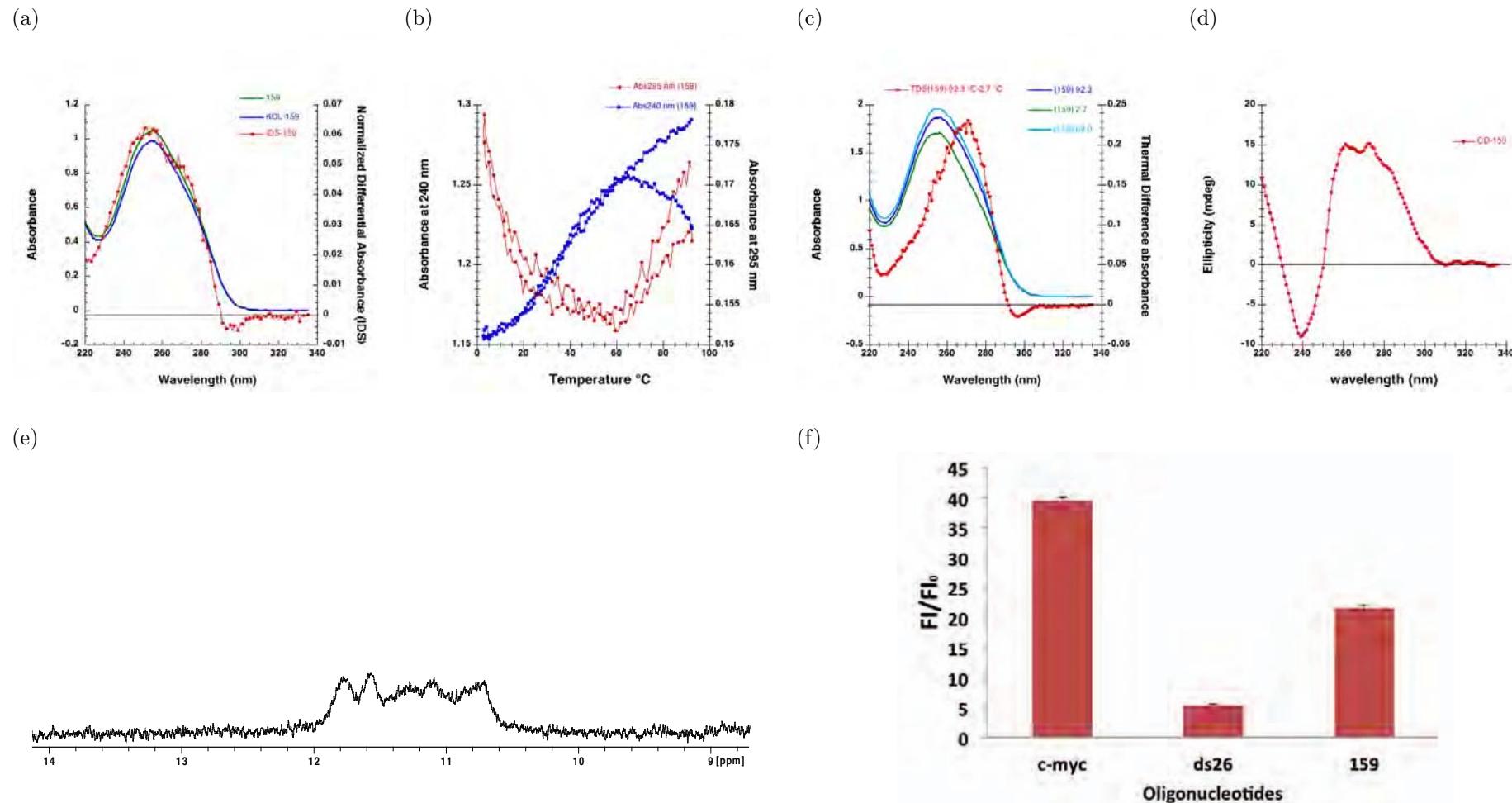
Table 159: Results interpretation of Mito 158

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	Parallel	Not done	++	Not G4

Name: Mito 159

Sequence:  $5' \text{ GGAATGGAGGTGATTCCCTA GGGGGTTGTTTG } 3'$

score: 1.13



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

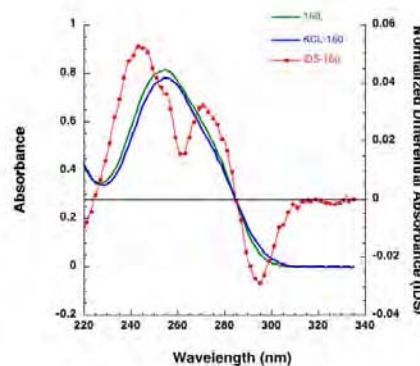
Table 160: Results interpretation of Mito 159

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes (-)	Yes (<37°C)	Yes (-)	Mixed	Yes (?)	++	G4 (Unstable)

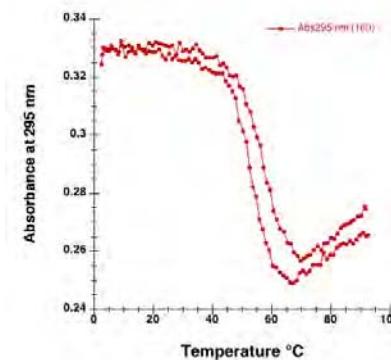
Name: Mito 160

Sequence: *5' GGGCTTGATGTGGGGAGGGGTGTTAAAGGGTTGGCTATATAATTGTCTGGG 3'* score: 1.45

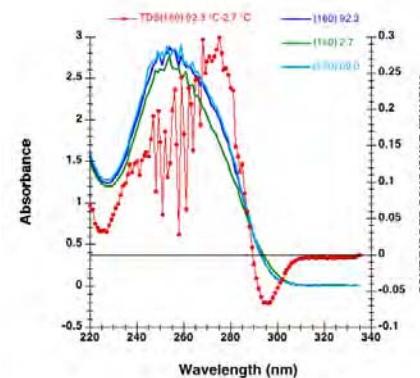
(a)



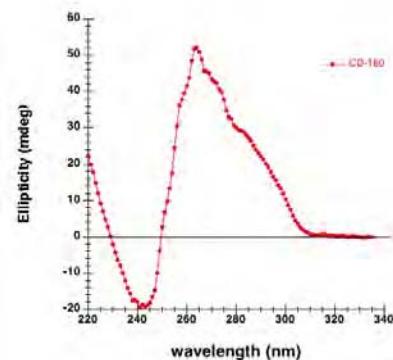
(b)



(c)

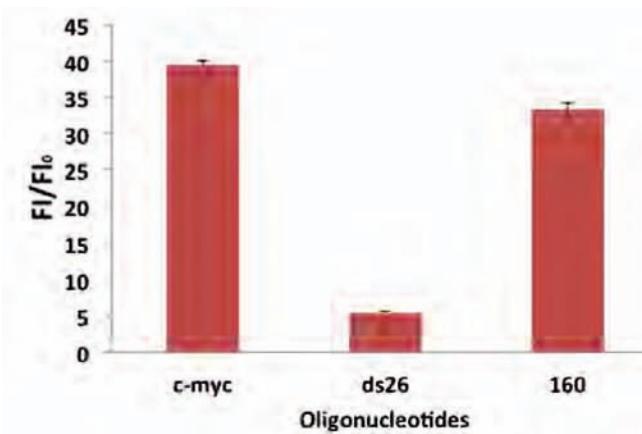


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

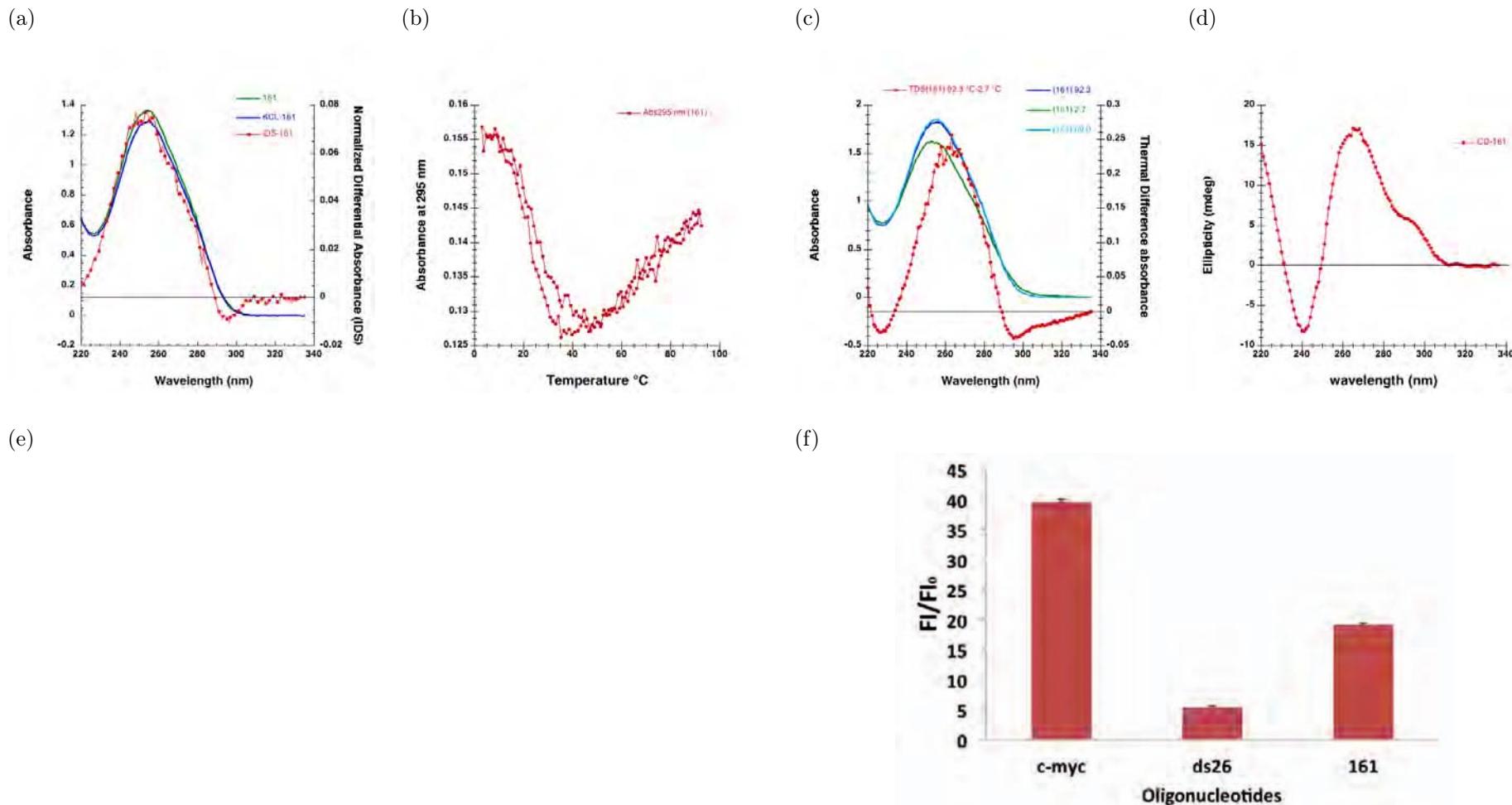
Table 161: Results interpretation of Mito 160

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Mixed	Not done	++	G4

Name: Mito 161

Sequence:  $5' \text{GGAGGATGGGGATTATTGCTAGGATGA} \text{GGATGG} 3'$

score: 1.12



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 162: Results interpretation of Mito 161

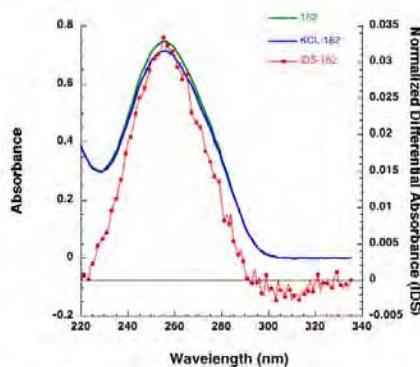
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	Yes (<37°C)	No	Mixed	Not done	++	G4 (Unstable)

Name: Mito 162

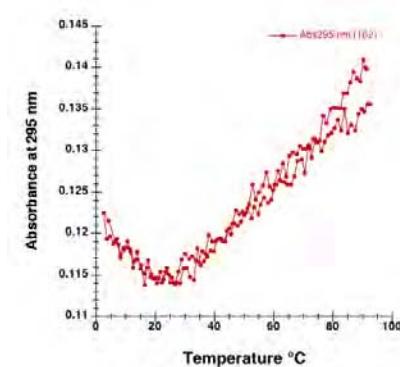
Sequence: *5' GTTGTGGATATATGGAGGATGGGATTATTG 3'*

score: 0.94

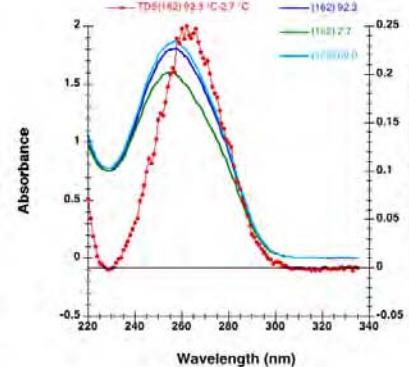
(a)



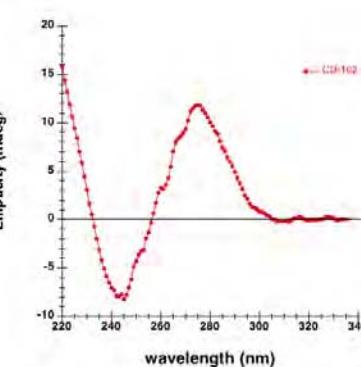
(b)



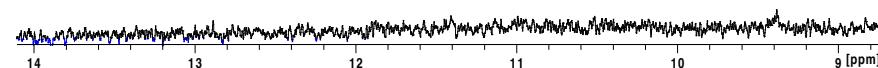
(c)



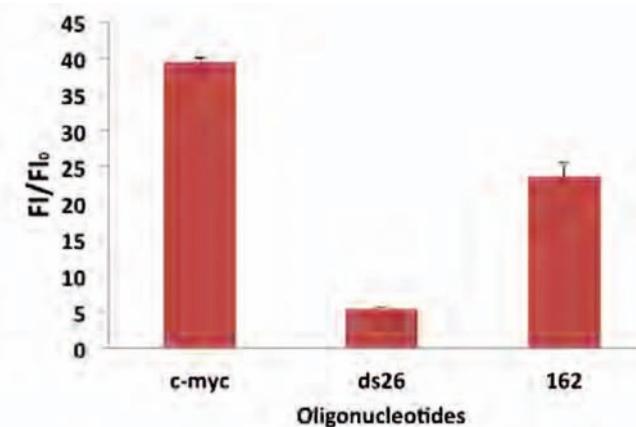
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 µM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 µM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 µM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 pM oligonucleotides and 0.5 µM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

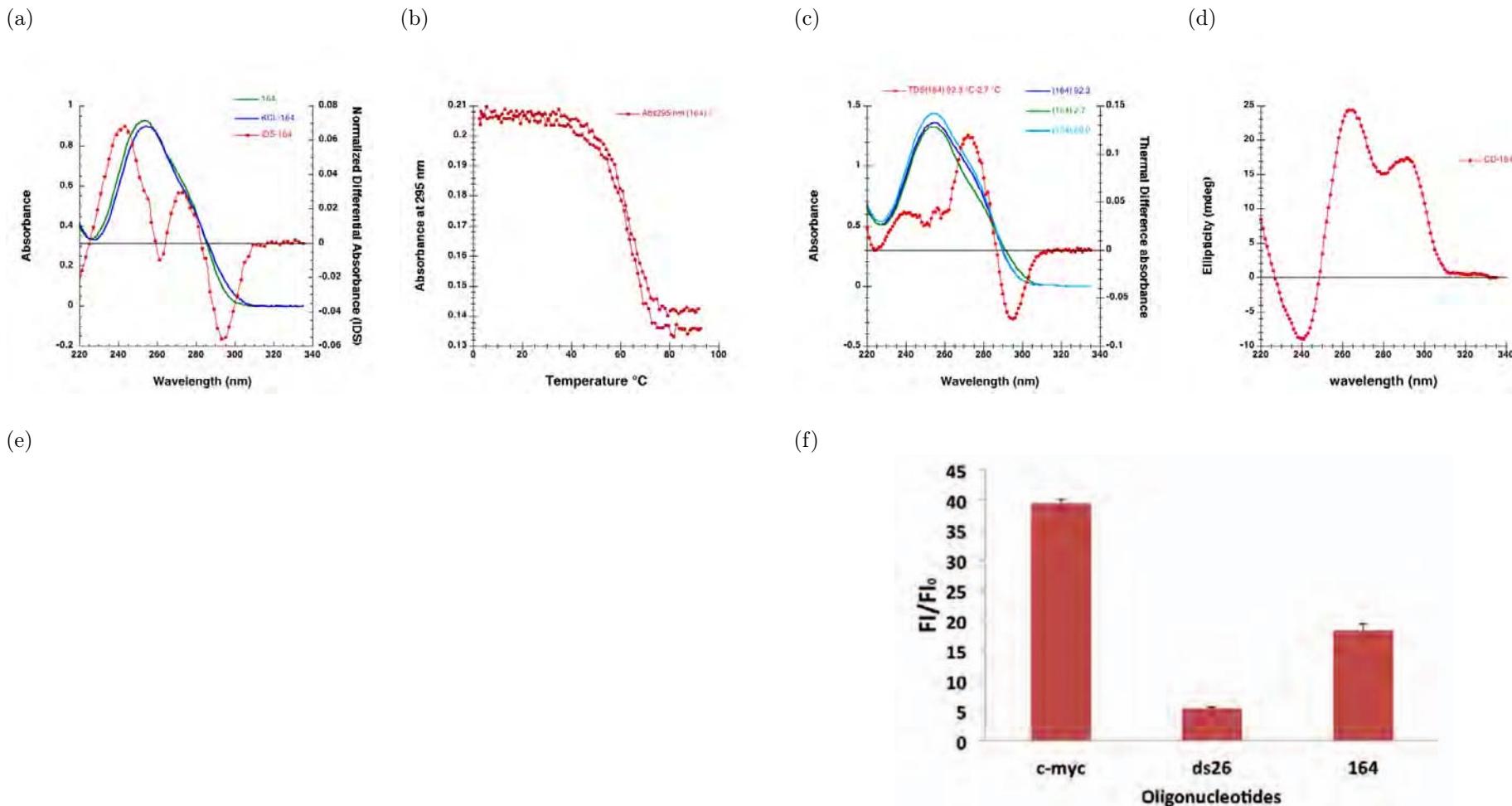
Table 163: Results interpretation of Mito 162

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	No / 4	++	Not G4

Name: Mito 164

Sequence:  $5' \text{GGGGAGGGGGTTTTGATGTGGGTTGGG} 3'$

score: 2.07



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 164: Results interpretation of Mito 164

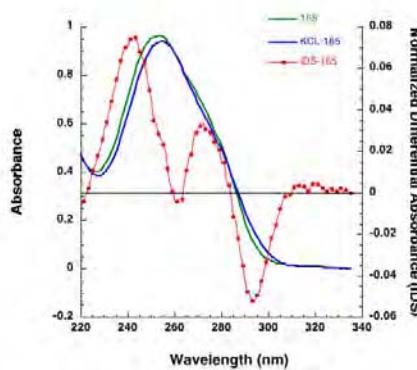
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Mixed	Not done	++	G4

Name: Mito 165

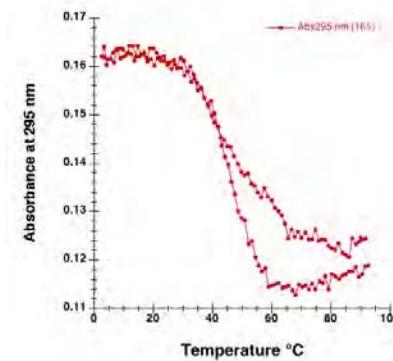
Sequence:  ${}^5' \text{GGGTGA} \text{GGGGTGGCTT} \text{GGA GTTG} {}^3'$

score: 1.46

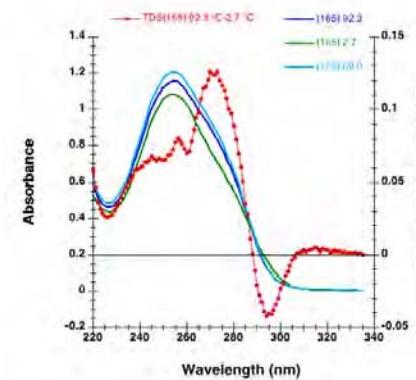
(a)



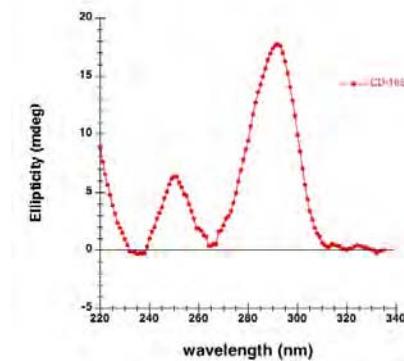
(b)



(c)

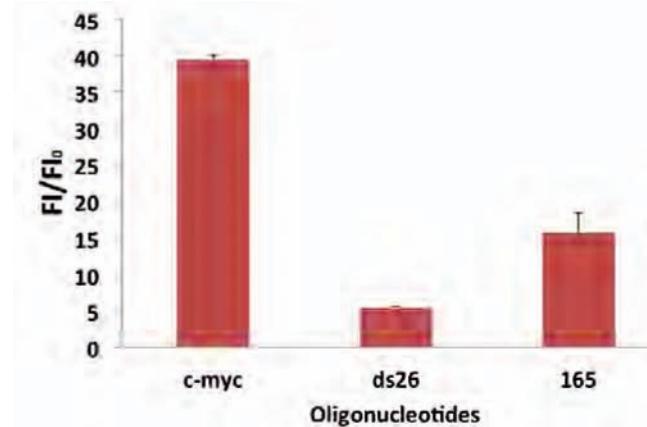


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

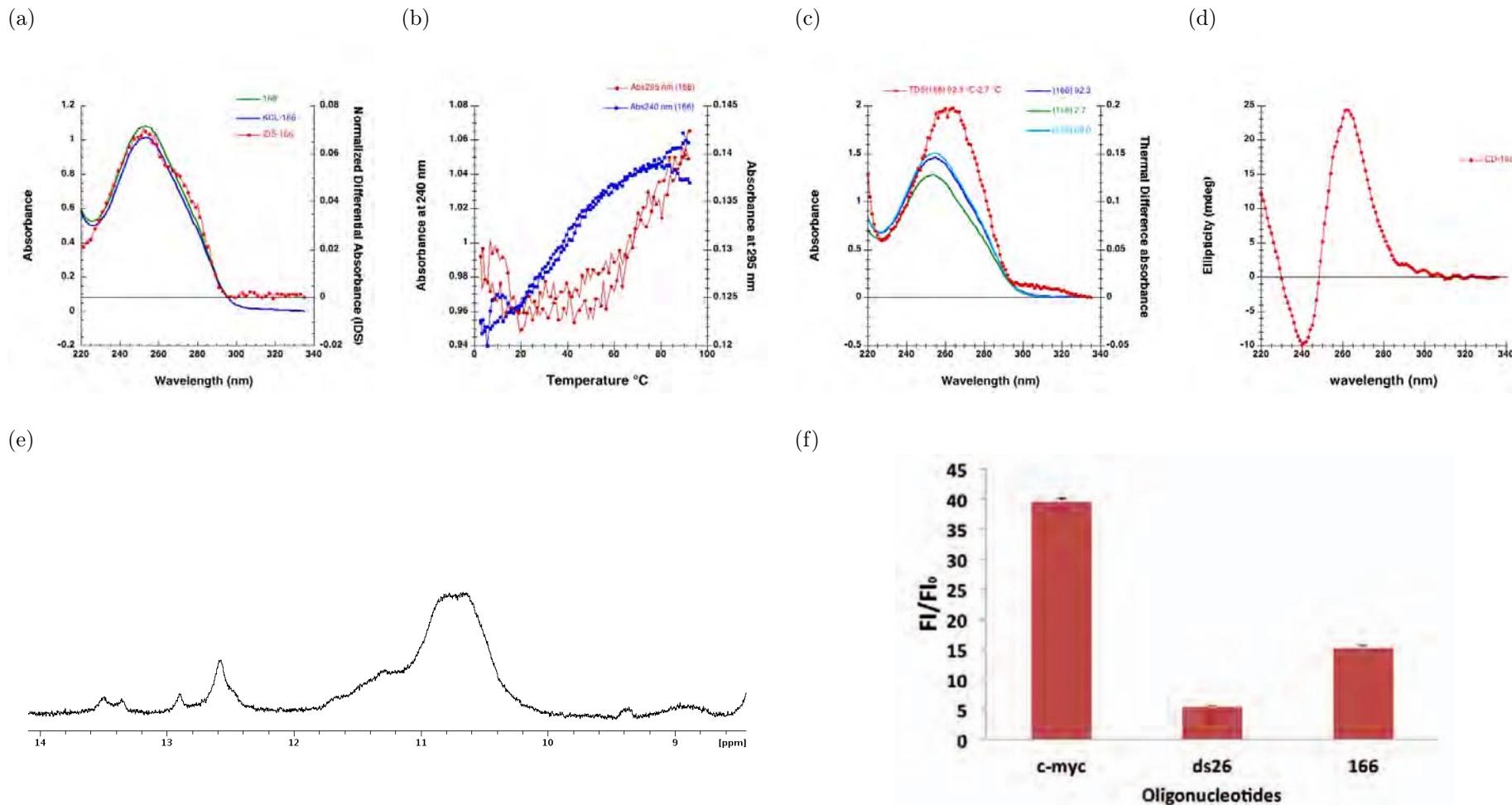
Table 165: Results interpretation of Mito 165

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Antiparallel	Not done	++	G4

Name: Mito 166

Sequence: 5' GGGGGGTCATCCATGGGGACGAGAAAGG 3'

score: 1.43



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 166: Results interpretation of Mito 166

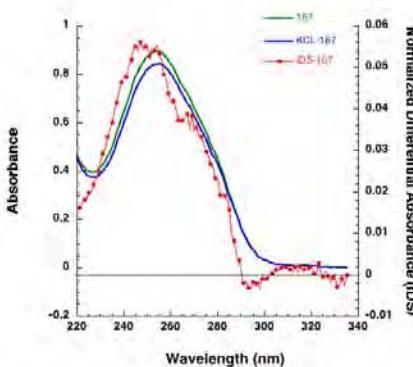
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	Parallel	Yes	++	G4 (Unstable/Competition)

Name: Mito 167

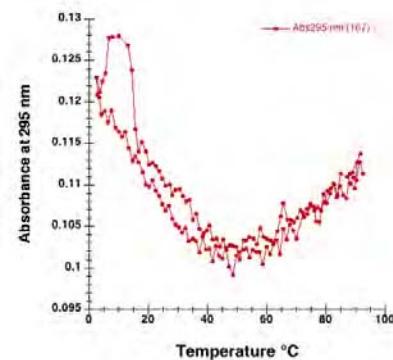
Sequence: *5' GGGAACGTGTGGCTATTTA GG 3'*

score: 1.26

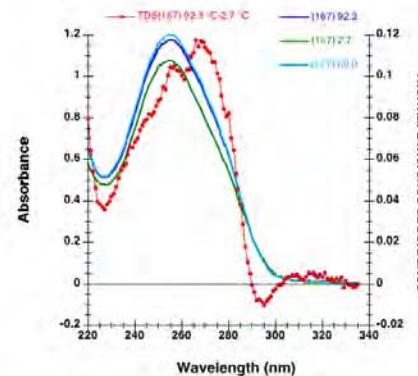
(a)



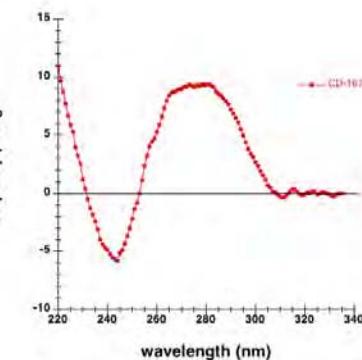
(b)



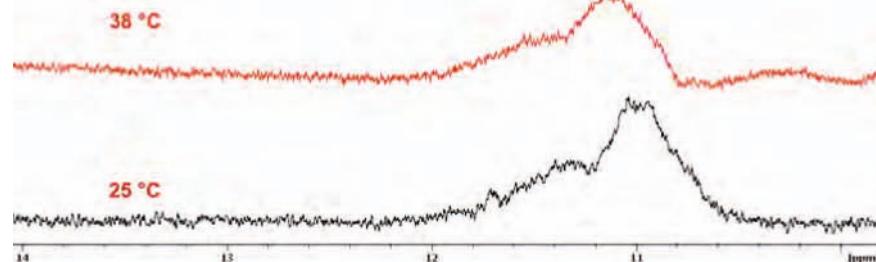
(c)



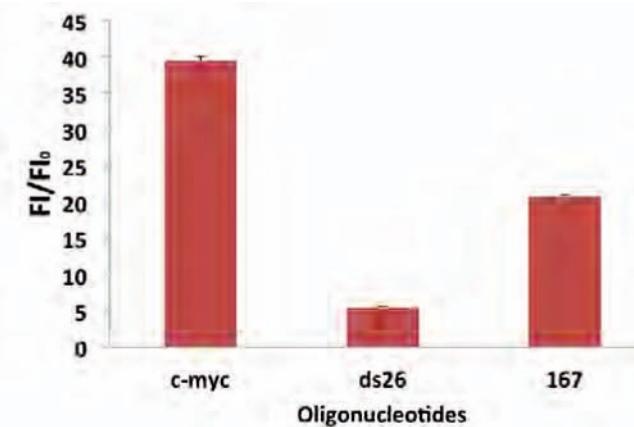
(d)



(e)



(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

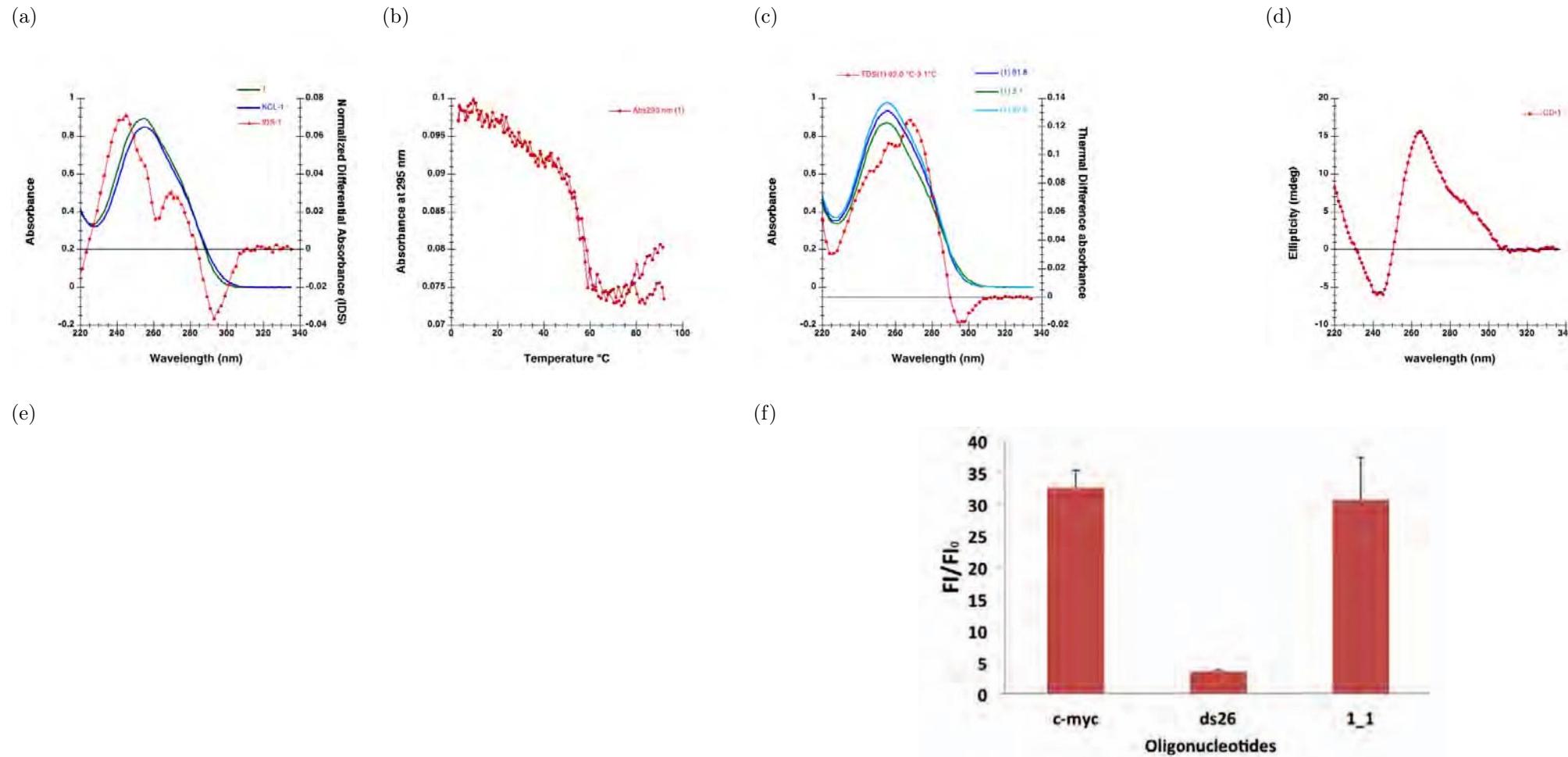
Table 167: Results interpretation of Mito 167

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Mixed	Yes	++	G4

Name: Mito 0.5-1\*

Sequence: *5' GGGTAAATGGTTTGGCTAAGGTTGTCTGGTAGTAAGGTGGGGTGGTTGGGCTAGG 3'*

Score: 1.26



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 168: Results interpretation of Mito 0.5-1\*

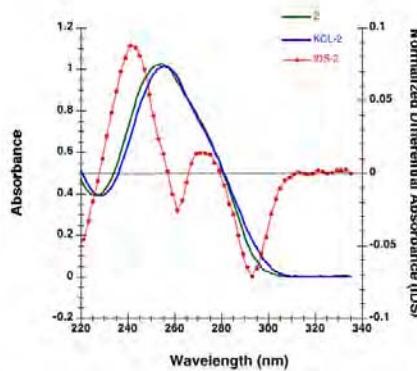
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Parallel	Not done	+++	G4

Name: Mito 0.5-2\*

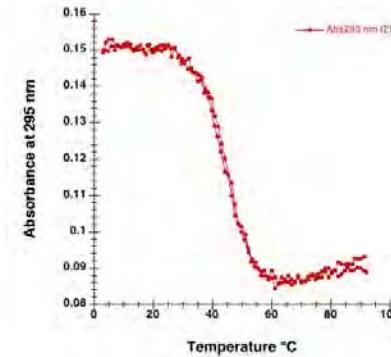
Sequence:  $5' \text{GGTTA} \text{GGCTGGTGTTA} \text{GGG} 3'$

Score: 1.11

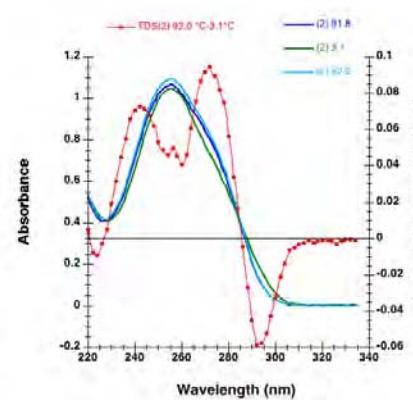
(a)



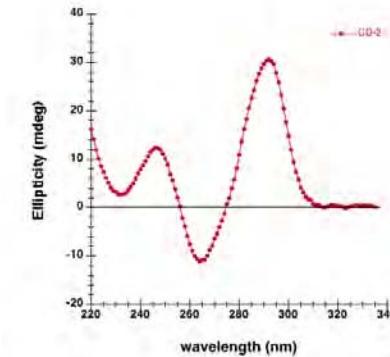
(b)



(c)

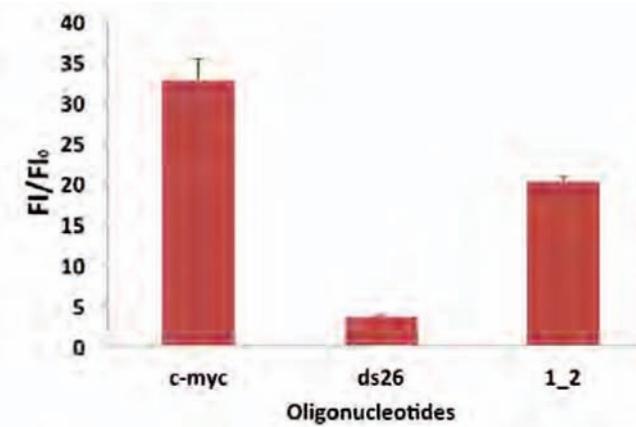


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

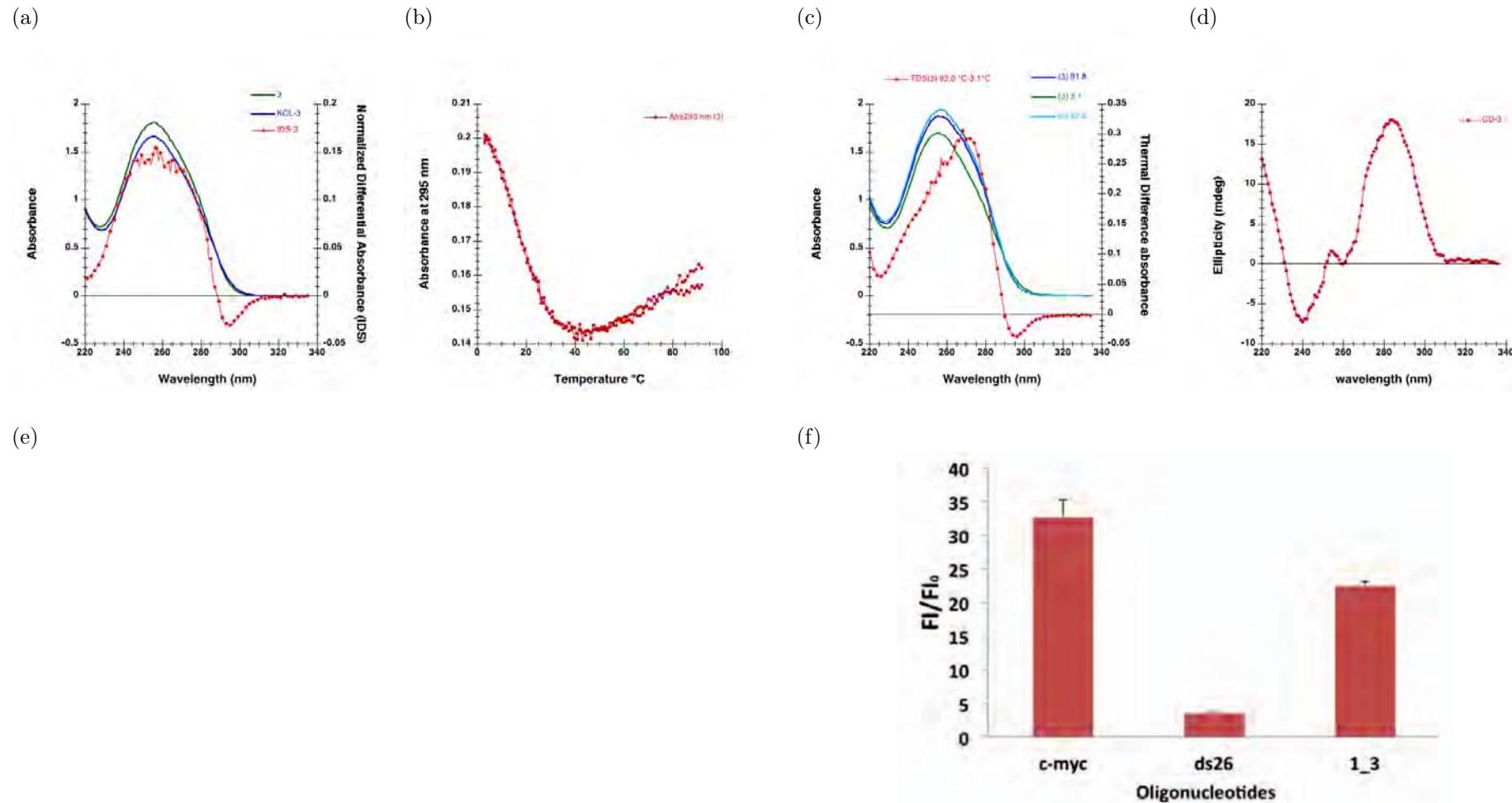
Table 169: Results interpretation of Mito 0.5-2\*

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Antiparallel	Not done	++	G4

Name: Mito 0.5-3

Sequence:  $5' G G T T T G G T A G T T A G G A C C T G T G G G T T T G T T A G G 3'$

Score: 0.71



*In vitro* characterization of the selected candidates: **a**) Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b**) Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c**) Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d**) Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e**) 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f**) Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 170: Results interpretation of Mito 0.5-3

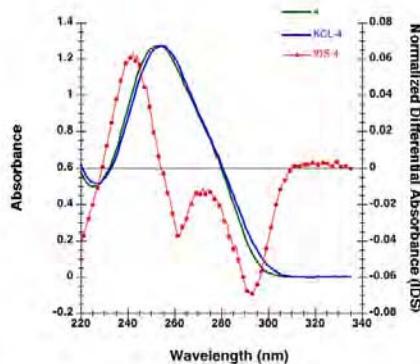
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes (<37°C)	Yes	Antiparallel	Not done	++	G4 (Unstable)

Name: Mito 0.5-4

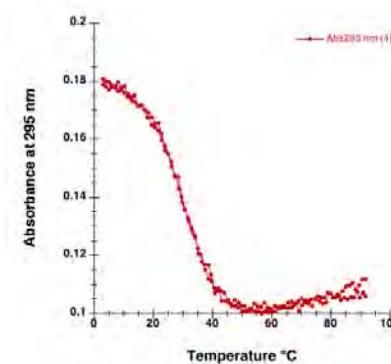
Sequence: *5' GGA GTAGGA GGTTGCCATGGG 3'*

Score: 1.0

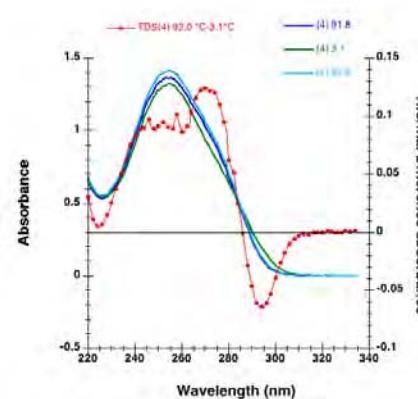
(a)



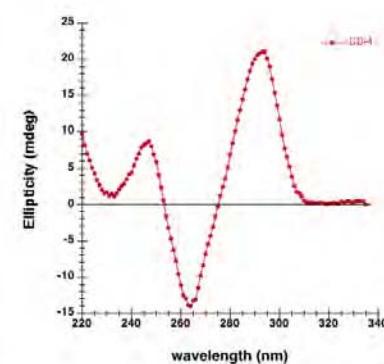
(b)



(c)

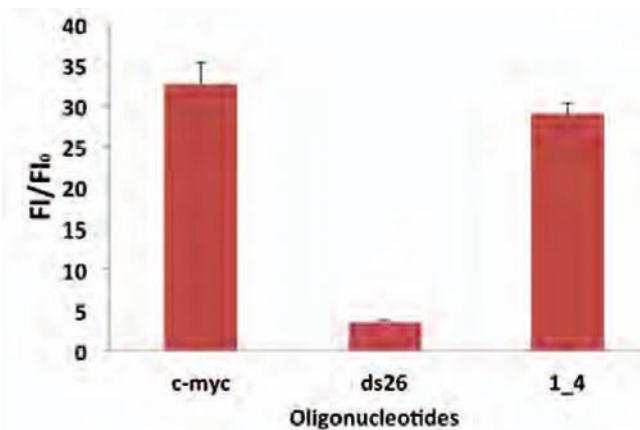


(d)



(e)

(f)



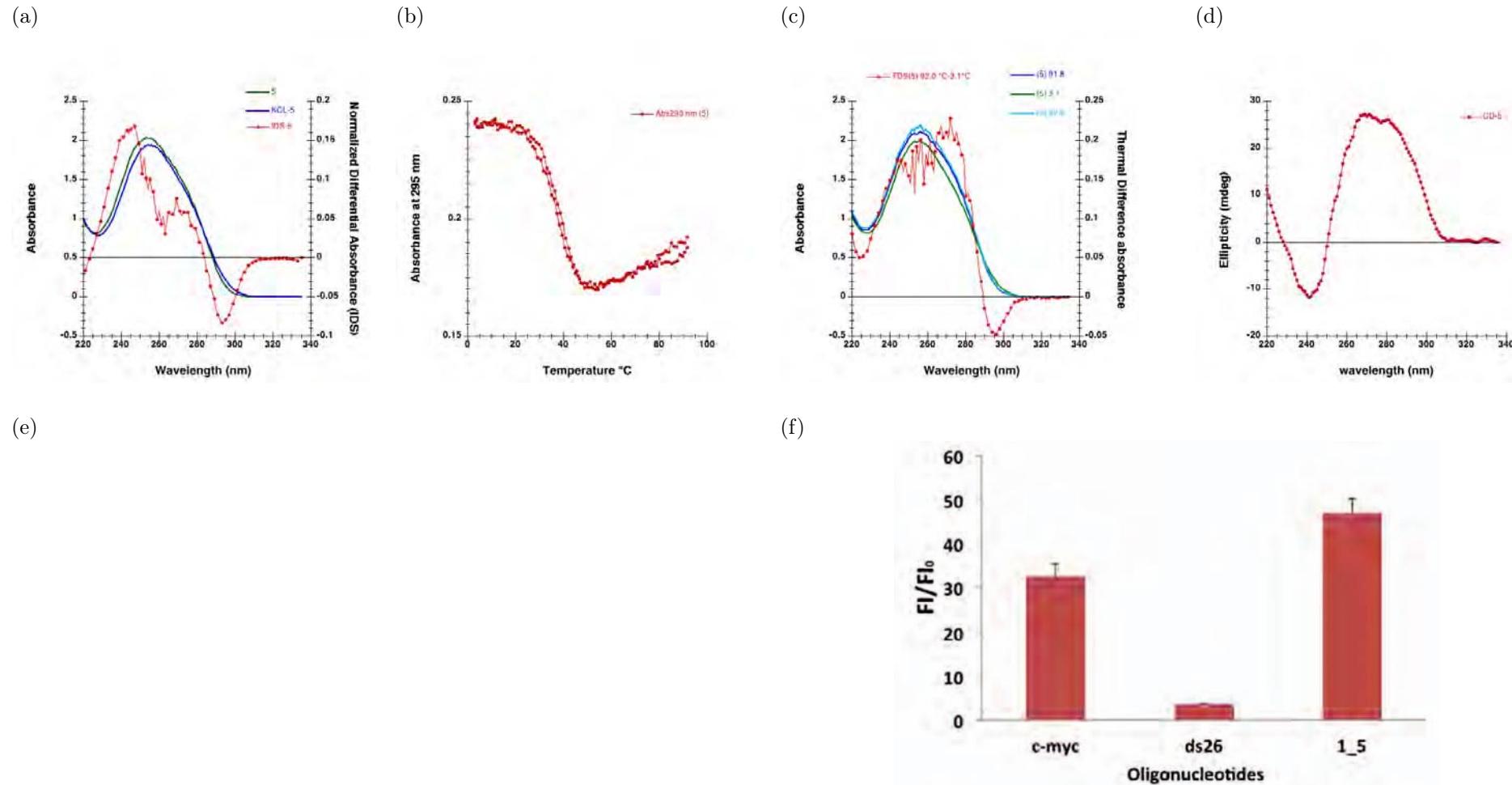
*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 171: Results interpretation of Mito 0.5-4

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes (<37°C)	Yes	Antiparallel	Not done	++	<b>G4 (Unstable)</b>

Name: Mito 0.5-5\*

Sequence: *5' GGGTGATGGTA GATGTGGCGGGTTTA GGGGCTCTTGG 3'* Score: 1.18



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

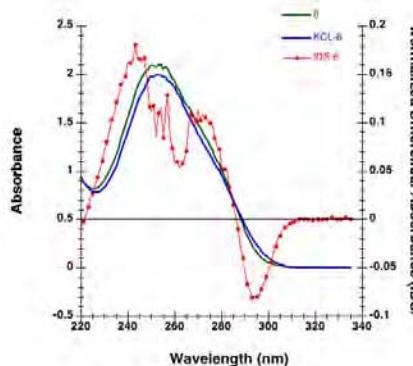
Table 172: Results interpretation of Mito 0.5-5\*

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Mixed	Not done	+++	G4

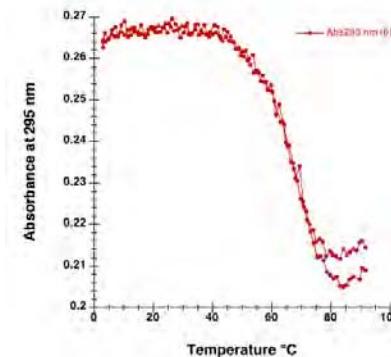
Name: Mito 0.5-6\*

Sequence:  $5' \text{GGAGGCCTA} \text{GGTTGA} \text{GGTTGACCA} \text{GGGGTTGGGTATGGGA} \text{GGGGGG} 3'$  Score: 1.65

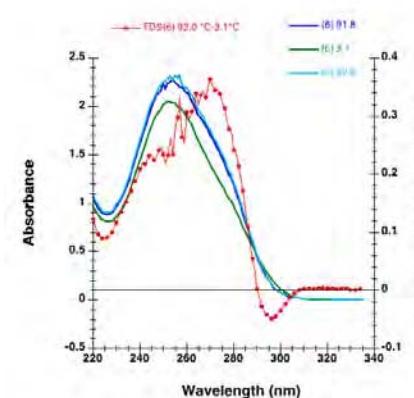
(a)



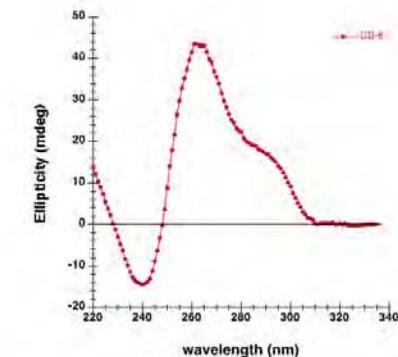
(b)



(c)

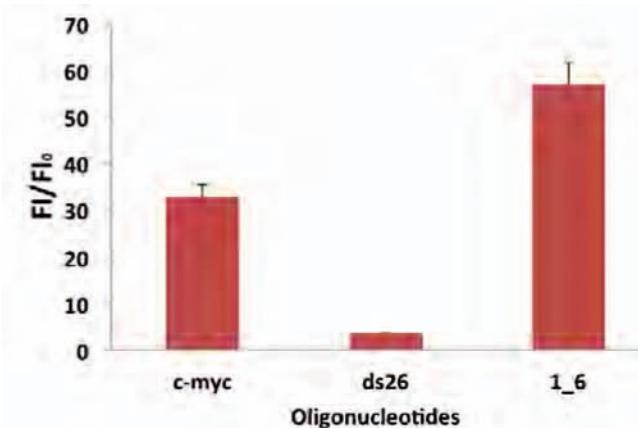


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 µM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 µM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 µM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 µM oligonucleotides and 0.5 µM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 173: Results interpretation of Mito 0.5-6\*

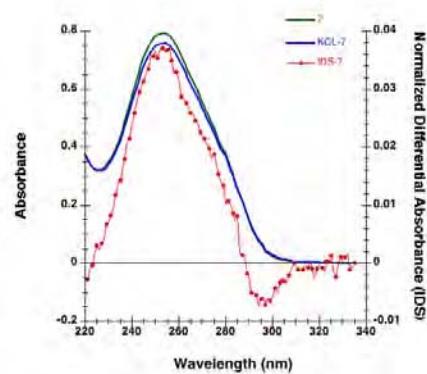
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Mixed	Not done	+++	G4

Name: Mito 0.5-7

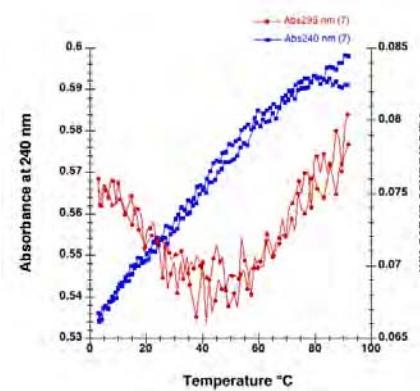
Sequence:  $5' \text{GGCTA GGCTA GAGGTGG} 3'$

Score: 0.88

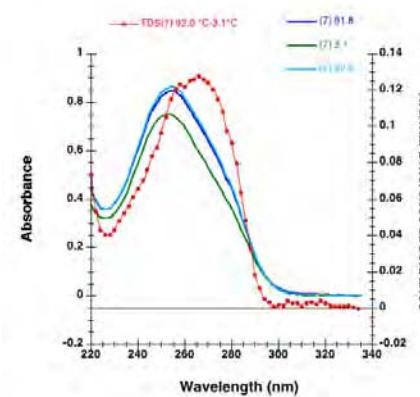
(a)



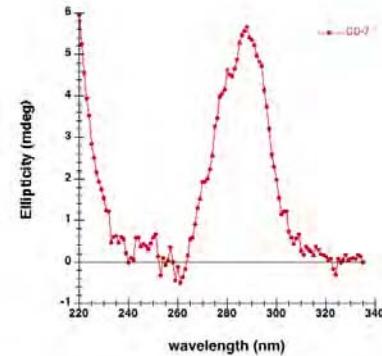
(b)



(c)

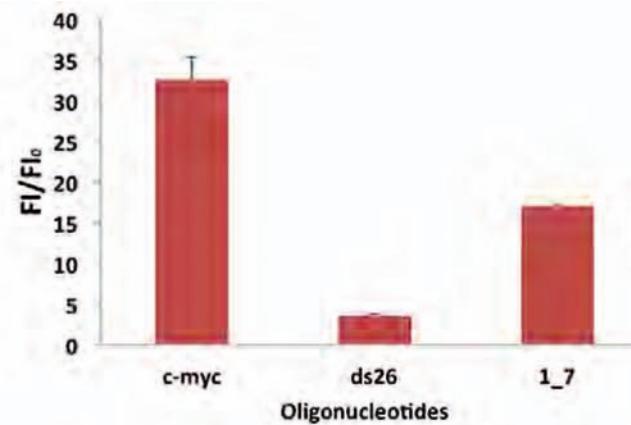


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 174: Results interpretation of Mito 0.5-7

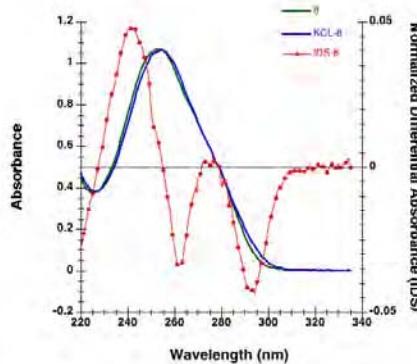
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes(-)	No	No	No	Not done	++	<b>Not G4</b>

Name: Mito 0.5-8

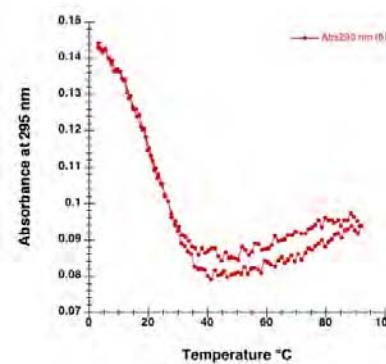
Sequence:  $5' GGGTGGAGAGGTTAAAAGG 3'$

Score: 1.22

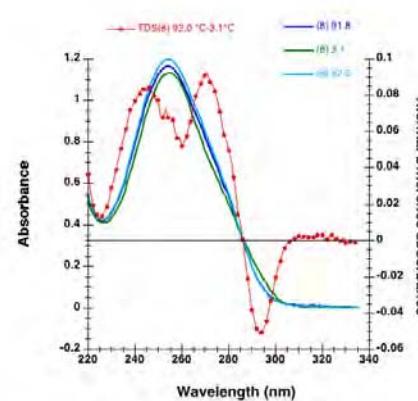
(a)



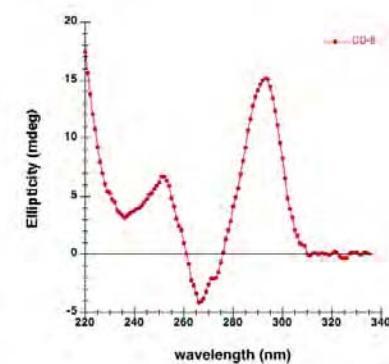
(b)



(c)

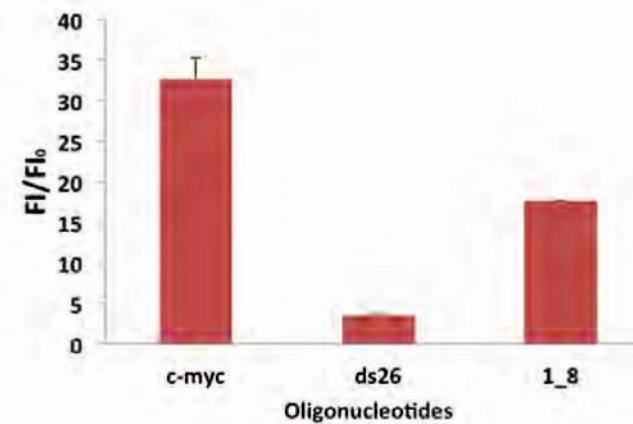


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 175: Results interpretation of Mito 0.5-8

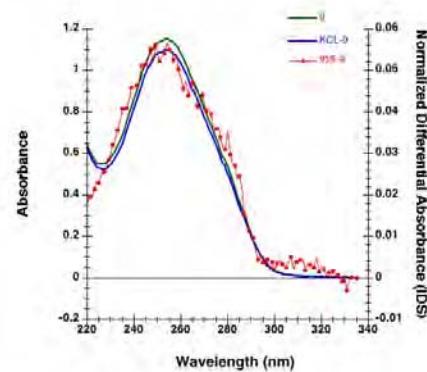
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes (<37°C)	Yes	Antiparallel	Not done	++	G4 (Unstable)

Name: Mito 0.5-9

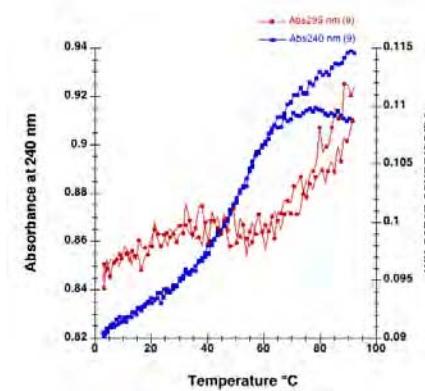
Sequence: 5' GGCCAAGGGTCATGATGGCAGG 3'

Score: 0.73

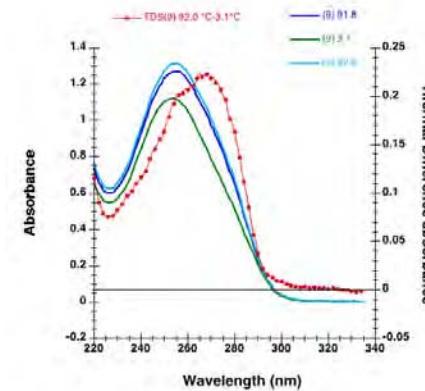
(a)



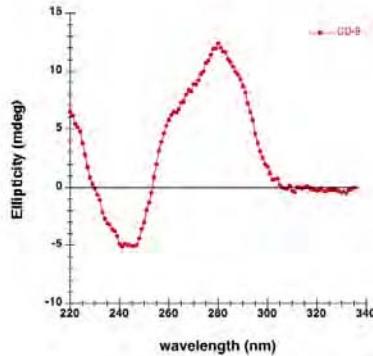
(b)



(c)

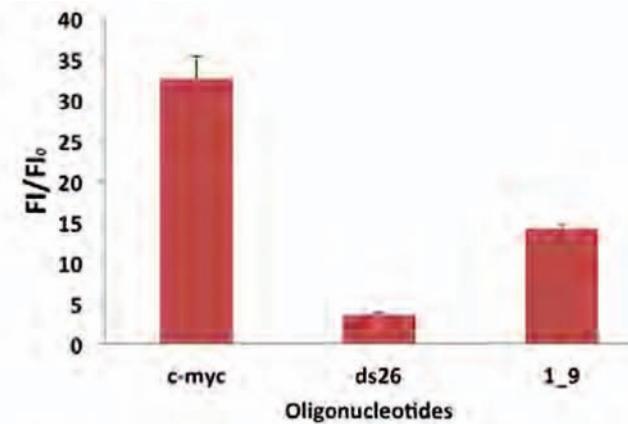


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 176: Results interpretation of Mito 0.5-9

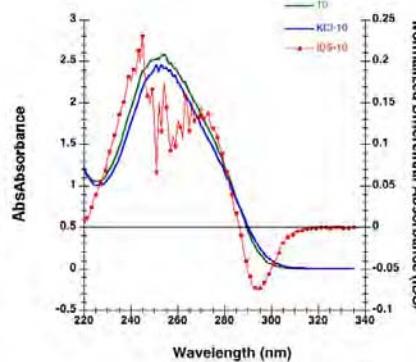
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	Mixed	Not done	++	<b>Not G4</b>

Name: Mito 0.5-10\*

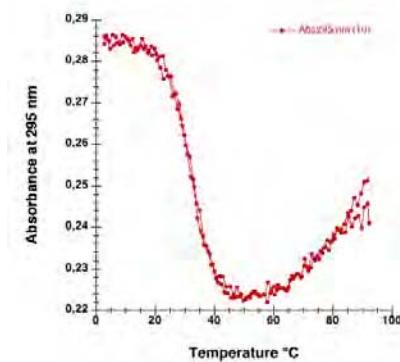
Sequence: 5' GGTTA**GC**GGGG**CA**GGCCTC**CTA****GGGA****GAGGAGGGTGGAT**GGAAATTAA**GGG** 3'

Score: 1.16

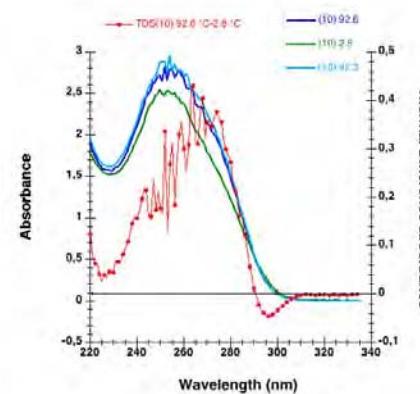
(a)



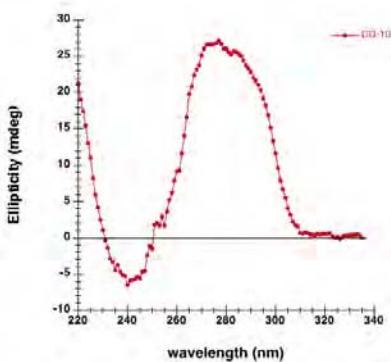
(b)



(c)

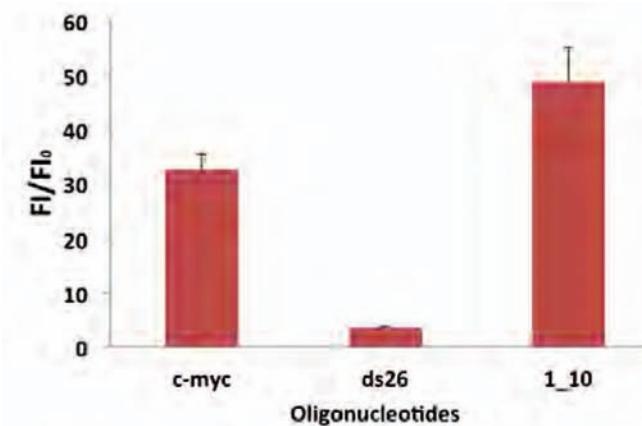


(d)



(e)

(f)



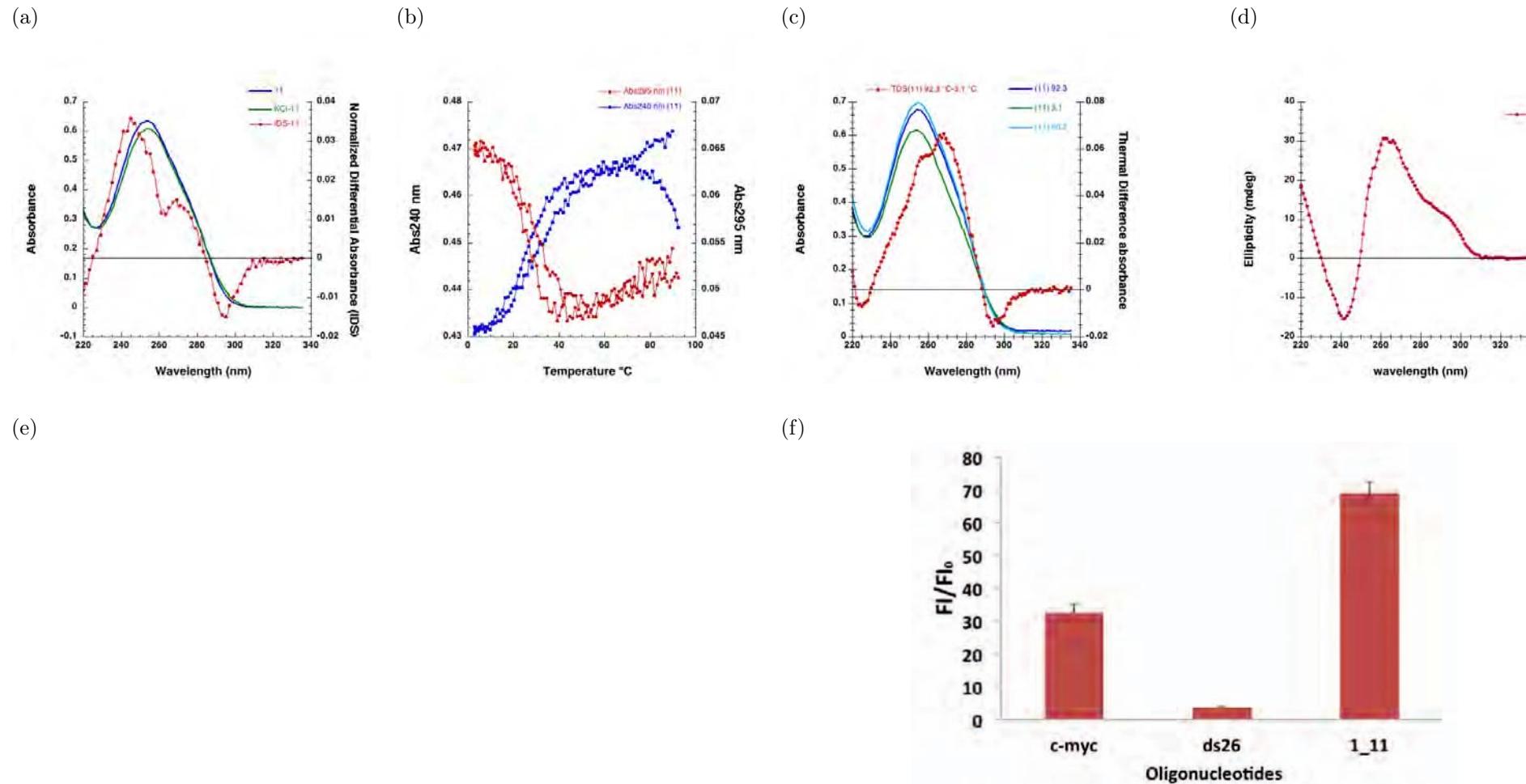
*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 177: Results interpretation of Mito 0.5-10\*

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Mixed	Not done	+++	<b>G4 (Unstable)</b>

Name: Mito 0.5-11\*

Sequence: 5' *GGTTAAGGAGGCTGATGGTGGCTATGATGGTGGGGATGATGAGG* 3' Score: 1.18



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 µM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 µM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 µM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 µM oligonucleotides and 0.5 µM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 178: Results interpretation of Mito 0.5-11\*

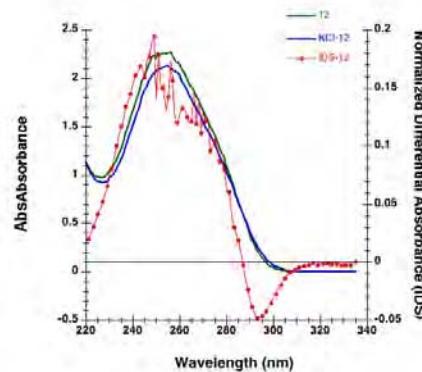
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes (<37°C)	Yes	Mixed	Not done	+++	G4 (Unstable)

Name: Mito 0.5-12

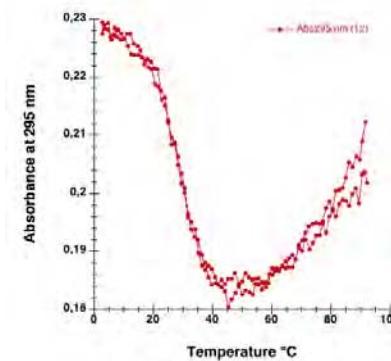
Sequence: *5' GGTGTAAGGAGAAGATGGTTAGGTCTACGGA GGCTCCA GGGTGGG 3'*

Score: 0.84

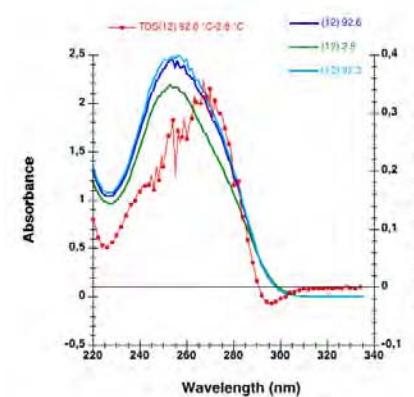
(a)



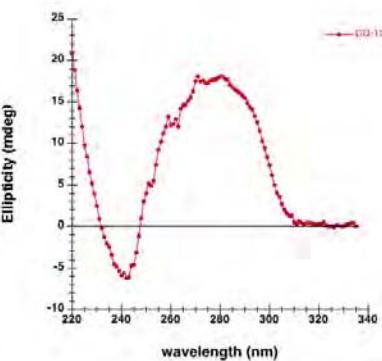
(b)



(c)

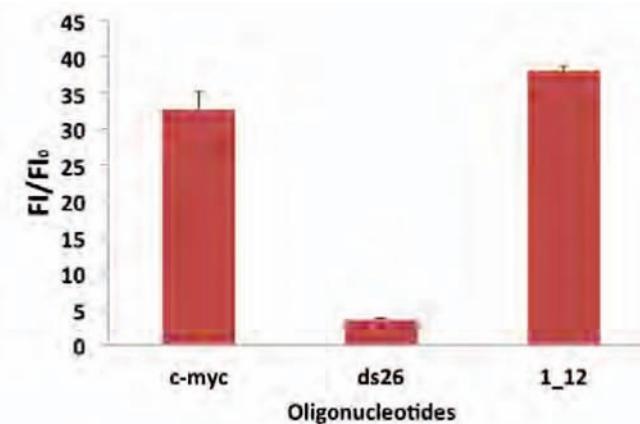


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a**) Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b**) Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c**) Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d**) Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e**) 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f**) Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

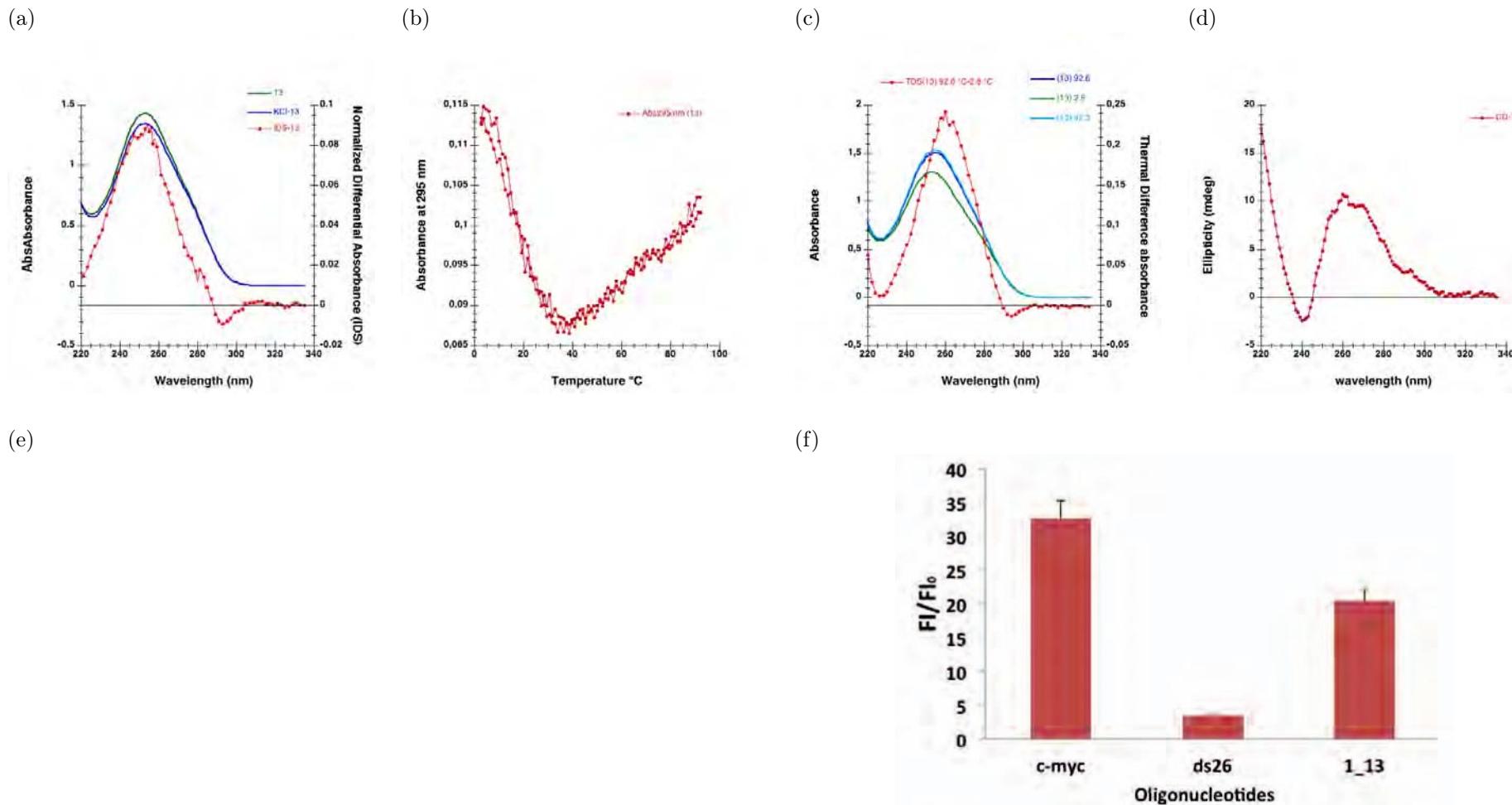
Table 179: Results interpretation of Mito 0.5-12

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes (<37°C)	Yes (-)	Mixed	Not done	+++	<b>G4 (Unstable)</b>

Name: Mito 0.5-13

Sequence: 5' GGACTGGAGAGATAGGAGAAGTAGG 3'

Score: 0.92



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 180: Results interpretation of Mito 0.5-13

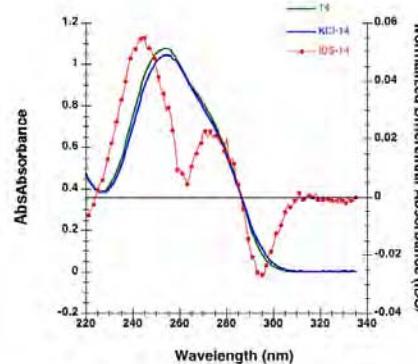
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes (<37°C)	Yes	Mixed	Not done	++	G4 (Unstable)

Name: Mito 0.5-14\*

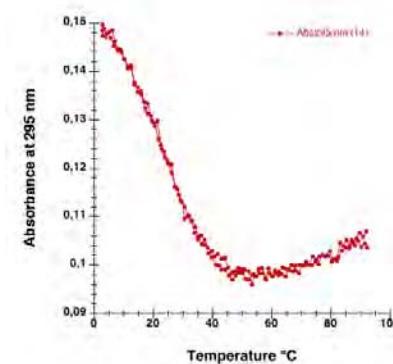
Sequence:  $5' GGTGGTGTTGAGGTTGC GG 3'$

Score: 0.95

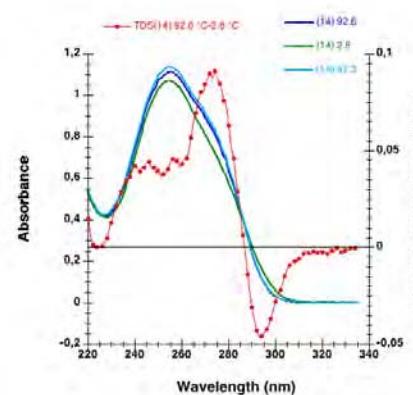
(a)



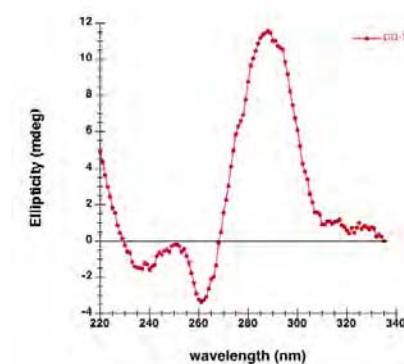
(b)



(c)

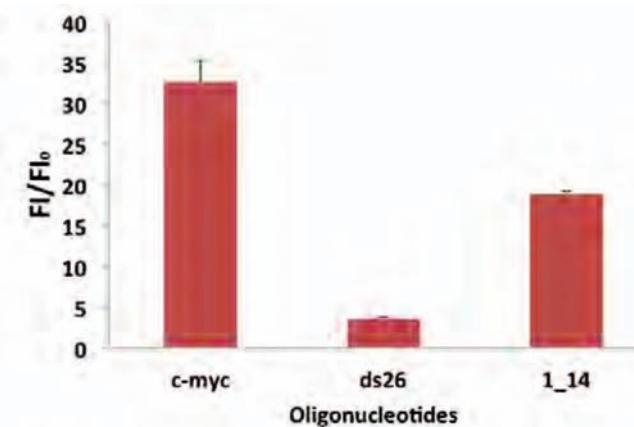


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

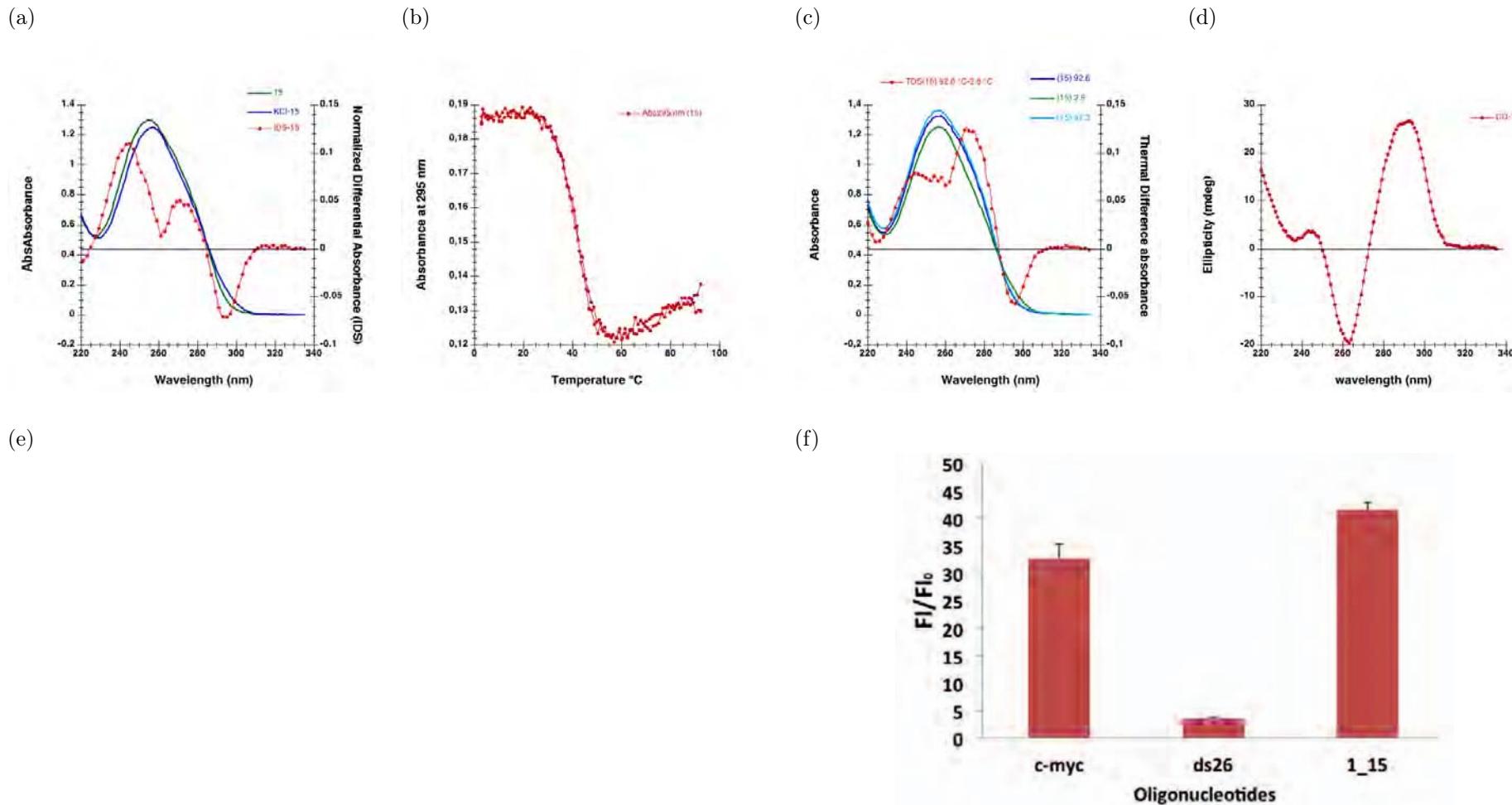
Table 181: Results interpretation of Mito 0.5-14\*

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes (<37°C)	Yes	Antiparallel	Not done	++	G4 (Unstable)

Name: Mito 0.5-15

Sequence: *5' GGATTTCGGCGTAGGTTGGTCTAAGG 3'*

Score: 0.89



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 182: Results interpretation of Mito 0.5-15

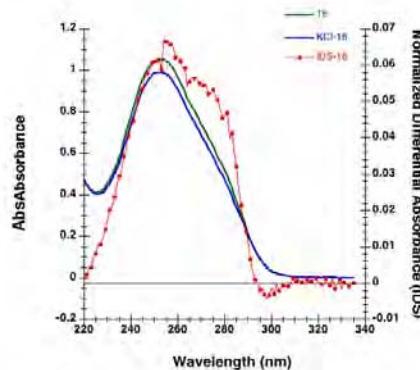
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Antiparallel	Not done	+++	G4

Name: Mito 0.5-16

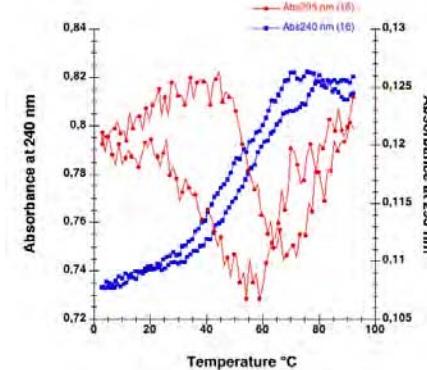
Sequence:  $5' \text{GGA} \text{GGCCATGGGGTTGG} 3'$ 

Score: 1.41

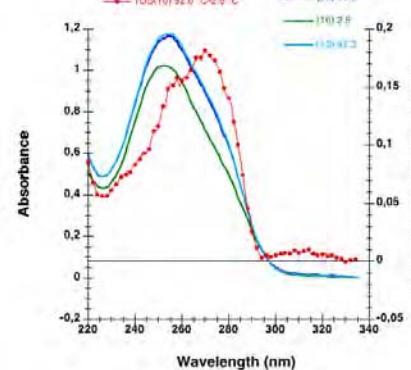
(a)



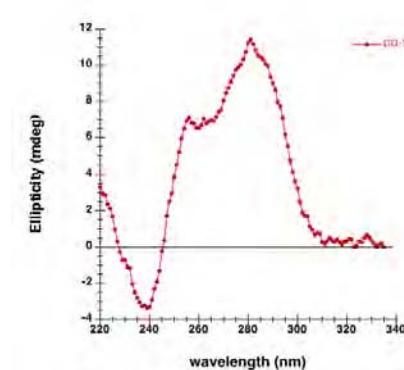
(b)



(c)

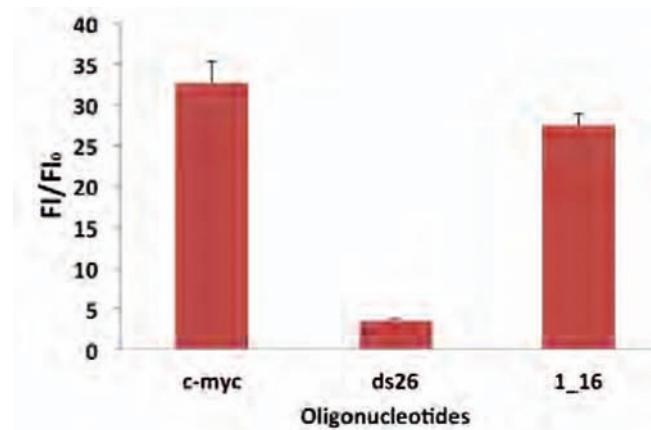


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalized differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence (right).

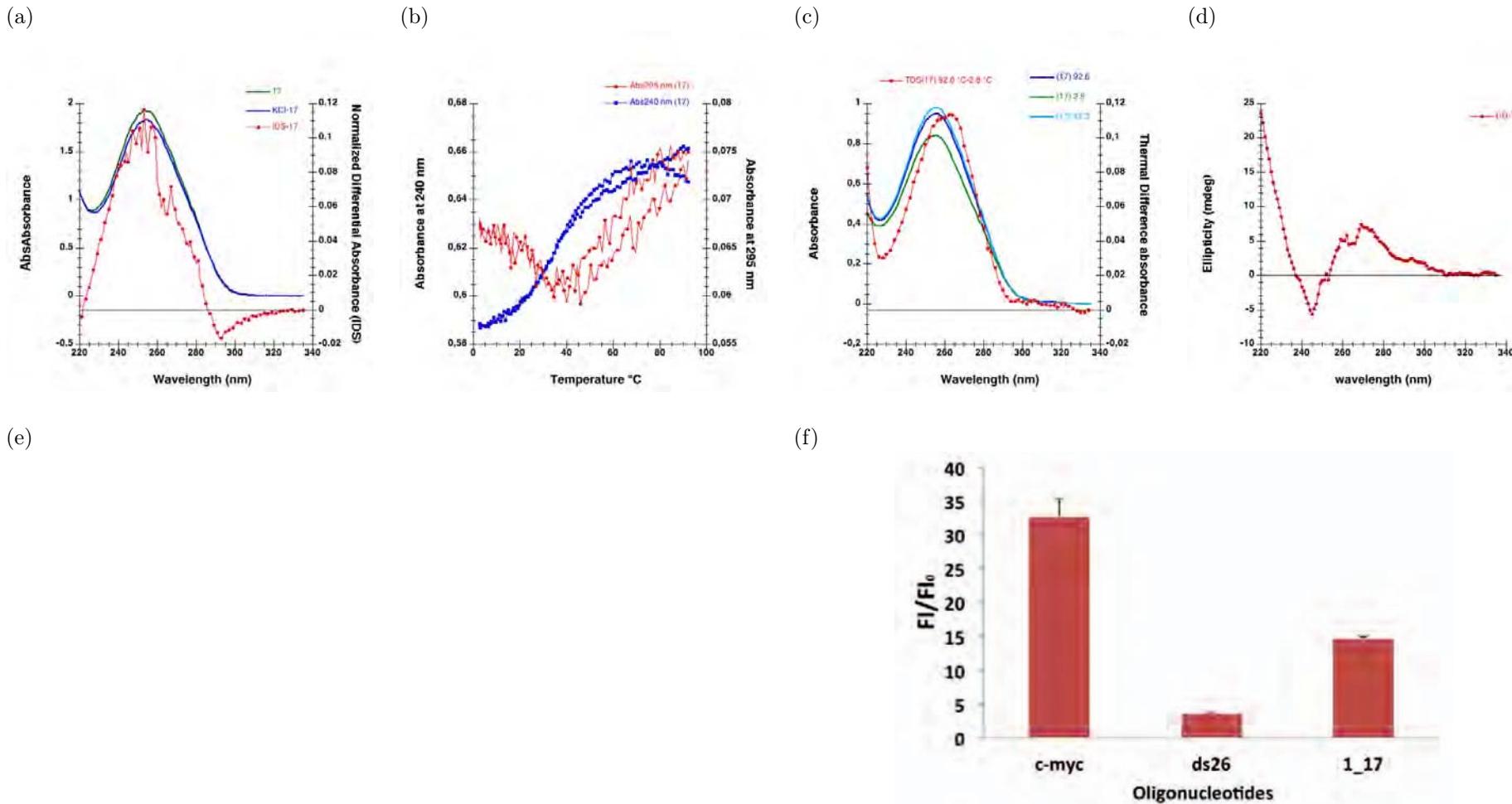
Table 183: Results interpretation of Mito 0.5-16

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes (-)	Yes	No	Mixed	Not done	++	G4

Name: Mito 0.5-17

Sequence: 5' GGAAAAAGGGCATACAGGACTAGG 3'

Score: 0.78



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

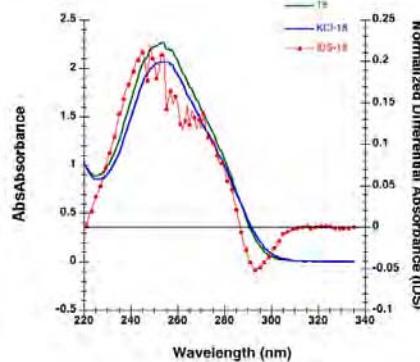
Table 184: Results interpretation of Mito 0.5-17

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	++	Not G4

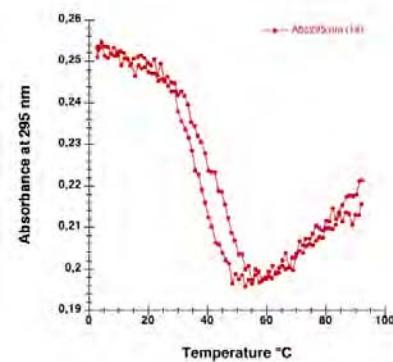
Name: Mito 0.5-18

Sequence:  $5' \text{GGATGC} \text{GTA} \text{GGGAT} \text{GGGA} \text{GGGCGAT} \text{GAGGACTA} \text{GGATGAT} \text{GGCGGGCAGG} 3'$  Score: 1.12

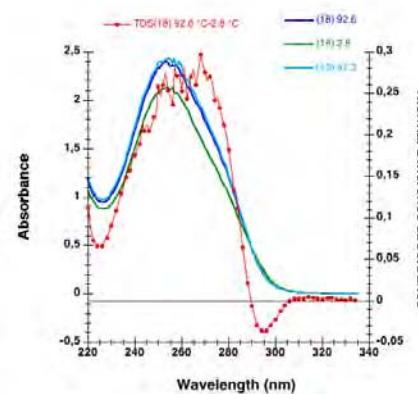
(a)



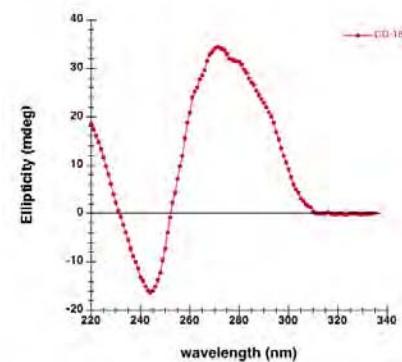
(b)



(c)

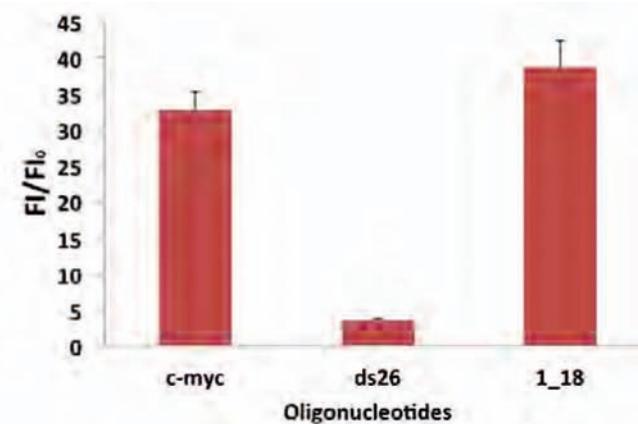


(d)



(e)

(f)



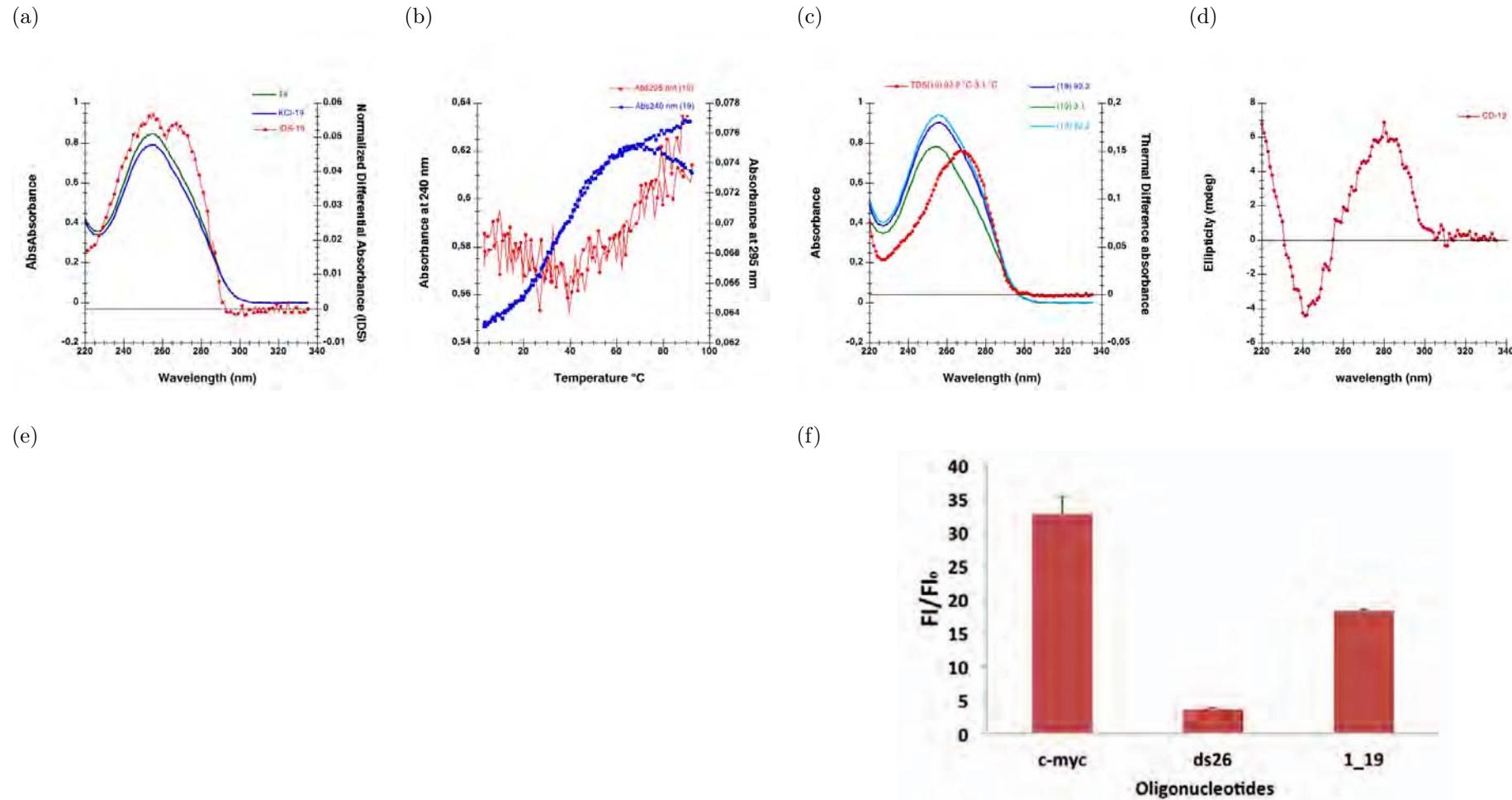
*In vitro* characterization of the selected candidates: **a**) Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b**) Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c**) Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d**) Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e**) 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f**) Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 185: Results interpretation of Mito 0.5-18\*

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Mixed	Not done	+++	G4

Name: Mito 0.5-19\* Mito

Sequence: *5' GGAGTCGCAGGTCGCCTGGTTCTAGGAATAATGGGGG 3'* Score: 0.84



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 µM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 µM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 µM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 µM oligonucleotides and 0.5 µM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 186: Results interpretation of Mito 0.5-19\*

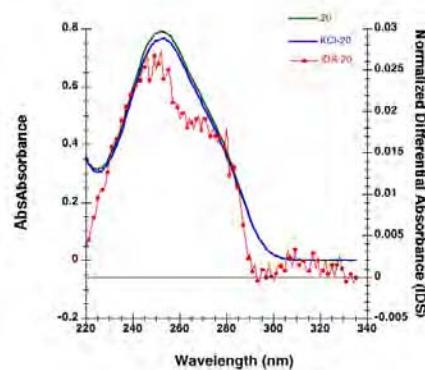
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	++	Not G4

Name: Mito 0.5-20

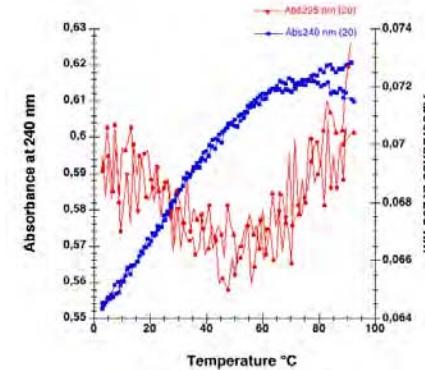
Sequence: *5' GGCA GGAGTCCGA GGAGG 3'*

Score: 0.72

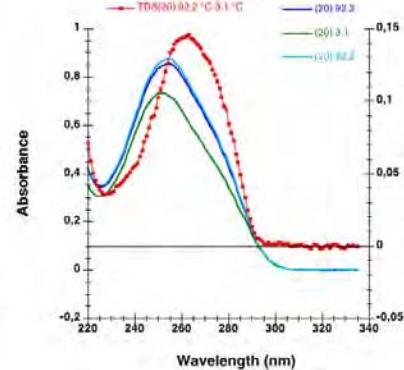
(a)



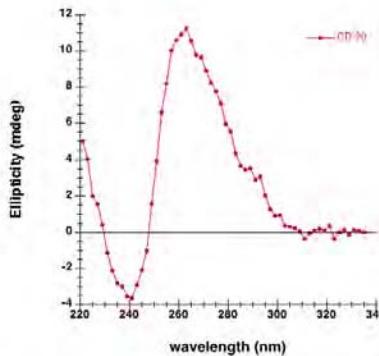
(b)



(c)

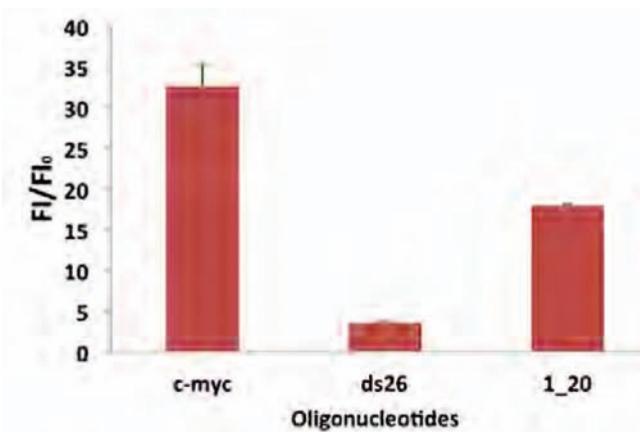


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

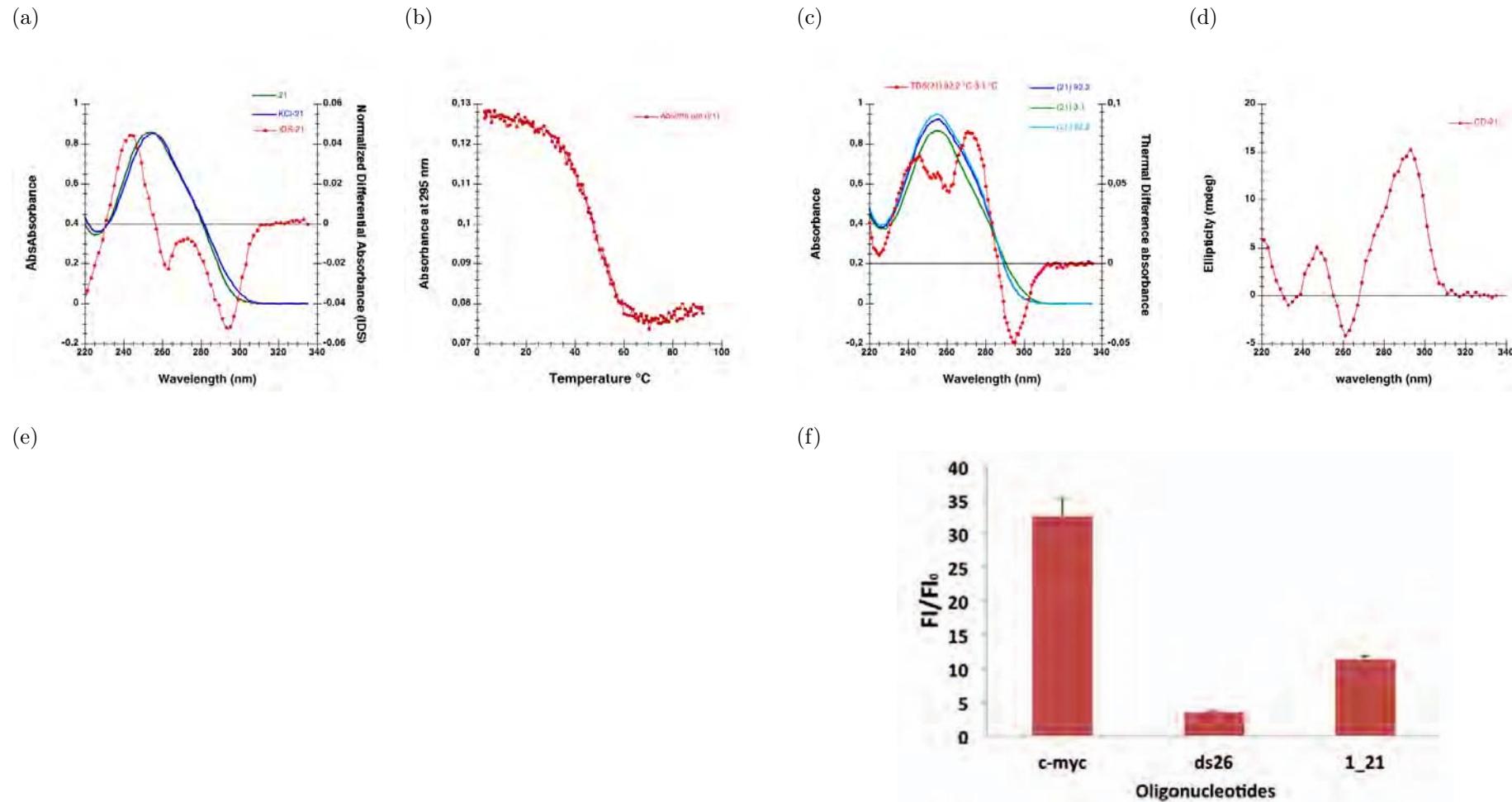
Table 187: Results interpretation of Mito 0.5-20

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	++	Not G4

Name: Mito 0.5-21

Sequence:  $5' GGGGATGGCCATGGCTA GG 3'$

Score: 1.21



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 188: Results interpretation of Mito 0.5-21

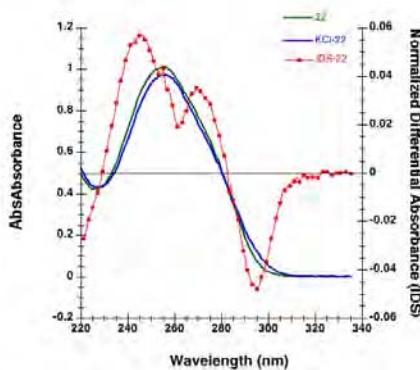
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Antiparallel	Not done	++	G4

Name: Mito 0.5-22

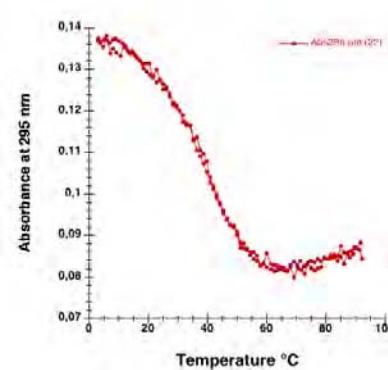
Sequence: *5' GGTTA GGC GTAC GGC CA GGG CTATT GG 3'*

Score: 0.7

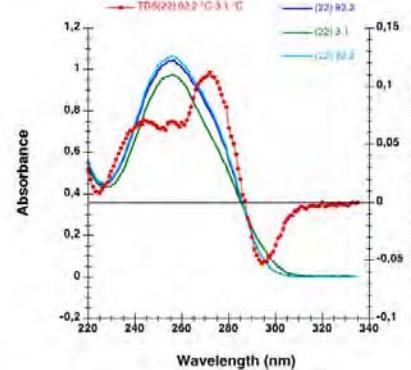
(a)



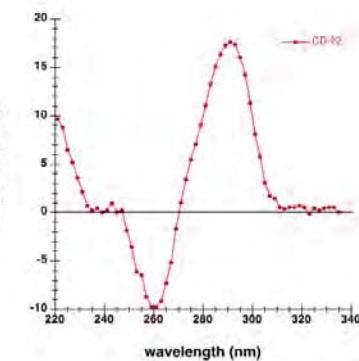
(b)



(c)

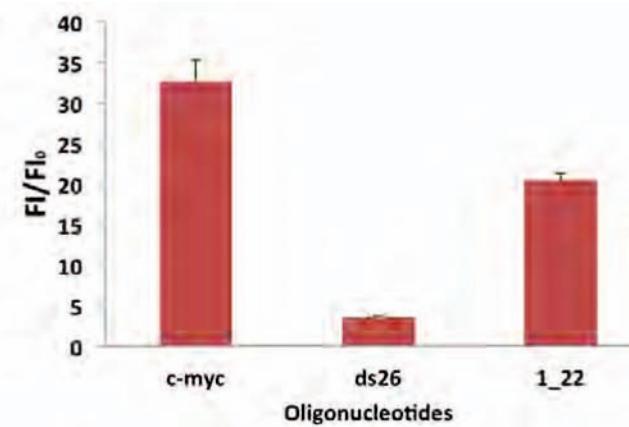


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 189: Results interpretation of Mito 0.5-22

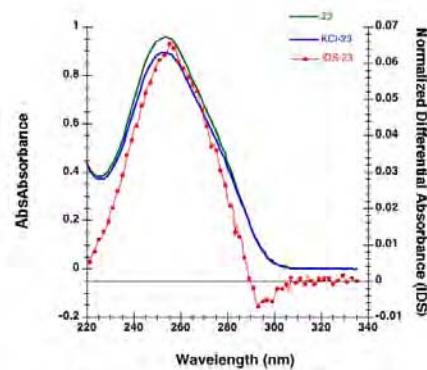
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Antiparallel	Not done	++	G4

Name: Mito 0.5-23\*

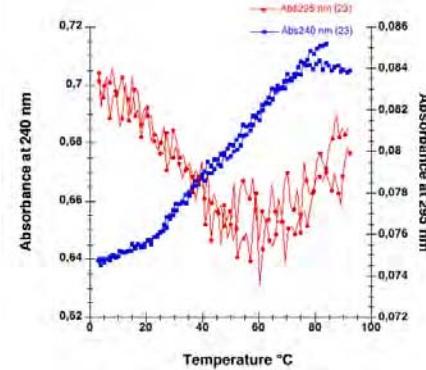
Sequence:  $5' GGCTAGGCCGGAGTCATTA GGAGGGCTGAGAGGG 3'$

Score: 0.94

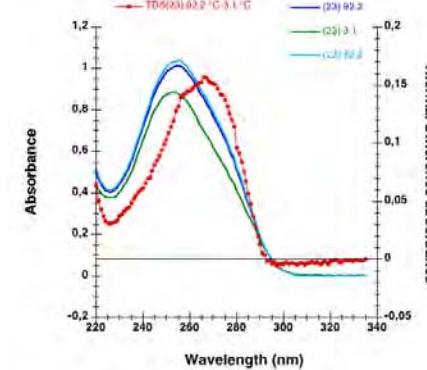
(a)



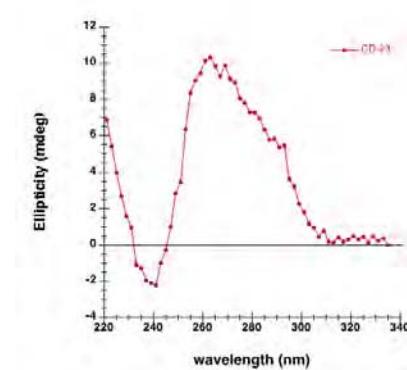
(b)



(c)

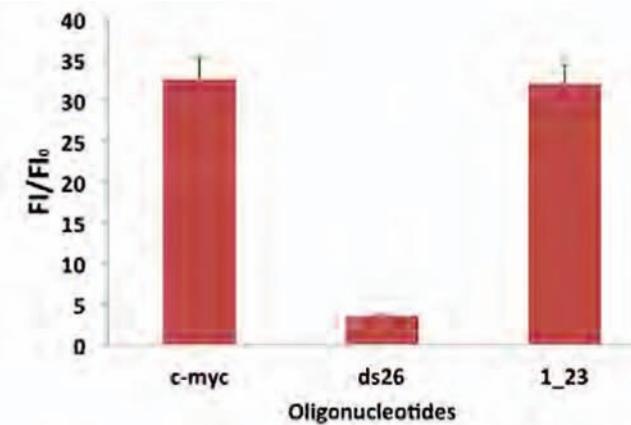


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 190: Results interpretation of Mito 0.5-23\*

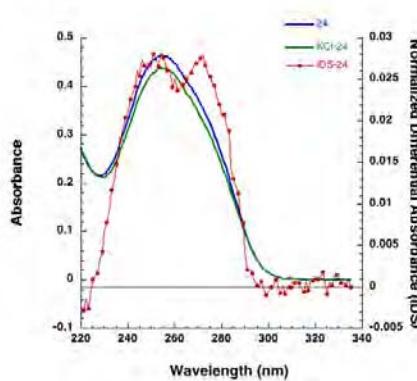
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes (-)	No	No	??	Not done	+++	<b>Not G4</b>

Name: Mito 0.5-24

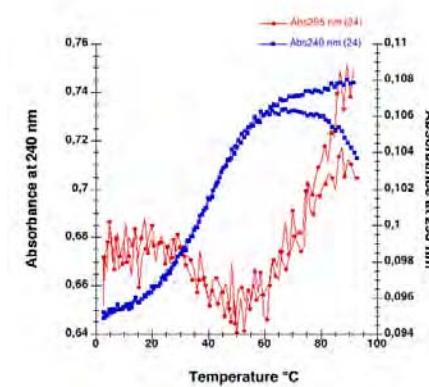
Sequence:  $5' GGCCTTTTGGACAGGTGGTGTGTTGGCCTTGG 3'$

Score: 0.6

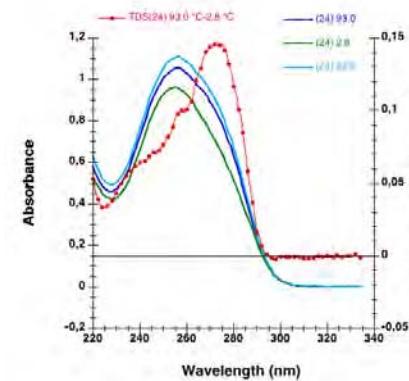
(a)



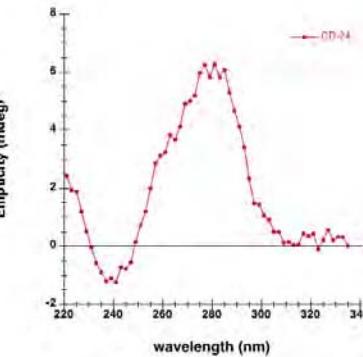
(b)



(c)

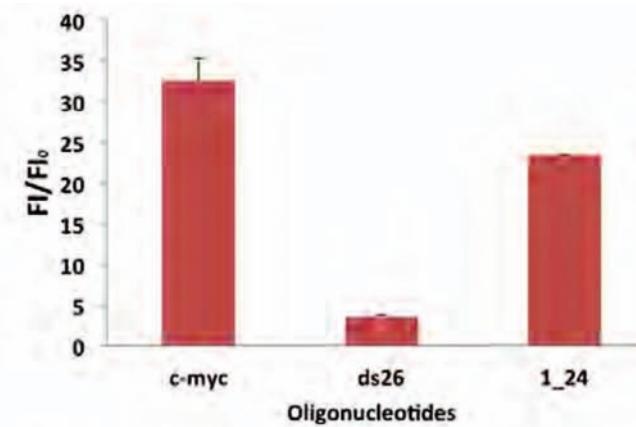


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

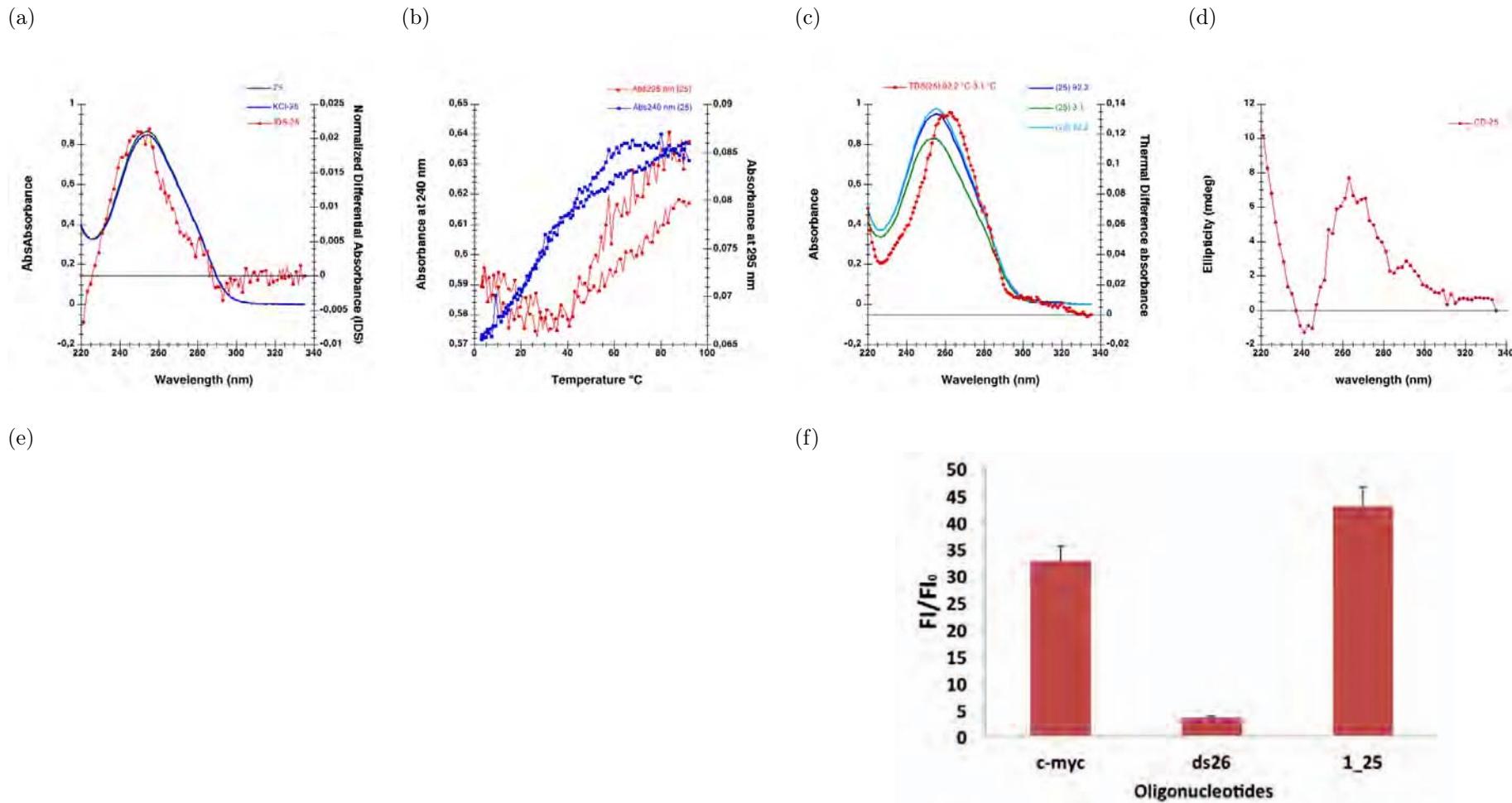
Table 191: Results interpretation of Mito 0.5-24

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	++	Not G4

Name: Mito 0.5-25

Sequence: 5' GG CATA GTAGGGAGGATATGAGG 3'

Score: 0.96



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 µM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 µM strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 µM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 µM oligonucleotides and 0.5 µM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 192: Results interpretation of Mito 0.5-25

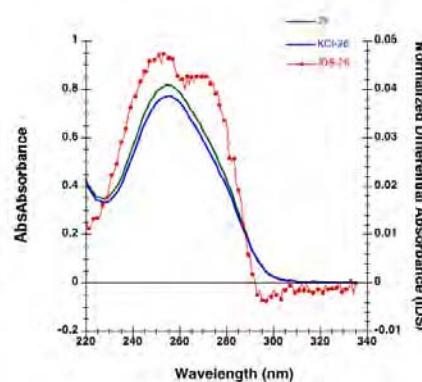
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	Mixed	Not done	+++	<b>Not G4</b>

Name: Mito 0.5-26

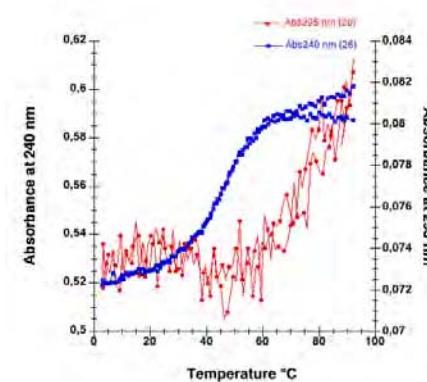
Sequence:  $5' \text{GGTTCACTGGATAAGTGGCGTTGG} 3'$

Score: 0.63

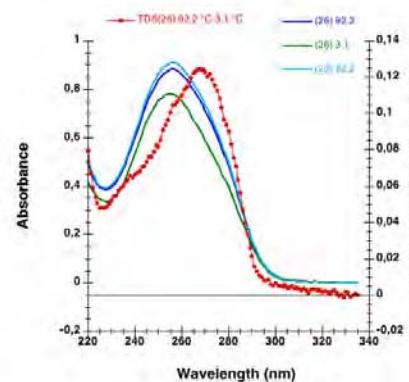
(a)



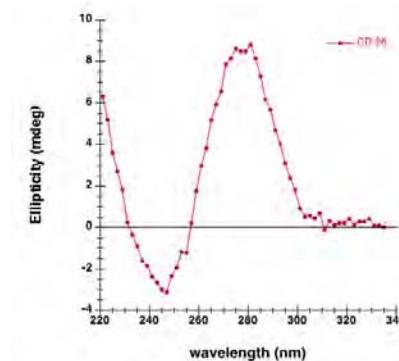
(b)



(c)

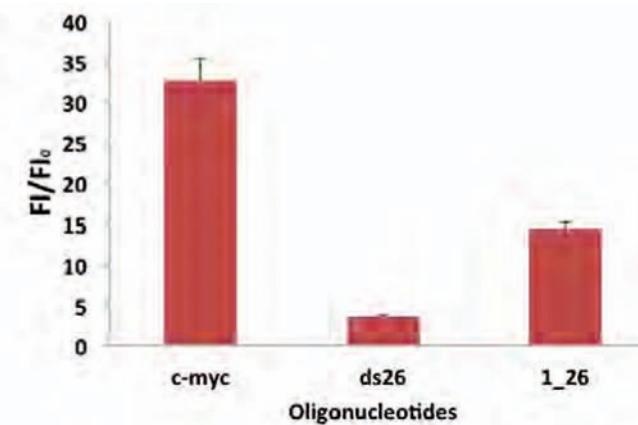


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalized differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence (right).

Table 193: Results interpretation of Mito 0.5-26

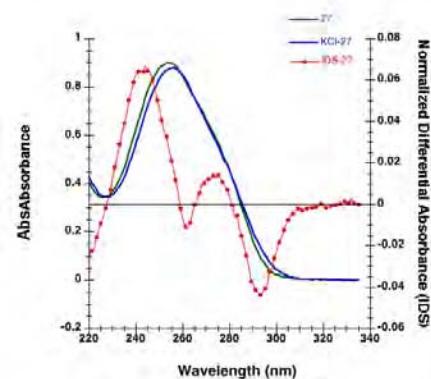
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	+	Not G4

Name: Mito 0.5-27

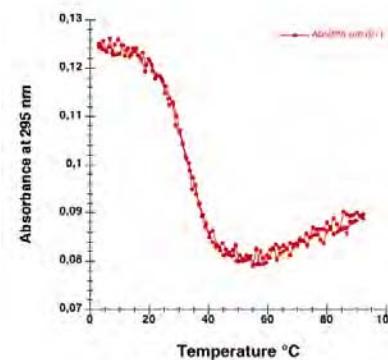
Sequence: 5' GGAATGCTA**GGTGTGGTTGG** 3'

Score: 0.85

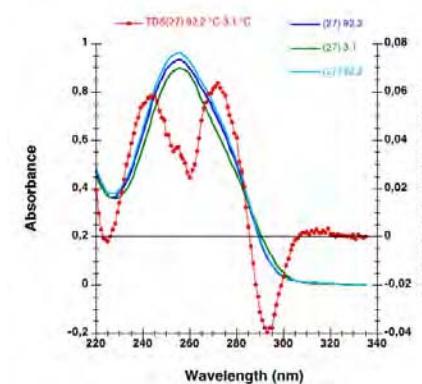
(a)



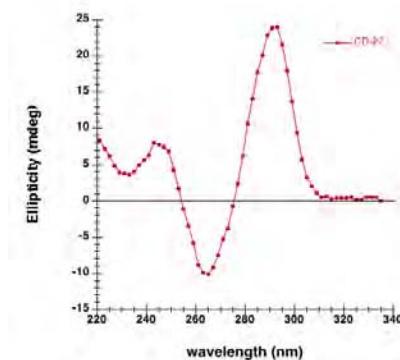
(b)



(c)

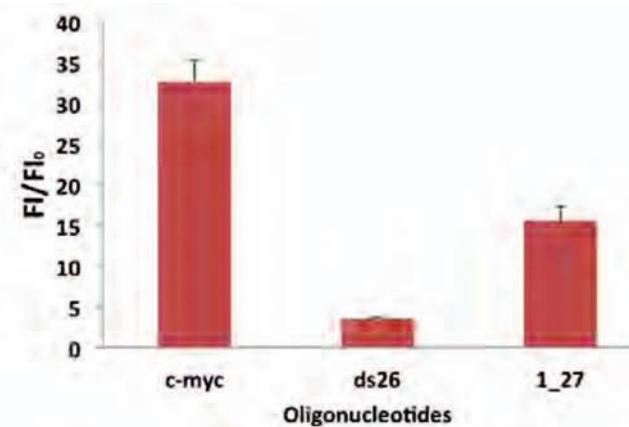


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 194: Results interpretation of Mito 0.5-27

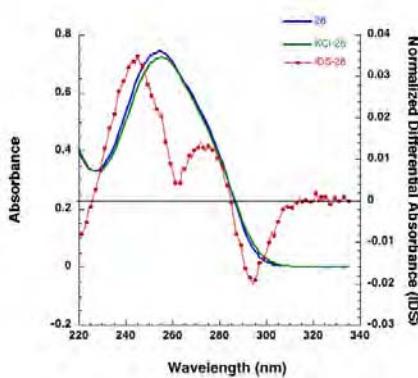
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes (<37°C)	Yes	Antiparallel	Not done	++	G4 (Unstable)

Name: Mito 0.5-28

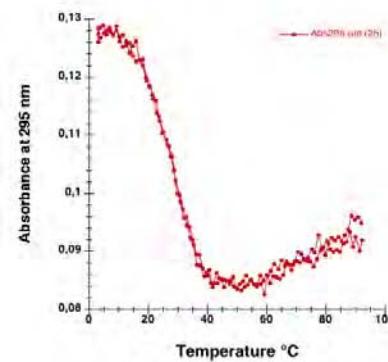
Sequence: *5' GGTTGTGGATGATGGACCCGG 3'*

Score: 0.43

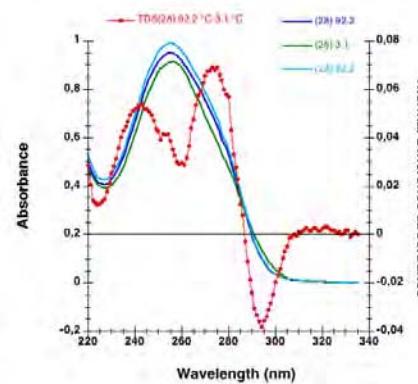
(a)



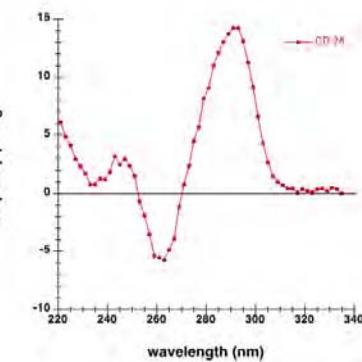
(b)



(c)

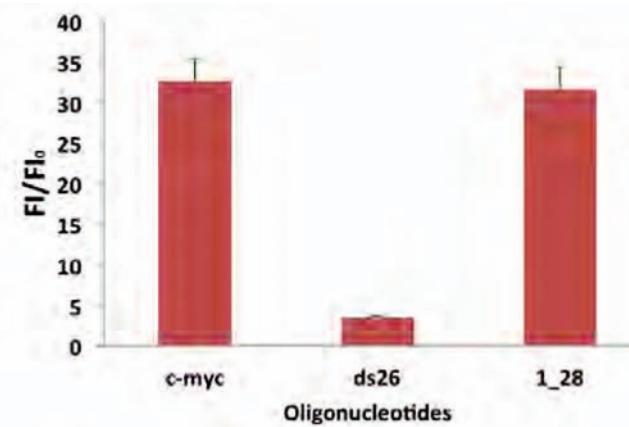


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 µM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 µM strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 µM strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 µM oligonucleotides and 0.5 µM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

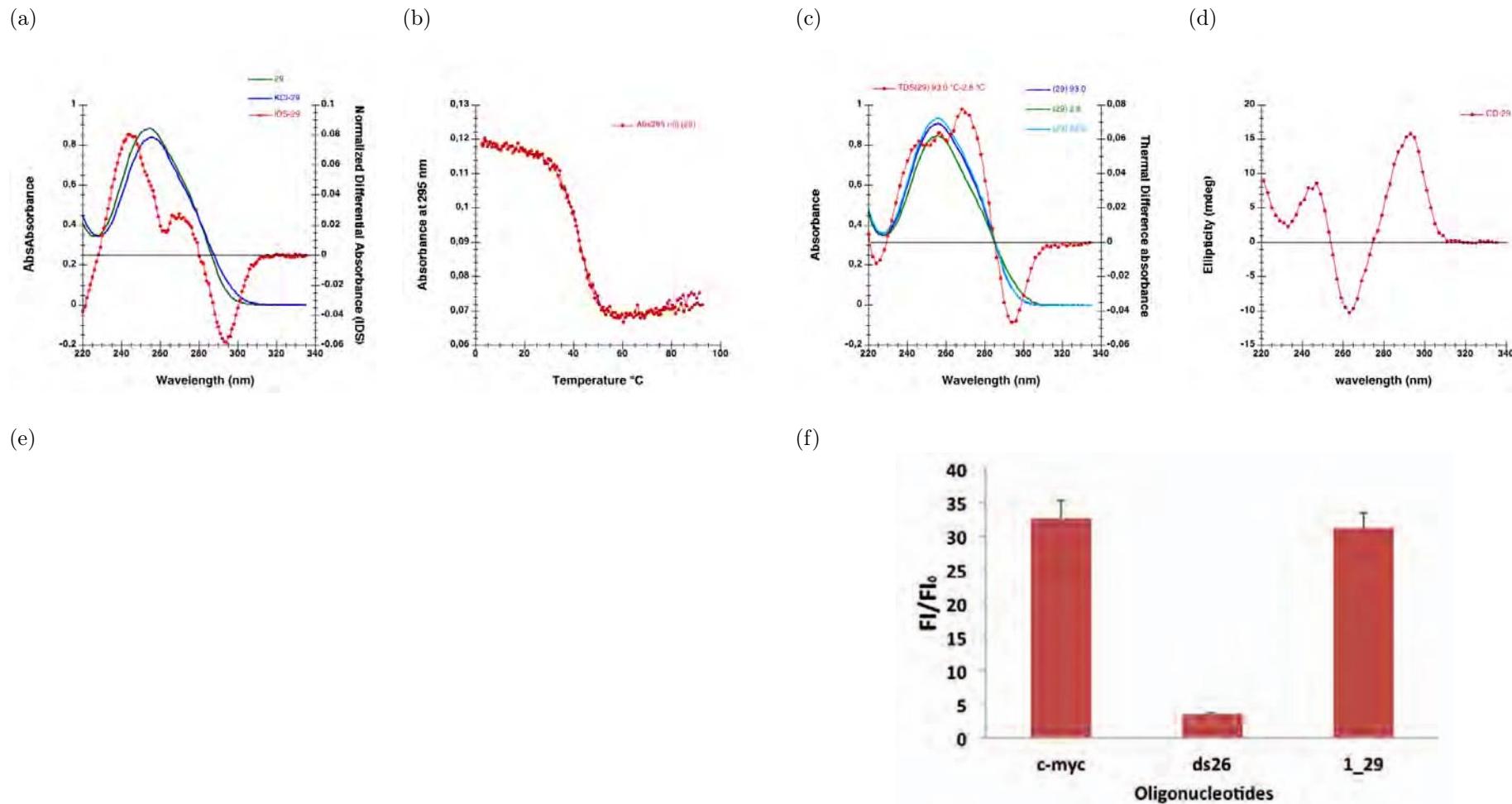
Table 195: Results interpretation of Mito 0.5-28

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes (<37°C)	Yes	Antiparallel	Not done	+++	G4 (Unstable)

Name: Mito 0.5-29: Mito

Sequence: 5' GGTAGGTA GTTGA GGGTCTA GGG 3'

Score: 0.96



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4 μM strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4 μM strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1 μM oligonucleotides and 0.5 μM Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 196: Results interpretation of Mito 0.5-29

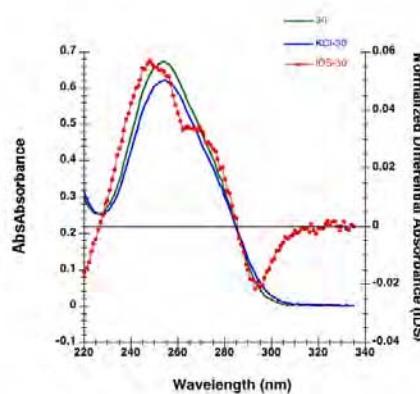
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Antiparallel	Not done	+++	G4

Name: Mito 0.5-30\*

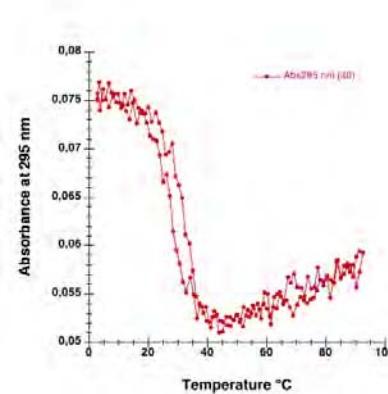
Sequence:  $5' \text{GGGTTGAGGTGATGATGGA} \text{GGTGGAGATTG} 3'$

Score: 1.03

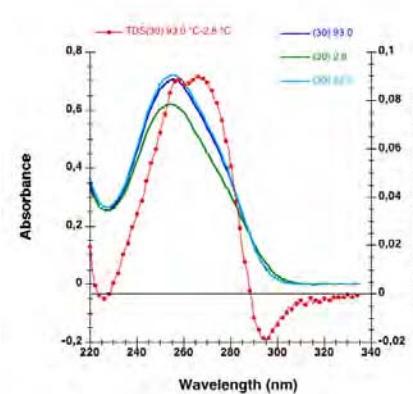
(a)



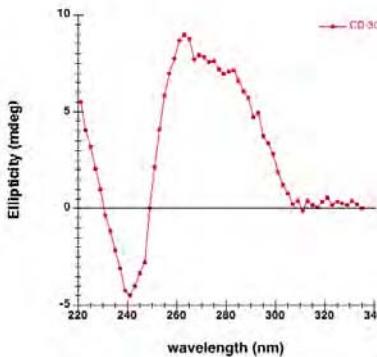
(b)



(c)

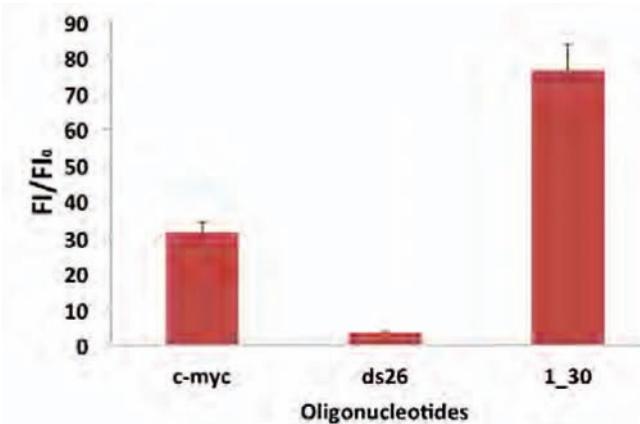


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalized differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence (right).

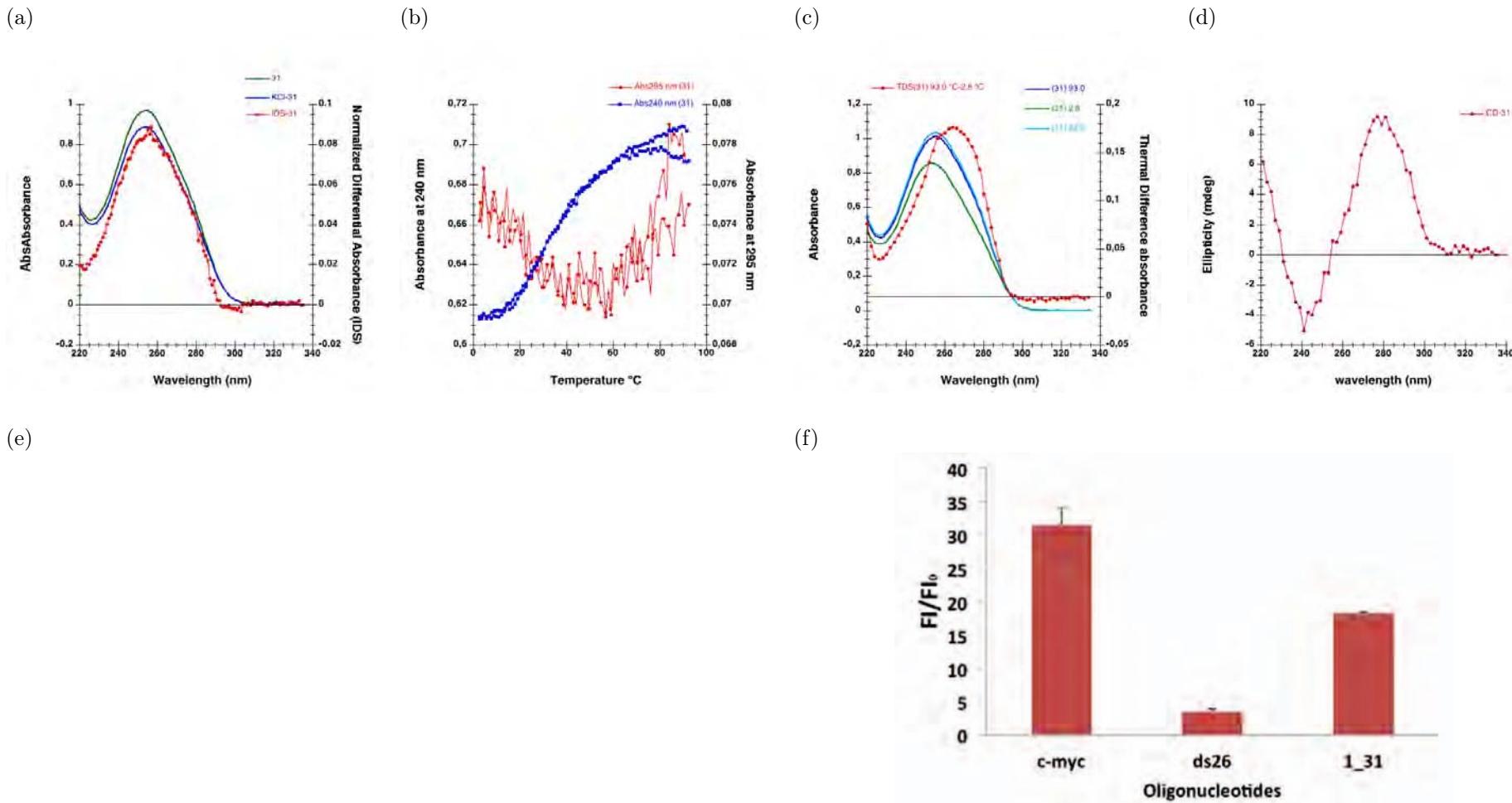
Table 197: Results interpretation of Mito 0.5-30\*

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Mixed	Not done	++	G4 (Unstable)

Name: Mito 0.5-31

Sequence:  $5' GGTGATTGGAGGATCAGGCAGGCCAA GG 3'$

Score: 0.61



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition (Tm) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 198: Results interpretation of Mito 0.5-31

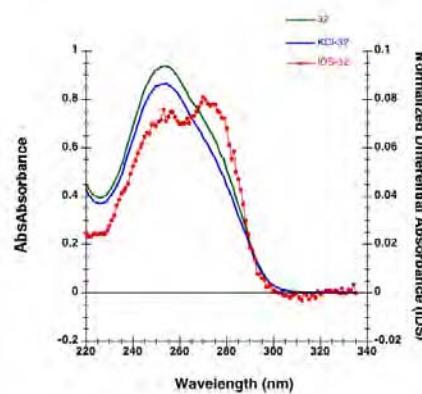
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	++	Not G4

Name: Mito 0.5-32

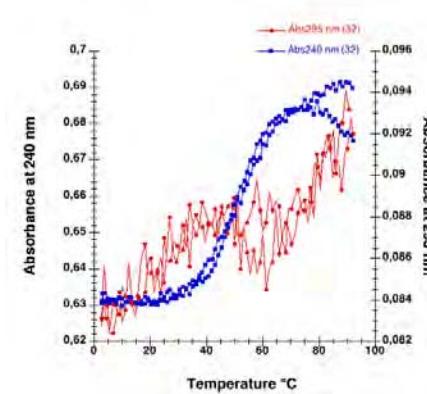
Sequence:  $5' GGC GG TTGA GGC GTCT GG 3'$

Score: 0.83

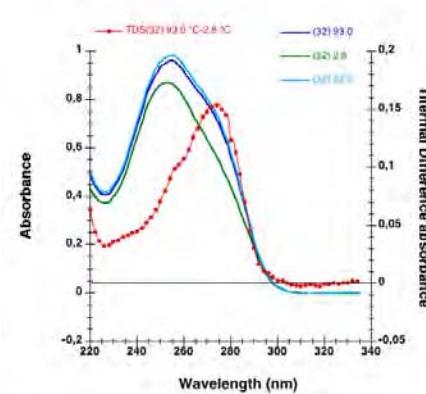
(a)



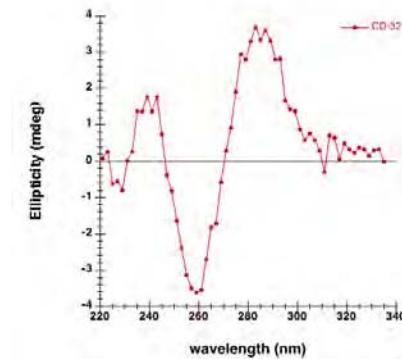
(b)



(c)

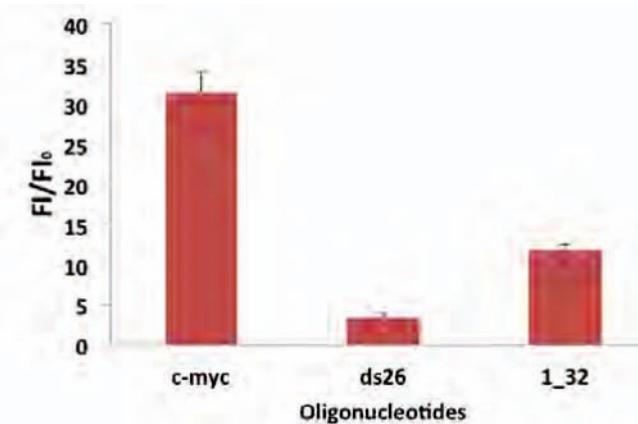


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

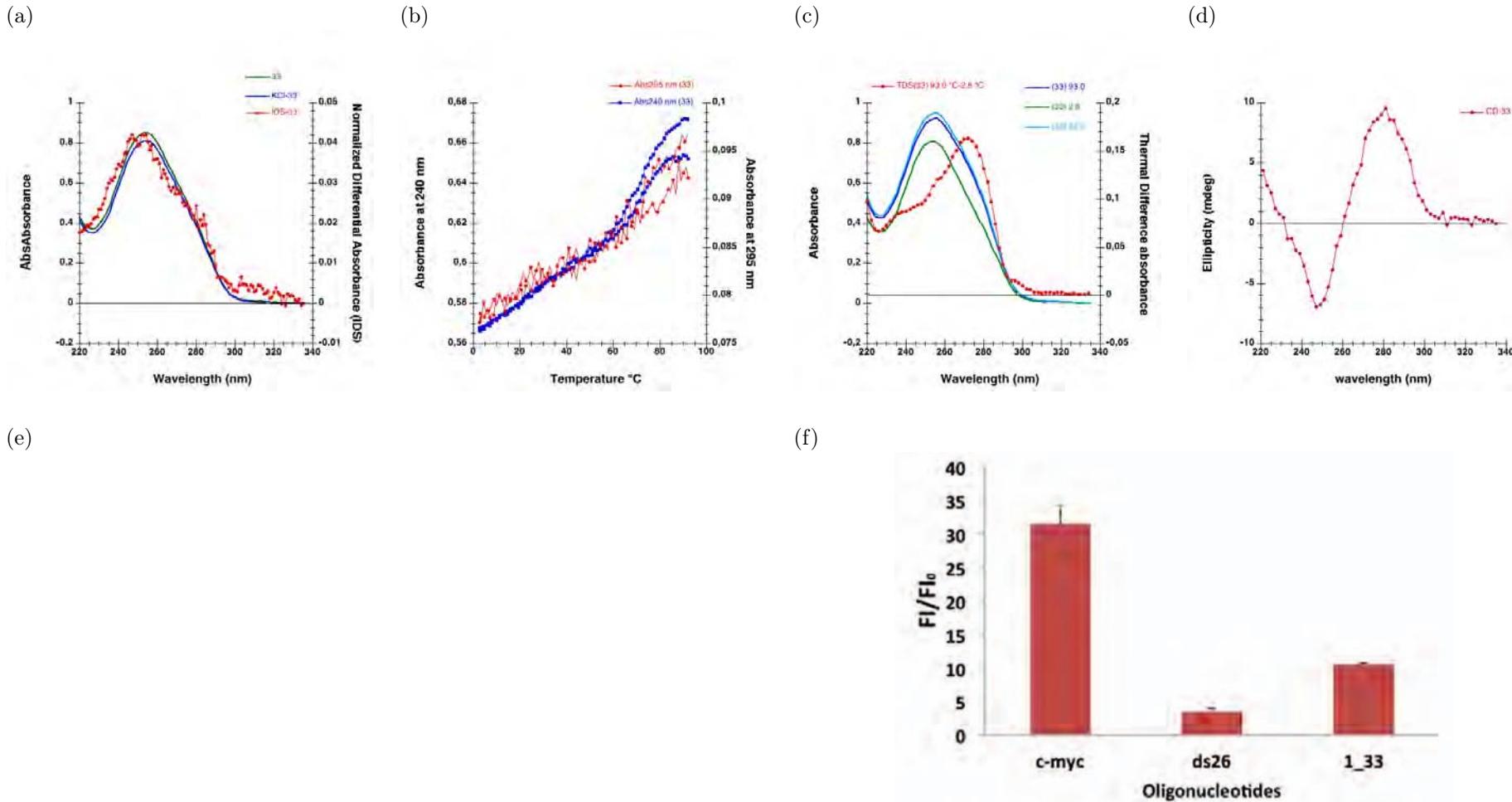
Table 199: Results interpretation of Mito 0.5-32

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	Antiparallel	Not done	+	<b>Not G4</b>

Name: Mito 0.5-33

Sequence:  $5' GGCGCCATTGGCGTGAAGGTAGCGG 3'$

Score: 0.52



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 200: Results interpretation of Mito 0.5-33

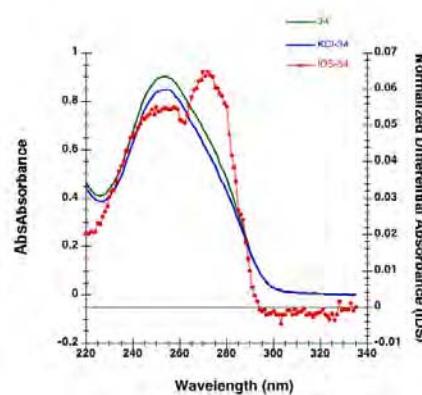
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	+	Not G4

Name: Mito 0.5-34

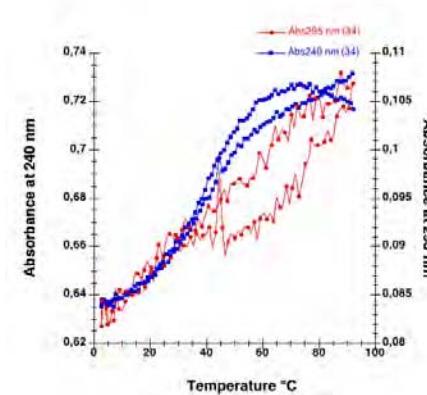
Sequence: *5' GGGTCGCCTA GGAGGTCTGG 3'*

Score: 0.8

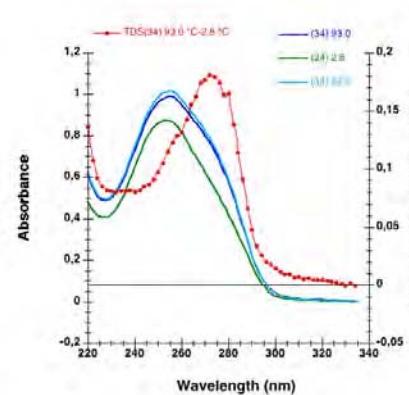
(a)



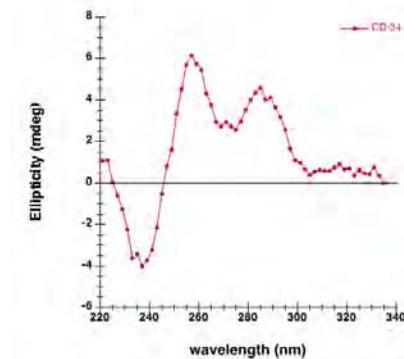
(b)



(c)

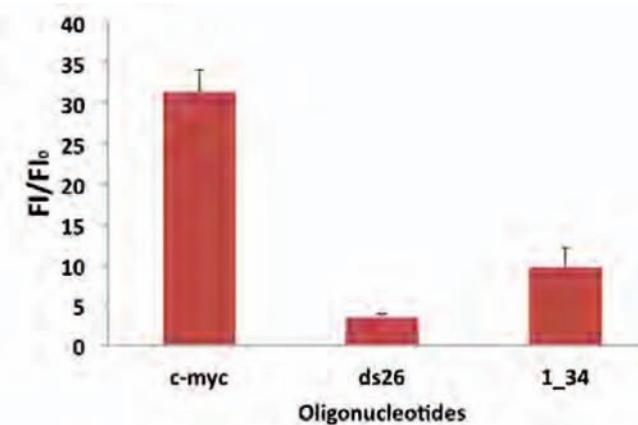


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

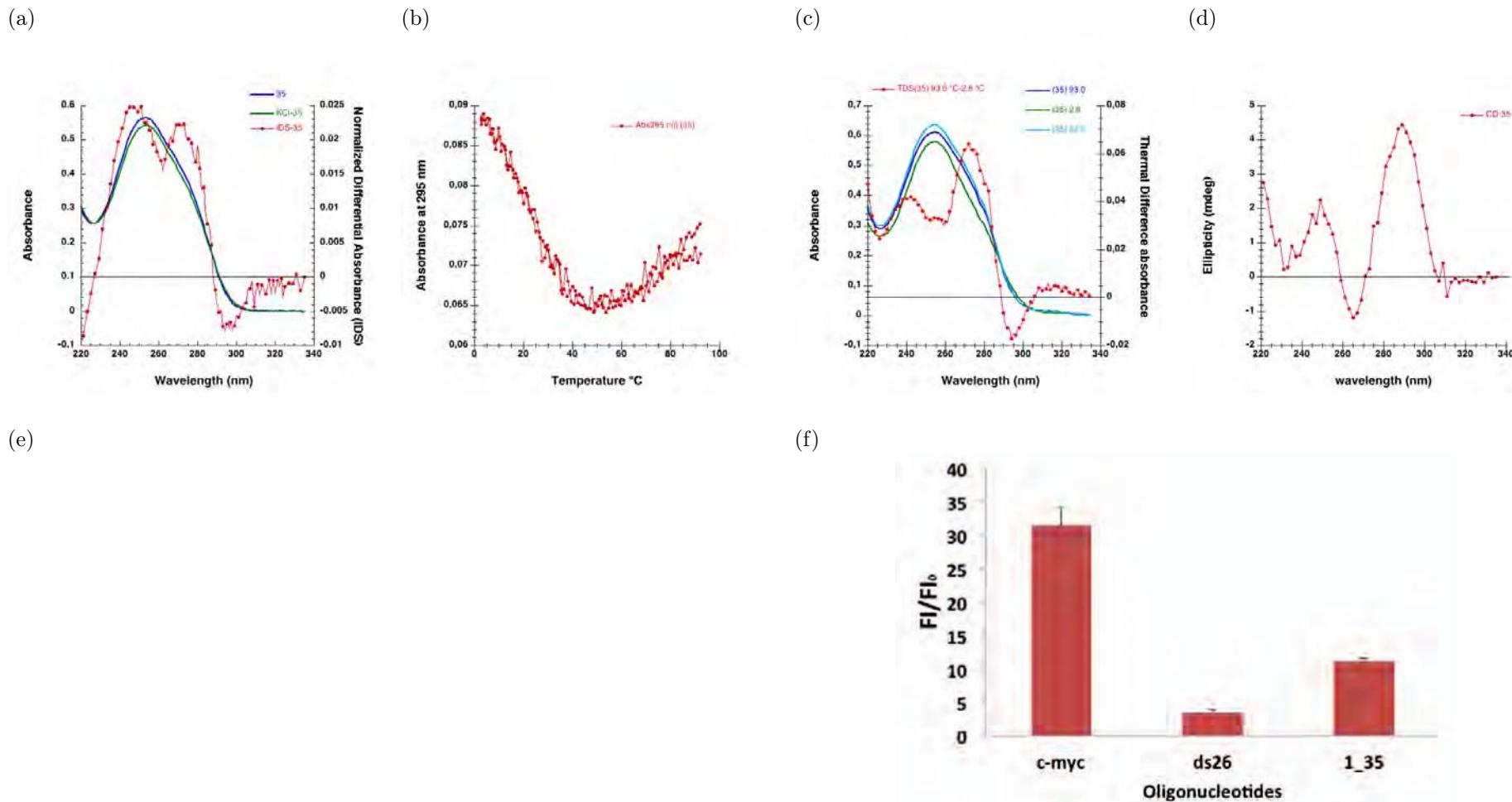
Table 201: Results interpretation of Mito 0.5-34

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	+	Not G4

Name: Mito 0.5-35

Sequence:  $5' GGAGGTCTGCGGCTAGG 3'$

Score: 0.82



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 202: Results interpretation of Mito 0.5-35

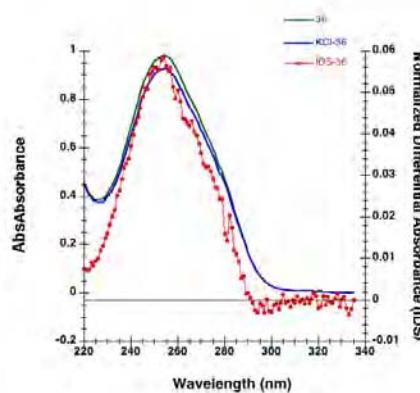
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes (<37°C)	Yes	Antiparallel	Not done	++	G4 (Unstable)

Name: Mito 0.5-36

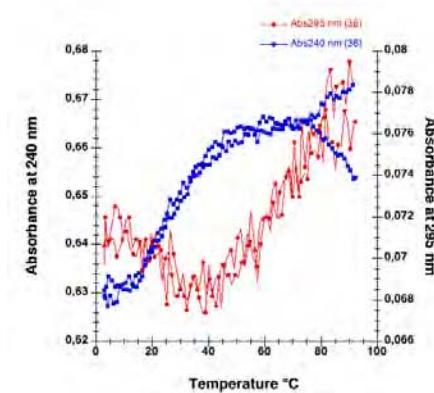
Sequence:  $5' \text{GGGTGCTAATGGTGGAGTTAAAGG} 3'$

Score: 0.96

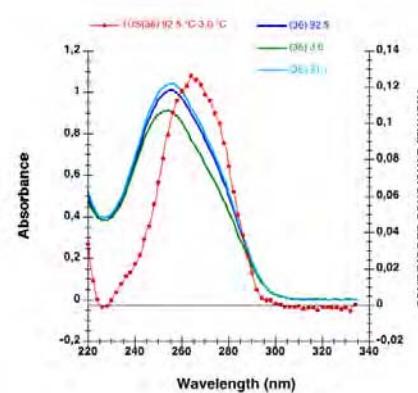
(a)



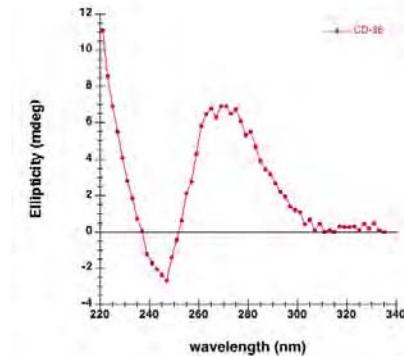
(b)



(c)

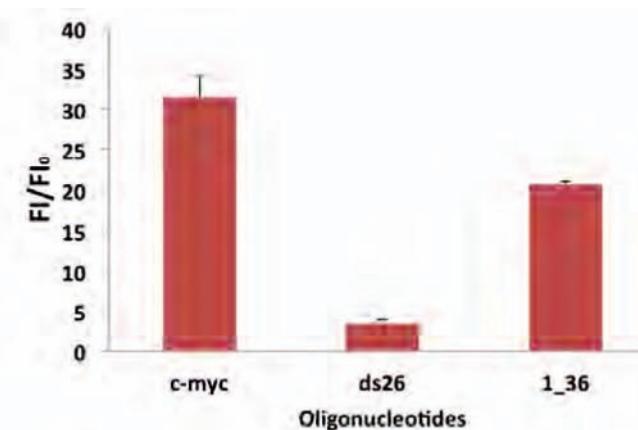


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a**) Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b**) Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl). **c**) Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH= 7.0) and 100 mM KCl). **d**) Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH= 7.0) and 100 mM KCl, 20°C). **e**) 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f**) Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

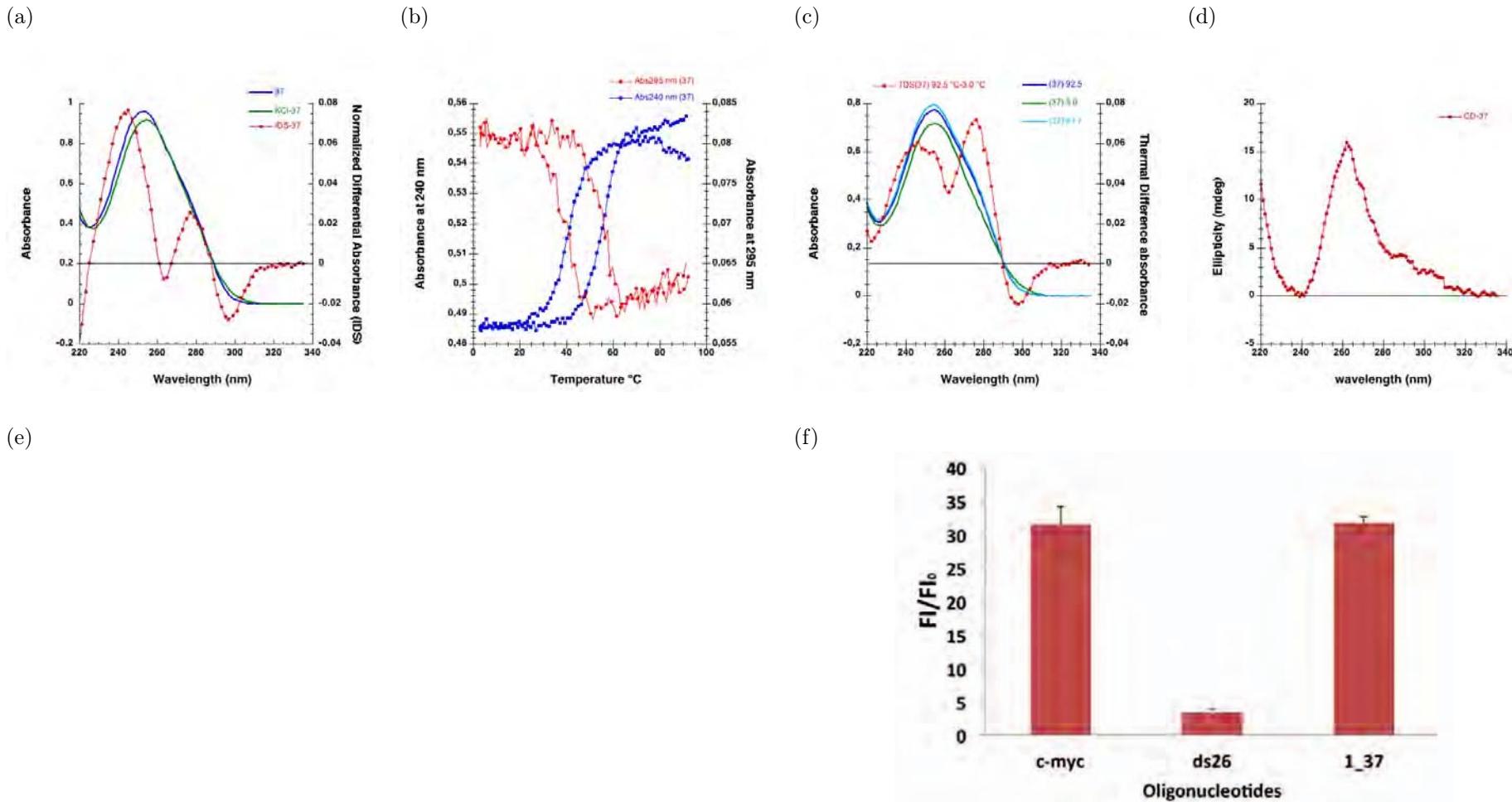
Table 203: Results interpretation of Mito 0.5-36

Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	++	Not G4

Name: Mito 0.5-37

Sequence: 5' GGAGGGATGGTGGCCAA GGG 3'

Score: 1.11



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 204: Results interpretation of Mito 0.5-37

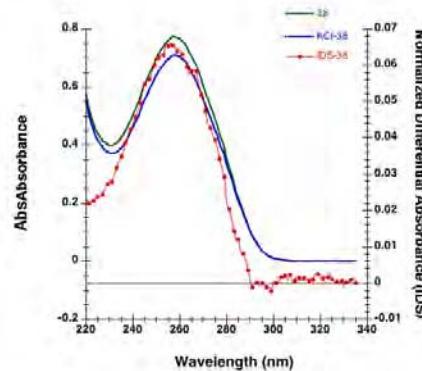
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	Yes	Yes	Yes	Parallel	Not done	+++	G4

Name: Mito 0.5-38

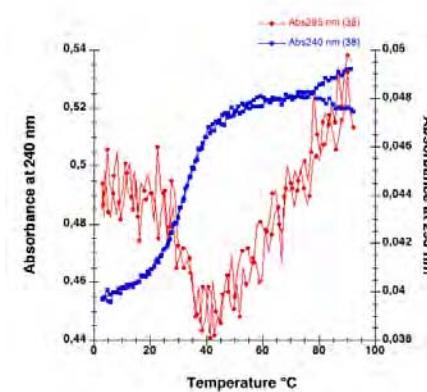
Sequence:  $5' CGTTCAATATTACA GGCGAACATAC 3'$

Score: 0.0

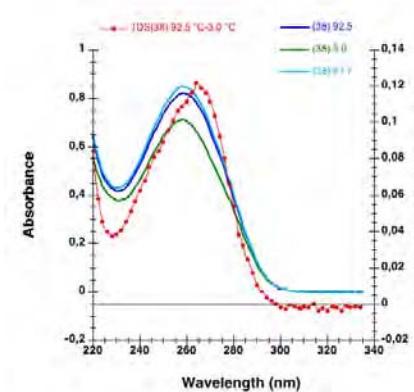
(a)



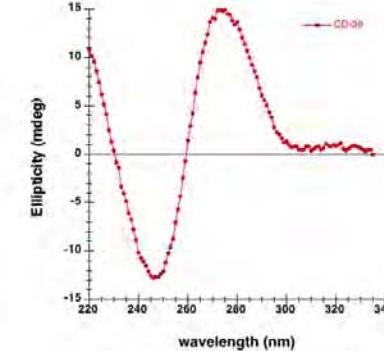
(b)



(c)

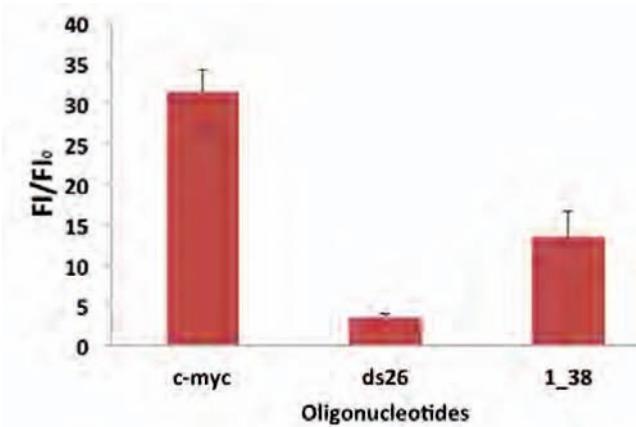


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

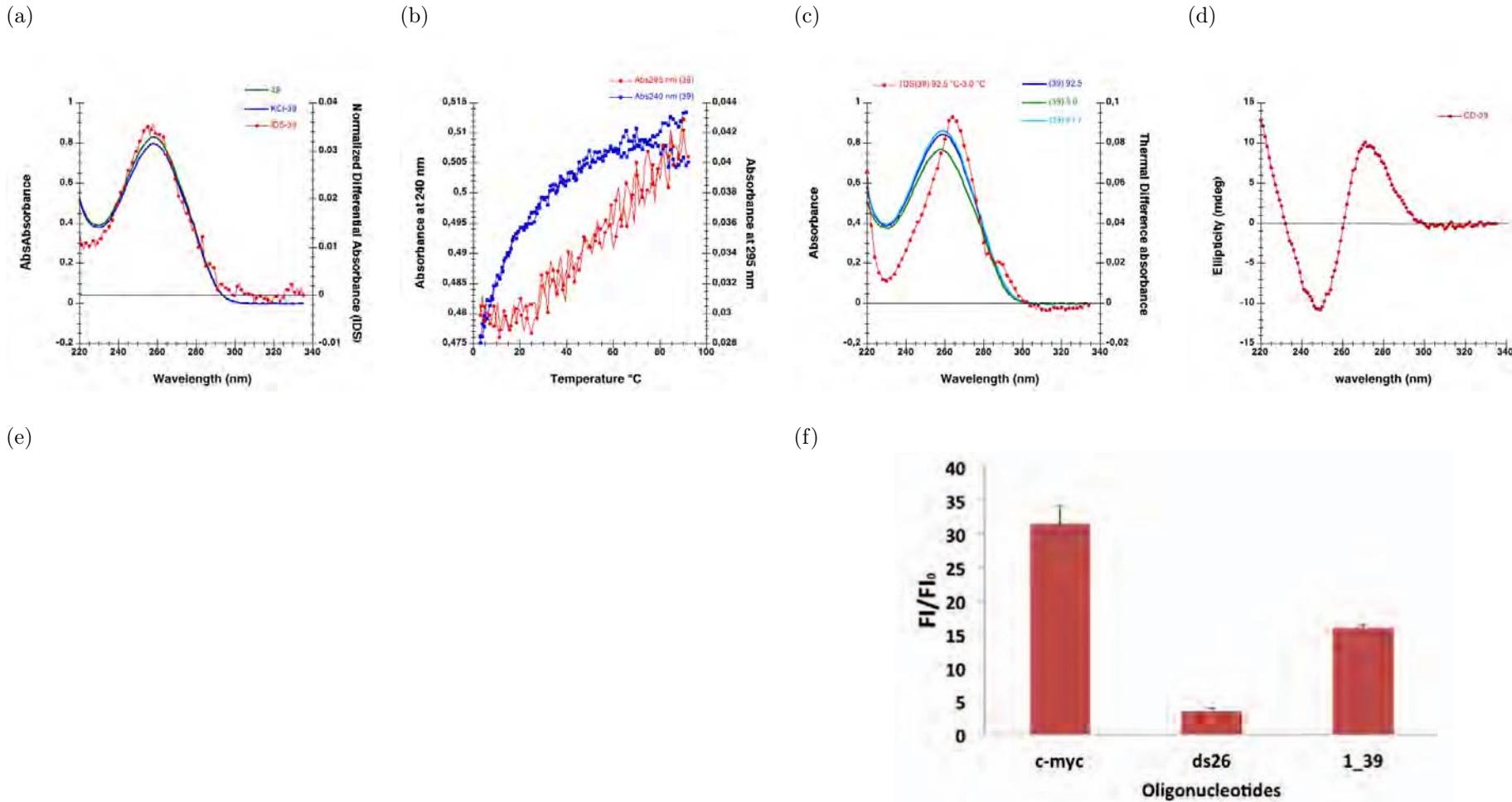
Table 205: Results interpretation of Mito 0.5-38

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	+	Not G4

Name: Mito 0.5-39

Sequence: 5' TATTACAGGC<sub>G</sub>AACATACTTACTAA3'

Score: 0.0



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence (right).

Table 206: Results interpretation of Mito 0.5-39

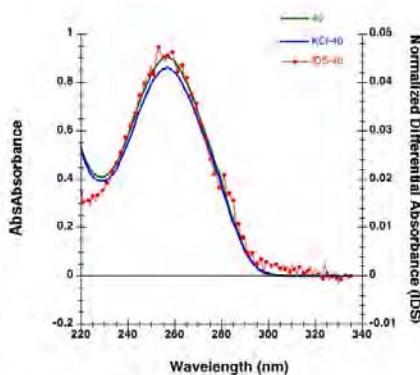
Technique	IDS	Tm	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	++	<b>Not G4</b>

Name: Mito 0.5-40

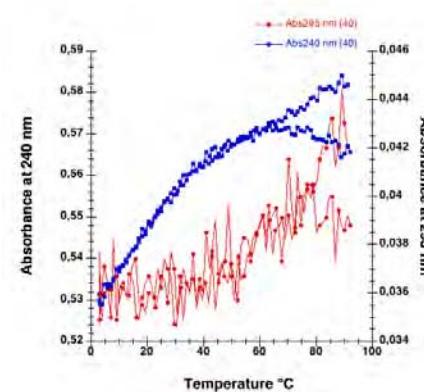
Sequence:  $5' GCTTGTAGGACATAATAATAACAGT 3'$

Score: 0.16

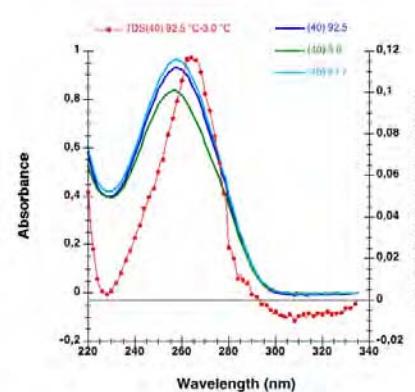
(a)



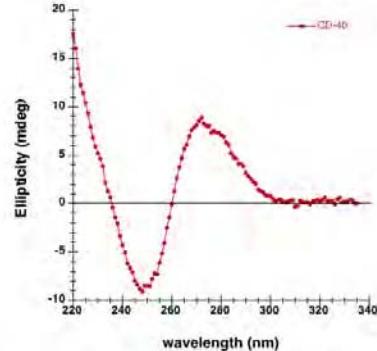
(b)



(c)

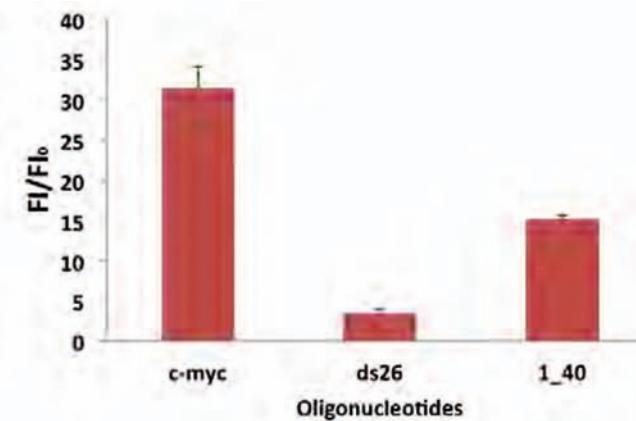


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalized differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence (right).

Table 207: Results interpretation of Mito 0.5-40

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	++	Not G4

Name: Mito 0.5-41

Sequence:  $5' CAATGCACTGAAAATGTTAGACVGG 3'$

Score: 0.16

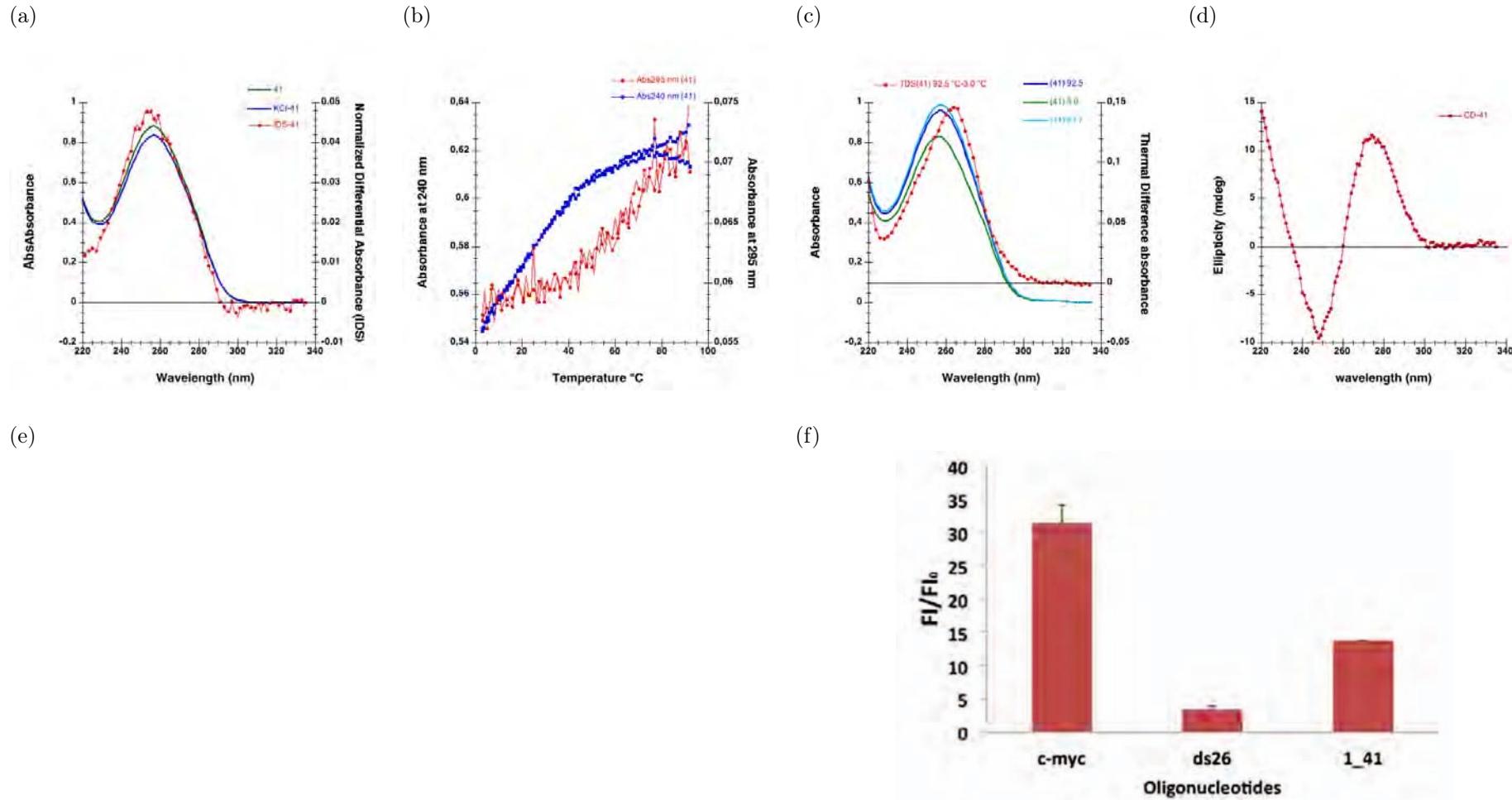


Table 208: Results interpretation of Mito 0.5-41

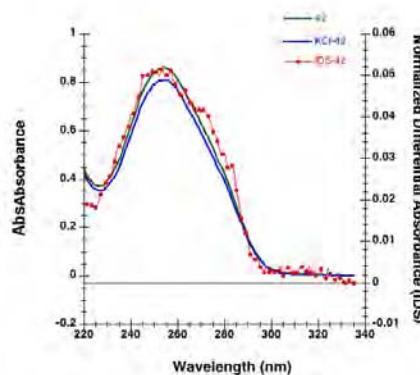
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	++	<b>Not G4</b>

Name: Mito 0.5-42

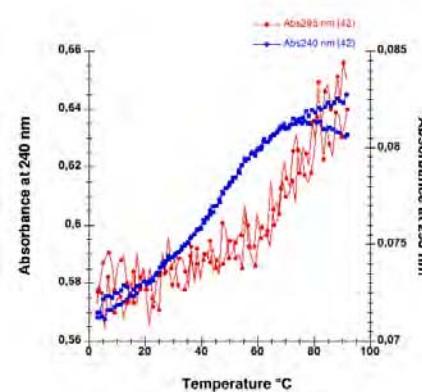
Sequence: *5' GGTCAA**GGTGTAGCCCATGA**GGTGG 3'*

Score: 0.36

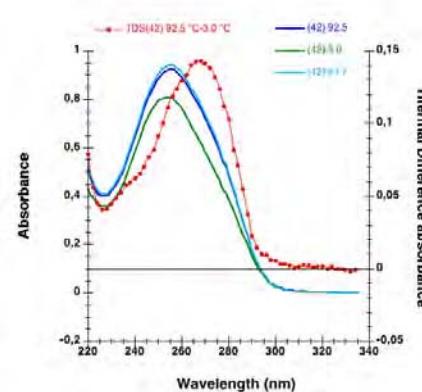
(a)



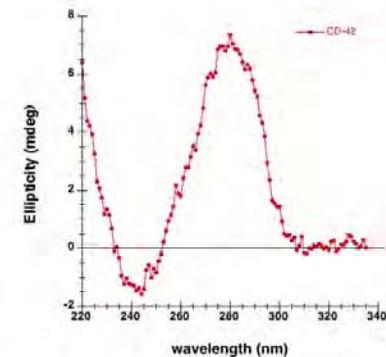
(b)



(c)

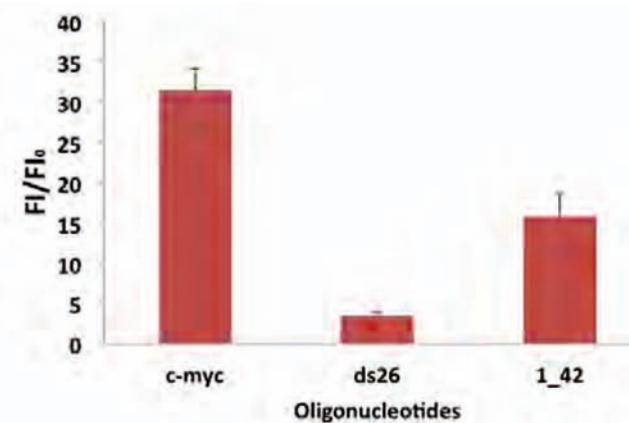


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalized differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence (right).

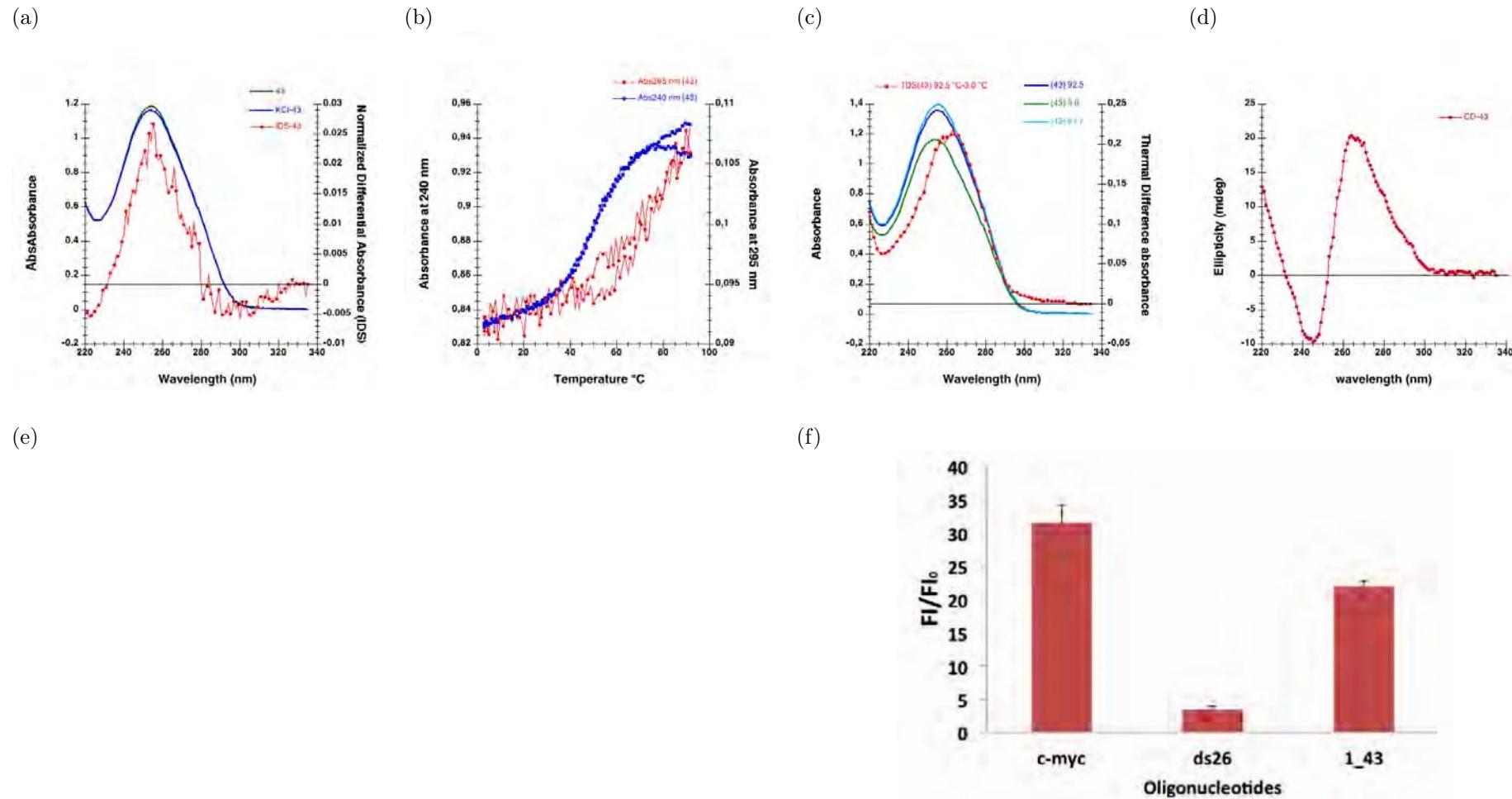
Table 209: Results interpretation of Mito 0.5-42

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	++	<b>Not G4</b>

Name: Mito 0.5-43

Sequence:  $5' AGCCCATGAGGTGGCAA GAAATGGG 3'$

Score: 0.4



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 210: Results interpretation of Mito 0.5-43

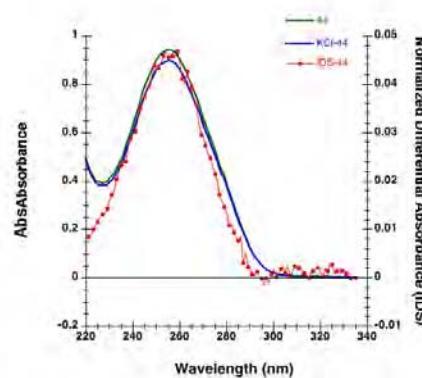
Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	++	<b>Not G4</b>

Name: Mito 0.5-44

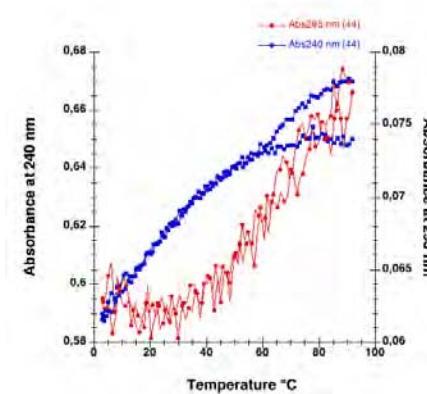
Sequence: *5' GAA GATTTATA GGTA GAGGCCACAA 3'*

Score: 0.4

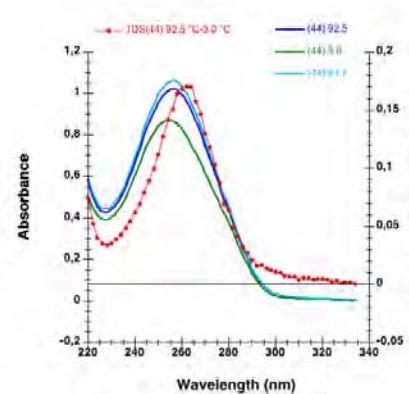
(a)



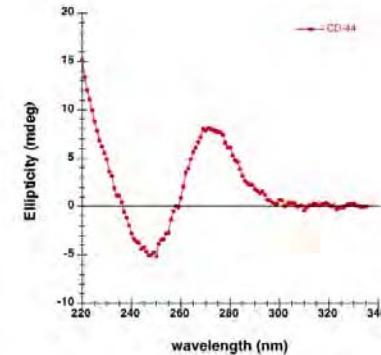
(b)



(c)

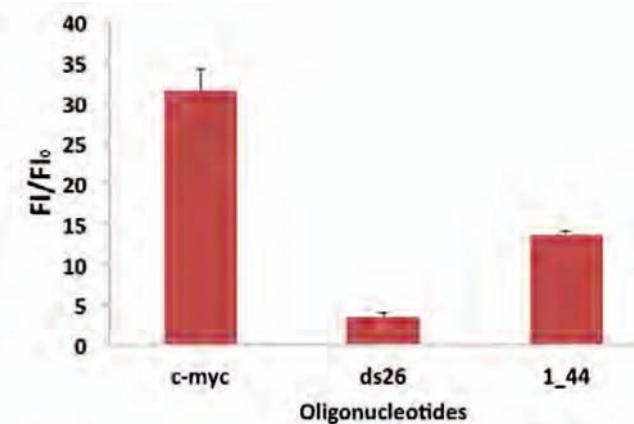


(d)



(e)

(f)



*In vitro* characterization of the selected candidates: **a)** Normalized Isothermal Difference Spectra (IDS) resulting from the difference between the absorbance recorded at 25°C before and after annealing in 100 mM KCl. **b)** Thermal melting transition ( $T_m$ ) profiles measured at 240 and/or 295 nm (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl). **c)** Normalize differential spectra (TDS) in the 220 and 335 nm region (4  $\mu$ M strand concentration, 10mM lithium cacodylate (pH=7.0) and 100 mM KCl). **d)** Circular dichroism spectra (CD) (4  $\mu$ M strand concentration, 10mM sodium cacodylate (pH=7.0) and 100 mM KCl, 20°C). **e)** 1D Imino proton spectra in a 20 mM potassium phosphate buffer pH 6.9 with 70 mM KCl at 25°C. The presence of peaks between 10 and 12 ppm suggests G4 formation. **f)** Bar graph of fluorescence enhancement with 1  $\mu$ M oligonucleotides and 0.5  $\mu$ M Thioflavine T for one positive control (c-myc G4-forming), one duplex (ds 26) and the tested sequence(right).

Table 211: Results interpretation of Mito 0.5-44

Technique	IDS	$T_m$	TDS	CD	NMR	Thioflavine	Conclusion
Result (G4 ?)	No	No	No	No	Not done	++	Not G4