

Detection of single nucleotide variation diseases using DNA logic gates based on strand

displacement technology

(Supplementary Information)

Table1. Design of purified DNA sequences

Names	Design sequence
Accounting items	
H1	5'-TTGCCTACGCTAGAGCTTGCGATAGTAGCGTAGGCAAGTCACGTC-3'
H2	5'-HEX-GAGCTTGCGATAGGACTTGCCCTACGCTACTATCGCAAGCTCTAGCGTAG-BHQ1-3'
Alzheimer's disease	
CP	5'-G-Biotin-TTTTTTTTTTTGCCAGGCACTTCTGCAGTACTTCAGATACCCAA-3'
FP	5'-AAGTACTGCAGAAGTGC-3'
SP	5'-GACGTGACTTGGGTAT-3'
RS429358-MT	5'-TTGGGTATTTGAAGTAC-3'
RS429358-WT	5'-TTGGGTATCTGAAGTAC-3'
RS7412-MT	5'-TGCAGAAGCGCCTGGCA-3'
RS7412-WT	5'-TGCAGAAGCGCCTGGCA-3'
Parkinson's syndrome	
CP	5'-G-Biotin-TTTTTTTTTTTATTAGTCTACAGAGAGTTCATCTCTACGCGAAATA-3'
FP	5'-AGATGAACTCTCTGTAGAC-3'
SP	5'-GACGTGACTATTTTCGCG-3'
RS94704480-MT	5'-AACTCTGTGCGACTAATA-3'
RS94704480-WT	5'-AACTCTGTGAGACTAATA-3'
RS1564282-MT	5'-TATTTTCGCCTAGAGATG-3'
RS1564282WT	5'-TATTTTCGCGTAGAGATG-3'
Renal tubular acidosis	
CP	5'-G-Biotin-TTTTTTTTTTTGCCAGGCACTTCTGCAGTACTTCAGATACCCAA-3'
FP	5'-AAGTACTGCAGAAGTGC-3'
SP	5'-GACGTGACTTGGGTAT-3'
RS464705-MT	5'-TTATGACTATATCTTGG-3'
RS464705-WT	5'-TTATGACTCTATCTTGG-3'
RS2298191-MT	5'-ATGAAGTGACCTTCTGC-3'
RS2298191-WT	5'-ATGAAGTGTCCCTTCTGC-3'

Table shows the nucleic acid sequences used in the main text.

Table2. Expression of logic gate sequences under NUPACK simulation

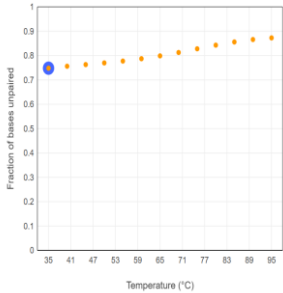
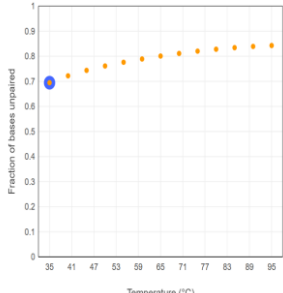
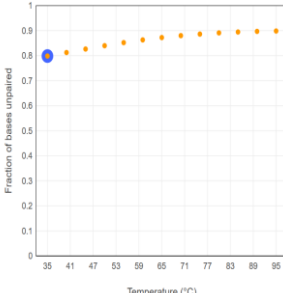
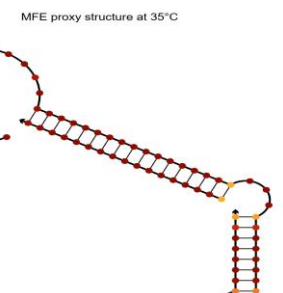
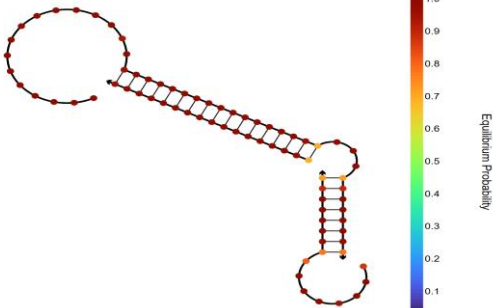
Alzheimer's disease	NUPACK prediction result
CP	
FP	
SP	
Logic gate	Melting curve  MFE proxy structure at 35°C  Free energy of the secondary structure: -35.57 kcal/mol

Table2. Expression of logic gate sequences under NUPACK simulation(continued)

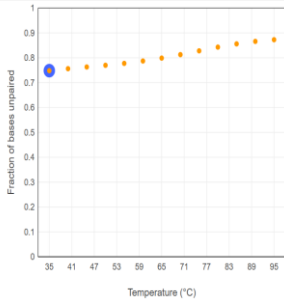
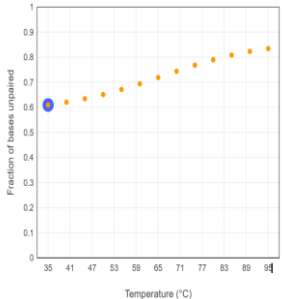
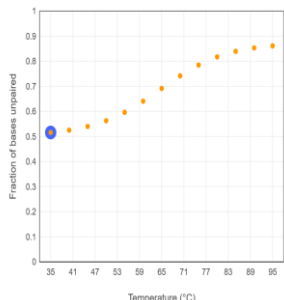
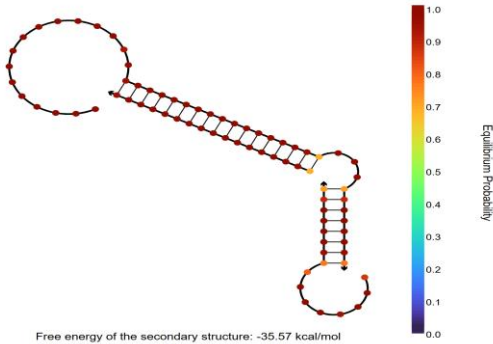
Parkinson's syndrome	NUPACK prediction result
CP	 Melting curve
FP	 Melting curve
SP	 Melting curve
Logic gate	MFE proxy structure at 35°C  Free energy of the secondary structure: -35.57 kcal/mol

Table2. Expression of logic gate sequences under NUPACK simulation(continued)

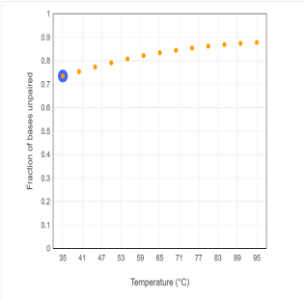
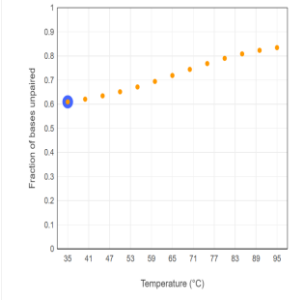
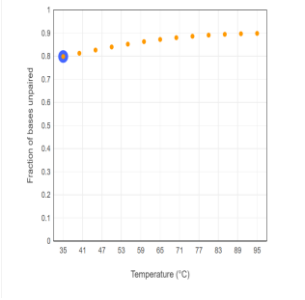
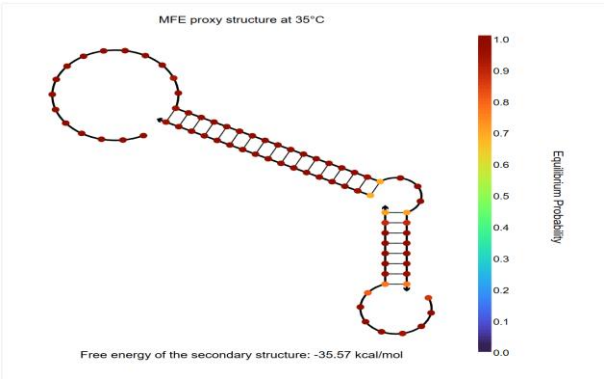
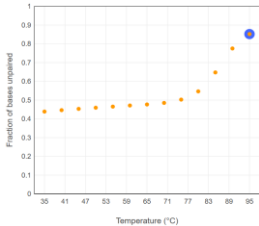
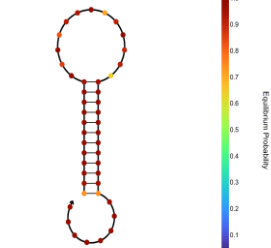
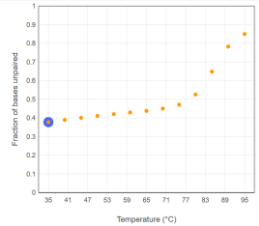
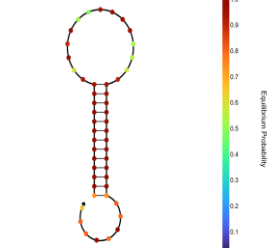
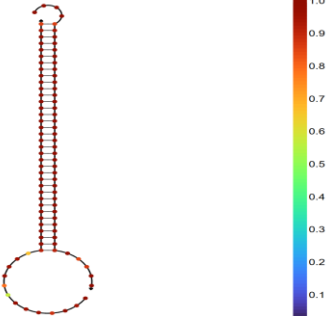
Renal tubular acidosis	NUPACK prediction result
CP	 Melting curve
FP	 Melting curve
SP	 Melting curve
Logic gate	MFE proxy structure at 35°C  Free energy of the secondary structure: -35.57 kcal/mol

Table3. Expression of hairpin structure under NUPACK simulation

Accounting items	NUPACK prediction result	
H1	 Melting curve	MFE proxy structure at 35°C  Free energy of the secondary structure: -12.77 kcal/mol
H2	 Melting curve	MFE proxy structure at 35°C  Free energy of the secondary structure: -14.66 kcal/mol
H1-H2	MFE proxy structure at 35°C  Free energy of the secondary structure: -53.77 kcal/mol	