Supporting Information

Figure i(a). Autoradiograph showing DNase I footprinting of peptide PyQK-10 on DNA duplexes labeled at the 5' end: 5'-[³²P]-labeled 158-mer upper strand, left panel; and 5'-[³²P]-labeled 135-mer lower strand, right panel. Peptide PyQK-10 was equilibrated with the DNA in 5 mM sodium cacodylate buffer, pH 6.5 at 37°C for 60 min before DNase 1 cleavage. G represents a Maxam-Gilbert guanine sequencing track and Ct shows a DNase I digestion control lane.

Figure i(b). Autoradiograph showing DNase I footprinting of peptide RY-12 on DNA duplexes labeled with [³²P] on the 5' end: 5'-[³²P]-labeled 158-mer upper strand, left panel; and 5'-[³²P]-labeled 135-mer lower strand, right panel. Peptide RY-12 was equilibrated with the DNA in 5 mM sodium cacodylate buffer, pH 6.5 at 25°C for 60 min before DNase 1 cleavage.

Figure i(c). Autoradiograph showing DNase I footprinting of peptide RY-12 on DNA duplexes labeled with [³²P] on the 5' end: 5'-[³²P]-labeled 158-mer upper strand, left panel; and 5'-[³²P]-labeled 135-mer lower strand, right panel. Peptide RY-12 was equilibrated with the DNA in 5 mM sodium cacodylate buffer, pH 6.5 at 31°C for 60 min before DNase 1 cleavage.

Figure i(d). Autoradiograph showing DNase I footprinting of peptide RY-12 on DNA duplexes labeled with [³²P] on the 5' end: 5'-[³²P]-labeled 158-mer upper strand, left panel; and 5'-[³²P]-labeled 135-mer lower strand, right panel. Peptide RY-12 was equilibrated with the DNA in 5 mM sodium cacodylate buffer, pH 6.5 at 37°C for 60 min before DNase 1 cleavage.

Figure ii(a). CD spectra of titration of duplex U4A-L4T versus peptide PyMK-10 at peptide concentrations of 0.5, 1.0, 1.5, 1.8, 2.0, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 3.0, 3.2, 3.4, 4.0 µM at 37°C. Figure ii(b). CD difference spectra of the titration of duplex

U4A-L4T versus peptide PyMK-10 with the contribution of duplex and peptide subtracted.

Figure ii(c). CD spectra of the titration of duplex U4A-L4T versus peptide PyQK-10 at peptide concentrations of 0.5, 1.0, 1.5, 1.8, 2.0, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 3.0, 3.2, 3.4, 4.0, 5.0 μM at 37°C.

Figure ii(d). CD difference spectra of the titration of duplex U4A-L4T versus peptide PyQK-10 with the contribution of duplex and peptide subtracted.

Figure iii(a). CD spectra of titration of duplex U4A-L4T versus peptide RY-12 at the same peptide concentrations as peptide HyS-10 at 25°C.

Figure iii(b). CD difference spectra of the titration of duplex U4A-L4T versus peptide RY-12 at 25°C with the contribution of duplex and peptide subtracted.

Figure iii(c). CD spectra of titration of duplex U4A-L4T versus peptide RY-12 at the same peptide concentrations as peptide HyS-10 at 31°C.

Figure iii(d). CD difference spectra of the titration of duplex U4A-L4T versus peptide RY-12 at 31°C with the contribution of duplex and peptide subtracted.

Figure iii(e). CD spectra of titration of duplex U4A-L4T versus peptide RY-12 at the same peptide concentrations as peptide HyS-10 at 37°C.

Figure iii(f). CD difference spectra of the titration of duplex U4A-L4T versus peptide RY-12 at 37°C with the contribution of duplex and peptide subtracted.

Figure iv. ITC experimental curves for the titration of various peptides to the U4A-L4T duplex at 25 °C. The top panels represent the raw heats of binding generated with each addition of peptide, and the bottom panels are plot of integrated heats versus peptide/DNA molar ratio. Data acquisition and analysis were performed using a nonlinear least squares fitting algorithm software (Microcal Origin 7.1).

Figure v. Upper panel, plot of enthalpy change (ΔH) versus free energy change (ΔG); lower panel, plot of entropy change ($T\Delta S$) versus free energy change (ΔG) of the titration of ten peptides versus the U4A-L4T duplex at 25 $^{\circ}\!\mathrm{C}$ (298 K).



Figure i(a)



Figure i(b)



Figure i(c)

37°C



Figure i(d)



Figure iia







Figure iic



Figure iid



Figure iii(a)



Figure iii(b)



Figure iii(c)



Figure iii(d)







Figure iii(f)



Figure iv



Figure iv



Figure iv





Figure v