Supplementary

Figure S1. IE-HPLC analysis of 4-nucleotide bulge RNA cleavage reactions in the presence of PNAzyme1 and RNA (1:1, PNAzyme:RNA). Reactions were carried out using 100 μM effective concentration of Zn$^{2+}$ and were analyzed at the 24 h time point (pH 7.4, 37 °C).

RNA1, (4-nucleotide bulge: 5'-AAA-3')

RNA2, (4-nucleotide bulge: 5'-AAAG-3')
RNA3, (4-nucleotide bulge: 5'-AAAC-3')

RNA4, (4-nucleotide bulge: 5'-AAAU-3')

RNA5, (4-nucleotide bulge: 5'-AAGA-3')
RNA6, (4-nucleotide bulge: 5'-AACA-3')

RNA7, (4-nucleotide bulge: 5'-AAUA-3')

RNA8, (4-nucleotide bulge: 5'-AAGG-3')
RNA9, (4-nucleotide bulge: 5'-AACC-3')

RNA10, (4-nucleotide bulge: 5'-AAUU-3')

RNA11, (4-nucleotide bulge: 5'-AGAA-3')
RNA12, (4-nucleotide bulge: 5'-ACAA-3')

RNA13, (4-nucleotide bulge: 5'-AUAA-3')

RNA14, (4-nucleotide bulge: 5'-GAAA-3')
**RNA15**, (4-nucleotide bulge: 5'-CAA-3')

- [Graph showing RNA fragments and target over time](image)

**RNA16**, (4-nucleotide bulge: 5'-UAA-3')

- [Graph showing RNA fragments and target over time](image)

**RNA17**, (4-nucleotide bulge: 5'-UUA-3')

- [Graph showing RNA fragments and target over time](image)
RNA18, (4-nucleotide bulge: 5'-UUUA-3')

[Graph showing RNA fragments and RNA target over time/min]

RNA19, (4-nucleotide bulge: 5'-UAUA-3')

[Graph showing RNA fragments and RNA target over time/min]

RNA20, (4-nucleotide bulge: 5'-AUGA-3')

[Graph showing RNA fragments and RNA target over time/min]
RNA21, (4-nucleotide bulge: 5’-ACGA-3’)

RNA fragments

RNA target

time/min

RNA22, (4-nucleotide bulge: 5’-CUGA-3’)

RNA fragments

RNA target

time/min

Figure S2. IE-HPLC analysis of 3-nucleotide bulge RNA cleavage reactions in the presence of PNAzyme1 and RNA (1:1, PNAzyme:RNA). Reactions were carried out using 100 μM effective concentration of Zn$^{2+}$ and were analyzed at the 24 h time point (pH 7.4, 37 °C).
RNA23, (3-nucleotide bulge: 5'·AAA·3')

RNA24, (3-nucleotide bulge: 5'·AUA·3')

RNA25, (3-nucleotide bulge: 5'·AGA·3')
RNA26, (3-nucleotide bulge: 5'-ACA-3')

RNA27, (3-nucleotide bulge: 5'-AAU-3')

RNA28, (3-nucleotide bulge: 5'-UAA-3')
RNA29, (3-nucleotide bulge: 5'-AUG-3')

RNA30, (3-nucleotide bulge: 5'-AUC-3')

RNA31, (3-nucleotide bulge: 5'-AUU-3')
RNA32, (3-nucleotide bulge: 5'-GUA-3')

RNA33, (3-nucleotide bulge: 5'-CUA-3')

RNA34, (3-nucleotide bulge: 5'-UUA-3')
RNA35, (3'-nucleotide bulge: 5'-GUG-3')

RNA36, (3'-nucleotide bulge: 5'-CUC-3')

RNA37, (3'-nucleotide bulge: 5'-ACG-3')