

## Supporting Information

**Figure 1supp:** *DNA lengthening due to binding of Ru(phen)<sub>2</sub>dppx<sup>2+</sup>.* Histograms of DNA length are shown for five ruthenium concentrations: (a) 750 nM Ru, or 1:1 Ru:base pairs (b) 3.0  $\mu$ M Ru, or 4:1 Ru:base pairs (c) 6  $\mu$ M, or 8:1 Ru:base pairs (d) 9.0  $\mu$ M or 12:1 Ru:base pairs (e) 15 $\mu$ M or 20:1 Ru:base pairs. The DNA concentration is 750 nM base pairs in all cases. The mean measured length of the DNA molecules alone is  $1.43 \pm 0.03 \mu\text{m}$  (black arrow).

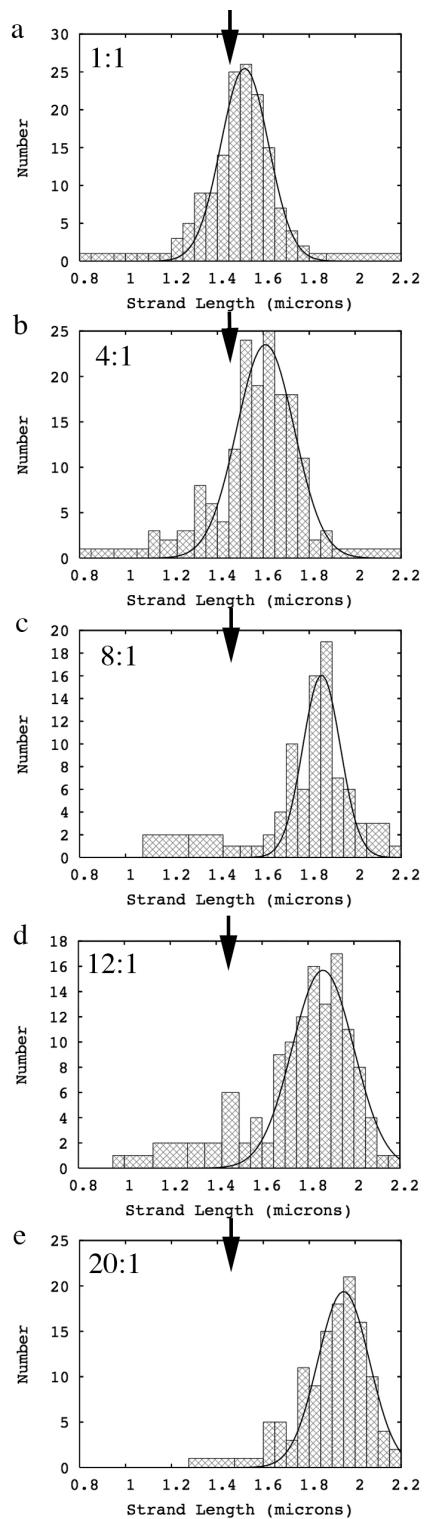
**Figure 2supp:** *DNA lengthening due to binding of Ru(phen)<sub>2</sub>dppq<sup>2+</sup>.* Characteristic AFM images and histograms of DNA length are shown for five ruthenium concentrations: (a) 750 nM Ru, or 1:1 Ru:base pairs (b) 3.0  $\mu$ M Ru, or 4:1 Ru:base pairs (c) 6  $\mu$ M, or 8:1 Ru:base pairs (d) 9.0  $\mu$ M or 12:1 Ru:base pairs (e) 15 $\mu$ M or 20:1 Ru:base pairs.

**Figure 3supp:** *DNA lengthening due to intercalative binding by Ru(phen)<sub>3</sub><sup>2+</sup>.* Characteristic AFM images and histograms of DNA length are shown for five ruthenium concentrations: (a) 750 nM Ru, or 1:1 Ru:base pairs (b) 1.5  $\mu$ M Ru, or 2:1 Ru:base pairs (c) 7.5  $\mu$ M or 10:1 Ru:base pairs (d) 19  $\mu$ M, or 25:1 Ru:base pairs; (e) 37.5  $\mu$ M, or 50:1 Ru:base pairs.

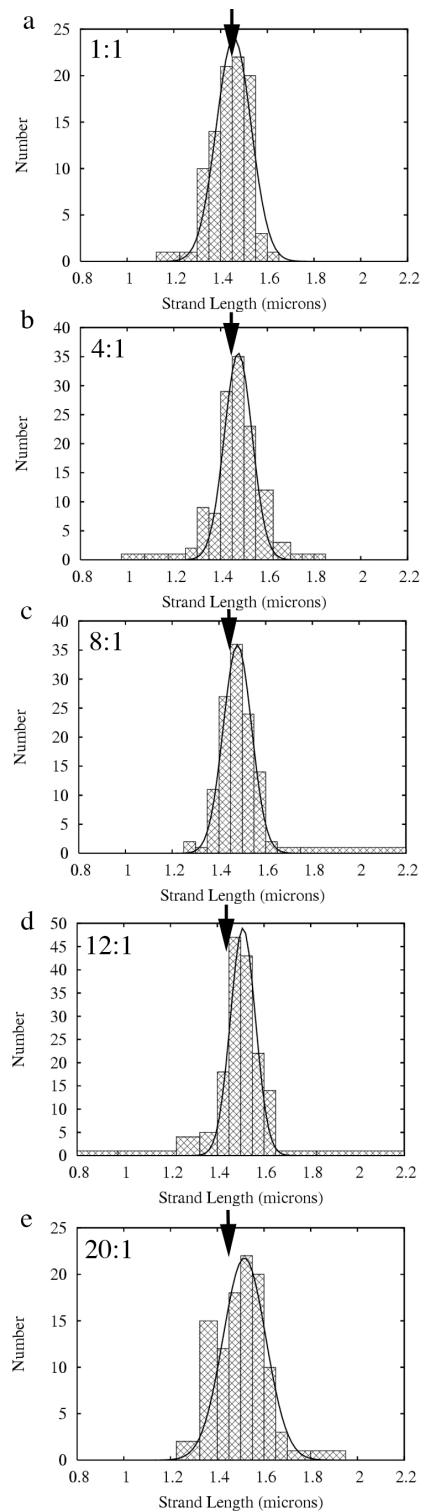
**Figure 4supp:** *DNA lengthening due to binding of Ru(bpy)<sub>3</sub><sup>2+</sup>.* Characteristic AFM images and histograms of DNA length are shown for five ruthenium concentrations: (a)

750 nM Ru, or 1:1 Ru:base pairs (b) 3.0  $\mu$ M Ru, or 4:1 Ru:base pairs (c) 9.0  $\mu$ M or 12:1 Ru:base pairs (d) 15  $\mu$ M, or 20:1 Ru:base pairs.

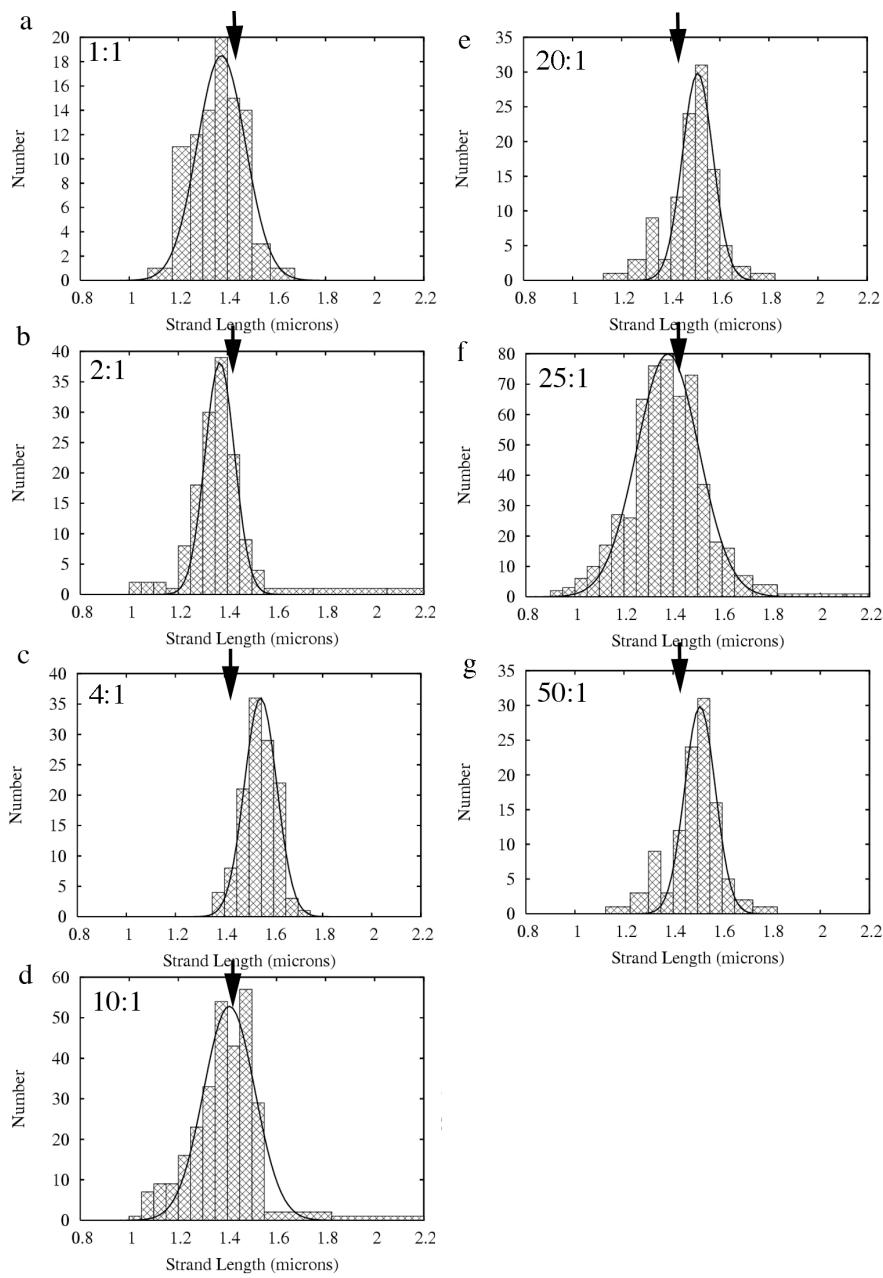
**Figure 1supp**



**Figure 2supp**



**Figure 3supp**



**Figure 4supp**

