

Electronic supplementary information for

## Notable Effect of Water in Excess Electron Attachment to Aqueous DNA Deoxyribonucleosides

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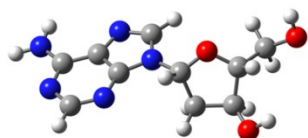
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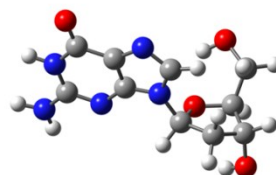
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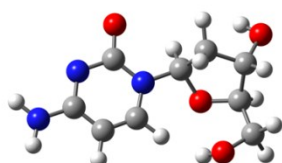
**Figure S1.** Structures of Four DNA dRNs.



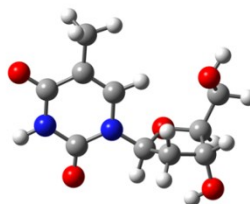
**Deoxyadenosine (dA)**



**Deoxyguanosine (dG)**

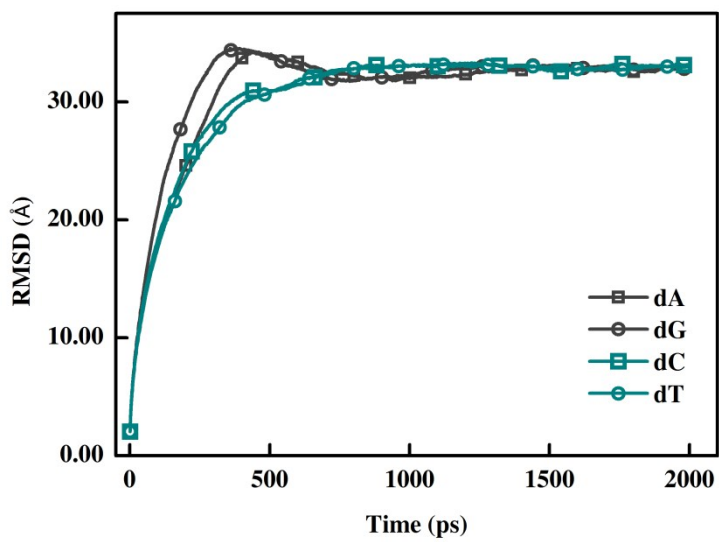


**Deoxycytidine (dC)**

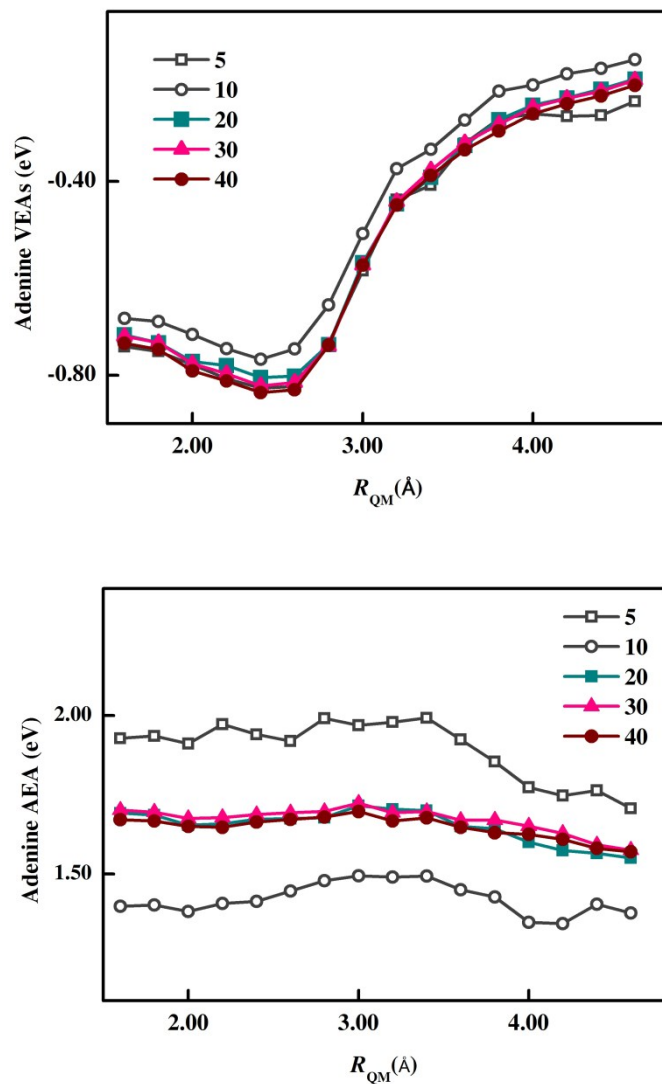


**Deoxythymidine (dT)**

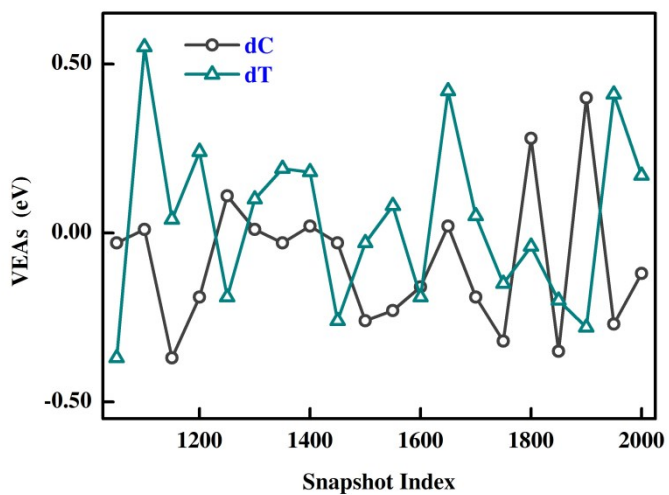
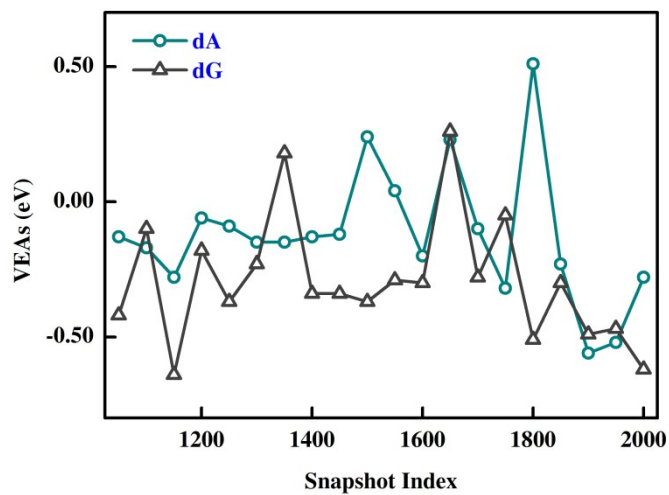
**Figure S2.** Root-mean-square Deviation (RMSD) of 2000 ps MD Simulations.



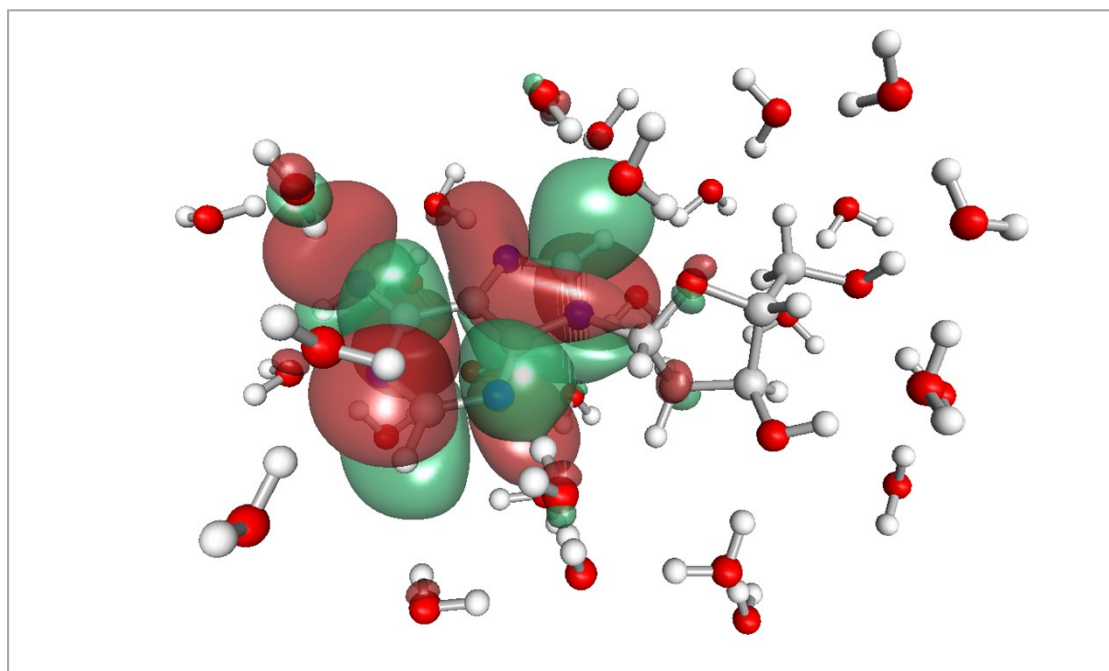
**Figure S3.** QM/MM Mean VEAs and AEA of Aqueous Adenine Computed by 5, 10, 20, 30, and 40 Snapshots.



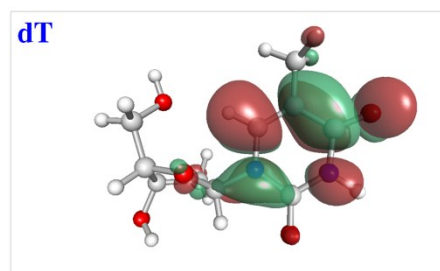
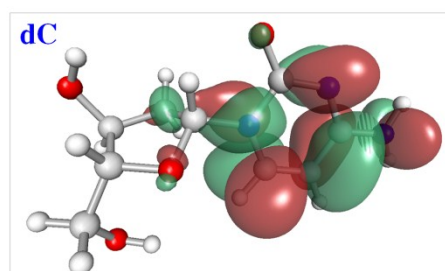
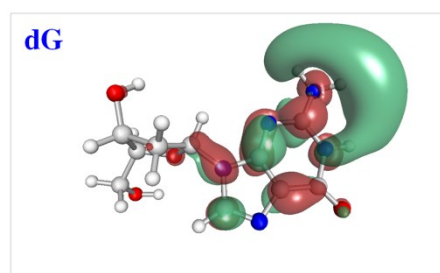
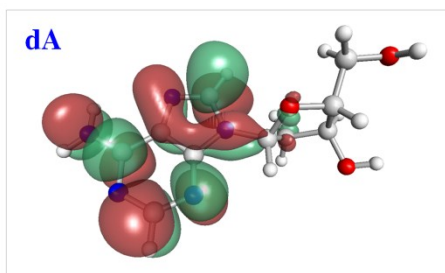
**Figure S4.** Vertical Electron Affinities (VEAs) of QM/MM Computations for 20 Snapshots.



**Figure S5.** dA S1650 LUMO of Neutral Calculations.

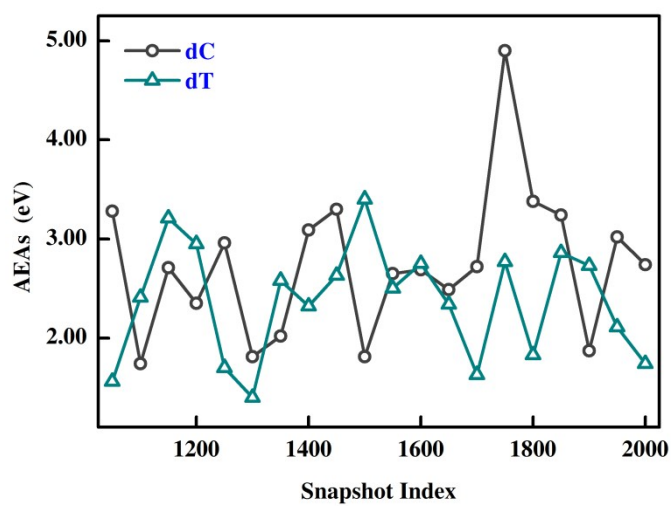
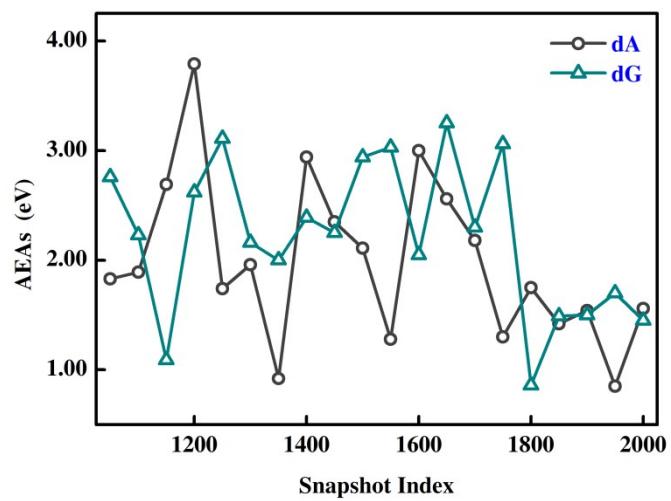


**Figure S6.** LUMOs of Four Gas dRNs.

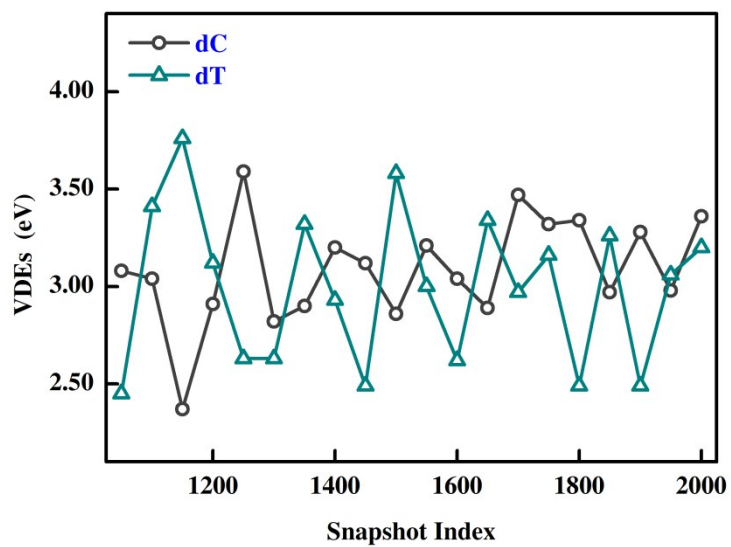
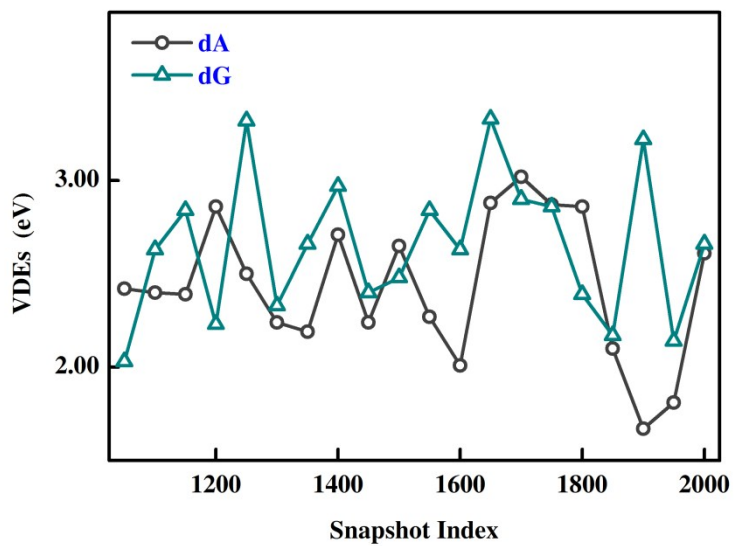




**Figure S7.** Adiabatic Electron Affinities (AEAs) of QM/MM Computations for 20 Snapshots.



**Figure S8.** Vertical Detachment Energies (VDEs) of QM/MM Computations for 20 Snapshots.



**Table S1.** Averaged numbers of atoms in QM regions of different sizes ( $R_{QM}$  in Å).

$R_{QM}$	dA	dG	dC	dT
1.6	31	32	29	31
1.8	32	33	30	32
2.0	37	36	34	36
2.2	41	40	37	38
2.4	43	45	40	39
2.6	51	52	46	46
2.8	64	68	61	61
3	84	88	82	81
3.2	104	104	97	98
3.4	121	122	109	111
3.6	134	134	119	125
3.8	148	143	129	139
4	161	157	144	150
4.2	172	169	158	162
4.4	182	181	169	176
4.6	195	194	180	189
4.8	209	208	194	201

**Table S2.** Standard errors (SEs) of VEA, AEA, and VDEs (eV).

	VEA		AEA			VDE	
	QM/MM	gas-QM	QM/MM	pol-QM	gas-QM	QM/MM	gas-QM
dA	0.05	0.08	0.17	0.16	0.07	0.08	0.07
dG	0.05	0.06	0.16	0.21	0.08	0.09	0.09
dC	0.05	0.06	0.17	0.17	0.07	0.06	0.09
dT	0.06	0.06	0.13	0.16	0.08	0.09	0.08

**Table S3.** Spin densities of anionic SP calculations at neutral and anionic optimized geometries.

	<b>Neutral OPT</b>		<b>Anionic OPT</b>	
	<b>dRN</b>	<b>bases</b>	<b>dRN</b>	<b>bases</b>
<b>dA</b>	<b>0.69</b>	<b>0.64</b>	<b>0.97</b>	<b>0.95</b>
<b>dG</b>	<b>0.60</b>	<b>0.53</b>	<b>0.94</b>	<b>0.87</b>
<b>dC</b>	<b>0.75</b>	<b>0.64</b>	<b>0.97</b>	<b>0.83</b>
<b>dT</b>	<b>0.82</b>	<b>0.71</b>	<b>0.98</b>	<b>0.86</b>