

Supporting Information

One-electron oxidation of DNA by ionizing radiation: competition between base-to-base hole-transfer and hole-trapping

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A) Derivation of Equation 3

B) Table S1

C) References

A. Derivation of Equation 3

The total chemical yield of free base release, $G_{\text{tot}}(\text{fbr})$, is

$$G_{\text{tot}}(\text{fbr}) = G(\text{Cyt}) + G(\text{Gua}) + G(\text{Thy}) + G(\text{Ade}) \quad (\text{S1})$$

The mol fraction of a given base X, $F(X)$, is

$$F(X) = \frac{\text{number of X}}{\text{number of all bases}}$$

For normal DNA sequences,

$$F(\text{Cyt}) + F(\text{Gua}) + F(\text{Thy}) + F(\text{Ade}) = 1 \text{ and}$$

$$F(\text{Cyt}) = F(\text{Gua}), F(\text{Thy}) = F(\text{Ade}) \quad (\text{S2})$$

thus

$$F(\text{Thy}) = 0.5 - F(\text{Cyt}) \quad (\text{S3})$$

By definition of the M-factor

$$M(\text{Cyt}) = \frac{G(\text{Cyt})}{G_{\text{tot}}(\text{fbr}) \times F(\text{Cyt})}, M(\text{Gua}) = \frac{G(\text{Gua})}{G_{\text{tot}}(\text{fbr}) \times F(\text{Gua})}, \text{ etc.}$$

It follows that

$$M(\text{Cyt}) \times F(\text{Cyt}) + M(\text{Gua}) \times F(\text{Gua}) + M(\text{Thy}) \times F(\text{Thy}) + M(\text{Ade}) \times F(\text{Ade}) = 1 \quad (\text{S4})$$

Substituting S2 and S3 into S4 and rearranging gives

$$M(\text{Cyt}) = -M(\text{Gua}) + \frac{1 - [M(\text{Thy}) + M(\text{Ade})] \times [0.5 - F(\text{Cyt})]}{F(\text{Cyt})} \quad (\text{S5})$$

In the manuscript Equation S5 is labeled Equation 3.

etc. **CG** | p p p p p p p p p p p p p p p p p
CC | p p p p p p p p p p p p p p p p p

<i>C. perfringens</i>		forward strand															
A	AA	AC	AG	AT	CA	CC	CG	CT	GA	GC	GG	GT	TA	TC	TG	TT	
	AA	0.019709	0.006569	0.011325	0.018067	0.005140	0.002596	0.000488	0.007589	0.010900	0.005063	0.005415	0.007997	0.018346	0.007202	0.006880	0.014604
	AC	0.004858	0.002119	0.002435	0.003738	0.001144	0.001172	0.000146	0.001532	0.001982	0.001584	0.001382	0.001860	0.004432	0.002528	0.001570	0.004312
	AG	0.010404	0.002475	0.006316	0.006932	0.001435	0.000848	0.000225	0.001668	0.004071	0.001670	0.002691	0.002858	0.006730	0.001318	0.004084	0.006107
	AT	0.018571	0.005050	0.007236	0.014262	0.004185	0.002630	0.000458	0.005611	0.006773	0.003946	0.003145	0.005514	0.015023	0.006180	0.006019	0.016476
	CA	0.006135	0.001817	0.003489	0.005012	0.002911	0.001146	0.000357	0.003724	0.002557	0.001294	0.001334	0.002301	0.005205	0.001396	0.001818	0.004320
	CC	0.002816	0.001615	0.001482	0.002237	0.001229	0.001374	0.000143	0.001428	0.001294	0.001176	0.000673	0.001478	0.003913	0.002220	0.001363	0.004289
	CG	0.000624	0.000219	0.000450	0.000455	0.000122	0.000069	0.000055	0.000106	0.000171	0.000103	0.000107	0.000149	0.000420	0.000078	0.000222	0.000470
	CT	0.008782	0.001930	0.003531	0.006347	0.002742	0.001095	0.000344	0.003292	0.002003	0.001217	0.000864	0.001823	0.007588	0.002206	0.002805	0.007878
	GA	0.009757	0.002573	0.003970	0.006953	0.002029	0.001171	0.000221	0.003030	0.005858	0.002235	0.002249	0.003804	0.006153	0.002217	0.002164	0.006291
	GC	0.002958	0.001455	0.001330	0.002482	0.000707	0.000875	0.000084	0.000958	0.001306	0.001252	0.000898	0.001209	0.002481	0.001657	0.000755	0.002954
	GG	0.004425	0.001718	0.002563	0.004333	0.001051	0.000505	0.000133	0.000923	0.002834	0.001494	0.001253	0.002043	0.002934	0.000978	0.001506	0.003782
	GT	0.005266	0.001909	0.002369	0.004431	0.001459	0.000935	0.000153	0.001670	0.002405	0.001496	0.001134	0.001823	0.004123	0.001988	0.001796	0.005369
	TA	0.020108	0.004861	0.010623	0.016978	0.004926	0.001985	0.000558	0.006966	0.006461	0.003063	0.004015	0.006627	0.016029	0.004914	0.006030	0.012787
	TC	0.005861	0.002987	0.002225	0.004238	0.001412	0.001653	0.000184	0.002149	0.001904	0.001991	0.001244	0.001911	0.006112	0.004082	0.001889	0.006551
	TG	0.007787	0.002066	0.004900	0.005117	0.001100	0.000733	0.000236	0.001316	0.002073	0.001226	0.001543	0.001915	0.005514	0.001381	0.003695	0.004939
	TT	0.020033	0.005554	0.006988	0.014714	0.005043	0.002808	0.000587	0.006213	0.007216	0.004255	0.003508	0.005062	0.016141	0.006391	0.005872	0.018502
C	AA	0.012898	0.004141	0.006937	0.012651	0.005897	0.002380	0.000626	0.007982	0.001060	0.000788	0.000788	0.001317	0.014826	0.008668	0.006871	0.021652
	AC	0.006054	0.002748	0.003888	0.007600	0.001996	0.001561	0.000263	0.002784	0.000499	0.000478	0.000276	0.000722	0.006540	0.003795	0.003491	0.009740
	AG	0.009247	0.003126	0.005559	0.009148	0.003659	0.001525	0.000558	0.004697	0.000953	0.000393	0.000669	0.001072	0.012607	0.005359	0.006476	0.014790
	AT	0.013087	0.004427	0.005941	0.014603	0.009112	0.003141	0.000643	0.010706	0.000790	0.000531	0.000386	0.001072	0.016484	0.007659	0.005776	0.019535
	CA	0.004126	0.001134	0.001796	0.004151	0.005073	0.001289	0.000467	0.005534	0.000408	0.000312	0.000236	0.000412	0.004483	0.001966	0.001306	0.007370
	CC	0.002257	0.000996	0.001136	0.004170	0.001922	0.000943	0.000187	0.003015	0.000172	0.000248	0.000176	0.000295	0.003000	0.002270	0.001365	0.005311
	CG	0.000696	0.000212	0.000389	0.000624	0.000671	0.000231	0.000180	0.000771	0.000144	0.000032	0.000117	0.000076	0.000883	0.000452	0.000643	0.001094
	CT	0.005088	0.001822	0.002323	0.006963	0.009020	0.002442	0.000667	0.008608	0.000274	0.000291	0.000172	0.000556	0.009439	0.004421	0.003578	0.015170
	GA	0.003565	0.000932	0.001240	0.003342	0.002227	0.000639	0.000240	0.002155	0.000535	0.000272	0.000350	0.000416	0.002457	0.001206	0.001028	0.005215
	GC	0.001979	0.001195	0.001066	0.004039	0.001023	0.000926	0.000108	0.001372	0.000338	0.000482	0.000149	0.000463	0.001847	0.001822	0.000898	0.004962
	GG	0.002769	0.000854	0.001539	0.003034	0.000932	0.000401	0.000210	0.000941	0.000429	0.000323	0.000412	0.000484	0.002867	0.001614	0.001690	0.004215
	GT	0.002743	0.000856	0.001323	0.003627	0.002767	0.000775	0.000206	0.002852	0.000225	0.000214	0.000176	0.000344	0.003620	0.001624	0.001204	0.005561
	TA	0.011477	0.003506	0.006625	0.011197	0.007262	0.002247	0.000660	0.008031	0.001070	0.000677	0.000771	0.001272	0.012847	0.006086	0.005867	0.016442
	TC	0.009502	0.005260	0.005247	0.013063	0.003601	0.002608	0.000323	0.004716	0.000531	0.000739	0.000221	0.001040	0.010335	0.007200	0.005818	0.014607
	TG	0.007360	0.002166	0.003937	0.006277	0.003075	0.001221	0.000493	0.003111	0.000495	0.000289	0.000352	0.000592	0.009056	0.004283	0.005024	0.009400
	TT	0.016308	0.005958	0.007612	0.020317	0.012524	0.004793	0.001055	0.016030	0.000998	0.000807	0.000561	0.001580	0.021523	0.011940	0.007615	0.031862
G	AA	0.028835	0.004926	0.012946	0.018455	0.009248	0.004172	0.001092	0.014896	0.013570	0.004926	0.005107	0.009330	0.016579	0.006144	0.007148	0.022423
	AC	0.001524	0.000236	0.000593	0.000962	0.000560	0.000554	0.000084	0.001021	0.000852	0.000567	0.000307	0.000620	0.001147	0.000609	0.000518	0.001388
	AG	0.014720	0.002778	0.007715	0.010307	0.003314	0.001010	0.000642	0.004761	0.004569	0.001449	0.002831	0.002883	0.007316	0.002080	0.004975	0.008030
	AT	0.019624	0.003415	0.006793	0.014245	0.006279	0.002747	0.000503	0.009140	0.012513	0.003956	0.004108	0.007419	0.011115	0.003446	0.004006	0.013286
	CA	0.007064	0.000922	0.002952	0.005487	0.005487	0.001930	0.000556	0.007080	0.005140	0.000991	0.001310	0.003104	0.006054	0.001116	0.001399	0.007775
	CC	0.000816	0.000146	0.000205	0.000490	0.000578	0.000532	0.000143	0.000812	0.000276	0.000146	0.000199	0.000282	0.000991	0.000410	0.000349	0.000955
	CG	0.000924	0.000141	0.000598	0.000587	0.000468	0.000205	0.000201	0.000543	0.000353	0.000132	0.000238	0.000234	0.000609	0.000192	0.000435	0.000503
	CT	0.007651	0.001222	0.002380	0.006376	0.004609	0.001752	0.000402	0.006420	0.005401	0.001368	0.001372	0.004205	0.006813	0.001438	0.001966	0.007196
	GA	0.010638	0.001423	0.004070	0.007121	0.004009	0.001573	0.000501	0.005365	0.006777	0.001763	0.002169	0.003439	0.005809	0.001280	0.001933	0.008606
	GC	0.000918	0.000276	0.000320	0.000691	0.000364	0.000320	0.000015	0.000483	0.000585	0.000443	0.000203	0.000446	0.000781	0.000349	0.000373	0.000885
	GG	0.004862	0.000827	0.002623	0.003161	0.001308	0.000410	0.000307	0.001692	0.002725	0.000880	0.001088	0.001535	0.002299	0.000580	0.001196	0.002769
	GT	0.005963	0.000946	0.001886	0.004684	0.002261	0.000891	0.000225	0.003239	0.005266	0.001165	0.001160	0.002967	0.003682	0.000898	0.001167	0.004229
	TA	0.019690	0.003219	0.008549	0.015042	0.009517	0.003188	0.001083	0.013709	0.010177	0.002050	0.003080	0.006612	0.013169	0.003009	0.004741	0.015024
	TC	0.001167	0.000214	0.000210	0.000880	0.000505	0.000525	0.000135	0.000880	0.000547	0.000276	0.000236	0.000390	0.001251	0.000812	0.000446	0.001308

	TG	0.012599	0.002824	0.008469	0.009231	0.003446	0.000955	0.000585	0.003896	0.003821	0.001222	0.002061	0.002138	0.007064	0.002361	0.005096	0.006338	
	TT	0.017120	0.002921	0.005760	0.014033	0.007508	0.002782	0.000649	0.010206	0.010215	0.002486	0.002621	0.006413	0.012134	0.004103	0.004426	0.014115	
T		AA	AC	AG	AT	CA	CC	CG	CT	GA	GC	GG	GT	TA	TC	TG	TT	
	AA	0.016881	0.004971	0.006827	0.015652	0.004658	0.003872	0.000420	0.006386	0.005887	0.002601	0.003880	0.004025	0.011942	0.006333	0.004179	0.014479	
	AC	0.004900	0.001820	0.001636	0.005435	0.001794	0.002160	0.000154	0.003044	0.001722	0.001177	0.001339	0.001727	0.006069	0.003873	0.002332	0.007870	
	AG	0.005832	0.001638	0.002900	0.005651	0.001368	0.001017	0.000149	0.001928	0.002069	0.000905	0.001447	0.001486	0.006712	0.003021	0.003098	0.007819	
	AT	0.014009	0.004371	0.005528	0.014551	0.004856	0.004317	0.000366	0.007272	0.004257	0.002379	0.002366	0.003817	0.016737	0.007428	0.005182	0.018729	
	CA	0.005732	0.001756	0.002796	0.006119	0.003691	0.001568	0.000226	0.004575	0.001811	0.000745	0.001240	0.001592	0.006051	0.002108	0.001959	0.007430	
	CC	0.003570	0.001180	0.000840	0.003064	0.001425	0.001347	0.000111	0.003113	0.001292	0.001056	0.000811	0.001435	0.004050	0.002568	0.001392	0.005735	
	CG	0.000599	0.000155	0.000338	0.000498	0.000273	0.000141	0.000068	0.000346	0.000236	0.000095	0.000142	0.000169	0.000588	0.000226	0.000300	0.000631	
	CT	0.006787	0.002404	0.003485	0.007091	0.005075	0.002767	0.000444	0.007456	0.002510	0.001415	0.001540	0.002571	0.010289	0.004312	0.003745	0.012190	
	GA	0.005725	0.001792	0.001968	0.005593	0.001200	0.000947	0.000102	0.001402	0.003574	0.001432	0.001977	0.002196	0.004445	0.002126	0.001358	0.006947	
	GC	0.003848	0.001435	0.001019	0.003742	0.001097	0.001500	0.000106	0.001974	0.001722	0.001229	0.001097	0.001406	0.002850	0.002508	0.001329	0.004989	
	GG	0.002447	0.000838	0.000898	0.002439	0.000619	0.000450	0.000059	0.000873	0.001455	0.000739	0.001247	0.001022	0.001985	0.001107	0.001029	0.002645	
	GT	0.005226	0.001862	0.001883	0.005010	0.001927	0.001805	0.000169	0.002716	0.002454	0.001289	0.001407	0.001830	0.004888	0.002672	0.001841	0.006975	
	TA	0.015341	0.003994	0.007207	0.015034	0.005548	0.003013	0.000347	0.007314	0.005595	0.002342	0.003658	0.004335	0.015991	0.006234	0.005281	0.019220	
	TC	0.007632	0.002838	0.002180	0.007613	0.002012	0.003295	0.000131	0.004788	0.002019	0.001606	0.001507	0.002107	0.006755	0.006886	0.002987	0.012006	
	TG	0.004667	0.001457	0.002525	0.004295	0.001108	0.001001	0.000110	0.001600	0.001368	0.000783	0.001227	0.001131	0.004716	0.002275	0.002590	0.005311	
	TT	0.019741	0.005577	0.008550	0.018766	0.008103	0.004854	0.000585	0.011623	0.005977	0.003002	0.003021	0.005099	0.020802	0.010768	0.006320	0.021268	
		C. perfingens		reverse strand														
A		AA	AC	AG	AT	CA	CC	CG	CT	GA	GC	GG	GT	TA	TC	TG	TT	
	AA	0.021268	0.006975	0.012190	0.018729	0.005311	0.002645	0.000631	0.007819	0.012006	0.004989	0.005735	0.007870	0.019220	0.006947	0.007430	0.014479	
	AC	0.005099	0.001830	0.002571	0.003817	0.001131	0.001022	0.000169	0.001486	0.002107	0.001406	0.001435	0.001727	0.004335	0.002196	0.001592	0.004025	
	AG	0.011623	0.002716	0.007456	0.007272	0.001600	0.000873	0.000346	0.001928	0.004788	0.001974	0.003113	0.003044	0.007314	0.001402	0.004575	0.006386	
	AT	0.018766	0.005010	0.007091	0.014551	0.004295	0.002439	0.000498	0.005651	0.007613	0.003742	0.003064	0.005435	0.015034	0.005593	0.006119	0.015652	
	CA	0.006320	0.001841	0.003745	0.005182	0.002590	0.001029	0.000300	0.003098	0.002987	0.001329	0.001392	0.002332	0.005281	0.001358	0.001959	0.004179	
	CC	0.003021	0.001407	0.001540	0.002366	0.001227	0.001247	0.000142	0.001447	0.001507	0.001097	0.000811	0.001339	0.003658	0.001977	0.001240	0.003880	
	CG	0.000585	0.000169	0.000444	0.000366	0.000110	0.000059	0.000068	0.000149	0.000131	0.000106	0.000111	0.000154	0.000347	0.000102	0.000226	0.000420	
	CT	0.008550	0.001883	0.003485	0.005528	0.002525	0.000898	0.000338	0.002900	0.002180	0.001019	0.000840	0.001636	0.007207	0.001968	0.002796	0.006827	
	GA	0.010768	0.002672	0.004312	0.007428	0.002275	0.001107	0.000226	0.003021	0.006886	0.002508	0.002568	0.003873	0.006234	0.002126	0.002108	0.006333	
	GC	0.003002	0.001289	0.001415	0.002379	0.000783	0.000739	0.000095	0.000905	0.001606	0.001229	0.001056	0.001177	0.002342	0.001432	0.000745	0.002601	
	GG	0.004854	0.001805	0.002767	0.004317	0.001001	0.000450	0.000141	0.001017	0.003295	0.001500	0.001347	0.002160	0.003013	0.000947	0.001568	0.003872	
	GT	0.005577	0.001862	0.002404	0.004371	0.001457	0.000838	0.000155	0.001638	0.002838	0.001435	0.001180	0.001820	0.003994	0.001792	0.001756	0.004971	
	TA	0.020802	0.004888	0.010289	0.016737	0.004716	0.001985	0.000588	0.006712	0.006755	0.002850	0.004050	0.006069	0.015991	0.004445	0.006051	0.011942	
	TC	0.005977	0.002454	0.002510	0.004257	0.001368	0.001455	0.000236	0.002069	0.002019	0.001722	0.001292	0.001722	0.005595	0.003574	0.001811	0.005887	
	TG	0.008103	0.001927	0.005075	0.004856	0.001108	0.000619	0.000273	0.001368	0.002012	0.001097	0.001425	0.001794	0.005548	0.001200	0.003691	0.004658	
	TT	0.019741	0.005226	0.006787	0.014009	0.004667	0.002447	0.000599	0.005832	0.007632	0.003848	0.003570	0.004900	0.015341	0.005725	0.005732	0.016881	
C		AA	AC	AG	AT	CA	CC	CG	CT	GA	GC	GG	GT	TA	TC	TG	TT	
	AA	0.014115	0.004229	0.007196	0.013286	0.006338	0.002769	0.000503	0.008030	0.001308	0.000885	0.000955	0.001388	0.015024	0.008606	0.007775	0.022423	
	AC	0.006413	0.002967	0.004205	0.007419	0.002138	0.001535	0.000234	0.002883	0.000390	0.000446	0.000282	0.000620	0.006612	0.003439	0.003104	0.009330	
	AG	0.010206	0.003239	0.006420	0.009140	0.003896	0.001692	0.000543	0.004761	0.000880	0.000483	0.000812	0.001021	0.013709	0.005365	0.007080	0.014896	
	AT	0.014033	0.004684	0.006376	0.014245	0.009231	0.003161	0.000587	0.010307	0.000880	0.000691	0.000490	0.000962	0.015042	0.007121	0.005487	0.018455	
	CA	0.004426	0.001167	0.001966	0.004006	0.005096	0.001196	0.000435	0.004975	0.000446	0.000373	0.000349	0.000518	0.004741	0.001933	0.001399	0.007148	
	CC	0.002621	0.001160	0.001372	0.004108	0.002061	0.001088	0.000238	0.002831	0.000236	0.000203	0.000199	0.000307	0.003080	0.002169	0.001310	0.005107	
	CG	0.000649	0.000225	0.000402	0.000503	0.000585	0.000307	0.000201	0.000642	0.000135	0.000015	0.000143	0.000084	0.001083	0.000501	0.000556	0.001092	
	CT	0.005760	0.001886	0.002380	0.006793	0.008469	0.002623	0.000598	0.007715	0.000210	0.000320	0.000205	0.000593	0.008549	0.004070	0.002952	0.012946	
	GA	0.004103	0.000898	0.001438	0.003446	0.002361	0.000580	0.000192	0.002080	0.000812	0.000349	0.000410	0.000609	0.003009	0.001280	0.001116	0.006144	
	GC	0.002486	0.001165	0.001368	0.003956	0.001222	0.000880	0.000132	0.001449	0.000276	0.000443	0.000146	0.000567	0.002050	0.001763	0.000991	0.004926	
	GG	0.002782	0.000891	0.001752	0.002747	0.000955	0.000410	0.000205	0.001010	0.000525	0.000320	0.000532	0.000554	0.003188	0.001573	0.001930	0.004172	
	GT	0.002921	0.000946	0.001222	0.003415	0.002824	0.000827	0.000141	0.002778	0.000214	0.000276	0.000146	0.000236	0.003219	0.001423	0.000922	0.004926	

	GG	0.007485	0.002994	0.010479	0.001497	0.000000	0.000000	0.000000	0.001497	0.004491	0.001497	0.001497	0.000000	0.005988	0.005988	0.002994	0.002994
	GT	0.005988	0.005988	0.008982	0.002994	0.000000	0.001497	0.000000	0.002994	0.001497	0.002994	0.004491	0.001497	0.001497	0.005988	0.004491	0.004491
	TA	0.007485	0.004491	0.005988	0.002994	0.001497	0.002994	0.002994	0.007485	0.004491	0.001497	0.004491	0.004491	0.002994	0.002994	0.002994	0.004491
	TC	0.004491	0.001497	0.005988	0.004491	0.005988	0.004491	0.007485	0.005988	0.004491	0.010479	0.007485	0.004491	0.002994	0.002994	0.008982	0.004491
	TG	0.004491	0.000000	0.005988	0.004491	0.004491	0.000000	0.005988	0.004491	0.005988	0.001497	0.005988	0.001497	0.005988	0.001497	0.000000	0.000000
	TT	0.005988	0.002994	0.002994	0.007485	0.001497	0.007485	0.002994	0.002994	0.001497	0.002994	0.000000	0.000000	0.000000	0.014970	0.001497	0.004491
C		AA	AC	AG	AT	CA	CC	CG	CT	GA	GC	GG	GT	TA	TC	TG	TT
	AA	0.002963	0.000000	0.004444	0.002963	0.005926	0.005926	0.001481	0.004444	0.004444	0.004444	0.000000	0.002963	0.005926	0.004444	0.002963	0.004444
	AC	0.002963	0.001481	0.004444	0.004444	0.004444	0.001481	0.002963	0.001481	0.002963	0.010370	0.002963	0.001481	0.004444	0.001481	0.004444	0.001481
	AG	0.005926	0.001481	0.010370	0.005926	0.004444	0.002963	0.002963	0.001481	0.002963	0.001481	0.008889	0.002963	0.002963	0.011852	0.005926	0.002963
	AT	0.004444	0.004444	0.010370	0.004444	0.005926	0.002963	0.007407	0.002963	0.001481	0.001481	0.002963	0.004444	0.001481	0.004444	0.004444	0.007407
	CA	0.004444	0.001481	0.004444	0.005926	0.002963	0.001481	0.002963	0.004444	0.005926	0.004444	0.001481	0.001481	0.001481	0.004444	0.007407	0.000000
	CC	0.002963	0.002963	0.002963	0.001481	0.002963	0.008889	0.005926	0.002963	0.004444	0.001481	0.005926	0.004444	0.000000	0.001481	0.004444	0.002963
	CG	0.004444	0.002963	0.005926	0.001481	0.010370	0.001481	0.000000	0.004444	0.001481	0.007407	0.001481	0.004444	0.001481	0.017778	0.007407	0.005926
	CT	0.008889	0.011852	0.004444	0.005926	0.004444	0.005926	0.004444	0.002963	0.001481	0.002963	0.001481	0.004444	0.001481	0.002963	0.002963	0.008889
	GA	0.001481	0.004444	0.002963	0.001481	0.000000	0.002963	0.002963	0.000000	0.001481	0.002963	0.004444	0.002963	0.001481	0.004444	0.001481	0.001481
	GC	0.002963	0.005926	0.013333	0.005926	0.000000	0.002963	0.005926	0.001481	0.001481	0.005926	0.005926	0.000000	0.002963	0.002963	0.004444	0.002963
	GG	0.002963	0.001481	0.002963	0.002963	0.005926	0.002963	0.004444	0.002963	0.013333	0.005926	0.005926	0.005926	0.001481	0.002963	0.005926	0.004444
	GT	0.001481	0.004444	0.005926	0.005926	0.001481	0.000000	0.001481	0.002963	0.001481	0.000000	0.002963	0.007407	0.004444	0.001481	0.004444	0.001481
	TA	0.000000	0.001481	0.002963	0.002963	0.004444	0.000000	0.010370	0.002963	0.002963	0.002963	0.007407	0.000000	0.000000	0.004444	0.002963	0.001481
	TC	0.002963	0.002963	0.005926	0.004444	0.002963	0.007407	0.001481	0.002963	0.002963	0.008889	0.004444	0.001481	0.000000	0.002963	0.004444	0.005926
	TG	0.007407	0.004444	0.002963	0.004444	0.007407	0.002963	0.005926	0.004444	0.000000	0.010370	0.007407	0.004444	0.002963	0.002963	0.005926	0.002963
	TT	0.001481	0.002963	0.005926	0.002963	0.004444	0.005926	0.004444	0.004444	0.001481	0.005926	0.010370	0.004444	0.001481	0.004444	0.004444	0.002963
G		AA	AC	AG	AT	CA	CC	CG	CT	GA	GC	GG	GT	TA	TC	TG	TT
	AA	0.005857	0.001464	0.001464	0.004392	0.004392	0.004392	0.004392	0.007321	0.005857	0.010249	0.008785	0.000000	0.004392	0.002928	0.007321	0.004392
	AC	0.002928	0.004392	0.004392	0.002928	0.001464	0.002928	0.002928	0.007321	0.001464	0.002928	0.004392	0.004392	0.000000	0.001464	0.000000	0.005857
	AG	0.004392	0.001464	0.001464	0.007321	0.004392	0.005857	0.011713	0.002928	0.002928	0.007321	0.004392	0.002928	0.002928	0.002928	0.001464	0.000000
	AT	0.002928	0.002928	0.005857	0.002928	0.001464	0.005857	0.005857	0.002928	0.000000	0.002928	0.000000	0.002928	0.004392	0.000000	0.002928	0.002928
	CA	0.007321	0.001464	0.005857	0.005857	0.008785	0.005857	0.004392	0.008785	0.007321	0.005857	0.005857	0.001464	0.001464	0.004392	0.007321	0.007321
	CC	0.001464	0.004392	0.004392	0.001464	0.005857	0.004392	0.005857	0.010249	0.005857	0.004392	0.004392	0.004392	0.002928	0.002928	0.000000	0.001464
	CG	0.005857	0.000000	0.001464	0.004392	0.002928	0.002928	0.004392	0.004392	0.008785	0.001464	0.005857	0.004392	0.005857	0.004392	0.010249	0.005857
	CT	0.001464	0.010249	0.002928	0.001464	0.008785	0.002928	0.007321	0.001464	0.001464	0.007321	0.004392	0.004392	0.002928	0.005857	0.004392	0.005857
	GA	0.002928	0.002928	0.002928	0.002928	0.007321	0.001464	0.005857	0.002928	0.001464	0.004392	0.001464	0.002928	0.004392	0.001464	0.002928	0.005857
	GC	0.004392	0.002928	0.005857	0.004392	0.007321	0.004392	0.004392	0.008785	0.002928	0.004392	0.005857	0.010249	0.004392	0.002928	0.001464	0.008785
	GG	0.007321	0.000000	0.004392	0.005857	0.000000	0.002928	0.007321	0.004392	0.004392	0.002928	0.001464	0.004392	0.002928	0.001464	0.005857	0.004392
	GT	0.004392	0.001464	0.007321	0.001464	0.005857	0.005857	0.002928	0.005857	0.001464	0.004392	0.000000	0.005857	0.005857	0.002928	0.004392	0.002928
	TA	0.002928	0.000000	0.002928	0.002928	0.002928	0.000000	0.001464	0.004392	0.000000	0.004392	0.001464	0.002928	0.000000	0.000000	0.001464	0.004392
	TC	0.001464	0.002928	0.000000	0.001464	0.000000	0.004392	0.001464	0.005857	0.001464	0.002928	0.005857	0.007321	0.001464	0.004392	0.007321	0.007321
	TG	0.004392	0.000000	0.000000	0.000000	0.002928	0.004392	0.007321	0.002928	0.001464	0.002928	0.001464	0.002928	0.007321	0.005857	0.004392	0.002928
	TT	0.005857	0.000000	0.002928	0.002928	0.002928	0.005857	0.005857	0.004392	0.001464	0.002928	0.004392	0.007321	0.002928	0.004392	0.001464	0.005857
T		AA	AC	AG	AT	CA	CC	CG	CT	GA	GC	GG	GT	TA	TC	TG	TT
	AA	0.004573	0.009146	0.006098	0.001524	0.006098	0.000000	0.003049	0.001524	0.006098	0.003049	0.000000	0.003049	0.001524	0.004573	0.004573	0.000000
	AC	0.000000	0.003049	0.001524	0.004573	0.009146	0.001524	0.003049	0.004573	0.004573	0.003049	0.004573	0.003049	0.001524	0.000000	0.001524	0.004573
	AG	0.004573	0.001524	0.001524	0.003049	0.004573	0.001524	0.001524	0.001524	0.003049	0.007622	0.004573	0.004573	0.006098	0.006098	0.007622	0.003049
	AT	0.009146	0.003049	0.001524	0.006098	0.003049	0.001524	0.003049	0.003049	0.001524	0.003049	0.003049	0.006098	0.004573	0.003049	0.003049	0.001524
	CA	0.003049	0.003049	0.006098	0.003049	0.006098	0.004573	0.001524	0.003049	0.006098	0.004573	0.003049	0.003049	0.006098	0.006098	0.003049	0.003049
	CC	0.003049	0.000000	0.001524	0.003049	0.000000	0.003049	0.003049	0.003049	0.004573	0.004573	0.003049	0.006098	0.001524	0.004573	0.000000	0.007622
	CG	0.006098	0.000000	0.000000	0.003049	0.004573	0.000000	0.003049	0.003049	0.000000	0.004573	0.003049	0.001524	0.001524	0.007622	0.007622	0.007622
	CT	0.003049	0.006098	0.000000	0.003049	0.004573	0.004573	0.007622	0.000000	0.004573	0.003049	0.001524	0.001524	0.003049	0.007622	0.001524	0.007622
	GA	0.004573	0.007622	0.000000	0.000000	0.001524	0.009146	0.003049	0.009146	0.001524	0.004573	0.000000	0.003049	0.006098	0.000000	0.001524	0.003049
	GC	0.001524	0.004573	0.001524	0.001524	0.013720	0.010671	0.004573	0.007622	0.001524	0.010671	0.007622	0.006098	0.006098	0.003049	0.003049	0.004573

	GG	0.007622	0.001524	0.003049	0.007622	0.004573	0.003049	0.004573	0.003049	0.006098	0.004573	0.004573	0.007622	0.006098	0.003049	0.000000	0.004573
	GT	0.003049	0.004573	0.001524	0.007622	0.003049	0.004573	0.007622	0.003049	0.003049	0.009146	0.007622	0.006098	0.000000	0.006098	0.006098	0.006098
	TA	0.003049	0.000000	0.000000	0.003049	0.010671	0.006098	0.003049	0.004573	0.001524	0.004573	0.003049	0.001524	0.006098	0.000000	0.004573	0.006098
	TC	0.003049	0.001524	0.001524	0.003049	0.009146	0.003049	0.000000	0.001524	0.006098	0.003049	0.003049	0.004573	0.003049	0.009146	0.006098	0.003049
	TG	0.006098	0.001524	0.006098	0.003049	0.004573	0.001524	0.003049	0.004573	0.006098	0.004573	0.000000	0.003049	0.003049	0.001524	0.010671	0.003049
	TT	0.004573	0.001524	0.001524	0.004573	0.003049	0.009146	0.004573	0.007622	0.003049	0.004573	0.004573	0.001524	0.004573	0.007622	0.003049	0.007622
	puc18		reverse strand														
A		AA	AC	AG	AT	CA	CC	CG	CT	GA	GC	GG	GT	TA	TC	TG	TT
	AA	0.007622	0.006098	0.007622	0.001524	0.003049	0.004573	0.007622	0.003049	0.003049	0.004573	0.007622	0.004573	0.006098	0.003049	0.003049	0.000000
	AC	0.001524	0.006098	0.001524	0.006098	0.003049	0.007622	0.001524	0.004573	0.004573	0.006098	0.006098	0.003049	0.001524	0.003049	0.003049	0.003049
	AG	0.007622	0.003049	0.000000	0.003049	0.004573	0.003049	0.003049	0.001524	0.001524	0.007622	0.003049	0.004573	0.004573	0.009146	0.003049	0.001524
	AT	0.004573	0.007622	0.003049	0.006098	0.003049	0.007622	0.003049	0.003049	0.003049	0.001524	0.003049	0.004573	0.003049	0.000000	0.003049	0.001524
	CA	0.003049	0.006098	0.001524	0.003049	0.010671	0.000000	0.007622	0.007622	0.006098	0.003049	0.000000	0.001524	0.004573	0.001524	0.003049	0.004573
	CC	0.004573	0.007622	0.001524	0.003049	0.000000	0.004573	0.003049	0.004573	0.003049	0.007622	0.003049	0.004573	0.003049	0.000000	0.003049	0.000000
	CG	0.004573	0.007622	0.007622	0.003049	0.003049	0.004573	0.003049	0.001524	0.000000	0.004573	0.003049	0.003049	0.003049	0.003049	0.001524	0.003049
	CT	0.001524	0.001524	0.000000	0.001524	0.006098	0.003049	0.000000	0.001524	0.001524	0.001524	0.001524	0.001524	0.000000	0.000000	0.006098	0.006098
	GA	0.007622	0.006098	0.007622	0.003049	0.001524	0.003049	0.007622	0.006098	0.009146	0.003049	0.004573	0.000000	0.000000	0.000000	0.006098	0.004573
	GC	0.004573	0.009146	0.003049	0.003049	0.004573	0.004573	0.004573	0.007622	0.003049	0.010671	0.004573	0.003049	0.004573	0.004573	0.004573	0.003049
	GG	0.009146	0.004573	0.004573	0.001524	0.001524	0.003049	0.000000	0.001524	0.003049	0.010671	0.003049	0.001524	0.006098	0.009146	0.004573	0.000000
	GT	0.001524	0.004573	0.006098	0.003049	0.001524	0.001524	0.000000	0.001524	0.001524	0.004573	0.000000	0.003049	0.000000	0.007622	0.003049	0.009146
	TA	0.004573	0.000000	0.003049	0.004573	0.003049	0.006098	0.001524	0.006098	0.003049	0.006098	0.001524	0.001524	0.006098	0.006098	0.006098	0.001524
	TC	0.003049	0.003049	0.004573	0.001524	0.006098	0.006098	0.000000	0.003049	0.006098	0.001524	0.004573	0.004573	0.001524	0.001524	0.006098	0.006098
	TG	0.003049	0.003049	0.004573	0.003049	0.004573	0.004573	0.004573	0.004573	0.009146	0.013720	0.000000	0.009146	0.010671	0.001524	0.006098	0.006098
	TT	0.004573	0.003049	0.003049	0.009146	0.006098	0.007622	0.006098	0.004573	0.003049	0.001524	0.003049	0.000000	0.003049	0.004573	0.003049	0.004573
C		AA	AC	AG	AT	CA	CC	CG	CT	GA	GC	GG	GT	TA	TC	TG	TT
	AA	0.005857	0.002928	0.005857	0.002928	0.002928	0.004392	0.005857	0.000000	0.007321	0.008785	0.001464	0.005857	0.004392	0.005857	0.007321	0.004392
	AC	0.007321	0.005857	0.004392	0.002928	0.002928	0.004392	0.004392	0.002928	0.007321	0.010249	0.004392	0.004392	0.002928	0.002928	0.001464	0.000000
	AG	0.004392	0.005857	0.001464	0.002928	0.002928	0.004392	0.004392	0.002928	0.005857	0.008785	0.010249	0.007321	0.004392	0.002928	0.008785	0.007321
	AT	0.002928	0.001464	0.001464	0.002928	0.000000	0.005857	0.004392	0.007321	0.001464	0.004392	0.001464	0.002928	0.002928	0.002928	0.005857	0.004392
	CA	0.001464	0.004392	0.004392	0.002928	0.004392	0.005857	0.010249	0.001464	0.007321	0.001464	0.000000	0.000000	0.001464	0.002928	0.007321	0.007321
	CC	0.004392	0.000000	0.004392	0.000000	0.001464	0.001464	0.005857	0.004392	0.005857	0.005857	0.004392	0.004392	0.001464	0.001464	0.005857	0.008785
	CG	0.005857	0.002928	0.007321	0.005857	0.007321	0.007321	0.004392	0.011713	0.001464	0.004392	0.005857	0.002928	0.001464	0.005857	0.004392	0.004392
	CT	0.002928	0.007321	0.002928	0.005857	0.000000	0.004392	0.001464	0.001464	0.000000	0.005857	0.004392	0.004392	0.002928	0.002928	0.005857	0.001464
	GA	0.004392	0.002928	0.005857	0.000000	0.005857	0.001464	0.004392	0.002928	0.004392	0.002928	0.002928	0.001464	0.000000	0.001464	0.004392	0.002928
	GC	0.002928	0.004392	0.007321	0.002928	0.002928	0.002928	0.001464	0.007321	0.002928	0.004392	0.004392	0.002928	0.004392	0.004392	0.005857	0.010249
	GG	0.005857	0.005857	0.002928	0.005857	0.004392	0.002928	0.002928	0.005857	0.004392	0.004392	0.004392	0.002928	0.000000	0.001464	0.005857	0.004392
	GT	0.000000	0.001464	0.010249	0.002928	0.000000	0.000000	0.000000	0.001464	0.002928	0.002928	0.004392	0.004392	0.000000	0.002928	0.001464	0.001464
	TA	0.002928	0.005857	0.002928	0.004392	0.007321	0.002928	0.005857	0.002928	0.001464	0.004392	0.002928	0.000000	0.000000	0.004392	0.001464	0.004392
	TC	0.001464	0.001464	0.001464	0.000000	0.001464	0.004392	0.008785	0.002928	0.001464	0.002928	0.005857	0.001464	0.000000	0.001464	0.007321	0.005857
	TG	0.002928	0.005857	0.008785	0.001464	0.002928	0.000000	0.002928	0.004392	0.000000	0.007321	0.005857	0.001464	0.002928	0.007321	0.008785	0.004392
	TT	0.005857	0.004392	0.001464	0.002928	0.004392	0.007321	0.005857	0.004392	0.001464	0.004392	0.001464	0.002928	0.002928	0.002928	0.007321	0.005857
G		AA	AC	AG	AT	CA	CC	CG	CT	GA	GC	GG	GT	TA	TC	TG	TT
	AA	0.002963	0.001481	0.008889	0.007407	0.002963	0.004444	0.005926	0.002963	0.005926	0.002963	0.002963	0.001481	0.001481	0.001481	0.000000	0.004444
	AC	0.004444	0.007407	0.004444	0.004444	0.004444	0.005926	0.004444	0.002963	0.001481	0.000000	0.004444	0.001481	0.000000	0.002963	0.001481	0.002963
	AG	0.004444	0.002963	0.002963	0.002963	0.004444	0.002963	0.004444	0.001481	0.002963	0.001481	0.002963	0.001481	0.002963	0.000000	0.004444	0.004444
	AT	0.002963	0.005926	0.005926	0.004444	0.004444	0.002963	0.001481	0.005926	0.004444	0.005926	0.001481	0.004444	0.002963	0.001481	0.005926	0.002963
	CA	0.004444	0.004444	0.002963	0.004444	0.005926	0.005926	0.007407	0.005926	0.004444	0.004444	0.004444	0.004444	0.002963	0.001481	0.007407	0.002963
	CC	0.010370	0.002963	0.001481	0.002963	0.007407	0.005926	0.001481	0.008889	0.004444	0.005926	0.005926	0.002963	0.007407	0.004444	0.001481	0.000000
	CG	0.004444	0.001481	0.004444	0.007407	0.005926	0.004444	0.000000	0.002963	0.001481	0.005926	0.005926	0.002963	0.010370	0.002963	0.002963	0.001481
	CT	0.005926	0.005926	0.004444	0.010370	0.002963	0.002963	0.005926	0.010370	0.005926	0.013333	0.002963	0.004444	0.002963	0.002963	0.004444	0.004444

	GA	0.004444	0.001481	0.002963	0.004444	0.002963	0.002963	0.017778	0.011852	0.002963	0.002963	0.001481	0.001481	0.004444	0.004444	0.004444	0.004444	
	GC	0.005926	0.000000	0.002963	0.001481	0.010370	0.005926	0.007407	0.001481	0.008889	0.005926	0.001481	0.010370	0.002963	0.002963	0.004444	0.004444	
	GG	0.005926	0.000000	0.005926	0.002963	0.002963	0.002963	0.001481	0.002963	0.007407	0.002963	0.008889	0.001481	0.000000	0.002963	0.001481	0.005926	
	GT	0.002963	0.004444	0.011852	0.004444	0.004444	0.001481	0.002963	0.001481	0.002963	0.002963	0.005926	0.002963	0.001481	0.004444	0.001481	0.000000	
	TA	0.001481	0.004444	0.001481	0.001481	0.002963	0.001481	0.001481	0.002963	0.000000	0.002963	0.000000	0.004444	0.000000	0.001481	0.001481	0.005926	
	TC	0.001481	0.001481	0.001481	0.001481	0.000000	0.013333	0.001481	0.002963	0.002963	0.001481	0.004444	0.002963	0.002963	0.001481	0.005926	0.004444	
	TG	0.004444	0.001481	0.004444	0.005926	0.007407	0.005926	0.010370	0.004444	0.002963	0.000000	0.002963	0.004444	0.004444	0.000000	0.002963	0.005926	
	TT	0.001481	0.001481	0.008889	0.004444	0.007407	0.002963	0.004444	0.005926	0.002963	0.002963	0.002963	0.002963	0.000000	0.001481	0.004444	0.002963	
T		AA	AC	AG	AT	CA	CC	CG	CT	GA	GC	GG	GT	TA	TC	TG	TT	
	AA	0.004491	0.004491	0.004491	0.002994	0.000000	0.002994	0.001497	0.005988	0.004491	0.002994	0.005988	0.004491	0.004491	0.001497	0.001497	0.002994	
	AC	0.000000	0.001497	0.000000	0.004491	0.005988	0.000000	0.002994	0.005988	0.004491	0.001497	0.011976	0.002994	0.004491	0.005988	0.002994	0.005988	
	AG	0.002994	0.002994	0.000000	0.002994	0.004491	0.001497	0.002994	0.000000	0.005988	0.001497	0.004491	0.001497	0.007485	0.001497	0.004491	0.004491	
	AT	0.007485	0.002994	0.001497	0.002994	0.004491	0.001497	0.001497	0.002994	0.004491	0.002994	0.001497	0.001497	0.002994	0.004491	0.001497	0.008982	
	CA	0.001497	0.004491	0.001497	0.002994	0.001497	0.002994	0.001497	0.002994	0.008982	0.001497	0.001497	0.004491	0.002994	0.001497	0.002994	0.004491	
	CC	0.000000	0.004491	0.000000	0.004491	0.001497	0.001497	0.002994	0.004491	0.007485	0.002994	0.004491	0.005988	0.004491	0.004491	0.004491	0.011976	
	CG	0.002994	0.000000	0.004491	0.005988	0.005988	0.000000	0.004491	0.001497	0.007485	0.001497	0.001497	0.002994	0.002994	0.001497	0.004491	0.002994	
	CT	0.002994	0.008982	0.001497	0.001497	0.005988	0.010479	0.000000	0.005988	0.005988	0.002994	0.004491	0.001497	0.005988	0.002994	0.002994	0.014970	
	GA	0.014970	0.005988	0.002994	0.000000	0.005988	0.005988	0.005988	0.004491	0.002994	0.007485	0.004491	0.000000	0.002994	0.002994	0.001497	0.002994	
	GC	0.002994	0.002994	0.000000	0.002994	0.005988	0.001497	0.007485	0.002994	0.010479	0.007485	0.008982	0.001497	0.001497	0.008982	0.005988	0.004491	
	GG	0.007485	0.001497	0.000000	0.008982	0.000000	0.000000	0.004491	0.001497	0.004491	0.004491	0.002994	0.000000	0.002994	0.002994	0.002994	0.008982	
	GT	0.002994	0.005988	0.002994	0.002994	0.000000	0.002994	0.001497	0.004491	0.001497	0.004491	0.005988	0.001497	0.004491	0.004491	0.002994	0.008982	
	TA	0.000000	0.001497	0.002994	0.001497	0.001497	0.005988	0.001497	0.002994	0.002994	0.002994	0.004491	0.004491	0.004491	0.004491	0.004491	0.007485	
	TC	0.001497	0.001497	0.005988	0.000000	0.005988	0.004491	0.001497	0.000000	0.004491	0.010479	0.001497	0.004491	0.004491	0.002994	0.001497	0.004491	
	TG	0.001497	0.000000	0.004491	0.001497	0.004491	0.000000	0.002994	0.002994	0.005988	0.002994	0.004491	0.002994	0.001497	0.002994	0.001497	0.004491	
	TT	0.005988	0.005988	0.001497	0.007485	0.004491	0.007485	0.007485	0.005988	0.004491	0.010479	0.000000	0.004491	0.007485	0.013473	0.011976	0.022455	
	calf thymus (bovine)			forward strand														
A		AA	AC	AG	AT	CA	CC	CG	CT	GA	GC	GG	GT	TA	TC	TG	TT	
	AA	0.016554	0.006576	0.008885	0.011585	0.007399	0.003761	0.000827	0.005961	0.009925	0.004970	0.005473	0.006445	0.009906	0.005119	0.007651	0.008323	
	AC	0.006753	0.003025	0.003465	0.003975	0.006140	0.002603	0.001137	0.003615	0.006248	0.003474	0.003901	0.004761	0.004134	0.003336	0.004405	0.005126	
	AG	0.010640	0.003861	0.006738	0.006749	0.005103	0.002759	0.000841	0.004060	0.006847	0.003340	0.005202	0.005311	0.004169	0.003363	0.005343	0.004552	
	AT	0.008385	0.002824	0.003546	0.005479	0.005015	0.002118	0.000459	0.003722	0.004078	0.002407	0.002271	0.003137	0.007178	0.003212	0.004388	0.007337	
	CA	0.007490	0.003767	0.006203	0.005634	0.004453	0.002968	0.000456	0.003973	0.005143	0.002504	0.004002	0.003195	0.003978	0.002566	0.003878	0.003853	
	CC	0.005274	0.003427	0.003859	0.003127	0.004395	0.003932	0.000937	0.004240	0.004709	0.003904	0.006591	0.004487	0.003156	0.004383	0.005248	0.004548	
	CG	0.000580	0.000465	0.000695	0.000436	0.000530	0.000686	0.000122	0.001330	0.000624	0.000483	0.000727	0.000570	0.000328	0.000399	0.000631	0.000493	
	CT	0.004390	0.002015	0.002921	0.002954	0.002873	0.001898	0.000330	0.002730	0.003162	0.001534	0.002215	0.002302	0.002999	0.001986	0.002927	0.003970	
	GA	0.009768	0.004129	0.006322	0.006880	0.004034	0.002485	0.000486	0.004052	0.006303	0.003709	0.004763	0.003896	0.004344	0.003335	0.004211	0.004815	
	GC	0.004813	0.002538	0.003344	0.002873	0.003203	0.001856	0.000680	0.002474	0.004551	0.003647	0.004158	0.003307	0.002502	0.003066	0.002885	0.003633	
	GG	0.007610	0.002701	0.005502	0.004045	0.004033	0.002006	0.000760	0.003719	0.006168	0.003048	0.004697	0.003511	0.002274	0.002431	0.003672	0.003681	
	GT	0.004156	0.001706	0.002309	0.002781	0.002497	0.001247	0.000284	0.002299	0.002326	0.001676	0.001910	0.001922	0.003036	0.001838	0.002520	0.003905	
	TA	0.009839	0.003470	0.005442	0.006926	0.003776	0.002014	0.000375	0.003417	0.004257	0.002290	0.002678	0.003471	0.004970	0.002649	0.003728	0.005706	
	TC	0.006268	0.002823	0.004082	0.004231	0.004945	0.003234	0.000781	0.005387	0.005608	0.003804	0.004337	0.006091	0.003736	0.003946	0.004810	0.006037	
	TG	0.008327	0.004017	0.005762	0.005461	0.003950	0.003113	0.000528	0.005072	0.005219	0.003594	0.003897	0.004405	0.003573	0.003082	0.005119	0.004955	
	TT	0.008772	0.003016	0.003876	0.005770	0.004033	0.002424	0.000376	0.004131	0.003900	0.002386	0.002679	0.003353	0.005206	0.003322	0.003782	0.007971	
C		AA	AC	AG	AT	CA	CC	CG	CT	GA	GC	GG	GT	TA	TC	TG	TT	
	AA	0.008416	0.005330	0.006809	0.006916	0.005946	0.004439	0.000612	0.004720	0.000828	0.000609	0.000662	0.000894	0.005042	0.005806	0.007038	0.006400	
	AC	0.004845	0.004599	0.005837	0.005041	0.005707	0.004064	0.000747	0.004196	0.000704	0.000580	0.000578	0.000707	0.003360	0.003988	0.005244	0.004511	
	AG	0.006828	0.004337	0.007158	0.006085	0.005999	0.004727	0.000797	0.006078	0.001107	0.000686	0.000807	0.000859	0.003614	0.004365	0.006071	0.005684	
	AT	0.006427	0.005174	0.005945	0.005946	0.005939	0.005114	0.000597	0.005256	0.000777	0.000557	0.000468	0.000644	0.004626	0.005768	0.006417	0.007634	
	CA	0.005969	0.006131	0.007892	0.006088	0.006159	0.004195	0.000916	0.004986	0.001283	0.001016	0.001209	0.001400	0.003323	0.005006	0.007161	0.006460	

	CC	0.005059	0.005719	0.007736	0.005888	0.006719	0.003860	0.001403	0.004915	0.000821	0.001145	0.001313	0.000943	0.002737	0.005160	0.007423	0.005449
	CG	0.000712	0.000754	0.001130	0.000720	0.001000	0.000987	0.000384	0.000932	0.000178	0.000319	0.000361	0.000220	0.000490	0.001045	0.001180	0.000923
	CT	0.005794	0.004478	0.007802	0.005847	0.008677	0.006117	0.001130	0.008461	0.000764	0.000649	0.000951	0.000760	0.004408	0.006469	0.008968	0.009052
	GA	0.004354	0.004067	0.005694	0.004867	0.003882	0.003760	0.000583	0.003765	0.000694	0.000632	0.001013	0.000794	0.003060	0.004936	0.006740	0.005024
	GC	0.004319	0.003844	0.004835	0.004938	0.004389	0.003485	0.000939	0.003844	0.000577	0.000763	0.000835	0.000745	0.002217	0.004004	0.006218	0.004722
	GG	0.005440	0.002855	0.005990	0.003926	0.004184	0.002904	0.000836	0.003771	0.000596	0.000681	0.001170	0.000706	0.002742	0.004423	0.005677	0.004752
	GT	0.004066	0.003911	0.005065	0.004724	0.005993	0.003567	0.000950	0.004196	0.000421	0.001108	0.000990	0.001078	0.002871	0.004284	0.005065	0.005623
	TA	0.005339	0.003386	0.005408	0.005959	0.004319	0.002340	0.000446	0.003624	0.000507	0.000319	0.000469	0.000726	0.003421	0.003543	0.005206	0.005795
	TC	0.007732	0.004738	0.009206	0.008461	0.007662	0.005484	0.001135	0.007842	0.000974	0.000650	0.000810	0.000988	0.004231	0.007077	0.007704	0.008910
	TG	0.006004	0.003517	0.007708	0.006183	0.006804	0.004064	0.000905	0.006446	0.000976	0.000499	0.000815	0.000806	0.004240	0.004775	0.007923	0.007421
	TT	0.008009	0.006560	0.008965	0.009396	0.009635	0.007366	0.000749	0.010036	0.000750	0.000546	0.000658	0.000834	0.006769	0.009777	0.009148	0.013395
G		AA	AC	AG	AT	CA	CC	CG	CT	GA	GC	GG	GT	TA	TC	TG	TT
	AA	0.013416	0.005629	0.009087	0.007583	0.007457	0.004769	0.000863	0.005693	0.008905	0.004738	0.005435	0.004481	0.005769	0.005049	0.006483	0.006405
	AC	0.000917	0.001112	0.000832	0.000679	0.000856	0.000734	0.000216	0.000889	0.001037	0.000764	0.000966	0.000730	0.000757	0.000828	0.001453	0.000935
	AG	0.010005	0.004216	0.008435	0.005241	0.006448	0.003752	0.000876	0.006070	0.007817	0.003821	0.004901	0.004167	0.003590	0.003768	0.004961	0.004697
	AT	0.009410	0.004703	0.005844	0.005900	0.006184	0.003925	0.000662	0.006072	0.008447	0.004917	0.005879	0.004998	0.005931	0.004845	0.006072	0.006865
	CA	0.009078	0.005030	0.008930	0.006335	0.007866	0.005620	0.001110	0.006014	0.007651	0.006209	0.007387	0.005179	0.005146	0.006683	0.007119	0.006948
	CC	0.000709	0.001029	0.001000	0.000499	0.000871	0.001212	0.000361	0.000840	0.000874	0.000903	0.001389	0.000625	0.000504	0.001061	0.001272	0.000689
	CG	0.000813	0.000982	0.001211	0.000634	0.000958	0.000868	0.000381	0.000855	0.001206	0.000977	0.001439	0.000789	0.000471	0.000621	0.000966	0.000650
	CT	0.008921	0.005004	0.007720	0.005857	0.007685	0.005965	0.001050	0.007092	0.009193	0.004803	0.007688	0.005775	0.005353	0.005658	0.007840	0.006693
	GA	0.009786	0.004280	0.006438	0.005755	0.004781	0.004456	0.001001	0.004361	0.007105	0.004026	0.005148	0.003972	0.003514	0.004929	0.004981	0.005768
	GC	0.000595	0.001125	0.000698	0.000584	0.000558	0.000710	0.000321	0.000735	0.000707	0.000794	0.001196	0.000605	0.000341	0.000664	0.001074	0.000632
	GG	0.007351	0.003549	0.006077	0.005085	0.004056	0.002916	0.000936	0.004721	0.005484	0.003486	0.003862	0.004062	0.002317	0.003745	0.004176	0.004397
	GT	0.006540	0.003890	0.004455	0.005140	0.003525	0.002860	0.000716	0.004360	0.004755	0.003838	0.005733	0.004562	0.003356	0.004038	0.006146	0.005274
	TA	0.006805	0.002885	0.004435	0.004627	0.004284	0.002766	0.000469	0.003623	0.004265	0.002239	0.002764	0.003379	0.003418	0.003109	0.003359	0.005063
	TC	0.000817	0.000471	0.000818	0.000821	0.001030	0.000638	0.000178	0.001159	0.001023	0.000603	0.000864	0.000738	0.000548	0.000758	0.001352	0.000885
	TG	0.009556	0.005974	0.008621	0.005859	0.006759	0.004172	0.000951	0.005961	0.007596	0.004369	0.006689	0.005635	0.004267	0.003859	0.006146	0.005902
	TT	0.008020	0.004061	0.005801	0.006403	0.006016	0.005477	0.000668	0.006814	0.007721	0.004337	0.005066	0.004824	0.005329	0.004373	0.005994	0.008397
T		AA	AC	AG	AT	CA	CC	CG	CT	GA	GC	GG	GT	TA	TC	TG	TT
	AA	0.007948	0.003916	0.003973	0.007368	0.004990	0.003701	0.000462	0.004577	0.006077	0.003651	0.004607	0.005163	0.005705	0.004838	0.003859	0.008345
	AC	0.003314	0.001917	0.002279	0.003135	0.004402	0.003533	0.000533	0.005320	0.006064	0.003326	0.004497	0.004770	0.003436	0.003903	0.003162	0.006457
	AG	0.004102	0.002284	0.002704	0.003699	0.005084	0.003727	0.001294	0.004049	0.005413	0.002465	0.004263	0.003604	0.003389	0.004052	0.003955	0.005944
	AT	0.005764	0.002791	0.002957	0.005510	0.005496	0.004081	0.000397	0.006785	0.004252	0.002912	0.003165	0.004018	0.006905	0.006904	0.005648	0.011587
	CA	0.003748	0.002496	0.002906	0.004381	0.005111	0.003687	0.000594	0.005346	0.004796	0.002881	0.005268	0.004414	0.003683	0.004197	0.003848	0.007643
	CC	0.002644	0.001891	0.002194	0.002254	0.003905	0.004700	0.000683	0.005205	0.004311	0.004162	0.006627	0.003915	0.002651	0.004774	0.003981	0.005476
	CG	0.000402	0.000299	0.000349	0.000489	0.000561	0.000802	0.000128	0.000877	0.000822	0.000702	0.000977	0.001176	0.000392	0.000515	0.000480	0.000866
	CT	0.003852	0.002299	0.002909	0.003535	0.005769	0.005495	0.000649	0.006758	0.004095	0.003361	0.003891	0.003488	0.005421	0.006310	0.006203	0.008895
	GA	0.003303	0.001848	0.001981	0.003233	0.003122	0.002433	0.000391	0.003395	0.003969	0.003061	0.004406	0.003336	0.002648	0.003358	0.002594	0.005141
	GC	0.002356	0.001672	0.001500	0.002402	0.003605	0.003071	0.000448	0.003347	0.003803	0.003668	0.003935	0.003482	0.002262	0.003719	0.002492	0.004979
	GG	0.002404	0.001239	0.001887	0.002102	0.003146	0.002016	0.000682	0.002783	0.003256	0.001849	0.003955	0.002614	0.002003	0.002497	0.002980	0.003773
	GT	0.002996	0.001700	0.002006	0.002828	0.004036	0.002738	0.000437	0.003883	0.002821	0.002549	0.003448	0.003043	0.003453	0.004153	0.003783	0.006593
	TA	0.005162	0.003036	0.002993	0.007177	0.003587	0.002293	0.000307	0.004193	0.003741	0.002518	0.003198	0.004165	0.004919	0.004351	0.003979	0.009942
	TC	0.003875	0.002306	0.003130	0.004050	0.005192	0.006202	0.000571	0.006848	0.005610	0.004561	0.004728	0.006254	0.004204	0.006300	0.005106	0.009954
	TG	0.003991	0.002469	0.002848	0.004990	0.003939	0.004029	0.000486	0.005095	0.004942	0.003203	0.004387	0.006153	0.003727	0.004017	0.004410	0.007393
	TT	0.008717	0.004120	0.004351	0.008335	0.008314	0.007619	0.000518	0.010621	0.006253	0.004818	0.005278	0.006760	0.009772	0.009759	0.007493	0.016564
	calf thymus (bovine)			reverse strand													
A		AA	AC	AG	AT	CA	CC	CG	CT	GA	GC	GG	GT	TA	TC	TG	TT
	AA	0.016564	0.006593	0.008895	0.011587	0.007393	0.003773	0.000866	0.005944	0.009954	0.004979	0.005476	0.006457	0.009942	0.005141	0.007643	0.008345
	AC	0.006760	0.003043	0.003488	0.004018	0.006153	0.002614	0.001176	0.003604	0.006254	0.003482	0.003915	0.004770	0.004165	0.003336	0.004414	0.005163
	AG	0.010621	0.003883	0.006758	0.006785	0.005095	0.002783	0.000877	0.004049	0.006848	0.003347	0.005205	0.005320	0.004193	0.003395	0.005346	0.004577

	AT	0.008335	0.002828	0.003535	0.005510	0.004990	0.002102	0.000489	0.003699	0.004050	0.002402	0.002254	0.003135	0.007177	0.003233	0.004381	0.007368
	CA	0.007493	0.003783	0.006203	0.005648	0.004410	0.002980	0.000480	0.003955	0.005106	0.002492	0.003981	0.003162	0.003979	0.002594	0.003848	0.003859
	CC	0.005278	0.003448	0.003891	0.003165	0.004387	0.003955	0.000977	0.004263	0.004728	0.003935	0.006627	0.004497	0.003198	0.004406	0.005268	0.004607
	CG	0.000518	0.000437	0.000649	0.000397	0.000486	0.000682	0.000128	0.001294	0.000571	0.000448	0.000683	0.000533	0.000307	0.000391	0.000594	0.000462
	CT	0.004351	0.002006	0.002909	0.002957	0.002848	0.001887	0.000349	0.002704	0.003130	0.001500	0.002194	0.002279	0.002993	0.001981	0.002906	0.003973
	GA	0.009759	0.004153	0.006310	0.006904	0.004017	0.002497	0.000515	0.004052	0.006300	0.003719	0.004774	0.003903	0.004351	0.003358	0.004197	0.004838
	GC	0.004818	0.002549	0.003361	0.002912	0.003203	0.001849	0.000702	0.002465	0.004561	0.003668	0.004162	0.003326	0.002518	0.003061	0.002881	0.003651
	GG	0.007619	0.002738	0.005495	0.004081	0.004029	0.002016	0.000802	0.003727	0.006202	0.003071	0.004700	0.003533	0.002293	0.002433	0.003687	0.003701
	GT	0.004120	0.001700	0.002299	0.002791	0.002469	0.001239	0.000299	0.002284	0.002306	0.001672	0.001891	0.001917	0.003036	0.001848	0.002496	0.003916
	TA	0.009772	0.003453	0.005421	0.006905	0.003727	0.002003	0.000392	0.003389	0.004204	0.002262	0.002651	0.003436	0.004919	0.002648	0.003683	0.005705
	TC	0.006253	0.002821	0.004095	0.004252	0.004942	0.003256	0.000822	0.005413	0.005610	0.003803	0.004311	0.006064	0.003741	0.003969	0.004796	0.006077
	TG	0.008314	0.004036	0.005769	0.005496	0.003939	0.003146	0.000561	0.005084	0.005192	0.003605	0.003905	0.004402	0.003587	0.003122	0.005111	0.004990
	TT	0.008717	0.002996	0.003852	0.005764	0.003991	0.002404	0.000402	0.004102	0.003875	0.002356	0.002644	0.003314	0.005162	0.003303	0.003748	0.007948
C		AA	AC	AG	AT	CA	CC	CG	CT	GA	GC	GG	GT	TA	TC	TG	TT
	AA	0.008397	0.005274	0.006693	0.006865	0.005902	0.004397	0.000650	0.004697	0.000885	0.000632	0.000689	0.000935	0.005063	0.005768	0.006948	0.006405
	AC	0.004824	0.004562	0.005775	0.004998	0.005635	0.004062	0.000789	0.004167	0.000738	0.000605	0.000625	0.000730	0.003379	0.003972	0.005179	0.004481
	AG	0.006814	0.004360	0.007092	0.006072	0.005961	0.004721	0.000855	0.006070	0.001159	0.000735	0.000840	0.000889	0.003623	0.004361	0.006014	0.005693
	AT	0.006403	0.005140	0.005857	0.005900	0.005859	0.005085	0.000634	0.005241	0.000821	0.000584	0.000499	0.000679	0.004627	0.005755	0.006335	0.007583
	CA	0.005994	0.006146	0.007840	0.006072	0.006146	0.004176	0.000966	0.004961	0.001352	0.001074	0.001272	0.001453	0.003359	0.004981	0.007119	0.006483
	CC	0.005066	0.005733	0.007688	0.005879	0.006689	0.003862	0.001439	0.004901	0.000864	0.001196	0.001389	0.000966	0.002764	0.005148	0.007387	0.005435
	CG	0.000668	0.000716	0.001050	0.000662	0.000951	0.000936	0.000381	0.000876	0.000178	0.000321	0.000361	0.000216	0.000469	0.001001	0.001110	0.000863
	CT	0.005801	0.004455	0.007720	0.005844	0.008621	0.006077	0.001211	0.008435	0.000818	0.000698	0.001000	0.000832	0.004435	0.006438	0.008930	0.009087
	GA	0.004373	0.004038	0.005658	0.004845	0.003859	0.003745	0.000621	0.003768	0.000758	0.000664	0.001061	0.000828	0.003109	0.004929	0.006683	0.005049
	GC	0.004337	0.003838	0.004803	0.004917	0.004369	0.003486	0.000977	0.003821	0.000603	0.000794	0.000903	0.000764	0.002239	0.004026	0.006209	0.004738
	GG	0.005477	0.002860	0.005965	0.003925	0.004172	0.002916	0.000868	0.003752	0.000638	0.000710	0.001212	0.000734	0.002766	0.004456	0.005620	0.004769
	GT	0.004061	0.003890	0.005004	0.004703	0.005974	0.003549	0.000982	0.004216	0.000471	0.001125	0.001029	0.001112	0.002885	0.004280	0.005030	0.005629
	TA	0.005329	0.003356	0.005353	0.005931	0.004267	0.002317	0.000471	0.003590	0.000548	0.000341	0.000504	0.000757	0.003418	0.003514	0.005146	0.005769
	TC	0.007721	0.004755	0.009193	0.008447	0.007596	0.005484	0.001206	0.007817	0.001023	0.000707	0.000874	0.001037	0.004265	0.007105	0.007651	0.008905
	TG	0.006016	0.003525	0.007685	0.006184	0.006759	0.004056	0.000958	0.006448	0.001030	0.000558	0.000871	0.000856	0.004284	0.004781	0.007866	0.007457
	TT	0.008020	0.006540	0.008921	0.009410	0.009556	0.007351	0.000813	0.010005	0.000817	0.000595	0.000709	0.000917	0.006805	0.009786	0.009078	0.013416
G		AA	AC	AG	AT	CA	CC	CG	CT	GA	GC	GG	GT	TA	TC	TG	TT
	AA	0.013395	0.005623	0.009052	0.007634	0.007421	0.004752	0.000923	0.005684	0.008910	0.004722	0.005449	0.004511	0.005795	0.005024	0.006460	0.006400
	AC	0.000834	0.001078	0.000760	0.000644	0.000806	0.000706	0.000220	0.000859	0.000988	0.000745	0.000943	0.000707	0.000726	0.000794	0.001400	0.000894
	AG	0.010036	0.004196	0.008461	0.005256	0.006446	0.003771	0.000932	0.006078	0.007842	0.003844	0.004915	0.004196	0.003624	0.003765	0.004986	0.004720
	AT	0.009396	0.004724	0.005847	0.005946	0.006183	0.003926	0.000720	0.006085	0.008461	0.004938	0.005888	0.005041	0.005959	0.004867	0.006088	0.006916
	CA	0.009148	0.005065	0.008968	0.006417	0.007923	0.005677	0.001180	0.006071	0.007704	0.006218	0.007423	0.005244	0.005206	0.006740	0.007161	0.007038
	CC	0.000658	0.000990	0.000951	0.000468	0.000815	0.001170	0.000361	0.000807	0.000810	0.000835	0.001313	0.000578	0.000469	0.001013	0.001209	0.000662
	CG	0.000749	0.000950	0.001130	0.000597	0.000905	0.000836	0.000384	0.000797	0.001135	0.000939	0.001403	0.000747	0.000446	0.000583	0.000916	0.000612
	CT	0.008965	0.005065	0.007802	0.005945	0.007708	0.005990	0.001130	0.007158	0.009206	0.004835	0.007736	0.005837	0.005408	0.005694	0.007892	0.006809
	GA	0.009777	0.004284	0.006469	0.005768	0.004775	0.004423	0.001045	0.004365	0.007077	0.004004	0.005160	0.003988	0.003543	0.004936	0.005006	0.005806
	GC	0.000546	0.001108	0.000649	0.000557	0.000499	0.000681	0.000319	0.000686	0.000650	0.000763	0.001145	0.000580	0.000319	0.000632	0.001016	0.000609
	GG	0.007366	0.003567	0.006117	0.005114	0.004064	0.002904	0.000987	0.004727	0.005484	0.003485	0.003860	0.004064	0.002340	0.003760	0.004195	0.004439
	GT	0.006560	0.003911	0.004478	0.005174	0.003517	0.002855	0.000754	0.004337	0.004738	0.003844	0.005719	0.004599	0.003386	0.004067	0.006131	0.005330
	TA	0.006769	0.002871	0.004408	0.004626	0.004240	0.002742	0.000490	0.003614	0.004231	0.002217	0.002737	0.003360	0.003421	0.003060	0.003323	0.005042
	TC	0.000750	0.000421	0.000764	0.000777	0.000976	0.000596	0.000178	0.001107	0.000974	0.000577	0.000821	0.000704	0.000507	0.000694	0.001283	0.000828
	TG	0.009635	0.005993	0.008677	0.005939	0.006804	0.004184	0.001000	0.005999	0.007662	0.004389	0.006719	0.005707	0.004319	0.003882	0.006159	0.005946
	TT	0.008009	0.004066	0.005794	0.006427	0.006004	0.005440	0.000712	0.006828	0.007732	0.004319	0.005059	0.004845	0.005339	0.004354	0.005969	0.008416
T		AA	AC	AG	AT	CA	CC	CG	CT	GA	GC	GG	GT	TA	TC	TG	TT
	AA	0.007971	0.003905	0.003970	0.007337	0.004955	0.003681	0.000493	0.004552	0.006037	0.003633	0.004548	0.005126	0.005706	0.004815	0.003853	0.008323
	AC	0.003353	0.001922	0.002302	0.003137	0.004405	0.003511	0.000570	0.005311	0.006091	0.003307	0.004487	0.004761	0.003471	0.003896	0.003195	0.006445
	AG	0.004131	0.002299	0.002730	0.003722	0.005072	0.003719	0.001330	0.004060	0.005387	0.002474	0.004240	0.003615	0.003417	0.004052	0.003973	0.005961

	AT	0.005770	0.002781	0.002954	0.005479	0.005461	0.004045	0.000436	0.006749	0.004231	0.002873	0.003127	0.003975	0.006926	0.006880	0.005634	0.011585	
	CA	0.003782	0.002520	0.002927	0.004388	0.005119	0.003672	0.000631	0.005343	0.004810	0.002885	0.005248	0.004405	0.003728	0.004211	0.003878	0.007651	
	CC	0.002679	0.001910	0.002215	0.002271	0.003897	0.004697	0.000727	0.005202	0.004337	0.004158	0.006591	0.003901	0.002678	0.004763	0.004002	0.005473	
	CG	0.000376	0.000284	0.000330	0.000459	0.000528	0.000760	0.000122	0.000841	0.000781	0.000680	0.000937	0.001137	0.000375	0.000486	0.000456	0.000827	
	CT	0.003876	0.002309	0.002921	0.003546	0.005762	0.005502	0.000695	0.006738	0.004082	0.003344	0.003859	0.003465	0.005442	0.006322	0.006203	0.008885	
	GA	0.003322	0.001838	0.001986	0.003212	0.003082	0.002431	0.000399	0.003363	0.003946	0.003066	0.004383	0.003336	0.002649	0.003335	0.002566	0.005119	
	GC	0.002386	0.001676	0.001534	0.002407	0.003594	0.003048	0.000483	0.003340	0.003804	0.003647	0.003904	0.003474	0.002290	0.003709	0.002504	0.004970	
	GG	0.002424	0.001247	0.001898	0.002118	0.003113	0.002006	0.000686	0.002759	0.003234	0.001856	0.003932	0.002603	0.002014	0.002485	0.002968	0.003761	
	GT	0.003016	0.001706	0.002015	0.002824	0.004017	0.002701	0.000465	0.003861	0.002823	0.002538	0.003427	0.003025	0.003470	0.004129	0.003767	0.006576	
	TA	0.005206	0.003036	0.002999	0.007178	0.003573	0.002274	0.000328	0.004169	0.003736	0.002502	0.003156	0.004134	0.004970	0.004344	0.003978	0.009906	
	TC	0.003900	0.002326	0.003162	0.004078	0.005219	0.006168	0.000624	0.006847	0.005608	0.004551	0.004709	0.006248	0.004257	0.006303	0.005143	0.009925	
	TG	0.004033	0.002497	0.002873	0.005015	0.003950	0.004033	0.000530	0.005103	0.004945	0.003203	0.004395	0.006140	0.003776	0.004034	0.004453	0.007399	
	TT	0.008772	0.004156	0.004390	0.008385	0.008327	0.007610	0.000580	0.010640	0.006268	0.004813	0.005274	0.006753	0.009839	0.009768	0.007490	0.016554	
	Micrococcus sp. 28 pSD10			forward strand														
A		AA	AC	AG	AT	CA	CC	CG	CT	GA	GC	GG	GT	TA	TC	TG	TT	
	AA	0.001266	0.000806	0.001036	0.001151	0.001151	0.001957	0.001957	0.000345	0.000921	0.002878	0.001266	0.001381	0.000460	0.001957	0.001036	0.000691	
	AC	0.000576	0.004489	0.003569	0.000921	0.001381	0.010936	0.006331	0.000691	0.001957	0.004835	0.005871	0.001036	0.000576	0.004029	0.003799	0.000691	
	AG	0.001381	0.005065	0.006677	0.001727	0.001727	0.008518	0.006677	0.001266	0.002417	0.005180	0.003914	0.001151	0.000691	0.005410	0.005295	0.001151	
	AT	0.000115	0.000345	0.000230	0.000230	0.000691	0.002417	0.000921	0.000921	0.000806	0.000691	0.000806	0.000115	0.000115	0.000806	0.000345	0.000115	
	CA	0.000806	0.001381	0.002187	0.000576	0.002878	0.006331	0.007252	0.001842	0.004605	0.005641	0.006562	0.003108	0.000115	0.000806	0.001957	0.000345	
	CC	0.001496	0.005986	0.008173	0.000691	0.005295	0.021757	0.019224	0.005065	0.005871	0.018188	0.015310	0.004029	0.000576	0.010245	0.009555	0.002878	
	CG	0.003684	0.009785	0.010360	0.002417	0.004605	0.016346	0.016576	0.004835	0.010130	0.019915	0.023023	0.007943	0.001842	0.011051	0.011281	0.001842	
	CT	0.000806	0.000806	0.000806	0.000000	0.004259	0.004374	0.005756	0.001612	0.000576	0.000806	0.001036	0.000230	0.000576	0.001036	0.001151	0.000806	
	GA	0.002072	0.002763	0.002763	0.001957	0.005641	0.006562	0.011166	0.004029	0.006446	0.008634	0.008634	0.004489	0.000806	0.004489	0.001957	0.001151	
	GC	0.001151	0.004029	0.005180	0.000921	0.006101	0.018303	0.013238	0.005295	0.008288	0.016461	0.013929	0.004489	0.001151	0.009785	0.007022	0.001381	
	GG	0.002417	0.007598	0.006101	0.002648	0.009670	0.010706	0.013468	0.006101	0.008634	0.013238	0.013699	0.007482	0.000576	0.010245	0.010475	0.002302	
	GT	0.000576	0.000806	0.000230	0.000345	0.001612	0.003453	0.002763	0.002417	0.001842	0.002417	0.002993	0.001727	0.000921	0.002417	0.000691	0.000345	
	TA	0.000000	0.000460	0.000576	0.000460	0.000345	0.000576	0.001151	0.000000	0.000230	0.000115	0.000806	0.000345	0.000115	0.000460	0.000115	0.000000	
	TC	0.001727	0.003684	0.003108	0.000691	0.002302	0.013353	0.010130	0.001036	0.002993	0.007943	0.007713	0.003223	0.000460	0.006101	0.006792	0.000806	
	TG	0.001957	0.004835	0.005295	0.001612	0.001842	0.011051	0.007022	0.001727	0.001266	0.009900	0.007022	0.002533	0.000921	0.008173	0.007598	0.001612	
	TT	0.000000	0.000115	0.000230	0.000000	0.000576	0.001036	0.000806	0.000230	0.000000	0.000576	0.000460	0.000115	0.000000	0.000806	0.000691	0.000115	
C		AA	AC	AG	AT	CA	CC	CG	CT	GA	GC	GG	GT	TA	TC	TG	TT	
	AA	0.000912	0.001882	0.001654	0.000513	0.001882	0.001939	0.002794	0.001141	0.002623	0.003650	0.003022	0.001312	0.000456	0.001312	0.000969	0.000456	
	AC	0.002053	0.005646	0.004733	0.002965	0.002794	0.006159	0.006273	0.002281	0.004049	0.008269	0.007698	0.004334	0.000798	0.003365	0.004961	0.001026	
	AG	0.001255	0.005018	0.007128	0.001654	0.002851	0.004448	0.005703	0.001768	0.003022	0.007014	0.004733	0.002566	0.000342	0.003650	0.005018	0.001768	
	AT	0.000912	0.003536	0.003022	0.001654	0.002224	0.003136	0.003422	0.001654	0.003878	0.004676	0.003193	0.002167	0.000684	0.001768	0.001654	0.000627	
	CA	0.001141	0.002509	0.002224	0.001654	0.006900	0.008839	0.011804	0.003992	0.005246	0.007413	0.007870	0.003878	0.000684	0.002110	0.002395	0.000969	
	CC	0.001483	0.006729	0.006102	0.002623	0.005246	0.006216	0.011177	0.003022	0.007527	0.012318	0.010265	0.004562	0.000912	0.004277	0.006387	0.001939	
	CG	0.001597	0.005589	0.007014	0.003365	0.008953	0.013572	0.018248	0.004163	0.007641	0.012432	0.011861	0.004676	0.002053	0.004505	0.006672	0.002680	
	CT	0.001369	0.004163	0.002053	0.001198	0.003593	0.002965	0.004277	0.002965	0.005474	0.004277	0.005589	0.003136	0.000912	0.001768	0.001711	0.000912	
	GA	0.001711	0.003536	0.001996	0.001711	0.005760	0.005817	0.007584	0.003764	0.006330	0.006729	0.004733	0.003650	0.000513	0.002509	0.002623	0.001141	
	GC	0.003307	0.008611	0.007185	0.004277	0.007299	0.009295	0.013173	0.006216	0.011975	0.017336	0.014599	0.007299	0.001255	0.004334	0.004505	0.001654	
	GG	0.001996	0.006615	0.004562	0.003250	0.009238	0.012203	0.020244	0.004676	0.006273	0.009124	0.010036	0.006045	0.001026	0.003878	0.005474	0.001711	
	GT	0.001198	0.003935	0.004049	0.002281	0.003821	0.003307	0.006216	0.003136	0.003878	0.004505	0.004961	0.004619	0.001141	0.002338	0.002737	0.001711	
	TA	0.000855	0.001483	0.000684	0.000570	0.001026	0.000969	0.002110	0.001312	0.001540	0.001255	0.001141	0.001255	0.000342	0.000855	0.000741	0.000627	
	TC	0.001255	0.004733	0.003593	0.001825	0.001654	0.003821	0.004106	0.001939	0.003479	0.005931	0.004847	0.002908	0.000456	0.004106	0.002566	0.001825	
	TG	0.000684	0.004049	0.002737	0.001198	0.002395	0.006045	0.006729	0.001255	0.002167	0.005531	0.004220	0.003193	0.000342	0.003479	0.003650	0.001141	
	TT	0.001026	0.001882	0.001597	0.001996	0.001939	0.001939	0.003193	0.001312	0.002851	0.003307	0.003365	0.001882	0.000171	0.001768	0.001426	0.001255	
G		AA	AC	AG	AT	CA	CC	CG	CT	GA	GC	GG	GT	TA	TC	TG	TT	
	AA	0.002006	0.001475	0.001180	0.001652	0.001829	0.003127	0.002714	0.001357	0.002065	0.003009	0.002065	0.001593	0.000590	0.001770	0.001239	0.001121	

	AC	0.002655	0.004896	0.005840	0.002655	0.002537	0.008967	0.005781	0.002596	0.003540	0.006548	0.004425	0.003127	0.000767	0.004307	0.003953	0.001475
	AG	0.002419	0.004130	0.004837	0.003009	0.002655	0.009203	0.005545	0.001652	0.002242	0.006076	0.003422	0.002596	0.000531	0.003717	0.004189	0.001357
	AT	0.001947	0.002832	0.002478	0.002655	0.001298	0.003304	0.002537	0.001711	0.003127	0.004130	0.002183	0.002537	0.000472	0.001121	0.001829	0.000826
	CA	0.002537	0.003540	0.002124	0.001947	0.005899	0.006076	0.007256	0.004719	0.005781	0.006902	0.005840	0.003481	0.000295	0.002419	0.002596	0.001357
	CC	0.004543	0.007197	0.012271	0.003894	0.006961	0.018819	0.014099	0.005545	0.006666	0.017521	0.008672	0.006017	0.001416	0.006607	0.008731	0.002891
	CG	0.002655	0.005840	0.007551	0.003953	0.008554	0.017934	0.012920	0.005309	0.005899	0.008259	0.006961	0.004071	0.001475	0.004543	0.007256	0.003245
	CT	0.001357	0.003304	0.002832	0.002301	0.003304	0.005073	0.005899	0.002891	0.005840	0.007551	0.005014	0.003245	0.000590	0.002183	0.002419	0.001298
	GA	0.003068	0.003540	0.002360	0.002655	0.007492	0.005191	0.007256	0.004955	0.006607	0.008495	0.005309	0.004248	0.000885	0.003363	0.003304	0.002360
	GC	0.003776	0.005250	0.006961	0.003894	0.006135	0.011386	0.012330	0.005604	0.006961	0.012684	0.007669	0.004719	0.001770	0.006194	0.006135	0.002891
	GG	0.002891	0.004425	0.005191	0.002714	0.004071	0.009911	0.007669	0.003481	0.003835	0.006017	0.003363	0.003422	0.000885	0.003953	0.005840	0.001829
	GT	0.002832	0.003304	0.003776	0.003481	0.003481	0.005427	0.005486	0.003599	0.004425	0.007197	0.004660	0.004484	0.000944	0.003363	0.002537	0.001475
	TA	0.000236	0.000649	0.000472	0.000354	0.000295	0.001003	0.000708	0.000354	0.000177	0.000885	0.001180	0.000472	0.000118	0.000177	0.000531	0.000354
	TC	0.002596	0.004601	0.006312	0.003009	0.002242	0.007138	0.005663	0.002419	0.002773	0.007905	0.004366	0.002655	0.001239	0.005309	0.004071	0.001475
	TG	0.001652	0.006017	0.004955	0.002242	0.001652	0.010914	0.006135	0.002065	0.003304	0.004601	0.002891	0.002360	0.000531	0.004425	0.004896	0.001298
	TT	0.000826	0.001534	0.001357	0.001003	0.000767	0.003127	0.001888	0.000767	0.001593	0.002360	0.001239	0.001003	0.000472	0.001888	0.000826	0.000708
T		AA	AC	AG	AT	CA	CC	CG	CT	GA	GC	GG	GT	TA	TC	TG	TT
	AA	0.000000	0.001461	0.000266	0.000000	0.001328	0.002921	0.003320	0.001328	0.001593	0.001593	0.001992	0.000797	0.000000	0.001992	0.000266	0.000266
	AC	0.000664	0.003585	0.000133	0.000398	0.003452	0.005311	0.005843	0.001195	0.002125	0.004116	0.007702	0.001859	0.000266	0.003718	0.002257	0.001195
	AG	0.000266	0.002523	0.000797	0.000531	0.002788	0.006241	0.006506	0.002125	0.003851	0.005311	0.006772	0.001726	0.000133	0.007834	0.003054	0.000797
	AT	0.000000	0.000398	0.000133	0.000000	0.001992	0.003187	0.003320	0.000797	0.001859	0.001195	0.001195	0.001062	0.000531	0.001726	0.000797	0.000531
	CA	0.000398	0.001726	0.000797	0.000398	0.007702	0.009826	0.013942	0.003054	0.008498	0.005843	0.012349	0.003718	0.000266	0.003054	0.002125	0.001062
	CC	0.000664	0.005444	0.001062	0.000664	0.005843	0.011419	0.016465	0.003851	0.007834	0.013810	0.016996	0.004515	0.000531	0.006506	0.006374	0.001859
	CG	0.001062	0.003984	0.004515	0.002125	0.012349	0.016067	0.015801	0.007038	0.011287	0.014606	0.018855	0.007569	0.000664	0.008233	0.009560	0.000797
	CT	0.000133	0.000929	0.000266	0.000664	0.004647	0.006108	0.010490	0.003718	0.003452	0.005179	0.005710	0.003452	0.000531	0.002656	0.001328	0.000664
	GA	0.000531	0.001992	0.001461	0.000531	0.011419	0.010092	0.013146	0.005179	0.011818	0.011287	0.012083	0.004249	0.000266	0.003452	0.002523	0.001726
	GC	0.000929	0.005046	0.000664	0.001992	0.008498	0.008100	0.014075	0.005046	0.009959	0.014075	0.018324	0.005975	0.000664	0.009162	0.005710	0.001461
	GG	0.000664	0.002656	0.002921	0.001593	0.009826	0.007834	0.013146	0.006506	0.012482	0.014872	0.014341	0.007967	0.000797	0.008764	0.005710	0.002125
	GT	0.000133	0.000929	0.000398	0.000664	0.007038	0.007834	0.011021	0.005046	0.004515	0.006506	0.005577	0.004116	0.000398	0.002257	0.001461	0.000398
	TA	0.000266	0.000531	0.000266	0.000531	0.000929	0.001328	0.002257	0.001328	0.000531	0.001062	0.001062	0.000664	0.000000	0.000929	0.000266	0.000398
	TC	0.000531	0.004382	0.001195	0.000664	0.002390	0.006639	0.007038	0.002125	0.001992	0.006905	0.006241	0.002125	0.000398	0.005843	0.003718	0.000398
	TG	0.000266	0.002390	0.002125	0.000797	0.002257	0.007967	0.006108	0.002921	0.002390	0.005975	0.007303	0.001726	0.000266	0.006108	0.002257	0.000664
	TT	0.000133	0.000664	0.000266	0.000531	0.001726	0.002390	0.002257	0.001195	0.000797	0.001859	0.001726	0.000000	0.000133	0.000929	0.000664	0.000398
	Micrococcus sp. 28 pSD10			reverse strand													
A		AA	AC	AG	AT	CA	CC	CG	CT	GA	GC	GG	GT	TA	TC	TG	TT
	AA	0.000398	0.000398	0.000664	0.000531	0.000664	0.002125	0.000797	0.000797	0.000398	0.001461	0.001859	0.001195	0.000398	0.001726	0.001062	0.000266
	AC	0.000000	0.004116	0.003452	0.001062	0.001726	0.007967	0.007569	0.001726	0.002125	0.005975	0.004515	0.001859	0.000664	0.004249	0.003718	0.000797
	AG	0.001195	0.005046	0.003718	0.000797	0.002921	0.006506	0.007038	0.002125	0.002125	0.005046	0.003851	0.001195	0.001328	0.005179	0.003054	0.001328
	AT	0.000531	0.000664	0.000664	0.000000	0.000797	0.001593	0.002125	0.000531	0.000664	0.001992	0.000664	0.000398	0.000531	0.000531	0.000398	0.000000
	CA	0.000664	0.001461	0.001328	0.000797	0.002257	0.005710	0.009560	0.003054	0.003718	0.005710	0.006374	0.002257	0.000266	0.002523	0.002125	0.000266
	CC	0.001726	0.005577	0.005710	0.001195	0.007303	0.014341	0.018855	0.006772	0.006241	0.018324	0.016996	0.007702	0.001062	0.012083	0.012349	0.001992
	CG	0.002257	0.011021	0.010490	0.003320	0.006108	0.013146	0.015801	0.006506	0.007038	0.014075	0.016465	0.005843	0.002257	0.013146	0.013942	0.003320
	CT	0.000266	0.000398	0.000266	0.000133	0.002125	0.002921	0.004515	0.000797	0.001195	0.000664	0.001062	0.000133	0.000266	0.001461	0.000797	0.000266
	GA	0.000929	0.002257	0.002656	0.001726	0.006108	0.008764	0.008233	0.007834	0.005843	0.009162	0.006506	0.003718	0.000929	0.003452	0.003054	0.001992
	GC	0.001859	0.006506	0.005179	0.001195	0.005975	0.014872	0.014606	0.005311	0.006905	0.014075	0.013810	0.004116	0.001062	0.011287	0.005843	0.001593
	GG	0.002390	0.007834	0.006108	0.003187	0.007967	0.007834	0.016067	0.006241	0.006639	0.008100	0.011419	0.005311	0.001328	0.010092	0.009826	0.002921
	GT	0.000664	0.000929	0.000929	0.000398	0.002390	0.002656	0.003984	0.002523	0.004382	0.005046	0.005444	0.003585	0.000531	0.001992	0.001726	0.001461
	TA	0.000133	0.000398	0.000531	0.000531	0.000266	0.000797	0.000664	0.000133	0.000398	0.000664	0.000531	0.000266	0.000000	0.000266	0.000266	0.000000
	TC	0.000797	0.004515	0.003452	0.001859	0.002390	0.012482	0.011287	0.003851	0.001992	0.009959	0.007834	0.002125	0.000531	0.011818	0.008498	0.001593
	TG	0.001726	0.007038	0.004647	0.001992	0.002257	0.009826	0.012349	0.002788	0.002390	0.008498	0.005843	0.003452	0.000929	0.011419	0.007702	0.001328
	TT	0.000133	0.000133	0.000133	0.000000	0.000266	0.000664	0.001062	0.000266	0.000531	0.000929	0.000664	0.000664	0.000266	0.000531	0.000398	0.000000
		AA	AC	AG	AT	CA	CC	CG	CT	GA	GC	GG	GT	TA	TC	TG	TT

C	AA	0.000708	0.001475	0.001298	0.000826	0.001298	0.001829	0.003245	0.001357	0.001475	0.002891	0.002891	0.001475	0.000354	0.002360	0.001357	0.001121
	AC	0.001003	0.004484	0.003245	0.002537	0.002360	0.003422	0.004071	0.002596	0.002655	0.004719	0.006017	0.003127	0.000472	0.004248	0.003481	0.001593
	AG	0.000767	0.003599	0.002891	0.001711	0.002065	0.003481	0.005309	0.001652	0.002419	0.005604	0.005545	0.002596	0.000354	0.004955	0.004719	0.001357
	AT	0.001003	0.003481	0.002301	0.002655	0.002242	0.002714	0.003953	0.003009	0.003009	0.003894	0.003894	0.002655	0.000354	0.002655	0.001947	0.001652
	CA	0.000826	0.002537	0.002419	0.001829	0.004896	0.005840	0.007256	0.004189	0.004071	0.006135	0.008731	0.003953	0.000531	0.003304	0.002596	0.001239
	CC	0.001239	0.004660	0.005014	0.002183	0.002891	0.003363	0.006961	0.003422	0.004366	0.007669	0.008672	0.004425	0.001180	0.005309	0.005840	0.002065
	CG	0.001888	0.005486	0.005899	0.002537	0.006135	0.007669	0.012920	0.005545	0.005663	0.012330	0.014099	0.005781	0.000708	0.007256	0.007256	0.002714
	CT	0.001357	0.003776	0.002832	0.002478	0.004955	0.005191	0.007551	0.004837	0.006312	0.006961	0.012271	0.005840	0.000472	0.002360	0.002124	0.001180
	GA	0.001888	0.003363	0.002183	0.001121	0.004425	0.003953	0.004543	0.003717	0.005309	0.006194	0.006607	0.004307	0.000177	0.003363	0.002419	0.001770
	GC	0.002360	0.007197	0.007551	0.004130	0.004601	0.006017	0.008259	0.006076	0.007905	0.012684	0.017521	0.006548	0.000885	0.008495	0.006902	0.003009
	GG	0.003127	0.005427	0.005073	0.003304	0.010914	0.009911	0.017934	0.009203	0.007138	0.011386	0.018819	0.008967	0.001003	0.005191	0.006076	0.003127
	GT	0.001534	0.003304	0.003304	0.002832	0.006017	0.004425	0.005840	0.004130	0.004601	0.005250	0.007197	0.004896	0.000649	0.003540	0.003540	0.001475
	TA	0.000472	0.000944	0.000590	0.000472	0.000531	0.000885	0.001475	0.000531	0.001239	0.001770	0.001416	0.000767	0.000118	0.000885	0.000295	0.000590
	TC	0.001593	0.004425	0.005840	0.003127	0.003304	0.003835	0.005899	0.002242	0.002773	0.006961	0.006666	0.003540	0.000177	0.006607	0.005781	0.002065
	TG	0.000767	0.003481	0.003304	0.001298	0.001652	0.004071	0.008554	0.002655	0.002242	0.006135	0.006961	0.002537	0.000295	0.007492	0.005899	0.001829
	TT	0.000826	0.002832	0.001357	0.001947	0.001652	0.002891	0.002655	0.002419	0.002596	0.003776	0.004543	0.002655	0.000236	0.003068	0.002537	0.002006
		AA	AC	AG	AT	CA	CC	CG	CT	GA	GC	GG	GT	TA	TC	TG	TT
G	AA	0.001255	0.001711	0.000912	0.000627	0.001141	0.001711	0.002680	0.001768	0.001825	0.001654	0.001939	0.001026	0.000627	0.001141	0.000969	0.000456
	AC	0.001882	0.004619	0.003136	0.002167	0.003193	0.006045	0.004676	0.002566	0.002908	0.007299	0.004562	0.004334	0.001255	0.003650	0.003878	0.001312
	AG	0.001312	0.003136	0.002965	0.001654	0.001255	0.004676	0.004163	0.001768	0.001939	0.006216	0.003022	0.002281	0.001312	0.003764	0.003992	0.001141
	AT	0.001996	0.002281	0.001198	0.001654	0.001198	0.003250	0.003365	0.001654	0.001825	0.004277	0.002623	0.002965	0.000570	0.001711	0.001654	0.000513
	CA	0.001426	0.002737	0.001711	0.001654	0.003650	0.005474	0.006672	0.005018	0.002566	0.004505	0.006387	0.004961	0.000741	0.002623	0.002395	0.000969
	CC	0.003365	0.004961	0.005589	0.003193	0.004220	0.010036	0.011861	0.004733	0.004847	0.014599	0.010265	0.007698	0.001141	0.004733	0.007870	0.003022
	CG	0.003193	0.006216	0.004277	0.003422	0.006729	0.020244	0.018248	0.005703	0.004106	0.013173	0.011177	0.006273	0.002110	0.007584	0.011804	0.002794
	CT	0.001597	0.004049	0.002053	0.003022	0.002737	0.004562	0.007014	0.007128	0.003593	0.007185	0.006102	0.004733	0.000684	0.001996	0.002224	0.001654
	GA	0.001768	0.002338	0.001768	0.001768	0.003479	0.003878	0.004505	0.003650	0.004106	0.004334	0.004277	0.003365	0.000855	0.002509	0.002110	0.001312
	GC	0.003307	0.004505	0.004277	0.004676	0.005531	0.009124	0.012432	0.007014	0.005931	0.017336	0.012318	0.008269	0.001255	0.006729	0.007413	0.003650
	GG	0.001939	0.003307	0.002965	0.003136	0.006045	0.012203	0.013572	0.004448	0.003821	0.009295	0.006216	0.006159	0.000969	0.005817	0.008839	0.001939
	GT	0.001882	0.003935	0.004163	0.003536	0.004049	0.006615	0.005589	0.005018	0.004733	0.008611	0.006729	0.005646	0.001483	0.003536	0.002509	0.001882
	TA	0.000171	0.001141	0.000912	0.000684	0.000342	0.001026	0.002053	0.000342	0.000456	0.001255	0.000912	0.000798	0.000342	0.000513	0.000684	0.000456
	TC	0.002851	0.003878	0.005474	0.003878	0.002167	0.006273	0.007641	0.003022	0.003479	0.011975	0.007527	0.004049	0.001540	0.006330	0.005246	0.002623
	TG	0.001939	0.003821	0.003593	0.002224	0.002395	0.009238	0.008953	0.002851	0.001654	0.007299	0.005246	0.002794	0.001026	0.005760	0.006900	0.001882
	TT	0.001026	0.001198	0.001369	0.000912	0.000684	0.001996	0.001597	0.001255	0.001255	0.003307	0.001483	0.002053	0.000855	0.001711	0.001141	0.000912
T		AA	AC	AG	AT	CA	CC	CG	CT	GA	GC	GG	GT	TA	TC	TG	TT
	AA	0.000115	0.000345	0.000806	0.000115	0.001612	0.002302	0.001842	0.001151	0.000806	0.001381	0.002878	0.000691	0.000000	0.001151	0.000345	0.000691
	AC	0.000115	0.001727	0.000230	0.000115	0.002533	0.007482	0.007943	0.001151	0.003223	0.004489	0.004029	0.001036	0.000345	0.004489	0.003108	0.001381
	AG	0.000230	0.002417	0.001612	0.000921	0.001727	0.006101	0.004835	0.001266	0.001036	0.005295	0.005065	0.000691	0.000000	0.004029	0.001842	0.000345
	AT	0.000000	0.000345	0.000000	0.000230	0.001612	0.002648	0.002417	0.001727	0.000691	0.000921	0.000691	0.000921	0.000460	0.001957	0.000576	0.001151
	CA	0.000691	0.000691	0.001151	0.000345	0.007598	0.010475	0.011281	0.005295	0.006792	0.007022	0.009555	0.003799	0.000115	0.001957	0.001957	0.001036
	CC	0.000460	0.002993	0.001036	0.000806	0.007022	0.013699	0.023023	0.003914	0.007713	0.013929	0.015310	0.005871	0.000806	0.008634	0.006562	0.001266
	CG	0.000806	0.002763	0.005756	0.000921	0.007022	0.013468	0.016576	0.006677	0.010130	0.013238	0.019224	0.006331	0.001151	0.011166	0.007252	0.001957
	CT	0.000230	0.000230	0.000806	0.000230	0.005295	0.006101	0.010360	0.006677	0.003108	0.005180	0.008173	0.003569	0.000576	0.002763	0.002187	0.001036
	GA	0.000806	0.002417	0.001036	0.000806	0.008173	0.010245	0.011051	0.005410	0.006101	0.009785	0.010245	0.004029	0.000460	0.004489	0.000806	0.001957
	GC	0.000576	0.002417	0.000806	0.000691	0.009900	0.013238	0.019915	0.005180	0.007943	0.016461	0.018188	0.004835	0.000115	0.008634	0.005641	0.002878
	GG	0.001036	0.003453	0.004374	0.002417	0.011051	0.010706	0.016346	0.008518	0.013353	0.018303	0.021757	0.010936	0.000576	0.006562	0.006331	0.001957
	GT	0.000115	0.000806	0.000806	0.000345	0.004835	0.007598	0.009785	0.005065	0.003684	0.004029	0.005986	0.004489	0.000460	0.002763	0.001381	0.000806
	TA	0.000000	0.000921	0.000576	0.000115	0.000921	0.000576	0.001842	0.000691	0.000460	0.001151	0.000576	0.000576	0.000115	0.000806	0.000115	0.000460
	TC	0.000000	0.001842	0.000576	0.000806	0.001266	0.008634	0.010130	0.002417	0.002993	0.008288	0.005871	0.001957	0.000230	0.006446	0.004605	0.000921
	TG	0.000576	0.001612	0.004259	0.000691	0.001842	0.009670	0.004605	0.001727	0.002302	0.006101	0.005295	0.001381	0.000345	0.005641	0.002878	0.001151
	TT	0.000000	0.000576	0.000806	0.000115	0.001957	0.002417	0.003684	0.001381	0.001727	0.001151	0.001496	0.000576	0.000000	0.002072	0.000806	0.001266

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