

Electronic Supplementary Information 9

Non-identical Electronic Characters of the Internucleotidic Phosphates in RNA Modulate the Chemical Reactivity of the Phosphodiester Bonds

Jharna Barman¹, Sandipta Acharya¹, Chuanzheng Zhou¹, Subhrangsu Chatterjee¹, Åke Engström², and Jyoti Chattopadhyaya^{1*}

¹Department of Bioorganic Chemistry, Box 581, Biomedical Center, Uppsala University, S-751 23 Uppsala, Sweden

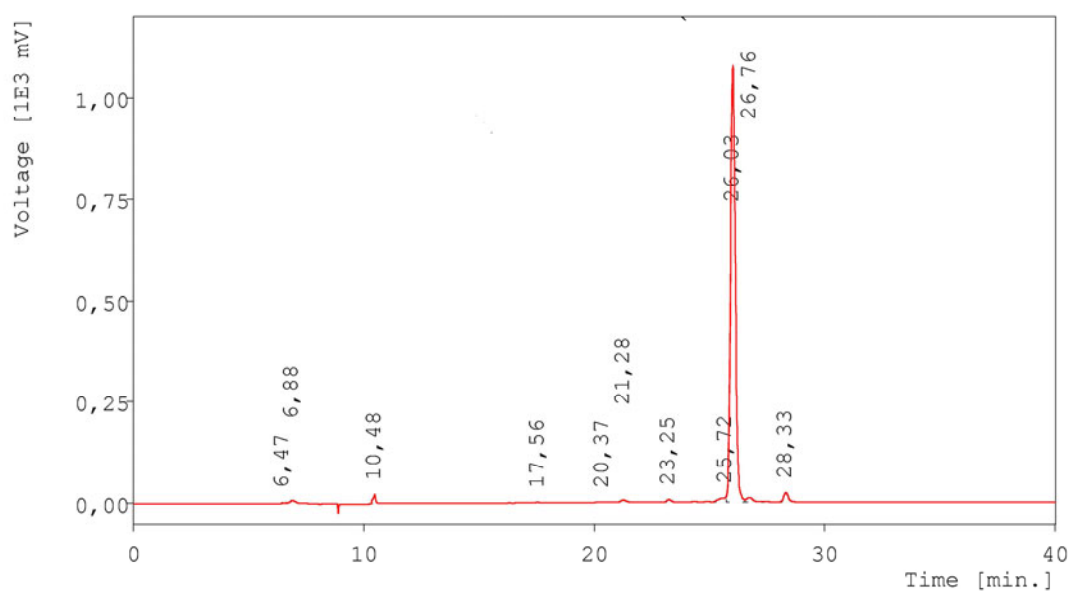
²Department of Medical Biochemistry and Microbiology, Box 582, Biomedical Center, Uppsala University, S-751 23 Uppsala, Sweden

jyoti@boc.uu.se

Table of Content:

Figure S15E. Panels (e1) – (e7) show the RP-Hplc and SMART™ RP-Hplc profiles at ½, 2, 3, 4, 8, 15, 27 of alkali digestion of N^{1-Me}-G containing heptamer . 5'-r(CAAG^{Me}AAC)-3' (5c). **p. S2–S8**

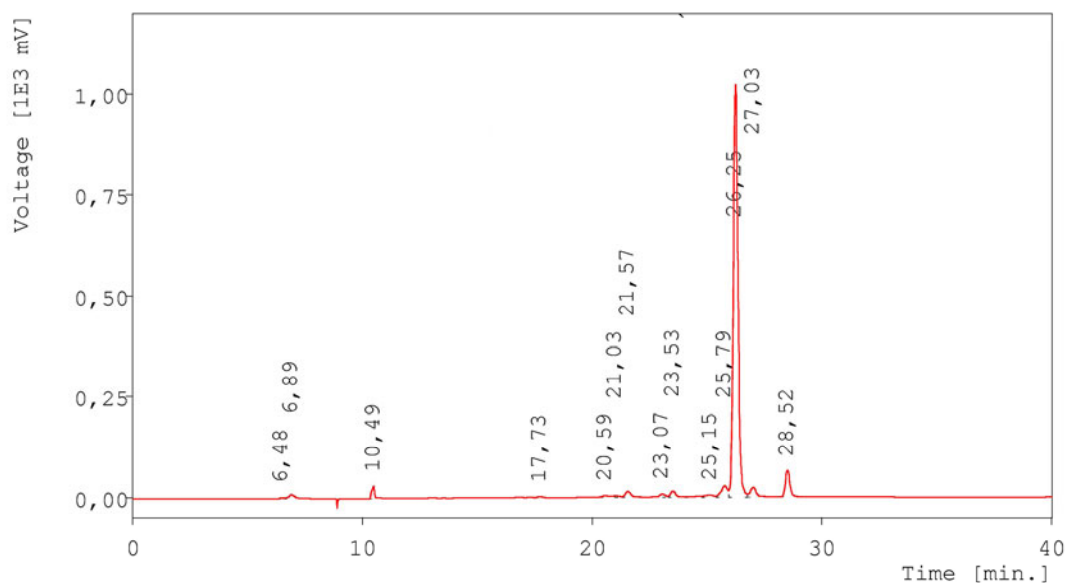
Figure S15E



Result Table - Calculation Method Uncal

Peak No.	Reten. time	Area [mV.s]	Height [mV]	W05 [min.]	Area [%]	Height [%]
1	6,467	17,4100	2,451	0,133	0,102	0,209
2	6,880	153,5195	7,784	0,273	0,896	0,665
3	10,480	219,6231	22,899	0,133	1,281	1,957
4	17,560	20,5576	1,486	0,227	0,120	0,127
5	20,367	44,8887	1,119	0,813	0,262	0,096
6	21,280	91,3243	5,359	0,260	0,533	0,458
7	23,253	80,1364	6,145	0,207	0,468	0,525
8	25,720	209,0391	10,584	0,360	1,220	0,904
9	26,027	15752,9076	1077,694	0,233	91,904	92,099
10	26,760	227,1807	11,104	0,333	1,325	0,949
11	28,333	323,9689	23,521	0,213	1,889	2,011
-	Total	17140,5561	1170,146			

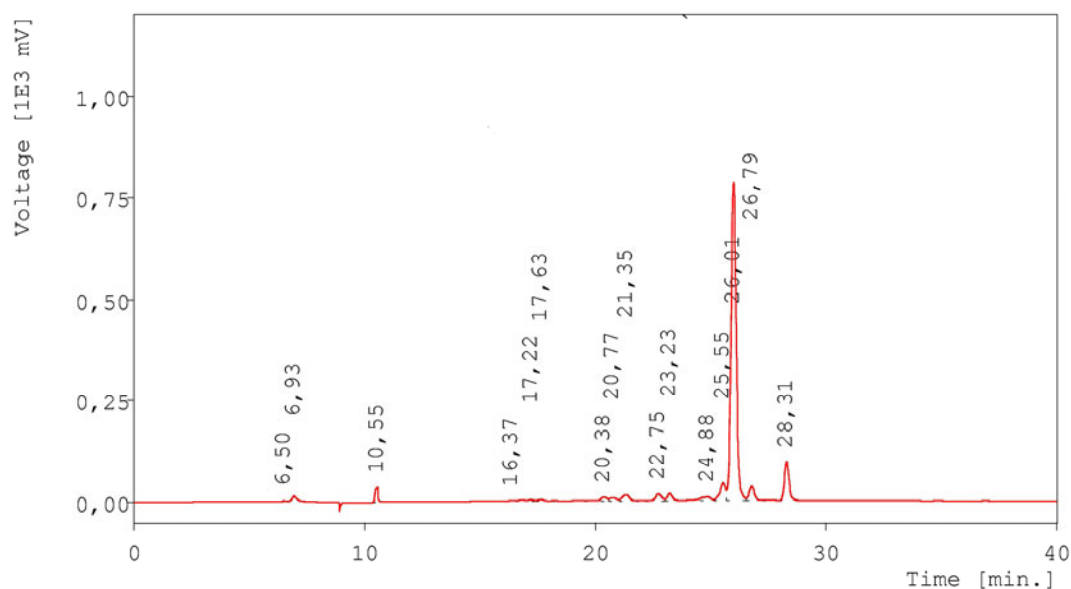
Figure S15(e1): Hplc analysis of alkaline Hydrolysis products of **5'-r(CAAG^{Me}AAC)-3' (5c)** [after digestion for **0.5h** at pH 12.5 using 0.03N NaOH/ 20°C, followed by quenching with 0.03 N aq. acetic acid]. For Hplc conditions see the experimental section in the text.



Result Table - Calculation Method Uncal

Peak No.	Reten. time	Area [mV.s]	Height [mV]	W05 [min.]	Area [%]	Height [%]
1	6,480	18,3741	2,399	0,147	0,101	0,194
2	6,893	174,6511	9,935	0,253	0,962	0,802
3	10,493	294,5216	31,358	0,147	1,623	2,531
4	17,727	37,0578	2,479	0,247	0,204	0,200
5	20,587	168,4972	4,299	0,573	0,928	0,347
6	21,027	68,1590	4,382	0,313	0,376	0,354
7	21,567	277,5667	14,821	0,260	1,529	1,196
8	23,067	165,8893	7,950	0,293	0,914	0,642
9	23,527	256,4250	15,621	0,240	1,413	1,261
10	25,153	216,4507	5,496	0,480	1,193	0,444
11	25,787	518,2750	28,235	0,320	2,855	2,279
12	26,253	14585,4201	1023,558	0,227	80,359	82,613
13	27,027	482,5125	24,373	0,273	2,658	1,967
14	28,520	886,6020	64,074	0,213	4,885	5,170
-	Total	18150,4021	1238,978			

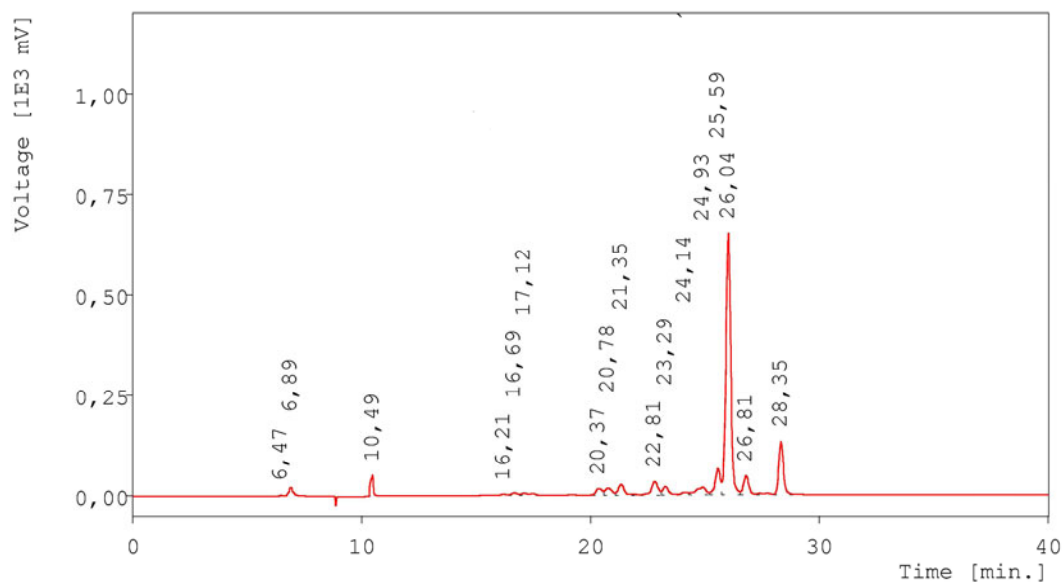
Figure S15(e2): Hplc analysis of alkaline Hydrolysis products of 5'-r(CAAG^{Me}AAC)-3' (**5c**) [after digestion for **2h** at pH 12.5 using 0.03N NaOH/ 20°C, followed by quenching with 0.03 N aq. acetic acid]. For Hplc conditions see the experimental section in the text.



Result Table - Calculation Method Uncal

Peak No.	Reten. time	Area [mV.s]	Height [mV]	W05 [min.]	Area [%]	Height [%]
1	6,500	20,4887	2,570	0,160	0,117	0,233
2	6,927	226,6300	13,902	0,213	1,290	1,261
3	10,553	364,6884	37,452	0,167	2,076	3,397
4	16,367	17,9555	1,190	0,273	0,102	0,108
5	17,220	121,4162	3,621	0,333	0,691	0,328
6	17,633	93,4011	3,942	0,293	0,532	0,357
7	20,380	210,8550	9,371	0,353	1,200	0,850
8	20,767	166,3817	8,357	0,373	0,947	0,758
9	21,353	339,0305	14,867	0,360	1,930	1,348
10	22,747	316,7098	16,924	0,293	1,803	1,535
11	23,233	302,2008	17,938	0,247	1,721	1,627
12	24,880	363,3199	10,052	0,513	2,068	0,912
13	25,553	728,4894	43,722	0,280	4,147	3,965
14	26,007	12302,8655	787,281	0,247	70,043	71,399
15	26,793	636,4516	35,593	0,247	3,623	3,228
16	28,313	1353,7700	95,861	0,220	7,710	8,694
-	Total	17564,6541	1102,643			

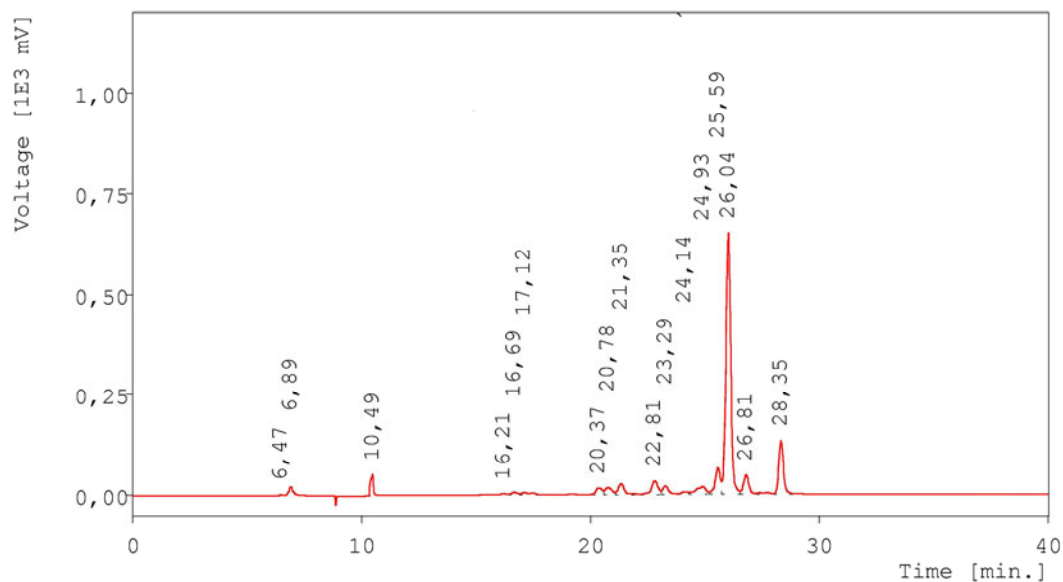
Figure S15(e3): Hplc analysis of alkaline Hydrolysis products of **5'-r(CAAG^{Me}AAC)-3' (5c)** [after digestion for **3h** at pH 12.5 using 0.03N NaOH/ 20°C, followed by quenching with 0.03 N aq. acetic acid]. For Hplc conditions see the experimental section in the text.



Result Table - Calculation Method Uncal

Peak No.	Reten. time	Area [mV.s]	Height [mV]	W05 [min.]	Area [%]	Height [%]
1	6,467	21,3058	2,556	0,160	0,120	0,226
2	6,893	314,4433	21,782	0,187	1,766	1,924
3	10,487	502,2609	53,217	0,160	2,820	4,701
4	16,213	47,0681	2,818	0,320	0,264	0,249
5	16,687	117,8957	6,470	0,293	0,662	0,572
6	17,120	180,7842	5,548	0,673	1,015	0,490
7	20,373	364,3346	16,781	0,353	2,046	1,482
8	20,780	371,7501	17,557	0,393	2,087	1,551
9	21,347	534,3639	26,909	0,280	3,001	2,377
10	22,813	676,6160	34,027	0,300	3,799	3,006
11	23,287	390,0521	21,391	0,273	2,190	1,890
12	24,140	125,9887	6,189	0,347	0,707	0,547
13	24,927	592,9565	19,070	0,487	3,330	1,685
14	25,587	1040,1467	65,679	0,273	5,841	5,802
15	26,040	9698,1696	651,251	0,233	54,458	57,531
16	26,813	915,4356	47,637	0,253	5,140	4,208
17	28,347	1915,0350	133,122	0,227	10,754	11,759
-	Total	17808,6069	1132,004			

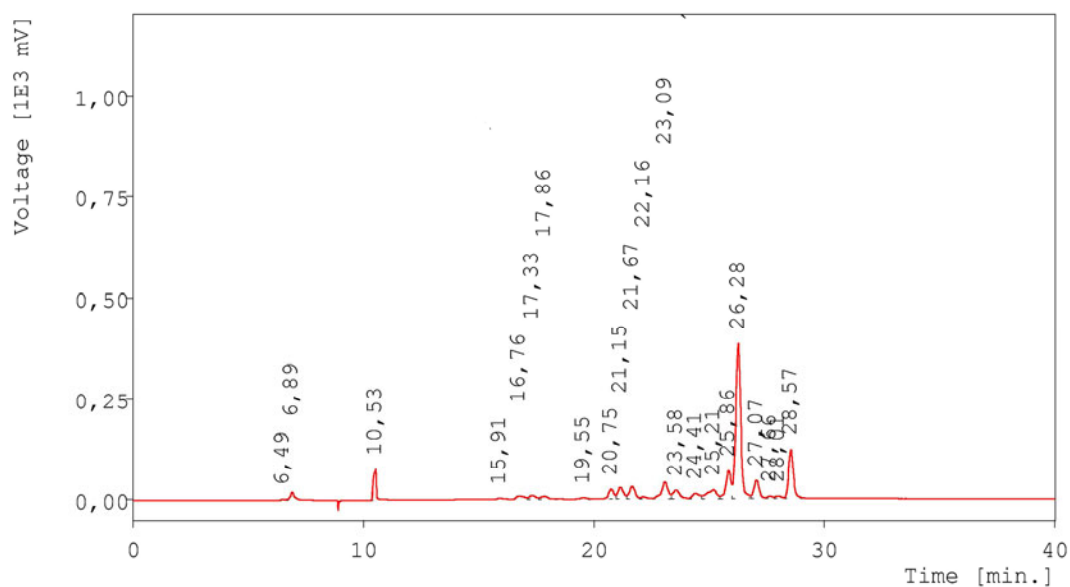
Figure S15(e4): Hplc analysis of alkaline Hydrolysis products of **5'-r(CAAG^{Me}AAC)-3' (5c)** [after digestion for **4h** at pH 12.5 using 0.03N NaOH/ 20°C, followed by quenching with 0.03 N aq. acetic acid]. For Hplc conditions see the experimental section in the text.



Result Table - Calculation Method Uncal

Peak No.	Reten. time	Area [mV.s]	Height [mV]	W05 [min.]	Area [%]	Height [%]
1	6,467	21,3058	2,556	0,160	0,120	0,226
2	6,893	314,4433	21,782	0,187	1,766	1,924
3	10,487	502,2609	53,217	0,160	2,820	4,701
4	16,213	47,0681	2,818	0,320	0,264	0,249
5	16,687	117,8957	6,470	0,293	0,662	0,572
6	17,120	180,7842	5,548	0,673	1,015	0,490
7	20,373	364,3346	16,781	0,353	2,046	1,482
8	20,780	371,7501	17,557	0,393	2,087	1,551
9	21,347	534,3639	26,909	0,280	3,001	2,377
10	22,813	676,6160	34,027	0,300	3,799	3,006
11	23,287	390,0521	21,391	0,273	2,190	1,890
12	24,140	125,9887	6,189	0,347	0,707	0,547
13	24,927	592,9565	19,070	0,487	3,330	1,685
14	25,587	1040,1467	65,679	0,273	5,841	5,802
15	26,040	9698,1696	651,251	0,233	54,458	57,531
16	26,813	915,4356	47,637	0,253	5,140	4,208
17	28,347	1915,0350	133,122	0,227	10,754	11,759
-	Total	17808,6069	1132,004			

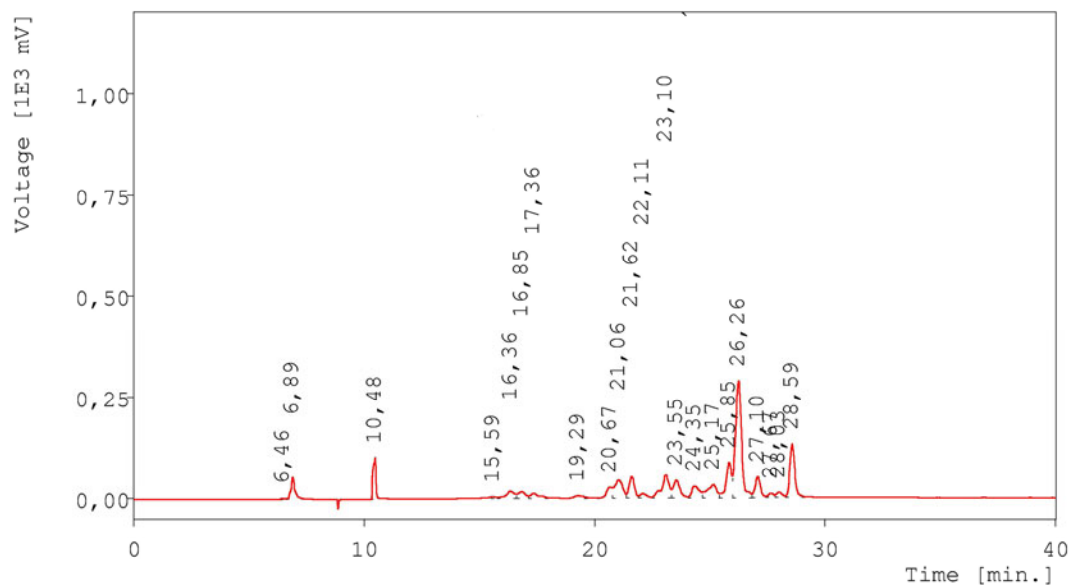
Figure S15(e5): Hplc analysis of alkaline Hydrolysis products of **5'-r(CAAG^{Me}AAC)-3' (5c)** [after digestion for **8h** at pH 12.5 using 0.03N NaOH/ 20°C, followed by quenching with 0.03 N aq. acetic acid]. For Hplc conditions see the experimental section in the text.



Result Table - Calculation Method Uncal

Peak No.	Reten. time	Area [mV.s]	Height [mV]	W05 [min.]	Area [%]	Height [%]
1	6,487	20,5843	2,474	0,160	0,135	0,258
2	6,887	262,4664	20,070	0,167	1,716	2,094
3	10,527	727,6406	78,881	0,160	4,758	8,230
4	15,907	60,1852	2,684	0,373	0,394	0,280
5	16,760	198,8047	8,218	0,447	1,300	0,857
6	17,327	190,1064	9,562	0,340	1,243	0,998
7	17,860	183,8324	7,312	0,387	1,202	0,763
8	19,553	74,5351	3,152	0,360	0,487	0,329
9	20,753	419,4360	24,711	0,267	2,742	2,578
10	21,153	512,7959	29,602	0,287	3,353	3,088
11	21,673	553,9720	31,513	0,280	3,622	3,288
12	22,160	100,9891	5,237	0,313	0,660	0,546
13	23,093	835,4073	42,668	0,273	5,462	4,452
14	23,580	466,3115	22,176	0,347	3,049	2,314
15	24,413	276,7065	13,126	0,407	1,809	1,369
16	25,207	653,4985	22,352	0,487	4,273	2,332
17	25,860	1079,8025	69,866	0,273	7,060	7,289
18	26,280	5921,5007	384,602	0,233	38,717	40,126
19	27,073	749,8046	45,780	0,253	4,903	4,776
20	27,660	93,3422	5,723	0,307	0,610	0,597
21	28,007	116,3273	6,374	0,347	0,761	0,665
22	28,567	1796,1304	122,398	0,227	11,744	12,771
-	Total	15294,1797	958,482			

Figure S15(e6): Hplc analysis of alkaline Hydrolysis products of **5'-r(CAAG^{Me}AAC)-3' (5c)** [after digestion for **15h** at pH 12.5 using 0.03N NaOH/ 20°C, followed by quenching with 0.03 N aq. acetic acid]. For Hplc conditions see the experimental section in the text.



Result Table - Calculation Method Uncal

Peak No.	Reten. time	Area [mV.s]	Height [mV]	W05 [min.]	Area [%]	Height [%]
1	6,460	20,7770	2,479	0,167	0,106	0,226
2	6,887	660,8820	53,489	0,153	3,373	4,882
3	10,480	961,6766	103,811	0,167	4,908	9,475
4	15,593	123,6421	4,476	0,393	0,631	0,408
5	16,360	454,9432	17,729	0,413	2,322	1,618
6	16,847	388,7098	16,506	0,440	1,984	1,506
7	17,360	373,6830	12,611	0,340	1,907	1,151
8	19,293	201,1209	5,917	0,493	1,026	0,540
9	20,673	459,7867	27,024	0,273	2,347	2,466
10	21,060	1088,5924	44,551	0,473	5,556	4,066
11	21,620	869,3326	52,155	0,267	4,437	4,760
12	22,107	221,4723	10,797	0,340	1,130	0,985
13	23,100	1280,7926	56,352	0,300	6,537	5,143
14	23,553	881,2704	43,305	0,340	4,498	3,952
15	24,353	665,0627	28,969	0,427	3,394	2,644
16	25,173	932,0762	32,010	0,493	4,757	2,921
17	25,853	1377,3713	87,011	0,267	7,030	7,941
18	26,260	5379,8707	289,338	0,287	27,457	26,407
19	27,100	836,1280	51,136	0,253	4,267	4,667
20	27,673	169,3610	10,541	0,293	0,864	0,962
21	28,027	239,2025	13,062	0,327	1,221	1,192
22	28,587	2008,0836	132,401	0,227	10,248	12,088
-	Total	19593,8373	1095,669			

Figure S15(e7): Hplc analysis of alkaline Hydrolysis products of **5'-r(CAAG^{Me}AAC)-3' (5c)** [after digestion for **27h** at pH 12.5 using 0.03N NaOH/ 20°C, followed by quenching with 0.03 N aq. acetic acid]. For Hplc conditions see the experimental section in the text.