SUPPORTING INFORMATION

List of Figures and Tables

Figure S1:

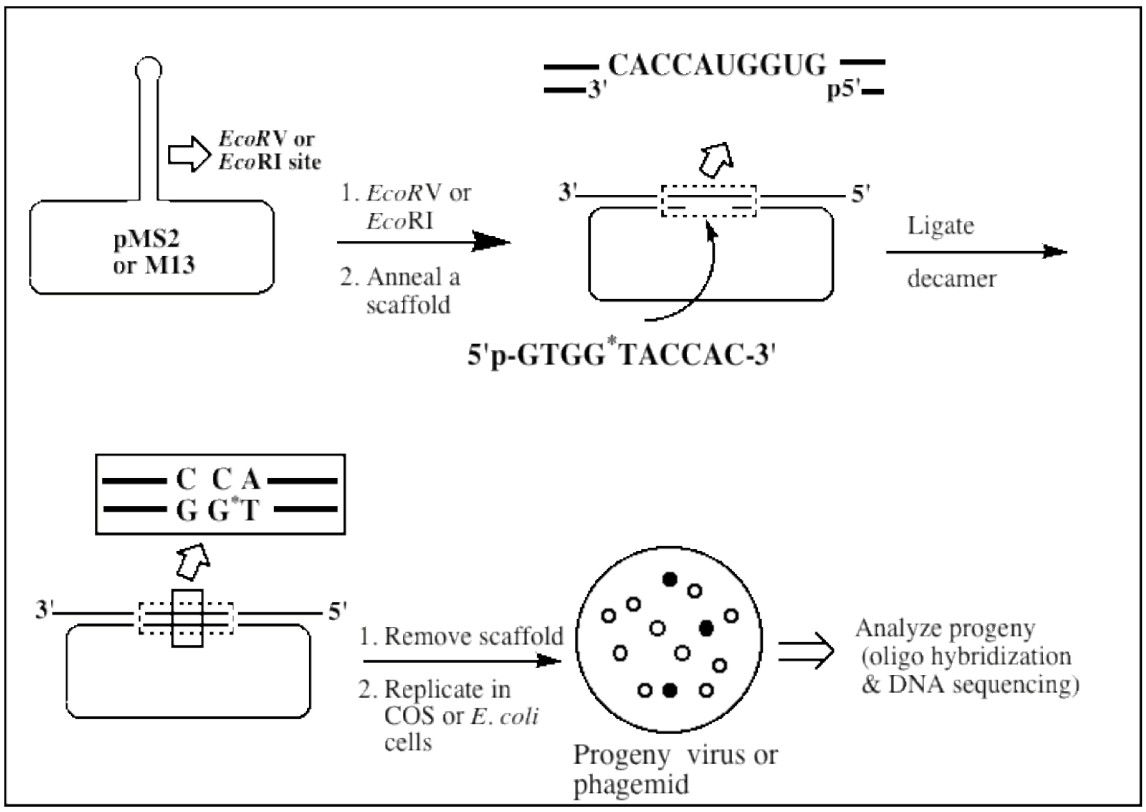


Fig. S1: A general scheme of construction, replication and analysis of the control and modified vector.

Figure S2: HPLC Profile and PAGE analysis of the 2,7-DAM-dG-N7 adduct (**8**)-containing decamer after heating at 90° C for 1, 2,and 3 min (chromatograms 3, 4, 5, respectively, on the right, and lanes 3, 4,and 5, respectively, in the autoradiogram on the left).

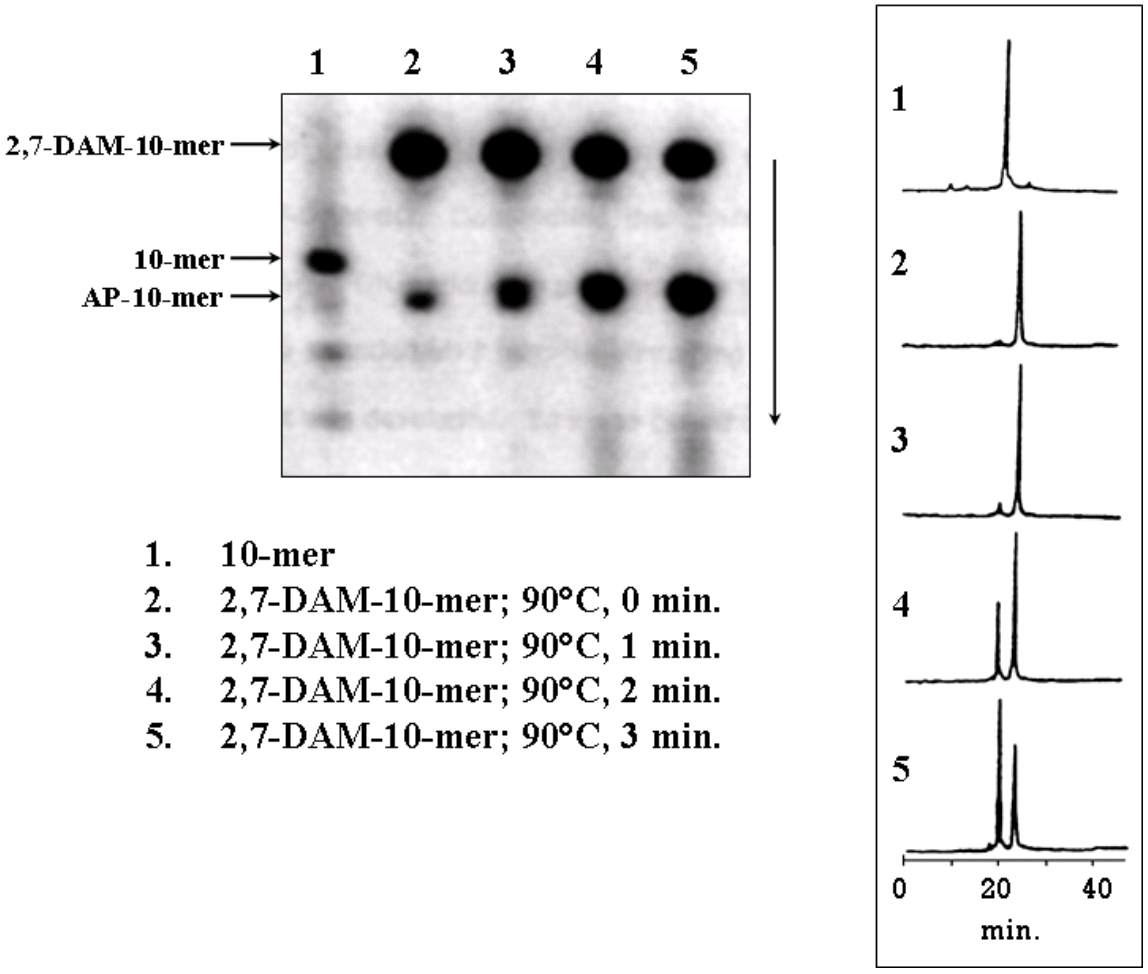
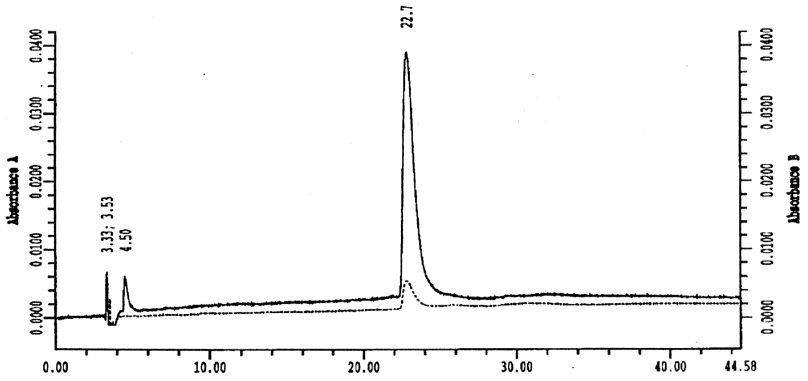
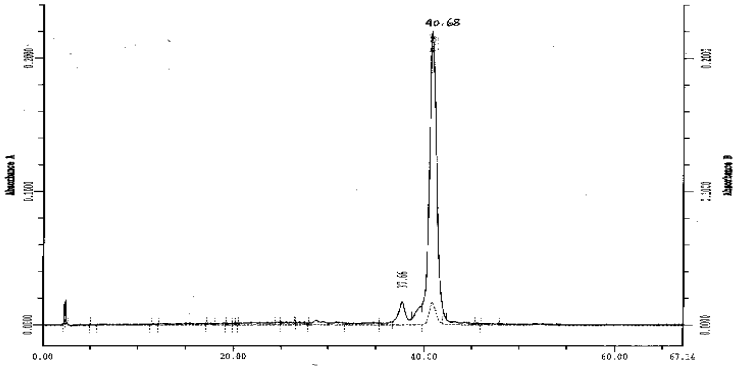


Fig. S3: HPLC tracings of ***10-13*** (purity). The HPLC were run on a C18 column, 100 Å, using a gradient of 5%-60% buffer B (70% 30 mM potassium phosphate and 30 % acetonitrile, pH 5.5) over 75 minutes. Buffer A has 100 % 30 mM potassium phosphate, pH 5.5, at 1ml/min flow rate.

HPLC trace MC-adducted (**7**) oligo ***10***



HPLC trace 2,7-DAM-adducted (**8**) oligo ***12***



HPLC trace 2,7-DAM-adducted (**8**) oligo ***13***

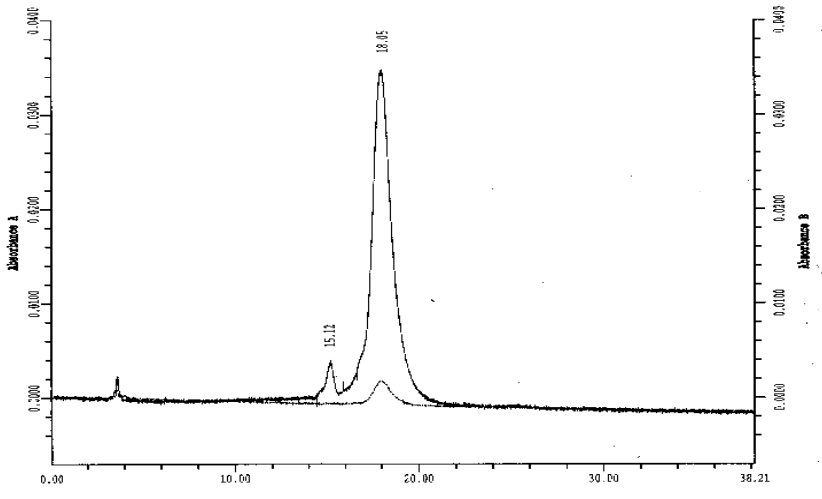


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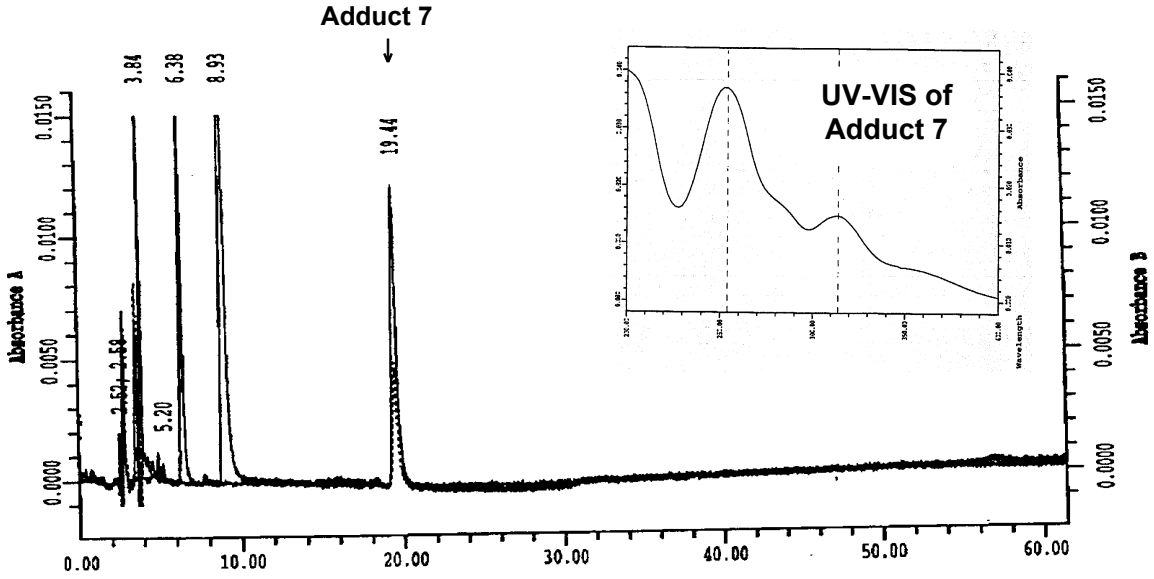
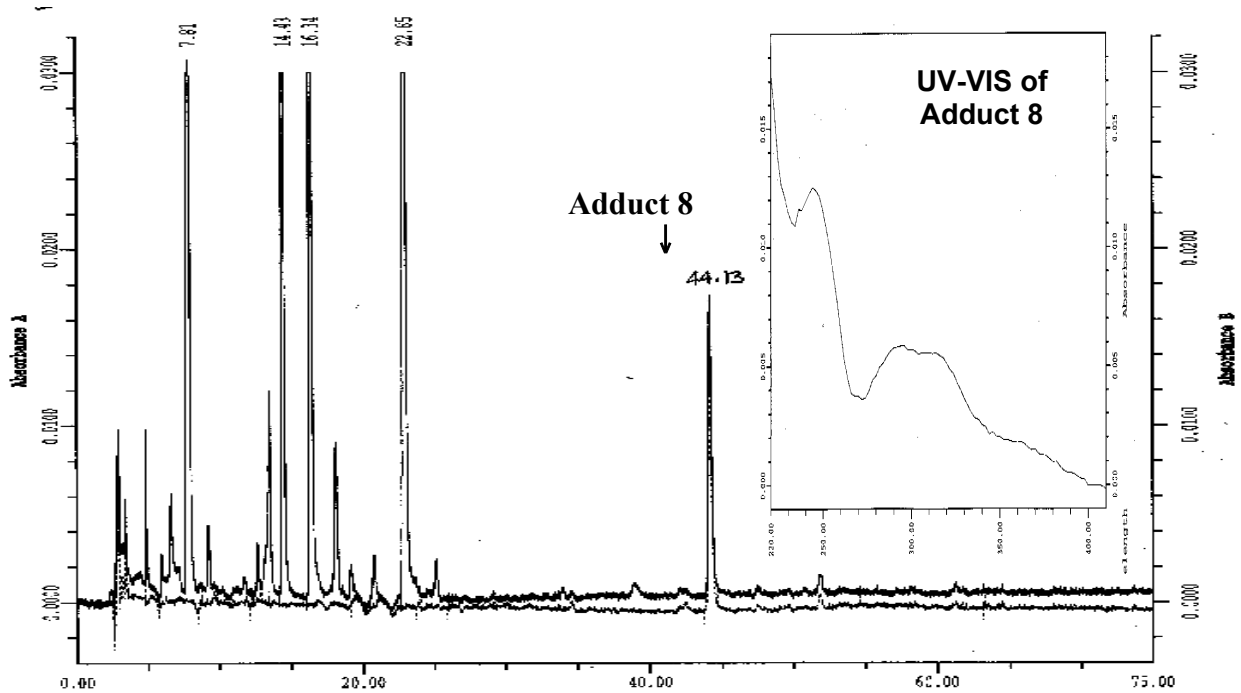
Fig. S4: HPLC of the [SVD + alkaline phosphatase] digests of ***10****-13* (shows adduct **7** or **8**).

a) HPLC of the digest of ***10.***



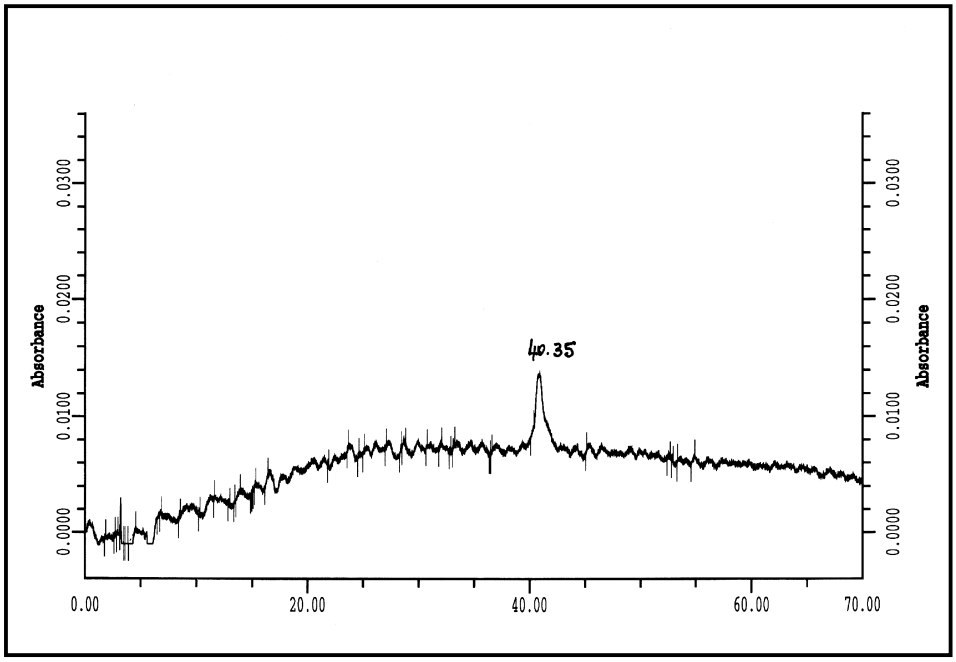
b) HPLC of the digest of ***12*** and ***13.***



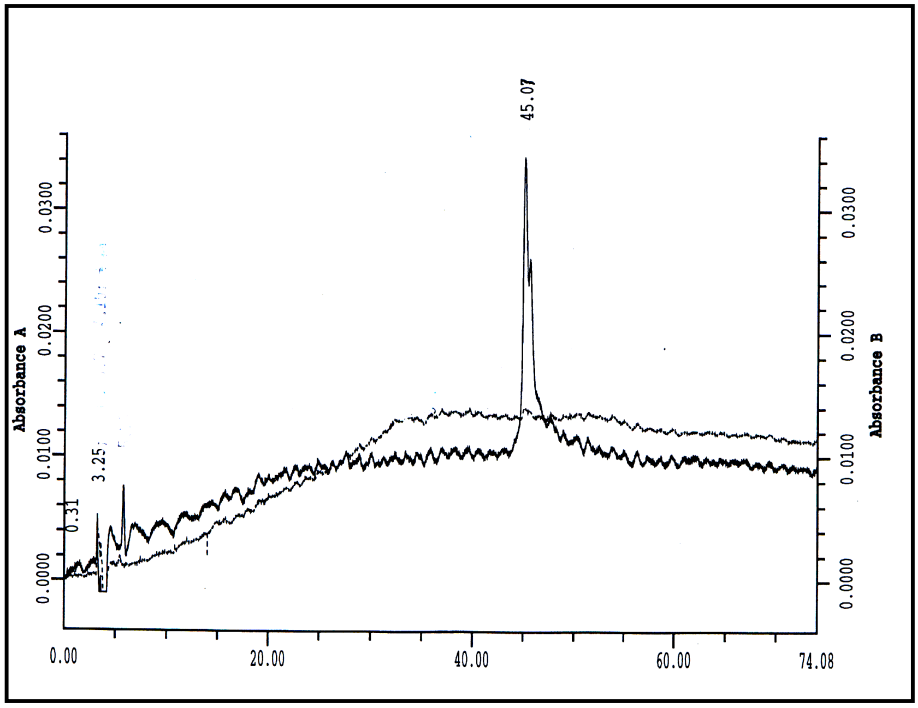
Method: Adducted oligonucleotides ***10-13*** were digested with snake venom phosphodiesterase (SVD) and alkaline phosphatase and subjected to HPLC analysis of nucleoside pattern. In the case of MC-adduct ***7*** a gradient of 20%-60% buffer B (30% acetonitrile in 30 mM phosphate buffer, pH 5.5) was run over 60 minutes on a C18 column, 100 Å, 1ml/min flow rate. In the case of 2,7-DAM-adduct ***8***, the digested oligonucleotides ***12-13*** were depurinated at 90 ^{o}C, 1 hour and 30 minutes after which the nucleoside pattern was analyzed on a C18 column, 100 Å at 1ml/min flow rate using the same buffer system as for MC-adduct 7 but a gradient of 5%-60% buffer B over 75 min.

Fig. S5. HPLC tracings of adducted templates ***14*** and ***15*** as tests for their purity (the HPLC trace for template ***16*** is not available).

HPLC trace of template 15:



HPLC Trace of template ***14:***



Method: Adducted templates were run on a C4 column, 300 Å, using a gradient of 20%-60% buffer B (30% acetonitrile into 30 mM potassium phosphate, pH 5.%), at 1 ml/min over 60 minutes. Buffer A has 100% 30 mM potassium phosphate buffer, pH 5.5.

Fig. S6: PAGE assay of purity of ***14***, ***15***, ***16***.

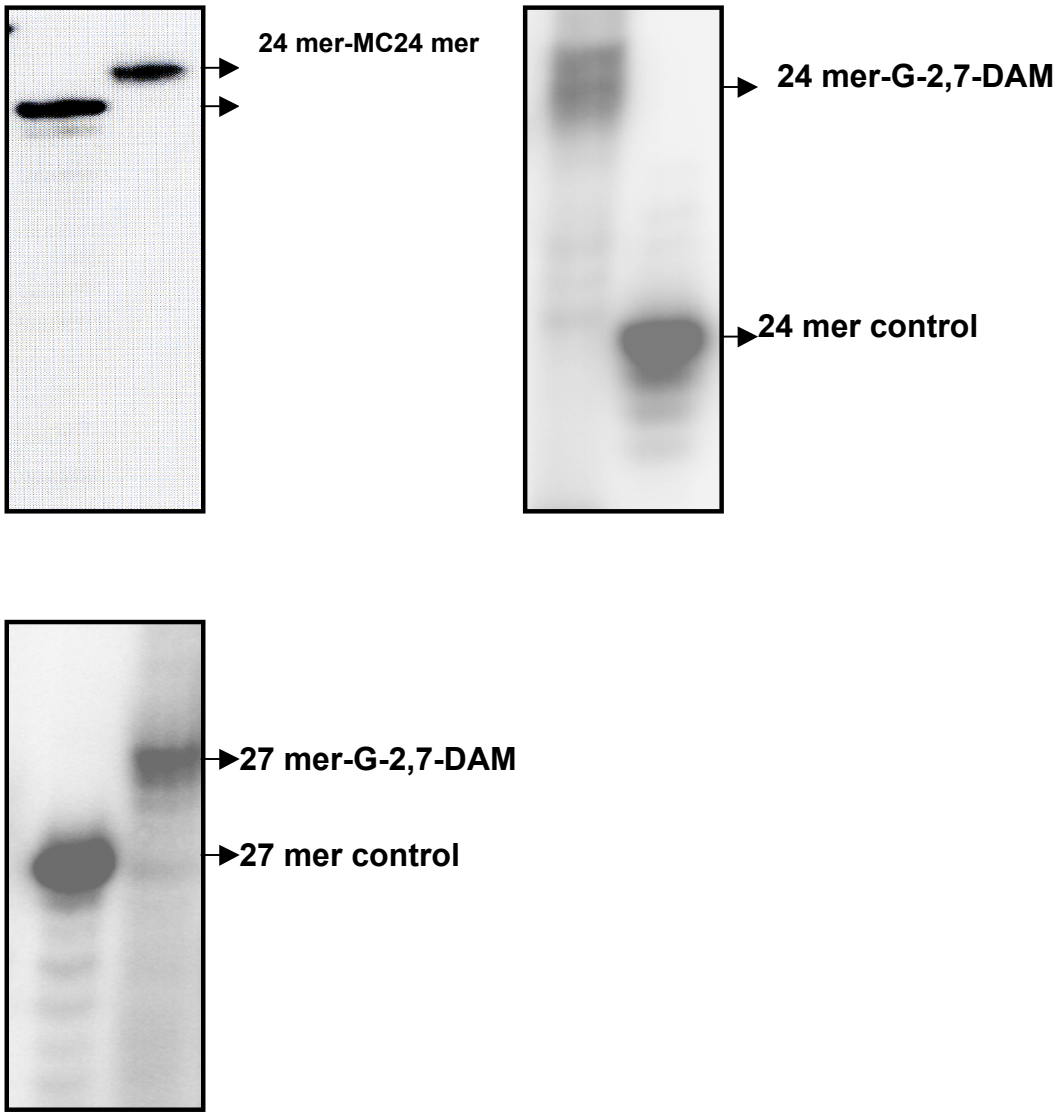


Fig. S6: The purity of adducted templates ***14-16*** was tested by running ^{32}P-labeled aliquots of each template on a 18% sequencing gel, at 2800 V constant voltage for 3 hours and half. The gel was exposed and processed using a 445SI PhosphorImager and ImageQuant 5.2 software. The abbreviation 24-mer MC24-mer specifies MC adduct **7** in oligonucleotide **14** and 24-mer G-2,7-DAM and 27-mer G-2,7-DAM specify adduct **8** in the oligonucleotides **15** and **16**, respectively.

Figure S7a. PAGE analysis of primer extension on 2,7-DAM-adducted (**8**) template of complex ***19*** by Klenow (exo-) DNA polymerase at 37°.

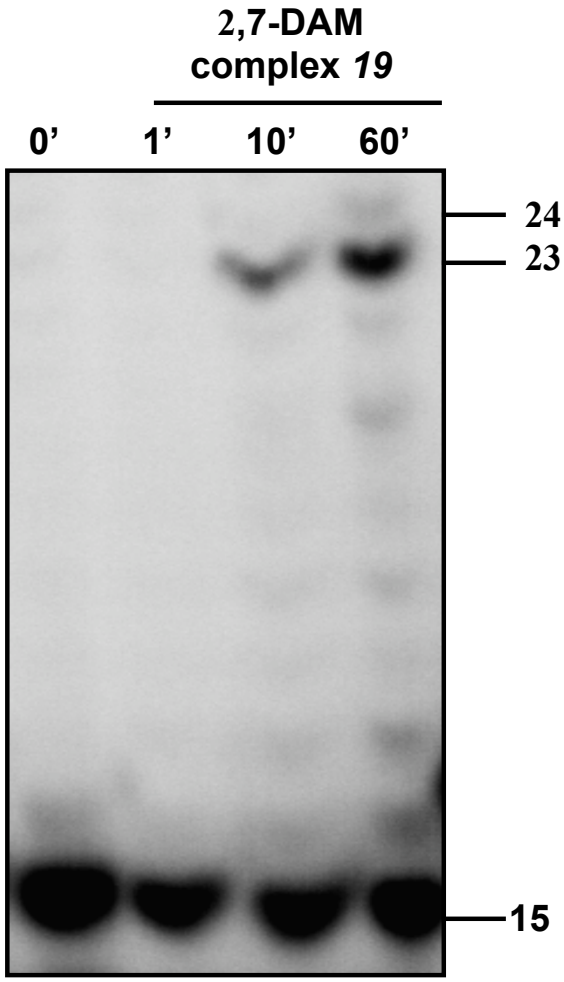


Figure S7b: PAGE analysis of primer extension on 2,7-DAM-adducted (**8**) template of complex ***18*** by T7 (exo-) DNA polymerase.

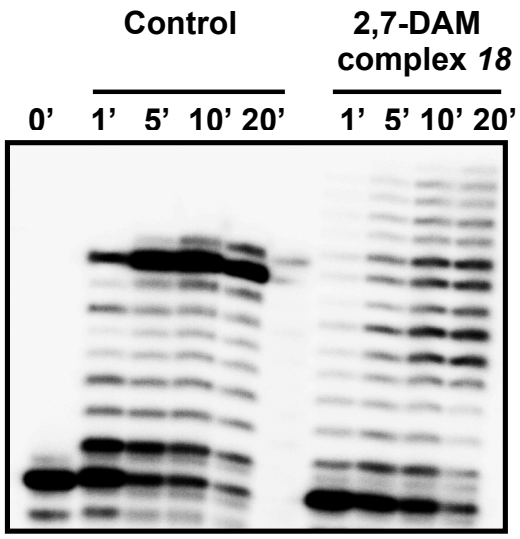


Figure S8: PAGE analysis of primer extension on 2,7-DAM-adducted (**8)** template of complex ***19*** by T7 exo$^-$, Klenow exo$^-$ and eta DNA polymerases. The translesion synthesis (TLS) were run at 250 μM final concentration of each dNTP, 89 nM final duplex DNA concentration and a substrate to enzyme (S:E) ratio of 3:1, 60 min incubation time.

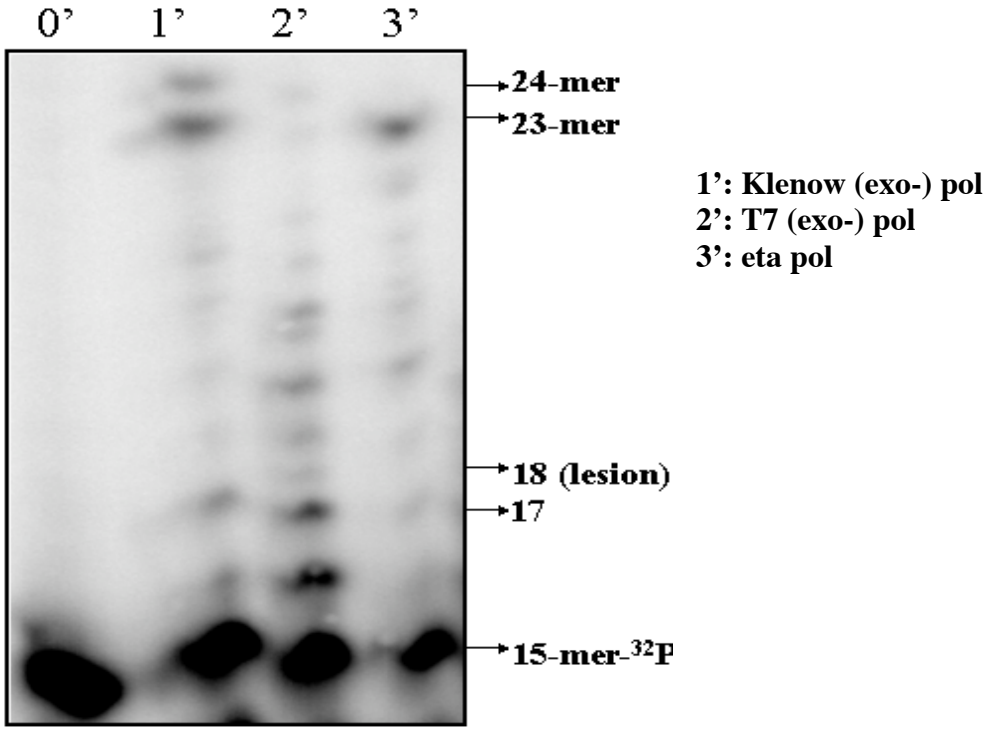


Table S1: Mass of oligonucleotides determined by ESIMS.

oligonucleotide	Theoretically predicted MW (Da)	Experimentally determined MW (Da)
5'-ACACGTCAT	2683	2682.13
5'- ACACG*(MC)TCAT (**10**)	2985	2984.48
5'-CTGGTAATTTAC	3634	3634.90
5'-CTGG*(2,7-DAM)TAATTTAC (**12**)	3877	3877.92
5'-CTAGTGGTACC	3636.5	3635.65
5'-CTAGTGG*(2,7-DAM)TACC (**13**)	3878.68	3879.68

***mark the position of alkylated guanine.**