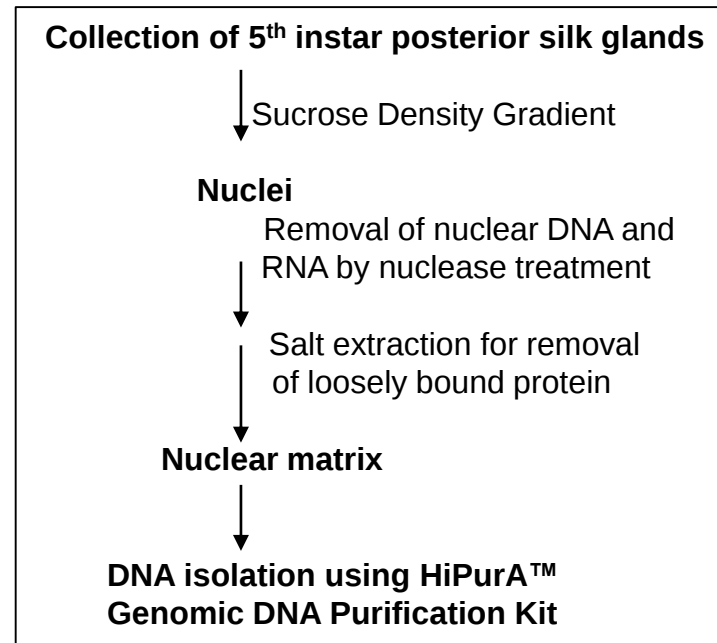


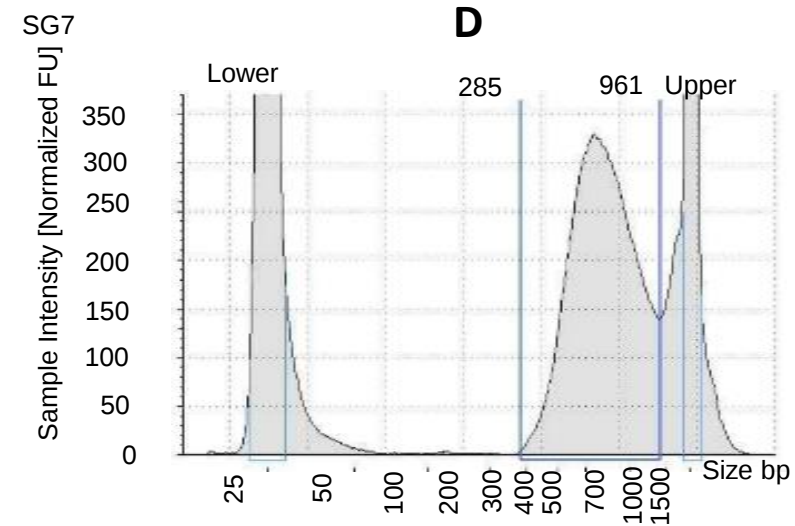
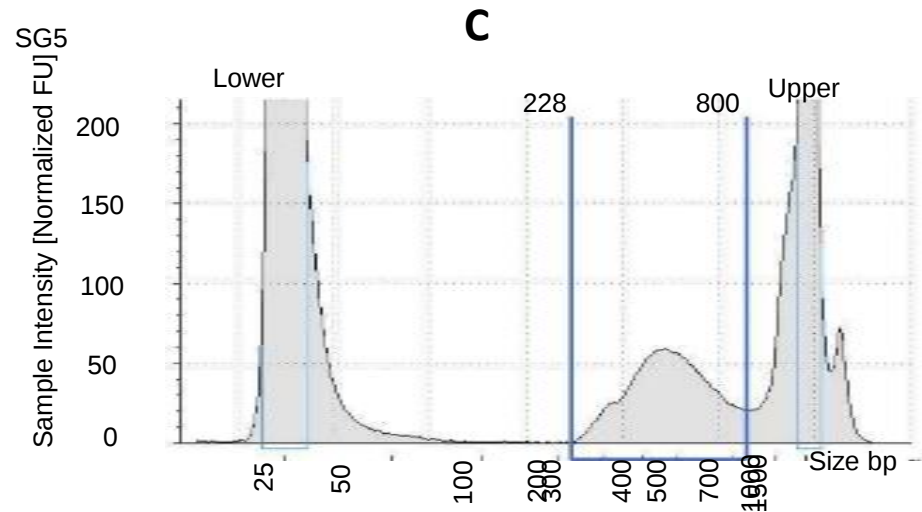
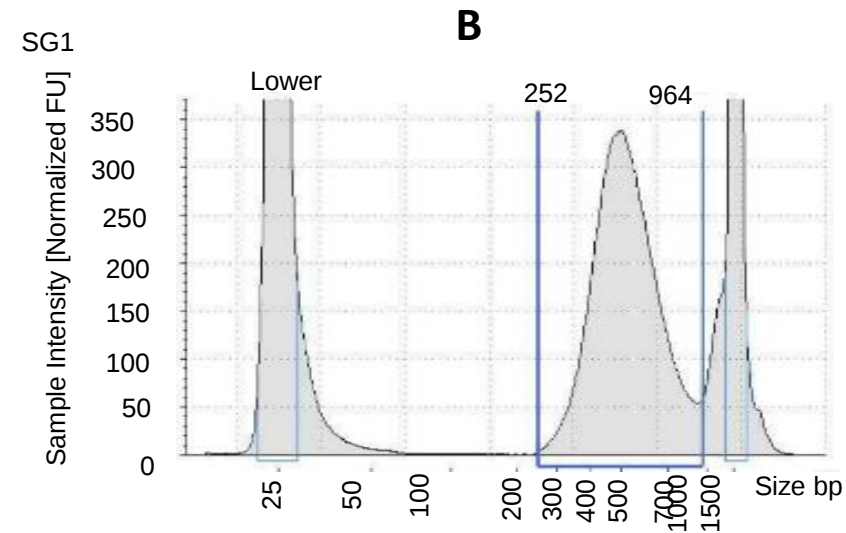
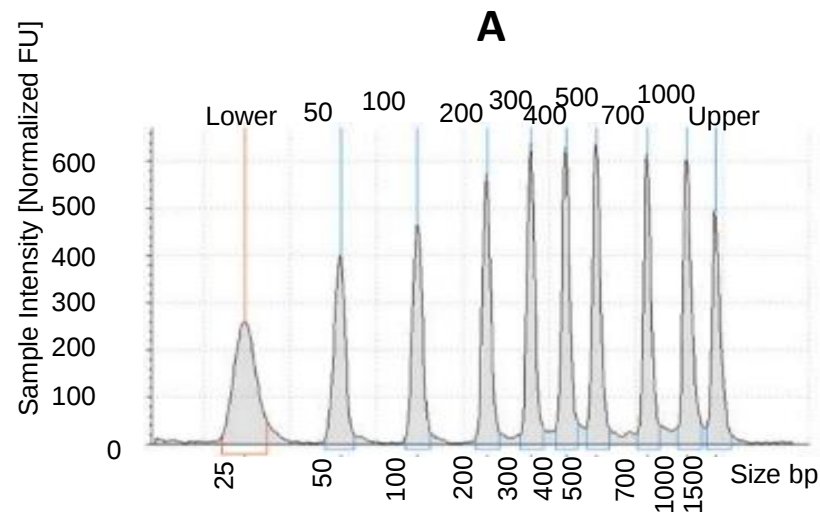
Supplementary Data



Supplementary Figure 1.

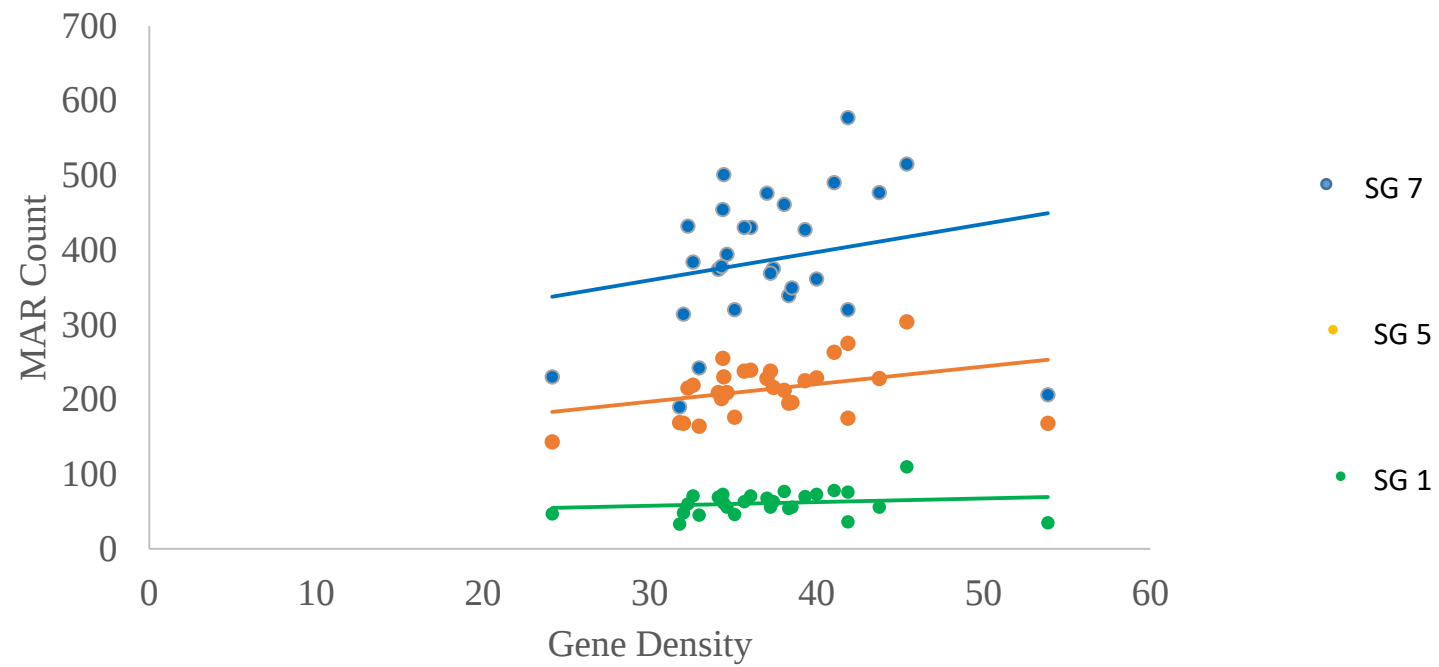
NuMat preparation. The steps involved in the NuMat extraction and MAR DNA isolation are depicted in the flowchart.

Ladder



Supplementary Figure 2.

Determination of Size Distribution of MAR DNA isolated from 5th instar PSGs. Tapestation profiling showing (A) 25-1500 bp ladder and enriched size range in (B) day 1 MAR DNA (C) day 5 MAR DNA) and (D) day 7 MAR DNA isolations.



Supplementary Figure 2.

Scatter plot of MAR Count against Gene Density among the three datasets.

S . No.	Sample ID	Qubit QC	Volume (μl)	Yield (ng)	Netflex Barcode	Barcode sequence
		ng/μl				
1	SG 1	23.8	10	238	NFBC21	GTTTCG
2	SG 5	16.6	10	166	NFBC22	CGTACG
3	SG 7	20.8	10	208	NFBC23	GAGTGG

Supplementary Table 1.

Library Concentration estimation using Qubit. Quantification of day 1, day 5 and day 7 PSGs from 5th instar B.mori larvae was performed using Qubit and the barcode sequences used in the library preparation are provided.

Day	Nuclei concentration in μg (Average $\pm$ Standard Error)	NuMat concentration in μg (Average $\pm$ Standard Error)
1	1360 $\pm$ 38232303	59 $\pm$ 13.85641
5	1700 $\pm$ 251.1971	160 $\pm$ 39.94997
7	1623.333 $\pm$ 349.6188	215 $\pm$ 50.22947

Supplementary Table 2.

Estimation of nuclei and nuclear matrix DNA in day 1, day 5 and day 7 posterior silk glands of *B. mori*. The MAR DNA isolated from day 1, day 5 and day 7 PSGs was quantified and the average concentration along with Standard error values are provided.

Details of the library	SG 1	SG 5	SG 7
Total Reads	26594084	30304527	44725766
Unique sequences	75.38 %	78.95 %	70.24%
% GC content	41	38	41

Supplementary Table 3.

Read count statistics of raw sequenced data. The total number of reads, the percentage of unique sequences obtained and the percentage GC content from the raw sequenced data is given.

S. No.	Gene ID	Gene	Protein	Predicted MAR	MARs found in datasets		
					SG 1	SG 5	SG 7
1	692737	Cypa	(Cyclophilin like protein) cyclophilin A	800	No Match	No Match	No Match
2	100101186	LOC100101186	Abnormal wing disc like protein	510	No Match	No Match	No Match
3	778467	LOC778467	Fructose 1,6-bisphosphate aldolase	2700;6700;10600;23800	3989-4084; 4483-4691; 5108-6177; 8013-10088; 10493-11961; 13141-15089; 15747-15904; 17493-17741; 18003-18155; 21636-22223; 24573-24895; 25316-26145; 26728-27203; 27659-27931; 28077-28259; 32932-33189	3989-4055; 5097-5491; 5574-5649; 5851-6186; 7085-7306; 8013-8395; 8532-8739; 8837-8877; 9706-10084; 13141-13402; 13781-14037; 4361-14448; 15748-15894; 17491-17745; 21650-21922; 22098-22188; 25324-26144; 26728-27191; 27647-27930; 28080-28256; 32928-33188	3989-4685; 5105-5833; 5866-6183; 8010-8058; 8139-8403; 8831-8877; 9706-10089; 11329-11518; 13142-13399; 13777-14031; 14331-14444; 15748-15904; 17494-17745; 18003-18095; 18352-18922; 21652-21922; 24517-24880; 25324-25581; 25867-26145; 26725-27182; 27664-27925; 28087-28256; 32933-33189

Supplementary Table 4.

MARs associated with differentially expressed genes. Examples of differentially expressed genes with MARs identified within the genes by BLAST analysis of the three PSG 5th instar MAR developmental datasets (day 1, day 5 and day 7) are shown. The MAR regions in bold refer to those present in the intronic regions of the gene.