Legends to Supplementary Figures

Supplementary Figure S1: DIC and DAPI images of HT1080 cells and purified nucleoli

(A) (I-III) Total HT1080 fibrosarcoma cells. (IV-VI) Nucleoli purified from HT1080 cells. Panels I and IV show DIC images. Panels II and V show cells and nucleoli stained with DAPI. Panels III and VI show a merge of the DIC and DAPI images. Scale bars: 10 microns (I-III); 1 micron (IV-VI). (B) 100 ng of *Hin*dIII digested nucleolar and total genomic DNA are loaded onto the gel. DNA blot showing enrichment of rDNA in purified nucleolar fraction.

Supplementary Figure S2: Deep sequencing data analysis of nucleolar-associated chromatin for each somatic chromosome

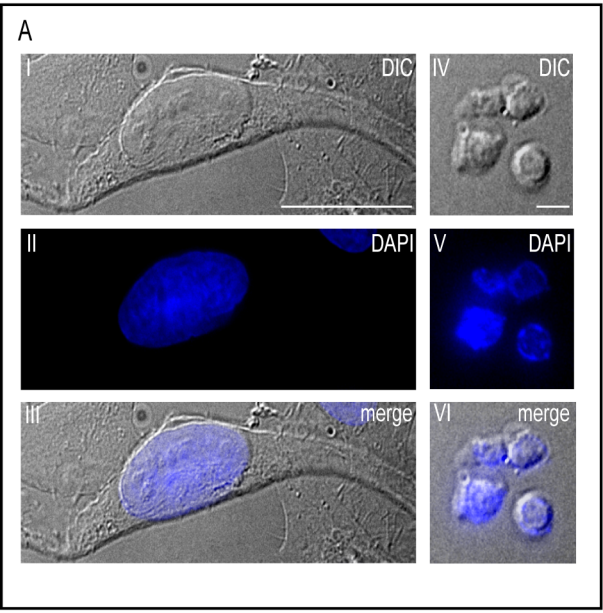
Panels show positions along each somatic chromosome (bin size 250kbp); from top to bottom: (I) genomic and (II) nucleolar count rate, both normalised to chromosomal mean; (III) normalised ratio of nucleolar to genomic rates (see Material and Methods). Panel (IV) shows the fraction of A and T nucleotides in each bin; (V) known gene count; (VI) gene expression amplitude; (VII) correlation between nucleolar/genomic ratios and AT fraction (red), gene count (blue) and gene expression amplitude (green) calculated as a Pearson's correlation coefficient in a running 20Mbp window.

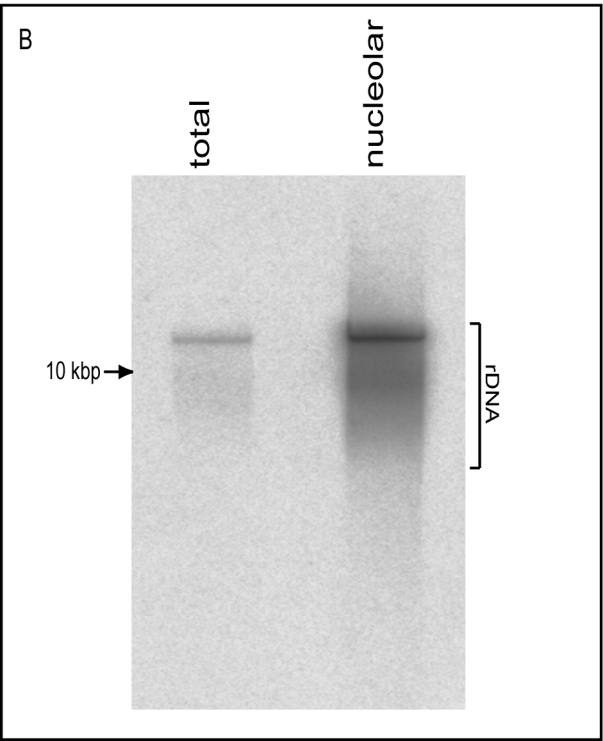
The red dashed line in panel (III) shows the (background) value of 1 for guidance. The red circles in panels (I), (II) and (III) indicate peaks that correspond to an expression amplitude above arbitrary threshold of 2000 (panel VI, dashed line). Sites of Lamin-associated domains (LADs) are indicated by blue boxes in panel (III) where light and dark boxes correspond to LAD score below or above 0.95, respectively.

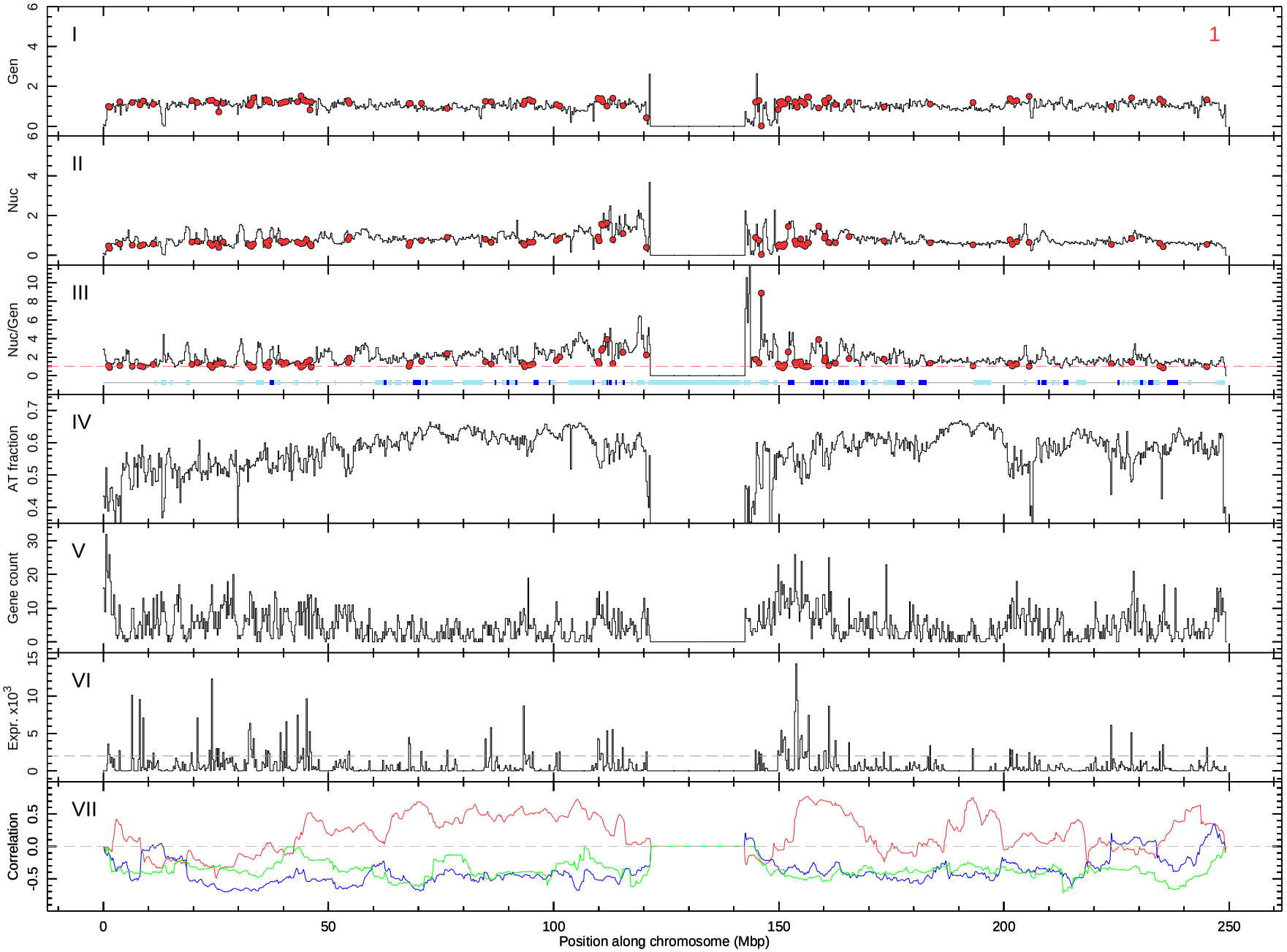
Supplementary Figure S3: Distribution of ratios of normalised B23 staining to PA-GFP intensities

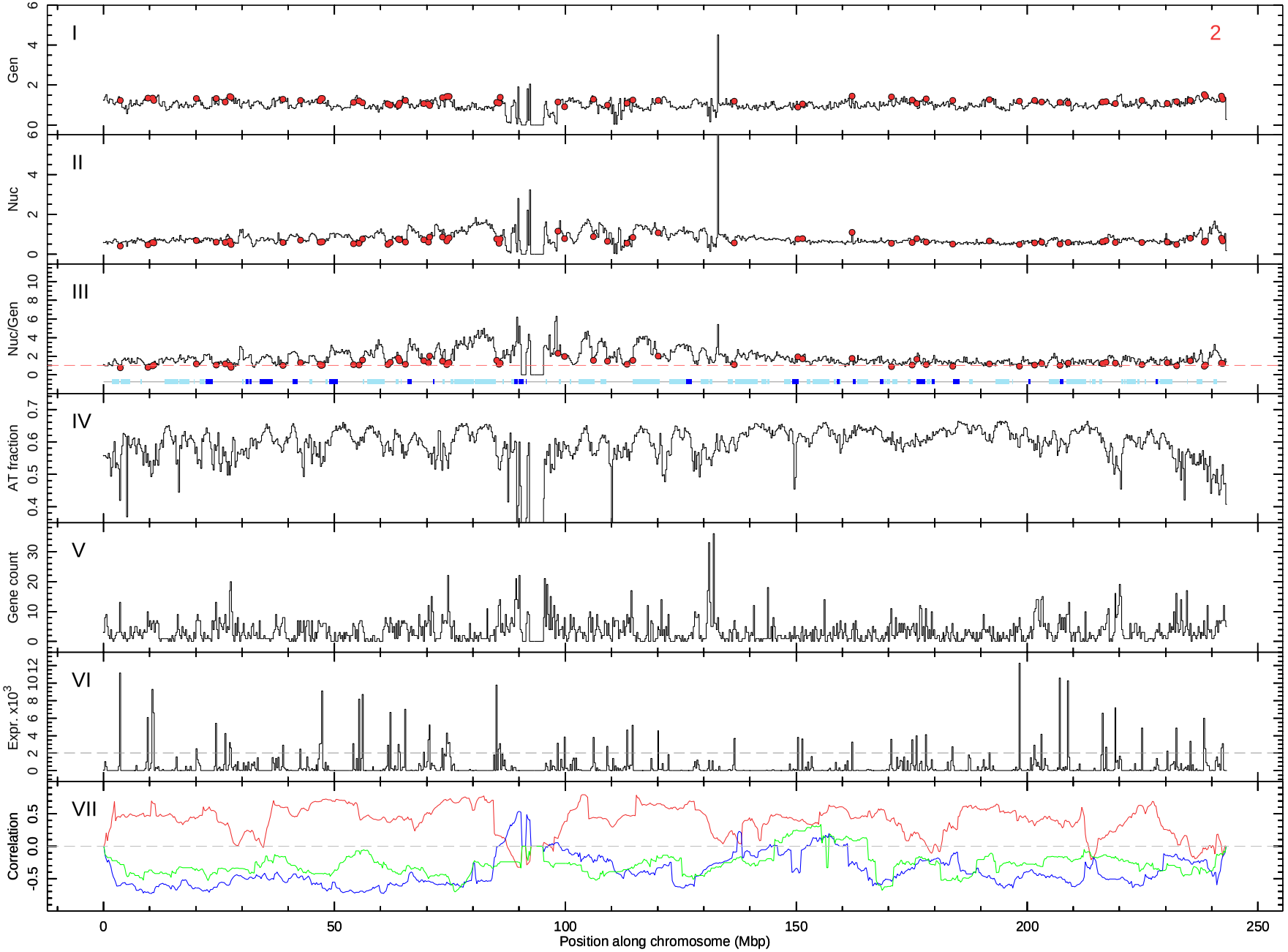
The intensities in cells where the photoactivated ROI overlapped nucleoli are indicated in red and those that were activated separate from nucleoli are shown in blue. The distributions are significantly different with Mann-Whitney (Wilcoxon Rank) W=110, p-value 0.00

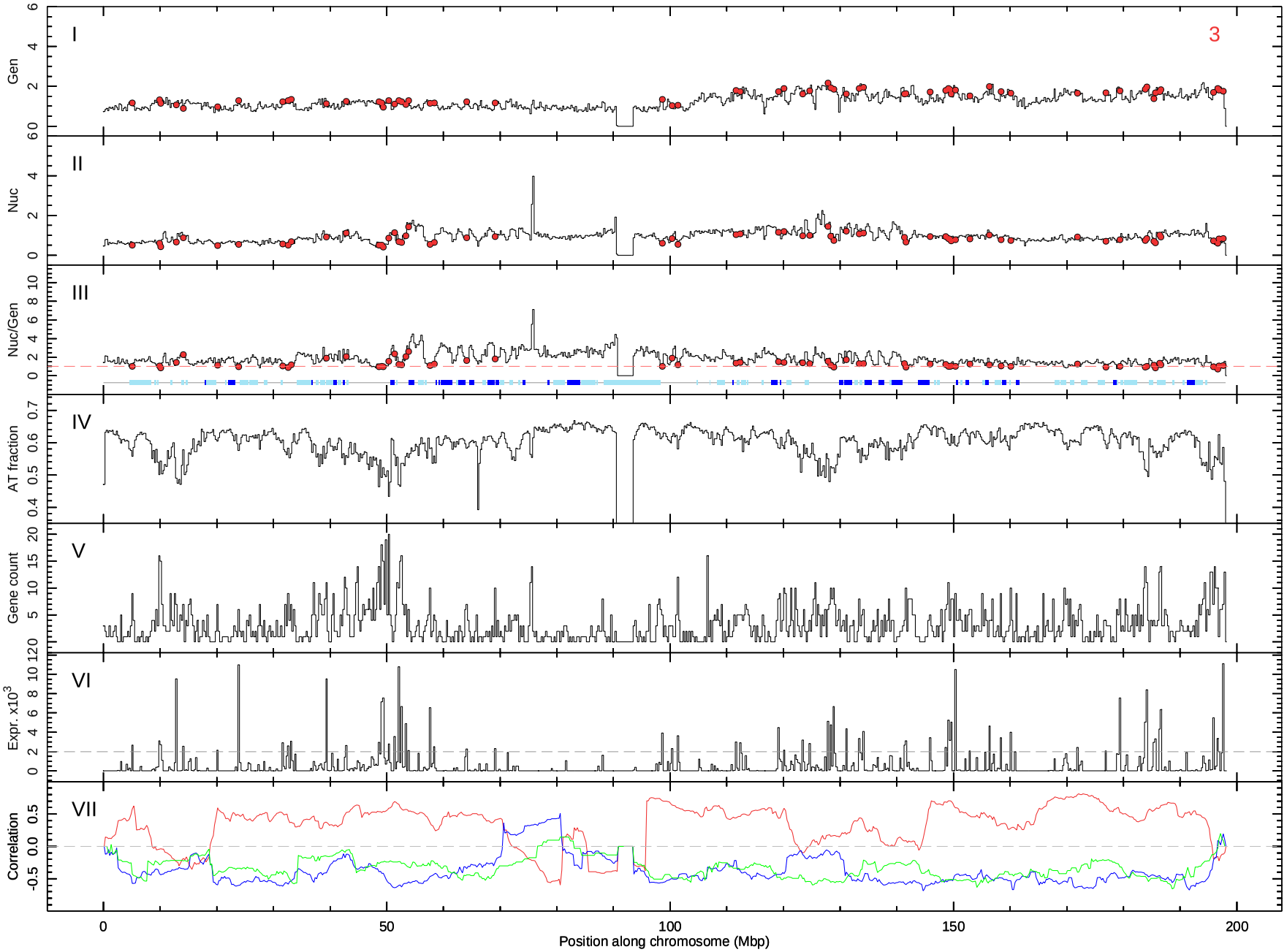
Supplementary Figure S1

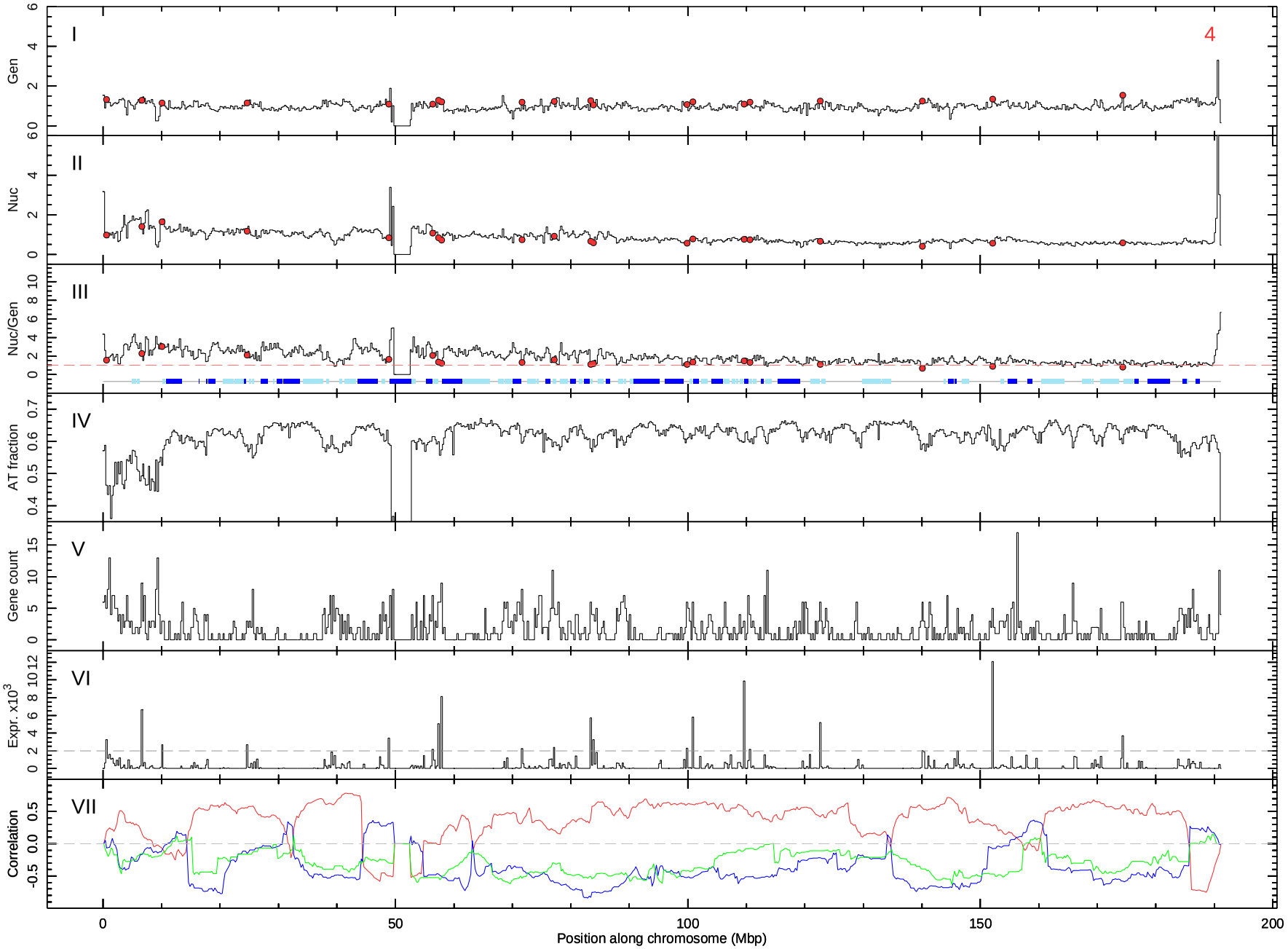


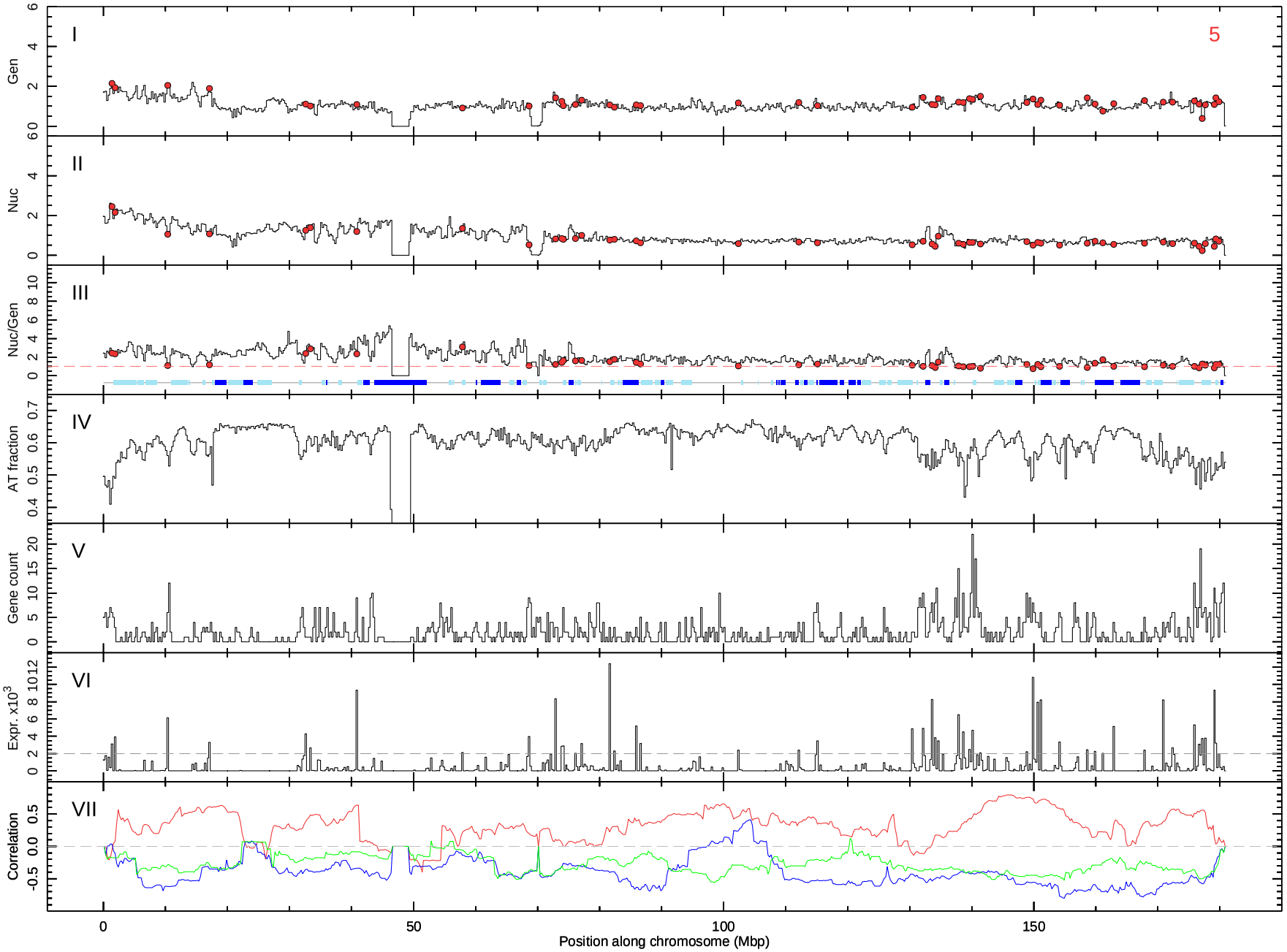


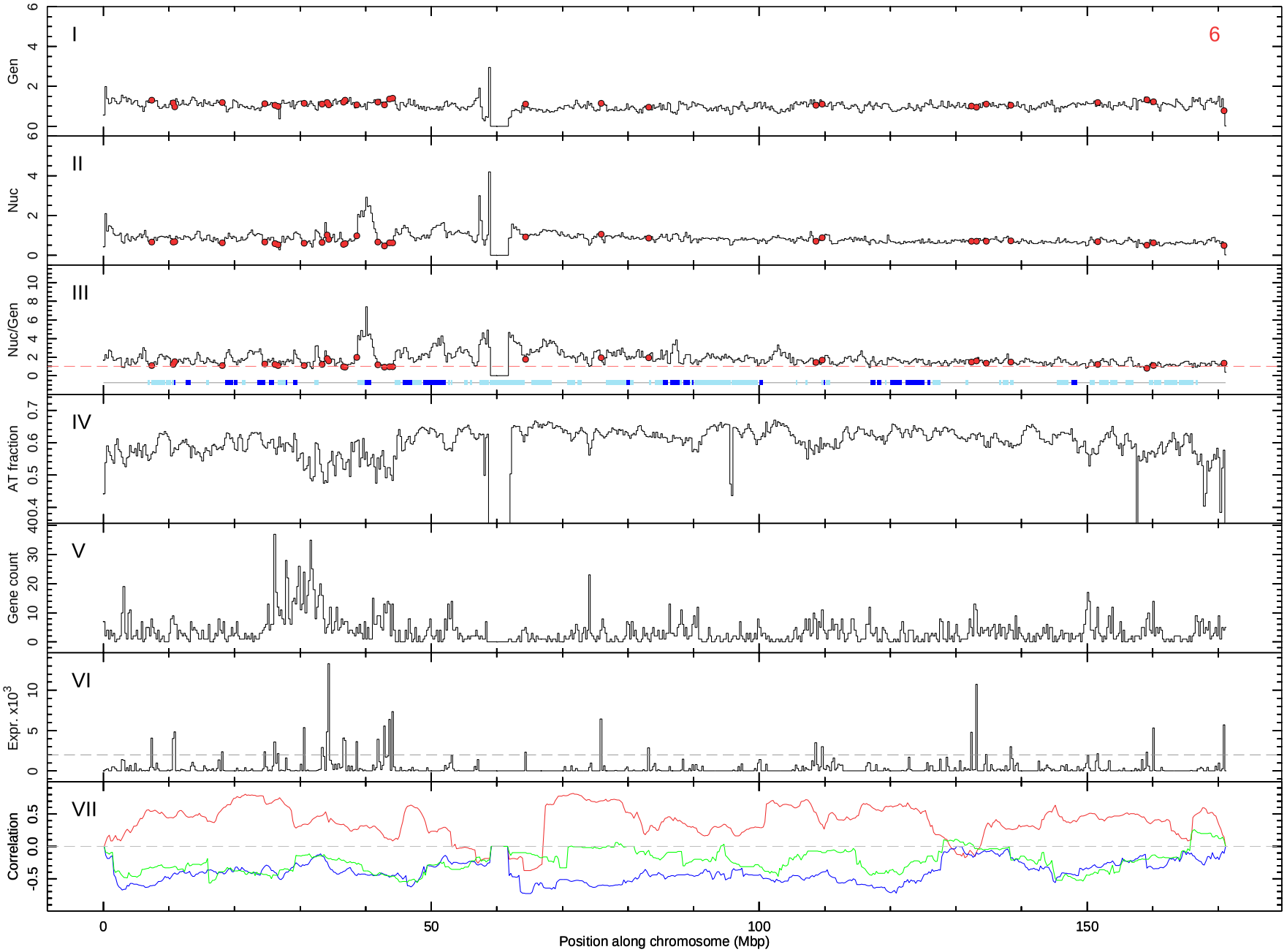

I
1
Gen
II
Nuc
III
Nuc/Gen
IV
AT fraction
V
Gene count
VI
Expr. x10^3
VII
Correlation
Position along chromosome (Mbp)

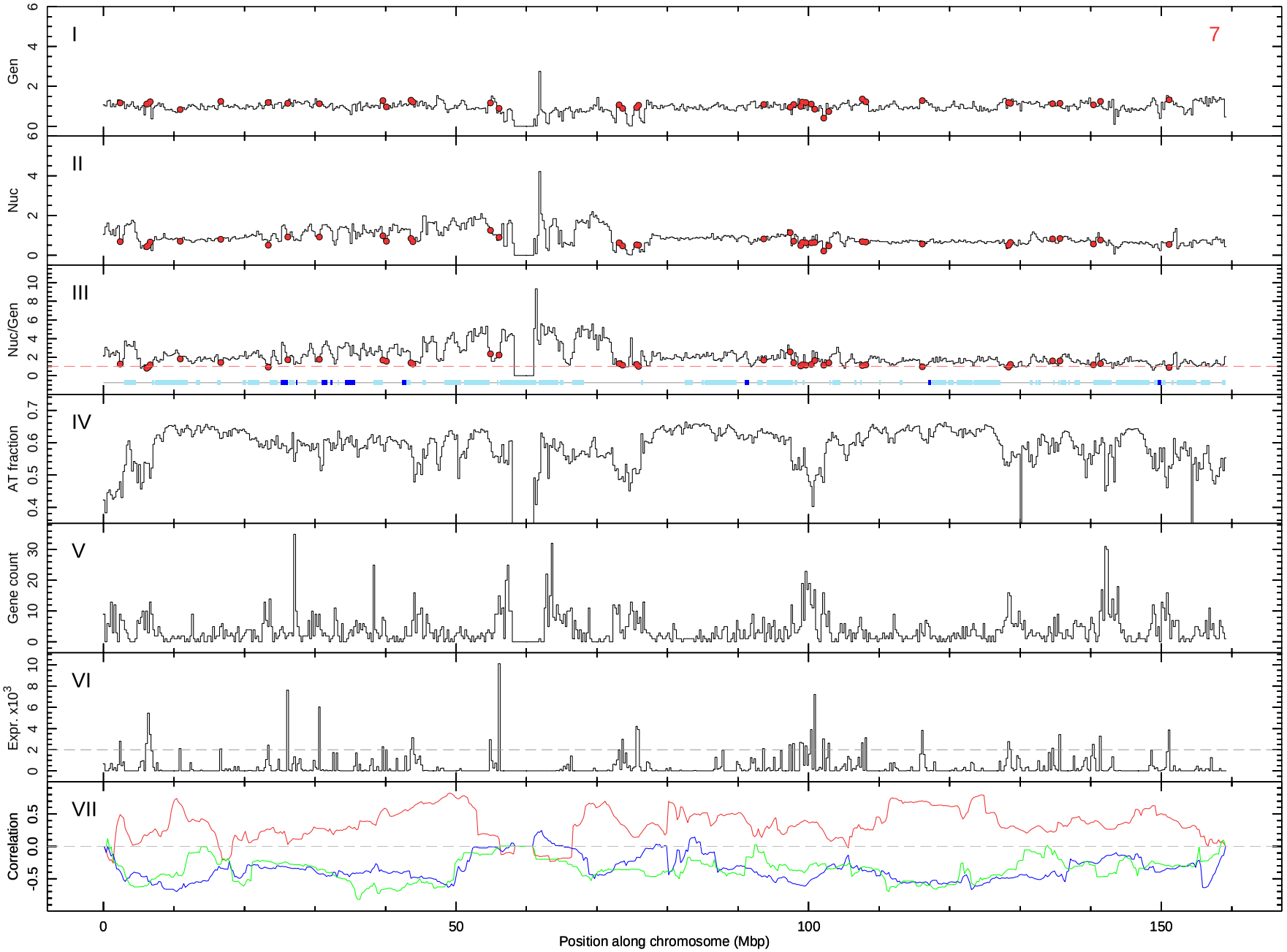

I
2
Gen
II
Nuc
III
Nuc/Gen
IV
AT fraction
V
Gene count
VI
Expr. x10^3
VII
Correlation
Position along chromosome (Mbp)

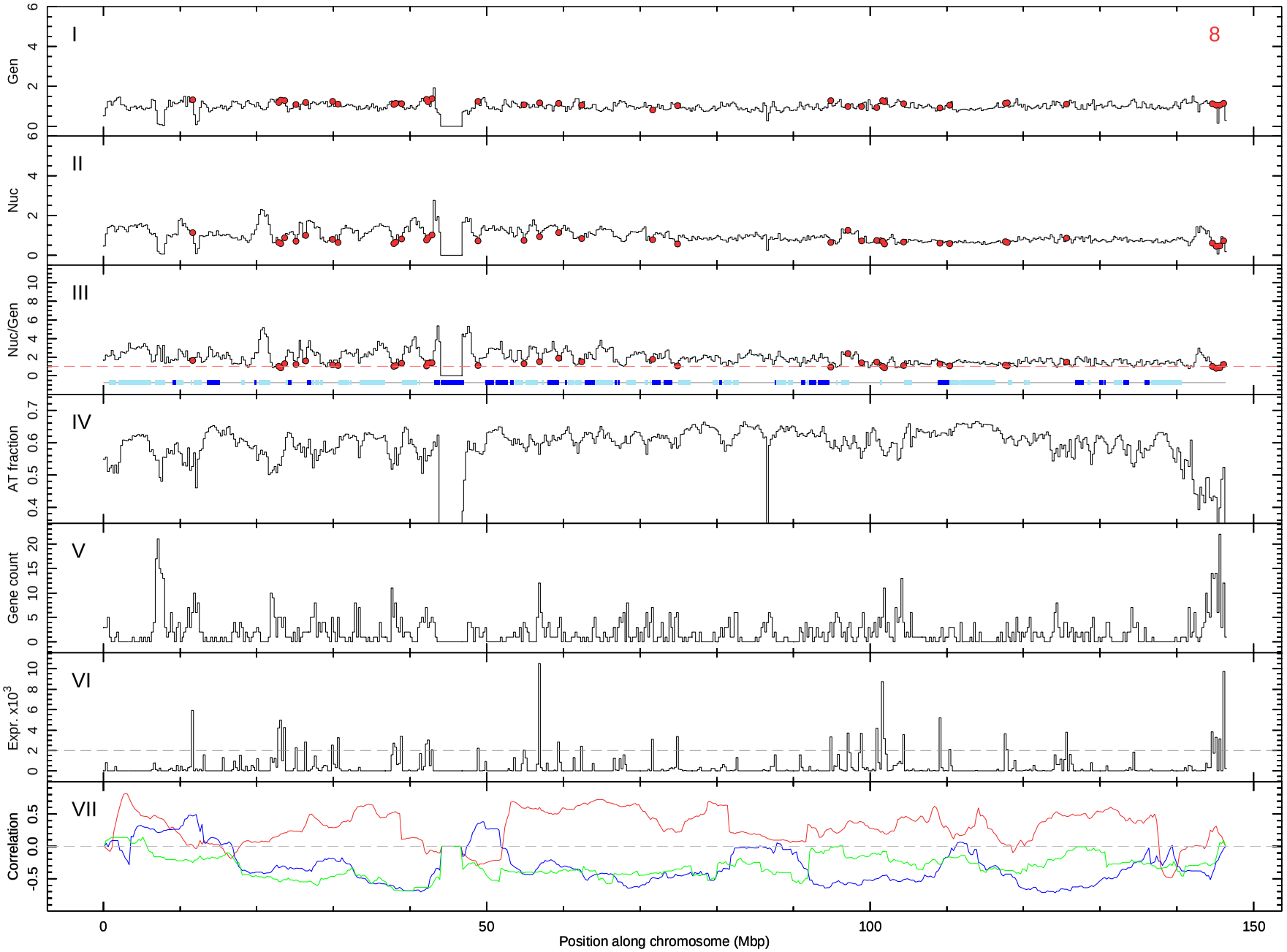

I
3
Gen
II
Nuc
III
Nuc/Gen
IV
AT fraction
V
Gene count
VI
Expr. x10^3
VII
Correlation
Position along chromosome (Mbp)
0
50
100
150
200

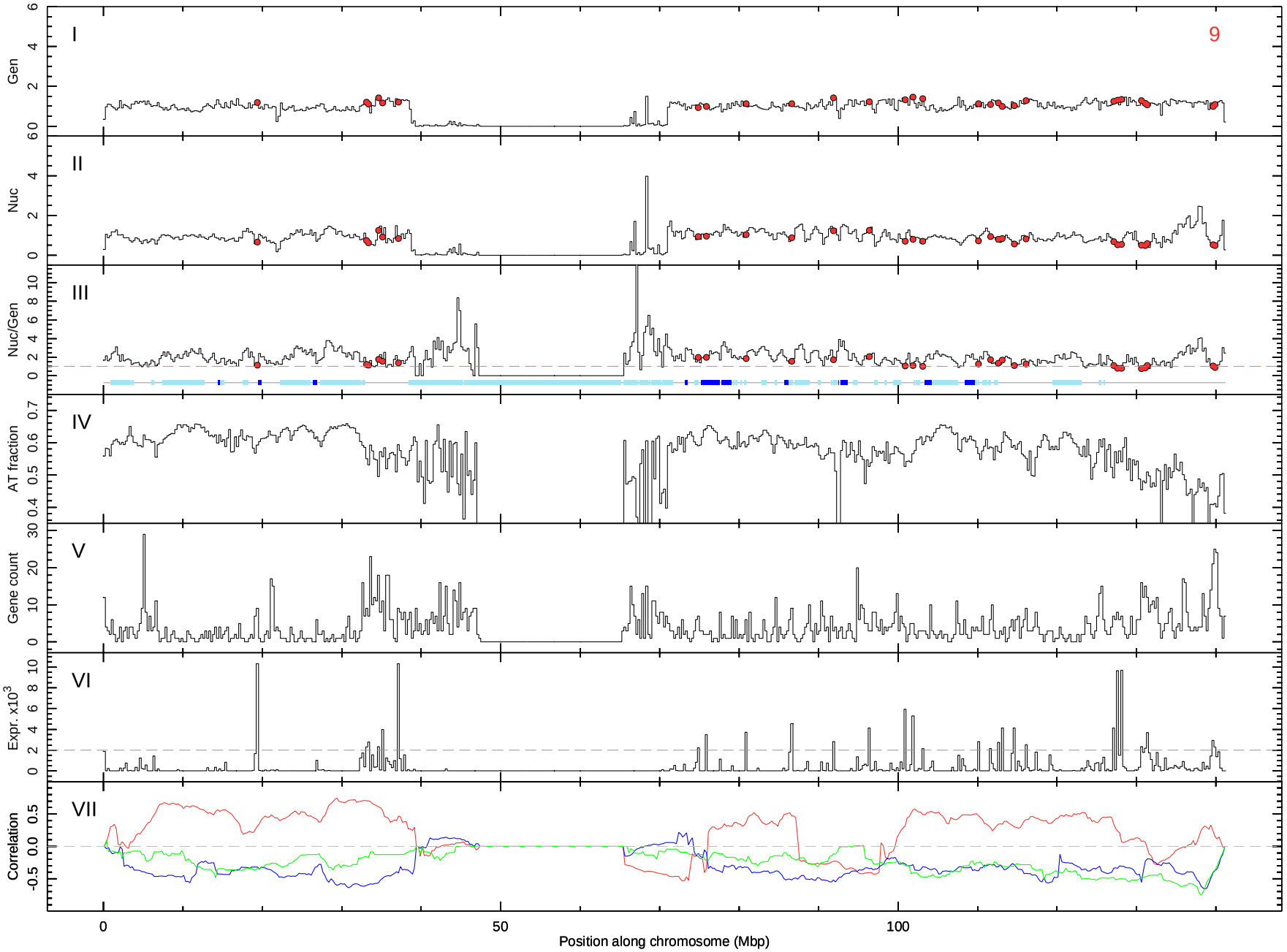

I
4
Gen
II
Nuc
III
Nuc/Gen
IV
AT fraction
V
Gene count
VI
Expr. x10^3
VII
Correlation
Position along chromosome (Mbp)

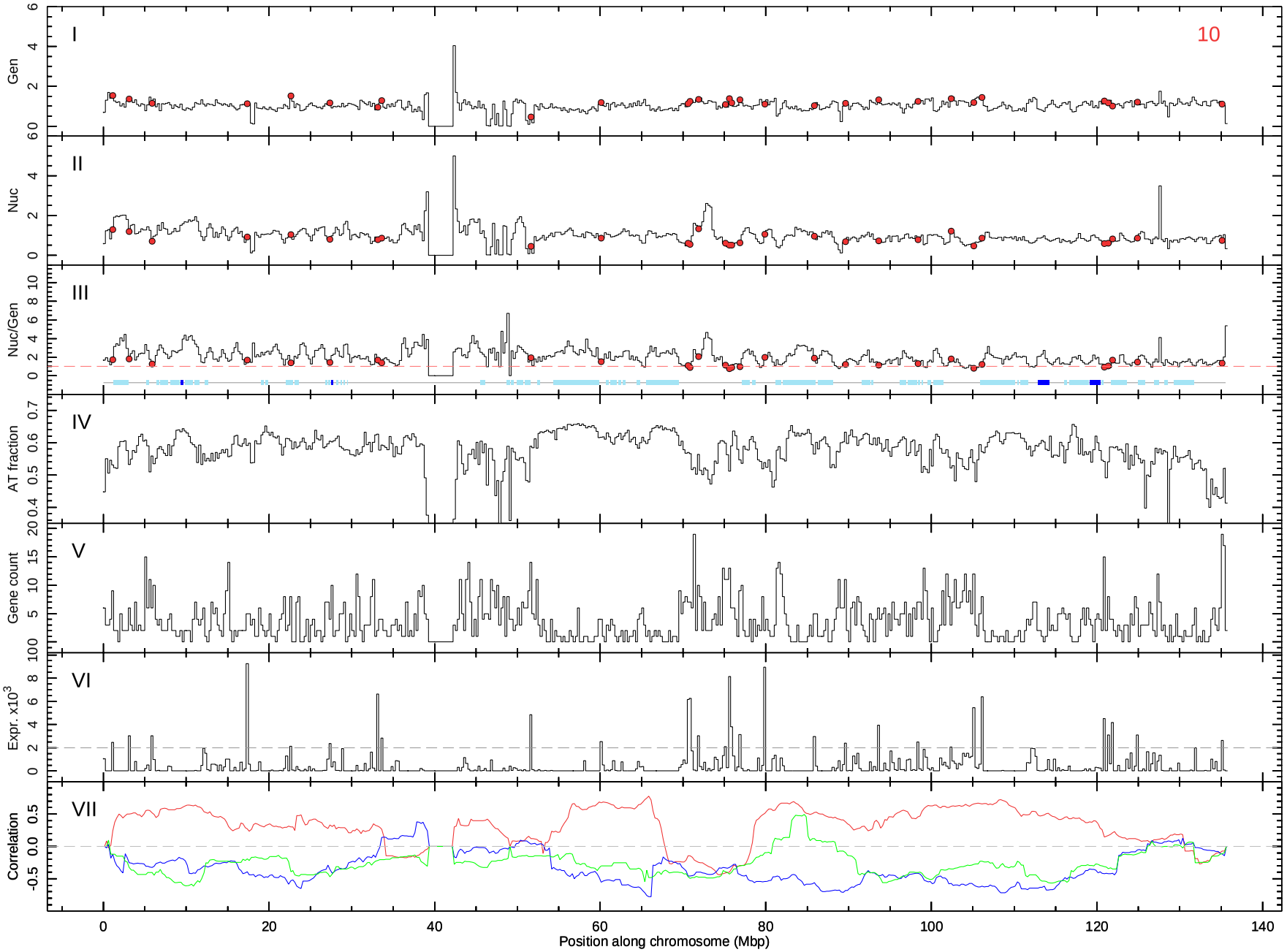

I
5
Gen
II
Nuc
III
Nuc/Gen
IV
AT fraction
V
Gene count
VI
Expr. x10^3
VII
Correlation
Position along chromosome (Mbp)

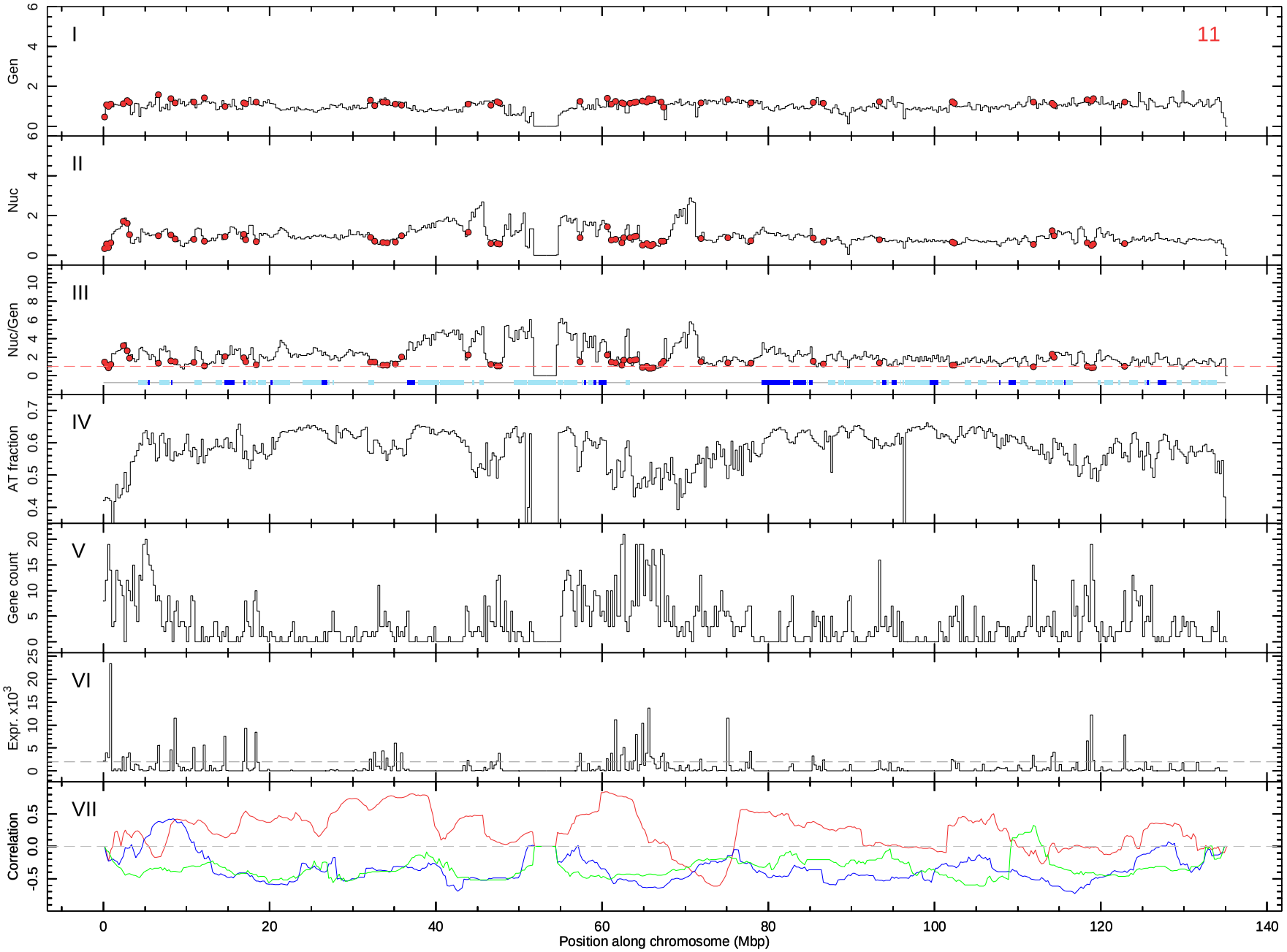

I
6
Gen
II
Nuc
III
Nuc/Gen
IV
AT fraction
V
Gene count
VI
Expr. x10^3
VII
Correlation
Position along chromosome (Mbp)

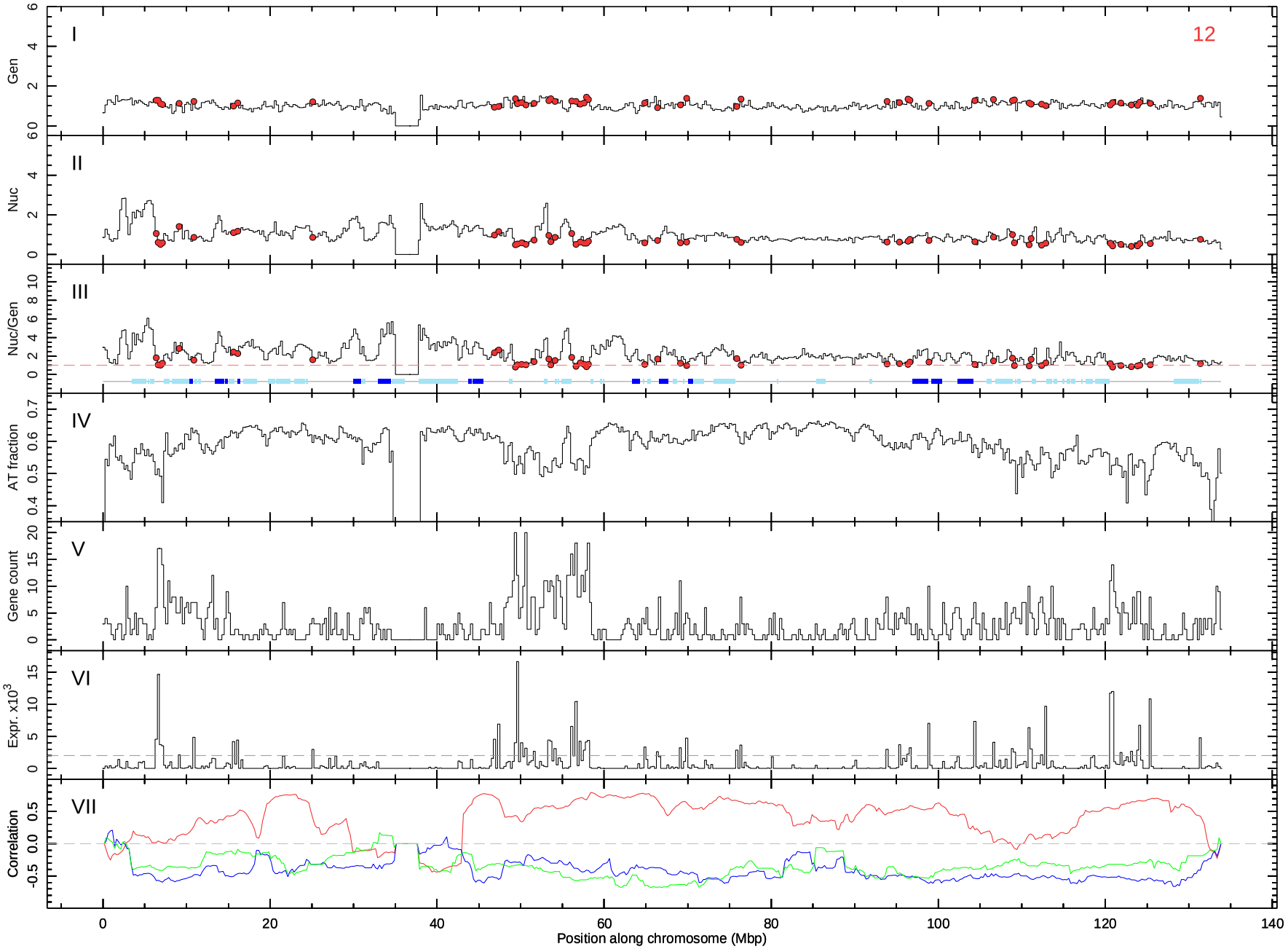

I
7
Gen
II
Nuc
III
Nuc/Gen
IV
AT fraction
V
Gene count
VI
Expr. x10^3
VII
Correlation
Position along chromosome (Mbp)
0
50
100
150

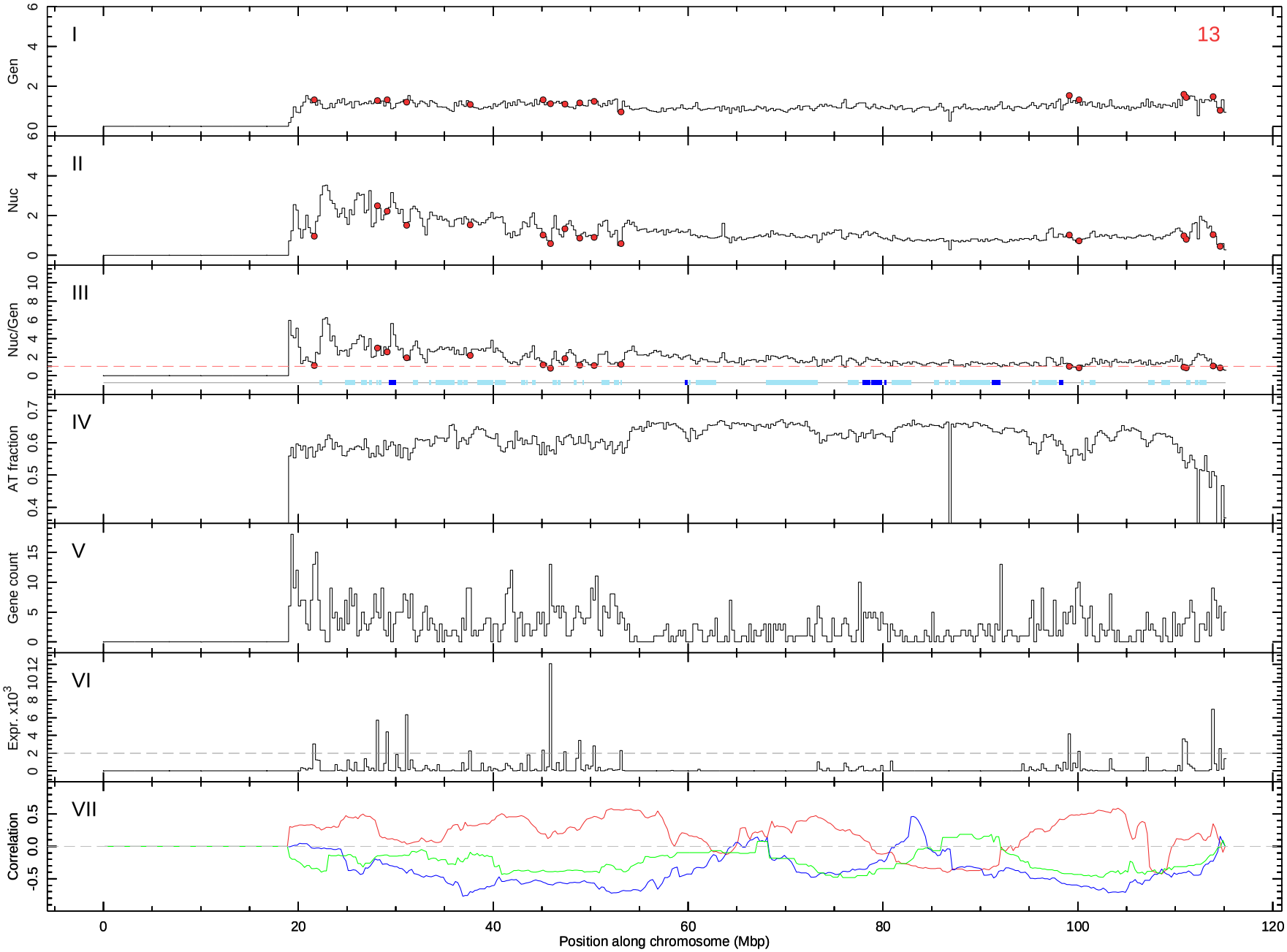

I
8
Gen
II
Nuc
III
Nuc/Gen
IV
AT fraction
V
Gene count
VI
Expr. x10^3
VII
Correlation
Position along chromosome (Mbp)

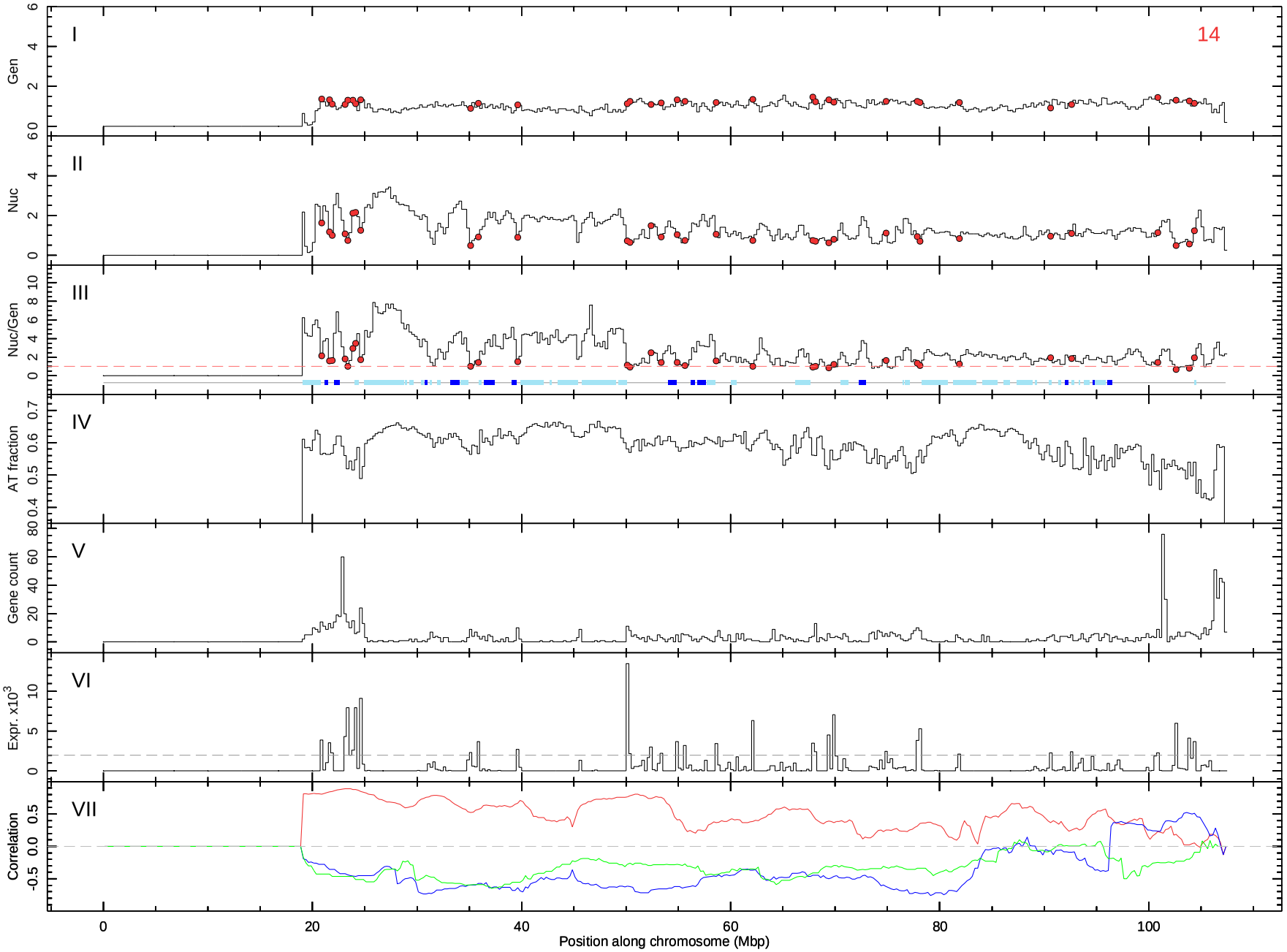

I
9
Gen
II
Nuc
III
Nuc/Gen
IV
AT fraction
V
Gene count
VI
Expr. x10^3
VII
Correlation
0
50
100
Position along chromosome (Mbp)

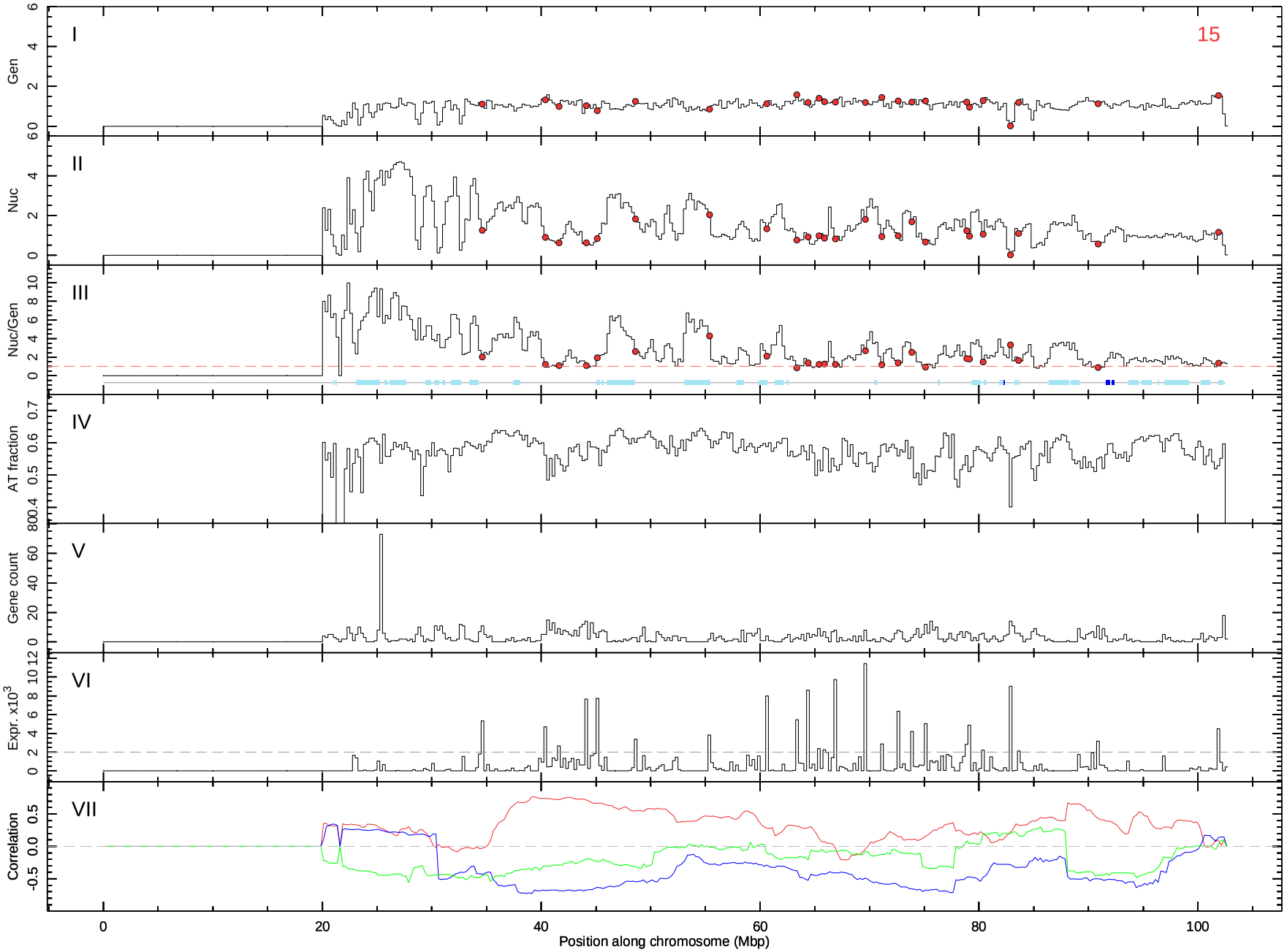

I
10
Gen
II
Nuc
III
Nuc/Gen
IV
AT fraction
V
Gene count
VI
Expr. x10^3
VII
Correlation
Position along chromosome (Mbp)

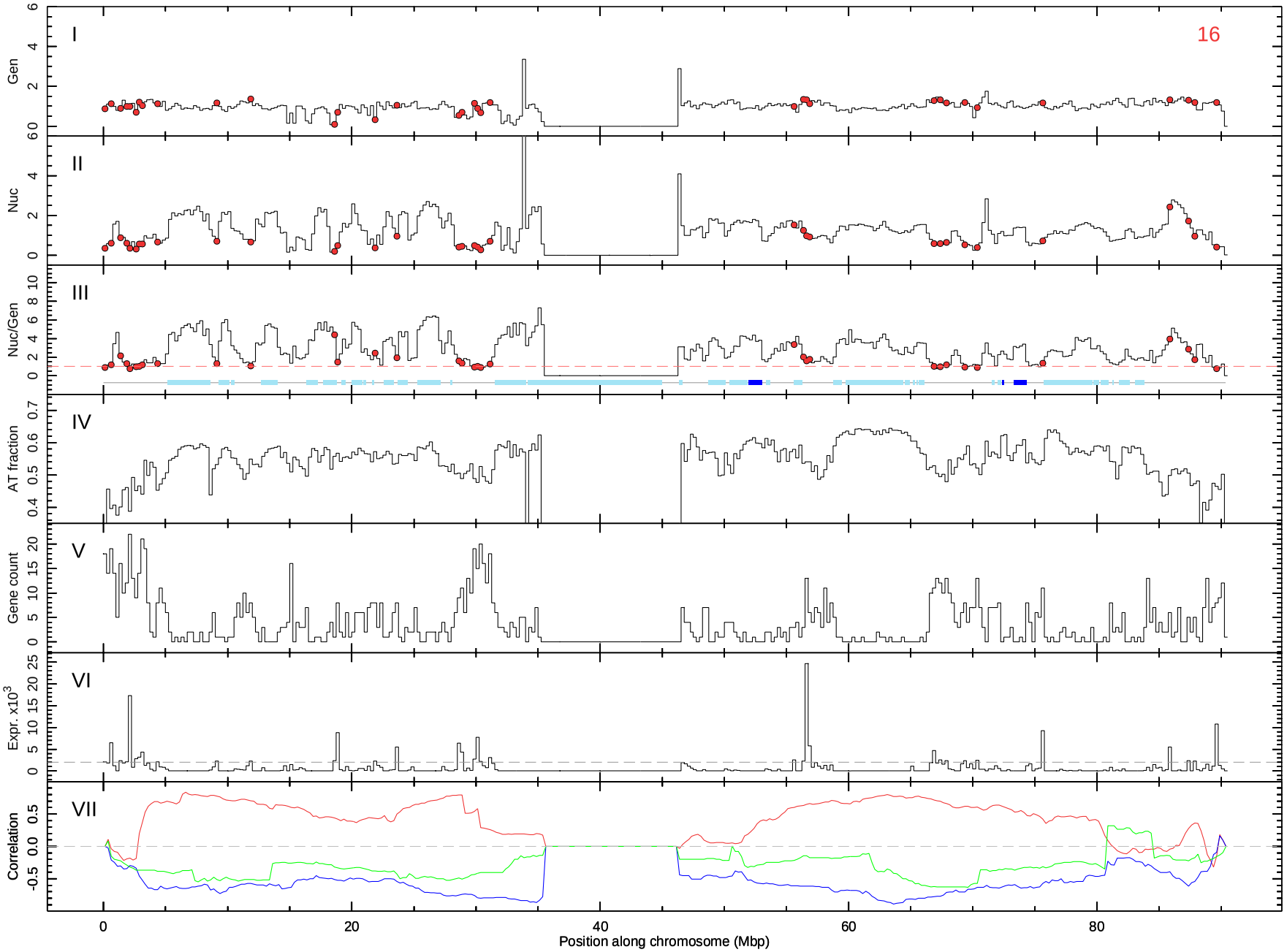

11
I
Gen
II
Nuc
III
Nuc/Gen
IV
AT fraction
V
Gene count
VI
Expr. x10^3
VII
Correlation
Position along chromosome (Mbp)

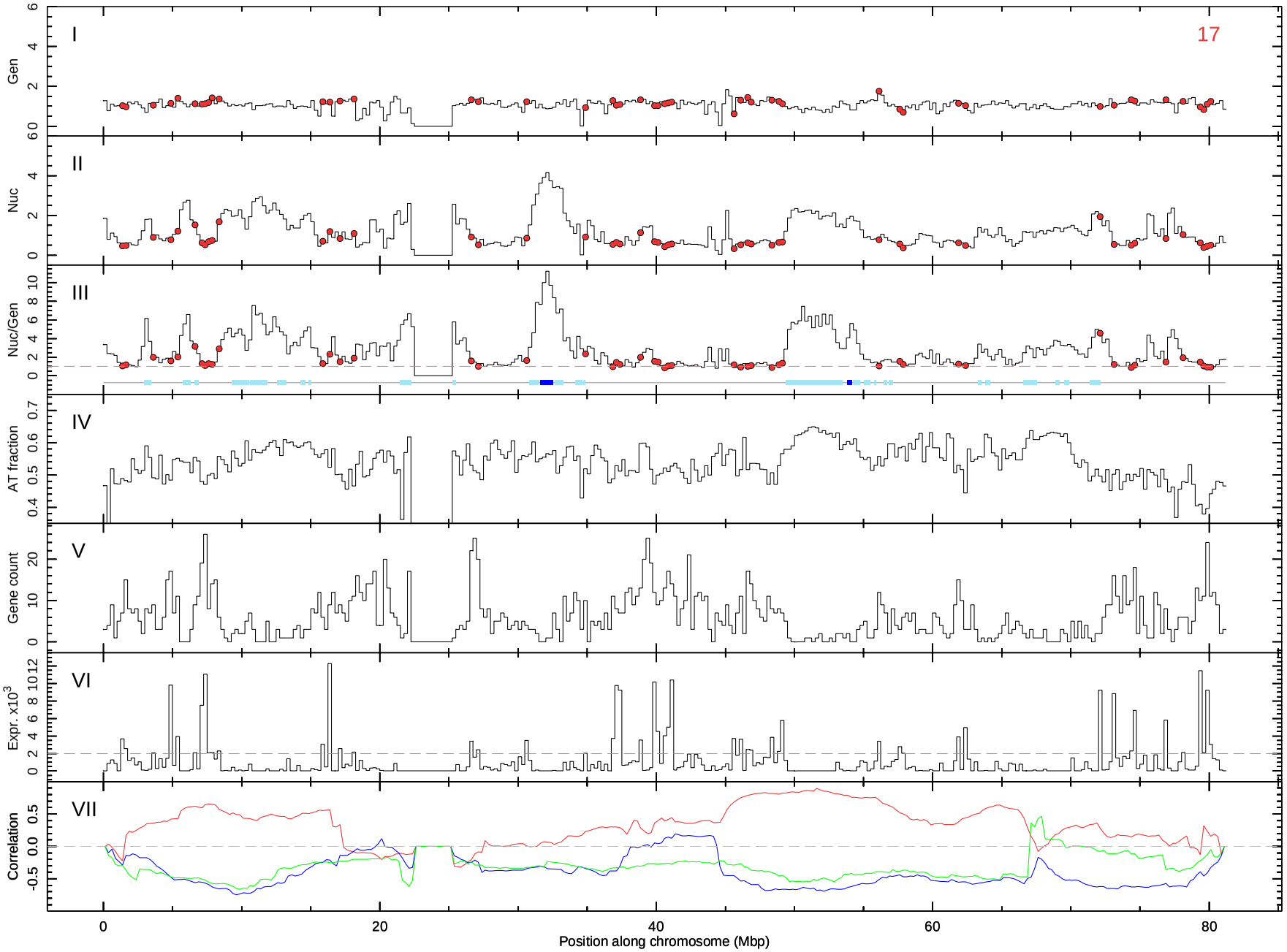

I
12
Gen
II
Nuc
III
Nuc/Gen
IV
AT fraction
V
Gene count
VI
Expr. x10^3
VII
Correlation
Position along chromosome (Mbp)

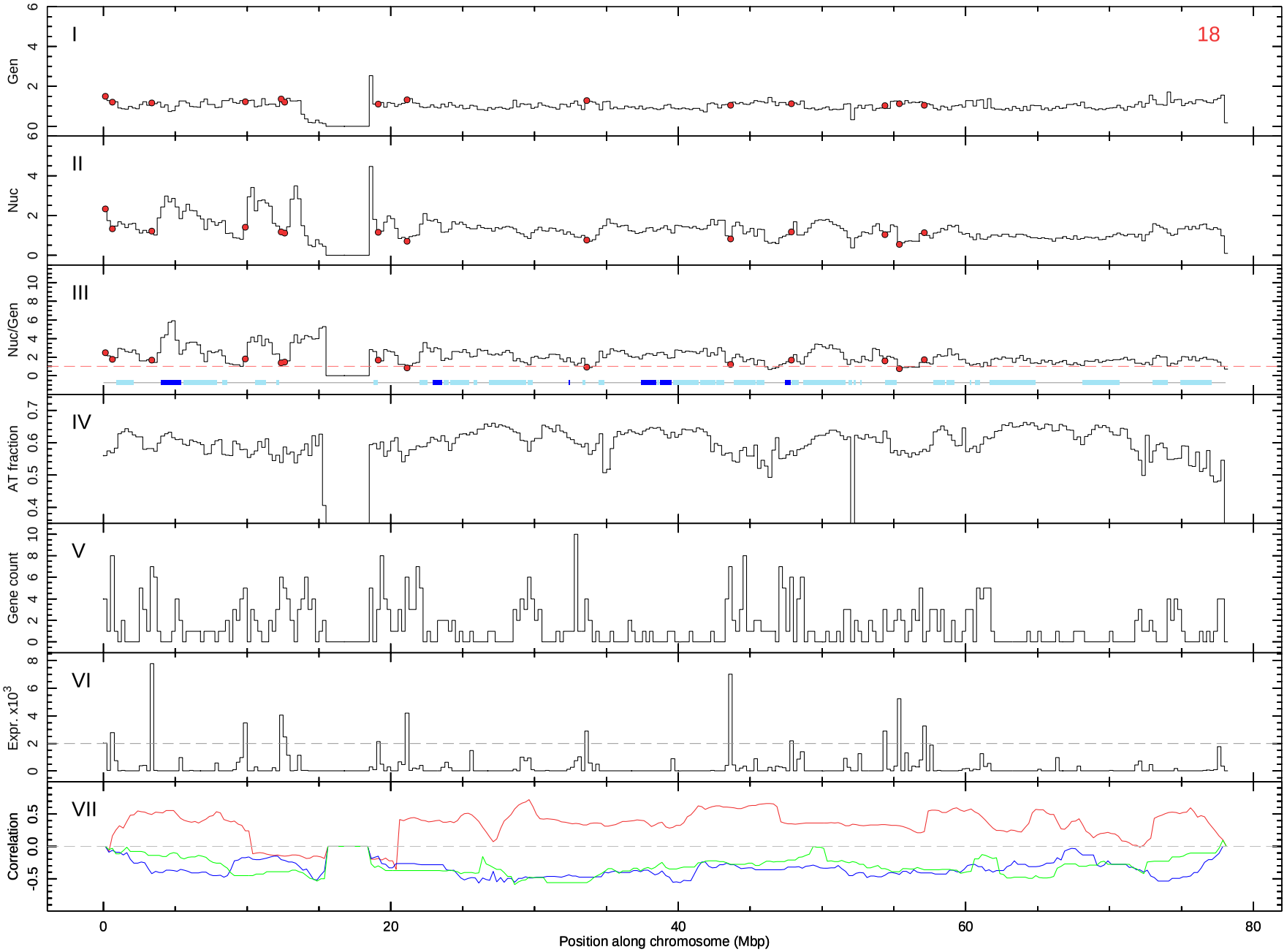

13
I
Gen
II
Nuc
III
Nuc/Gen
IV
AT fraction
V
Gene count
VI
Expr. x10^3
VII
Correlation
Position along chromosome (Mbp)

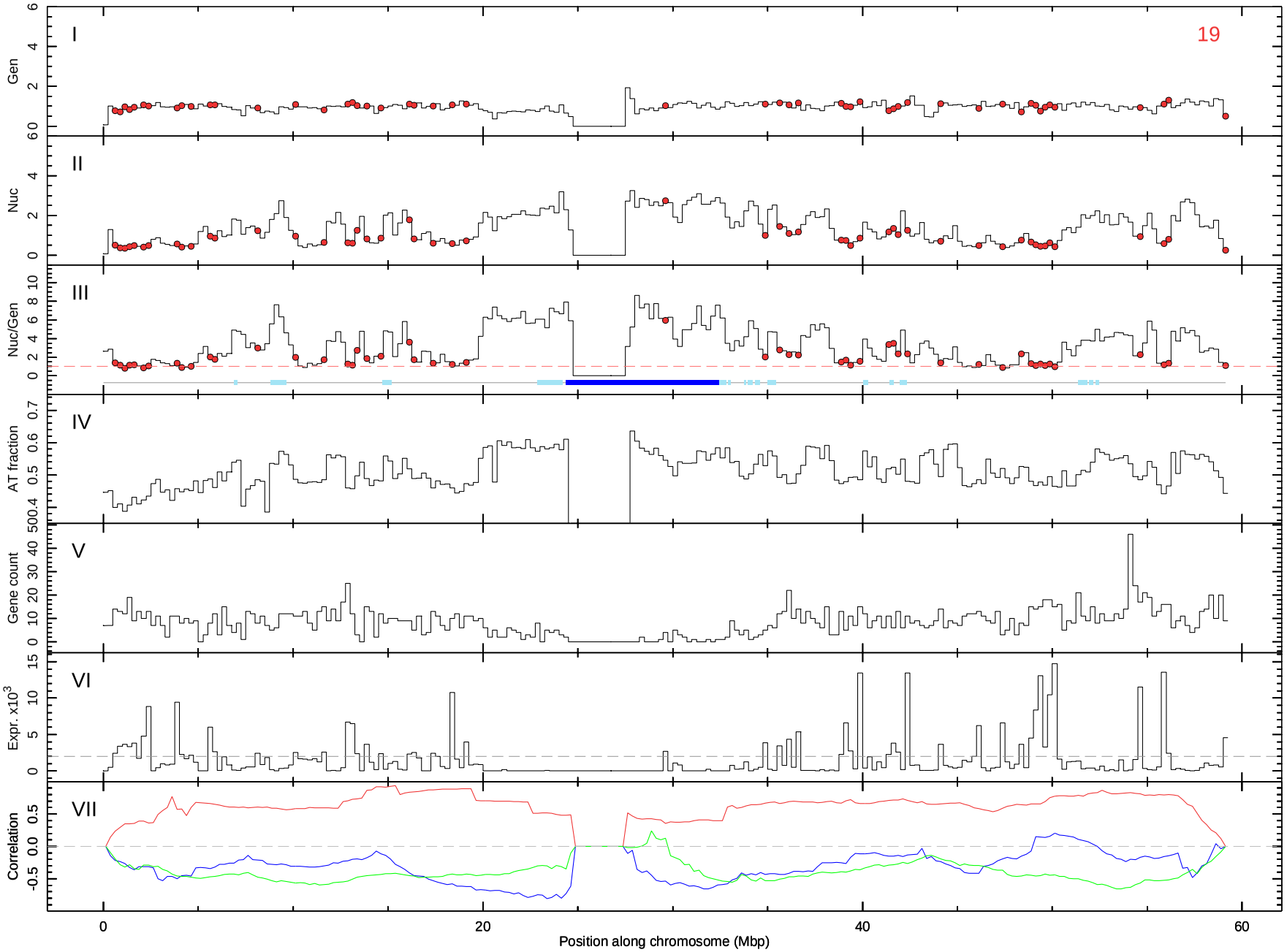

I
14
Gen
II
Nuc
III
Nuc/Gen
IV
AT fraction
V
Gene count
VI
Expr. x10^3
VII
Correlation
Position along chromosome (Mbp)

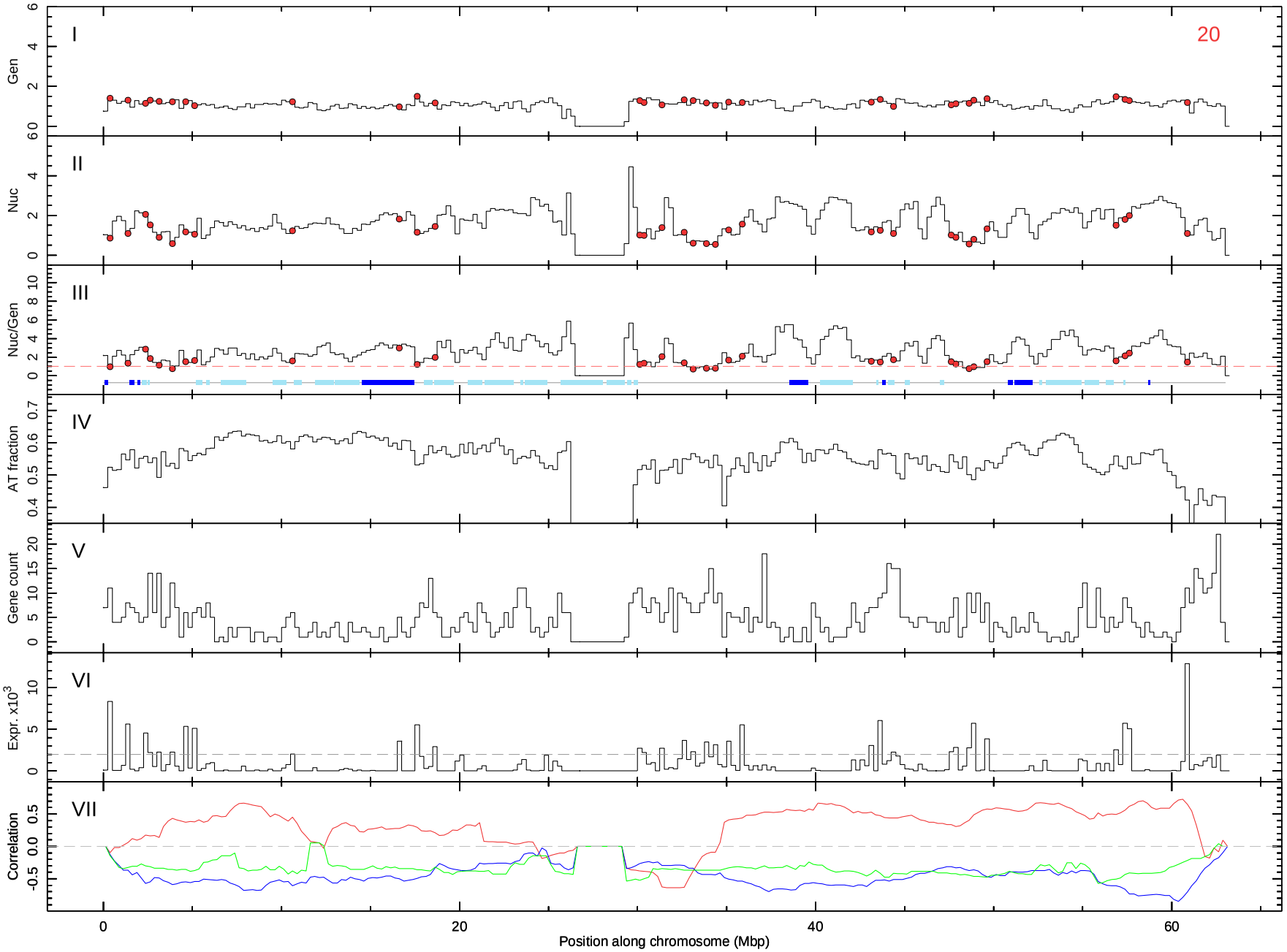

15
I
Gen
II
Nuc
III
Nuc/Gen
IV
AT fraction
V
Gene count
VI
Expr. x10^3
VII
Correlation
Position along chromosome (Mbp)

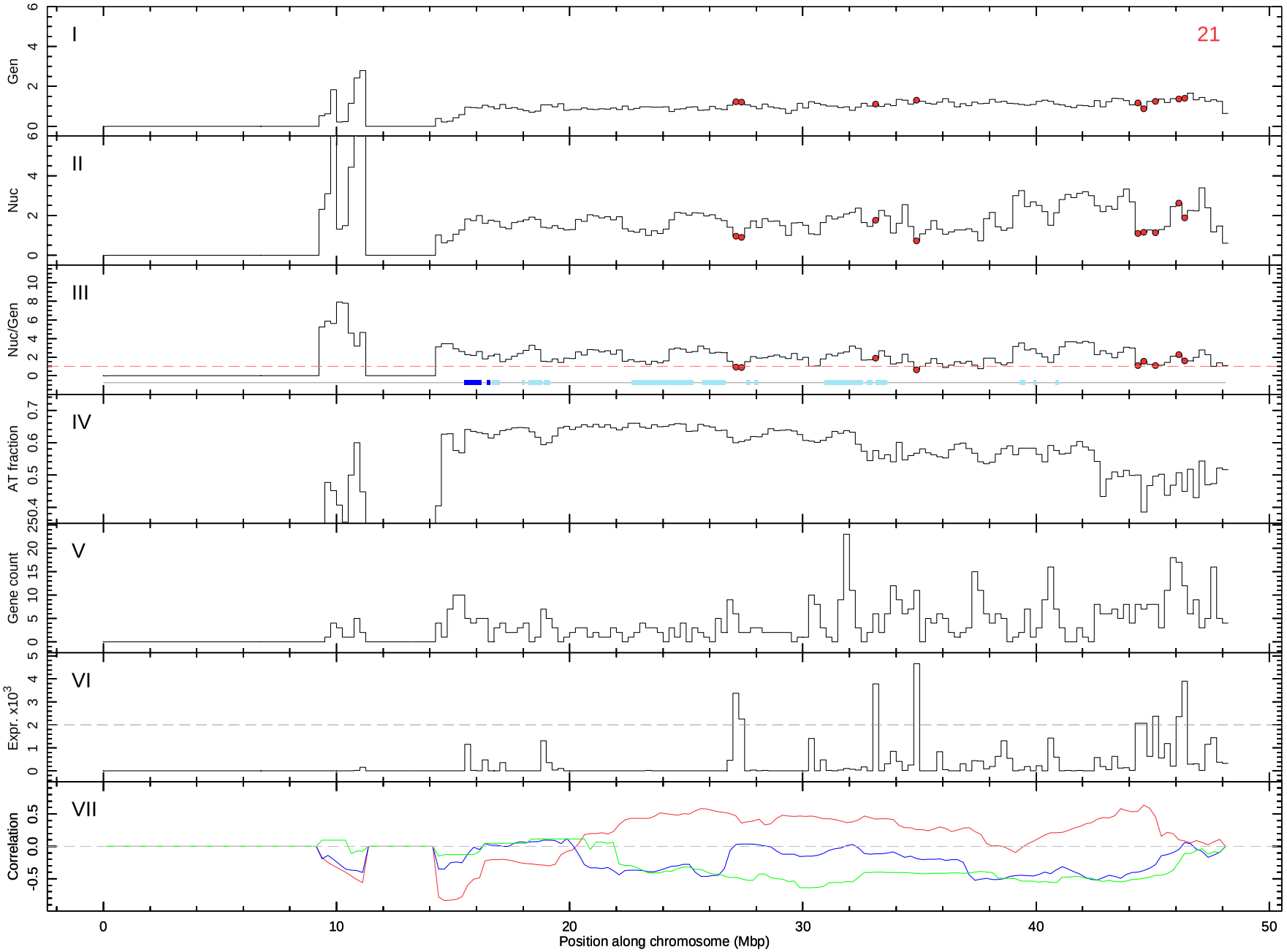

16
I
Gen
II
Nuc
III
Nuc/Gen
IV
AT fraction
V
Gene count
VI
Expr. x10^3
VII
Correlation
Position along chromosome (Mbp)

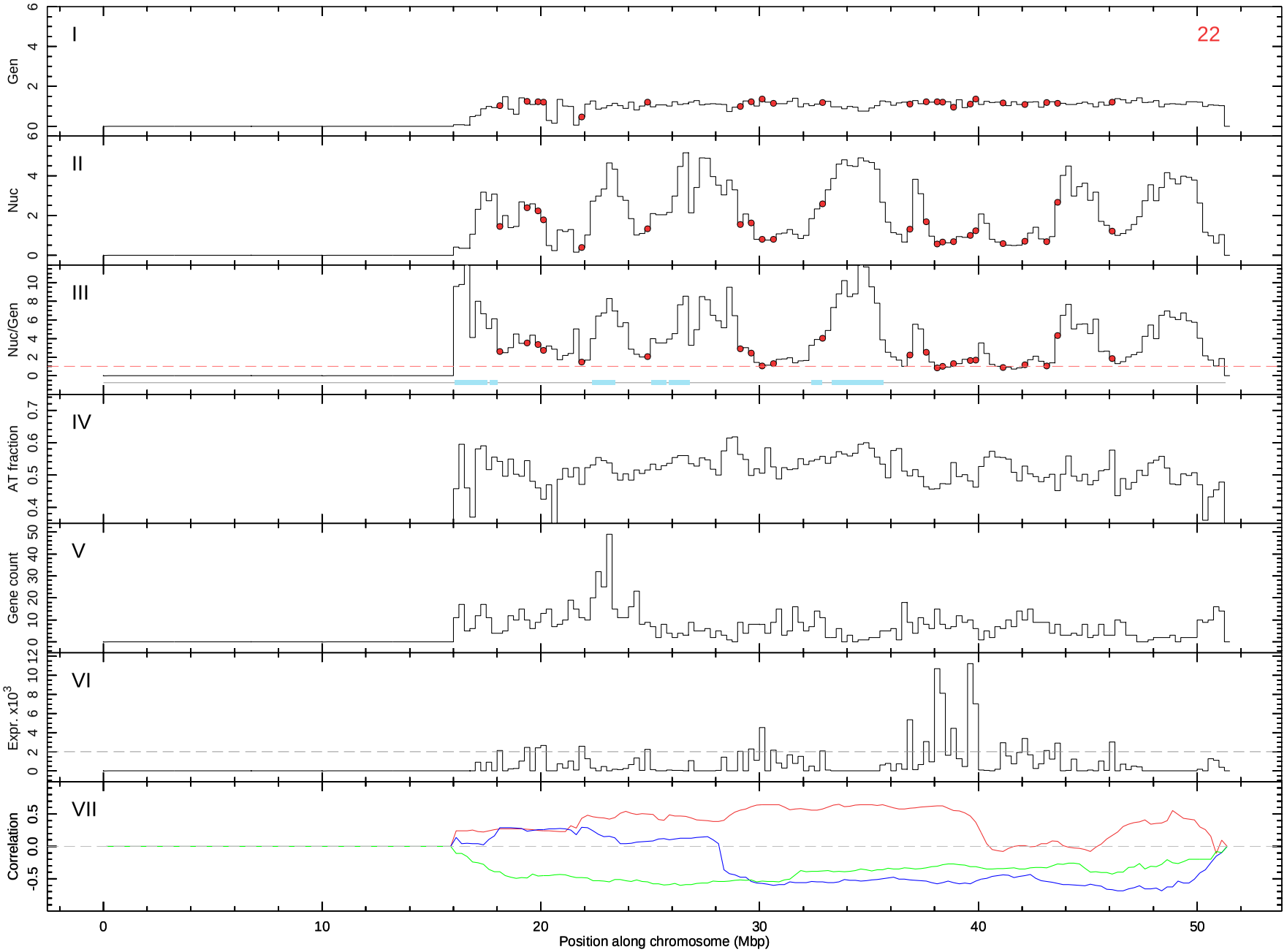
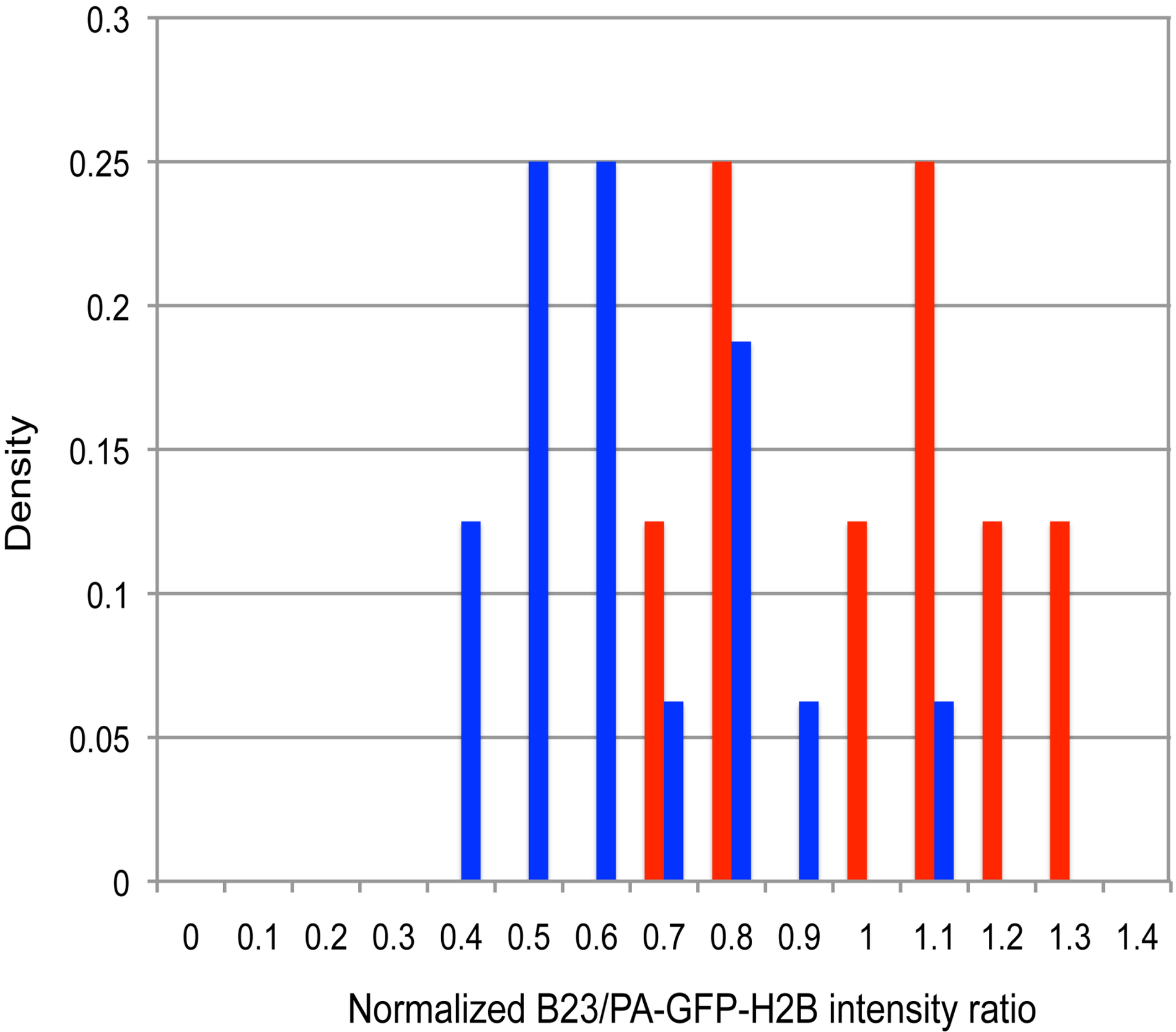

I
17
Gen
II
Nuc
III
Nuc/Gen
IV
AT fraction
V
Gene count
VI
Expr. x10^3
VII
Correlation
Position along chromosome (Mbp)


I
18
Gen
II
Nuc
III
Nuc/Gen
IV
AT fraction
V
Gene count
VI
Expr. x10^3
VII
Correlation
Position along chromosome (Mbp)


19
I
Gen
II
Nuc
III
Nuc/Gen
IV
AT fraction
V
Gene count
VI
Expr. x10^3
VII
Correlation
Position along chromosome (Mbp)


I
20
Gen
II
Nuc
III
Nuc/Gen
IV
AT fraction
V
Gene count
VI
Expr. x10^3
VII
Correlation
Position along chromosome (Mbp)


21
I
Gen
II
Nuc
III
Nuc/Gen
IV
AT fraction
V
Gene count
VI
Expr. x10^3
VII
Correlation
Position along chromosome (Mbp)


22
I
Gen
II
Nuc
III
Nuc/Gen
IV
AT fraction
V
Gene count
VI
Expr. x10^3
VII
Correlation
Position along chromosome (Mbp)

Supplementary Figure S3