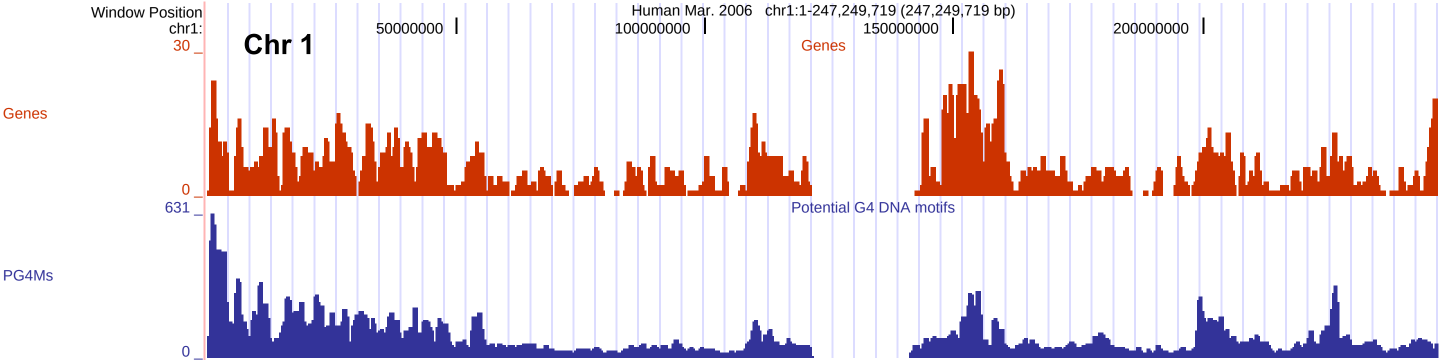
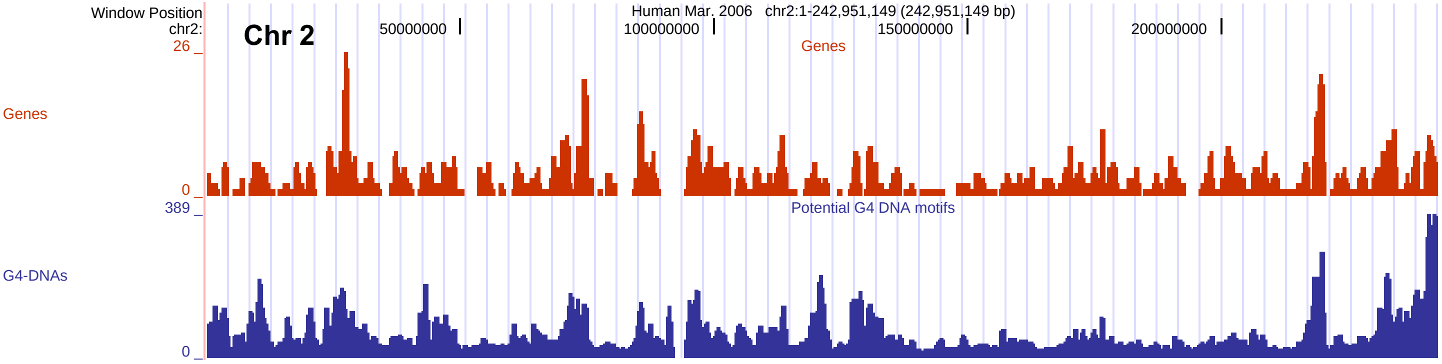
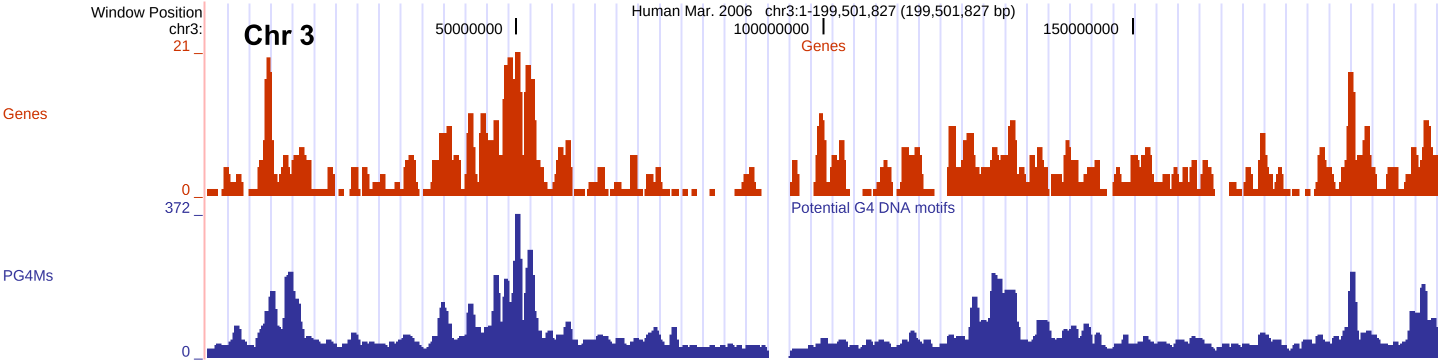
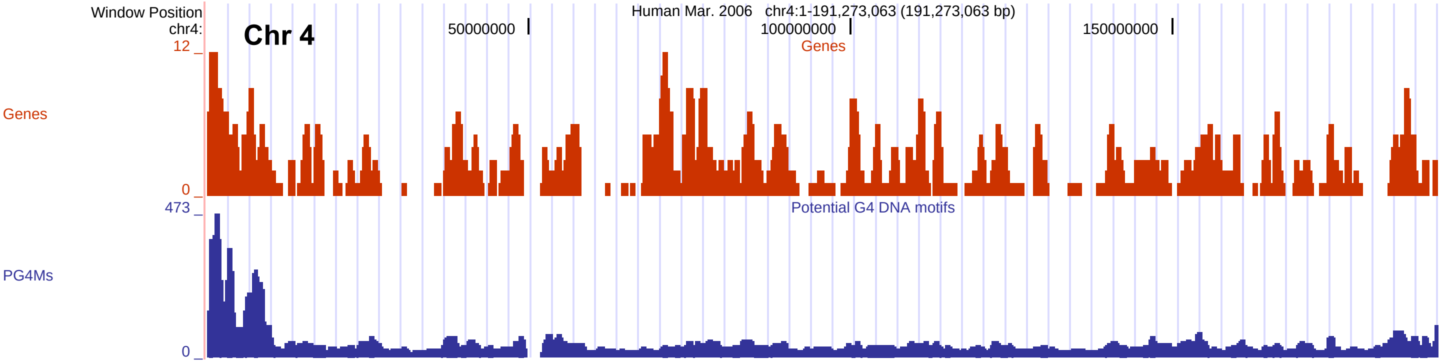
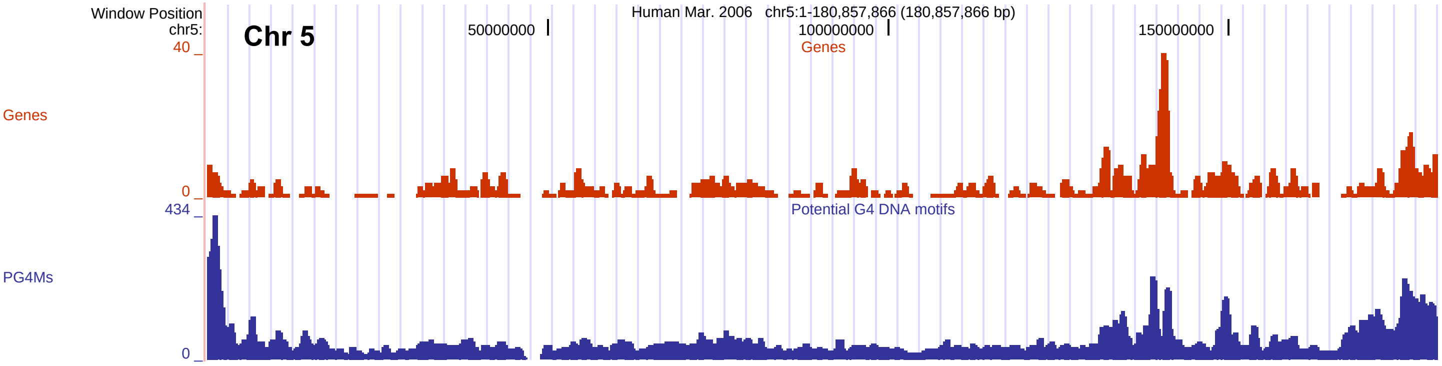
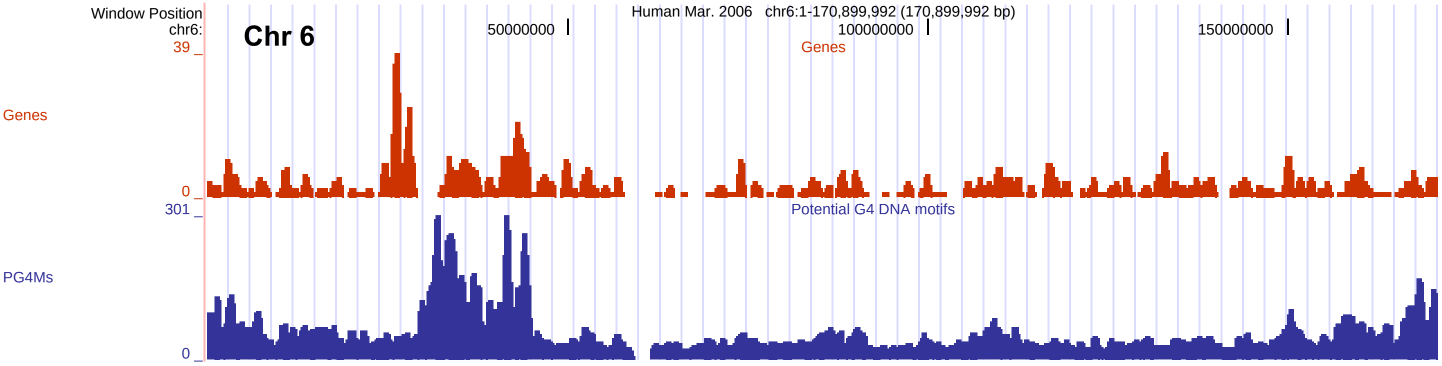

Window Position
chr1:
Chr 1
50000000
100000000
150000000
200000000
Human Mar. 2006 chr1:1-247,249,719 (247,249,719 bp)
Genes
30 _
Genes
0 _
631 _
Potential G4 DNA motifs
PG4Ms
0 _

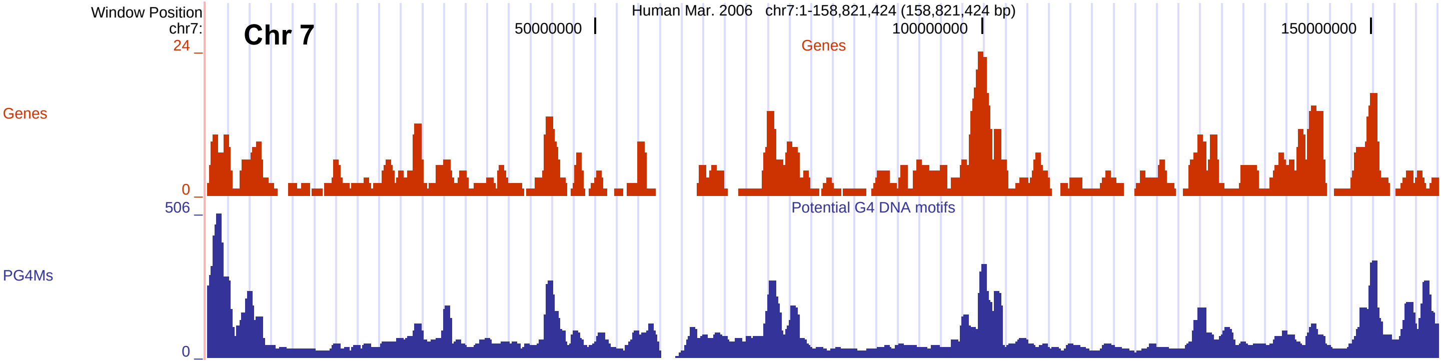

Window Position
chr2:
Chr 2
50000000
100000000
150000000
200000000
Human Mar. 2006 chr2:1-242,951,149 (242,951,149 bp)
Genes
26 _
Genes
0 _
389 _
Potential G4 DNA motifs
G4-DNAs
0 _

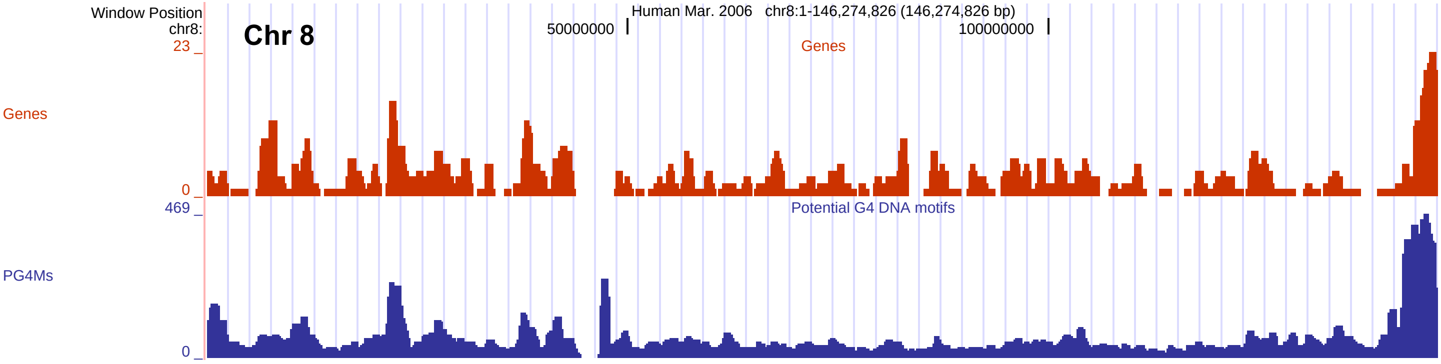

Window Position
chr3:
Chr 3
50000000
100000000
150000000
Human Mar. 2006 chr3:1-199,501,827 (199,501,827 bp)
Genes
21 _
Genes
0 _
372 _
Potential G4 DNA motifs
PG4Ms
0 _

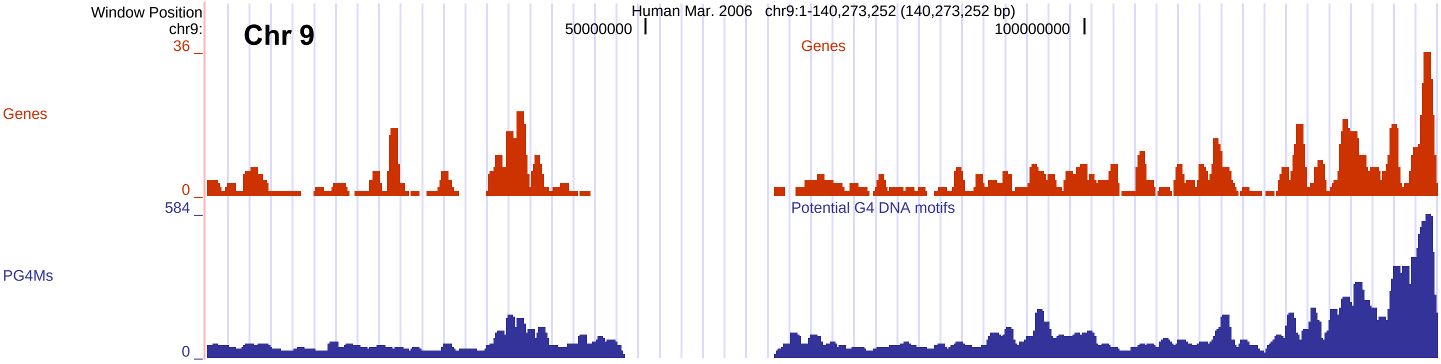

Window Position
chr4:
Chr 4
50000000
100000000
150000000
Human Mar. 2006 chr4:1-191,273,063 (191,273,063 bp)
Genes
12 _
Genes
0 _
473 _
Potential G4 DNA motifs
PG4Ms
0 _

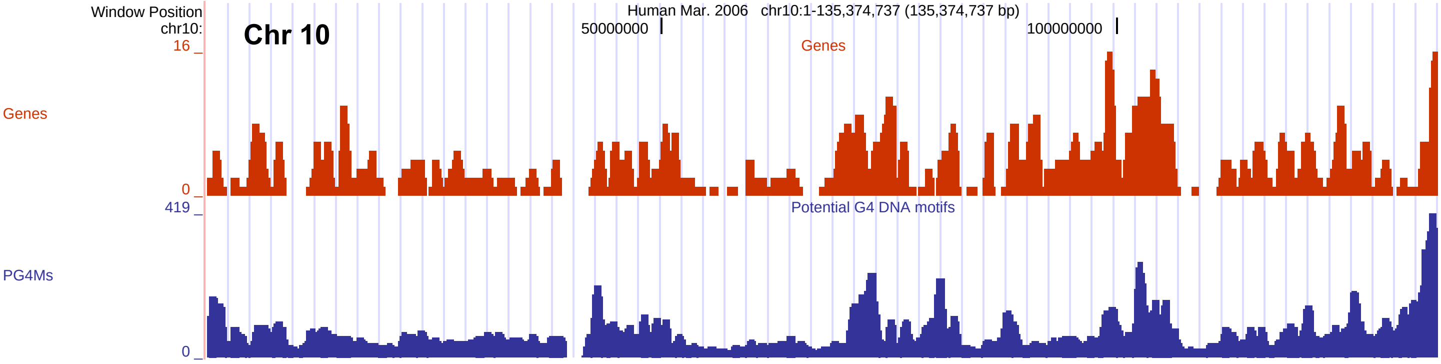

Window Position
chr5:
Chr 5
50000000
100000000
150000000
Human Mar. 2006 chr5:1-180,857,866 (180,857,866 bp)
Genes
40 _
Genes
0 _
434 _
Potential G4 DNA motifs
PG4Ms
0 _

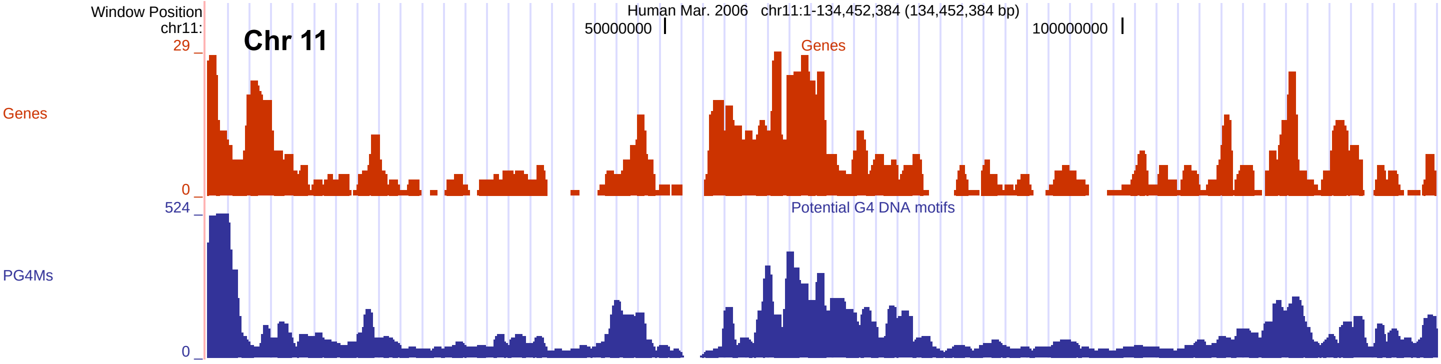

Window Position
chr6:
Chr 6
50000000
100000000
150000000
Human Mar. 2006 chr6:1-170,899,992 (170,899,992 bp)
Genes
39 _
Genes
0 _
301 _
Potential G4 DNA motifs
PG4Ms
0 _

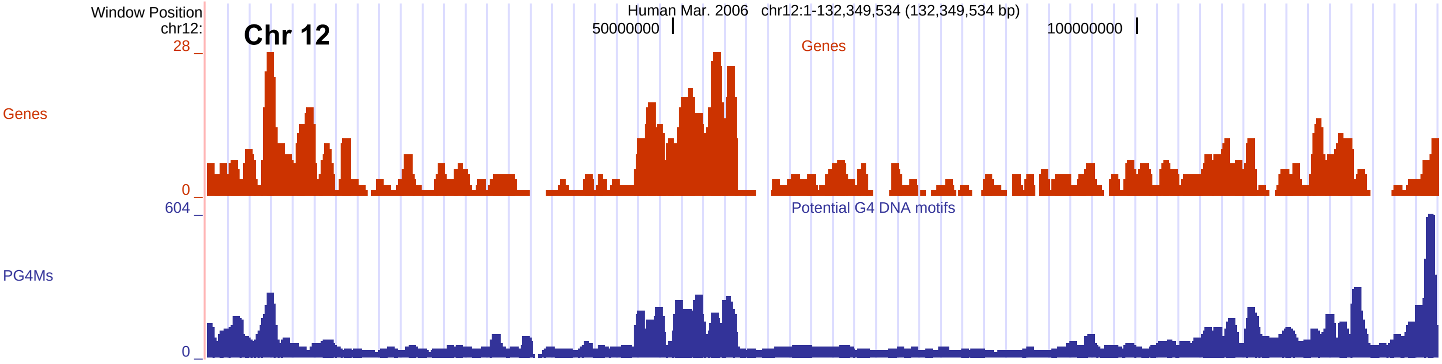

Window Position
chr7:
Chr 7
50000000
Human Mar. 2006 chr7:1-158,821,424 (158,821,424 bp)
100000000
150000000
Genes
24
Genes
0
506
Potential G4 DNA motifs
PG4Ms
0

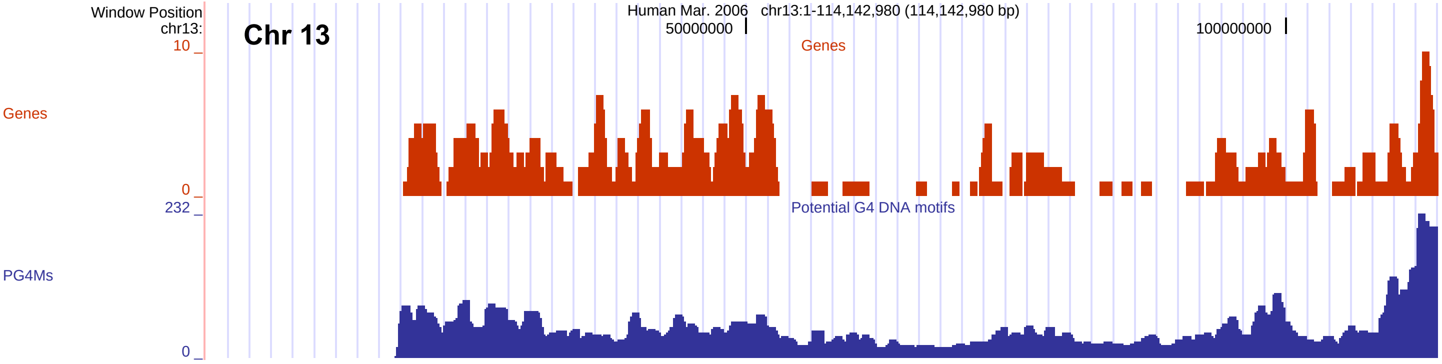

Window Position
chr8:
Chr 8
50000000
Human Mar. 2006 chr8:1-146,274,826 (146,274,826 bp)
100000000
Genes
23
Genes
0
469
Potential G4 DNA motifs
PG4Ms
0

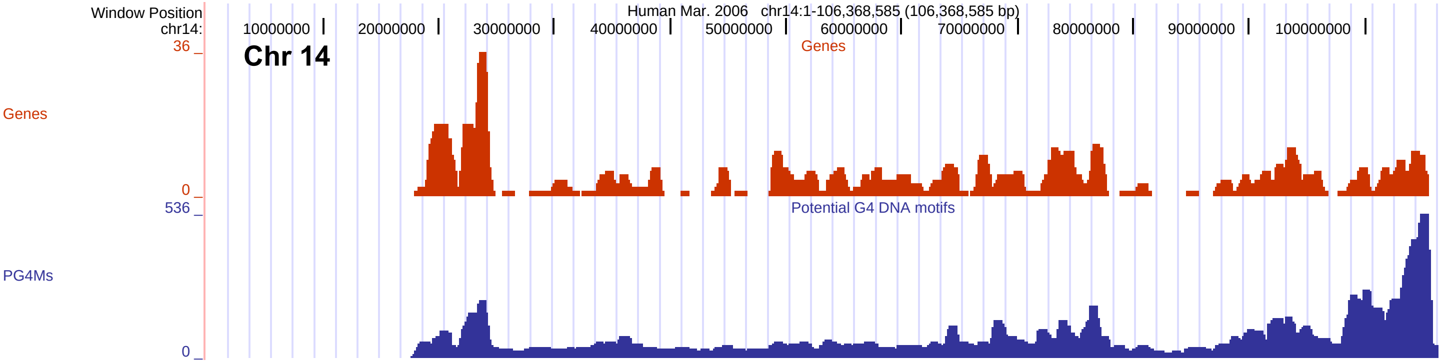

Window Position
chr9:
Chr 9
50000000
Human Mar. 2006 chr9:1-140,273,252 (140,273,252 bp)
100000000
Genes
36
Genes
0
584
Potential G4 DNA motifs
PG4Ms
0

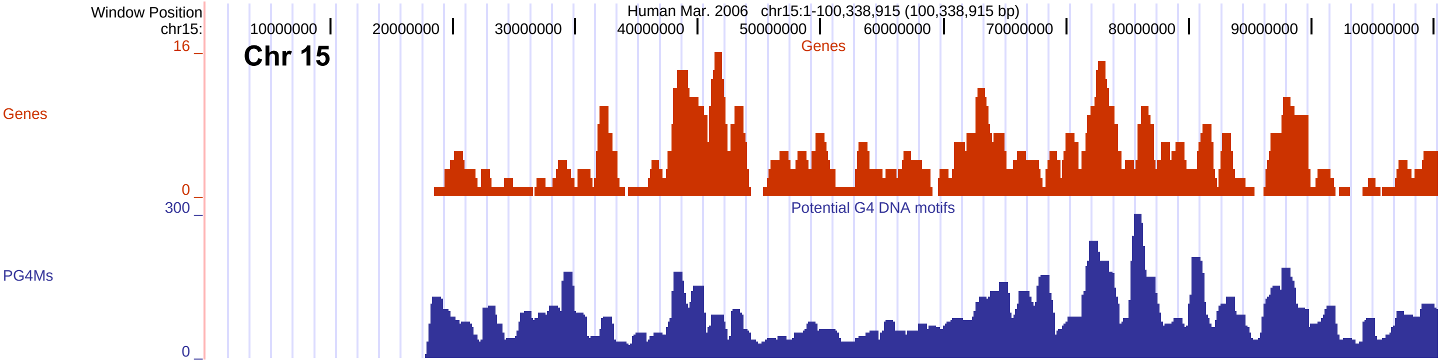

Window Position
chr10:
Chr 10
50000000
Human Mar. 2006 chr10:1-135,374,737 (135,374,737 bp)
100000000
Genes
16
Genes
0
419
Potential G4 DNA motifs
PG4Ms
0

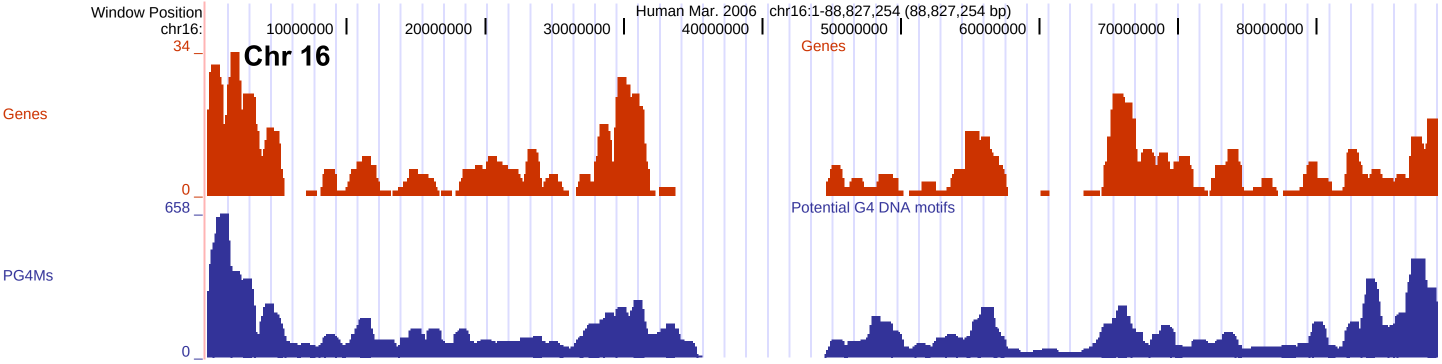

Window Position
chr11:
Chr 11
50000000
Human Mar. 2006 chr11:1-134,452,384 (134,452,384 bp)
100000000
Genes
29
Genes
0
524
Potential G4 DNA motifs
PG4Ms
0

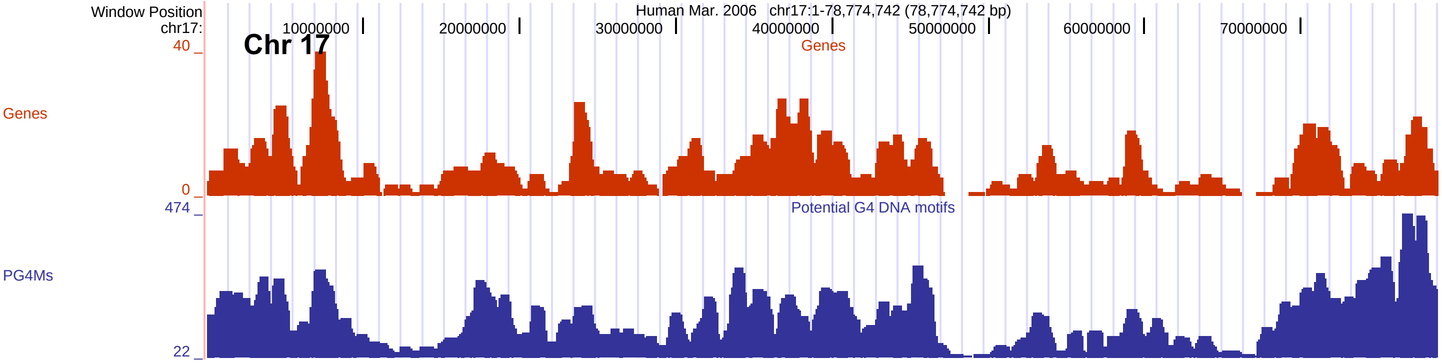

Window Position
chr12:
Chr 12
50000000
Human Mar. 2006 chr12:1-132,349,534 (132,349,534 bp)
100000000
Genes
28
Genes
0
604
Potential G4 DNA motifs
PG4Ms
0

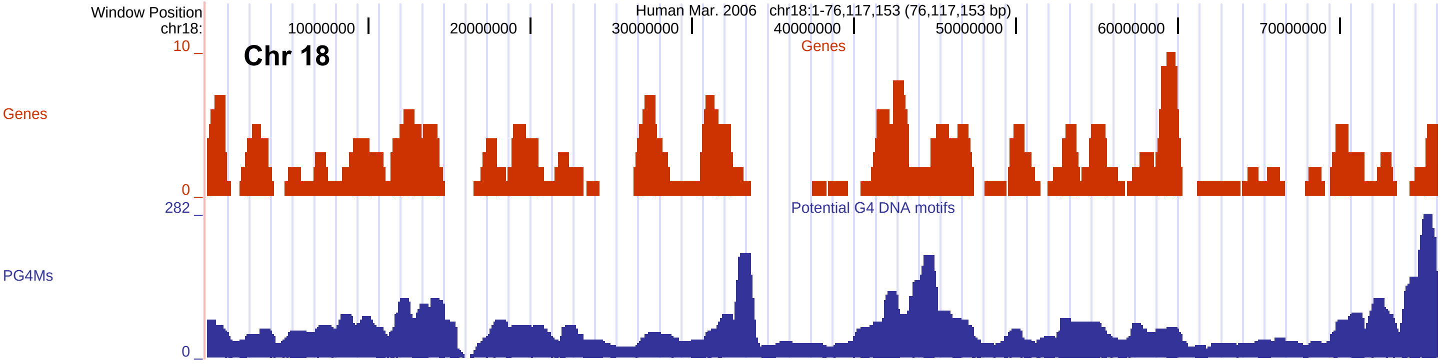

Window Position
chr13:
Human Mar. 2006 chr13:1-114,142,980 (114,142,980 bp)
50000000
100000000
Chr 13
10
Genes
Genes
0
232
Potential G4 DNA motifs
PG4Ms
0

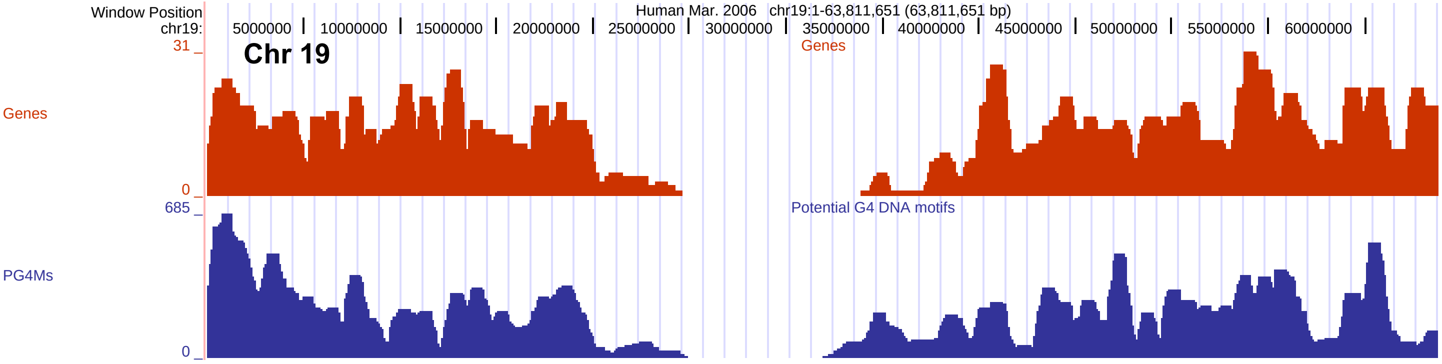

Window Position
chr14:
Human Mar. 2006 chr14:1-106,368,585 (106,368,585 bp)
10000000
20000000
30000000
40000000
50000000
60000000
70000000
80000000
90000000
100000000
Chr 14
36
Genes
Genes
0
536
Potential G4 DNA motifs
PG4Ms
0

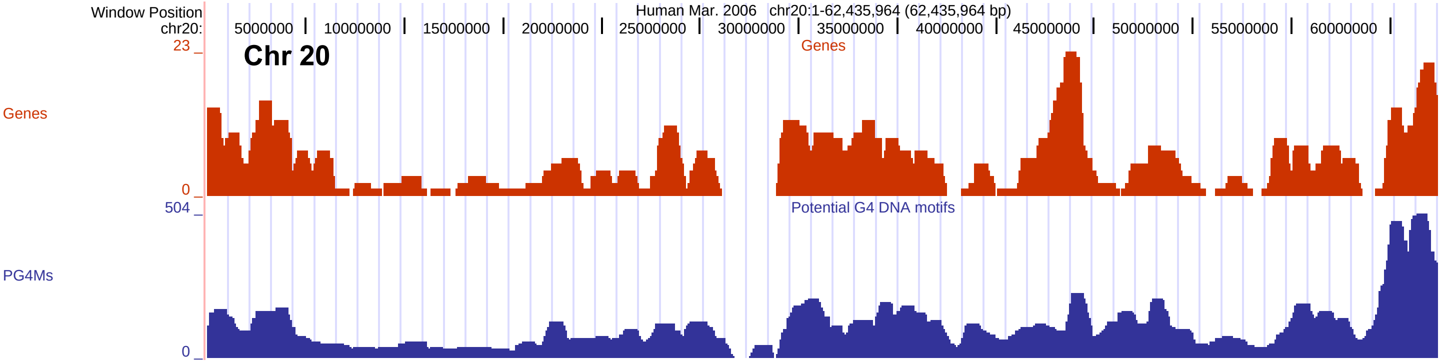

Window Position
chr15:
Human Mar. 2006 chr15:1-100,338,915 (100,338,915 bp)
10000000
20000000
30000000
40000000
50000000
60000000
70000000
80000000
90000000
100000000
Chr 15
16
Genes
Genes
0
300
Potential G4 DNA motifs
PG4Ms
0

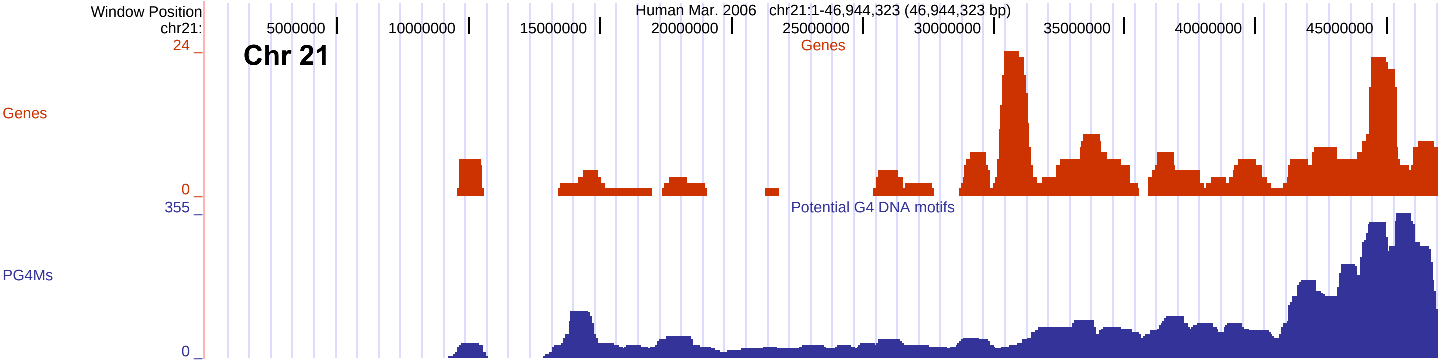

Window Position
chr16:
Human Mar. 2006 chr16:1-88,827,254 (88,827,254 bp)
10000000
20000000
30000000
40000000
50000000
60000000
70000000
80000000
Chr 16
34
Genes
Genes
0
658
Potential G4 DNA motifs
PG4Ms
0

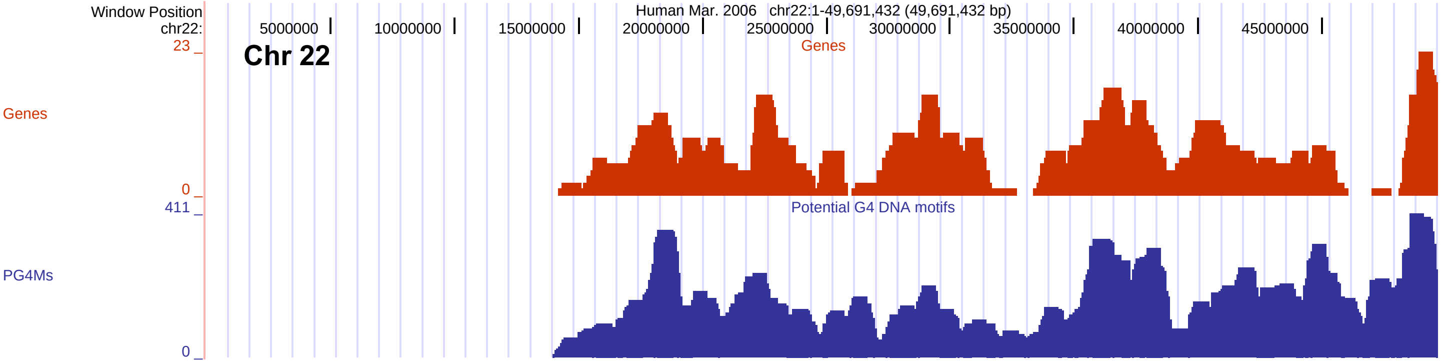

Window Position
chr17:
Human Mar. 2006 chr17:1-78,774,742 (78,774,742 bp)
10000000
20000000
30000000
40000000
50000000
60000000
70000000
Chr 17
40
Genes
Genes
0
474
Potential G4 DNA motifs
PG4Ms
22

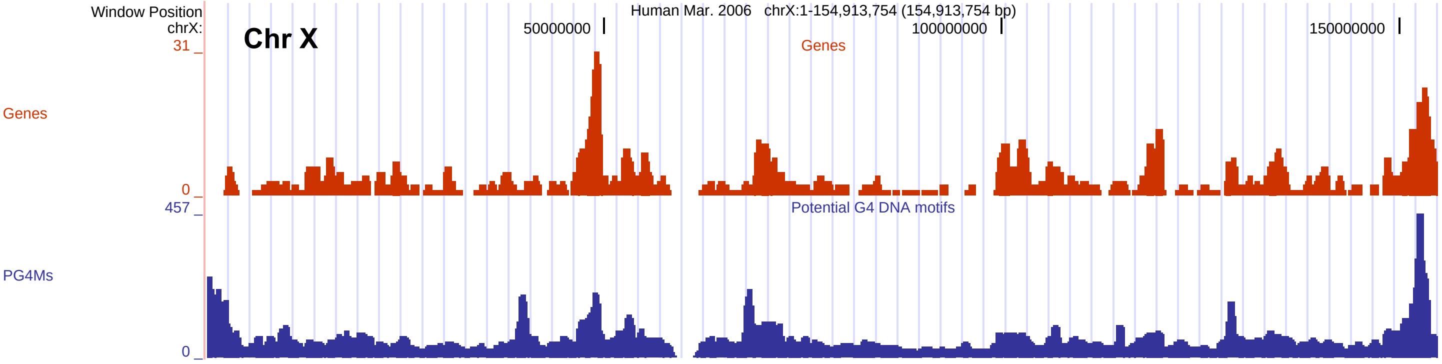

Window Position
chr18:
Human Mar. 2006 chr18:1-76,117,153 (76,117,153 bp)
10000000
20000000
30000000
40000000
50000000
60000000
70000000
Chr 18
10
Genes
Genes
0
282
Potential G4 DNA motifs
PG4Ms
0

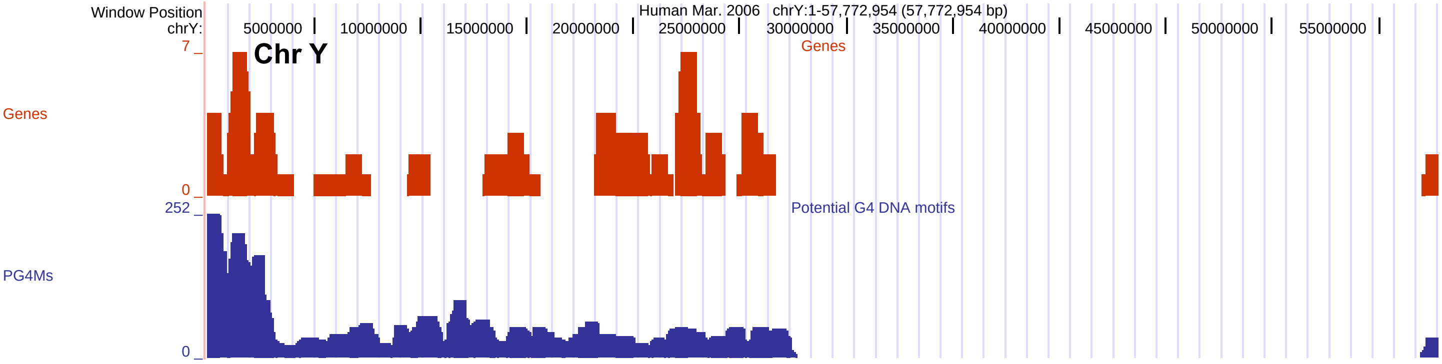

Window Position
chr19:
Human Mar. 2006 chr19:1-63,811,651 (63,811,651 bp)
5000000
10000000
15000000
20000000
25000000
30000000
35000000
40000000
45000000
50000000
55000000
60000000
Chr 19
Genes
31
0
Genes
Potential G4 DNA motifs
685
0
PG4Ms


Window Position
chr20:
Human Mar. 2006 chr20:1-62,435,964 (62,435,964 bp)
5000000
10000000
15000000
20000000
25000000
30000000
35000000
40000000
45000000
50000000
55000000
60000000
Chr 20
Genes
23
0
Genes
Potential G4 DNA motifs
504
0
PG4Ms


Window Position
chr21:
Human Mar. 2006 chr21:1-46,944,323 (46,944,323 bp)
5000000
10000000
15000000
20000000
25000000
30000000
35000000
40000000
45000000
Chr 21
Genes
24
0
Genes
Potential G4 DNA motifs
355
0
PG4Ms

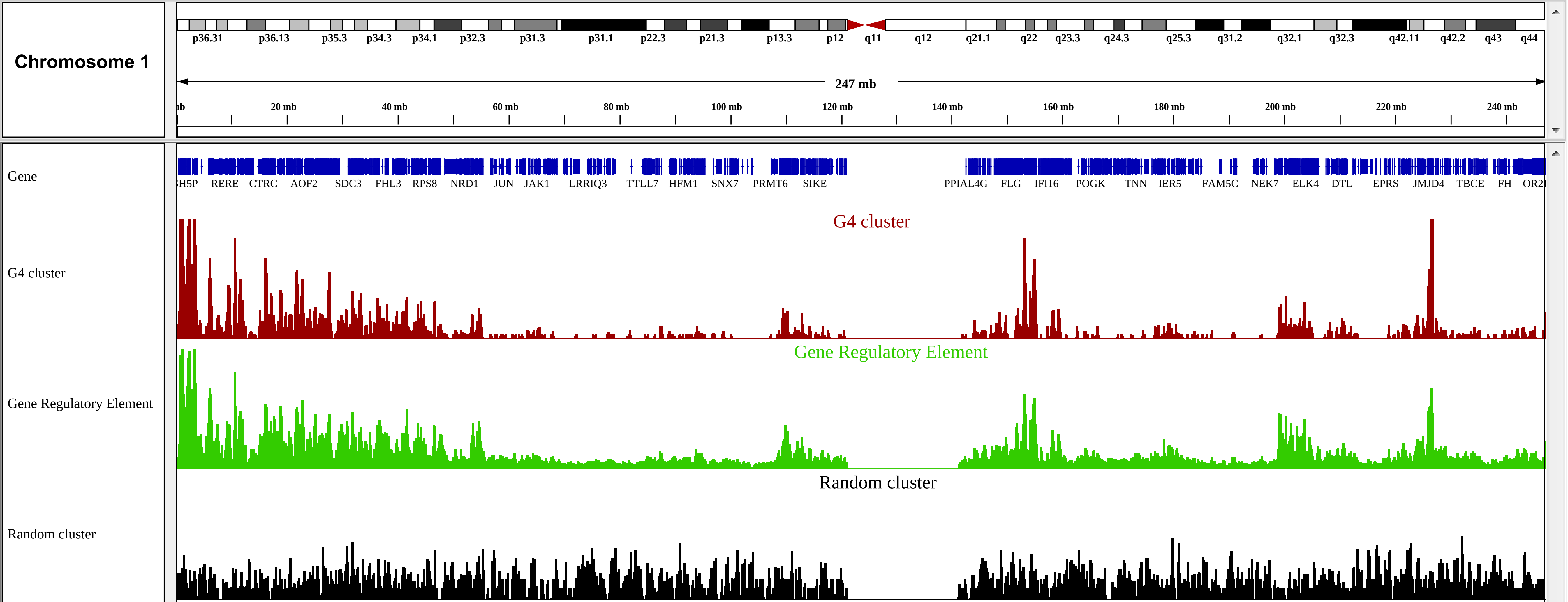

Window Position
chr22:
Human Mar. 2006 chr22:1-49,691,432 (49,691,432 bp)
5000000
10000000
15000000
20000000
25000000
30000000
35000000
40000000
45000000
Chr 22
Genes
23
0
Genes
Potential G4 DNA motifs
411
0
PG4Ms

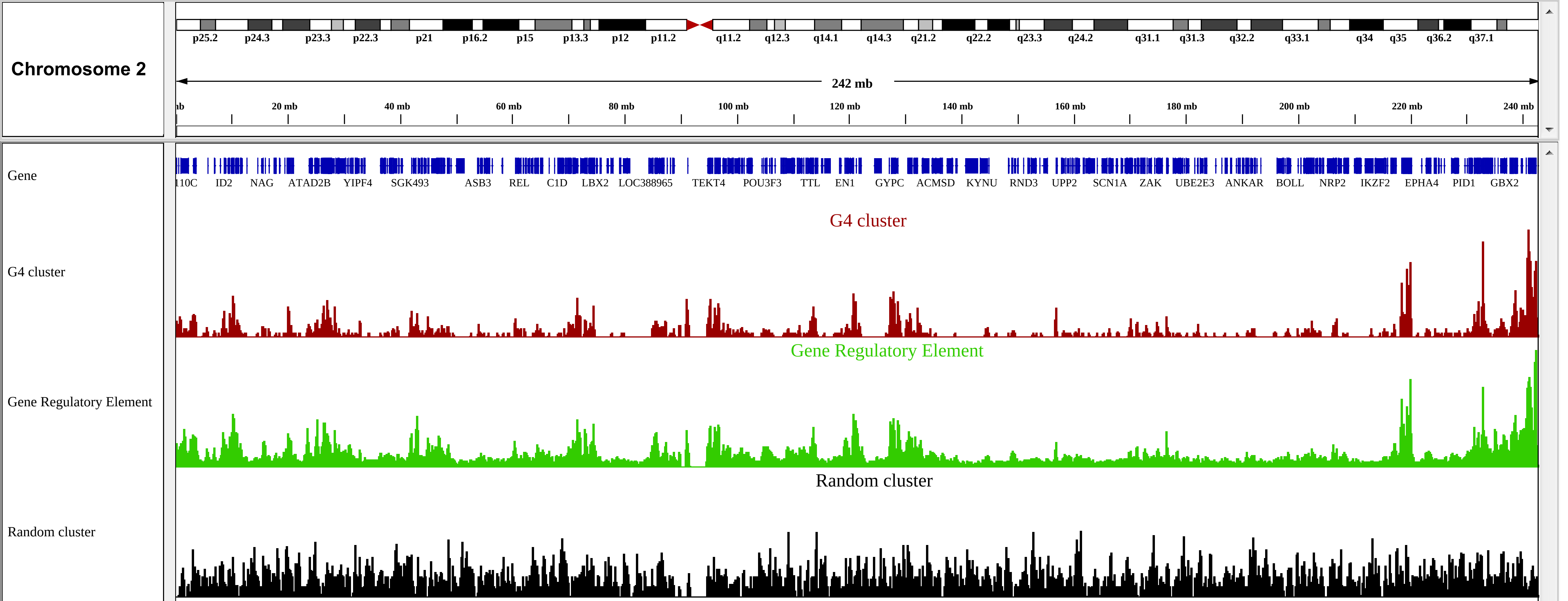

Window Position
chrX:
Human Mar. 2006 chrX:1-154,913,754 (154,913,754 bp)
50000000
100000000
150000000
Chr X
Genes
31
0
Genes
Potential G4 DNA motifs
457
0
PG4Ms

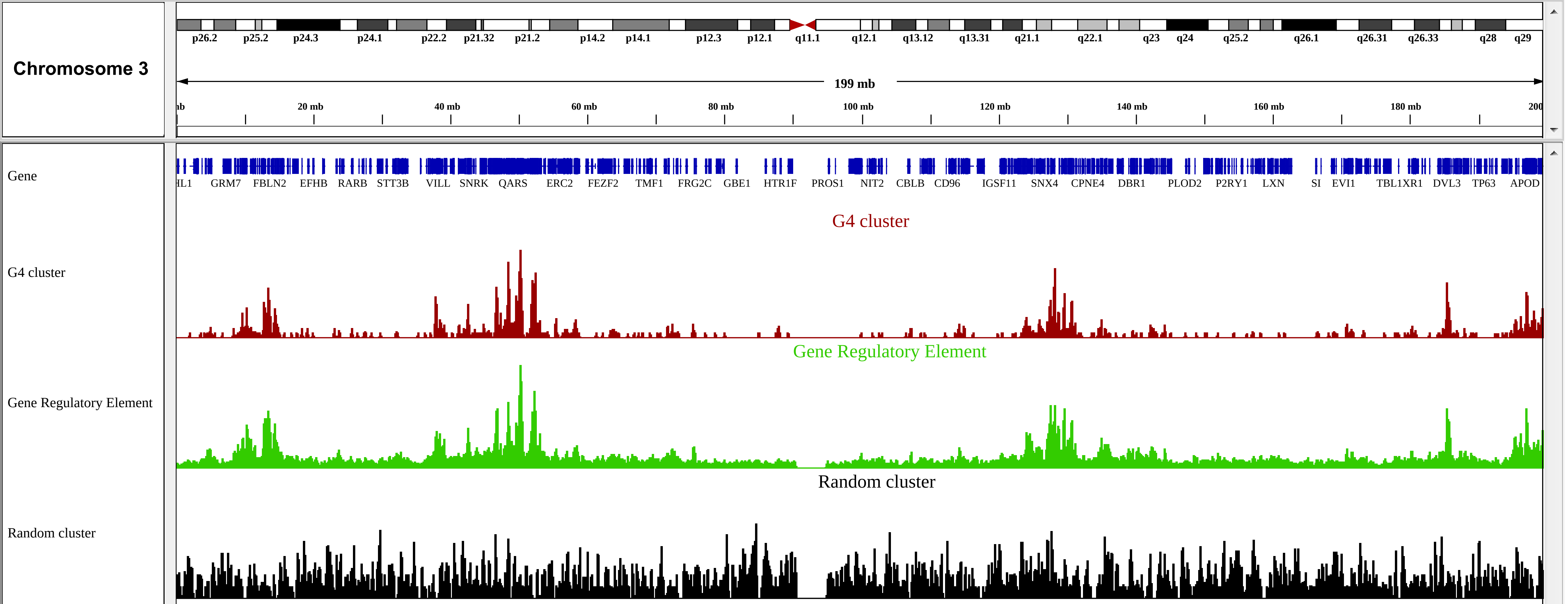

Window Position
chrY:
Human Mar. 2006 chrY:1-57,772,954 (57,772,954 bp)
5000000
10000000
15000000
20000000
25000000
30000000
35000000
40000000
45000000
50000000
55000000
Chr Y
Genes
7
0
Genes
Potential G4 DNA motifs
252
0
PG4Ms

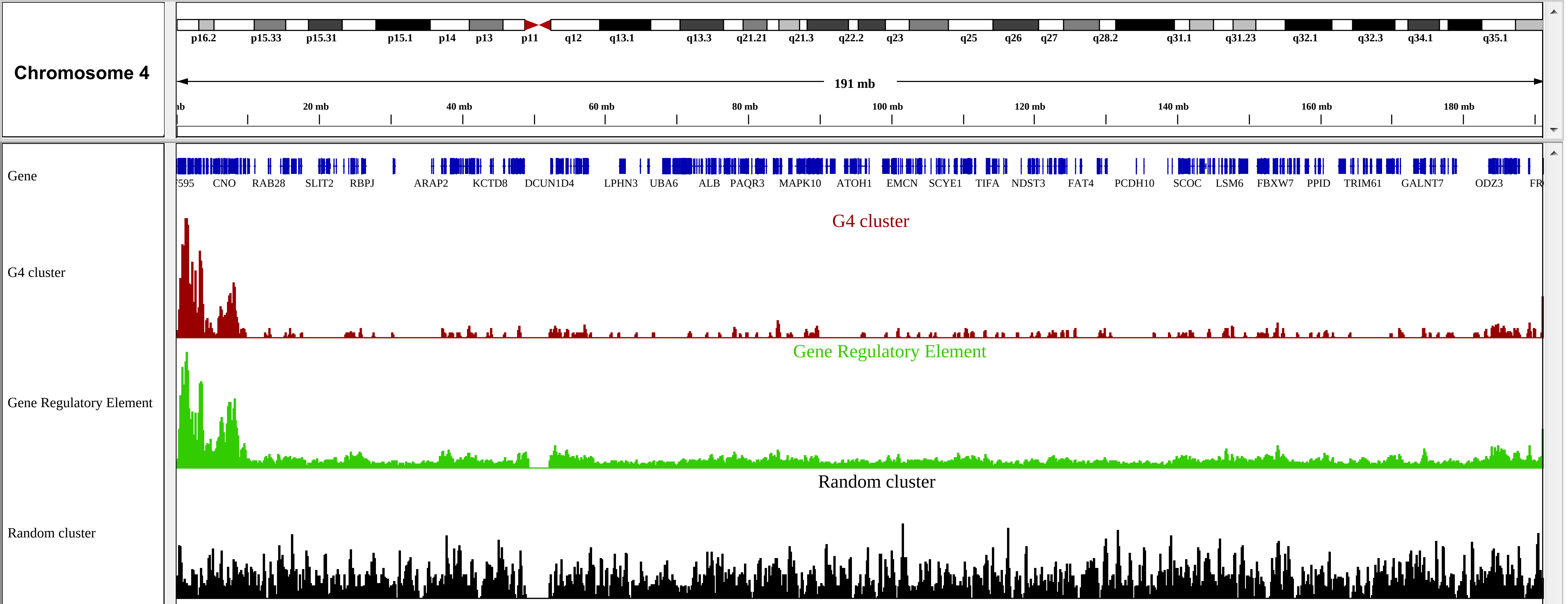
Chromosome	Spearman ρ	*P* value	Chromosome	Spearman ρ	*P* value
chr1	0.569	<0.001	chr13	0.602	<0.001
chr2	0.539	<0.001	chr14	0.631	<0.001
chr3	0.600	<0.001	chr15	0.487	<0.001
chr4	0.532	<0.001	chr16	0.655	<0.001
chr5	0.562	<0.001	chr17	0.653	<0.001
chr6	0.417	<0.001	chr18	0.514	<0.001
chr7	0.492	<0.001	chr19	0.670	<0.001
chr8	0.460	<0.001	chr20	0.639	<0.001
chr9	0.608	<0.001	chr21	0.728	<0.001
chr10	0.480	<0.001	chr22	0.466	<0.001
chr11	0.569	<0.001	chrX	0.610	<0.001
chr12	0.502	<0.001	chrY	0.139	<0.001

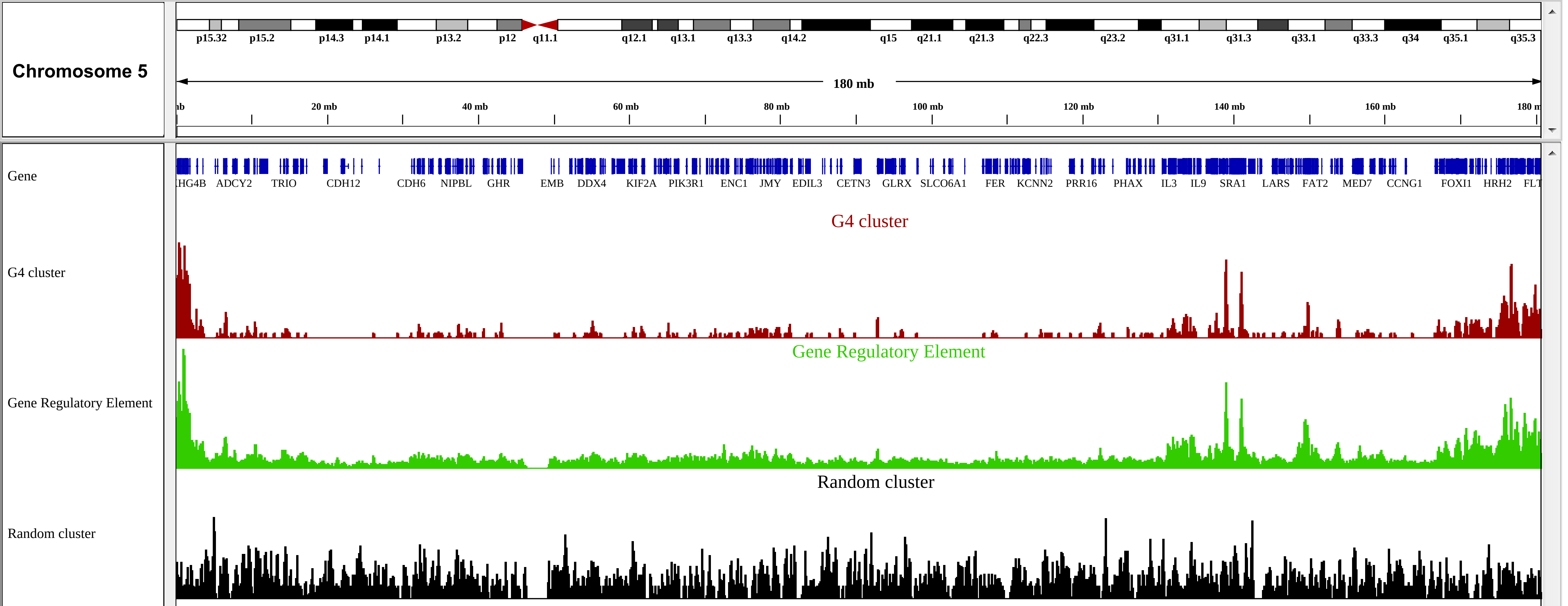
Supplementary Material Figure S1. The distribution of PG4Ms correlates with that of genes across the human genome.
Number of PG4Ms and gene regions was calculated in the human genome in 500-kb windows with a 50 kb step size. The distribution of PG4Ms (dark blue bars) and gene regions (dark red bars) are shown for each chromosome (this figure was prepared by the UCSC genome browser). Correlation coefficient between PG4Ms and gene regions for each chromosome are shown on the bottom. The low correlation coefficient of Y chromosome might have been due to low gene density.

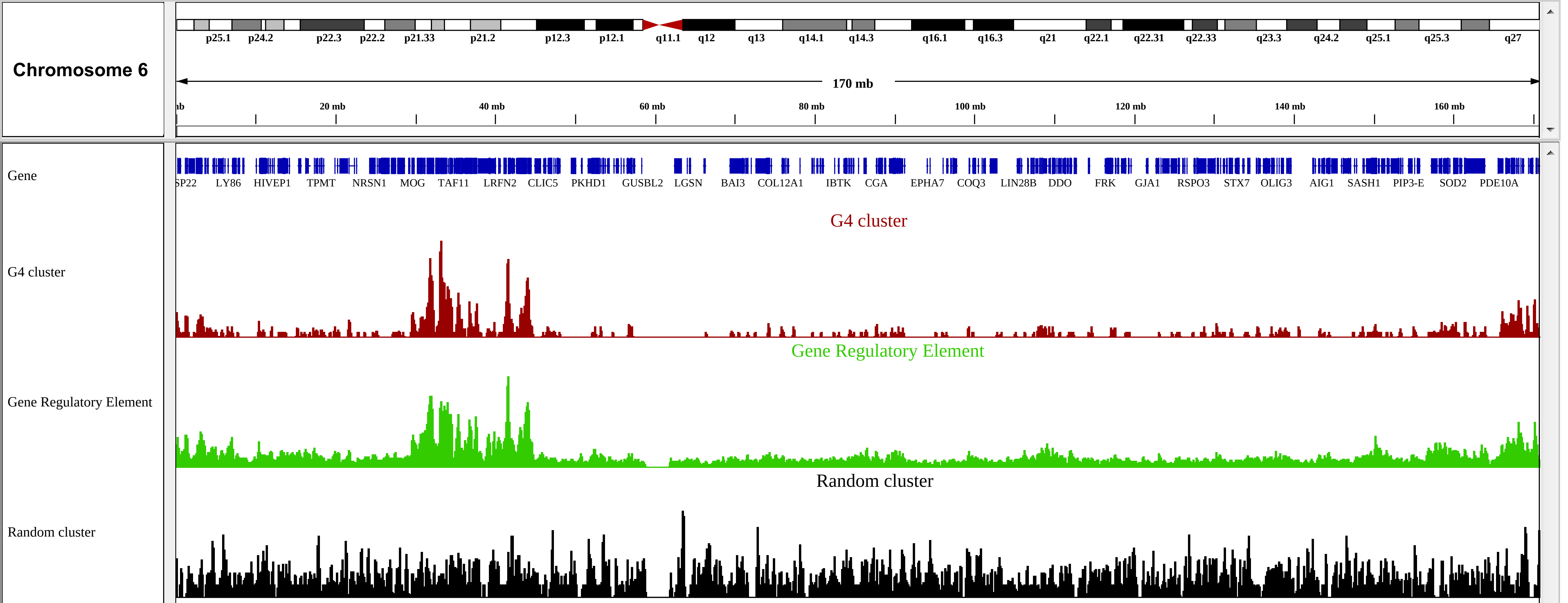

Chromosome 1
p36.31
p36.13
p35.3
p34.3
p34.1
p32.3
p31.3
p31.1
p22.3
p21.3
p13.3
p12
q11
q12
q21.1
q22
q23.3
q24.3
q25.3
q31.2
q32.1
q32.3
q42.11
q42.2
q43
q44
247 mb
20 mb
40 mb
60 mb
80 mb
100 mb
120 mb
140 mb
160 mb
180 mb
200 mb
220 mb
240 mb
Gene
H5P
RERE
CTRC
AOF2
SDC3
FHL3
RPS8
NRD1
JUN
JAK1
LRRIQ3
TTLL7
HFM1
SNX7
PRMT6
SIKE
PPIAL4G
FLG
IFI16
POGK
TNN
IER5
FAM5C
NEK7
ELK4
DTL
EPRS
JMJD4
TBCE
FH
OR2
G4 cluster
G4 cluster
Gene Regulatory Element
Gene Regulatory Element
Random cluster
Random cluster

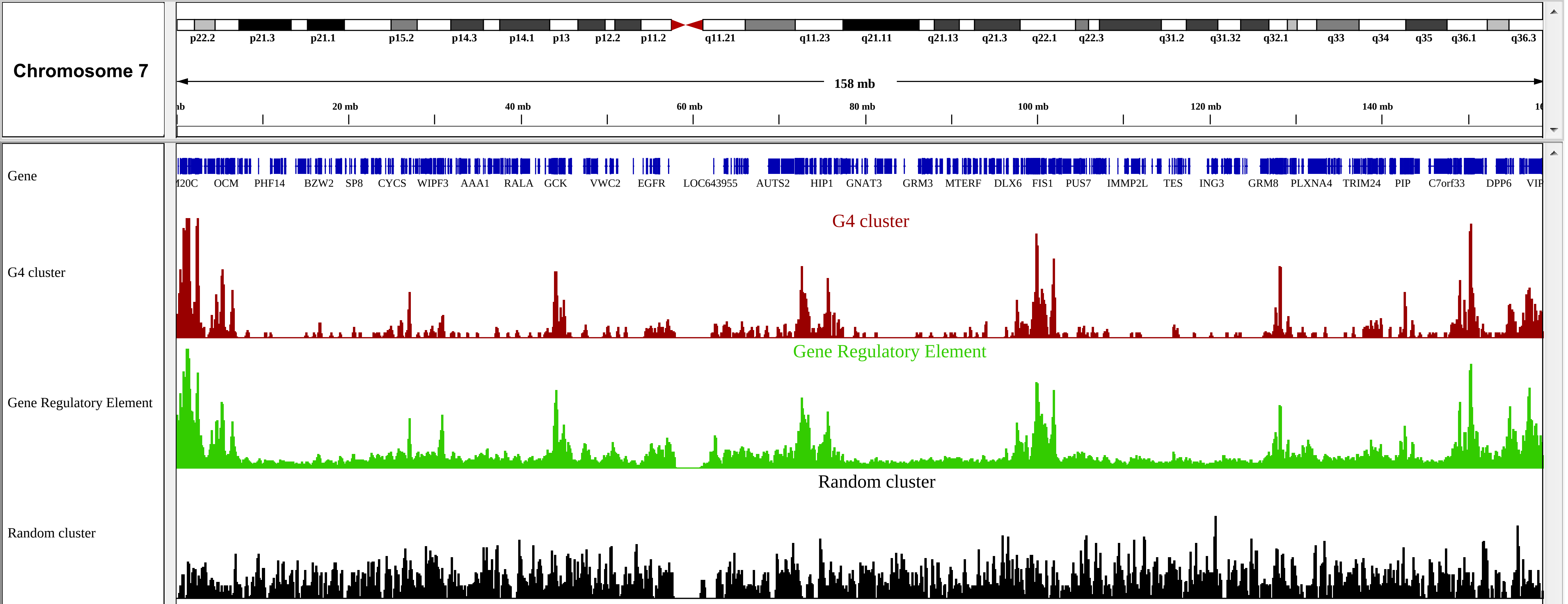

Chromosome 2
p25.2
p24.3
p23.3
p22.3
p21
p16.2
p15
p13.3
p12
p11.2
q11.2
q12.3
q14.1
q14.3
q21.2
q22.2
q23.3
q24.2
q31.1
q31.3
q32.2
q33.1
q34
q35
q36.2
q37.1
242 mb
mb
20 mb
40 mb
60 mb
80 mb
100 mb
120 mb
140 mb
160 mb
180 mb
200 mb
220 mb
240 mb
Gene
110C
ID2
NAG
ATAD2B
YIPF4
SGK493
ASB3
REL
C1D
LBX2
LOC388965
TEKT4
POU3F3
TTL
EN1
GYPC
ACMSD
KYNU
RND3
UPP2
SCN1A
ZAK
UBE2E3
ANKAR
BOLL
NRP2
IKZF2
EPHA4
PID1
GBX2
G4 cluster
G4 cluster
Gene Regulatory Element
Gene Regulatory Element
Random cluster
Random cluster

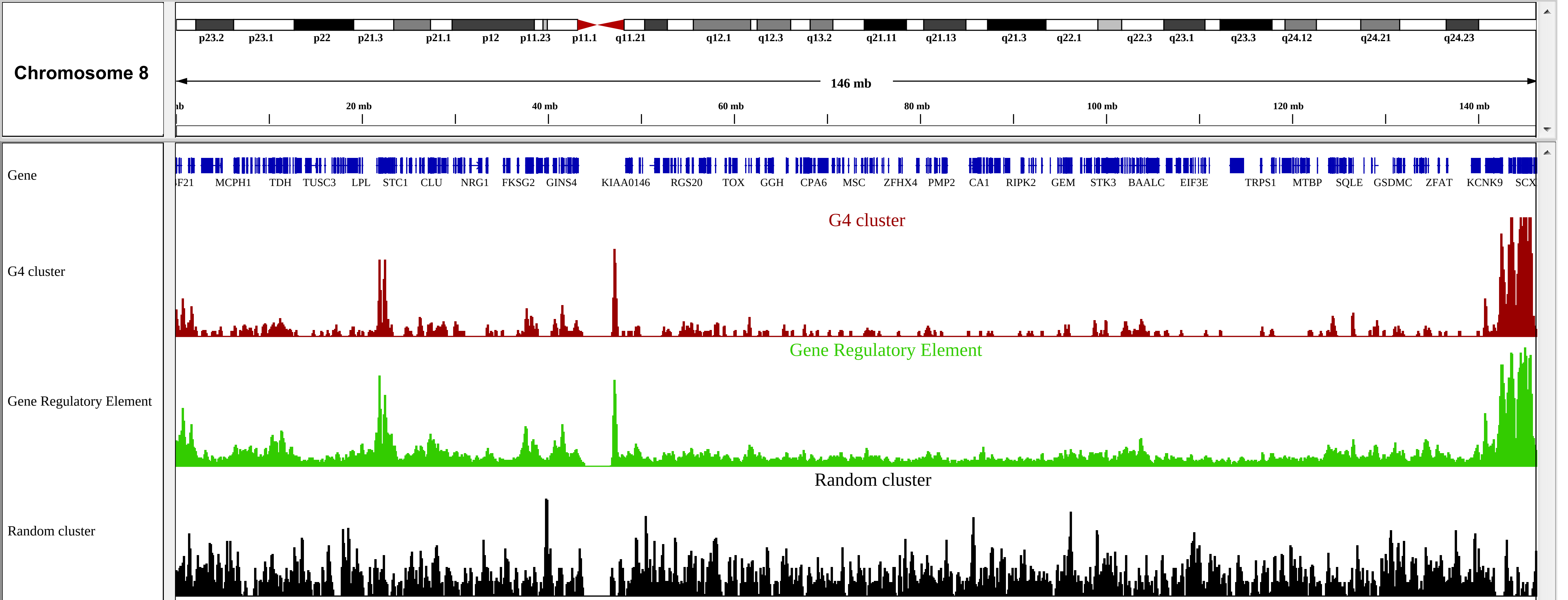

Chromosome 3
p26.2
p25.2
p24.3
p24.1
p22.2
p21.32
p21.2
p14.2
p14.1
p12.3
p12.1
q11.1
q12.1
q13.12
q13.31
q21.1
q22.1
q23
q24
q25.2
q26.1
q26.31
q26.33
q28
q29
199 mb
mb
20 mb
40 mb
60 mb
80 mb
100 mb
120 mb
140 mb
160 mb
180 mb
200
Gene
HL1
GRM7
FBLN2
EFHB
RARB
STT3B
VILL
SNRK
QARS
ERC2
FEZF2
TMF1
FRG2C
GBE1
HTR1F
PROS1
NIT2
CBLB
CD96
IGSF11
SNX4
CPNE4
DBR1
PLOD2
P2RY1
LXN
SI
EVI1
TBL1XR1
DVL3
TP63
APOD
G4 cluster
G4 cluster
Gene Regulatory Element
Gene Regulatory Element
Random cluster
Random cluster

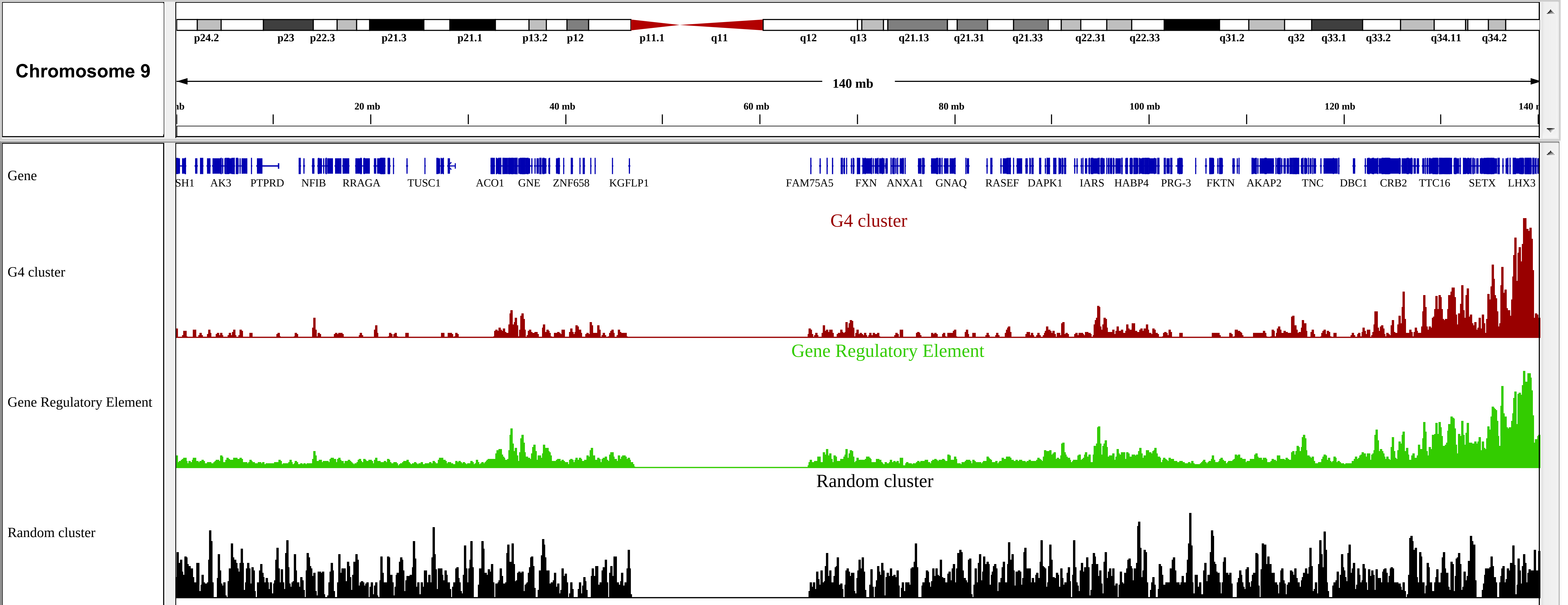

Chromosome 4
p16.2
p15.33
p15.31
p15.1
p14
p13
p11
q12
q13.1
q13.3
q21.21
q21.3
q22.2
q23
q25
q26
q27
q28.2
q31.1
q31.23
q32.1
q32.3
q34.1
q35.1
191 mb
20 mb
40 mb
60 mb
80 mb
100 mb
120 mb
140 mb
160 mb
180 mb
Gene
CNO
RAB28
SLIT2
RBPJ
ARAP2
KCTD8
DCUN1D4
LPHN3
UBA6
ALB
PAQR3
MAPK10
ATOH1
EMCN
SCYE1
TIFA
NDST3
FAT4
PCDH10
SCOC
LSM6
FBXW7
PPID
TRIM61
GALNT7
ODZ3
G4 cluster
G4 cluster
Gene Regulatory Element
Gene Regulatory Element
Random cluster
Random cluster

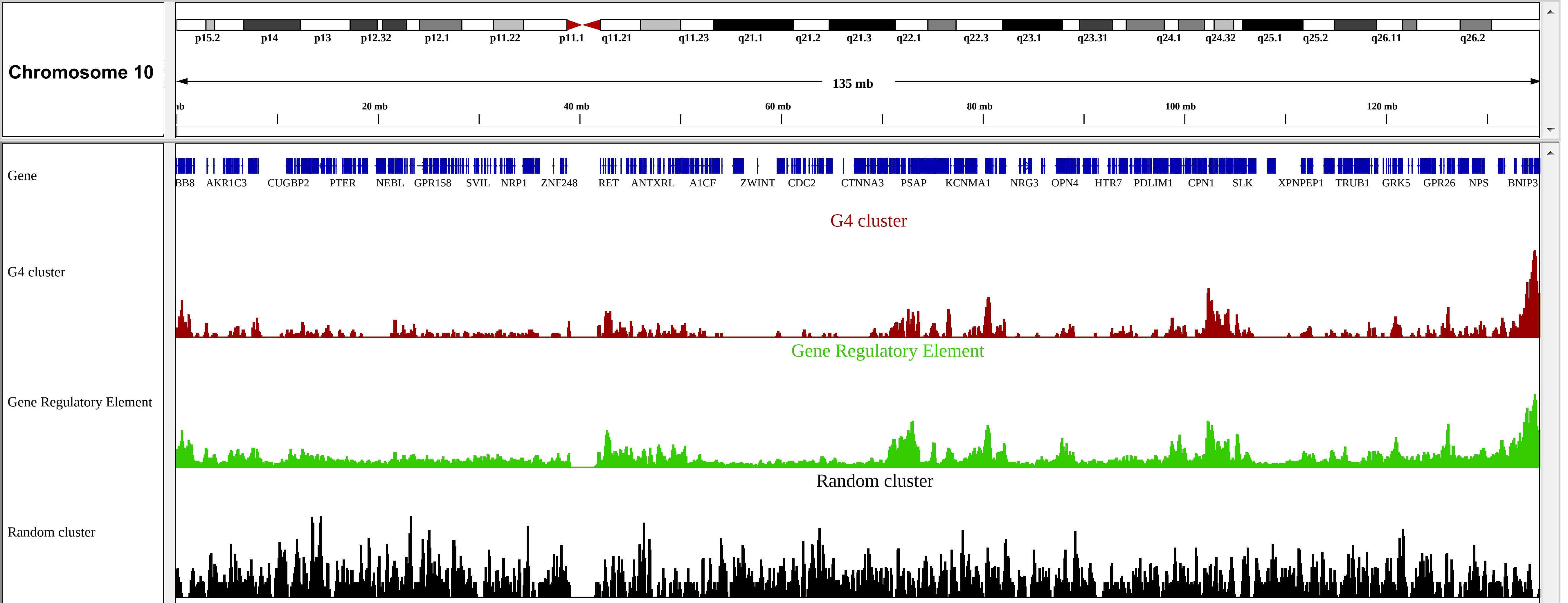

Chromosome 5
p15.32
p15.2
p14.3
p14.1
p13.2
p12
q11.1
q12.1
q13.1
q13.3
q14.2
q15
q21.1
q21.3
q22.3
q23.2
q31.1
q31.3
q33.1
q33.3
q34
q35.1
q35.3
180 mb
20 mb
40 mb
60 mb
80 mb
100 mb
120 mb
140 mb
160 mb
180 m
Gene
HG4B
ADCY2
TRIO
CDH12
CDH6
NIPBL
GHR
EMB
DDX4
KIF2A
PIK3R1
ENC1
JMY
EDIL3
CETN3
GLRX
SLCO6A1
FER
KCNN2
PRR16
PHAX
IL3
IL9
SRA1
LARS
FAT2
MED7
CCNG1
FOXI1
HRH2
FLT
G4 cluster
G4 cluster
Gene Regulatory Element
Gene Regulatory Element
Random cluster
Random cluster

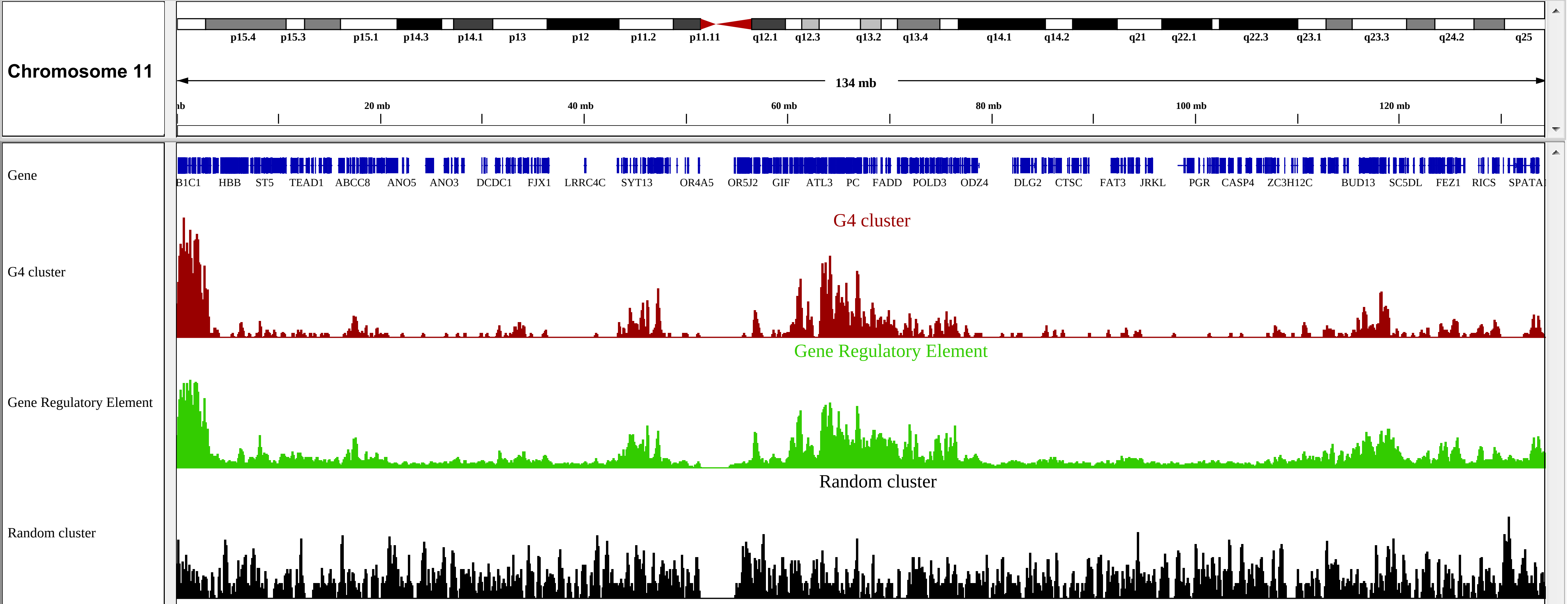

Chromosome 6
p25.1
p24.2
p22.3
p22.2
p21.33
p21.2
p12.3
p12.1
q11.1
q12
q13
q14.1
q14.3
q16.1
q16.3
q21
q22.1
q22.31
q22.33
q23.3
q24.2
q25.1
q25.3
q27
170 mb
nb
20 mb
40 mb
60 mb
80 mb
100 mb
120 mb
140 mb
160 mb
Gene
SP22
LY86
HIVEP1
TPMT
NRSN1
MOG
TAF11
LRFN2
CLIC5
PKHD1
GUSBL2
LGSN
BAI3
COL12A1
IBTK
CGA
EPHA7
COQ3
LIN28B
DDO
FRK
GJA1
RSPO3
STX7
OLIG3
AIG1
SASH1
PIP3-E
SOD2
PDE10A
G4 cluster
G4 cluster
Gene Regulatory Element
Gene Regulatory Element
Random cluster
Random cluster

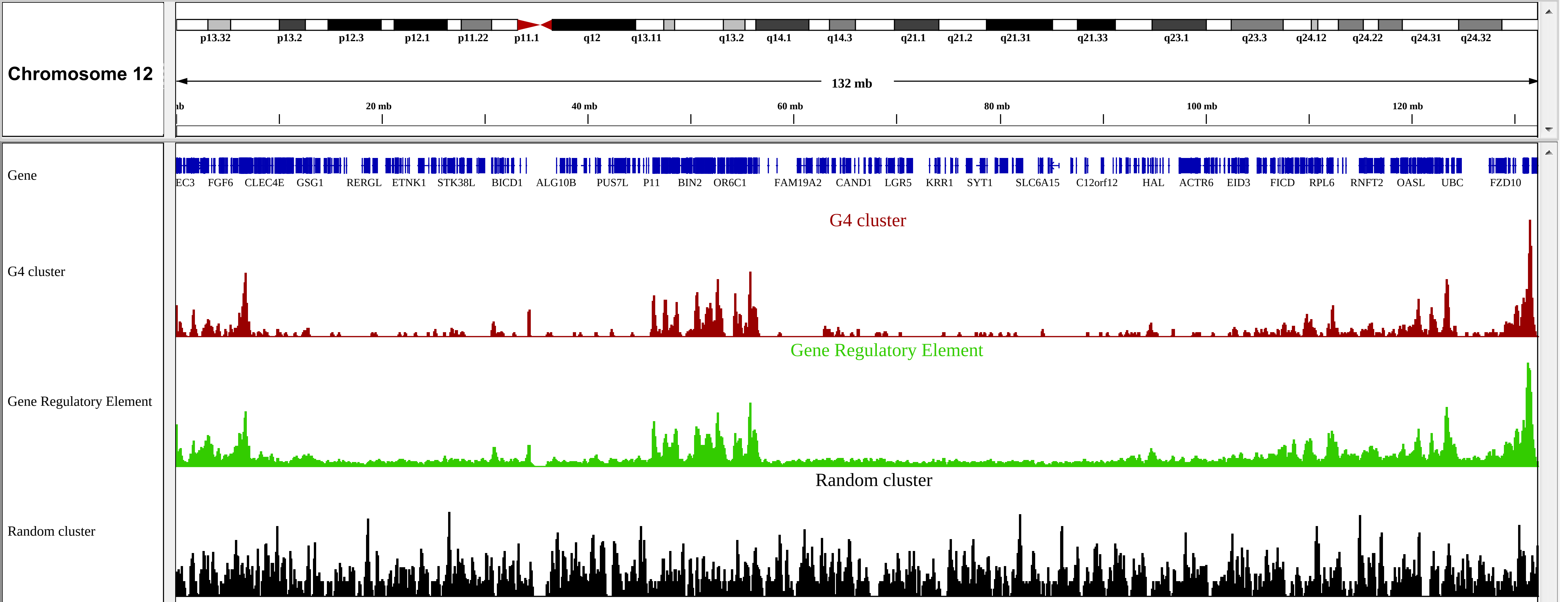

Chromosome 7
p22.2
p21.3
p21.1
p15.2
p14.3
p14.1
p13
p12.2
p11.2
q11.21
q11.23
q21.11
q21.13
q21.3
q22.1
q22.3
q31.2
q31.32
q32.1
q33
q34
q35
q36.1
q36.3
158 mb
20 mb
40 mb
60 mb
80 mb
100 mb
120 mb
140 mb
Gene
G4 cluster
Gene Regulatory Element
Random cluster
OCM
PHF14
BZW2
SP8
CYCS
WIPF3
AAA1
RALA
GCK
VWC2
EGFR
LOC643955
AUTS2
HIP1
GNAT3
GRM3
MTERF
DLX6
FIS1
PUS7
IMMP2L
TES
ING3
GRM8
PLXNA4
TRIM24
PIP
C7orf33
DPP6
G4 cluster
Gene Regulatory Element
Random cluster

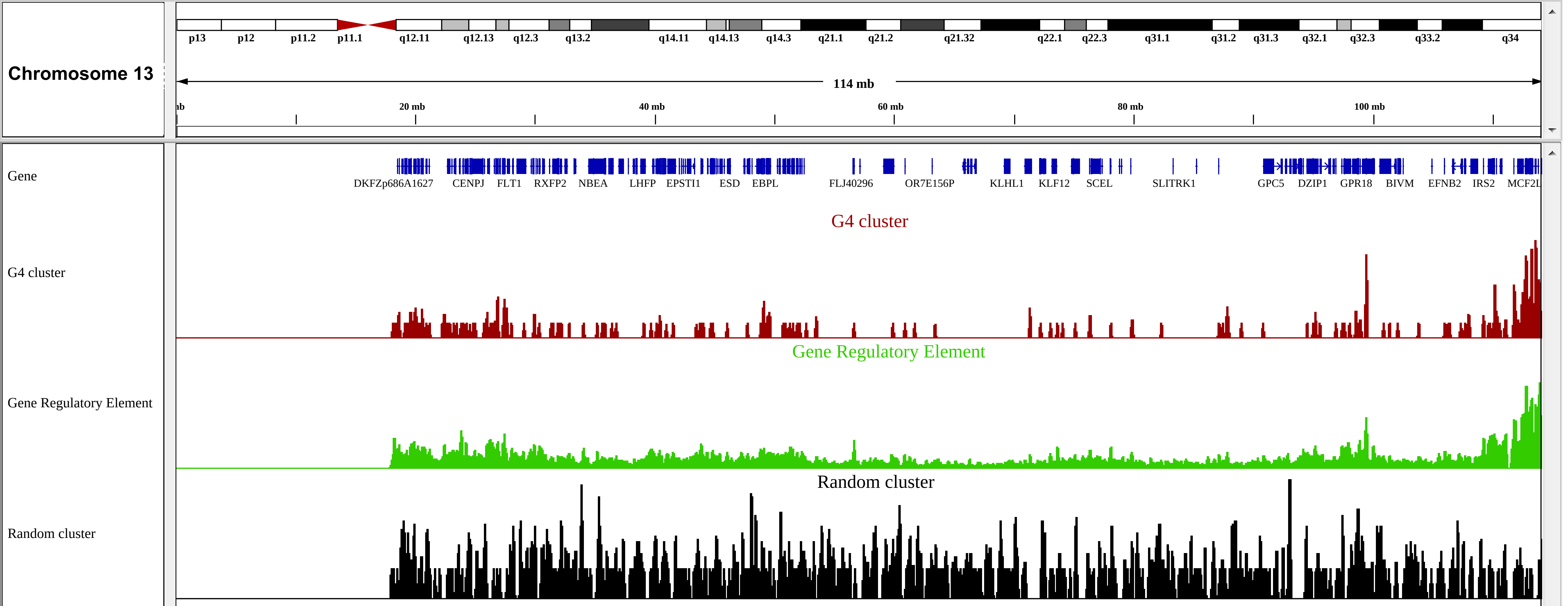

Chromosome 8
p23.2
p23.1
p22
p21.3
p21.1
p12
p11.23
p11.1
q11.21
q12.1
q12.3
q13.2
q21.11
q21.13
q21.3
q22.1
q22.3
q23.1
q23.3
q24.12
q24.21
q24.23
146 mb
20 mb
40 mb
60 mb
80 mb
100 mb
120 mb
140 mb
Gene
G4 cluster
Gene Regulatory Element
Random cluster
MCPH1
TDH
TUSC3
LPL
STC1
CLU
NRG1
FKSG2
GINS4
KIAA0146
RGS20
TOX
GGH
CPA6
MSC
ZFHX4
PMP2
CA1
RIPK2
GEM
STK3
BAALC
EIF3E
TRPS1
MTBP
SQLE
GSDMC
ZFAT
KCNK9
G4 cluster
Gene Regulatory Element
Random cluster

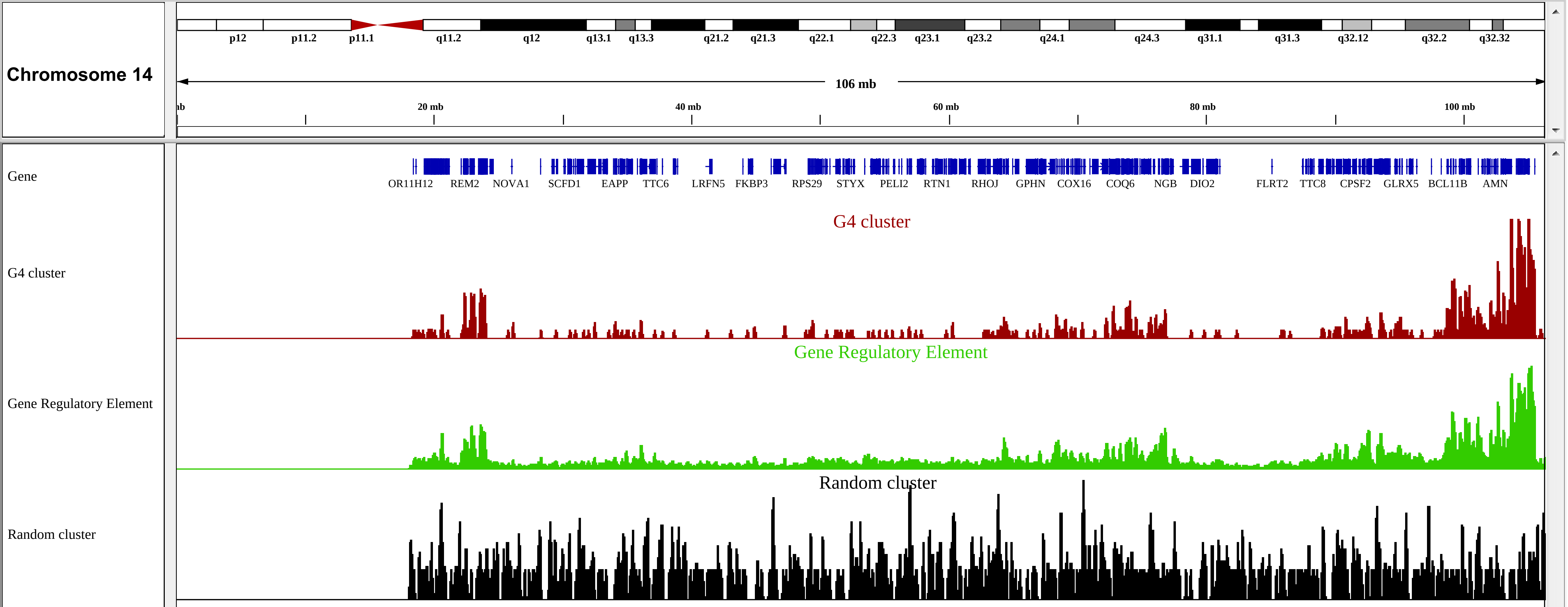

Chromosome 9
p24.2
p23
p22.3
p21.3
p21.1
p13.2
p12
p11.1
q11
q12
q13
q21.13
q21.31
q21.33
q22.31
q22.33
q31.2
q32
q33.1
q33.2
q34.11
q34.2
140 mb
20 mb
40 mb
60 mb
80 mb
100 mb
120 mb
Gene
SH1
AK3
PTPRD
NFIB
RRAGA
TUSC1
ACO1
GNE
ZNF658
KGFLP1
FAM75A5
FXN
ANXA1
GNAQ
RASEF
DAPK1
IARS
HABP4
PRG-3
FKTN
AKAP2
TNC
DBC1
CRB2
TTC16
SETX
LHX3
G4 cluster
G4 cluster
Gene Regulatory Element
Gene Regulatory Element
Random cluster
Random cluster

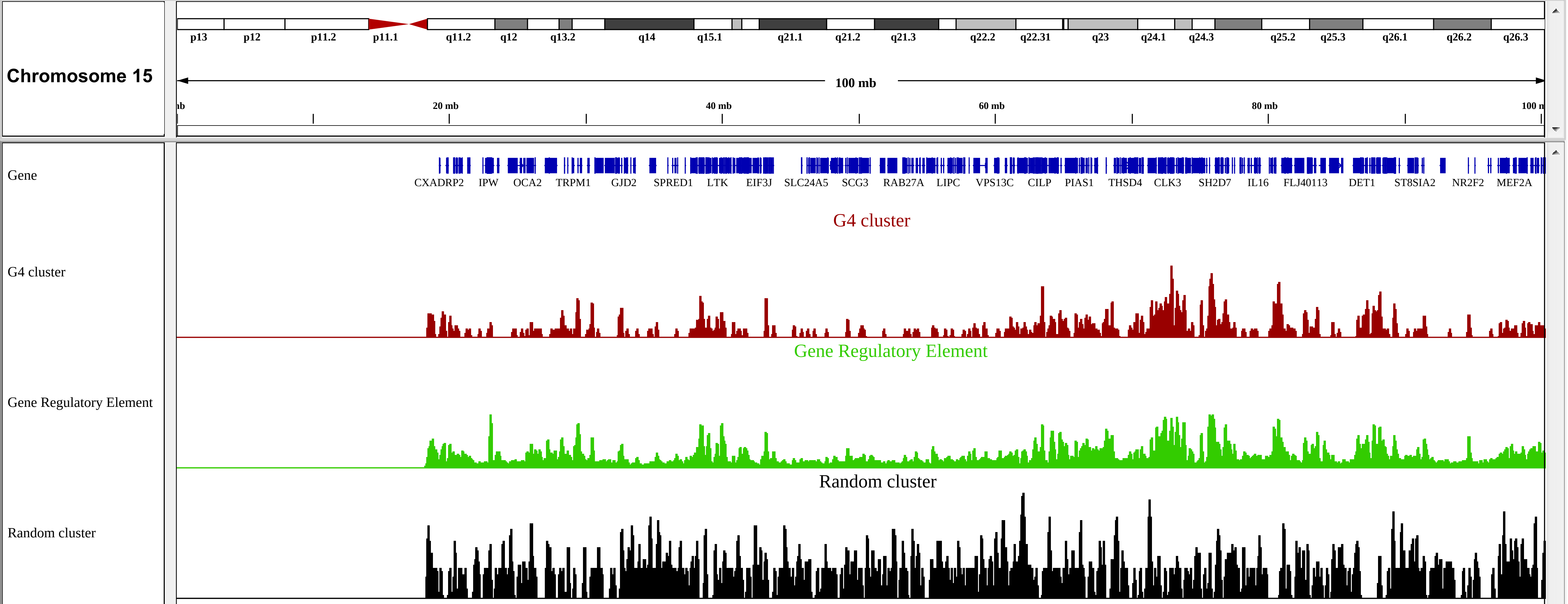

Chromosome 10
p15.2
p14
p13
p12.32
p12.1
p11.22
p11.1
q11.21
q11.23
q21.1
q21.2
q21.3
q22.1
q22.3
q23.1
q23.31
q24.1
q24.32
q25.1
q25.2
q26.11
q26.2
135 mb
20 mb
40 mb
60 mb
80 mb
100 mb
120 mb
Gene
BB8
AKR1C3
CUGBP2
PTER
NEBL
GPR158
SVIL
NRP1
ZNF248
RET
ANTXRL
A1CF
ZWINT
CDC2
CTNNA3
PSAP
KCNMA1
NRG3
OPN4
HTR7
PDLIM1
CPN1
SLK
XPNPEP1
TRUB1
GRK5
GPR26
NPS
BNIP3
G4 cluster
G4 cluster
Gene Regulatory Element
Gene Regulatory Element
Random cluster
Random cluster

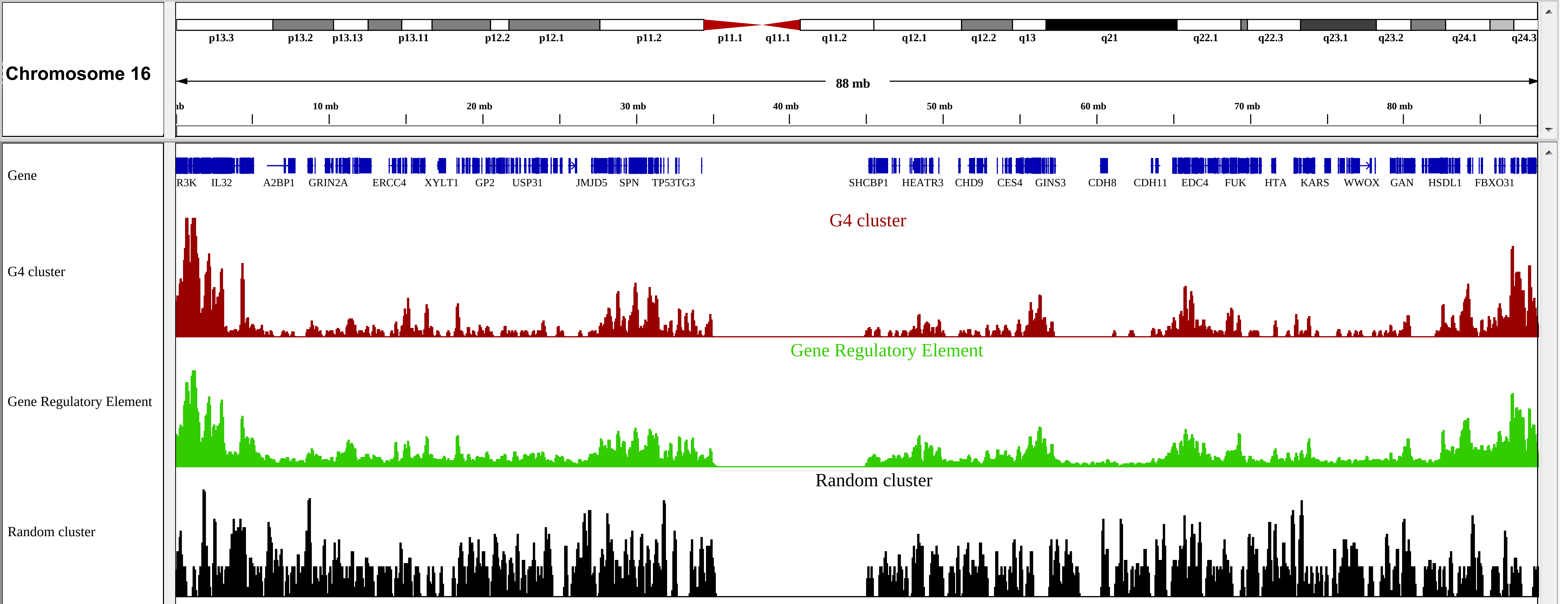

Chromosome 11
p15.4
p15.3
p15.1
p14.3
p14.1
p13
p12
p11.2
p11.11
q12.1
q12.3
q13.2
q13.4
q14.1
q14.2
q21
q22.1
q22.3
q23.1
q23.3
q24.2
q25
134 mb
20 mb
40 mb
60 mb
80 mb
100 mb
120 mb
Gene
B1C1
HBB
ST5
TEAD1
ABCC8
ANO5
ANO3
DCDC1
FJX1
LRRC4C
SYT13
OR4A5
OR5J2
GIF
ATL3
PC
FADD
POLD3
ODZ4
DLG2
CTSC
FAT3
JRKL
PGR
CASP4
ZC3H12C
BUD13
SC5DL
FEZ1
RICS
SPATA
G4 cluster
G4 cluster
Gene Regulatory Element
Gene Regulatory Element
Random cluster
Random cluster

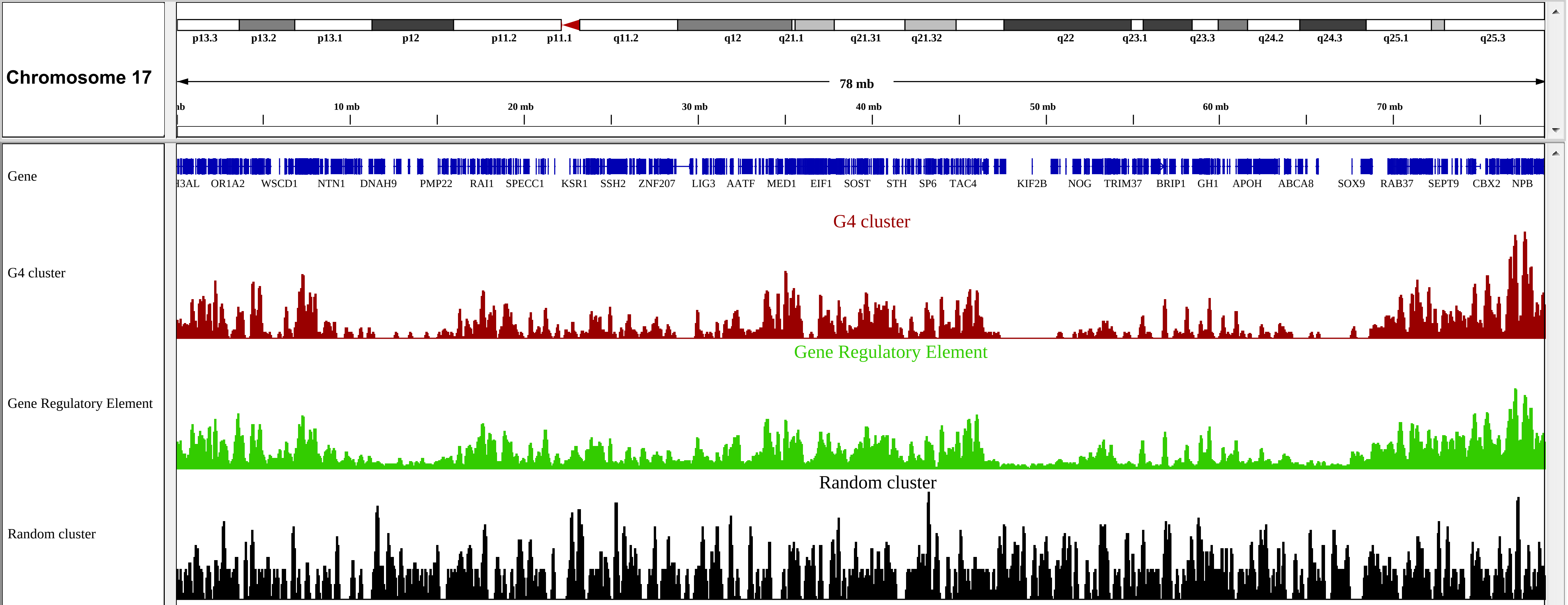

Chromosome 12
p13.32
p13.2
p12.3
p12.1
p11.22
p11.1
q12
q13.11
q13.2
q14.1
q14.3
q21.1
q21.2
q21.31
q21.33
q23.1
q23.3
q24.12
q24.22
q24.31
q24.32
132 mb
20 mb
40 mb
60 mb
80 mb
100 mb
120 mb
Gene
EC3
FGF6
CLEC4E
GSG1
RERGL
ETNK1
STK38L
BICD1
ALG10B
PUS7L
P11
BIN2
OR6C1
FAM19A2
CAND1
LGR5
KRR1
SYT1
SLC6A15
C12orf12
HAL
ACTR6
EID3
FICD
RPL6
RNFT2
OASL
UBC
FZD10
G4 cluster
G4 cluster
Gene Regulatory Element
Gene Regulatory Element
Random cluster
Random cluster

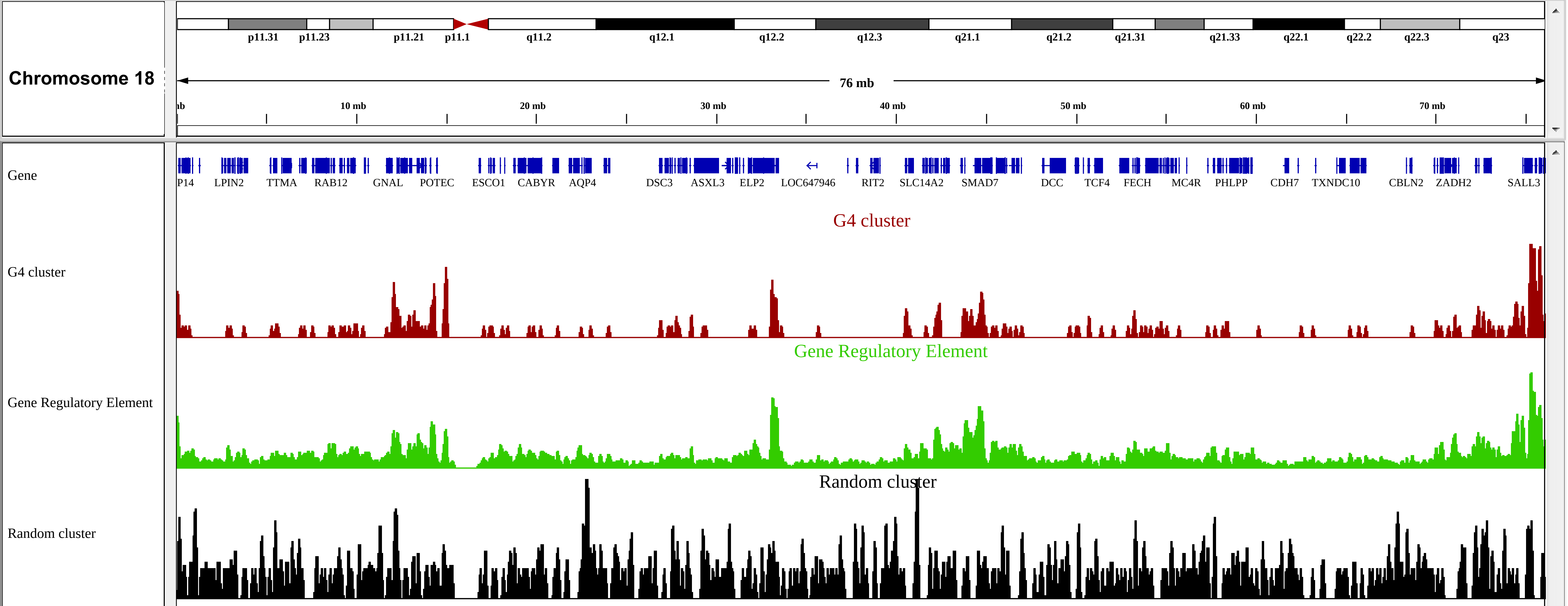

Chromosome 13
p13
p12
p11.2
p11.1
q12.11
q12.13
q12.3
q13.2
q14.11
q14.13
q14.3
q21.1
q21.2
q21.32
q22.1
q22.3
q31.1
q31.2
q31.3
q32.1
q32.3
q33.2
q34
114 mb
20 mb
40 mb
60 mb
80 mb
100 mb
Gene
DKFZp686A1627
CENPJ
FLT1
RXFP2
NBEA
LHFP
EPSTI1
ESD
EBPL
FLJ40296
OR7E156P
KLHL1
KLF12
SCEL
SLITRK1
GPC5
DZIP1
GPR18
BIVM
EFNB2
IRS2
G4 cluster
G4 cluster
Gene Regulatory Element
Gene Regulatory Element
Random cluster
Random cluster

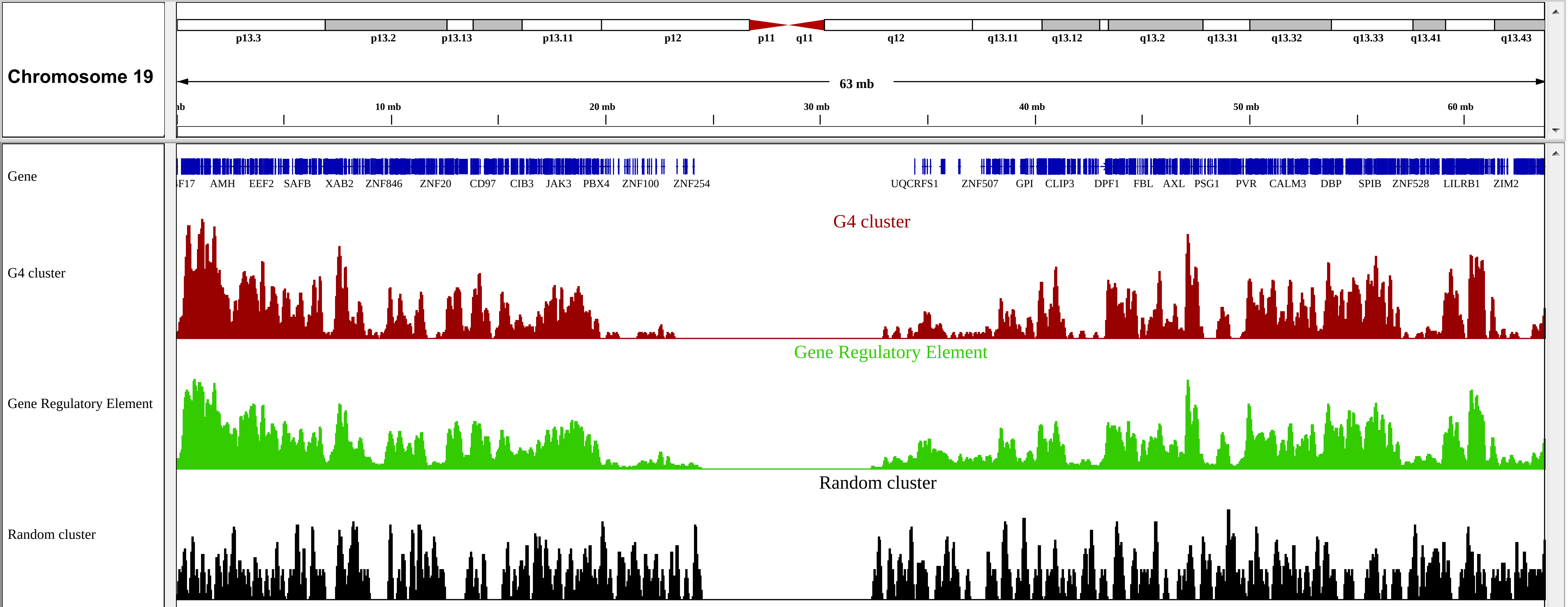

Chromosome 14
p12
p11.2
p11.1
q11.2
q12
q13.1
q13.3
q21.2
q21.3
q22.1
q22.3
q23.1
q23.2
q24.1
q24.3
q31.1
q31.3
q32.12
q32.2
q32.32
106 mb
20 mb
40 mb
60 mb
80 mb
100 mb
Gene
OR11H12
REM2
NOVA1
SCFD1
EAPP
TTC6
LRFN5
FKBP3
RPS29
STYX
PELI2
RTN1
RHOJ
GPHN
COX16
COQ6
NGB
DIO2
FLRT2
TTC8
CPSF2
GLRX5
BCL11B
AMN
G4 cluster
G4 cluster
Gene Regulatory Element
Gene Regulatory Element
Random cluster
Random cluster

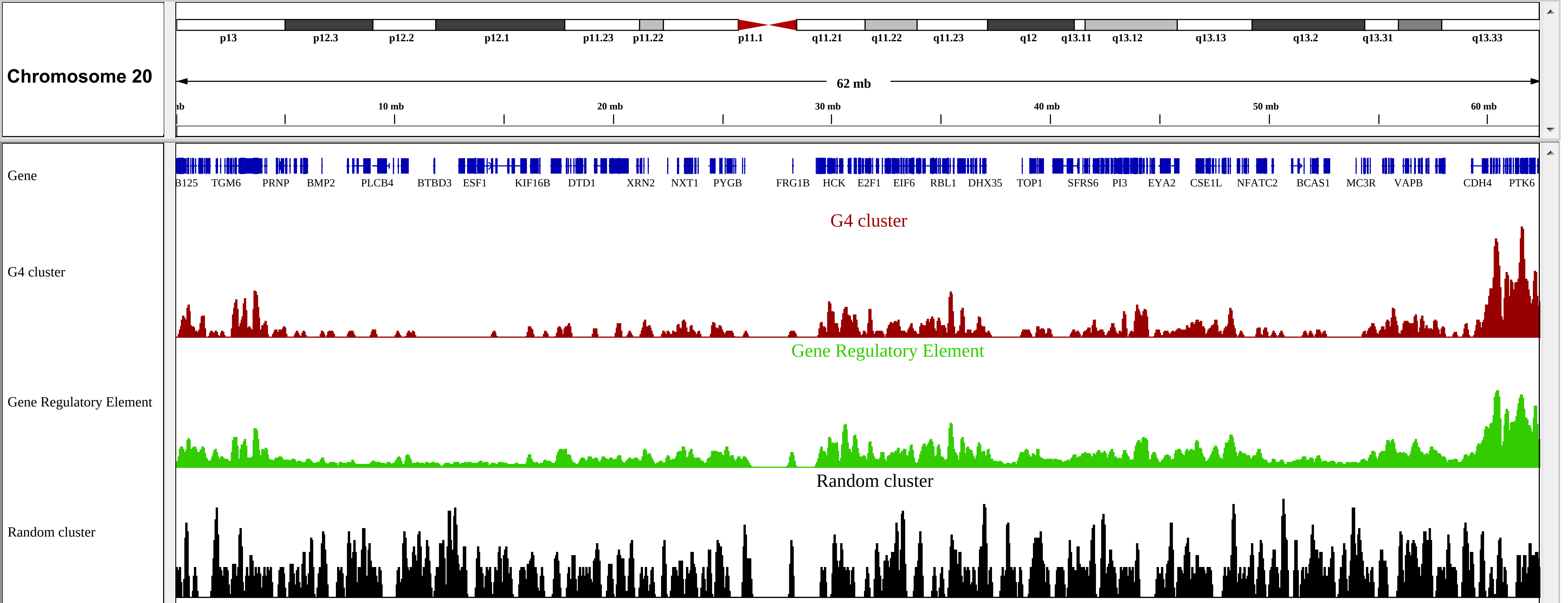

Chromosome 15
p13
p12
p11.2
p11.1
q11.2
q12
q13.2
q14
q15.1
q21.1
q21.2
q21.3
q22.2
q22.31
q23
q24.1
q24.3
q25.2
q25.3
q26.1
q26.2
q26.3
100 mb
20 mb
40 mb
60 mb
80 mb
Gene
CXADRP2
IPW
OCA2
TRPM1
GJD2
SPRED1
LTK
EIF3J
SLC24A5
SCG3
RAB27A
LIPC
VPS13C
CILP
PIAS1
THSD4
CLK3
SH2D7
IL16
FLJ40113
DET1
ST8SIA2
NR2F2
MEF2A
G4 cluster
G4 cluster
Gene Regulatory Element
Gene Regulatory Element
Random cluster
Random cluster

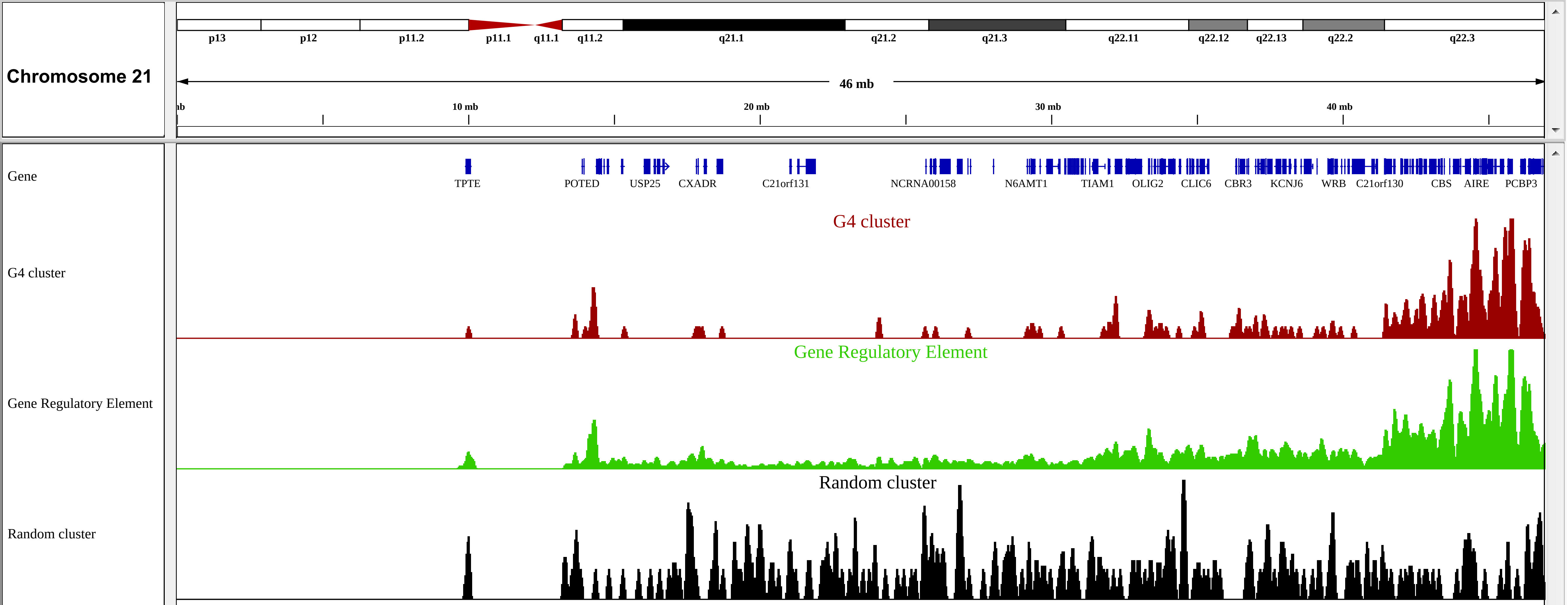

Chromosome 16
p13.3
p13.2
p13.13
p13.11
p12.2
p12.1
p11.2
p11.1
q11.1
q11.2
q12.1
q12.2
q13
q21
q22.1
q22.3
q23.1
q23.2
q24.1
q24.3
88 mb
10 mb
20 mb
30 mb
40 mb
50 mb
60 mb
70 mb
80 mb
Gene
R3K
IL32
A2BP1
GRIN2A
ERCC4
XYLT1
GP2
USP31
JMJD5
SPN
TP53TG3
SHCBP1
HEATR3
CHD9
CES4
GINS3
CDH8
CDH11
EDC4
FUK
HTA
KARS
WWOX
GAN
HSDL1
FBXO31
G4 cluster
G4 cluster
Gene Regulatory Element
Gene Regulatory Element
Random cluster
Random cluster

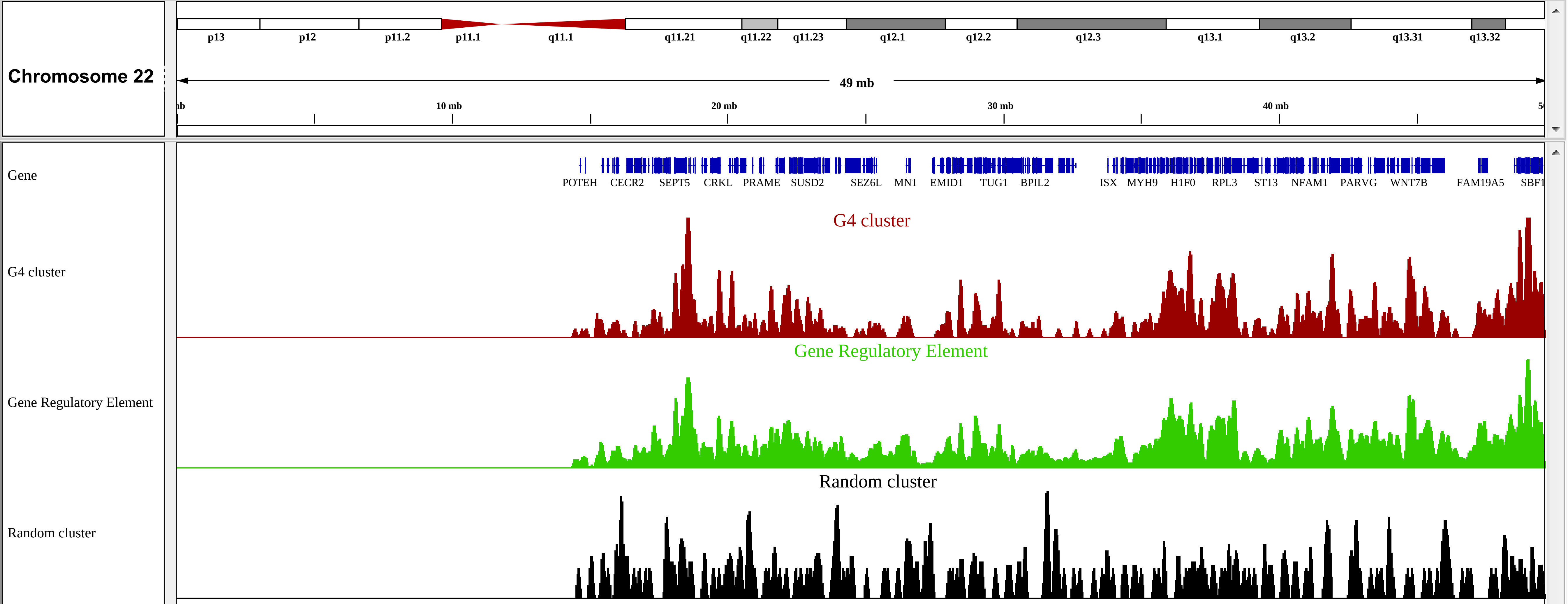

Chromosome 17
p13.3
p13.2
p13.1
p12
p11.2
p11.1
q11.2
q12
q21.1
q21.31
q21.32
q22
q23.1
q23.3
q24.2
q24.3
q25.1
q25.3
78 mb
mb
10 mb
20 mb
30 mb
40 mb
50 mb
60 mb
70 mb
Gene
3AL
OR1A2
WSCD1
NTN1
DNAH9
PMP22
RAI1
SPECC1
KSR1
SSH2
ZNF207
LIG3
AATF
MED1
EIF1
SOST
STH
SP6
TAC4
KIF2B
NOG
TRIM37
BRIP1
GH1
APOH
ABCA8
SOX9
RAB37
SEPT9
CBX2
NPB
G4 cluster
G4 cluster
Gene Regulatory Element
Gene Regulatory Element
Random cluster
Random cluster

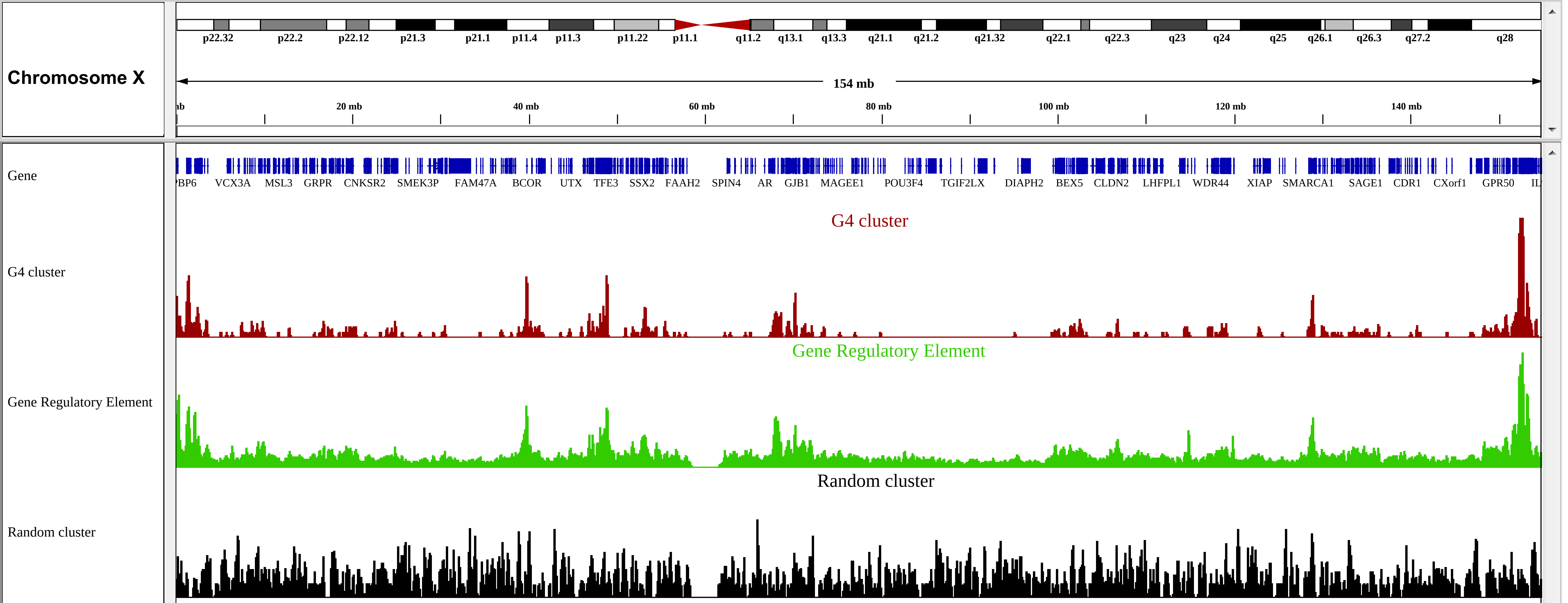

Chromosome 18
p11.31
p11.23
p11.21
p11.1
q11.2
q12.1
q12.2
q12.3
q21.1
q21.2
q21.31
q21.33
q22.1
q22.2
q22.3
q23
76 mb
10 mb
20 mb
30 mb
40 mb
50 mb
60 mb
70 mb
Gene
P14
LPIN2
TTMA
RAB12
GNAL
POTEC
ESCO1
CABYR
AQP4
DSC3
ASXL3
ELP2
LOC647946
RIT2
SLC14A2
SMAD7
DCC
TCF4
FECH
MC4R
PHLPP
CDH7
TXNDC10
CBLN2
ZADH2
SALL3
G4 cluster
G4 cluster
Gene Regulatory Element
Gene Regulatory Element
Random cluster
Random cluster

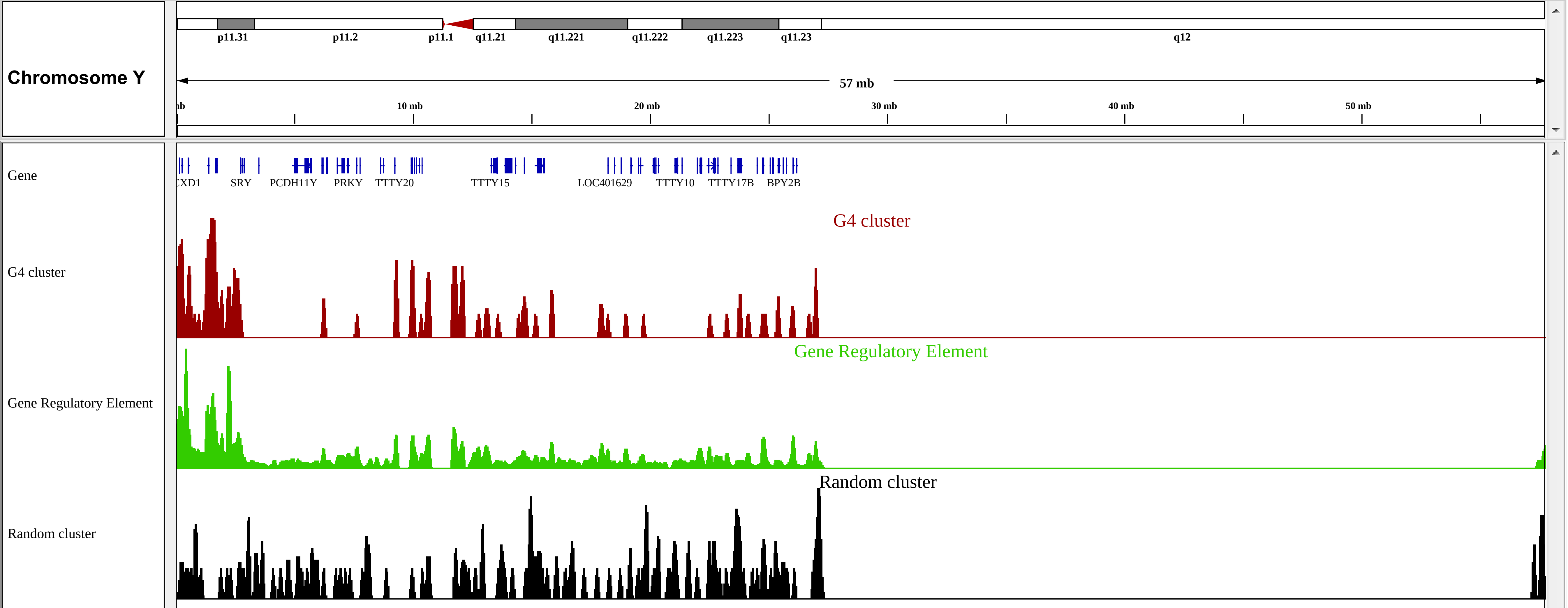

Chromosome 19
p13.3
p13.2
p13.13
p13.11
p12
p11
q11
q12
q13.11
q13.12
q13.2
q13.31
q13.32
q13.33
q13.41
q13.43
63 mb
10 mb
20 mb
30 mb
40 mb
50 mb
60 mb
Gene
F17
AMH
EEF2
SAFB
XAB2
ZNF846
ZNF20
CD97
CIB3
JAK3
PBX4
ZNF100
ZNF254
UQCRFS1
ZNF507
GPI
CLIP3
DPF1
FBL
AXL
PSG1
PVR
CALM3
DBP
SPIB
ZNF528
LILRB1
ZIM2
G4 cluster
G4 cluster
Gene Regulatory Element
Gene Regulatory Element
Random cluster
Random cluster


Chromosome 20
p13
p12.3
p12.2
p12.1
p11.23
p11.22
p11.1
q11.21
q11.22
q11.23
q12
q13.11
q13.12
q13.13
q13.2
q13.31
q13.33
62 mb
10 mb
20 mb
30 mb
40 mb
50 mb
60 mb
Gene
B125
TGM6
PRNP
BMP2
PLCB4
BTBD3
ESF1
KIF16B
DTD1
XRN2
NXT1
PYGB
FRG1B
HCK
E2F1
EIF6
RBL1
DHX35
TOP1
SFRS6
PI3
EYA2
CSE1L
NFATC2
BCAS1
MC3R
VAPB
CDH4
PTK6
G4 cluster
G4 cluster
Gene Regulatory Element
Gene Regulatory Element
Random cluster
Random cluster


Chromosome 21
p13
p12
p11.2
p11.1
q11.1
q11.2
q21.1
q21.2
q21.3
q22.11
q22.12
q22.13
q22.2
q22.3
46 mb
10 mb
20 mb
30 mb
40 mb
Gene
TPTE
POTED
USP25
CXADR
C21orf131
NCRNA00158
N6AMT1
TIAM1
OLIG2
CLIC6
CBR3
KCNJ6
WRB
C21orf130
CBS
AIRE
PCBP3
G4 cluster
G4 cluster
Gene Regulatory Element
Gene Regulatory Element
Random cluster
Random cluster


Chromosome 22
p13
p12
p11.2
p11.1
q11.1
q11.21
q11.22
q11.23
q12.1
q12.2
q12.3
q13.1
q13.2
q13.31
q13.32
49 mb
10 mb
20 mb
30 mb
40 mb
Gene
POTEH
CECR2
SEPT5
CRKL
PRAME
SUSD2
SEZ6L
MN1
EMID1
TUG1
BPIL2
ISX
MYH9
H1F0
RPL3
ST13
NFAM1
PARVG
WNT7B
FAM19A5
G4 cluster
G4 cluster
Gene Regulatory Element
Gene Regulatory Element
Random cluster
Random cluster


Chromosome X
p22.32
p22.2
p22.12
p21.3
p21.1
p11.4
p11.3
p11.22
p11.1
q11.2
q13.1
q13.3
q21.1
q21.2
q21.32
q22.1
q22.3
q23
q24
q25
q26.1
q26.3
q27.2
q28
154 mb
20 mb
40 mb
60 mb
80 mb
100 mb
120 mb
140 mb
Gene
VCX3A
MSL3
GRPR
CNKSR2
SMEK3P
FAM47A
BCOR
UTX
TFE3
SSX2
FAAH2
SPIN4
AR
GJB1
MAGEE1
POU3F4
TGIF2LX
DIAPH2
BEX5
CLDN2
LHFPL1
WDR44
XIAP
SMARCA1
SAGE1
CDR1
CXorf1
GPR50
G4 cluster
Gene Regulatory Element
Random cluster


Chromosome Y
p11.31
p11.2
p11.1
q11.21
q11.221
q11.222
q11.223
q11.23
q12
57 mb
10 mb
20 mb
30 mb
40 mb
50 mb
Gene
CXD1
SRY
PCDH11Y
PRKY
TTTY20
TTTY15
LOC401629
TTTY10
TTTY17B
BPY2B
G4 cluster
G4 cluster
Gene Regulatory Element
Gene Regulatory Element
Random cluster
Random cluster

Supplementary Material Figure S2. The distribution of G4 clusters correlates with that of GREs across the human genome.
Number of G4 clusters and GREs was calculated in the human genome in 100-kb windows with a 10 kb step size. All overlapping GREs were merged into a single entity for this analysis and a set of randomly selected genomic regions (random cluster, with an equal length as the corresponding G4 cluster) were used as a control. The distribution of G4 clusters (red), GREs (green), and random clusters (black) are shown for each chromosome. We found a positive correlation between G4 clusters and GREs (Spearman $\rho = 0.40$, $P < 0.001$). Since the number of NCRSs is very large, which could influence the results, we re-performed the correlation analysis by excluding NCRSs. We obtained a similar result (Spearman $\rho = 0.432$, $P < 0.001$), indicating a co-localization tendency between G4 clusters and GREs at the genome level.