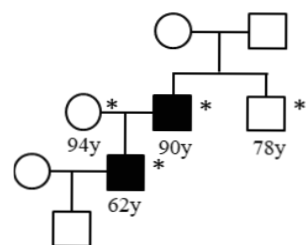
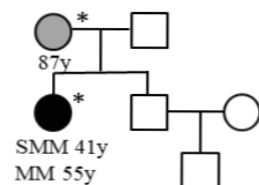


# Supplementary Figures

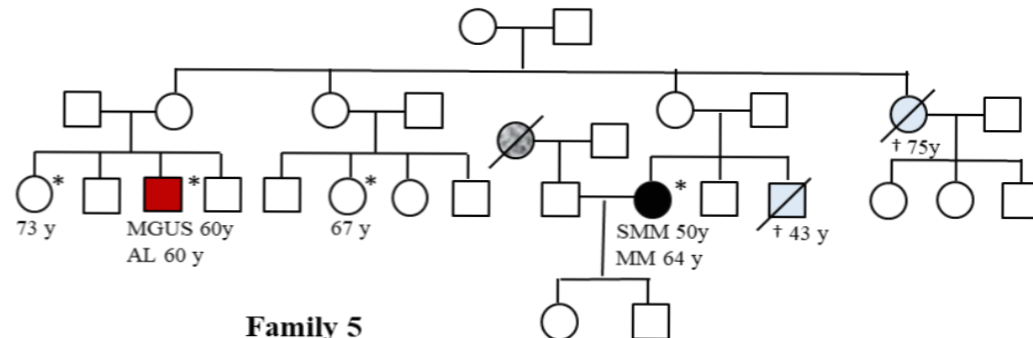
**Family 1**



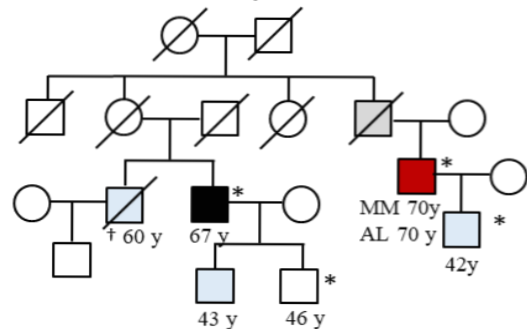
**Family 2**



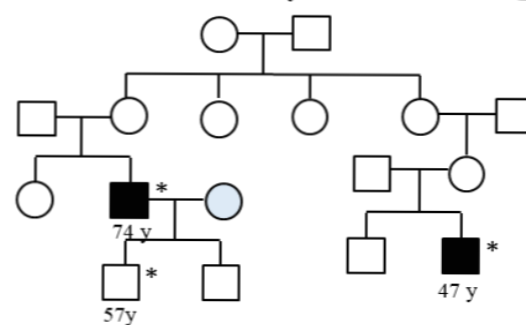
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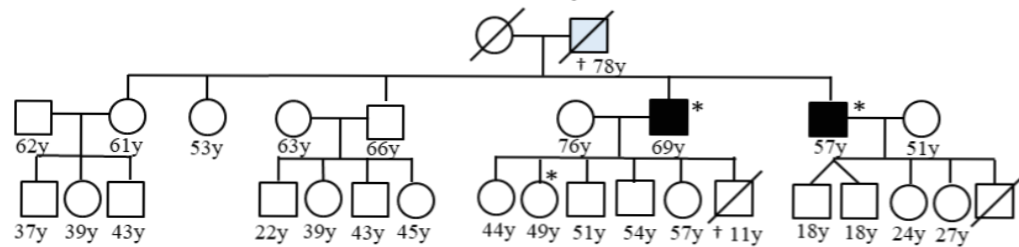
**Family 4**



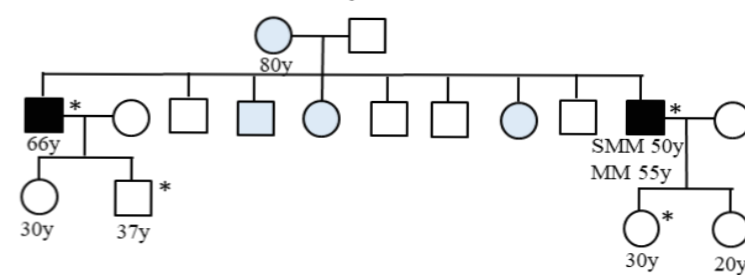
**Family 5**



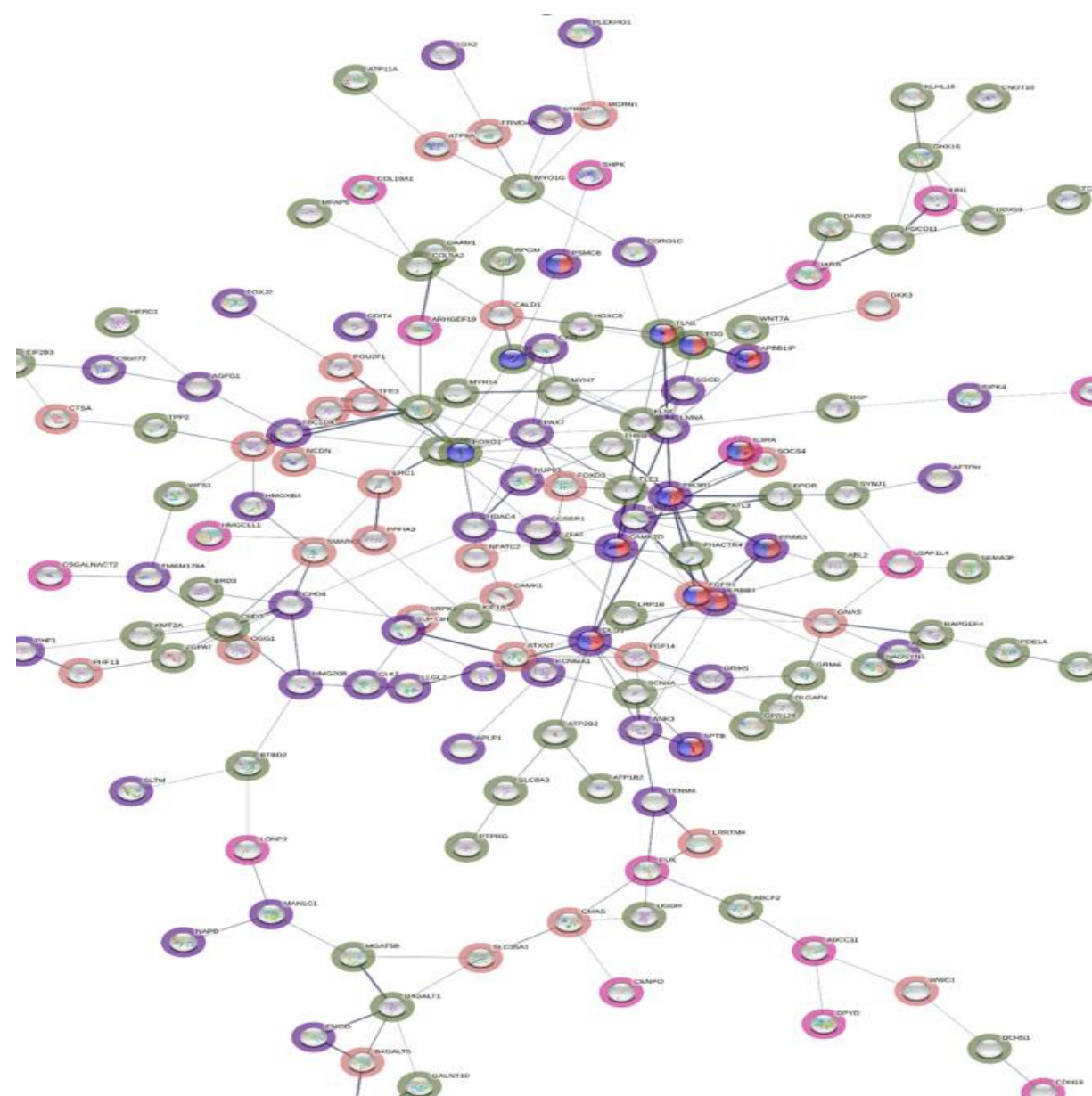
**Family 6**



**Family 7**

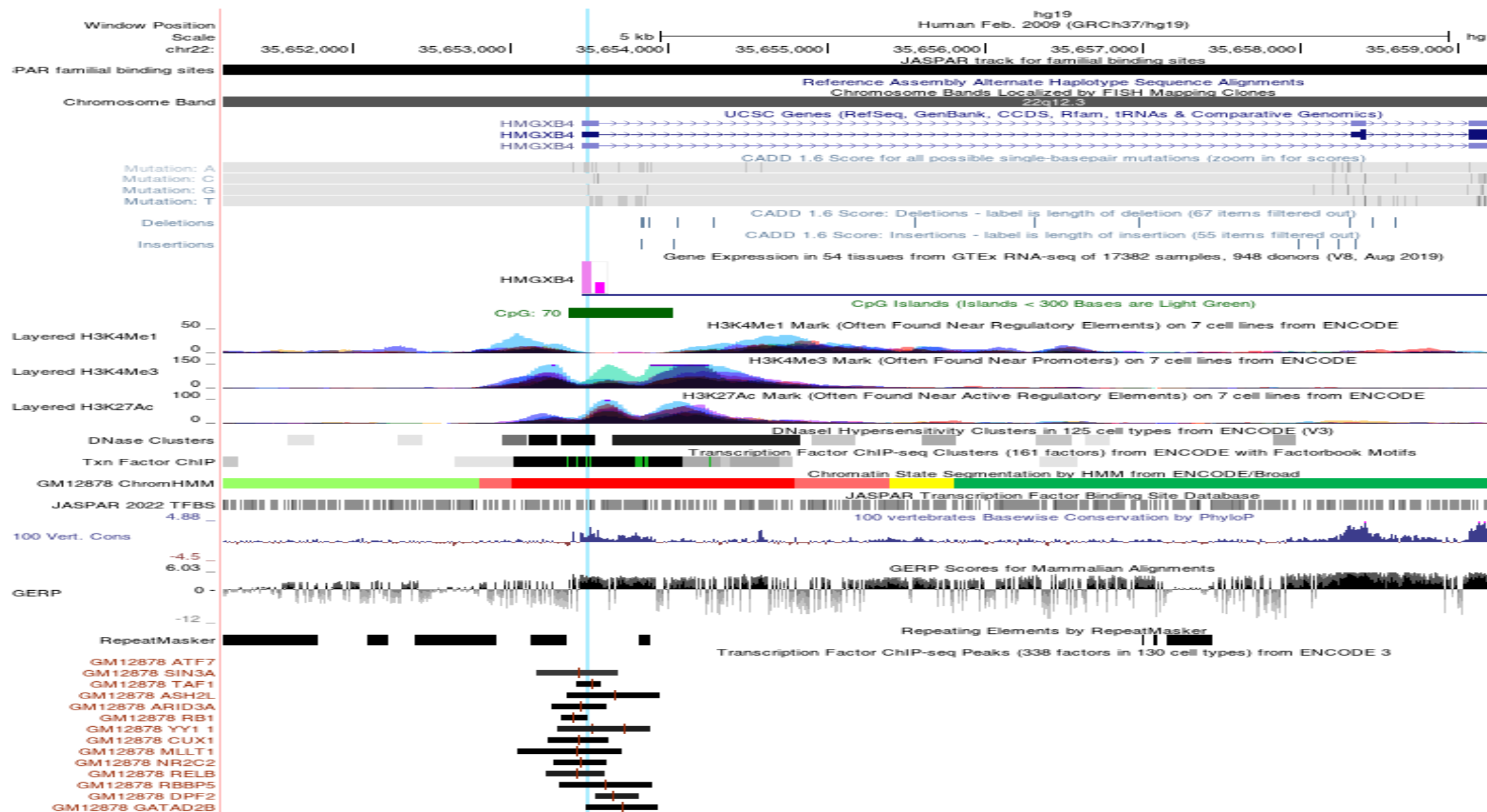




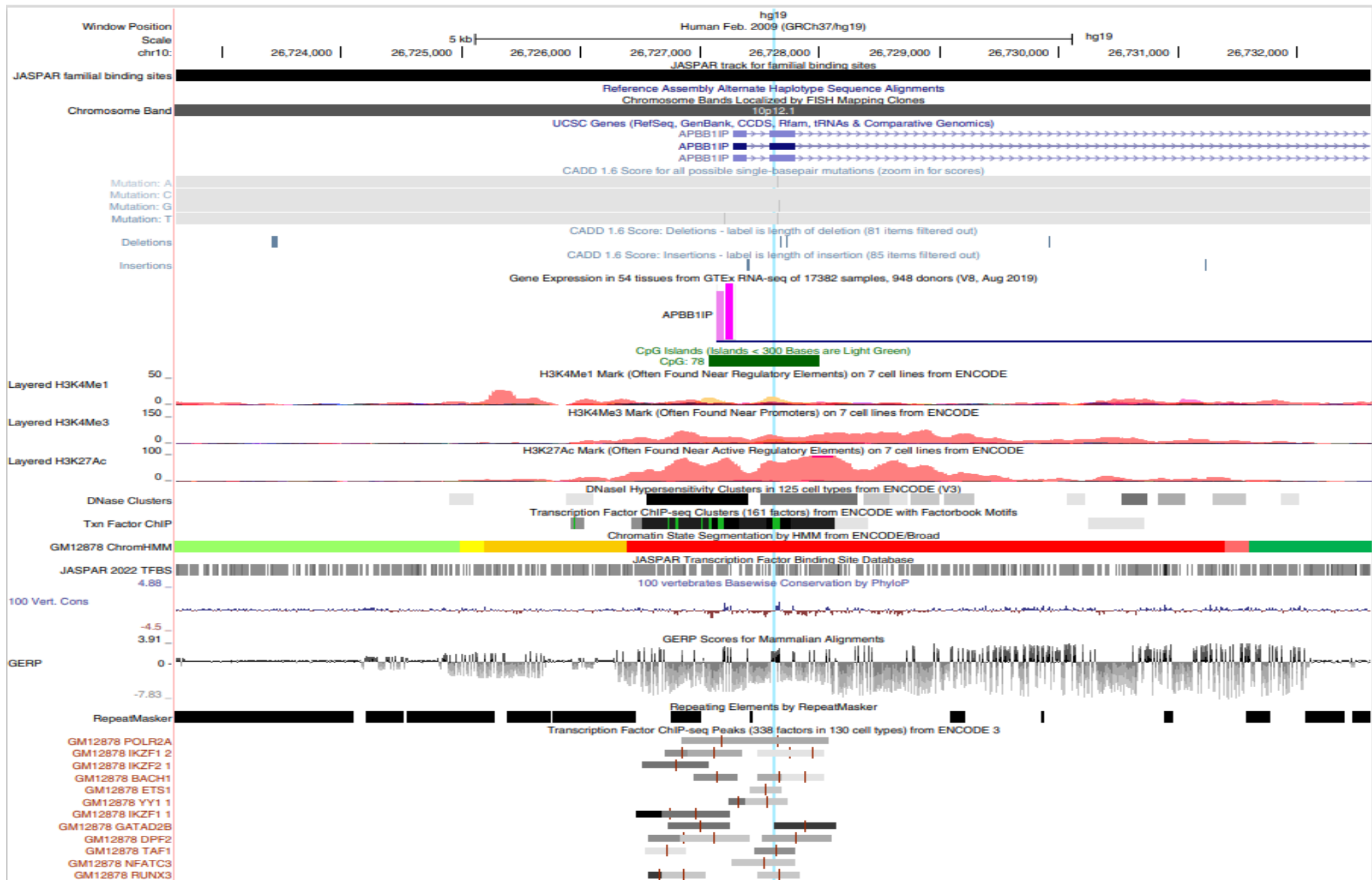


**Supplementary Figure S2.** Protein interaction network of a combination of genes with 5' and 3' UTR variants and genes with missense and loss-of-function variants generated by STRING. Proteins surrounded by green halo are missense and those surrounded by magenta are loss-of-function (LoF) variant related proteins. 5'UTR and 3'UTR variant proteins are surrounded by indigo and light red haloes respectively

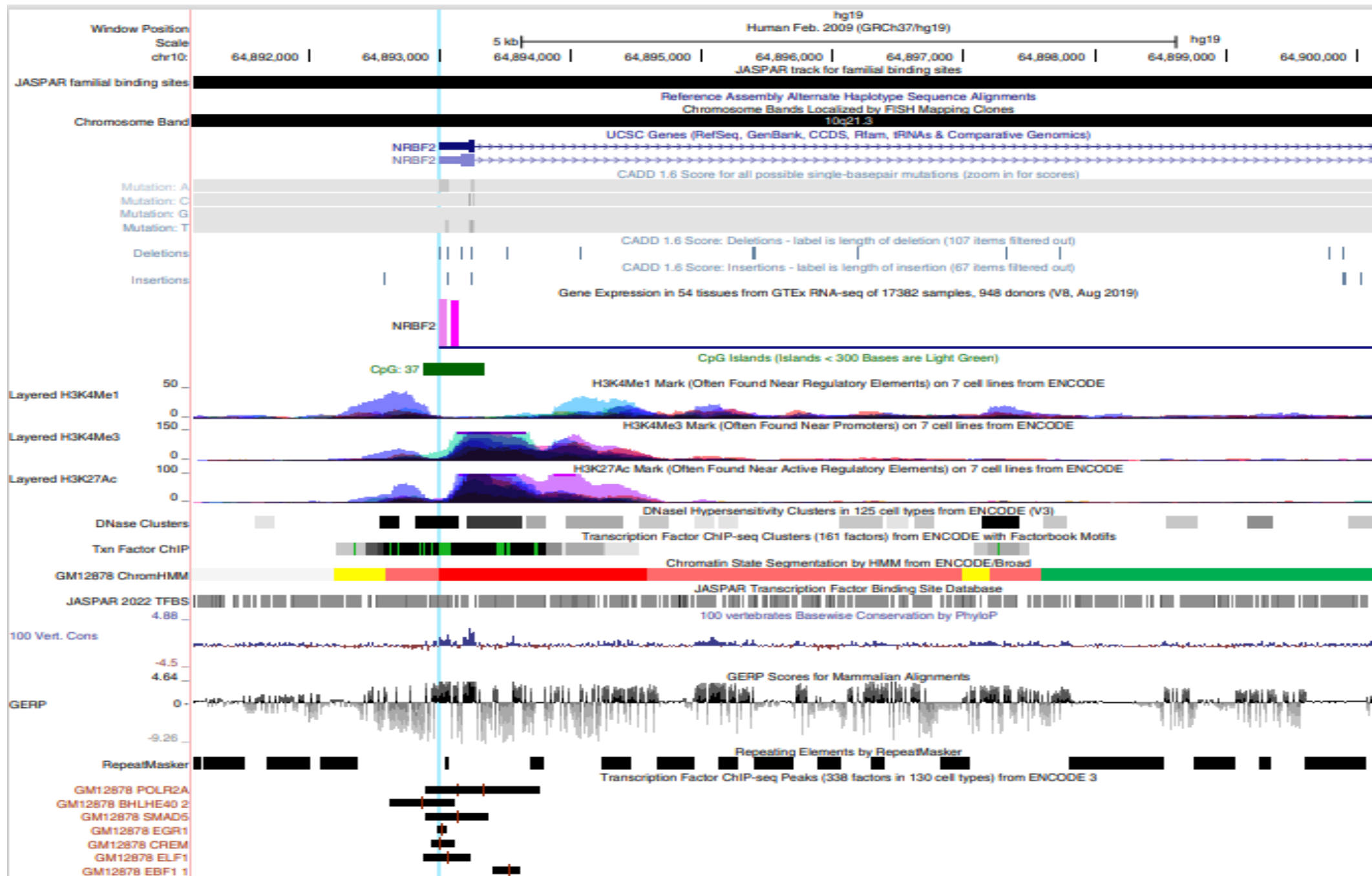
Supplementary Figures S3–S21: UCSC plots of top 5' UTR and MAPK pathway variants



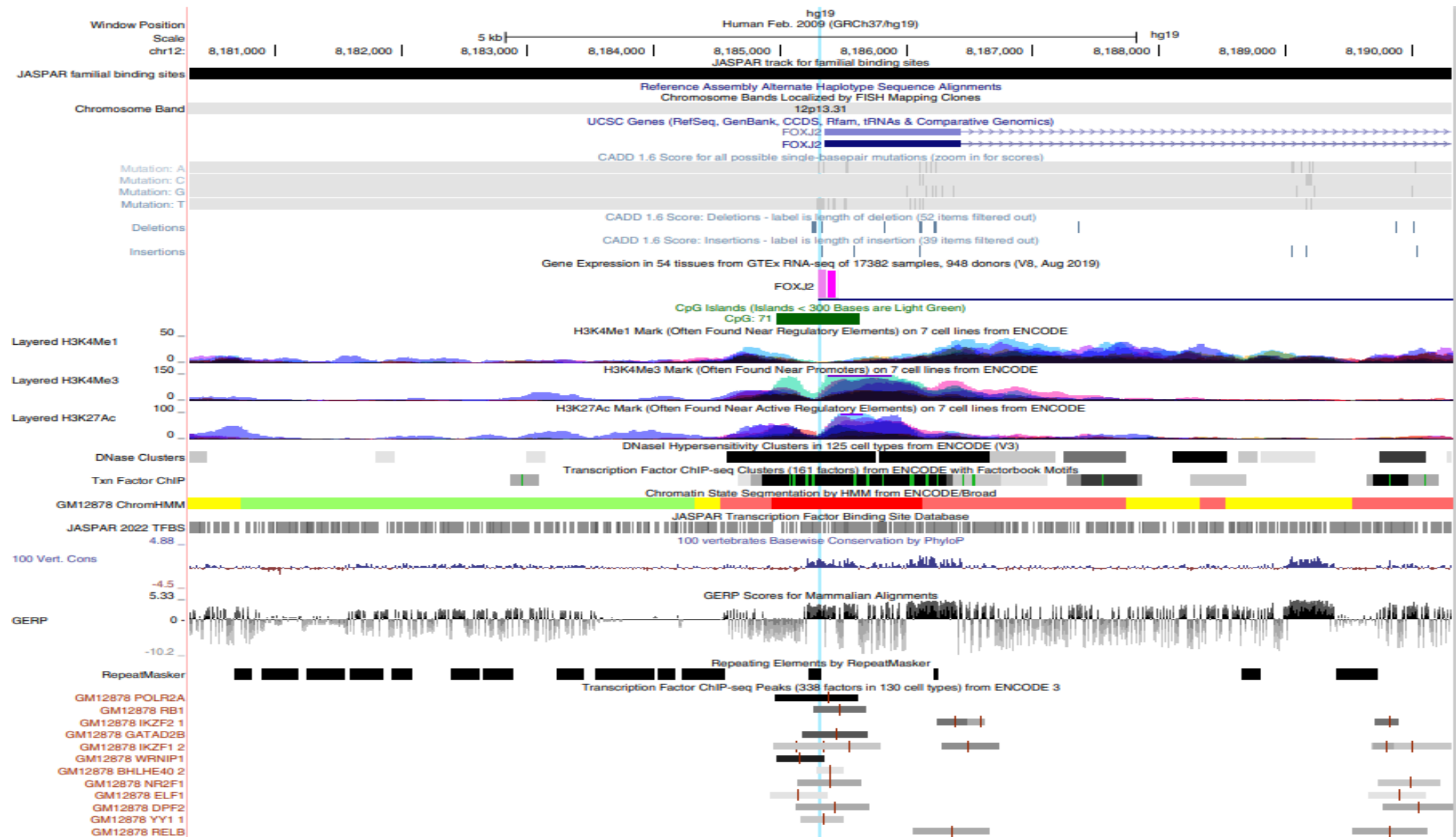
Supplementary Figure S3 HMGXB4:22\_35653479\_C\_A



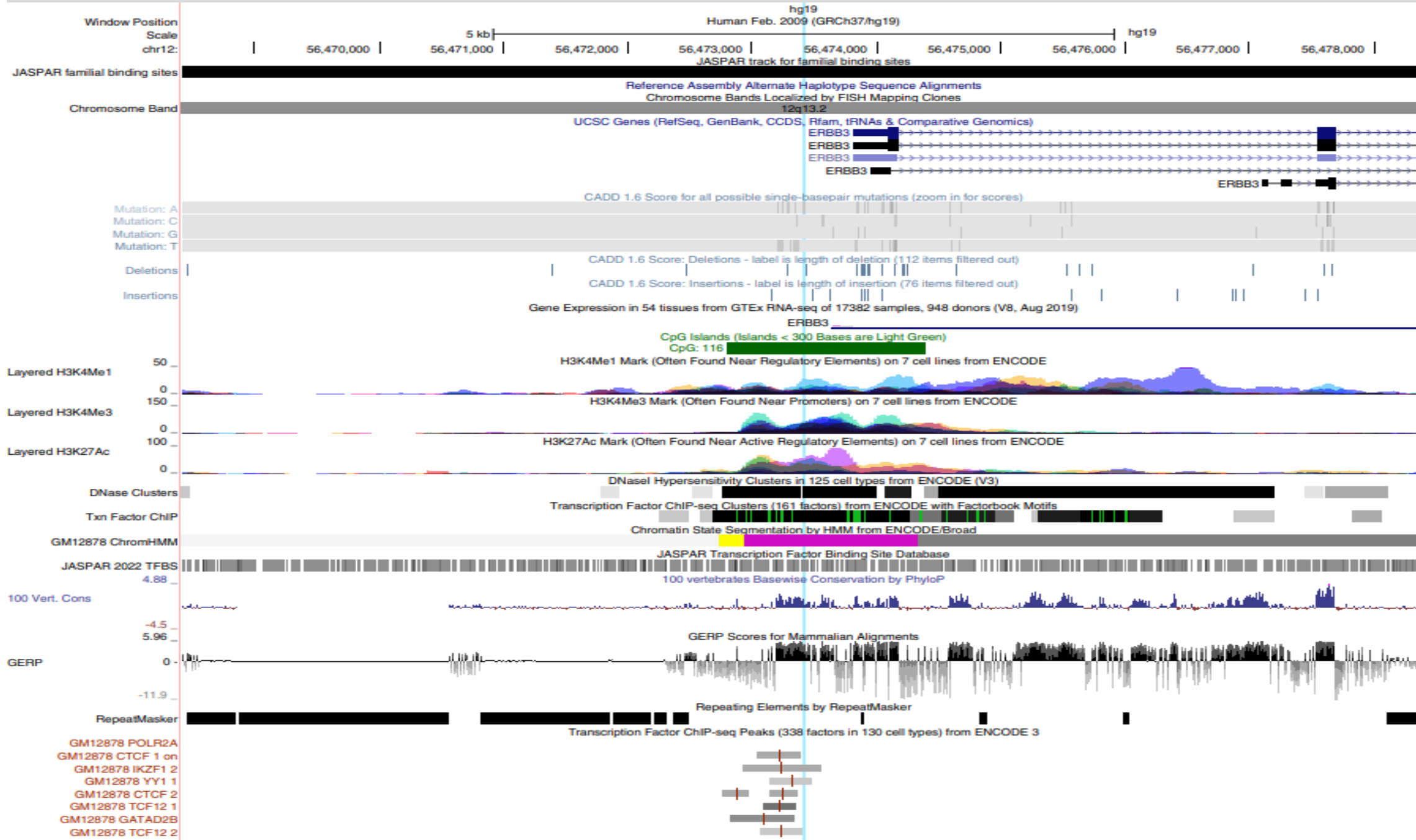
Supplementary Figure S4. *APBB1IP*:10\_26727608\_C\_G



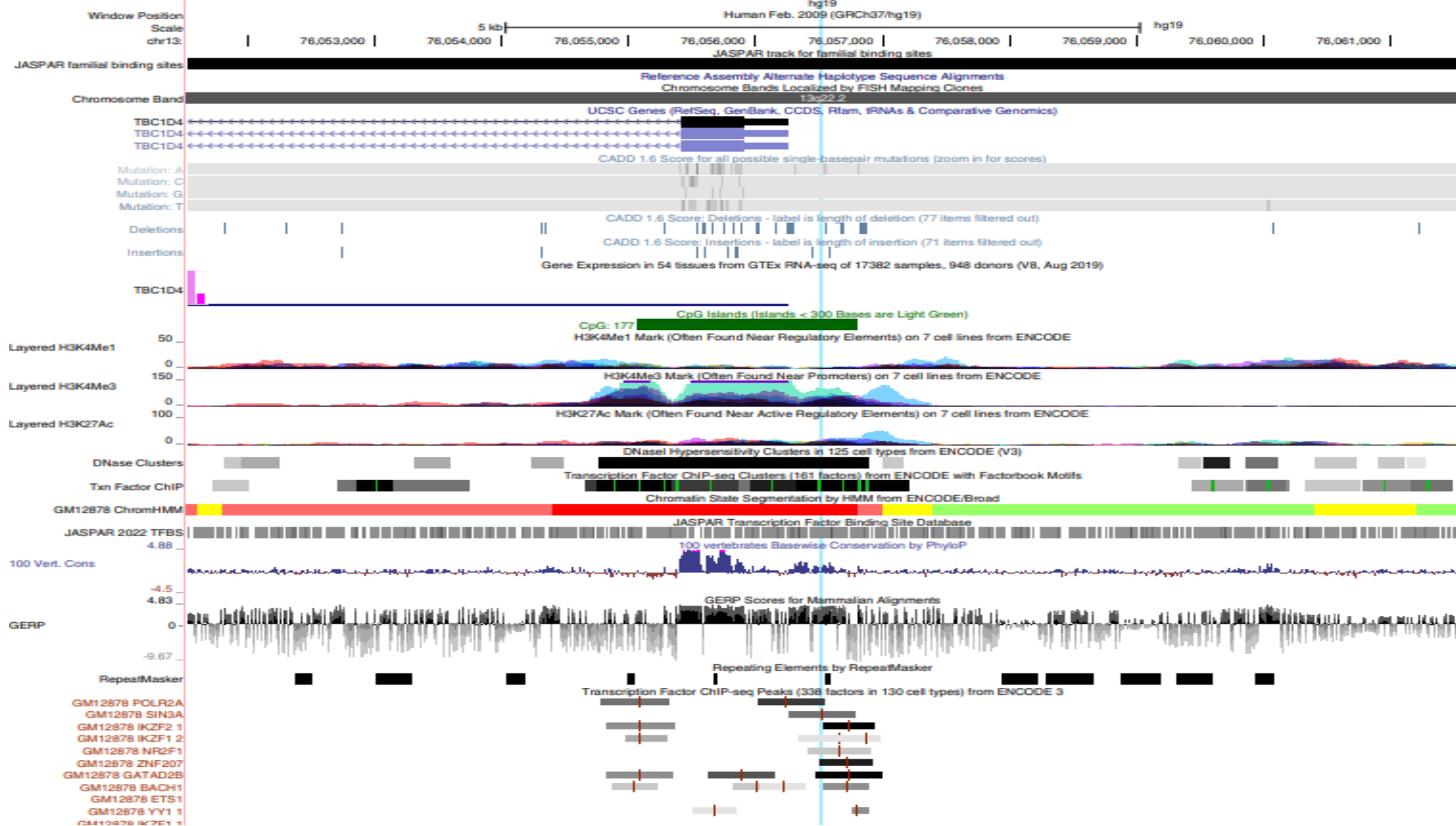
Supplementary Figure S5. *NRBF2*: 10\_64893005\_T\_C



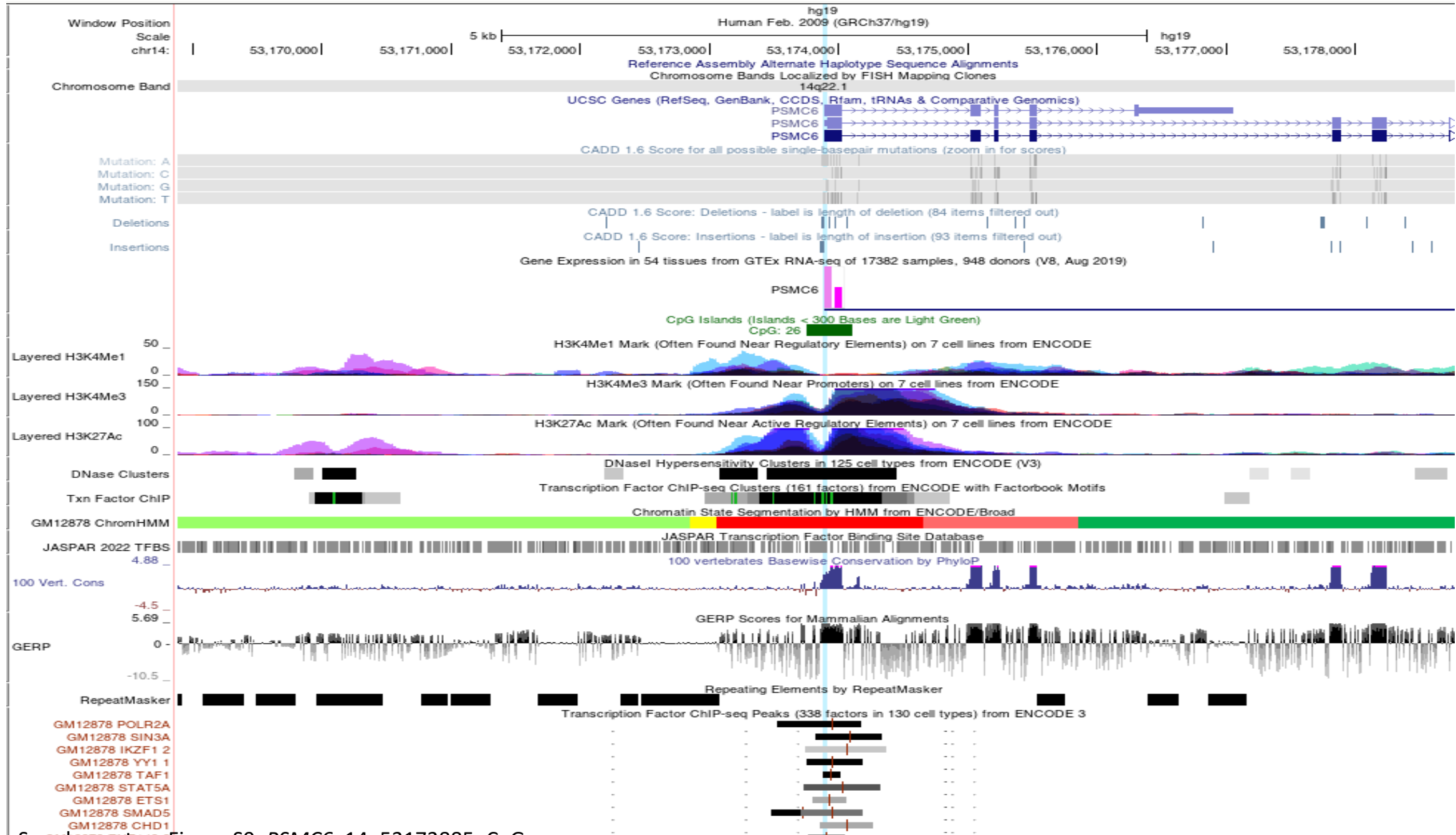
Supplementary Figure S6. *FOXJ2*:12\_8185317\_GGAGCC\_G



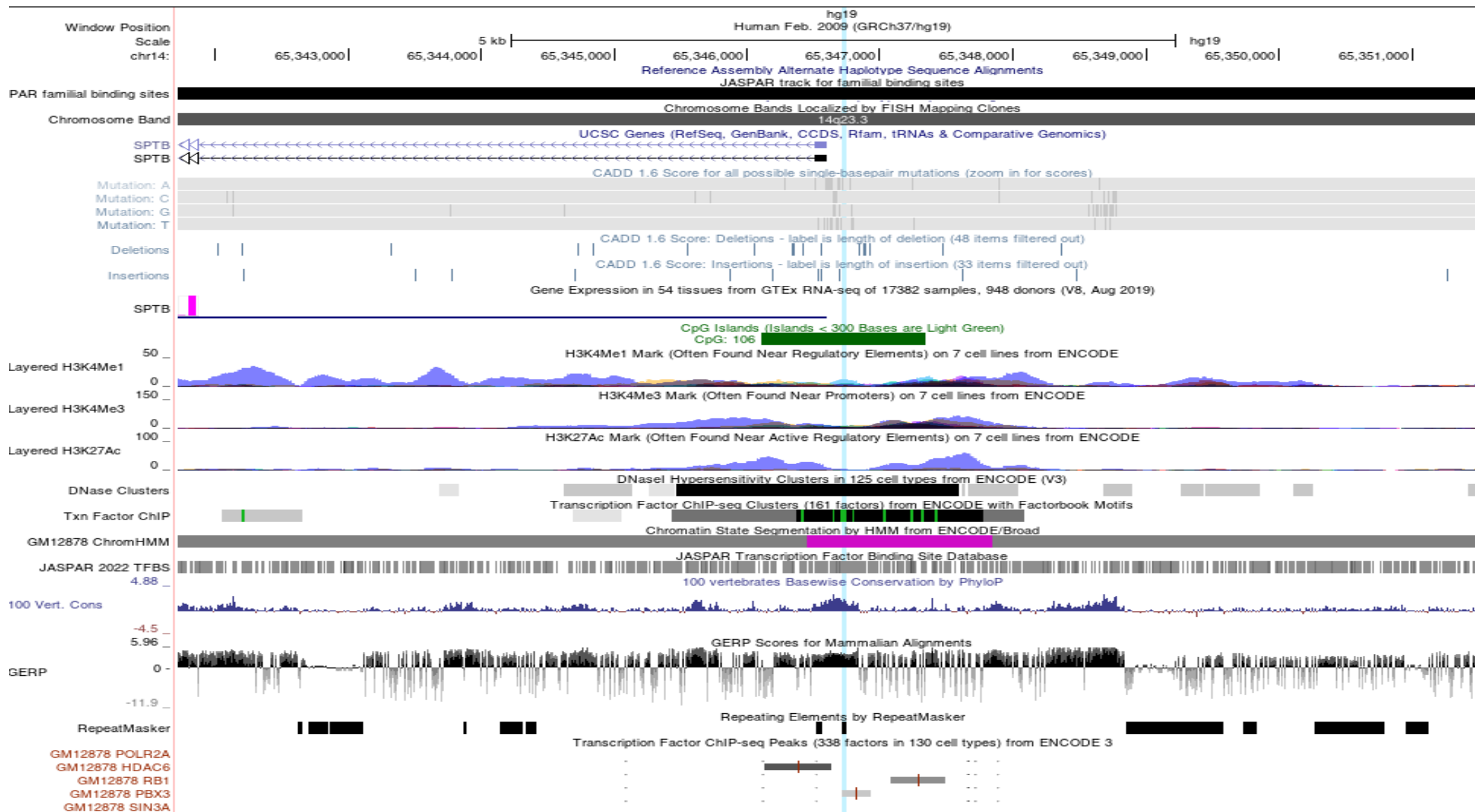
Supplementary Figure S7. *ERBB3*:12\_56473408\_C\_T



Supplementary Figure S8. *TBC1D4*: 13\_76056522\_G\_A

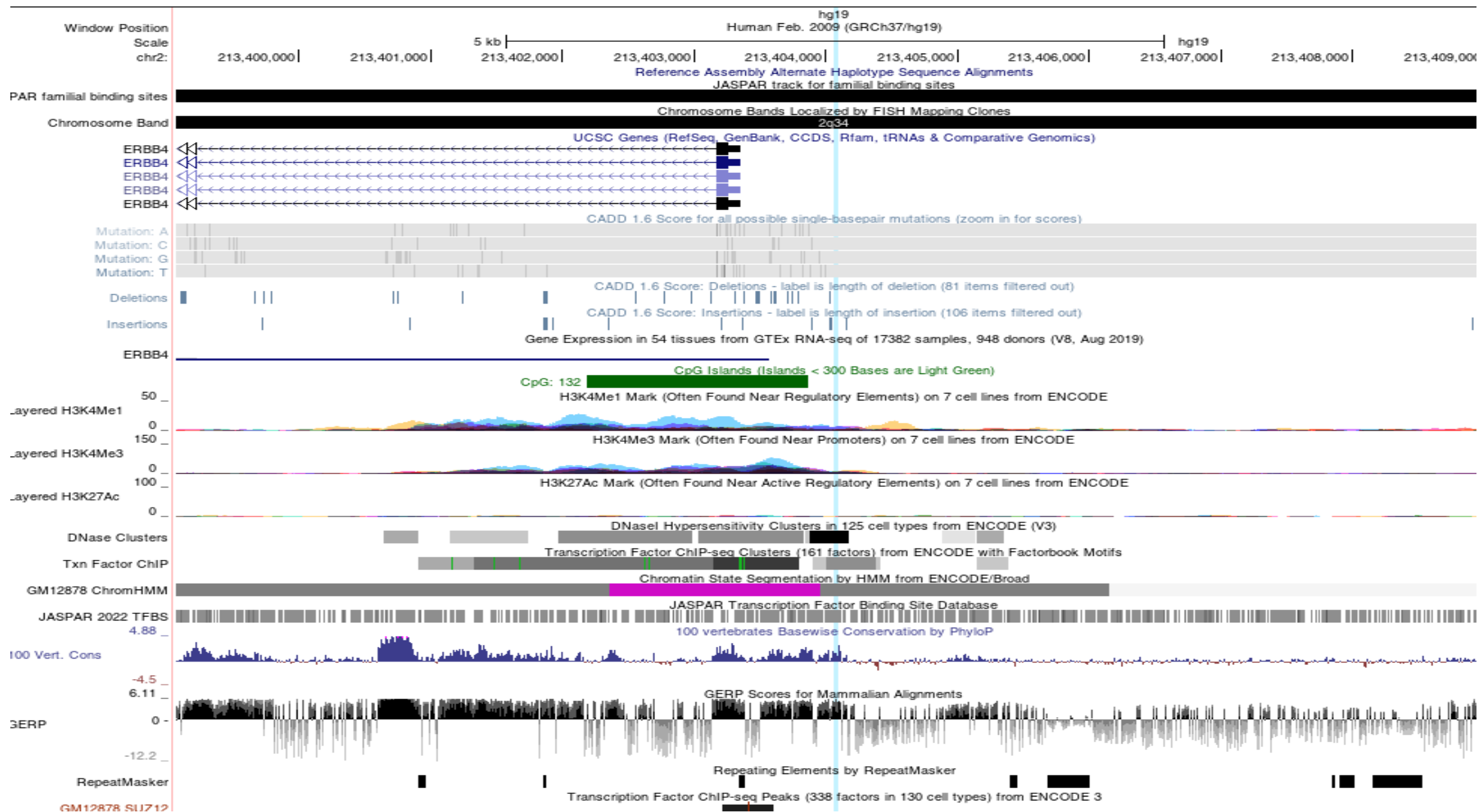


Supplementary Figure S9. *PSMC6*: 14\_53173885\_C\_G

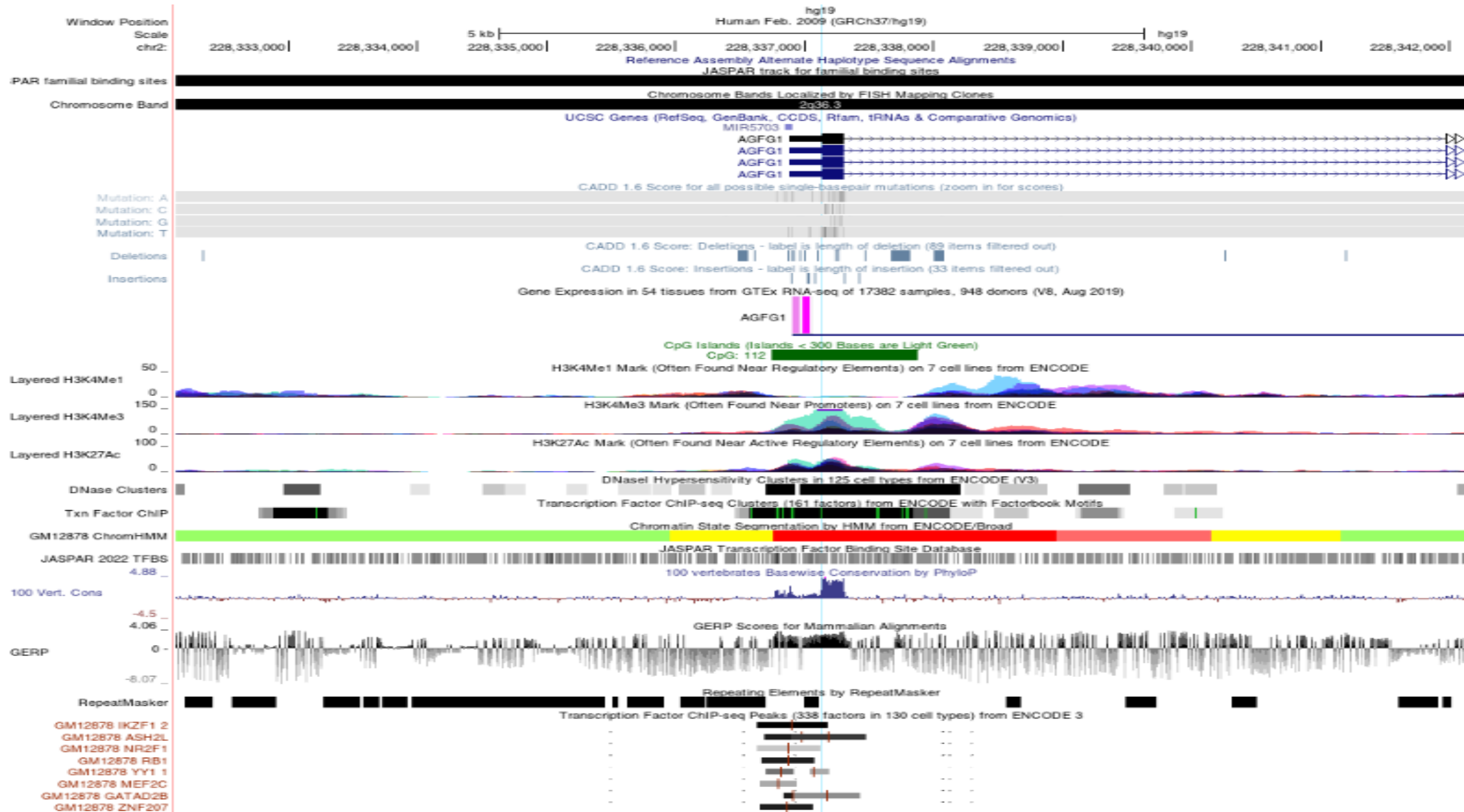


Supplementary Figure S10. *SPTB*: 14\_65346721\_C\_A

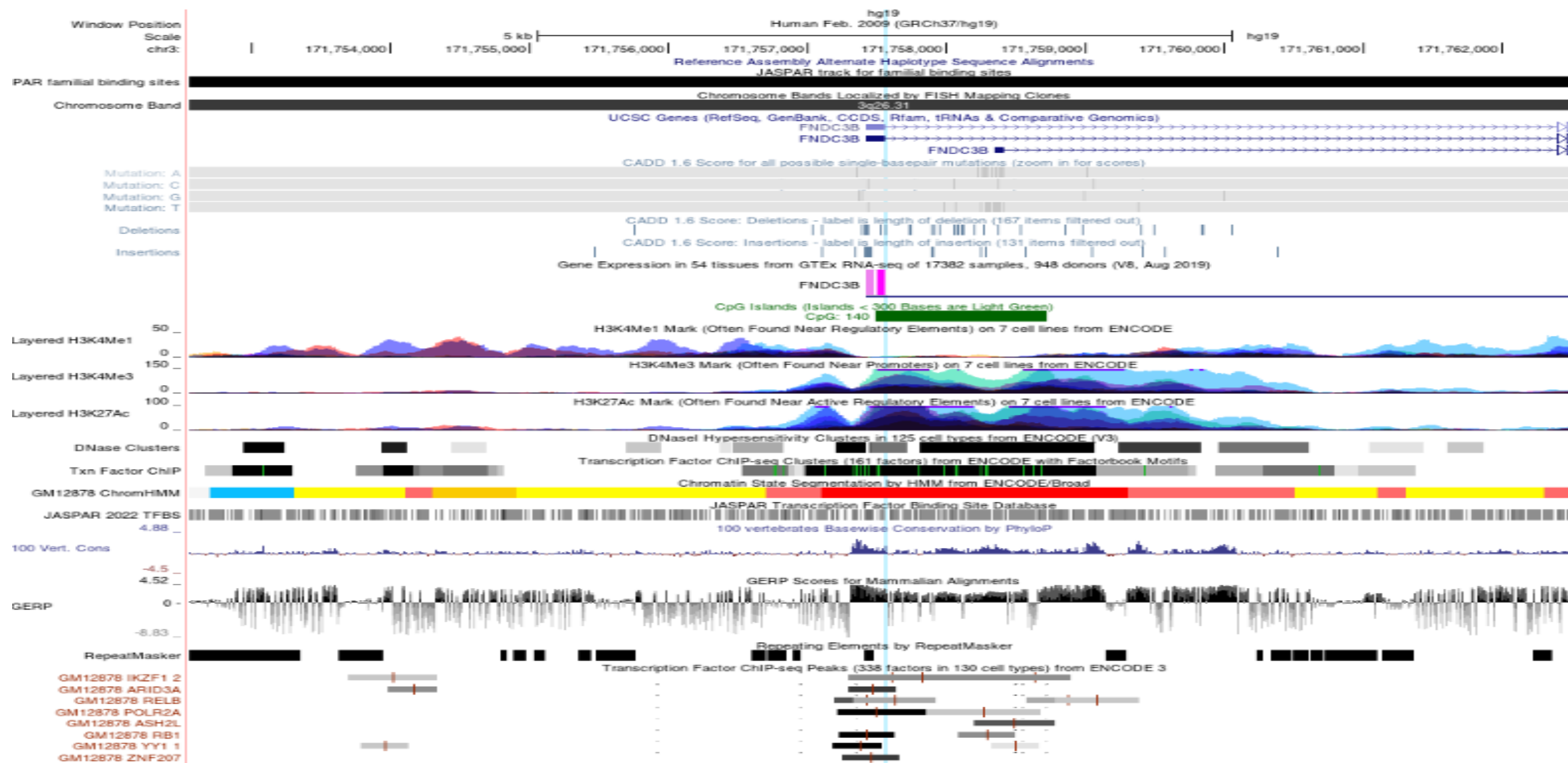




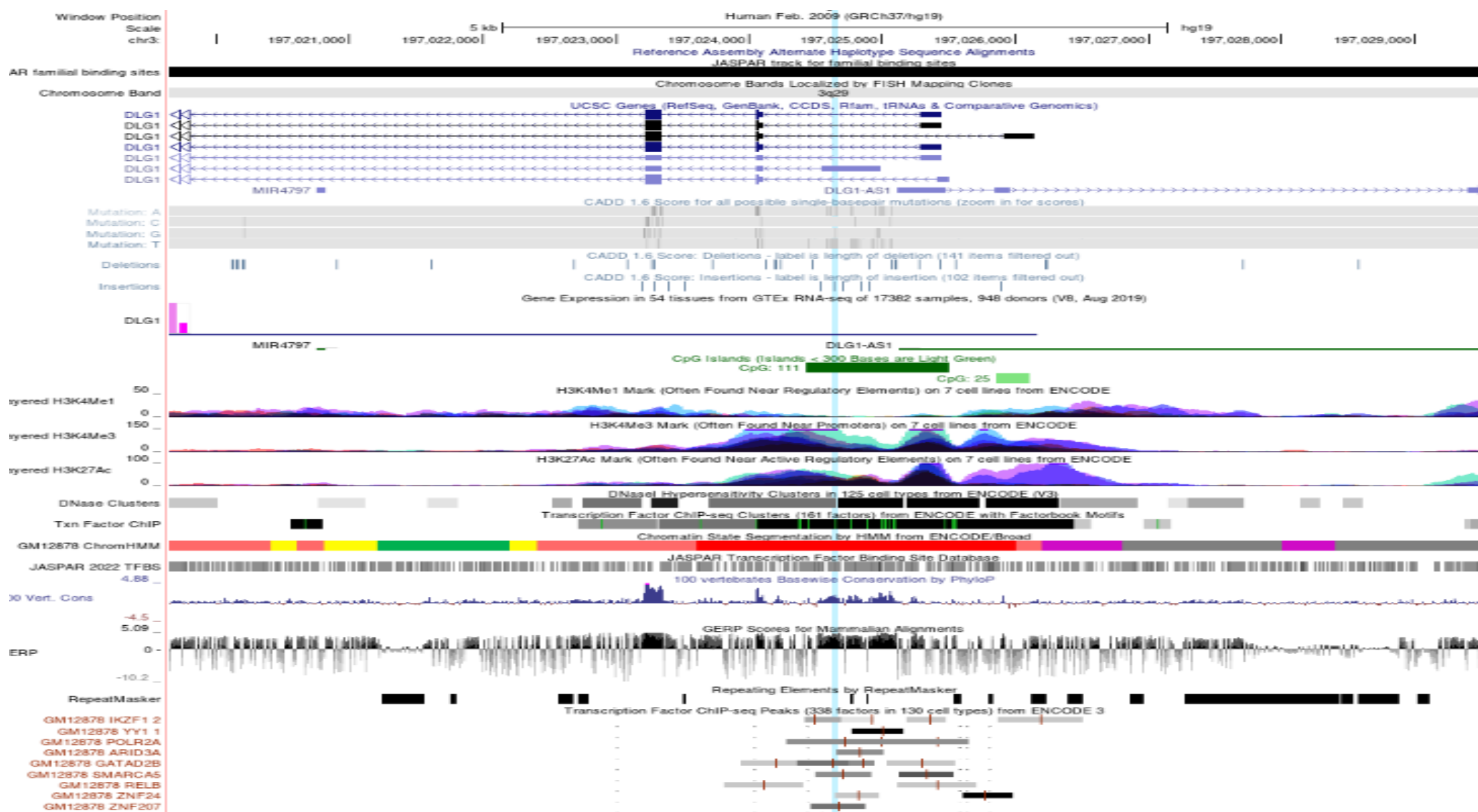
Supplementary Figure S12. *ERBB4*: 2\_213404066\_C\_T



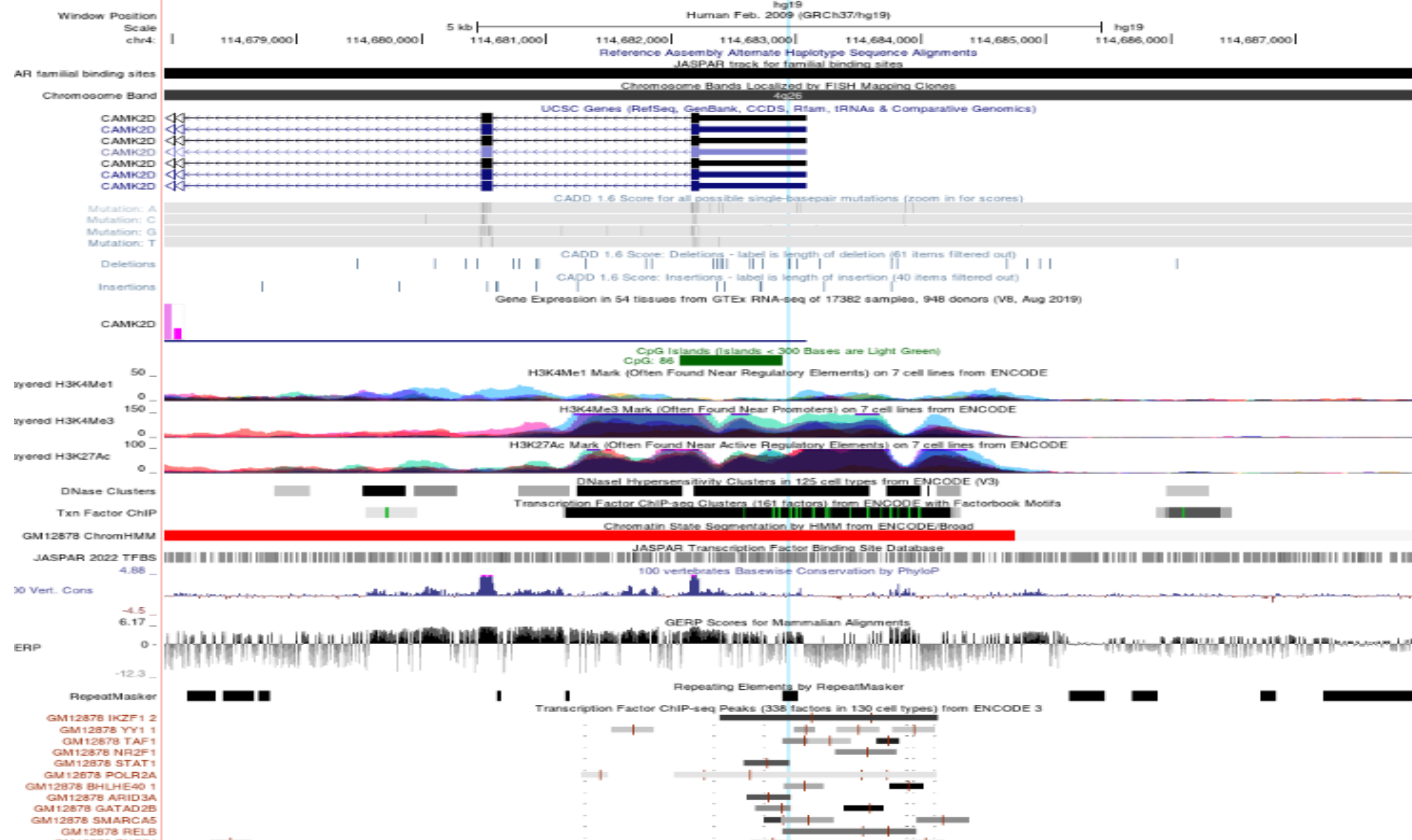
Supplementary Figure S13. *AGFG1*: 2\_228337132\_G\_A



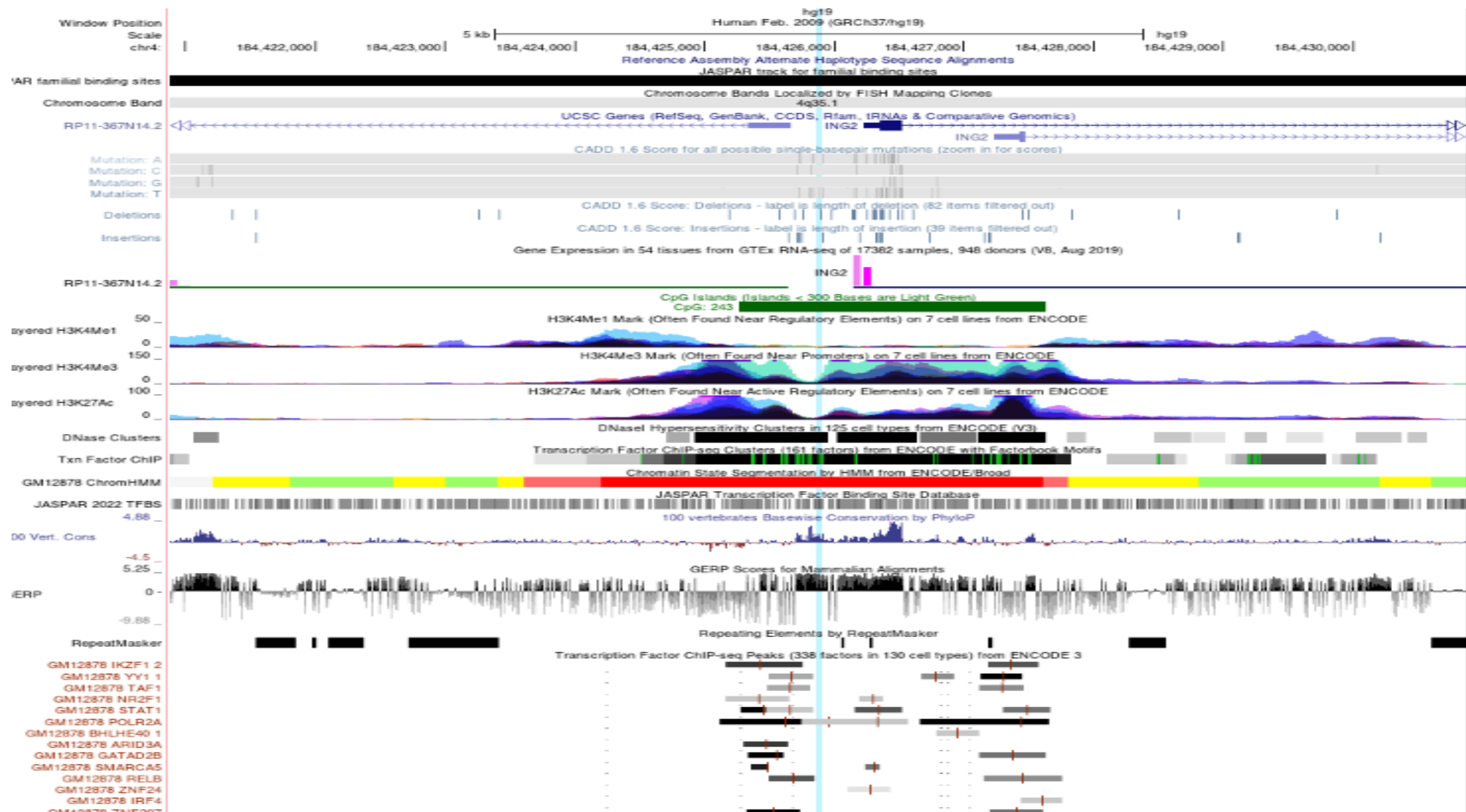
Supplementary Figure S14. *FNDC3B*: 3\_171757553\_C\_A



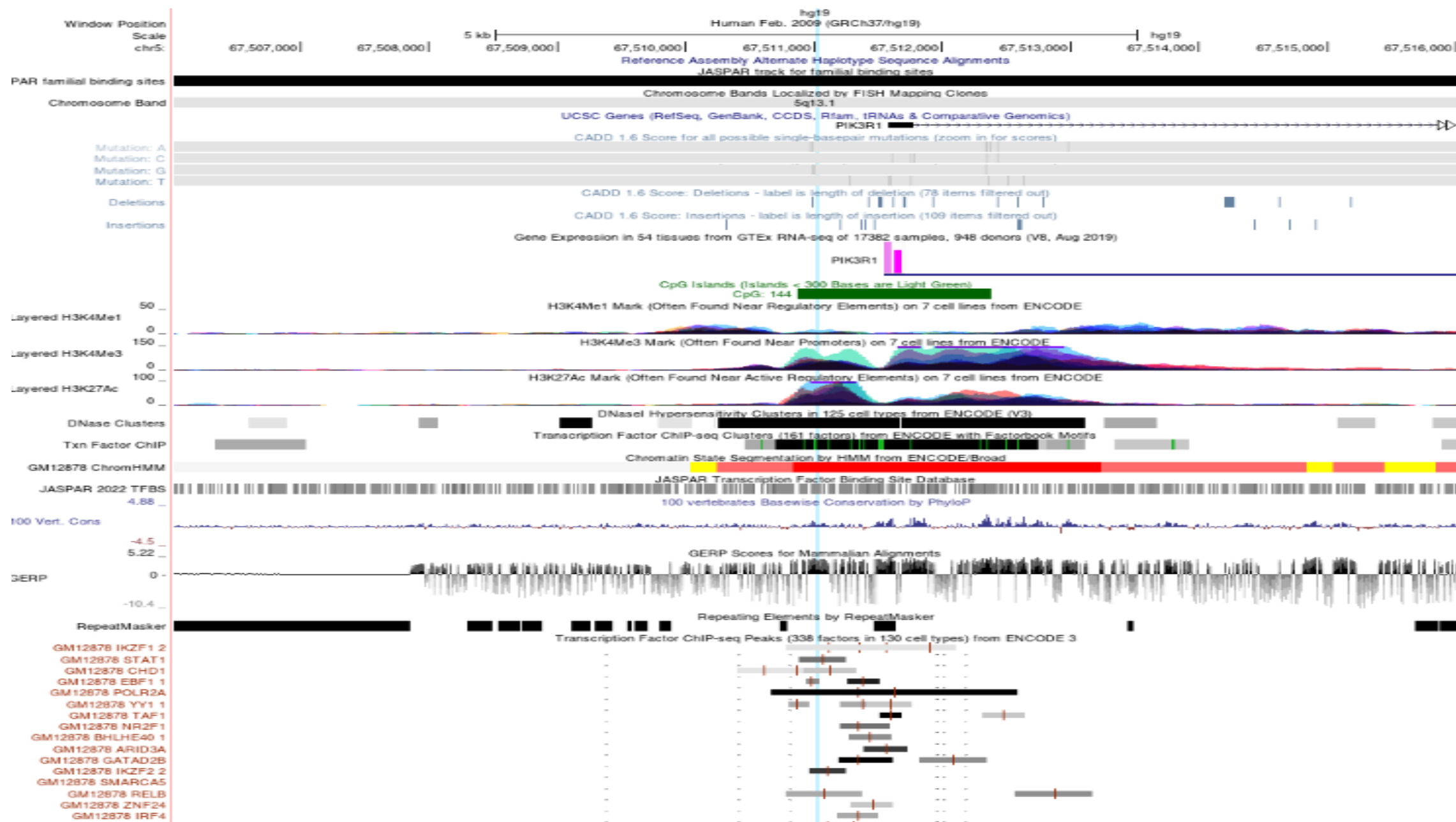
Supplementary Figure S15. *DLG1*: 3\_197024641\_C\_T



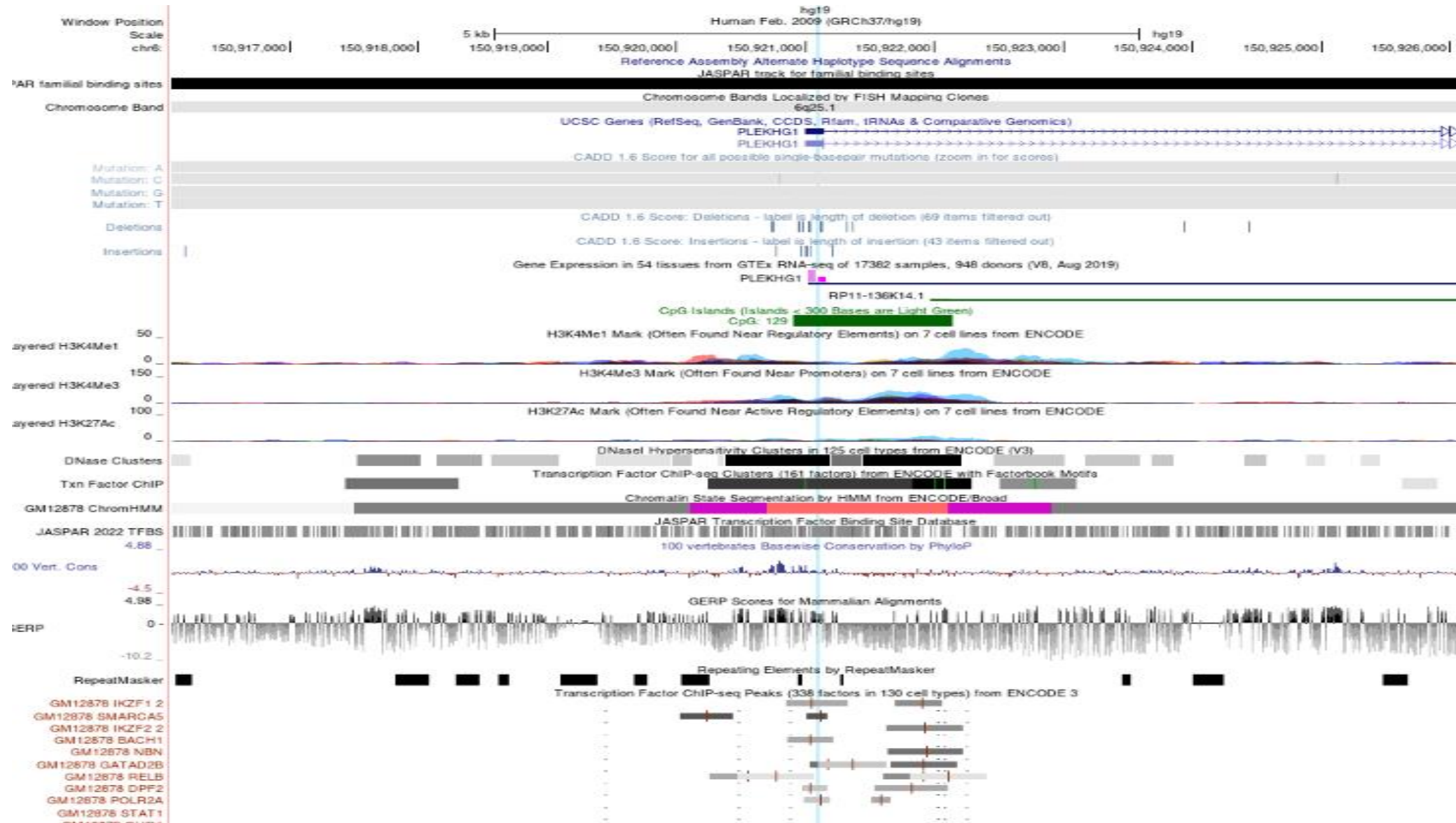
Supplementary Figure S16. *CAMK2D*: 4\_114682943\_TCCTCCTCCGGCG\_T



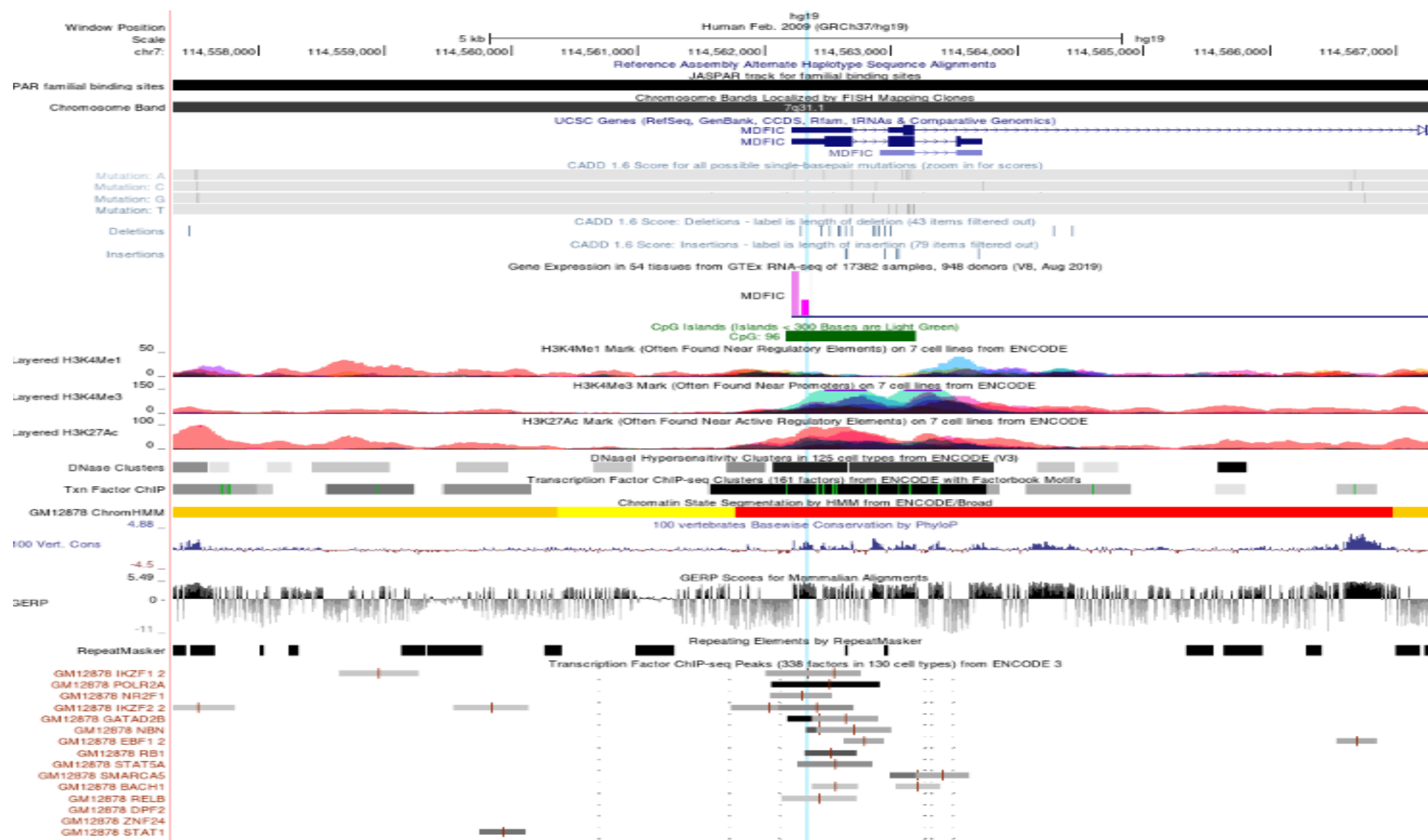
Supplementary Figure S17. *ING2*: 4\_184425877\_C\_A



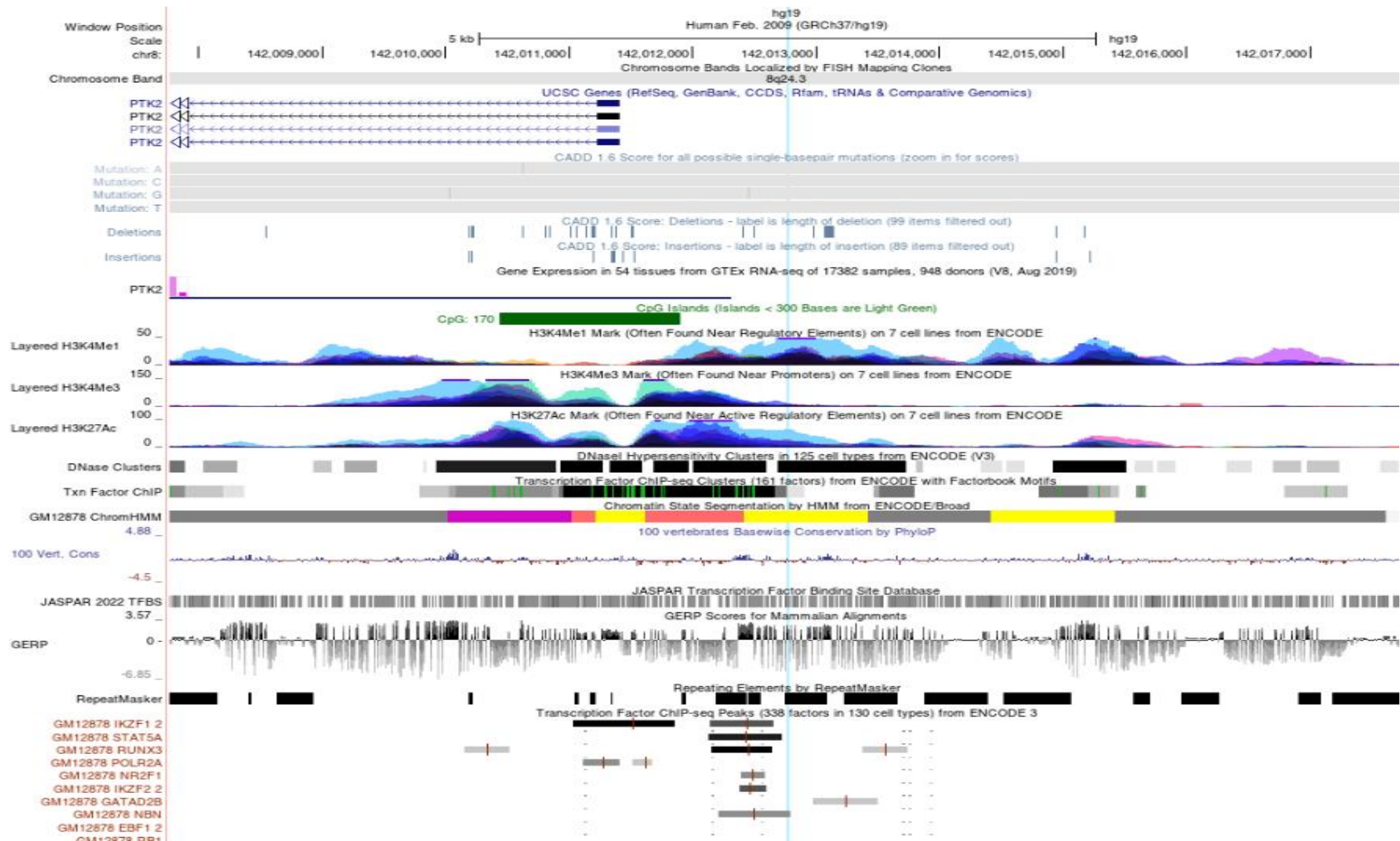
Supplementary Figure S18. *PIK3R1*: 5\_67511017\_G\_C



Supplementary Figure S19. *PLEKHG1*: 6\_150921086\_G\_A



Supplementary Figure S20. *MDFIC*: 7\_114562322\_C\_G



Supplementary Figure S21. *PTK2*: 8\_142012766\_C\_T