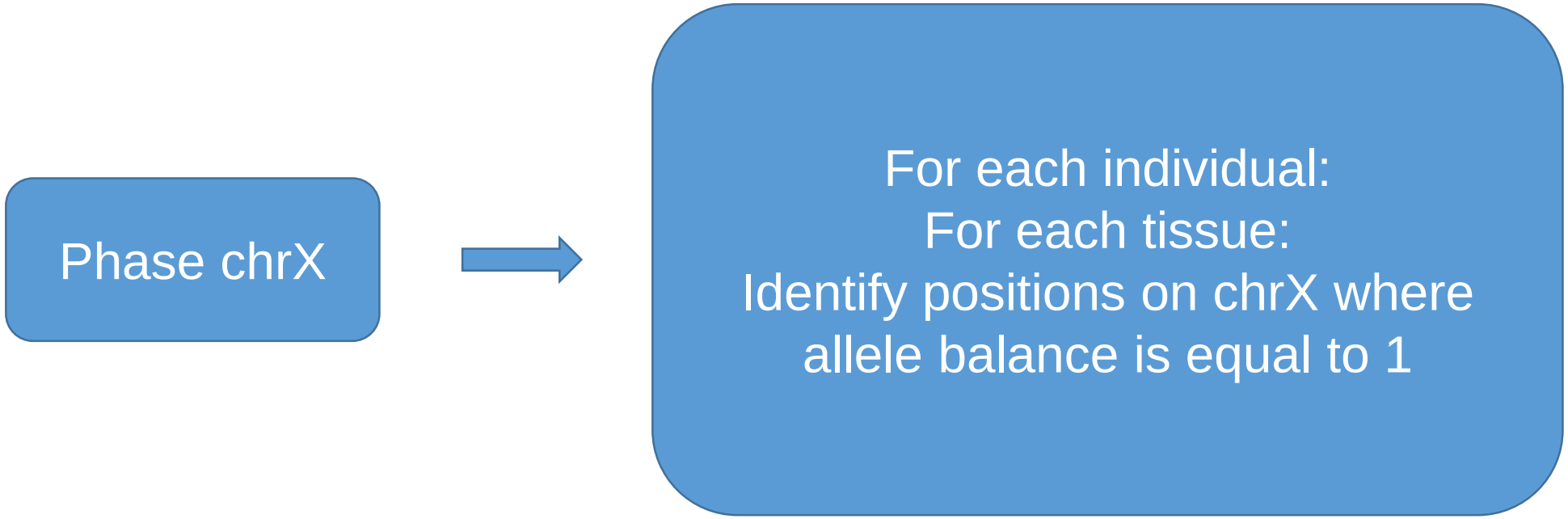

Phase chrX
For each individual:
For each tissue:
Identify positions on chrX where allele balance is equal to 1

PT101159
heart

Allele balance

60624	3.0	13.0	0.23076923076923078
694619	14.0	26.0	0.5384615384615384
879465	4.0	13.0	0.3076923076923077
1314201	19.0	26.0	0.7307692307692307
1436296	21.0	38.0	0.5526315789473685
1436503	22.0	40.0	0.55
1436515	22.0	38.0	0.5789473684210527
1717258	84.0	178.0	0.47191011235955055
1724510	9.0	46.0	0.1956521739130435
8720846	5.0	13.0	0.38461538461538464

position

Number of reads for the biased allele (biased allele is determined from phasing

Total number of reads

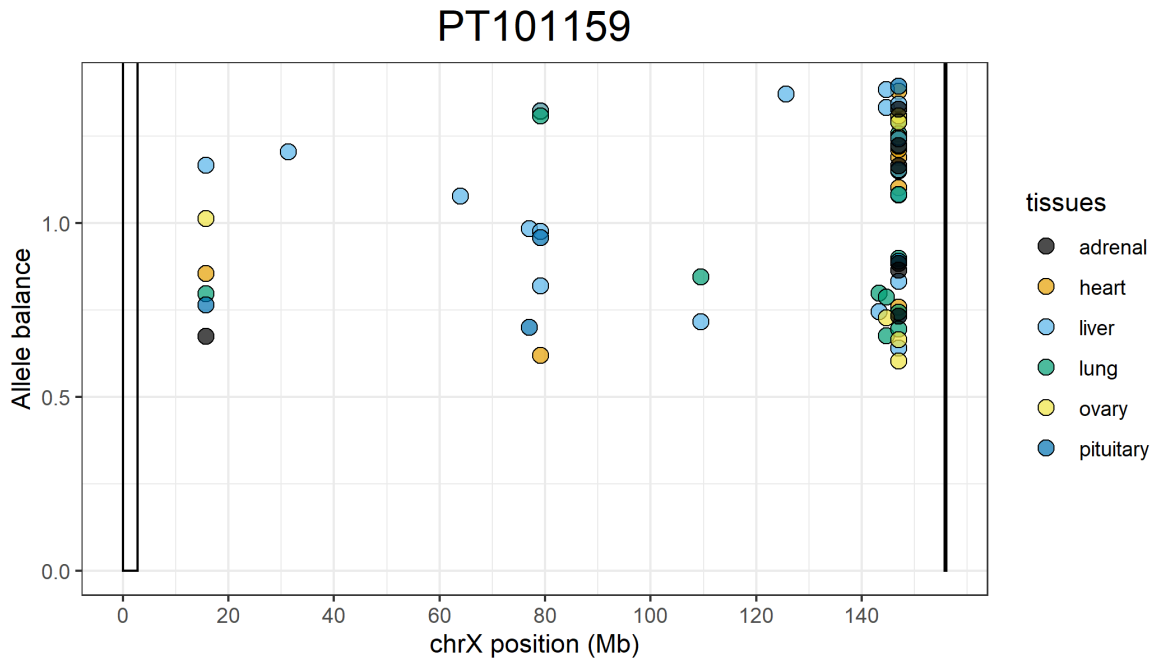
Obtain the positions where the allele balance is equal to 1 (completely skewed)

15705225	172.0	172.0	1.0
79147400	26.0	26.0	1.0
79147429	30.0	30.0	1.0
147054400	29.0	29.0	1.0
147054504	29.0	29.0	1.0
147054527	24.0	24.0	1.0
147054535	27.0	27.0	1.0
147054564	24.0	24.0	1.0
147054617	21.0	21.0	1.0

Repeat for all of the tissues within an individual

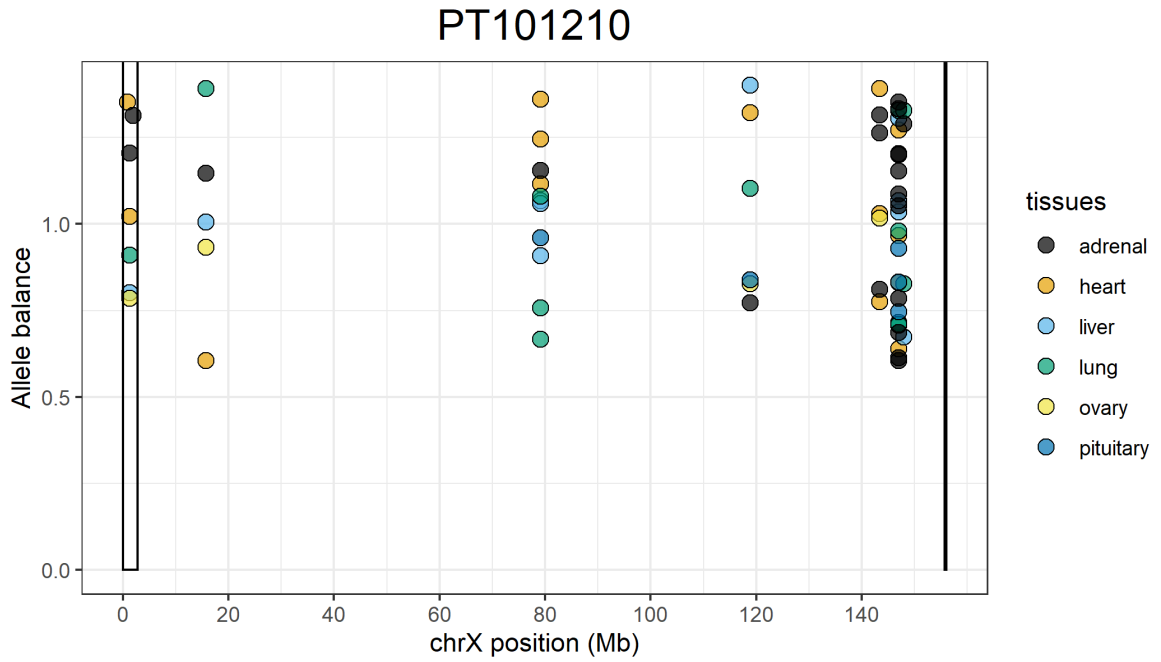
```r
# PT101159
setwd("c://Users/tuyen/Documents/postdoc_asu/projects/Cayo_x_inactivation/whole_X_inactivation/results
/phase_whole_X/minDepth10/PT101159/")

heart = read.table("PT101159_hap1_heart_hardfilter_complete_skewed.tsv")
liver = read.table("PT101159_hap1_liver_hardfilter_complete_skewed.tsv")
lung = read.table("PT101159_hap1_lung_hardfilter_complete_skewed.tsv")
ovary = read.table("PT101159_hap1_gonads_hardfilter_complete_skewed.tsv")
pituitary = read.table("PT101159_hap1_pituitary_hardfilter_complete_skewed.tsv")
adrenal = read.table("PT101159_hap1_adrenal_hardfilter_complete_skewed.tsv")

heart_label = rep("heart", nrow(heart))
liver_label = rep("liver", nrow(liver))
lung_label = rep("lung", nrow(lung))
ovary_label = rep("ovary", nrow(ovary))
pituitary_label = rep("pituitary", nrow(pituitary))
adrenal_label = rep("adrenal", nrow(adrenal))


plot_data = data.frame(tissues=c(heart_label, liver_label, lung_label, ovary_label, pituitary_label,
adrenal_label), allele_balance = 1, positions = c(heart[,1], liver[,1], lung[,1], ovary[,1], pituitary[,1],
adrenal[,1]))

cbbPalette <- c("#000000", "#E69F00", "#56B4E9", "#009E73", "#F0E442", "#0072B2")

png("c://Users/tuyen/Documents/postdoc_asu/projects/Cayo_x_inactivation/whole_X_inactivation/results/phase_wh
ole_X/minDepth10/Plots/PT101159_complete_skewed.png", width = 7, height = 4, units = "in", res = 300)
ggplot(data=plot_data, aes(x=positions, y=allele_balance, fill=tissues)) +
  geom_point(shape=21, size=3, color="black", position="jitter") +
  theme_bw() +
  coord_cartesian(xlim = c(1, 156040895)) +
  # geom_jitter(shape=21, size=4, color="black", aes(fill=tissues)) +
  scale_x_continuous(breaks=c(0, 20000000, 40000000, 60000000, 80000000, 100000000, 120000000, 140000000),
                     labels=c("0", "20", "40", "60", "80", "100", "120", "140")) +
  labs(x="chrX position (Mb)", y="Allele balance", title="PT101159") +
  theme(plot.title = element_text(hjust = 0.5, size=18)) +
  geom_rect(aes(xmin=10001, xmax=2781479, ymin=0, ymax=Inf), fill=NA, color="black") +
  geom_rect(aes(xmin=155701383, xmax=156030895, ymin=0, ymax=Inf), fill=NA, color="black") +
  scale_fill_manual(values=alpha(cbbPalette, 0.7))
dev.off()
```

Phased chrX Cayo



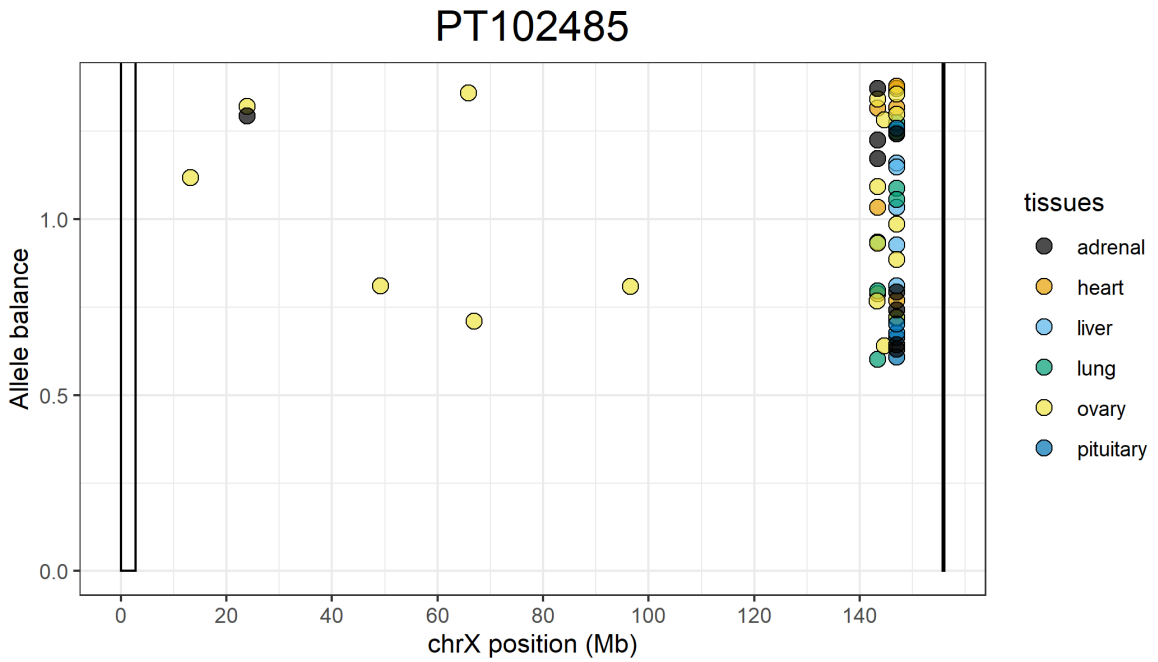
Positions on the X that are completely skewed that are shared across all 6 tissues:

- 15,705,225
- 147,054,504
- 147,054,527
- 147,054,535
- 147,054,564



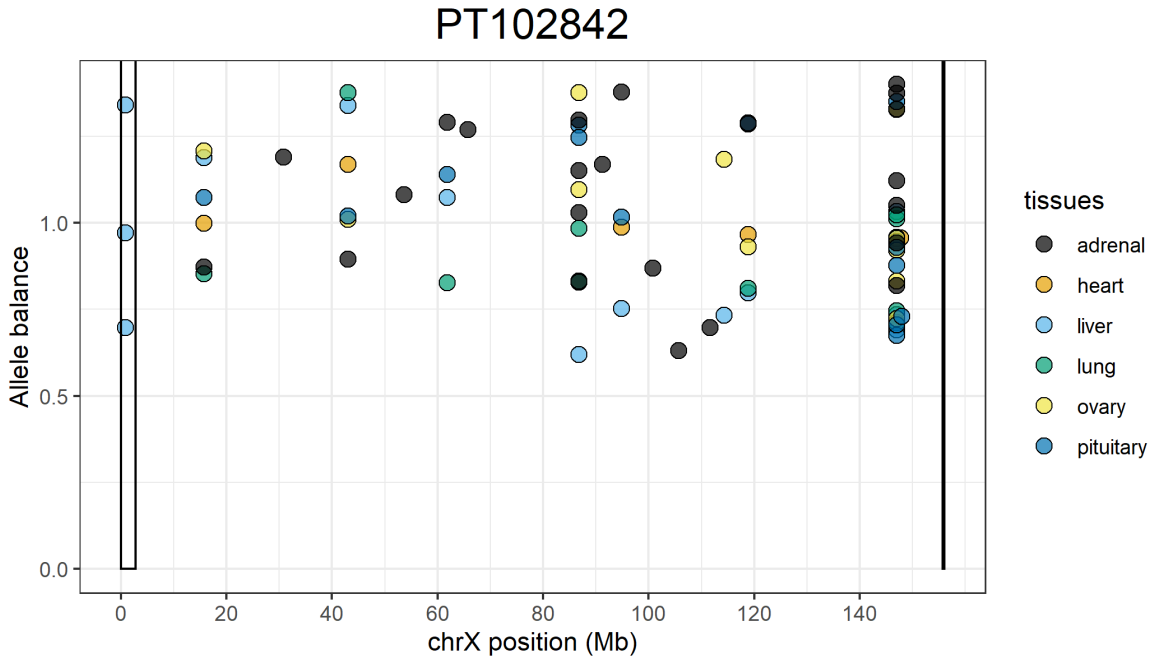
Positions on the X that are completely skewed that are shared across all 6 tissues:

- 118,831,364



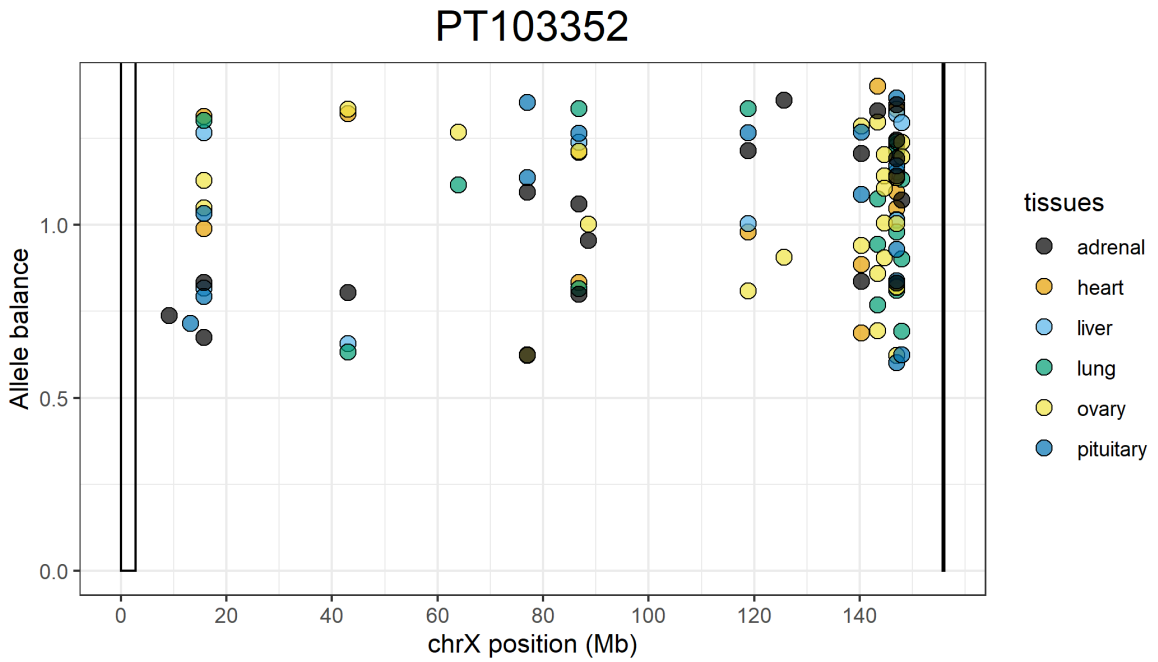
Positions on the X that are completely skewed that are shared across all 6 tissues:

- 147,054,504
- 147,054,527
- 147,054,535
- 147,054,564
- 147,054,617



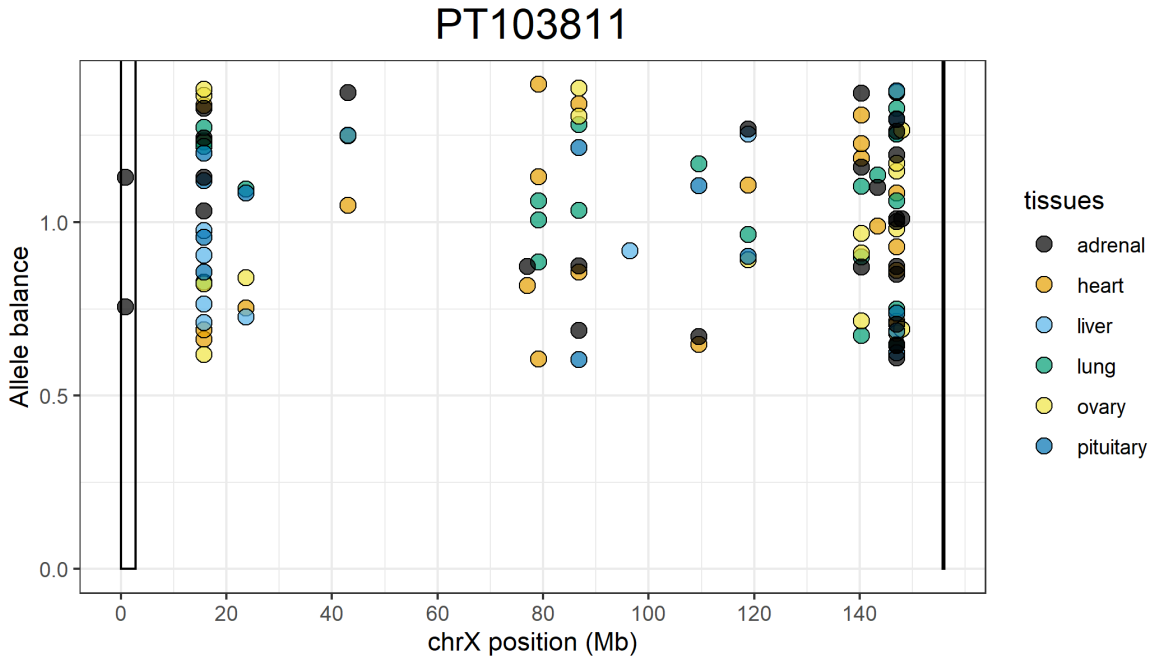
Positions on the X that are completely skewed that are shared across all 6 tissues:

- 15,705,200
- 43,034,819
- 118,831,364



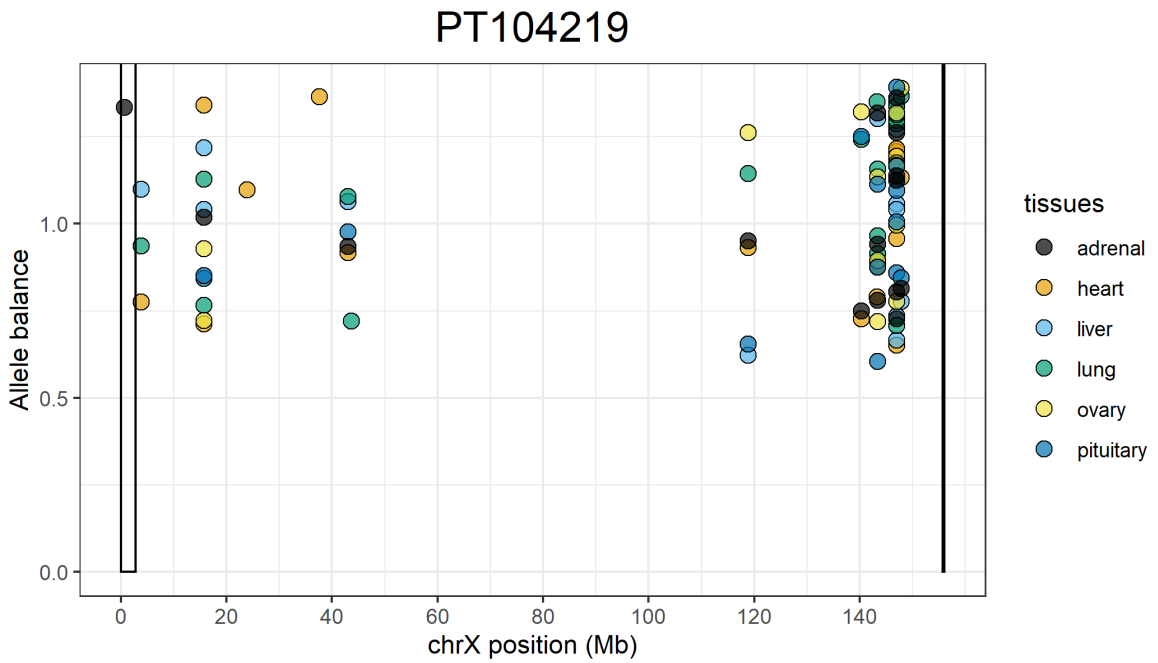
Positions on the X that are completely skewed that are shared across all 6 tissues:

- 15,705,233
- 118,831,364
- 147,054,400
- 147,054,504
- 147,054,527
- 147,054,535
- 147,054,564



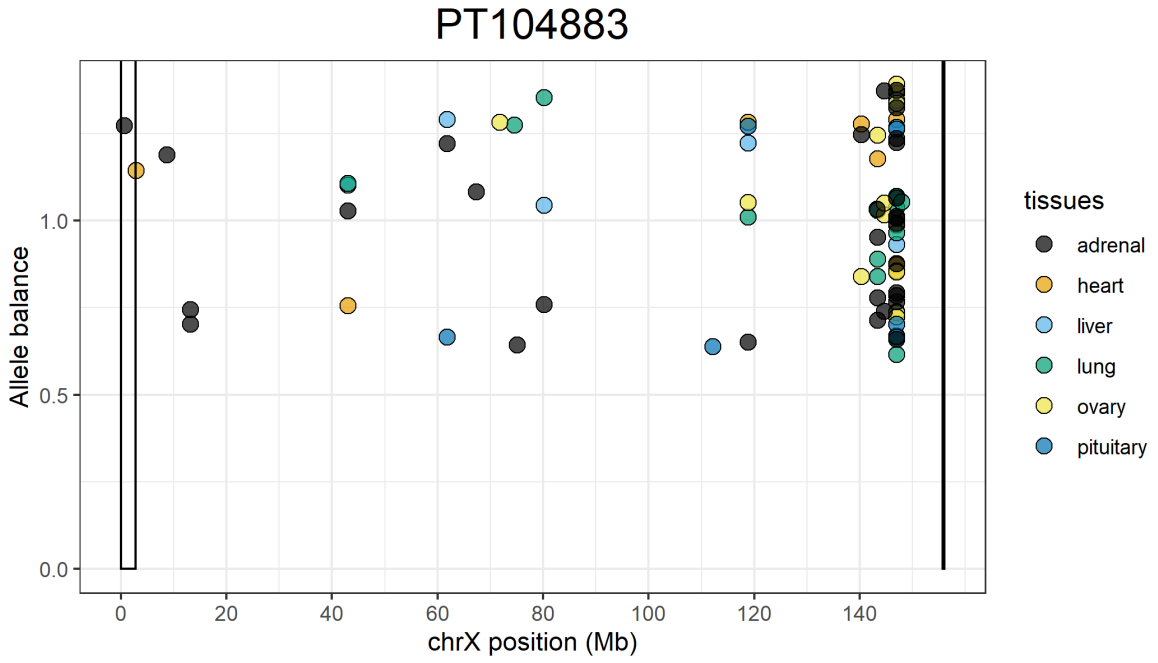
Positions on the X that are completely skewed that are shared across all 6 tissues:

- 15,705,200
- 15,705,225
- 15,705,233
- 15,705,394
- 118,831,364
- 147,054,504
- 147,054,527
- 147,054,535



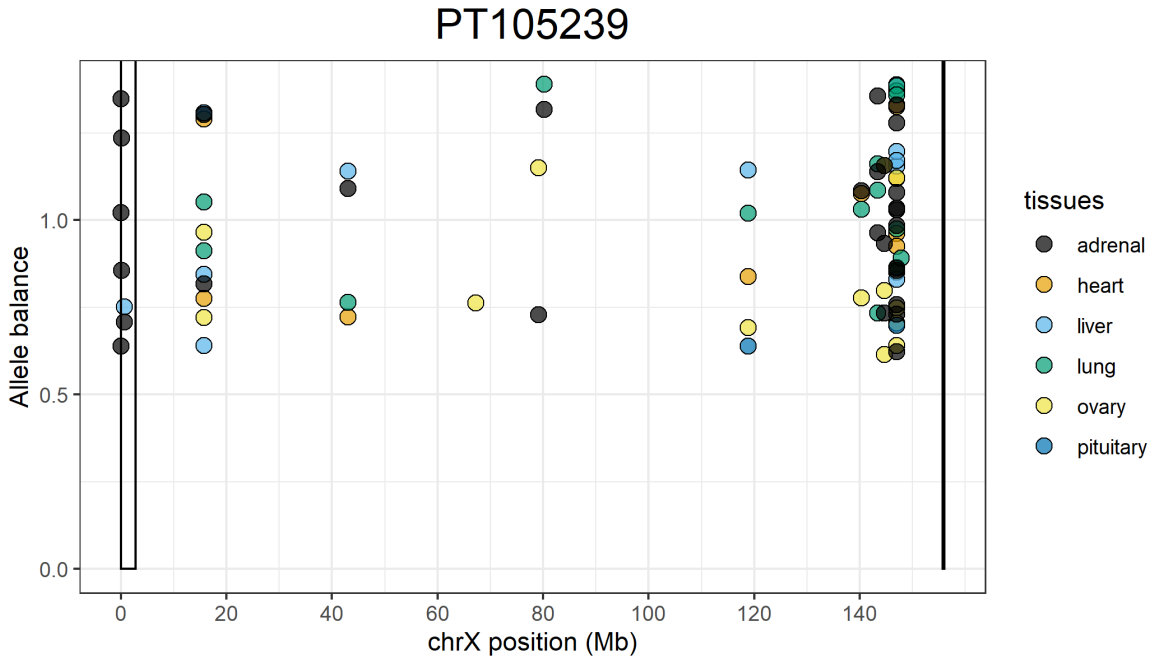
Positions on the X that are completely skewed that are shared across all 6 tissues:

- 15,705,225
- 118,831,364
- 143,373,439
- 147,054,400
- 147,054,504
- 147,054,527
- 147,054,535
- 147,054,564
- 147,054,617
- 147,823,222



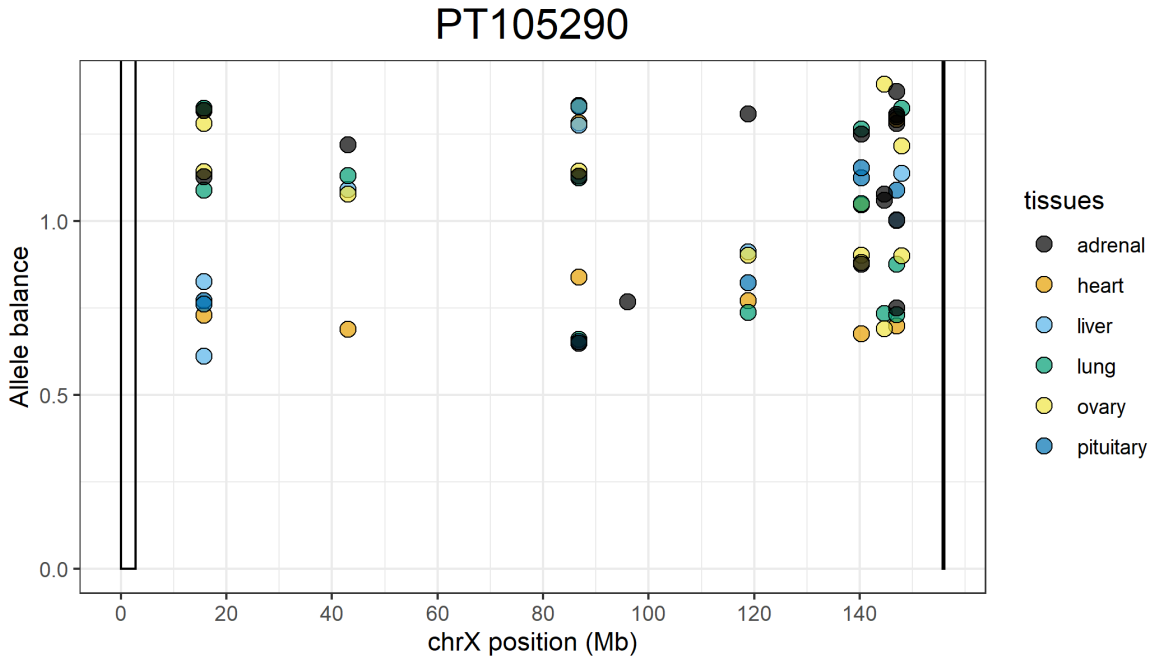
Positions on the X that are completely skewed that are shared across all 6 tissues:

- 118,831,364
- 147,054,527
- 147,054,535
- 147,054,564



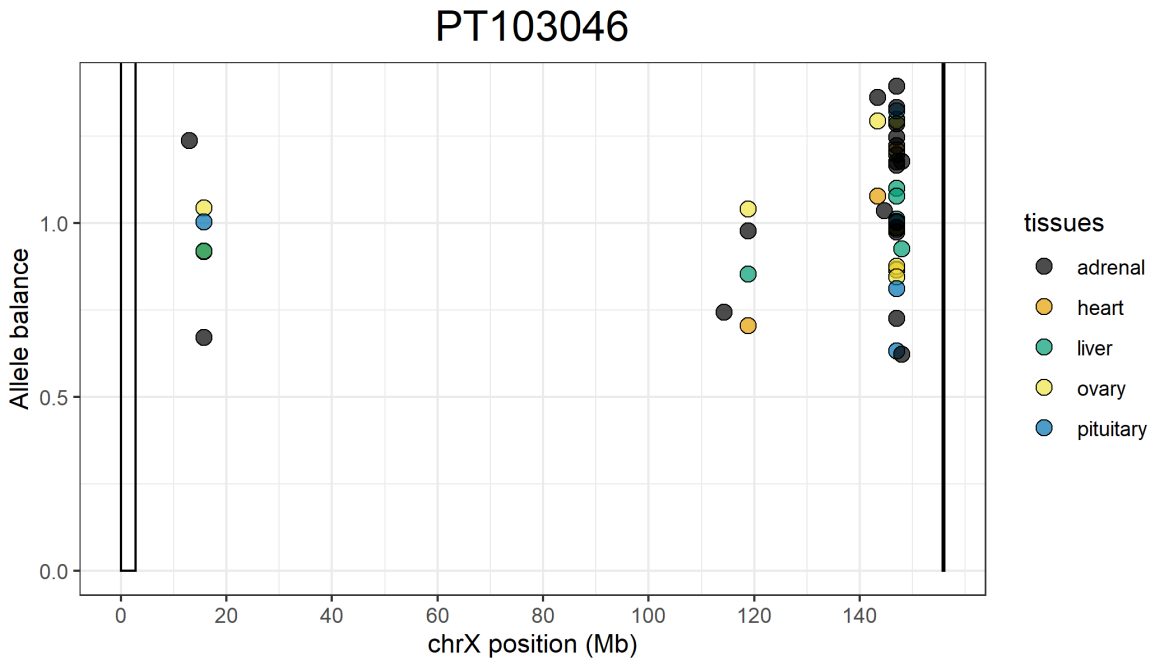
Positions on the X that are completely skewed that are shared across all 6 tissues:

- 15,705,225
- 147,054,504



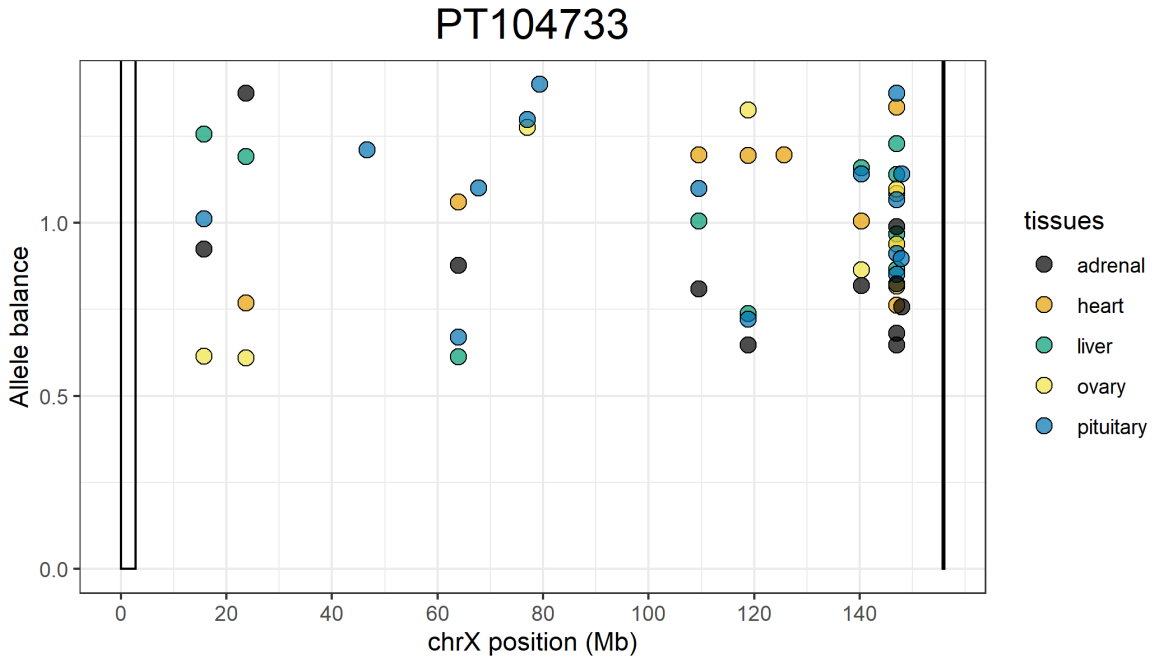
Positions on the X that are completely skewed that are shared across all 6 tissues:

- 15,705,225
- 15,705,233
- 86,750,672
- 118,831,364



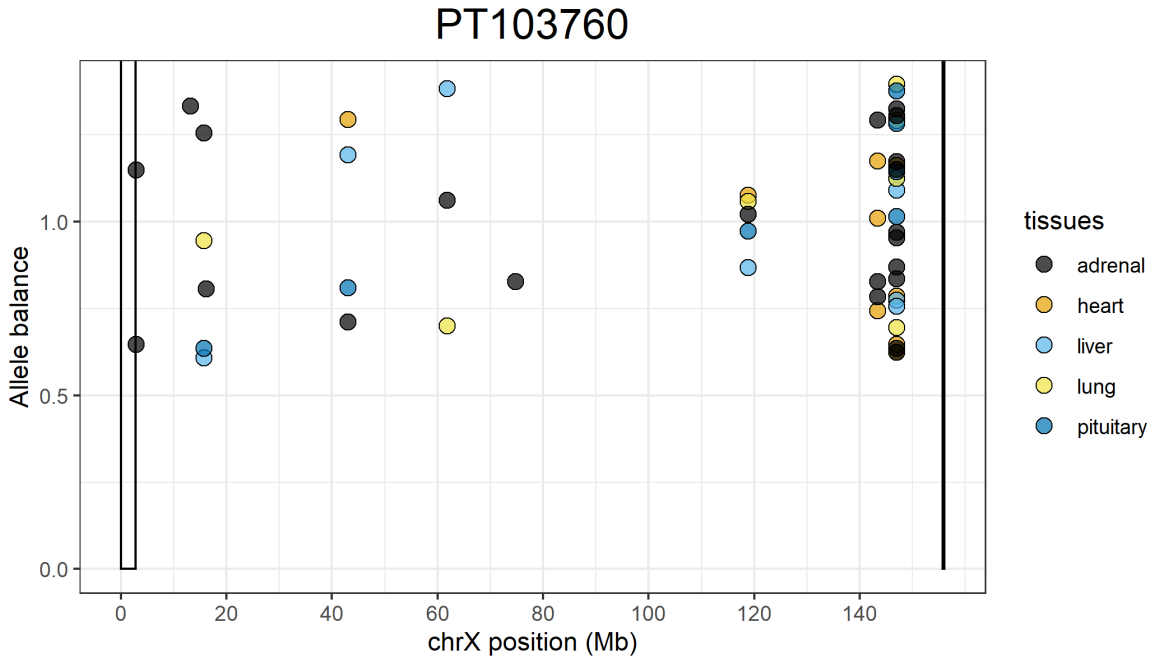
Positions on the X that are completely skewed that are shared across all 5 tissues:

- 15,705,394
- 147,054,527
- 147,054,564



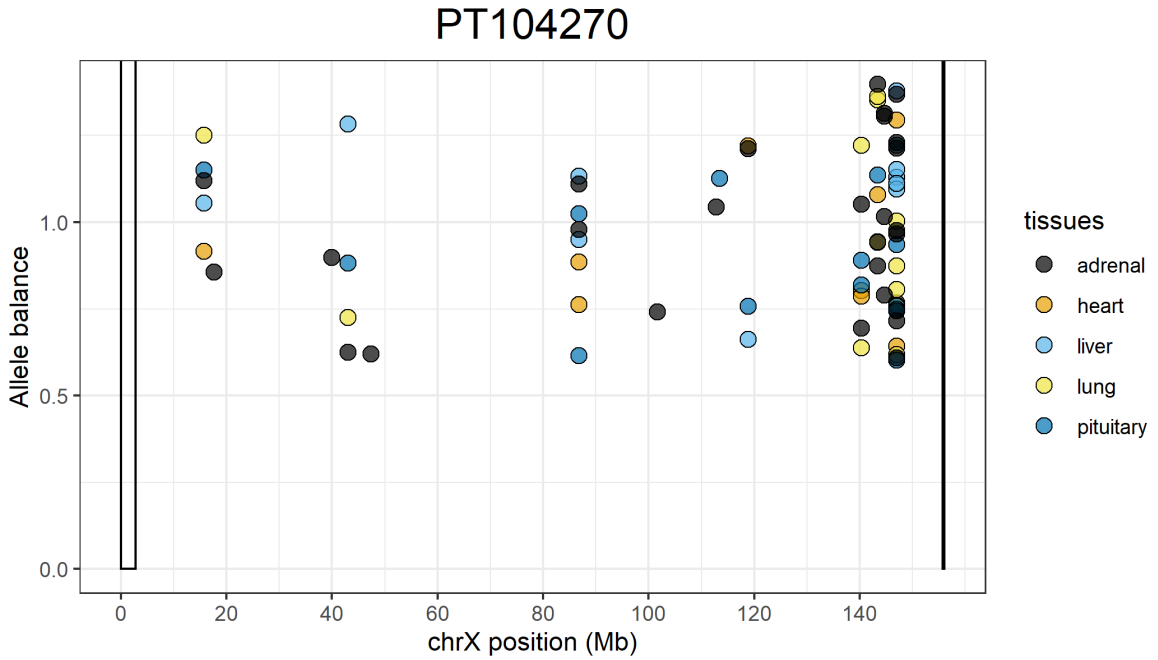
Positions on the X that are completely skewed that are shared across all 5 tissues:

- 118,831,364
- 140,353,426
- 147,054,504
- 147,054,527
- 147,054,535



Positions on the X that are completely skewed that are shared across all 5 tissues:

- 118,831,364
- 147,054,504
- 147,054,527
- 147,054,535
- 147,054,564

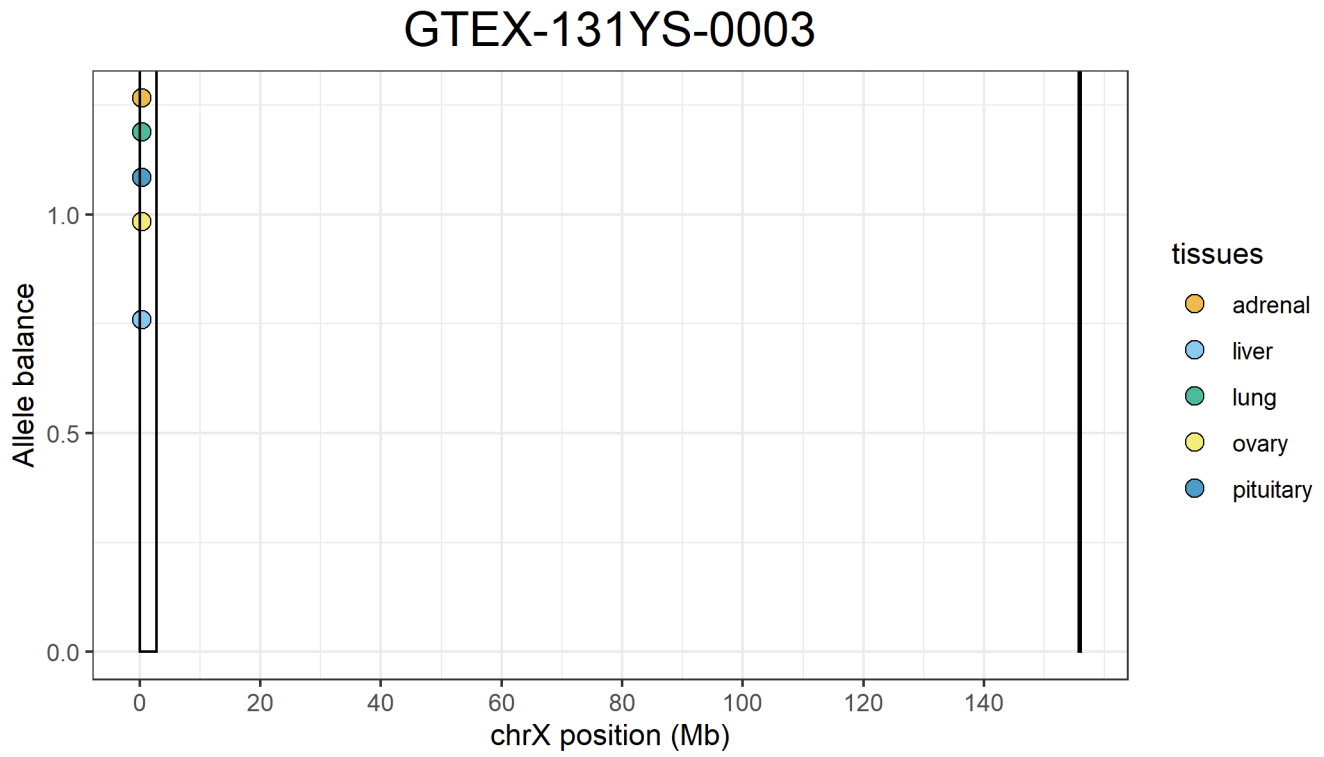


Positions on the X that are completely skewed that are shared across all 5 tissues:

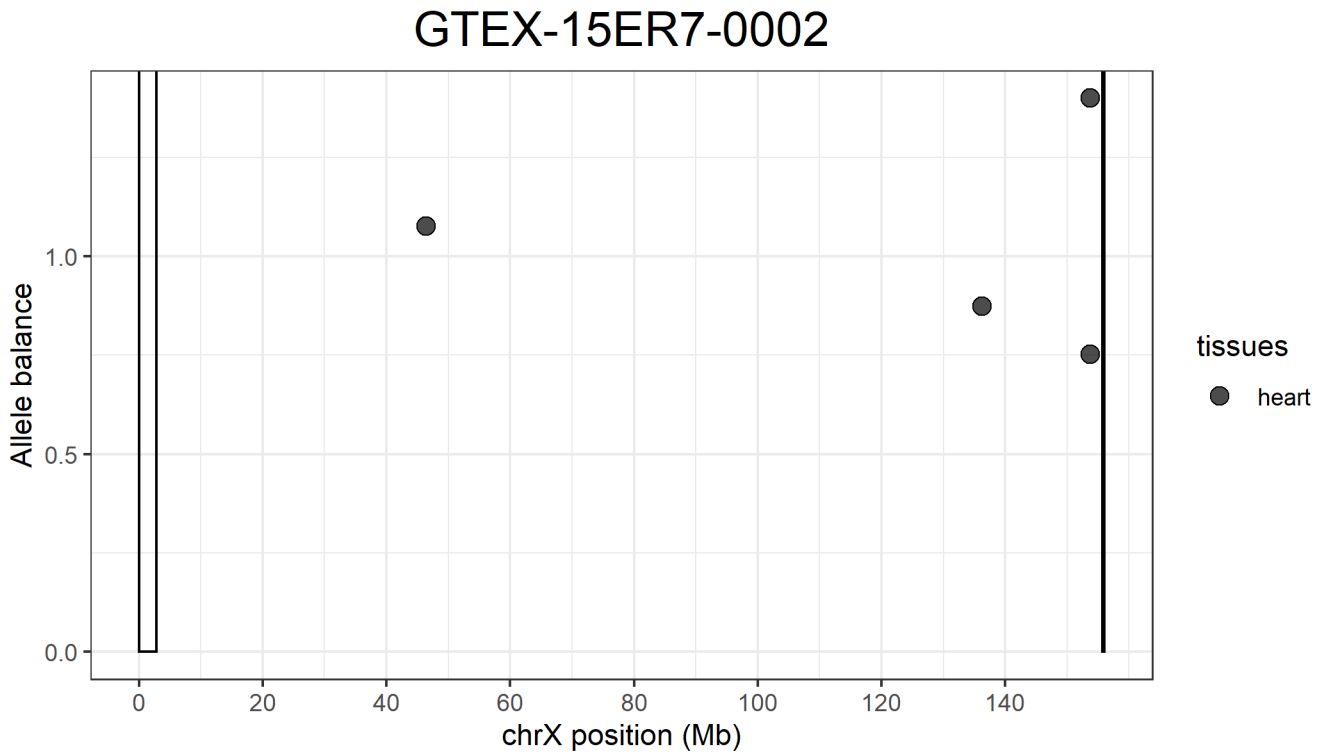
- 15,705,225
- 147,054,504
- 147,054,535
- 147,054,564

Phased chrX GTEx

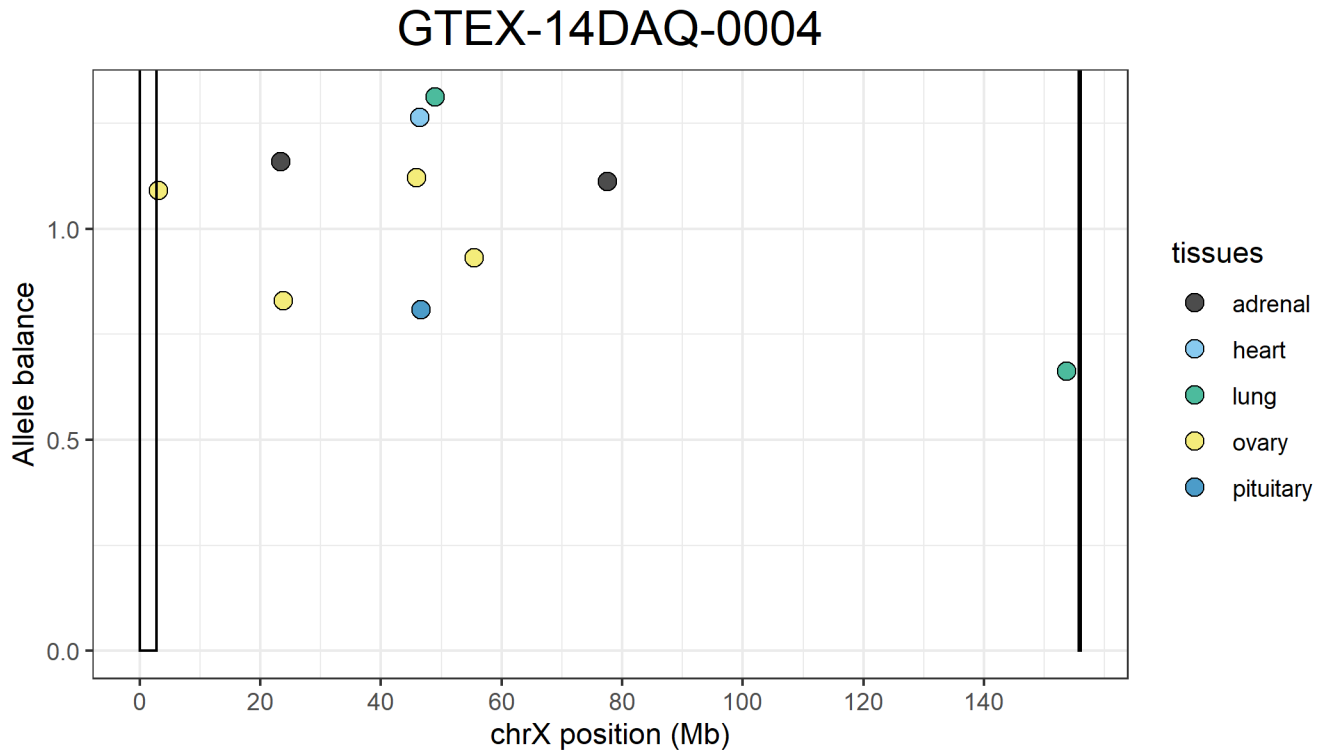
Tissue	How many variants that are completely skewed?	Positions
Heart	0	
Liver	1	**311858**
Lung	1	**311858**
Ovary	1	**311858**
Pituitary	1	**311858**
Adrenal	1	**311858**



Tissue	How many variants that are completely skewed?	Positions
Heart	4	46440204, 136228626, 136228626, 153784707
Liver	0	
Lung	0	
Ovary	0	
Pituitary	0	
Adrenal	0	

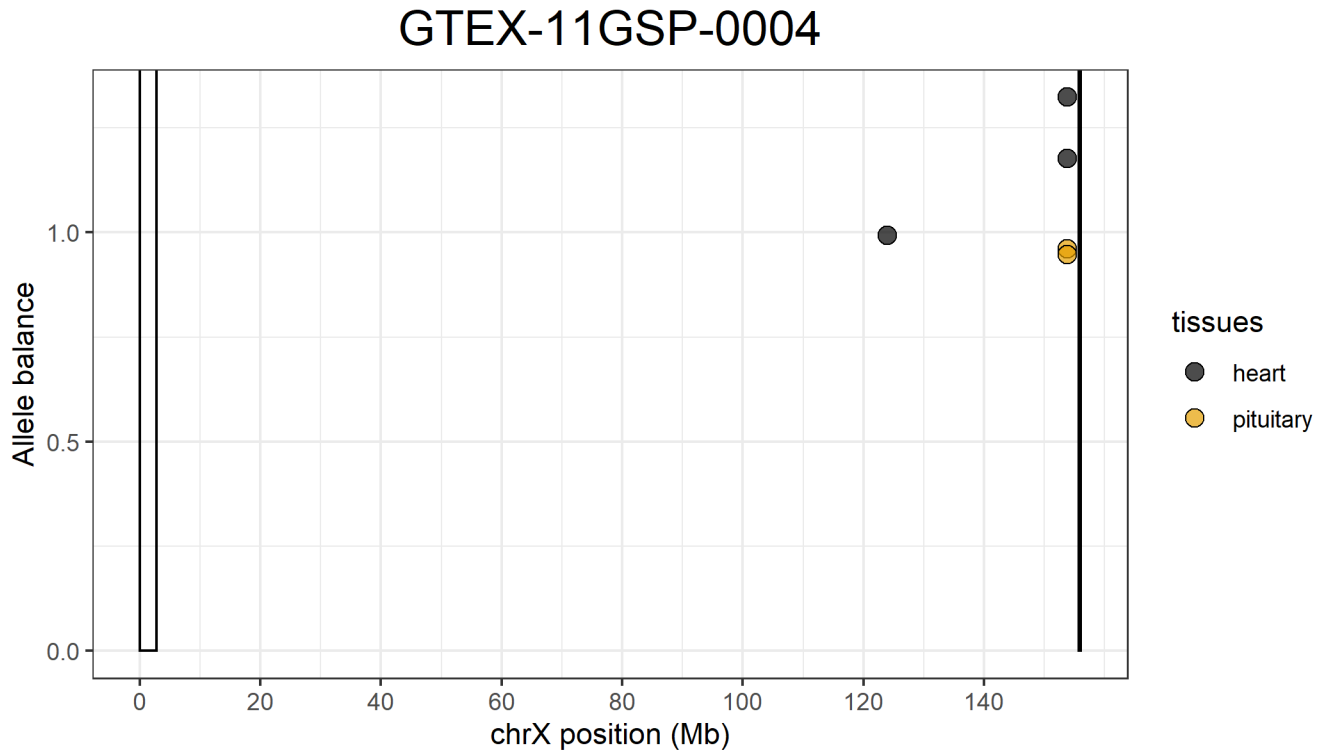


Tissue	How many variants that are completely skewed?	Positions
Heart	1	**46440204**
Liver	0	
Lung	2	48575111, 154462057
Ovary	4	3321504, 23783476, **46440204**, 54927214
Pituitary	1	**46440204**
Adrenal	2	23783476, 78125505

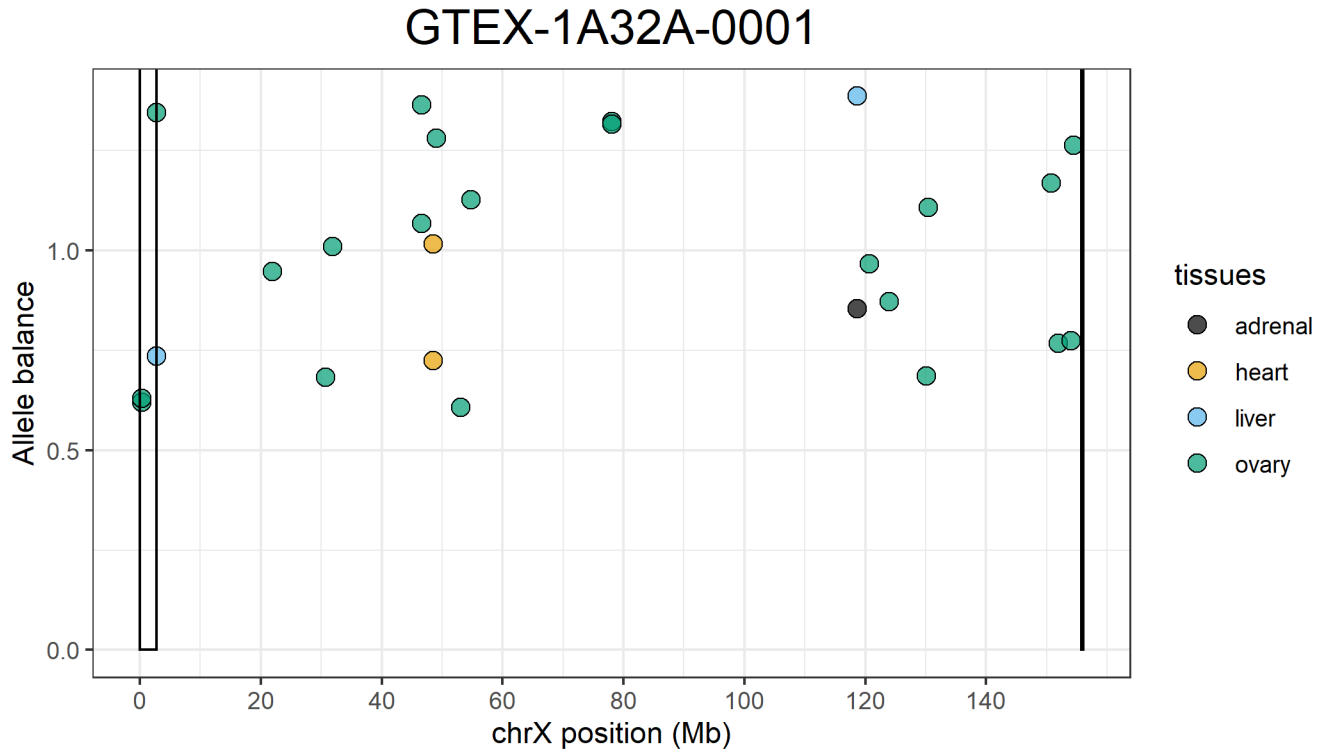


Tissue	How many variants that are completely skewed?	Positions
Heart	2	1412872, 1412877
Liver	10	2717448, 18893947, 43768752, 43768865, 49175859, 57448699, 57489006, 101886821, 129448500, **154348765**
Lung	0	
Ovary	0	
Pituitary	1	**154348765**
Adrenal	0	

Tissue	How many variants that are completely skewed?	Positions
Heart	3	123913073, **153784705**, **153784707**
Liver	0	
Lung	0	
Ovary	0	
Pituitary	2	**153784705**, **153784707**
Adrenal	0	

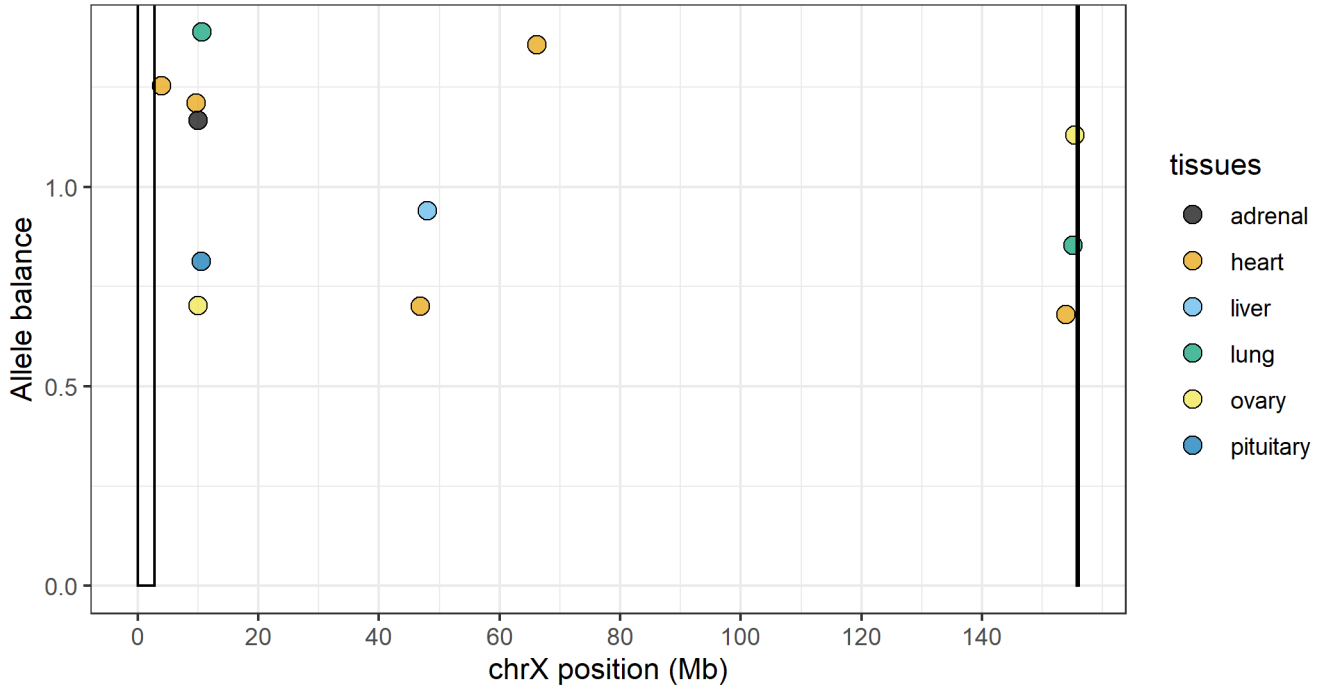


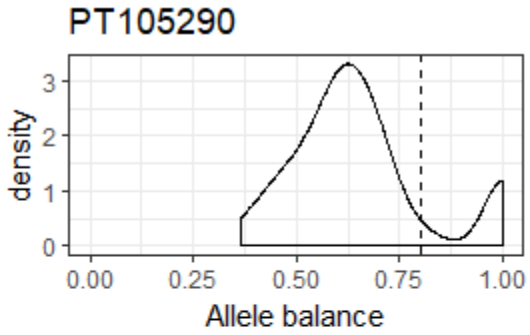
Tissue	How many variants that are completely skewed?	Positions
Heart	2	48577014, 48577017
Liver	2	2717448, **118685810**
Lung	0	
Ovary	21	284193, 290695, 2717448, 21967346, 30727673, 31875190, 46607325, 46613391, 49076231, 53087548, 54813580, 78125505, 78125517, 120626774, 123913432, 130067204, 130364862, 150762633, 151956016, 154014407, 154429242
Pituitary	0	
Adrenal	1	**118685810**

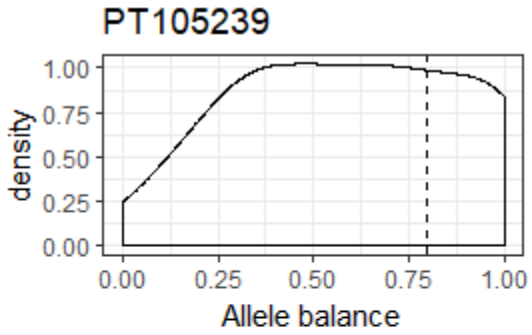


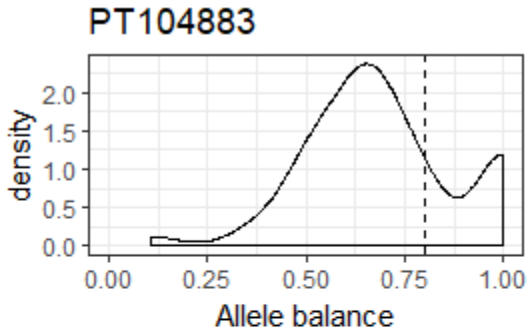
Tissue	How many variants that are completely skewed?	Positions
Heart	5	3818448, **10143330**, 46440204, 66207198, 153784707
Liver	1	48576920
Lung	2	**10143330**, **155309667**
Ovary	2	**10143330**, **155309667**
Pituitary	1	**10143330**
Adrenal	1	**10143330**

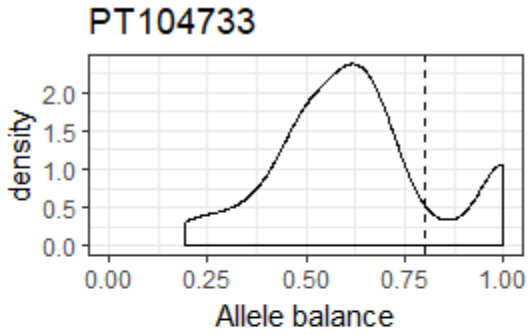
GTEX-1A8FM-0004

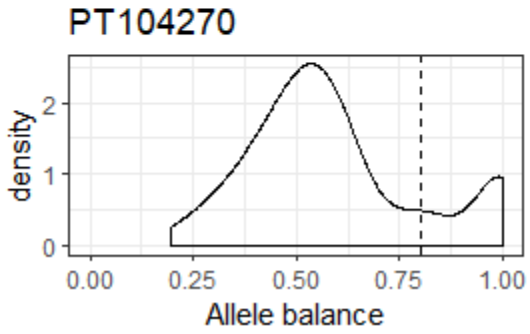


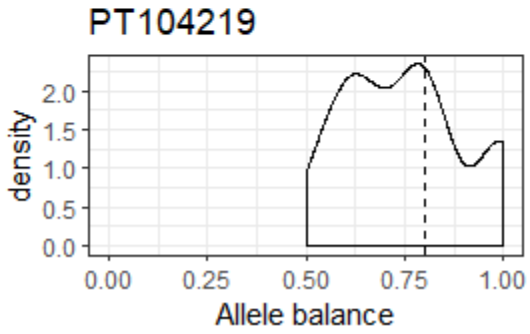


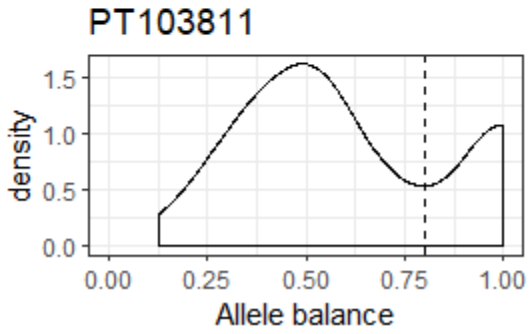


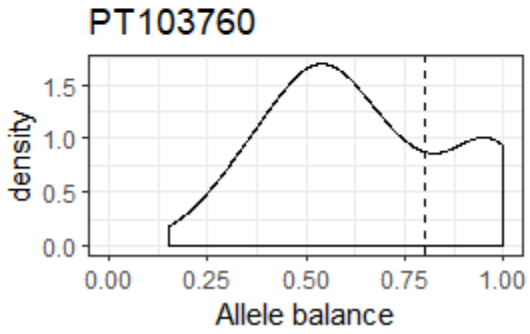


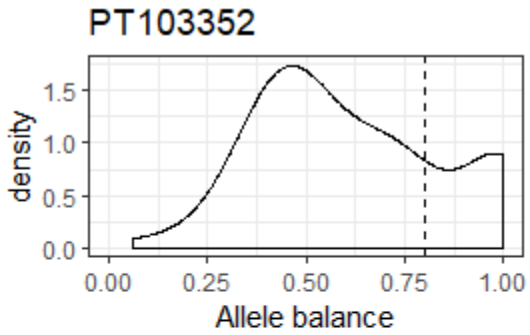


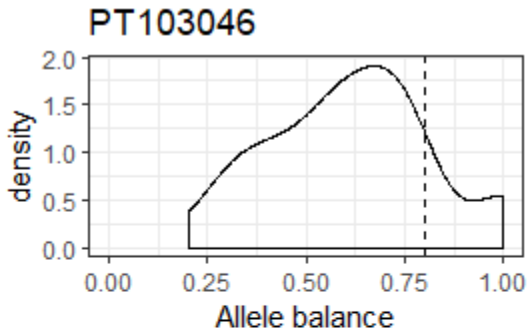


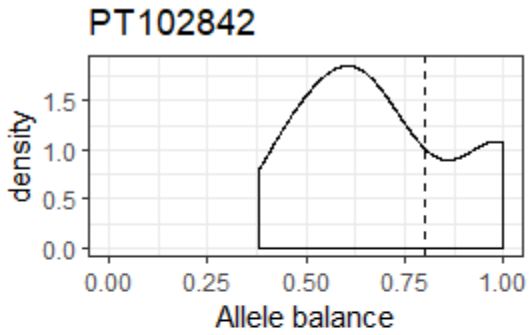


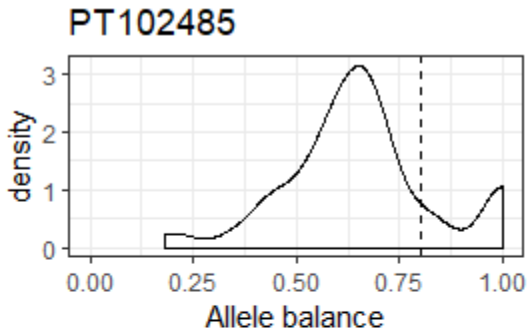


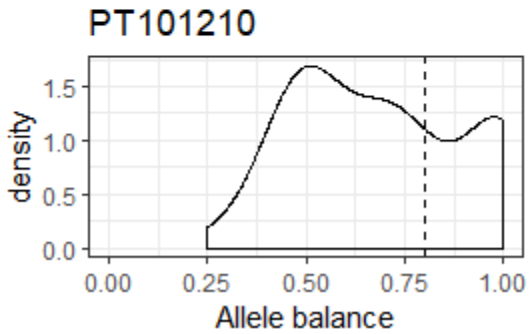


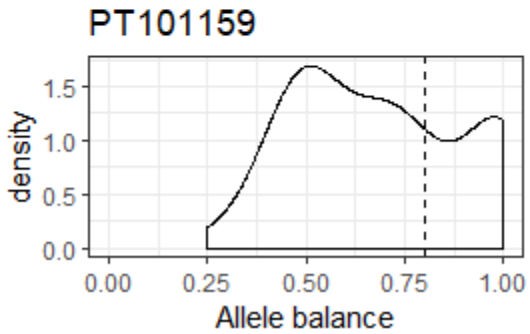




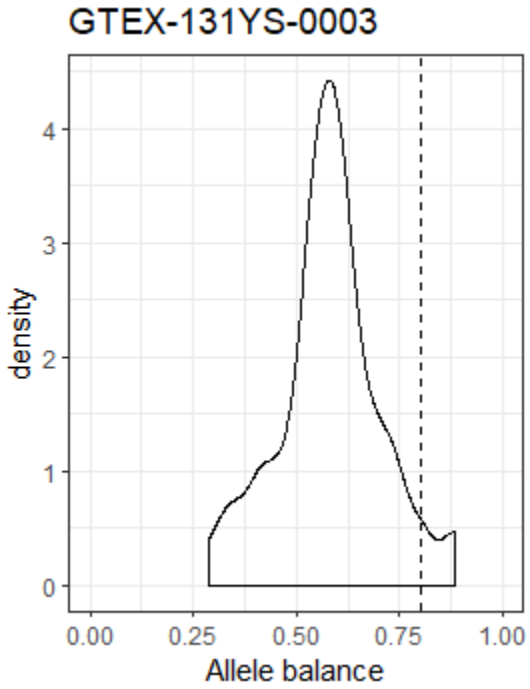


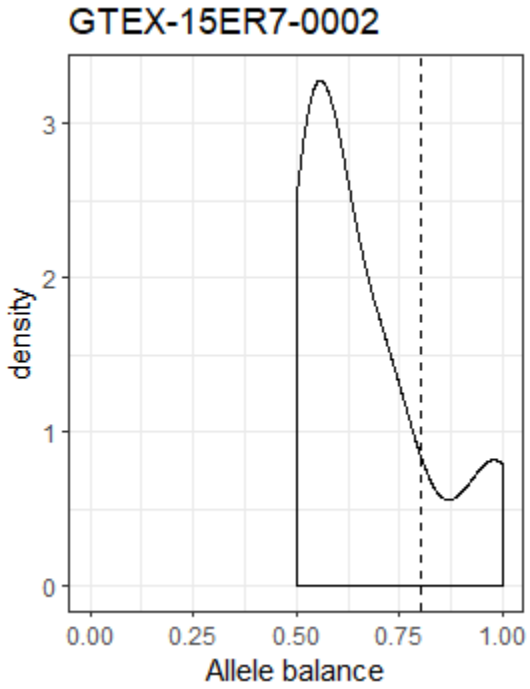


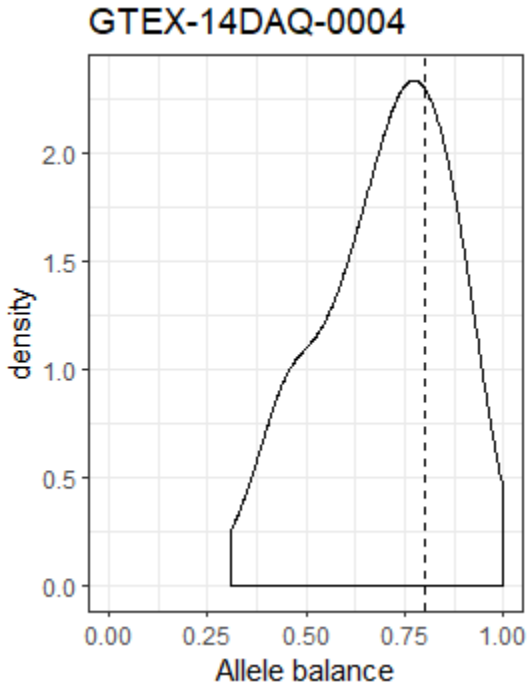


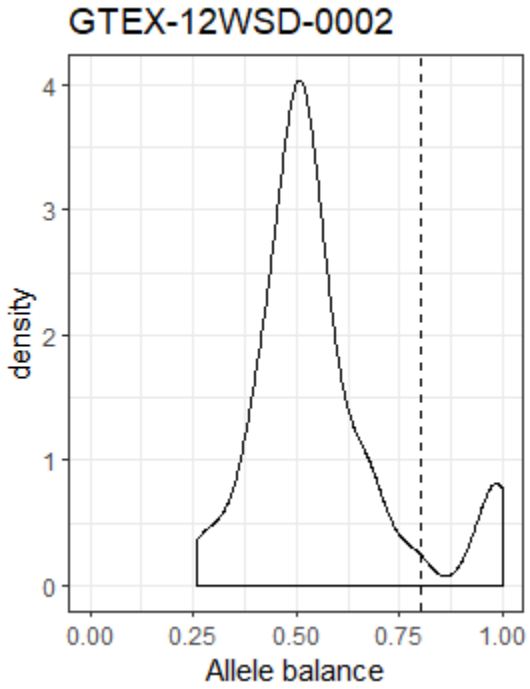


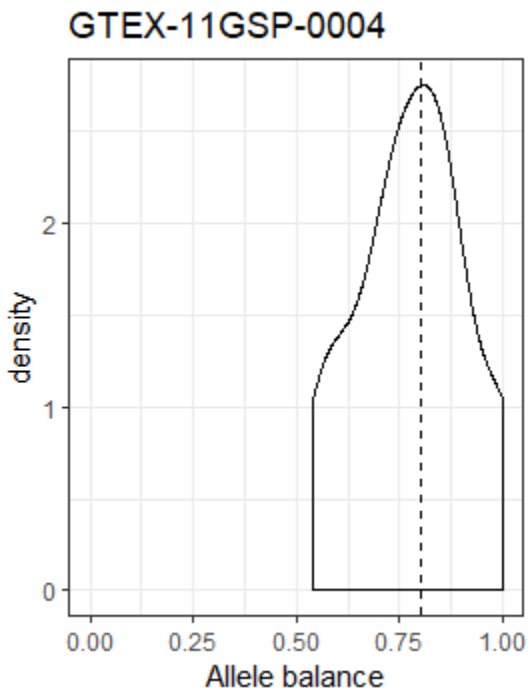
HEART TISSUE
Cayo

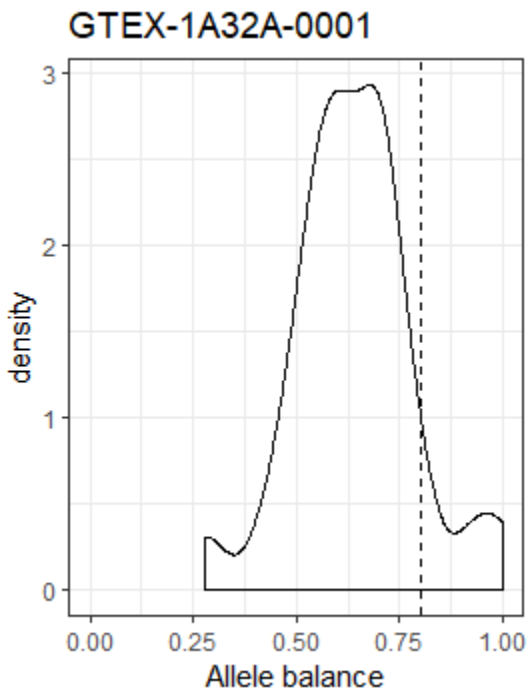


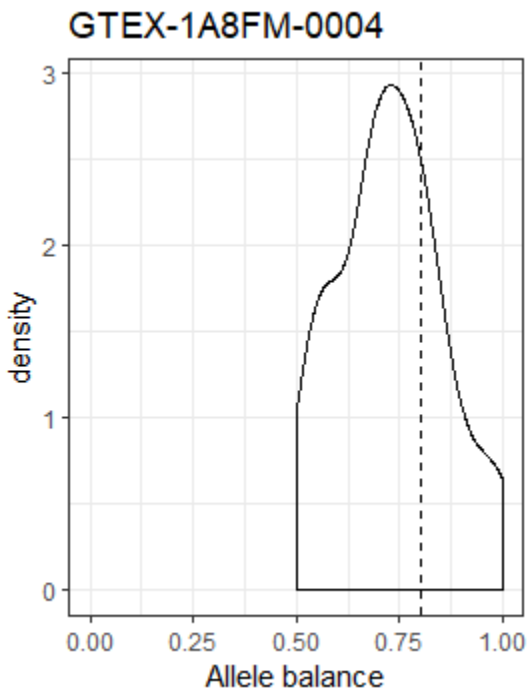












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