

## histone\_stats\_Fig\_S5

```
library(tidyr)
library(dplyr)
library(ggplot2)
library(ggpubr)
library(ggrepel)
library(here); i_am("R/Figure3/FigS5_histone_stats.Rmd")
```

### H3K27ac

```
histone = "H3K27ac"
window = "1000:1000"
tss_sets = c("beige", "white", "not_sig")

enrich_tables = list()
for (set in tss_sets){
  file = here("31_leafcutter/histone_profile", histone, paste0("window", window), paste0(set, ".", window))
  annot = read.delim(file, quote="")
  colnames(annot)[grep("chr", colnames(annot))] = "chr"
  annot$tss_set = set
  enrich_tables[[set]] = annot
}
str(enrich_tables)
```

```
## List of 3
## $ beige :'data.frame': 209 obs. of 6 variables:
## ..$ chr : chr [1:209] "chr1" "chr1" "chr1" "chr1" ...
## ..$ start : int [1:209] 6613856 14923129 23799401 45338954 55214361 87128764 113757062 1137588...
## ..$ end : int [1:209] 6615857 14925130 23801402 45340955 55216362 87130765 113759063 1137608...
## ..$ White_Adi.: num [1:209] 4.09 1.58 3.59 3.62 4.34 ...
## ..$ Beige_Adi.: num [1:209] 4.6 1.21 3.62 3.86 4.46 ...
## ..$ tss_set : chr [1:209] "beige" "beige" "beige" "beige" ...
## $ white :'data.frame': 213 obs. of 6 variables:
## ..$ chr : chr [1:213] "chr1" "chr1" "chr1" "chr1" ...
## ..$ start : int [1:213] 6612730 11802676 14944918 17633256 23799780 26431281 33348884 55214363...
## ..$ end : int [1:213] 6614731 11804677 14946919 17635257 23801781 26433282 33350885 55216364...
## ..$ White_Adi.: num [1:213] 4.56 3.96 4.24 1.38 3.7 ...
## ..$ Beige_Adi.: num [1:213] 4.604 3.196 3.75 0.861 3.904 ...
## ..$ tss_set : chr [1:213] "white" "white" "white" "white" ...
## $ not_sig:'data.frame': 23636 obs. of 6 variables:
## ..$ chr : chr [1:23636] "chr1" "chr1" "chr1" "chr1" ...
## ..$ start : int [1:23636] 28369 494475 497975 497975 498174 500606 501872 501872 513412 516251...
## ..$ end : int [1:23636] 30370 496476 499976 499976 500175 502607 503873 503873 515413 518252...
## ..$ White_Adi.: num [1:23636] 0 0.000608 0 0 0 ...
```

```
## ..$ Beige_Adi.: num [1:23636] 0 0 0 0 0 0 0 0 0 0 ...
## ..$ tss_set : chr [1:23636] "not_sig" "not_sig" "not_sig" "not_sig" ...
```

```
annot <- do.call(rbind, enrich_tables)
table(annot$tss_set)
```

```
##
## beige not_sig white
## 209 23636 213
```

```
head(annot); nrow(annot)
```

```
##      chr      start      end White_Adi. Beige_Adi. tss_set
## beige.1 chr1 6613856 6615857 4.092273 4.596609 beige
## beige.2 chr1 14923129 14925130 1.576263 1.207065 beige
## beige.3 chr1 23799401 23801402 3.594554 3.623050 beige
## beige.4 chr1 45338954 45340955 3.616605 3.855941 beige
## beige.5 chr1 55214361 55216362 4.344138 4.462454 beige
## beige.6 chr1 87128764 87130765 2.189834 2.507697 beige
```

```
## [1] 24058
```

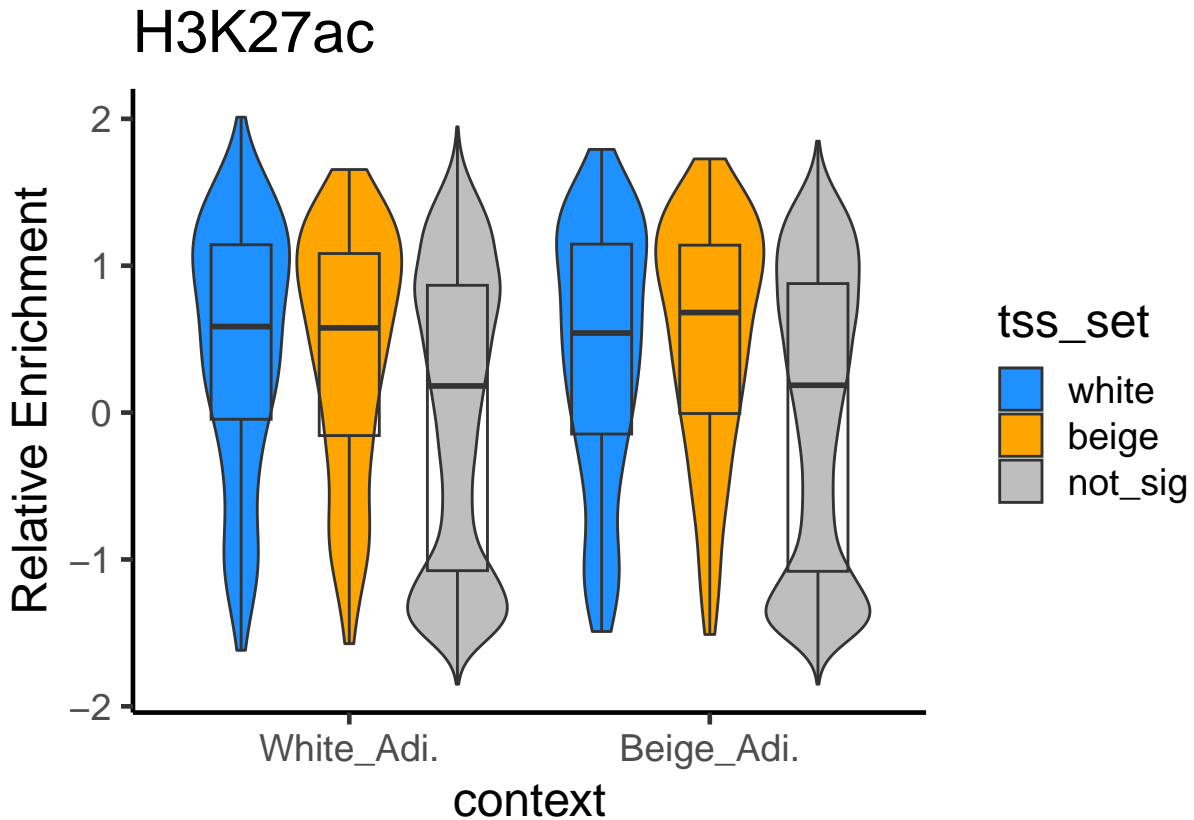
```
long = pivot_longer(annot, grep("Adi.", colnames(annot)), names_to = "context", values_to = "mean_enrichment")
long$context = factor(long$context, levels=c("White_Adi.", "Beige_Adi."))
long$tss_set = factor(long$tss_set, levels=c("white", "beige", "not_sig"))
```

```
relative = long %>% group_by(context) %>% mutate(zscore = scale(mean_enrichment), group=paste0(context, tss_set))
relative$group = factor(relative$group, levels=paste0(rep(levels(relative$context), each=3), levels(relative$tss_set)))
```

```
ggplot(relative,
  aes(fill=tss_set, y=zscore, x=context, group=group)) + geom_violin() +
  geom_boxplot(fill=NA, width=0.5, position=position_dodge(0.9)) + scale_fill_manual(values=c("dodgerblue", "red", "green")) +
  theme_classic(base_size=18) + ylab("Relative Enrichment") + ggtitle("histone")
```

```
## Warning: Removed 12 rows containing non-finite values ('stat_ydensity()').
```

```
## Warning: Removed 12 rows containing non-finite values ('stat_boxplot()').
```



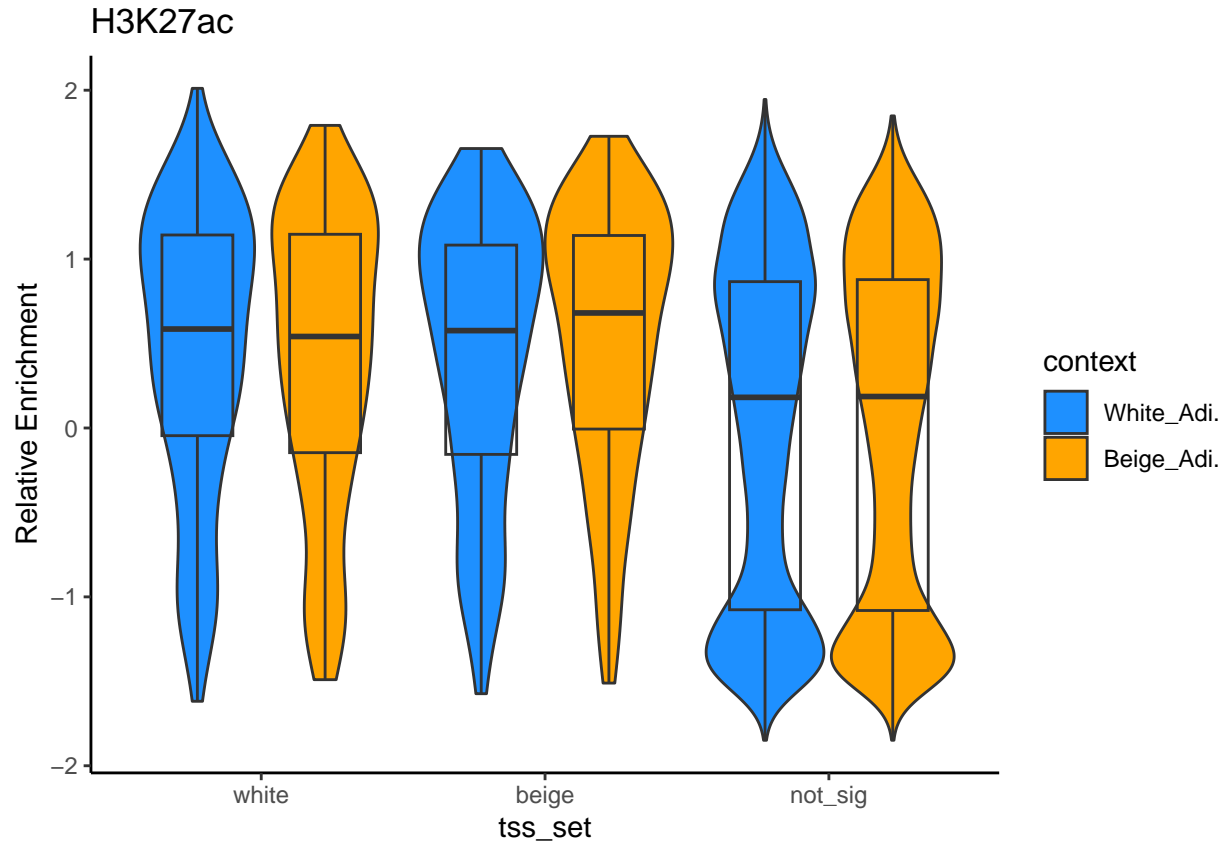
```
ggsave(here("31_leafcutter/histone_profile", histone, paste0(histone, "_violin_plot.pdf")))
```

```
## Saving 6.5 x 4.5 in image
```

```
## Warning: Removed 12 rows containing non-finite values ('stat_ydensity()').
## Removed 12 rows containing non-finite values ('stat_boxplot()').
```

```
ggplot(relative,
  aes(x=tss_set, y=zscore, fill=context, group=group)) + geom_violin() +
  geom_boxplot(fill=NA, width=0.5, position= position_dodge(0.9))+scale_fill_manual(values= c("dodgerblue", "orange", "gray"))
theme_classic() + ylab("Relative Enrichment")+ ggtitle(histone)
```

```
## Warning: Removed 12 rows containing non-finite values ('stat_ydensity()').
## Removed 12 rows containing non-finite values ('stat_boxplot()').
```



```
summary(aov(zscore ~ tss_set*context, data=relative))
```

```
##               Df Sum Sq Mean Sq F value Pr(>F)
## tss_set         2    176   87.97  88.284 <2e-16 ***
## context         1      0    0.00   0.000  1.000
## tss_set:context  2      1    0.60   0.606  0.545
## Residuals     48098 47925    1.00
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 12 observations deleted due to missingness
```

```
compare_means(zscore ~ tss_set, data=relative, method="wilcox.test", group.by="context")
```

```
## # A tibble: 6 x 9
##   context .y. group1 group2      p    p.adj p.format p.signif method
##   <fct>   <chr> <chr> <chr>    <dbl>    <dbl> <chr>    <chr>    <chr>
## 1 White_Adi. zscore white beige  7.39e- 1 7.4 e- 1 0.74      ns      Wilcoxon
## 2 White_Adi. zscore white not_sig 2.38e-11 1.20e-10 2.4e-11 ****    Wilcoxon
## 3 White_Adi. zscore beige not_sig 2.76e-10 1.10e- 9 2.8e-10 ****    Wilcoxon
## 4 Beige_Adi. zscore white beige  2.37e- 1 4.7 e- 1 0.24      ns      Wilcoxon
## 5 Beige_Adi. zscore white not_sig 2.48e- 9 7.4 e- 9 2.5e-09 ****    Wilcoxon
## 6 Beige_Adi. zscore beige not_sig 4.47e-14 2.70e-13 4.5e-14 ****    Wilcoxon
```

## upstream H3K4me1

```
histone = "H3K4me1"
window = "2000:-250"
tss_sets = c("beige", "white", "not_sig")

enrich_tables = list()
for (set in tss_sets){
  file = here("31_leafcutter/histone_profile", histone, paste0("window", window), paste0(set, ".", window))
  annot = read.delim(file, quote="")
  colnames(annot)[grep("chr", colnames(annot))] = "chr"
  annot$tss_set = set
  enrich_tables[[set]] = annot
}
str(enrich_tables)
```

```
## List of 3
## $ beige :'data.frame': 209 obs. of 6 variables:
## ..$ chr      : chr [1:209] "chr1" "chr1" "chr1" "chr1" ...
## ..$ start    : int [1:209] 6612856 14922129 23800651 45340204 55215611 87127764 113758312 1137601...
## ..$ end      : int [1:209] 6614607 14923880 23802402 45341955 55217362 87129515 113760063 1137618...
## ..$ White_Adi.: num [1:209] -0.597 0.844 0.495 0.985 0.503 ...
## ..$ Beige_Adi.: num [1:209] -0.234 0.311 0.835 1.127 0.555 ...
## ..$ tss_set   : chr [1:209] "beige" "beige" "beige" "beige" ...
## $ white :'data.frame': 213 obs. of 6 variables:
## ..$ chr      : chr [1:213] "chr1" "chr1" "chr1" "chr1" ...
## ..$ start    : int [1:213] 6611730 11803926 14943918 17632256 23801030 26430281 33350134 55215613...
## ..$ end      : int [1:213] 6613481 11805677 14945669 17634007 23802781 26432032 33351885 55217364...
## ..$ White_Adi.: num [1:213] 0.452 1.379 1.636 1.622 0.928 ...
## ..$ Beige_Adi.: num [1:213] 0.586 1.05 1.591 1.851 1.258 ...
## ..$ tss_set   : chr [1:213] "white" "white" "white" "white" ...
## $ not_sig:'data.frame': 23636 obs. of 6 variables:
## ..$ chr      : chr [1:23636] "chr1" "chr1" "chr1" "chr1" ...
## ..$ start    : int [1:23636] 29619 495725 499225 499225 499424 501856 503122 503122 514662 517501...
## ..$ end      : int [1:23636] 31370 497476 500976 500976 501175 503607 504873 504873 516413 519252...
## ..$ White_Adi.: num [1:23636] 0.0465 0 0 0 0 ...
## ..$ Beige_Adi.: num [1:23636] 0.035 0 0 0 0 ...
## ..$ tss_set   : chr [1:23636] "not_sig" "not_sig" "not_sig" "not_sig" ...
```

```
annot <- do.call(rbind, enrich_tables)
table(annot$tss_set)
```

```
##
##   beige not_sig   white
##    209   23636    213
```

```
head(annot); nrow(annot)
```

```
##           chr      start      end White_Adi. Beige_Adi. tss_set
## beige.1 chr1  6612856  6614607 -0.5965297 -0.2340625   beige
## beige.2 chr1 14922129 14923880  0.8442533  0.3109689   beige
```

```
## beige.3 chr1 23800651 23802402 0.4947430 0.8350845 beige
## beige.4 chr1 45340204 45341955 0.9852788 1.1270003 beige
## beige.5 chr1 55215611 55217362 0.5031132 0.5549283 beige
## beige.6 chr1 87127764 87129515 0.7427286 0.9335383 beige
```

```
## [1] 24058
```

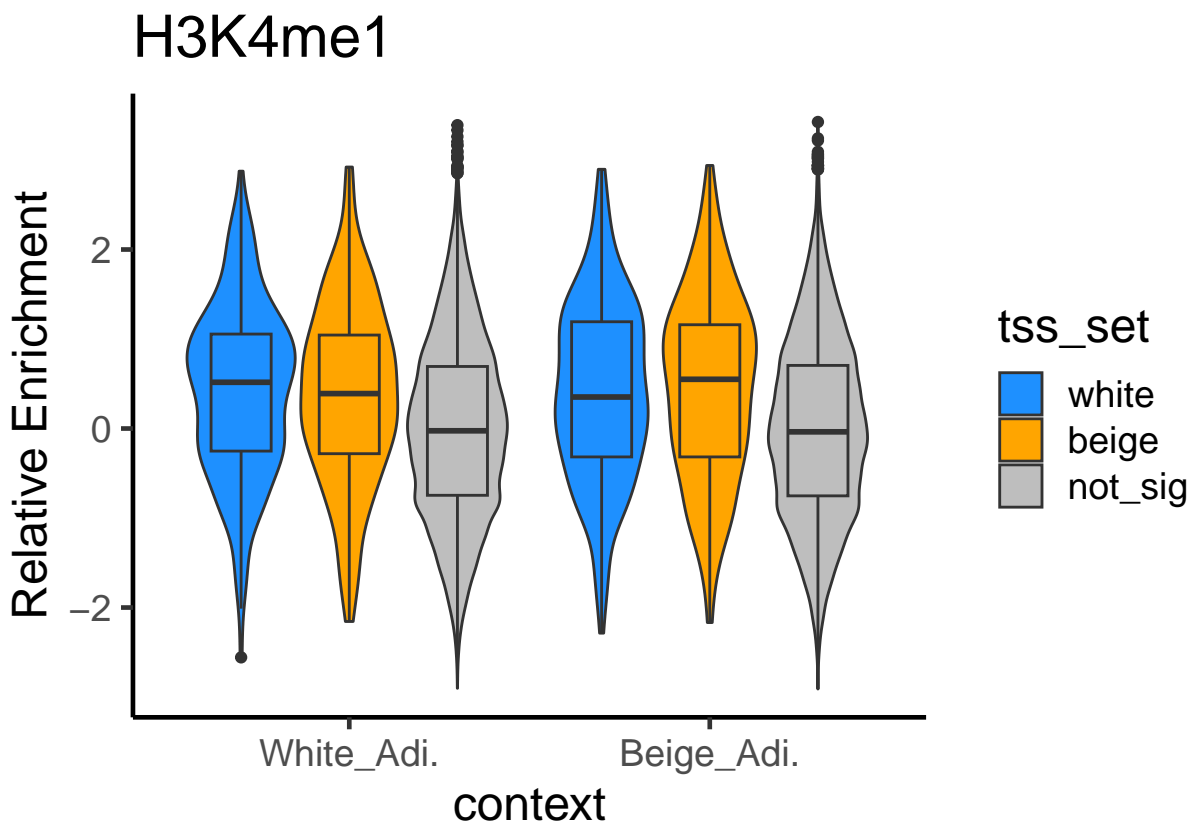
```
long = pivot_longer(annot, grep("Adi.", colnames(annot)), names_to = "context", values_to = "mean_enrichment")
long$context = factor(long$context, levels=c("White_Adi.", "Beige_Adi."))
long$tss_set = factor(long$tss_set, levels=c("white", "beige", "not_sig"))
```

```
relative = long %>% group_by(context) %>% mutate(zscore = scale(mean_enrichment), group=paste0(context, tss_set))
relative$group = factor(relative$group, levels=paste0(rep(levels(relative$context), each=3), levels(relative$tss_set)))
```

```
ggplot(relative,
  aes(fill=tss_set, y=zscore, x=context, group=group)) + geom_violin() +
  geom_boxplot(fill=NA, width=0.5, position=position_dodge(0.9)) + scale_fill_manual(values=c("white", "beige", "not_sig")) +
  theme_classic(base_size=18) + ylab("Relative Enrichment") + ggtitle(histone)
```

```
## Warning: Removed 12 rows containing non-finite values ('stat_ydensity()').
```

```
## Warning: Removed 12 rows containing non-finite values ('stat_boxplot()').
```



```
ggsave(here("31_leafcutter/histone_profile", histone, paste0(histone, "_upstream_violin_plot.pdf")))
```

```
## Saving 6.5 x 4.5 in image
```

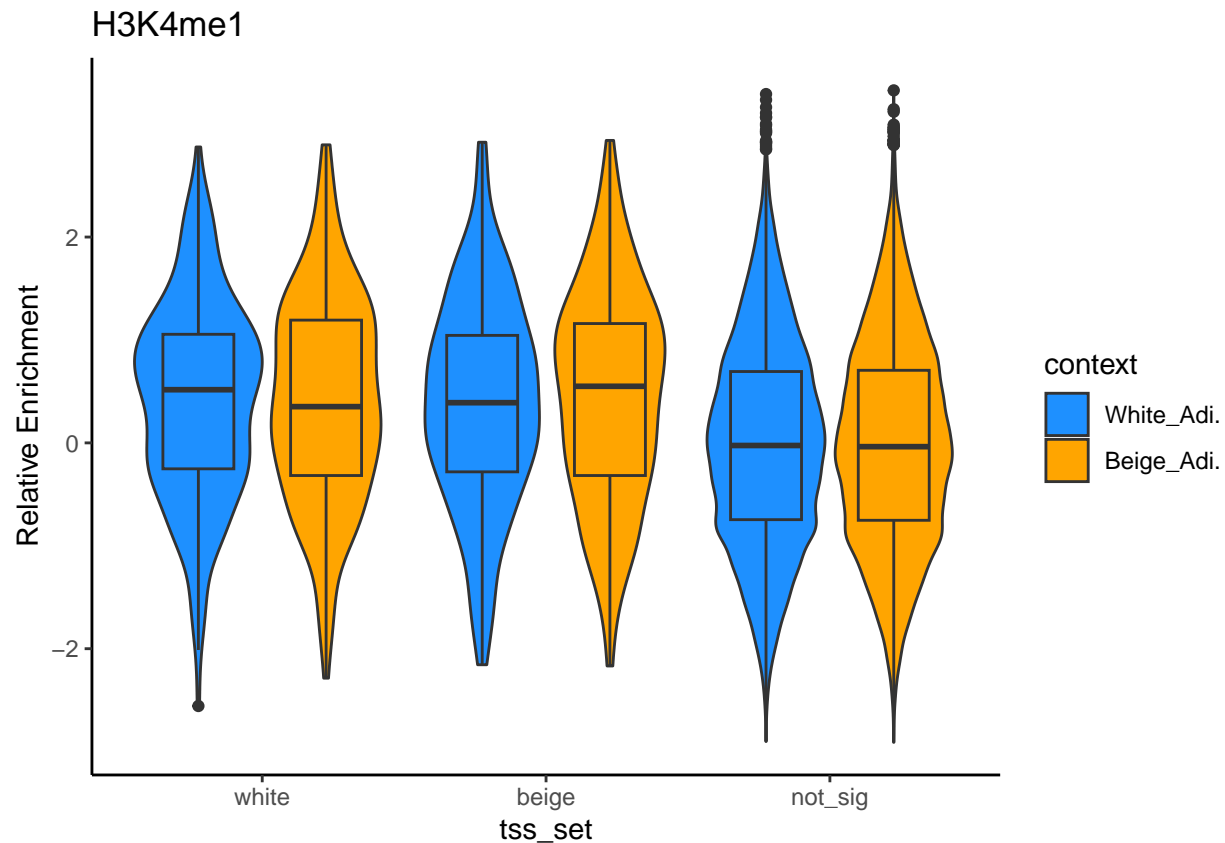
```
## Warning: Removed 12 rows containing non-finite values ('stat_ydensity()').
```

```
## Removed 12 rows containing non-finite values ('stat_boxplot()').
```

```
ggplot(relative,
  aes(x=tss_set, y=zscore, fill=context, group=group)) + geom_violin() +
  geom_boxplot(fill=NA, width=0.5, position= position_dodge(0.9))+scale_fill_manual(values= c("dodgerblue", "orange")) +
  theme_classic() + ylab("Relative Enrichment")+ ggtitle(histone)
```

```
## Warning: Removed 12 rows containing non-finite values ('stat_ydensity()').
```

```
## Removed 12 rows containing non-finite values ('stat_boxplot()').
```



```
summary(aov(zscore ~tss_set*context, data=relative))
```

```
##
```

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
## tss_set	2	152	75.81	76.049	<2e-16 ***
## context	1	0	0.00	0.000	1.000
## tss_set:context	2	1	0.30	0.297	0.743
## Residuals	48098	47950	1.00		

```
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 12 observations deleted due to missingness
```

```
compare_means(zscore ~ tss_set, data=relative, method="wilcox.test", group.by="context")
```

```
## # A tibble: 6 x 9
##   context   .y.   group1 group2      p      p.adj p.format p.signif method
##   <fct>   <chr> <chr> <chr>    <dbl>    <dbl> <chr>   <chr>   <chr>
## 1 White_Adi. zscore white beige  6.91e- 1    1    e+ 0 0.69    ns    Wilco~
## 2 White_Adi. zscore white not_sig 2.54e-10   1.3 e- 9 2.5e-10 ****   Wilco~
## 3 White_Adi. zscore beige not_sig 2.89e- 8   8.70e- 8 2.9e-08 ****   Wilco~
## 4 Beige_Adi. zscore white beige  6.59e- 1    1    e+ 0 0.66    ns    Wilco~
## 5 Beige_Adi. zscore white not_sig 2.73e- 9   1.10e- 8 2.7e-09 ****   Wilco~
## 6 Beige_Adi. zscore beige not_sig 1.60e-10   9.60e-10 1.6e-10 ****   Wilco~
```

## downstream H3K4me1

```
histone = "H3K4me1"
window = "-500:4000"
tss_sets = c("beige", "white", "not_sig")

enrich_tables = list()
for (set in tss_sets){
  file = here("31_leafcutter/histone_profile", histone, paste0("window", window), paste0(set, ".", window))
  annot = read.delim(file, quote="'")
  colnames(annot)[grep("chr", colnames(annot))] = "chr"
  annot$tss_set = set
  enrich_tables[[set]] = annot
}
str(enrich_tables)
```

```
## List of 3
## $ beige : 'data.frame': 209 obs. of 6 variables:
## ..$ chr : chr [1:209] "chr1" "chr1" "chr1" "chr1" ...
## ..$ start : int [1:209] 6615356 14924629 23796401 45335954 55211361 87130264 113754062 1137558
## ..$ end : int [1:209] 6618857 14928130 23799902 45339455 55214862 87133765 113757563 1137593
## ..$ White_Adi.: num [1:209] 0.688 1.139 0.495 0.947 0.451 ...
## ..$ Beige_Adi.: num [1:209] 0.9 0.7 0.759 0.742 0.509 ...
## ..$ tss_set : chr [1:209] "beige" "beige" "beige" "beige" ...
## $ white : 'data.frame': 213 obs. of 6 variables:
## ..$ chr : chr [1:213] "chr1" "chr1" "chr1" "chr1" ...
## ..$ start : int [1:213] 6614230 11799676 14946418 17634756 23796780 26432781 33345884 55211363
## ..$ end : int [1:213] 6617731 11803177 14949919 17638257 23800281 26436282 33349385 55214864
## ..$ White_Adi.: num [1:213] 0.333 0.826 1.153 0.659 0.518 ...
## ..$ Beige_Adi.: num [1:213] 0.641 0.696 0.834 0.334 0.786 ...
## ..$ tss_set : chr [1:213] "white" "white" "white" "white" ...
## $ not_sig: 'data.frame': 23636 obs. of 6 variables:
## ..$ chr : chr [1:23636] "chr1" "chr1" "chr1" "chr1" ...
## ..$ start : int [1:23636] 25369 491475 494975 494975 495174 497606 498872 498872 510412 513251
## ..$ end : int [1:23636] 28870 494976 498476 498476 498675 501107 502373 502373 513913 516752
## ..$ White_Adi.: num [1:23636] 0 -0.01584 -0.00101 -0.00101 0 ...
## ..$ Beige_Adi.: num [1:23636] 0 0.05138 0.00326 0.00326 0 ...
## ..$ tss_set : chr [1:23636] "not_sig" "not_sig" "not_sig" "not_sig" ...
```



```
annot <- do.call(rbind, enrich_tables)
table(annot$tss_set)
```

```
##
##   beige not_sig   white
##    209   23636    213
```

```
head(annot); nrow(annot)
```

```
##           chr      start      end White_Adi. Beige_Adi. tss_set
## beige.1 chr1  6615356  6618857  0.6881688  0.8996818   beige
## beige.2 chr1 14924629 14928130  1.1391123  0.6997367   beige
## beige.3 chr1 23796401 23799902  0.4951422  0.7586833   beige
## beige.4 chr1 45335954 45339455  0.9467275  0.7422740   beige
## beige.5 chr1 55211361 55214862  0.4513143  0.5086166   beige
## beige.6 chr1 87130264 87133765  1.0641341  1.0418659   beige
```

```
## [1] 24058
```

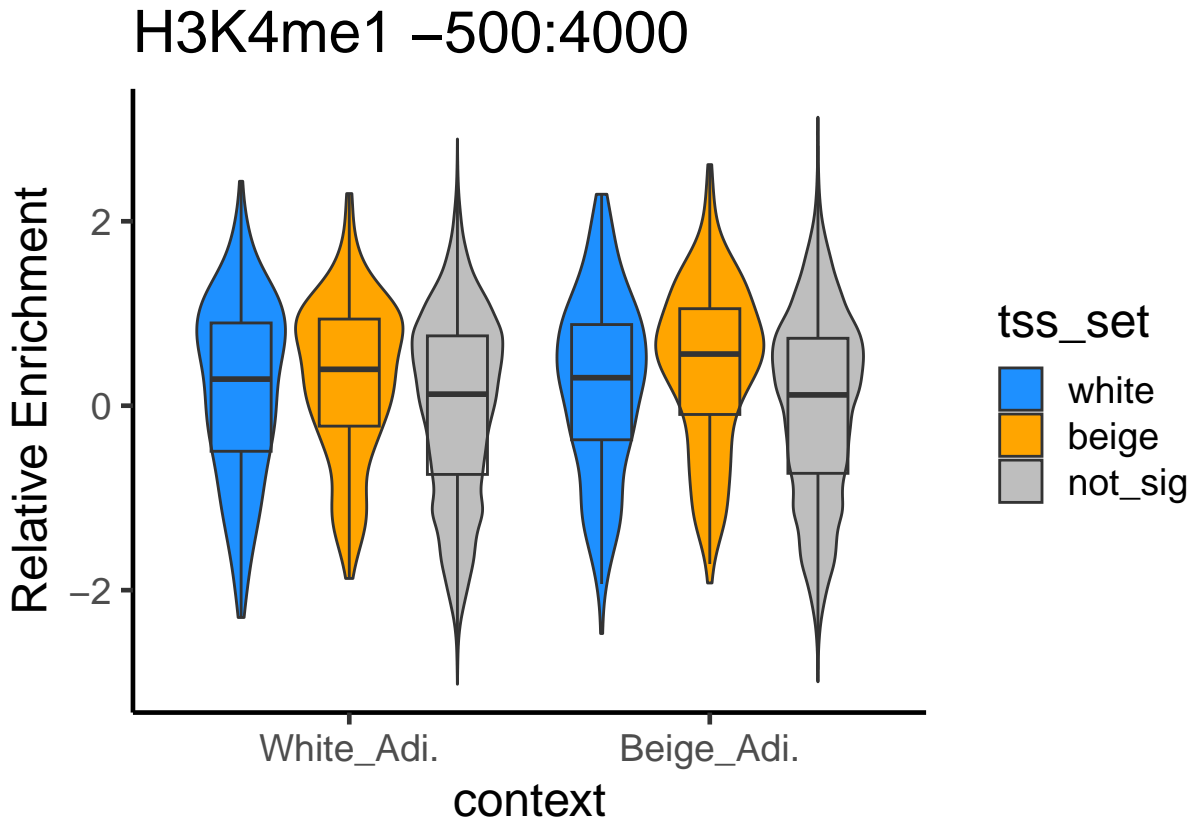
```
long = pivot_longer(annot, grep("Adi.", colnames(annot)), names_to = "context", values_to = "mean_enrichment")
long$context = factor(long$context, levels=c("White_Adi.", "Beige_Adi."))
long$tss_set = factor(long$tss_set, levels=c("white", "beige", "not_sig"))
```

```
relative = long %>% group_by(context) %>% mutate(zscore = scale(mean_enrichment), group=paste0(context, tss_set))
relative$group = factor(relative$group, levels=paste0(rep(levels(relative$context), each=3), levels(relative$tss_set)))
```

```
ggplot(relative,
  aes(fill=tss_set, y=zscore, x=context, group=group)) + geom_violin() +
  geom_boxplot(fill=NA, width=0.5, position=position_dodge(0.9), outlier.shape = NA) + scale_fill_manual(values=c("white", "beige", "not_sig")) +
  theme_classic(base_size=18) + ylab("Relative Enrichment") + ggtitle(paste(histone, window))
```

```
## Warning: Removed 12 rows containing non-finite values ('stat_ydensity()').
```

```
## Warning: Removed 12 rows containing non-finite values ('stat_boxplot()').
```



```
ggsave(here("31_leafcutter/histone_profile", histone, paste0(histone, "_downstream_violin_plot.pdf")))
```

```
## Saving 6.5 x 4.5 in image
```

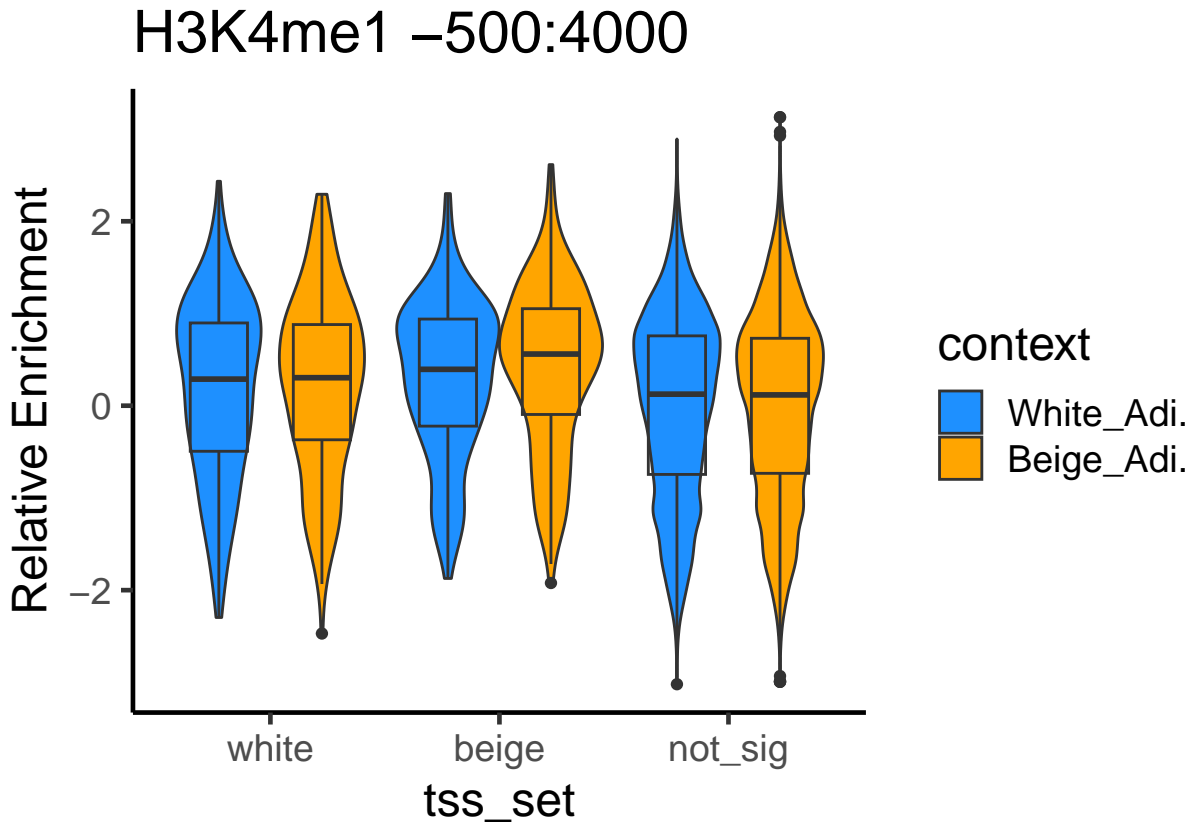
```
## Warning: Removed 12 rows containing non-finite values ('stat_ydensity()').
```

```
## Removed 12 rows containing non-finite values ('stat_boxplot()').
```

```
ggplot(relative,
  aes(x=tss_set, y=zscore, fill=context, group=group)) + geom_violin() +
  geom_boxplot(fill=NA, width=0.5, position= position_dodge(0.9))+scale_fill_manual(values= c("dodger", "beige", "grey"))
  theme_classic(base_size=18) + ylab("Relative Enrichment")+ ggtitle(paste(histone, window))
```

```
## Warning: Removed 12 rows containing non-finite values ('stat_ydensity()').
```

```
## Removed 12 rows containing non-finite values ('stat_boxplot()').
```



```
summary(aov(zscore ~ tss_set*context, data=relative))
```

```
##              Df Sum Sq Mean Sq F value    Pr(>F)
## tss_set        2      71    35.66   35.713 3.17e-16 ***
## context        1       0     0.00    0.000   1.000
## tss_set:context 2       2     1.02    1.023   0.359
## Residuals    48098 48029     1.00
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 12 observations deleted due to missingness
```

```
compare_means(zscore ~ tss_set, data=relative, method="wilcox.test", group.by="context")
```

```
## # A tibble: 6 x 9
##   context .y. group1 group2      p      p.adj p.format p.signif method
##   <fct>   <chr> <chr> <chr>    <dbl>    <dbl> <chr>    <chr>    <chr>
## 1 White_Adi. zscore white beige  3.59e- 1 3.6 e-1 0.3588 ns      Wilco~
## 2 White_Adi. zscore white not_sig 7.03e- 3 2.1 e-2 0.0070 **      Wilco~
## 3 White_Adi. zscore beige not_sig 3.76e- 5 1.9 e-4 3.8e-05 ****     Wilco~
## 4 Beige_Adi. zscore white beige  3.41e- 2 6.8 e-2 0.0341 *       Wilco~
## 5 Beige_Adi. zscore white not_sig 1.23e- 3 4.9 e-3 0.0012 **      Wilco~
## 6 Beige_Adi. zscore beige not_sig 7.52e-10 4.50e-9 7.5e-10 ****     Wilco~
```

## H3K27me3

```
histone = "H3K27me3"
window = "2000:2000"
tss_sets = c("beige", "white", "not_sig")

enrich_tables = list()
for (set in tss_sets){
  file = here("31_leafcutter/histone_profile", histone, paste0("window", window), paste0(set, ".", window))
  annot = read.delim(file, quote="")
  colnames(annot)[grep("chr", colnames(annot))] = "chr"
  annot$tss_set = set
  enrich_tables[[set]] = annot
}
str(enrich_tables)
```

```
## List of 3
## $ beige :'data.frame': 209 obs. of 6 variables:
## ..$ chr      : chr [1:209] "chr1" "chr1" "chr1" "chr1" ...
## ..$ start    : int [1:209] 6612856 14922129 23798401 45337954 55213361 87127764 113756062 1137578...
## ..$ end      : int [1:209] 6616857 14926130 23802402 45341955 55217362 87131765 113760063 1137618...
## ..$ White_Adi.: num [1:209] -0.916 -0.425 -0.891 -0.97 -1.11 ...
## ..$ Beige_Adi.: num [1:209] -0.737 -0.452 -0.821 -0.881 -0.887 ...
## ..$ tss_set   : chr [1:209] "beige" "beige" "beige" "beige" ...
## $ white :'data.frame': 213 obs. of 6 variables:
## ..$ chr      : chr [1:213] "chr1" "chr1" "chr1" "chr1" ...
## ..$ start    : int [1:213] 6611730 11801676 14943918 17632256 23798780 26430281 33347884 55213363...
## ..$ end      : int [1:213] 6615731 11805677 14947919 17636257 23802781 26434282 33351885 55217364...
## ..$ White_Adi.: num [1:213] -0.807 -0.839 -0.577 -0.531 -0.854 ...
## ..$ Beige_Adi.: num [1:213] -0.713 -1.331 -0.685 -0.478 -0.821 ...
## ..$ tss_set   : chr [1:213] "white" "white" "white" "white" ...
## $ not_sig:'data.frame': 23636 obs. of 6 variables:
## ..$ chr      : chr [1:23636] "chr1" "chr1" "chr1" "chr1" ...
## ..$ start    : int [1:23636] 27369 493475 496975 496975 497174 499606 500872 500872 512412 515251...
## ..$ end      : int [1:23636] 31370 497476 500976 500976 501175 503607 504873 504873 516413 519252...
## ..$ White_Adi.: num [1:23636] 0 -0.0147 0 0 0 ...
## ..$ Beige_Adi.: num [1:23636] -0.00309 0 0 0 0 ...
## ..$ tss_set   : chr [1:23636] "not_sig" "not_sig" "not_sig" "not_sig" ...
```

```
annot <- do.call(rbind, enrich_tables)
table(annot$tss_set)
```

```
##
##   beige not_sig   white
##    209   23636    213
```

```
head(annot); nrow(annot)
```

```
##           chr      start      end White_Adi. Beige_Adi. tss_set
## beige.1 chr1 6612856 6616857 -0.9155564 -0.7369399   beige
## beige.2 chr1 14922129 14926130 -0.4250593 -0.4520405   beige
```

```
## beige.3 chr1 23798401 23802402 -0.8911719 -0.8212295 beige
## beige.4 chr1 45337954 45341955 -0.9700809 -0.8805992 beige
## beige.5 chr1 55213361 55217362 -1.1103718 -0.8866640 beige
## beige.6 chr1 87127764 87131765 -0.6904183 -0.5758283 beige
```

```
## [1] 24058
```

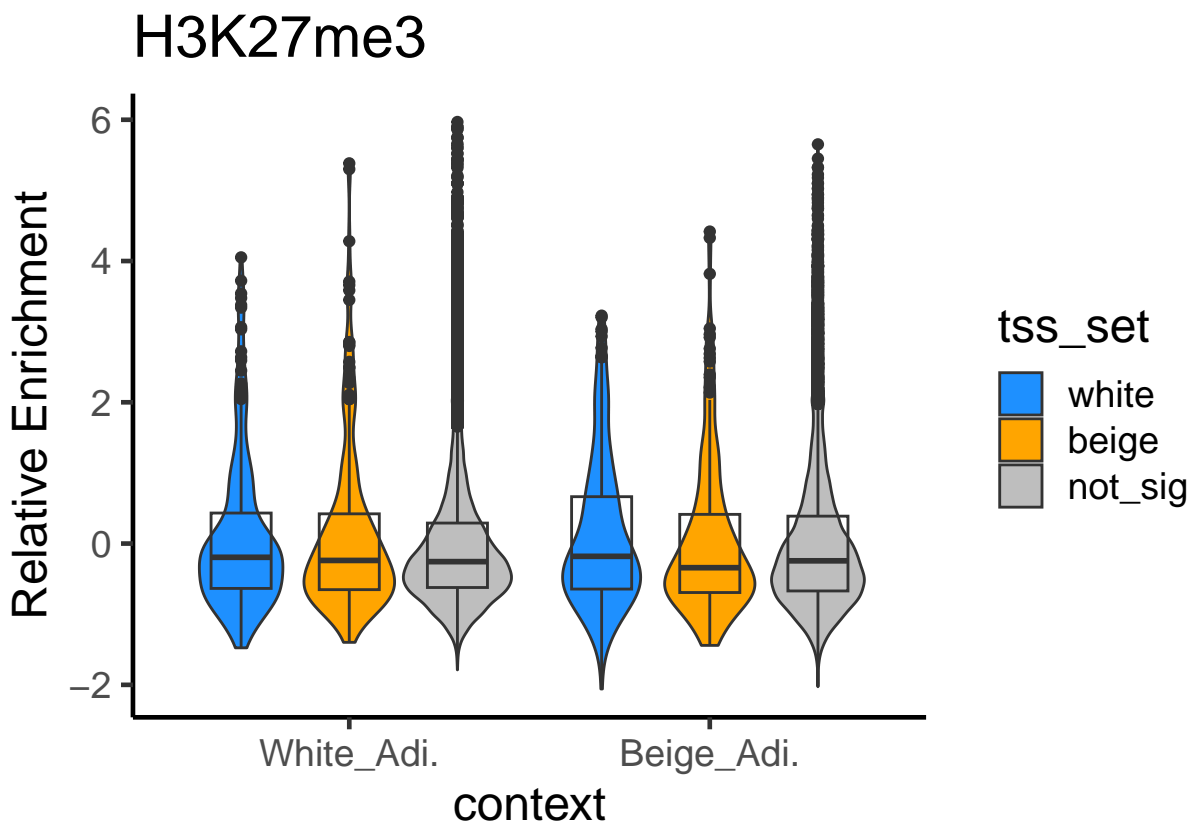
```
long = pivot_longer(annot, grep("Adi.", colnames(annot)), names_to = "context", values_to = "mean_enrichment")
long$context = factor(long$context, levels=c("White_Adi.", "Beige_Adi."))
long$tss_set = factor(long$tss_set, levels=c("white", "beige", "not_sig"))
```

```
relative = long %>% group_by(context) %>% mutate(zscore = scale(mean_enrichment), group=paste0(context, tss_set))
relative$group = factor(relative$group, levels=paste0(rep(levels(relative$context), each=3), levels(relative$tss_set)))
```

```
ggplot(relative,
  aes(fill=tss_set, y=zscore, x=context, group=group)) + geom_violin() +
  geom_boxplot(fill=NA, width=0.5, position=position_dodge(0.9)) + scale_fill_manual(values= c("dodgerblue", "orange", "grey")) +
  theme_classic(base_size=18) + ylab("Relative Enrichment") + ggtitle(histone)
```

```
## Warning: Removed 12 rows containing non-finite values ('stat_ydensity()').
```

```
## Warning: Removed 12 rows containing non-finite values ('stat_boxplot()').
```



```
ggsave(here("31_leafcutter/histone_profile", histone, paste0(histone, "_violin_plot.pdf")))
```

```
## Saving 6.5 x 4.5 in image
```

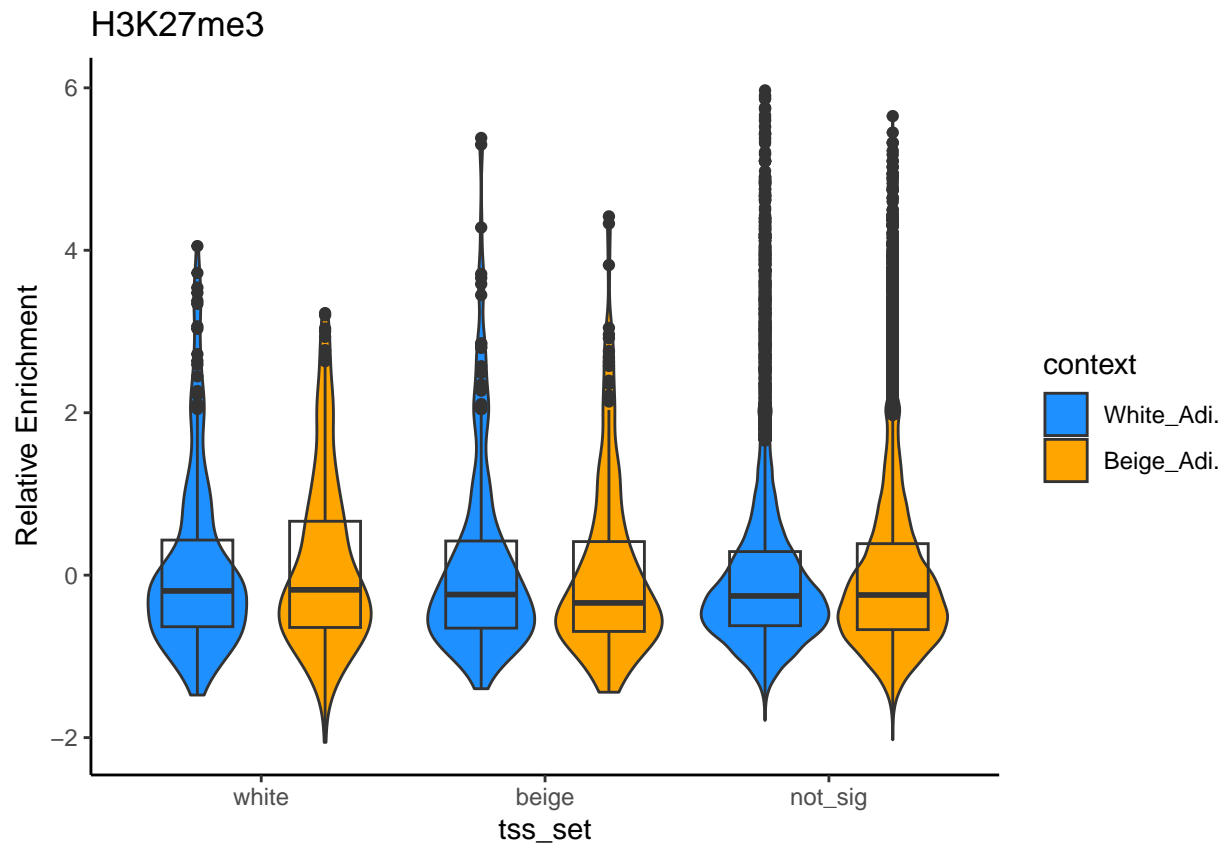
```
## Warning: Removed 12 rows containing non-finite values ('stat_ydensity()').
```

```
## Removed 12 rows containing non-finite values ('stat_boxplot()').
```

```
ggplot(relative,
  aes(x=tss_set, y=zscore, fill=context, group=group)) + geom_violin() +
  geom_boxplot(fill=NA, width=0.5, position= position_dodge(0.9))+scale_fill_manual(values= c("dodgerblue", "orange")) +
  theme_classic() + ylab("Relative Enrichment")+ ggtitle(histone)
```

```
## Warning: Removed 12 rows containing non-finite values ('stat_ydensity()').
```

```
## Removed 12 rows containing non-finite values ('stat_boxplot()').
```



```
summary(aov(zscore ~tss_set*context, data=relative))
```

```
##               Df Sum Sq Mean Sq F value Pr(>F)
## tss_set         2      9   4.321   4.321 0.0133 *
## context         1      0   0.000   0.000 1.0000
## tss_set:context  2      1   0.521   0.521 0.5940
## Residuals    48098 48092   1.000
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 12 observations deleted due to missingness
```

```
compare_means(zscore ~ tss_set, data=relative, method="wilcox.test", group.by="context")
```

```
## # A tibble: 6 x 9
```

##	context	.y.	group1	group2	p	p.adj	p.format	p.signif	method
##	<fct>	<chr>	<chr>	<chr>	<dbl>	<dbl>	<chr>	<chr>	<chr>
## 1	White_Adi.	zscore	white	beige	0.916	1	0.92	ns	Wilcoxon
## 2	White_Adi.	zscore	white	not_sig	0.361	1	0.36	ns	Wilcoxon
## 3	White_Adi.	zscore	beige	not_sig	0.511	1	0.51	ns	Wilcoxon
## 4	Beige_Adi.	zscore	white	beige	0.213	1	0.21	ns	Wilcoxon
## 5	Beige_Adi.	zscore	white	not_sig	0.112	0.67	0.11	ns	Wilcoxon
## 6	Beige_Adi.	zscore	beige	not_sig	0.801	1	0.80	ns	Wilcoxon