

# main

July 10, 2021

## 1 Plot RXE comparisons

```
[1]: library(ggpubr)
library(tidyverse)
```

Loading required package: ggplot2

```
Attaching packages: tidyverse
1.3.1

tibble 3.1.2    dplyr  1.0.7
tidyr  1.1.3    stringr 1.4.0
readr  1.4.0    forcats 0.5.1
purrr  0.3.4
```

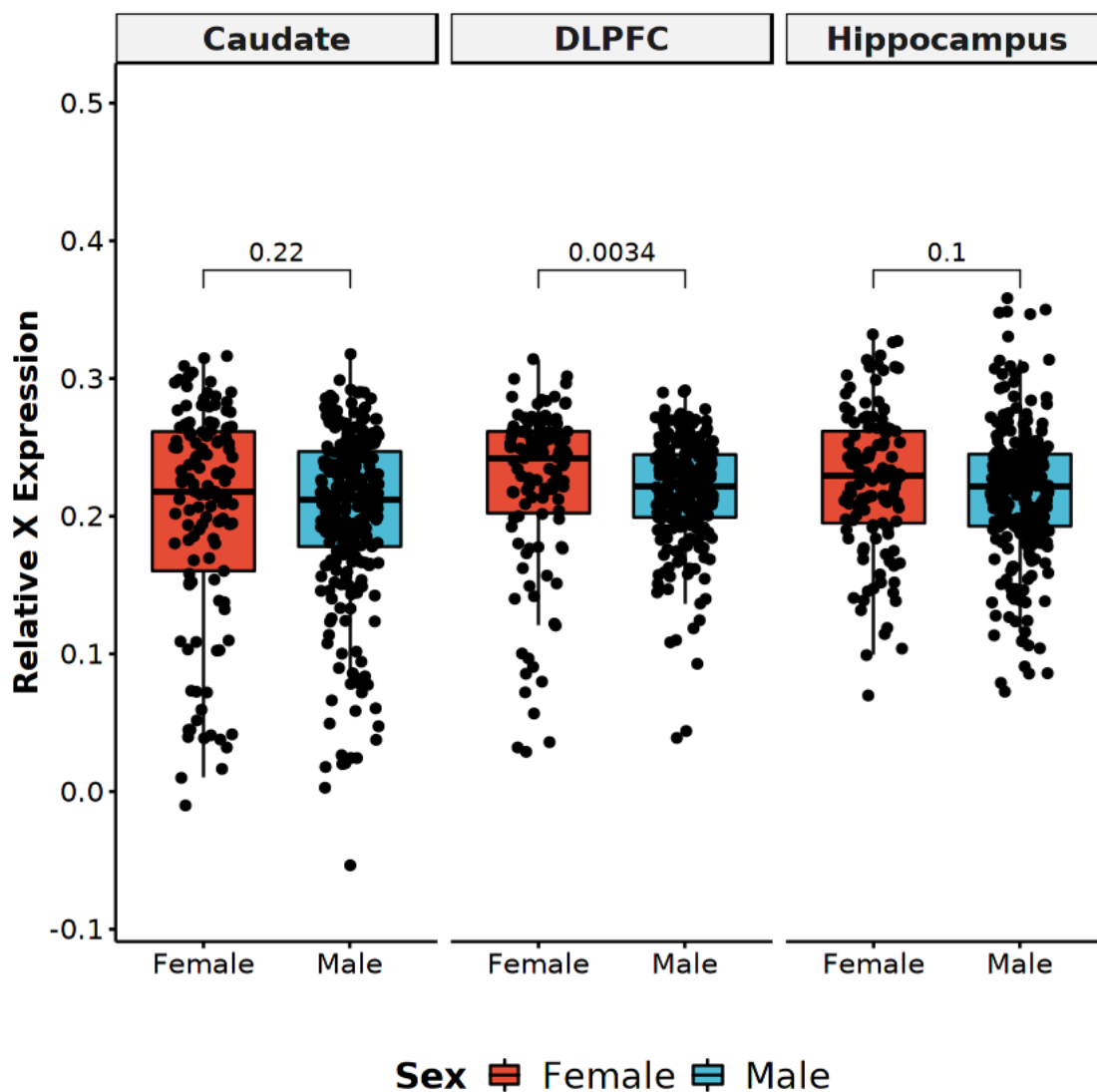
```
Conflicts
tidyverse_conflicts()
dplyr::filter() masks stats::filter()
dplyr::lag()    masks stats::lag()
```

```
[2]: save_ggplots <- function(p, fn, w=7, h=7){
  for(ext in c('.svg', '.png', '.pdf')){
    ggsave(p, filename=paste0(fn, ext), width=w, height=h)
  }
}
```

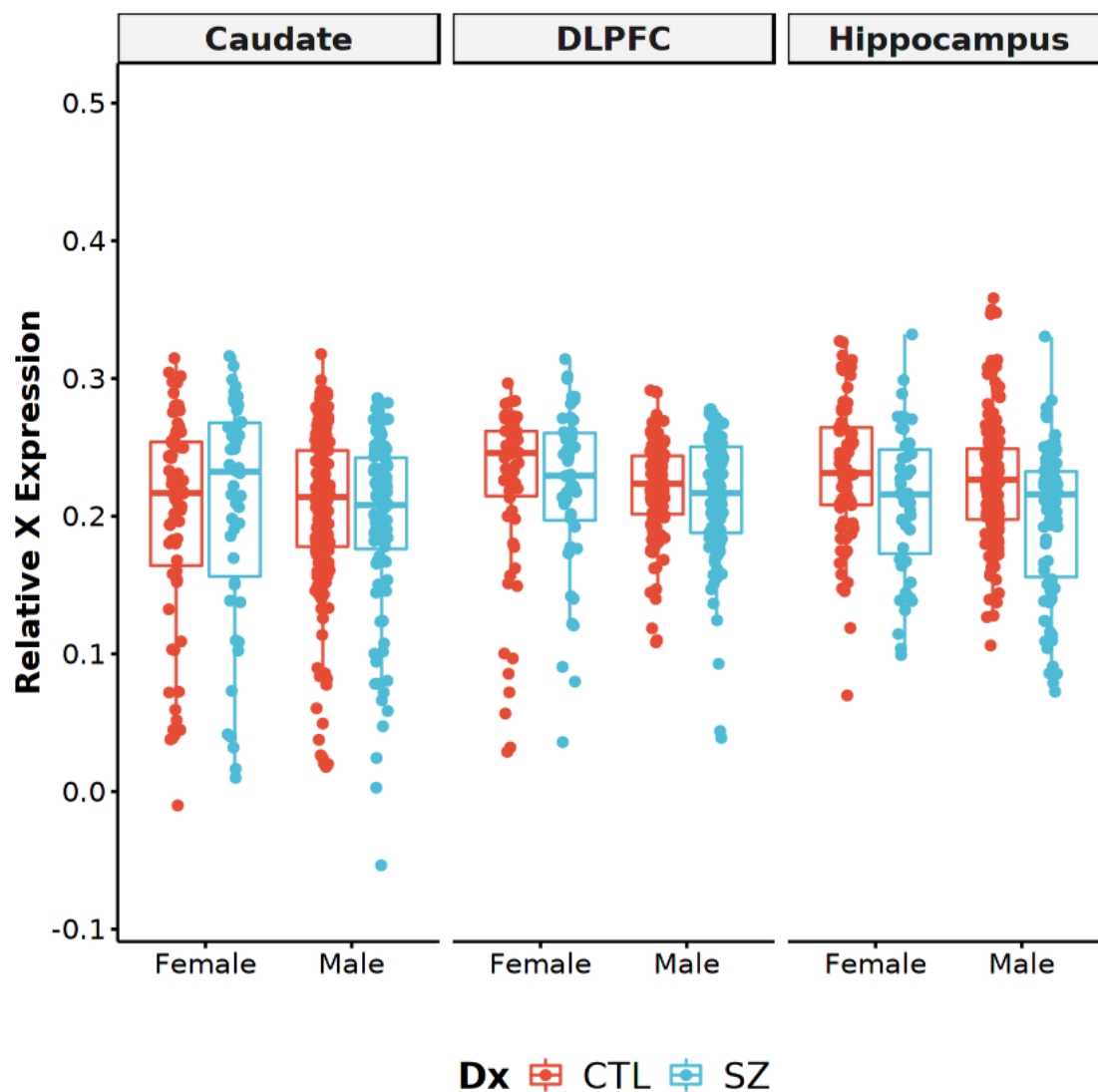
```
[3]: df = data.table::fread("../_m/RXE_public.csv") %>%
  mutate_if(is.character, as.factor)
levels(df$Sex) <- c("Female", "Male")
levels(df$Dx) <- c("CTL", "SZ")
levels(df$Region) <- c("Caudate", "DLPFC", "Hippocampus")
df %>% head(2)
```

	V1	X	autosome	sample	RXE	Sex	Dx	Region
	<fct>	<dbl>	<dbl>	<fct>	<dbl>	<fct>	<fct>	<fct>
A data.table: 2 × 8	R12864	3.076746	2.791519	R12864	0.2852265	Female	SZ	Caudate
	R12865	3.201302	2.986970	R12865	0.2143323	Male	SZ	Caudate

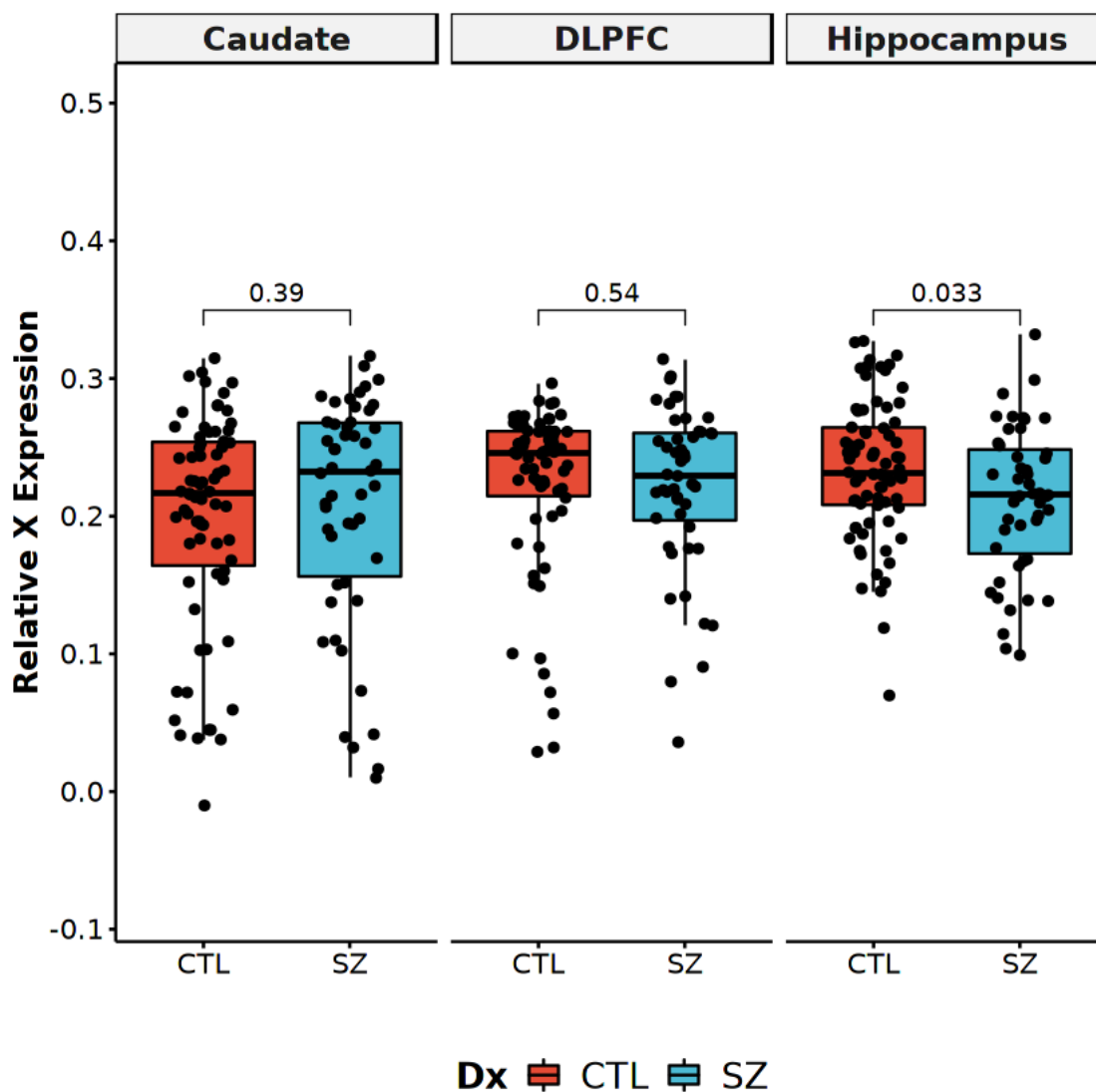
```
[4]: bxp = df %>%
  ggboxplot(x="Sex", y="RXE", fill='Sex', xlab='', palette="npg",
    add='jitter', outlier.shape=NA, facet.by='Region',
    ylab='Relative X Expression', ylim=c(-0.08, 0.5),
    panel.labs.font=list(face='bold', size=14),
    legend="bottom", ggtheme=theme_pubr()) +
  stat_compare_means(comparisons=list(c("Female", "Male")))+
  font("xy.title", size=14, face="bold") +
  font("xy.text", size=12) + #rrremove("y.ticks") +
  font("legend.title", size=16, face="bold") +
  font("legend.text", size=16)
save_ggplots(bxp, "rxs_sex_byRegion", 7, 5)
bxp
```



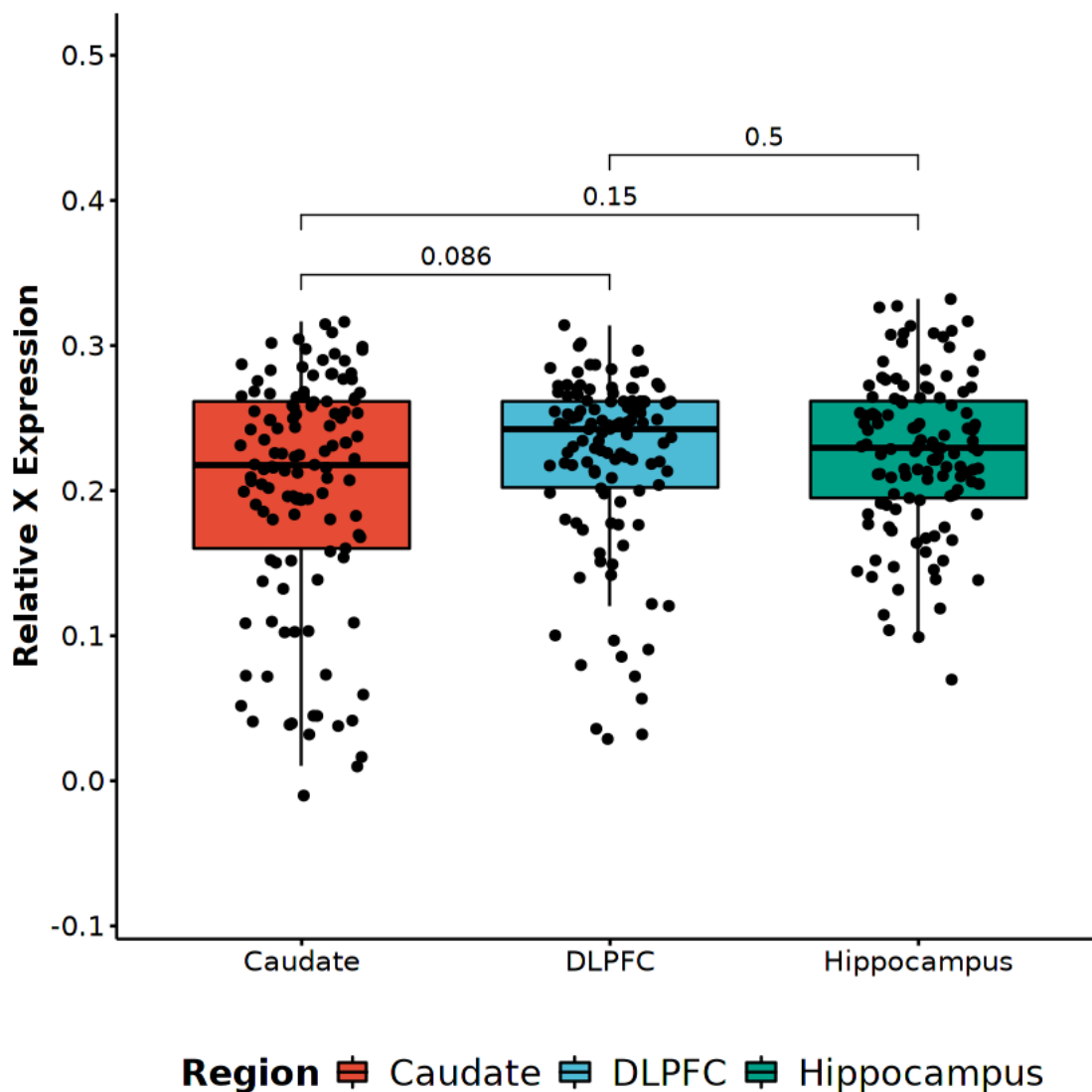
```
[5]: bxp = df %>%
  ggboxplot(x="Sex", y="RXE", color='Dx', xlab='', palette="npg",
    add='jitter', outlier.shape=NA, facet.by='Region',
    ylab='Relative X Expression', ylim=c(-0.08, 0.5),
    panel.labs.font=list(face='bold', size=14),
    legend="bottom", ggtheme=theme_pubr()) +
  font("xy.title", size=14, face="bold") +
  font("xy.text", size=12) + #rrremove("y.ticks") +
  font("legend.title", size=16, face="bold") +
  font("legend.text", size=16)
save_ggplots(bxp, "rxs_sex_diagnosis_byRegion", 7, 5)
bxp
```



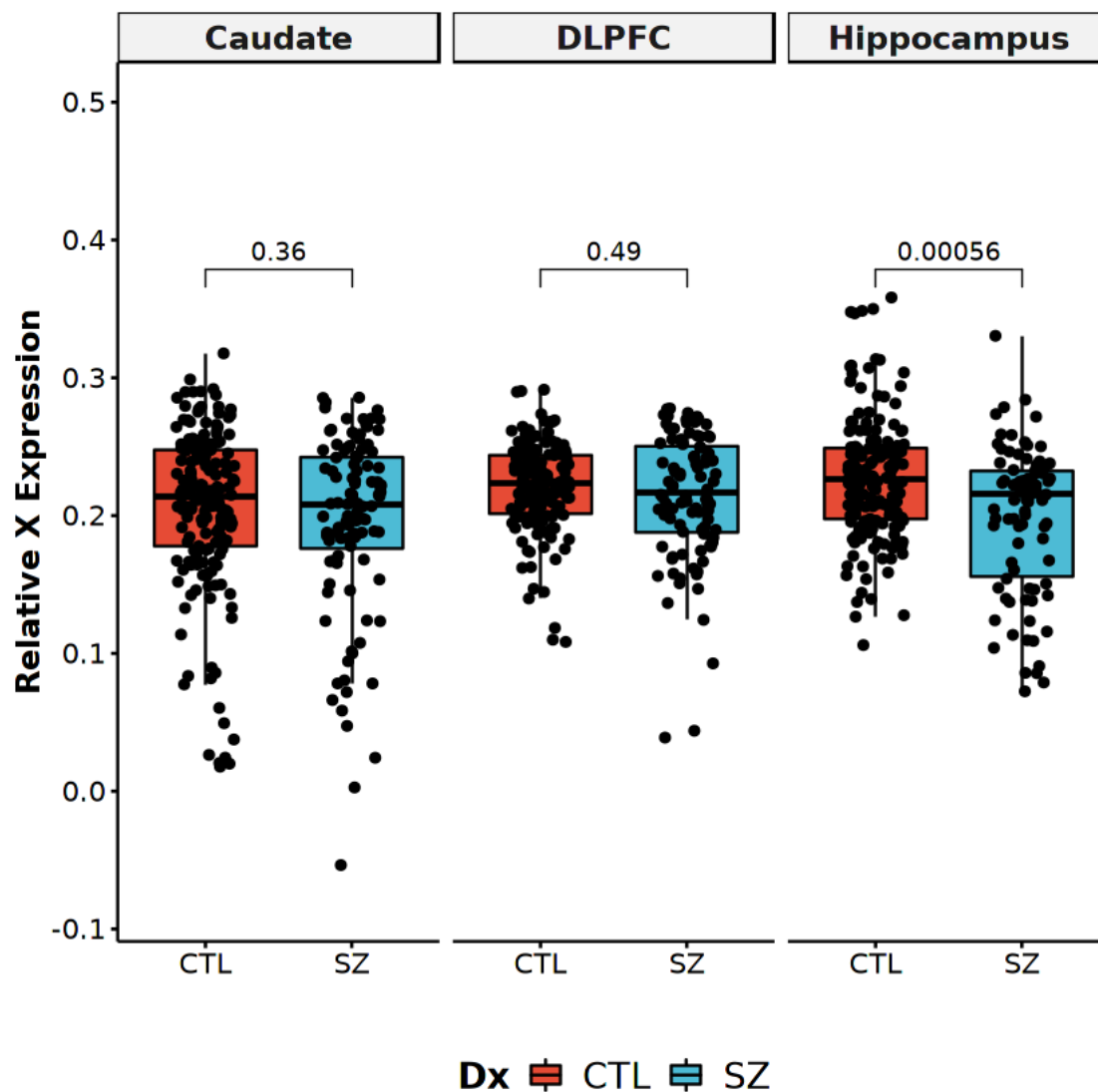
```
[6]: bxp_f = df %>% filter(Sex=='Female') %>%
      ggboxplot(x="Dx", y="RXE", fill='Dx', xlab='', palette="npg",
                add='jitter', outlier.shape=NA, facet.by=c('Region'),
                ylab='Relative X Expression', ylim=c(-0.08, 0.5),
                panel.labs.font=list(face='bold', size=14),
                legend="bottom", ggtheme=theme_pubr()) +
      stat_compare_means(comparisons=list(c("CTL", "SZ")))+
      font("xy.title", size=14, face="bold") +
      font("xy.text", size=12) + #rrremove("y.ticks") +
      font("legend.title", size=16, face="bold") +
      font("legend.text", size=16)
      save_ggplots(bxp_f, "rxs_female_diagnosis_byRegion", 7, 5)
      bxp_f
```



```
[7]: bxp_f2 = df %>% filter(Sex=='Female') %>%
  ggboxplot(x="Region", y="RXE", fill='Region', xlab='', palette="npg",
    add='jitter', outlier.shape=NA,
    ylab='Relative X Expression', ylim=c(-0.08, 0.5),
    panel.labs.font=list(face='bold', size=14),
    legend="bottom", ggtheme=theme_pubr()) +
  stat_compare_means(comparisons=list(c("Caudate", "DLPFC"),
    c("Caudate", "Hippocampus"),
    c("DLPFC", "Hippocampus")))+
  font("xy.title", size=14, face="bold") +
  font("xy.text", size=12) + #rrremove("y.ticks") +
  font("legend.title", size=16, face="bold") +
  font("legend.text", size=16)
save_ggplots(bxp_f2, "rx_e_female_region", 6, 6)
bxp_f2
```



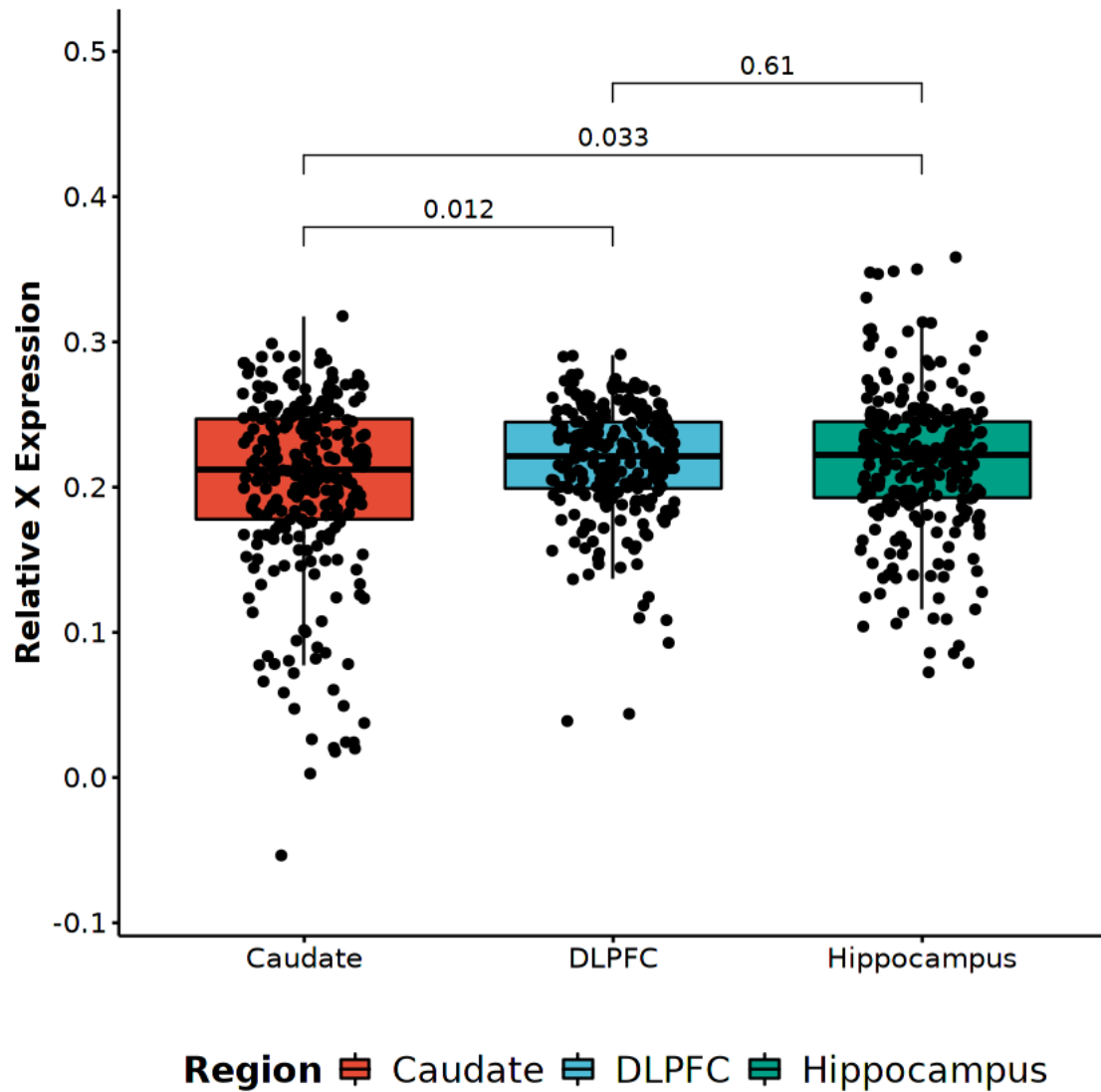
```
[8]: bxp_m = df %>% filter(Sex=='Male') %>%
  ggboxplot(x="Dx", y="RXE", fill='Dx', xlab='', palette="npg",
    add='jitter', outlier.shape=NA, facet.by=c('Region'),
    ylab='Relative X Expression', ylim=c(-0.08, 0.5),
    panel.labs.font=list(face='bold', size=14),
    legend="bottom", ggtheme=theme_pubr()) +
  stat_compare_means(comparisons=list(c("CTL", "SZ")))+
  font("xy.title", size=14, face="bold") +
  font("xy.text", size=12) + #rrremove("y.ticks") +
  font("legend.title", size=16, face="bold") +
  font("legend.text", size=16)
save_ggplots(bxp_m, "rxr_male_diagnosis_byRegion", 7, 5)
bxp_m
```



```

[9]: bxp_m2 = df %>% filter(Sex=='Male') %>%
      ggboxplot(x="Region", y="RXE", fill='Region', xlab='', palette="npg",
                add='jitter', outlier.shape=NA,
                ylab='Relative X Expression', ylim=c(-0.08, 0.5),
                panel.labs.font=list(face='bold', size=14),
                legend="bottom", ggtheme=theme_pubr()) +
      stat_compare_means(comparisons=list(c("Caudate", "DLPFC"),
                                           c("Caudate", "Hippocampus"),
                                           c("DLPFC", "Hippocampus")))+
      font("xy.title", size=14, face="bold") +
      font("xy.text", size=12) + #rrremove("y.ticks") +
      font("legend.title", size=16, face="bold") +
      font("legend.text", size=16)
save_ggplots(bxp_m2, "rx_male_region", 6, 6)
bxp_m2

```



## 1.1 Reproducibility Information

```
[10]: Sys.time()
proc.time()
options(width = 120)
sessioninfo::session_info()
```

```
[1] "2021-07-10 10:08:07 EDT"
```

```
   user  system elapsed
15.412   0.419  16.264
```

```
Session info
setting  value
```



```

version R version 4.0.3 (2020-10-10)
os      Arch Linux
system  x86_64, linux-gnu
ui      X11
language (EN)
collate en_US.UTF-8
ctype   en_US.UTF-8
tz      America/New_York
date    2021-07-10

```

#### Packages

package	* version	date	lib	source
abind	1.4-5	2016-07-21	[1]	CRAN (R 4.0.2)
assertthat	0.2.1	2019-03-21	[1]	CRAN (R 4.0.2)
backports	1.2.1	2020-12-09	[1]	CRAN (R 4.0.2)
base64enc	0.1-3	2015-07-28	[1]	CRAN (R 4.0.2)
broom	0.7.8	2021-06-24	[1]	CRAN (R 4.0.3)
Cairo	1.5-12.2	2020-07-07	[1]	CRAN (R 4.0.2)
car	3.0-11	2021-06-27	[1]	CRAN (R 4.0.3)
carData	3.0-4	2020-05-22	[1]	CRAN (R 4.0.2)
cellranger	1.1.0	2016-07-27	[1]	CRAN (R 4.0.2)
cli	3.0.0	2021-06-30	[1]	CRAN (R 4.0.3)
colorspace	2.0-2	2021-06-24	[1]	CRAN (R 4.0.3)
crayon	1.4.1	2021-02-08	[1]	CRAN (R 4.0.3)
curl	4.3.2	2021-06-23	[1]	CRAN (R 4.0.3)
data.table	1.14.0	2021-02-21	[1]	CRAN (R 4.0.3)
DBI	1.1.1	2021-01-15	[1]	CRAN (R 4.0.2)
dbplyr	2.1.1	2021-04-06	[1]	CRAN (R 4.0.3)
digest	0.6.27	2020-10-24	[1]	CRAN (R 4.0.2)
dplyr	* 1.0.7	2021-06-18	[1]	CRAN (R 4.0.3)
ellipsis	0.3.2	2021-04-29	[1]	CRAN (R 4.0.3)
evaluate	0.14	2019-05-28	[1]	CRAN (R 4.0.2)
fansi	0.5.0	2021-05-25	[1]	CRAN (R 4.0.3)
farver	2.1.0	2021-02-28	[1]	CRAN (R 4.0.3)
forcats	* 0.5.1	2021-01-27	[1]	CRAN (R 4.0.2)
foreign	0.8-80	2020-05-24	[2]	CRAN (R 4.0.3)
fs	1.5.0	2020-07-31	[1]	CRAN (R 4.0.2)
generics	0.1.0	2020-10-31	[1]	CRAN (R 4.0.2)
ggplot2	* 3.3.5	2021-06-25	[1]	CRAN (R 4.0.3)
ggpubr	* 0.4.0	2020-06-27	[1]	CRAN (R 4.0.2)
ggsci	2.9	2018-05-14	[1]	CRAN (R 4.0.2)
ggsignif	0.6.2	2021-06-14	[1]	CRAN (R 4.0.3)
glue	1.4.2	2020-08-27	[1]	CRAN (R 4.0.2)
gtable	0.3.0	2019-03-25	[1]	CRAN (R 4.0.2)
haven	2.4.1	2021-04-23	[1]	CRAN (R 4.0.3)
hms	1.1.0	2021-05-17	[1]	CRAN (R 4.0.3)
htmltools	0.5.1.1	2021-01-22	[1]	CRAN (R 4.0.2)
httr	1.4.2	2020-07-20	[1]	CRAN (R 4.0.2)

IRdisplay	1.0	2021-01-20	[1]	CRAN	(R 4.0.2)
IRkernel	1.2	2021-05-11	[1]	CRAN	(R 4.0.3)
jsonlite	1.7.2	2020-12-09	[1]	CRAN	(R 4.0.2)
labeling	0.4.2	2020-10-20	[1]	CRAN	(R 4.0.2)
lifecycle	1.0.0	2021-02-15	[1]	CRAN	(R 4.0.3)
lubridate	1.7.10	2021-02-26	[1]	CRAN	(R 4.0.3)
magrittr	2.0.1	2020-11-17	[1]	CRAN	(R 4.0.2)
modelr	0.1.8	2020-05-19	[1]	CRAN	(R 4.0.2)
munsell	0.5.0	2018-06-12	[1]	CRAN	(R 4.0.2)
openxlsx	4.2.4	2021-06-16	[1]	CRAN	(R 4.0.3)
pbdZMQ	0.3-5	2021-02-10	[1]	CRAN	(R 4.0.3)
pillar	1.6.1	2021-05-16	[1]	CRAN	(R 4.0.3)
pkgconfig	2.0.3	2019-09-22	[1]	CRAN	(R 4.0.2)
purrr	* 0.3.4	2020-04-17	[1]	CRAN	(R 4.0.2)
R6	2.5.0	2020-10-28	[1]	CRAN	(R 4.0.2)
Rcpp	1.0.7	2021-07-07	[1]	CRAN	(R 4.0.3)
readr	* 1.4.0	2020-10-05	[1]	CRAN	(R 4.0.2)
readxl	1.3.1	2019-03-13	[1]	CRAN	(R 4.0.2)
repr	1.1.3	2021-01-21	[1]	CRAN	(R 4.0.2)
reprex	2.0.0	2021-04-02	[1]	CRAN	(R 4.0.3)
rio	0.5.27	2021-06-21	[1]	CRAN	(R 4.0.3)
rlang	0.4.11	2021-04-30	[1]	CRAN	(R 4.0.3)
rstatix	0.7.0	2021-02-13	[1]	CRAN	(R 4.0.3)
rstudioapi	0.13	2020-11-12	[1]	CRAN	(R 4.0.2)
rvest	1.0.0	2021-03-09	[1]	CRAN	(R 4.0.3)
scales	1.1.1	2020-05-11	[1]	CRAN	(R 4.0.2)
sessioninfo	1.1.1	2018-11-05	[1]	CRAN	(R 4.0.2)
stringi	1.6.2	2021-05-17	[1]	CRAN	(R 4.0.3)
stringr	* 1.4.0	2019-02-10	[1]	CRAN	(R 4.0.2)
svglite	2.0.0	2021-02-20	[1]	CRAN	(R 4.0.3)
systemfonts	1.0.2	2021-05-11	[1]	CRAN	(R 4.0.3)
tibble	* 3.1.2	2021-05-16	[1]	CRAN	(R 4.0.3)
tidyr	* 1.1.3	2021-03-03	[1]	CRAN	(R 4.0.3)
tidyselect	1.1.1	2021-04-30	[1]	CRAN	(R 4.0.3)
tidyverse	* 1.3.1	2021-04-15	[1]	CRAN	(R 4.0.3)
utf8	1.2.1	2021-03-12	[1]	CRAN	(R 4.0.3)
uuid	0.1-4	2020-02-26	[1]	CRAN	(R 4.0.2)
vctrs	0.3.8	2021-04-29	[1]	CRAN	(R 4.0.3)
withr	2.4.2	2021-04-18	[1]	CRAN	(R 4.0.3)
xml2	1.3.2	2020-04-23	[1]	CRAN	(R 4.0.2)
zip	2.2.0	2021-05-31	[1]	CRAN	(R 4.0.3)

[1] /home/jbenja13/R/x86\_64-pc-linux-gnu-library/4.0

[2] /usr/lib/R/library

[ ]: