230510_rstudio_sex_bias_drugs_info

Jennifer Fisher

2022-12-21

```
System which operations were done on:
my laptop

GitHub Repo:
230321_JLF_Sex_bias_adverse_events

Docker:
jenfisher7/rstudio_sex_bias_drugs

Directory of operations:
~/Documents/230321_JLF_Sex_bias_adverse_events

Scripts being edited for operations:
NA

Data being used:
```

```
sessionInfo()
```

```
## R version 4.2.2 (2022-10-31)
## Platform: x86_64-pc-linux-gnu (64-bit)
## Running under: Ubuntu 22.04.1 LTS
##
## Matrix products: default
## BLAS:    /usr/lib/x86_64-linux-gnu/openblas-pthread/libblas.so.3
## LAPACK: /usr/lib/x86_64-linux-gnu/openblas-pthread/libopenblasp-r0.3.20.so
##
## locale:
##  [1] LC_CTYPE=en_US.UTF-8        LC_NUMERIC=C
##  [3] LC_TIME=en_US.UTF-8         LC_COLLATE=en_US.UTF-8
##  [5] LC_MONETARY=en_US.UTF-8     LC_MESSAGES=en_US.UTF-8
##  [7] LC_PAPER=en_US.UTF-8        LC_NAME=C
##  [9] LC_ADDRESS=C                LC_TELEPHONE=C
## [11] LC_MEASUREMENT=en_US.UTF-8 LC_IDENTIFICATION=C
##
## attached base packages:
## [1] stats     graphics  grDevices utils     datasets  methods   base
##
## loaded via a namespace (and not attached):
##  [1] digest_0.6.31   R6_2.5.1         lifecycle_1.0.3 jsonlite_1.8.4
##  [5] magrittr_2.0.3  evaluate_0.19   stringi_1.7.8   cachem_1.0.6
##  [9] rlang_1.0.6     cli_3.5.0       rstudioapi_0.14 jquerylib_0.1.4
## [13] bslib_0.4.2     vctrs_0.5.1     rmarkdown_2.19  tools_4.2.2
## [17] stringr_1.5.0   glue_1.6.2      xfun_0.36       yaml_2.3.6
## [21] fastmap_1.1.0   compiler_4.2.2  htmltools_0.5.4 knitr_1.41
## [25] sass_0.4.4
```

```r
# Listing packages
installed.packages()[,c(1,3)]
```

```
##                          Package               Version
## abind                    "abind"               "1.4-5"
## affy                     "affy"                "1.76.0"
## affyio                   "affyio"              "1.68.0"
## amap                     "amap"                "0.8-19"
## annotate                 "annotate"            "1.76.0"
## AnnotationDbi            "AnnotationDbi"       "1.60.0"
## AnnotationFilter         "AnnotationFilter"    "1.22.0"
## AnnotationForge          "AnnotationForge"     "1.40.0"
## AnnotationHub            "AnnotationHub"       "3.6.0"
## apcluster                "apcluster"           "1.4.10"
## ape                      "ape"                 "5.6-2"
## aplot                    "aplot"               "0.1.9"
## ashr                     "ashr"                "2.2-54"
## askpass                  "askpass"             "1.1"
## assertthat               "assertthat"          "0.2.1"
## backports                "backports"           "1.4.1"
## base64                   "base64"              "2.0.1"
## base64enc                "base64enc"           "0.1-3"
## base64url                "base64url"           "1.4"
## bayestestR               "bayestestR"          "0.13.0"
## beanplot                 "beanplot"            "1.3.1"
## bench                    "bench"               "1.1.2"
## BgeeDB                   "BgeeDB"              "2.24.0"
## BH                       "BH"                  "1.78.0-0"
## Biobase                  "Biobase"             "2.58.0"
## BiocBaseUtils            "BiocBaseUtils"       "1.0.0"
## BiocFileCache            "BiocFileCache"       "2.6.0"
## BiocGenerics             "BiocGenerics"        "0.44.0"
## BiocIO                   "BiocIO"              "1.8.0"
## BiocManager              "BiocManager"         "1.30.19"
## BiocParallel             "BiocParallel"        "1.32.5"
## BiocVersion              "BiocVersion"         "3.16.0"
## biomaRt                  "biomaRt"             "2.54.0"
## Biostrings               "Biostrings"          "2.66.0"
## bit                      "bit"                 "4.0.5"
## bit64                    "bit64"               "4.0.5"
## bitops                   "bitops"              "1.0-7"
## biwt                     "biwt"                "1.0.1"
## blob                     "blob"                "1.2.3"
## brew                     "brew"                "1.0-8"
## brio                     "brio"                "1.1.3"
## broom                    "broom"               "1.0.2"
## broom.mixed              "broom.mixed"         "0.2.9.4"
## bslib                    "bslib"               "0.4.2"
## bumphunter               "bumphunter"          "1.40.0"
## BumpyMatrix              "BumpyMatrix"         "1.6.0"
## cachem                   "cachem"              "1.0.6"
## callr                    "callr"               "3.7.3"
## car                      "car"                 "3.1-1"
## carData                  "carData"             "3.0-5"
## caret                    "caret"               "6.0-93"
```

```
## Category              "Category"              "2.64.0"
## caTools              "caTools"              "1.18.2"
## celestial            "celestial"            "1.4.6"
## cellranger           "cellranger"           "1.1.0"
## checkmate            "checkmate"            "2.1.0"
## ChemmineR            "ChemmineR"            "3.50.0"
## chron                "chron"                "2.3-58"
## circlize             "circlize"             "0.4.15"
## classInt             "classInt"             "0.4-8"
## cli                  "cli"                  "3.5.0"
## clipr                "clipr"                "0.8.0"
## clock                "clock"                "0.6.1"
## clue                 "clue"                 "0.3-63"
## clusterProfiler      "clusterProfiler"      "4.6.0"
## coda                 "coda"                 "0.19-4"
## CoGAPS               "CoGAPS"               "3.18.0"
## cogena               "cogena"               "1.32.0"
## colorspace           "colorspace"           "2.0-3"
## combinat             "combinat"             "0.0-8"
## commonmark           "commonmark"           "1.8.1"
## ComplexHeatmap       "ComplexHeatmap"       "2.14.0"
## ComplexUpset         "ComplexUpset"         "1.3.3"
## conflicted           "conflicted"           "1.1.0"
## coop                 "coop"                 "0.6-3"
## CoreGx               "CoreGx"               "2.2.0"
## corrplot             "corrplot"             "0.92"
## cowplot              "cowplot"              "1.1.1"
## cpp11                "cpp11"                "0.4.3"
## crayon               "crayon"               "1.5.2"
## credentials          "credentials"          "1.3.2"
## crosstalk            "crosstalk"            "1.2.0"
## curl                 "curl"                 "4.3.3"
## customCMPdb          "customCMPdb"          "1.8.0"
## data.table           "data.table"           "1.14.6"
## datawizard           "datawizard"           "0.6.5"
## DBI                  "DBI"                  "1.1.3"
## dbplyr               "dbplyr"               "2.2.1"
## DelayedArray         "DelayedArray"         "0.24.0"
## DelayedMatrixStats   "DelayedMatrixStats"   "1.20.0"
## dendextend           "dendextend"           "1.16.0"
## DEoptimR             "DEoptimR"             "1.0-11"
## desc                 "desc"                 "1.4.2"
## DESeq2               "DESeq2"               "1.38.2"
## devtools             "devtools"             "2.4.5"
## DEXSeq               "DEXSeq"               "1.44.0"
## dials                "dials"                "1.1.0"
## DiceDesign           "DiceDesign"           "1.9"
## diffobj              "diffobj"              "0.3.5"
## digest               "digest"               "0.6.31"
## discrim              "discrim"              "1.0.0"
## docopt               "docopt"               "0.7.1"
## doParallel           "doParallel"           "1.0.17"
```

```
## doRNG                  "doRNG"                  "1.8.3"
## DOSE                   "DOSE"                   "3.24.2"
## dotwhisker             "dotwhisker"             "0.7.4"
## downlit                "downlit"                "0.4.2"
## downloader             "downloader"             "0.4"
## dplyr                  "dplyr"                  "1.0.10"
## drugbankR              "drugbankR"              "1.5"
## DT                     "DT"                     "0.26"
## dtplyr                 "dtplyr"                 "1.2.2"
## e1071                  "e1071"                  "1.7-12"
## earth                  "earth"                  "5.3.1"
## edgeR                  "edgeR"                  "3.40.1"
## ellipse                "ellipse"                "0.4.3"
## ellipsis               "ellipsis"               "0.3.2"
## emmeans                "emmeans"                "1.8.3"
## enrichplot             "enrichplot"             "1.18.3"
## EnsDb.Hsapiens.v75     "EnsDb.Hsapiens.v75"     "2.99.0"
## ensembldb              "ensembldb"              "2.22.0"
## estimability           "estimability"           "1.4.1"
## etrunct                "etrunct"                "0.1"
## evaluate               "evaluate"               "0.19"
## ExperimentHub          "ExperimentHub"          "2.6.0"
## factoextra             "factoextra"             "1.0.7"
## FactoMineR             "FactoMineR"             "2.7"
## fansi                  "fansi"                  "1.0.3"
## farver                 "farver"                 "2.1.1"
## fastcluster            "fastcluster"            "1.2.3"
## fastmap                "fastmap"                "1.1.0"
## fastmatch              "fastmatch"              "1.1-3"
## fgsea                  "fgsea"                  "1.24.0"
## filelock               "filelock"               "1.0.2"
## flashClust             "flashClust"             "1.01-2"
## fmcsR                  "fmcsR"                  "1.40.0"
## fontawesome            "fontawesome"            "0.4.0"
## forcats                "forcats"                "0.5.2"
## foreach                "foreach"                "1.5.2"
## formatR                "formatR"                "1.13"
## Formula                "Formula"                "1.2-4"
## fs                     "fs"                     "1.5.2"
## furrr                  "furrr"                  "0.3.1"
## futile.logger          "futile.logger"          "1.4.3"
## futile.options         "futile.options"         "1.0.1"
## future                 "future"                 "1.30.0"
## future.apply           "future.apply"           "1.10.0"
## gargle                 "gargle"                 "1.2.1"
## gbm                    "gbm"                    "2.1.8.1"
## genefilter             "genefilter"             "1.80.2"
## geneplotter            "geneplotter"            "1.76.0"
## generics               "generics"               "0.1.3"
## GenomeInfoDb           "GenomeInfoDb"           "1.34.4"
## GenomeInfoDbData       "GenomeInfoDbData"       "1.2.9"
## GenomicAlignments      "GenomicAlignments"      "1.34.0"
```

```
## GenomicFeatures        "GenomicFeatures"      "1.50.3"
## GenomicRanges          "GenomicRanges"        "1.50.2"
## GEOquery               "GEOquery"             "2.66.0"
## gert                   "gert"                 "1.9.1"
## GetoptLong             "GetoptLong"           "1.0.5"
## ggalluvial             "ggalluvial"           "0.12.3"
## ggdendro               "ggdendro"             "0.1.23"
## ggforce                "ggforce"              "0.4.1"
## ggfun                  "ggfun"                "0.0.9"
## ggnewscale             "ggnewscale"           "0.4.8"
## ggplot2                "ggplot2"              "3.4.0"
## ggplotify              "ggplotify"            "0.1.0"
## ggpubr                 "ggpubr"               "0.5.0"
## ggraph                 "ggraph"               "2.1.0"
## ggrepel                "ggrepel"              "0.9.2"
## ggsci                  "ggsci"                "2.9"
## ggsignif               "ggsignif"             "0.6.4"
## ggstance               "ggstance"             "0.3.6"
## ggtree                 "ggtree"               "3.6.2"
## gh                     "gh"                   "1.3.1"
## gitcreds               "gitcreds"             "0.1.2"
## glmnet                 "glmnet"               "4.1-6"
## GlobalOptions          "GlobalOptions"        "0.1.2"
## globals                "globals"              "0.16.2"
## glue                   "glue"                 "1.6.2"
## GO.db                  "GO.db"                "3.16.0"
## googledrive            "googledrive"          "2.0.0"
## googlesheets4          "googlesheets4"        "1.0.1"
## GOSemSim               "GOSemSim"             "2.24.0"
## GOstats                "GOstats"              "2.64.0"
## gower                  "gower"                "1.0.1"
## GPfit                  "GPfit"                "1.0-8"
## gplots                 "gplots"               "3.1.3"
## gprofiler2             "gprofiler2"           "0.2.1"
## graph                  "graph"                "1.76.0"
## graphlayouts           "graphlayouts"         "0.8.4"
## gridBase               "gridBase"             "0.4-7"
## gridExtra              "gridExtra"            "2.3"
## gridGraphics           "gridGraphics"         "0.5-1"
## GSEABase               "GSEABase"             "1.60.0"
## gson                   "gson"                 "0.0.9"
## gsubfn                 "gsubfn"               "0.7"
## gtable                 "gtable"               "0.3.1"
## gtools                 "gtools"               "3.9.4"
## hardhat                "hardhat"              "1.2.0"
## hash                   "hash"                 "2.2.6.2"
## haven                  "haven"                "2.5.1"
## HDF5Array              "HDF5Array"            "1.26.0"
## HDO.db                 "HDO.db"               "0.99.1"
## here                   "here"                 "1.0.1"
## hexbin                 "hexbin"               "1.28.2"
## highr                  "highr"                "0.10"
```

```
## hms                     "hms"                     "1.1.2"
## htmltools               "htmltools"               "0.5.4"
## htmlwidgets             "htmlwidgets"             "1.6.0"
## httpuv                  "httpuv"                  "1.6.7"
## httr                    "httr"                    "1.4.4"
## hwriter                 "hwriter"                 "1.3.2.1"
## ids                     "ids"                     "1.0.1"
## igraph                  "igraph"                  "1.3.5"
## illuminaio              "illuminaio"              "0.40.0"
## infer                   "infer"                   "1.0.4"
## ini                     "ini"                     "0.3.1"
## insight                 "insight"                 "0.18.8"
## interactiveDisplayBase  "interactiveDisplayBase"  "1.36.0"
## inum                    "inum"                    "1.0-4"
## invgamma                "invgamma"                "1.1"
## ipred                   "ipred"                   "0.9-13"
## IRanges                 "IRanges"                 "2.32.0"
## IRdisplay               "IRdisplay"               "1.1"
## IRkernel                "IRkernel"                "1.3.1"
## irlba                   "irlba"                   "2.3.5.1"
## isoband                 "isoband"                 "0.2.7"
## iterators               "iterators"               "1.0.14"
## jquerylib               "jquerylib"               "0.1.4"
## jsonlite                "jsonlite"                "1.8.4"
## KEGGREST                "KEGGREST"                "1.38.0"
## kernlab                 "kernlab"                 "0.9-31"
## klaR                    "klaR"                    "1.7-1"
## knitr                   "knitr"                   "1.41"
## kohonen                 "kohonen"                 "3.0.11"
## labeling                "labeling"                "0.4.2"
## labelled                "labelled"                "2.10.0"
## lambda.r                "lambda.r"                "1.2.4"
## later                   "later"                   "1.3.0"
## lava                    "lava"                    "1.7.0"
## lazyeval                "lazyeval"                "0.2.2"
## leaps                   "leaps"                   "3.1"
## lhs                     "lhs"                     "1.1.6"
## libcoin                 "libcoin"                 "1.0-9"
## LiblineaR               "LiblineaR"               "2.10-22"
## lifecycle               "lifecycle"               "1.0.3"
## limma                   "limma"                   "3.54.0"
## listenv                 "listenv"                 "0.9.0"
## littler                 "littler"                 "0.3.17"
## lme4                    "lme4"                    "1.1-31"
## locfit                  "locfit"                  "1.5-9.7"
## lsa                     "lsa"                     "0.73.3"
## lubridate               "lubridate"               "1.9.0"
## magicaxis               "magicaxis"               "2.2.14"
## magrittr                "magrittr"                "2.0.3"
## mapproj                 "mapproj"                 "1.2.9"
## maps                    "maps"                    "3.4.1"
## margins                 "margins"                 "0.3.26"
```

```
## markdown               "markdown"               "1.4"
## marray                 "marray"                 "1.76.0"
## mashr                  "mashr"                  "0.2.69"
## MASS                   "MASS"                   "7.3-58.1"
## matrixcalc             "matrixcalc"             "1.0-6"
## MatrixGenerics         "MatrixGenerics"         "1.10.0"
## MatrixModels           "MatrixModels"           "0.5-1"
## matrixStats            "matrixStats"            "0.63.0"
## mclust                 "mclust"                 "6.0.0"
## memoise                "memoise"                "2.0.1"
## mime                   "mime"                   "0.12"
## minfi                  "minfi"                  "1.44.0"
## miniUI                 "miniUI"                 "0.1.1.1"
## minqa                  "minqa"                  "1.2.5"
## mixsqp                 "mixsqp"                 "0.3-48"
## modeldata              "modeldata"              "1.0.1"
## modelenv               "modelenv"               "0.1.0"
## ModelMetrics           "ModelMetrics"           "1.2.2.2"
## modelr                 "modelr"                 "0.1.10"
## multcompView           "multcompView"           "0.1-8"
## MultiAssayExperiment   "MultiAssayExperiment"   "1.24.0"
## multtest               "multtest"               "2.54.0"
## munsell                "munsell"                "0.5.0"
## mvtnorm                "mvtnorm"                "1.1-3"
## naivebayes             "naivebayes"             "0.9.7"
## netZooR                "netZooR"                "1.2.1"
## NISTunits              "NISTunits"              "1.0.1"
## nloptr                 "nloptr"                 "2.0.3"
## NMF                    "NMF"                    "0.25"
## nnet                   "nnet"                   "7.3-18"
## nor1mix                "nor1mix"                "1.3-0"
## numDeriv               "numDeriv"               "2016.8-1.1"
## openssl                "openssl"                "2.0.5"
## org.Hs.eg.db           "org.Hs.eg.db"           "3.16.0"
## pamr                   "pamr"                   "1.56.1"
## pandaR                 "pandaR"                 "1.30.0"
## parallelly             "parallelly"             "1.33.0"
## parameters             "parameters"             "0.20.0"
## parsnip                "parsnip"                "1.0.3"
## partykit               "partykit"               "1.2-16"
## pasilla                "pasilla"                "1.26.0"
## patchwork              "patchwork"              "1.1.2"
## pbdZMQ                 "pbdZMQ"                 "0.3-8"
## pbkrtest               "pbkrtest"               "0.5.1"
## penalized              "penalized"              "0.9-52"
## permute                "permute"                "0.9-7"
## PharmacoGx             "PharmacoGx"             "3.2.0"
## pheatmap               "pheatmap"               "1.0.12"
## piano                  "piano"                  "2.14.0"
## pillar                 "pillar"                 "1.8.1"
## pkgbuild               "pkgbuild"               "1.3.1"
## pkgconfig              "pkgconfig"              "2.0.3"
```

```
## pkgdown              "pkgdown"              "2.0.6"
## pkgload              "pkgload"              "1.3.1"
## PLIER                "PLIER"                "0.99.0"
## plogr                "plogr"                "0.2.0"
## plotly               "plotly"               "4.10.1"
## plotmo               "plotmo"               "3.6.2"
## plotrix              "plotrix"              "3.8-2"
## plyr                 "plyr"                 "1.8.8"
## png                  "png"                  "0.1-8"
## polyclip             "polyclip"             "1.10-4"
## polynom              "polynom"              "1.4-1"
## pracma               "pracma"               "2.4.2"
## praise               "praise"               "1.0.0"
## prediction           "prediction"           "0.3.14"
## preprocessCore       "preprocessCore"       "1.60.1"
## prettyunits          "prettyunits"          "1.1.1"
## pROC                 "pROC"                 "1.18.0"
## processx             "processx"             "3.8.0"
## prodlim              "prodlim"              "2019.11.13"
## profmem              "profmem"              "0.6.0"
## profvis              "profvis"              "0.3.7"
## progress             "progress"             "1.2.2"
## progressr            "progressr"            "0.12.0"
## projectR             "projectR"             "1.14.0"
## ProliferativeIndex   "ProliferativeIndex"   "1.0.1"
## promises             "promises"             "1.2.0.1"
## ProtGenerics         "ProtGenerics"         "1.30.0"
## proto                "proto"                "1.0.0"
## proxy                "proxy"                "0.4-27"
## ps                   "ps"                   "1.7.2"
## purrr                "purrr"                "1.0.0"
## quadprog             "quadprog"             "1.5-8"
## quantreg             "quantreg"             "5.94"
## quantro              "quantro"              "1.32.0"
## questionr            "questionr"            "0.7.7"
## qvalue               "qvalue"               "2.30.0"
## R.cache              "R.cache"              "0.16.0"
## R.methodsS3          "R.methodsS3"          "1.8.2"
## R.oo                 "R.oo"                 "1.25.0"
## R.utils              "R.utils"              "2.12.2"
## R6                   "R6"                   "2.5.1"
## ragg                 "ragg"                 "1.2.4"
## randomForest         "randomForest"         "4.7-1.1"
## ranger               "ranger"               "0.14.1"
## RANN                 "RANN"                 "2.6.1"
## rappdirs             "rappdirs"             "0.3.3"
## RBGL                 "RBGL"                 "1.74.0"
## rcmdcheck            "rcmdcheck"            "1.4.0"
## RColorBrewer         "RColorBrewer"         "1.1-3"
## Rcpp                 "Rcpp"                 "1.0.9"
## RcppArmadillo        "RcppArmadillo"        "0.11.4.2.1"
## RcppEigen            "RcppEigen"            "0.3.3.9.3"
```

```
## RcppGSL           "RcppGSL"          "0.3.12"
## RcppTOML          "RcppTOML"         "0.1.7"
## RCurl             "RCurl"            "1.98-1.9"
## RCy3              "RCy3"             "2.18.0"
## reactome.db       "reactome.db"      "1.82.0"
## readr             "readr"            "2.1.3"
## readxl            "readxl"           "1.4.1"
## recipes           "recipes"          "1.0.3"
## recount3          "recount3"         "1.8.0"
## registry          "registry"         "0.5-1"
## relations         "relations"        "0.6-12"
## rematch           "rematch"          "1.0.1"
## rematch2          "rematch2"         "2.1.2"
## remotes           "remotes"          "2.4.2"
## repr              "repr"             "1.1.4"
## reprex            "reprex"           "2.0.2"
## reshape           "reshape"          "0.8.9"
## reshape2          "reshape2"         "1.4.4"
## restfulr          "restfulr"         "0.0.15"
## reticulate        "reticulate"       "1.26"
## Rgraphviz         "Rgraphviz"        "2.42.0"
## rhdf5             "rhdf5"            "2.42.0"
## rhdf5filters      "rhdf5filters"     "1.10.0"
## Rhdf5lib          "Rhdf5lib"         "1.20.0"
## Rhtslib           "Rhtslib"          "2.0.0"
## rJava             "rJava"            "1.0-6"
## rjson             "rjson"            "0.2.21"
## RJSONIO           "RJSONIO"          "1.3-1.6"
## rlang             "rlang"            "1.0.6"
## rmarkdown         "rmarkdown"        "2.19"
## rmeta             "rmeta"            "3.0"
## rngtools          "rngtools"         "1.5.2"
## robustbase        "robustbase"       "0.95-0"
## ROCR              "ROCR"             "1.0-11"
## roxygen2          "roxygen2"         "7.2.1"
## rpart             "rpart"            "4.1.19"
## rprojroot         "rprojroot"        "2.0.3"
## rsample           "rsample"          "1.1.1"
## Rsamtools         "Rsamtools"        "2.14.0"
## RSQLite           "RSQLite"          "2.2.20"
## rstatix           "rstatix"          "0.7.1"
## rstudioapi        "rstudioapi"       "0.14"
## rsvd              "rsvd"             "1.0.5"
## rsvg              "rsvg"             "2.4.0"
## rtracklayer       "rtracklayer"      "1.58.0"
## RUnit             "RUnit"            "0.4.32"
## rversions         "rversions"        "2.1.2"
## rvest             "rvest"            "1.0.3"
## RWeka             "RWeka"            "0.4-44"
## RWekajars         "RWekajars"        "3.9.3-2"
## S4Vectors         "S4Vectors"        "0.36.1"
## sass              "sass"             "0.4.4"
```

```
## scales                "scales"               "1.2.1"
## scatterpie            "scatterpie"           "0.1.8"
## scatterplot3d         "scatterplot3d"        "0.3-42"
## scrime                "scrime"               "1.3.5"
## selectr               "selectr"              "0.4-2"
## sessioninfo           "sessioninfo"          "1.2.2"
## sets                  "sets"                 "1.0-21"
## shadowtext            "shadowtext"           "0.1.2"
## shape                 "shape"                "1.4.6"
## shiny                 "shiny"                "1.7.4"
## shinydashboard        "shinydashboard"       "0.7.2"
## shinyjs               "shinyjs"              "2.1.0"
## siggenes              "siggenes"             "1.72.0"
## signatureSearch       "signatureSearch"      "1.11.1"
## signatureSearchData   "signatureSearchData"  "1.12.0"
## SingleCellExperiment  "SingleCellExperiment" "1.20.0"
## skimr                 "skimr"                "2.1.5"
## slam                  "slam"                 "0.1-50"
## slider                "slider"               "0.3.0"
## sm                    "sm"                   "2.2-5.7.1"
## snow                  "snow"                 "0.4-4"
## SnowballC             "SnowballC"            "0.7.0"
## softImpute            "softImpute"           "1.4-1"
## sourcetools           "sourcetools"          "0.1.7"
## SparseM               "SparseM"              "1.81"
## sparseMatrixStats     "sparseMatrixStats"    "1.10.0"
## sqldf                 "sqldf"                "0.4-11"
## SQUAREM               "SQUAREM"              "2021.1"
## statmod               "statmod"              "1.4.37"
## STRINGdb              "STRINGdb"             "2.10.0"
## stringi               "stringi"              "1.7.8"
## stringr               "stringr"              "1.5.0"
## styler                "styler"               "1.8.1"
## SummarizedExperiment  "SummarizedExperiment" "1.28.0"
## sys                   "sys"                  "3.4.1"
## systemfonts           "systemfonts"          "1.0.4"
## TeachingDemos         "TeachingDemos"        "2.12"
## testthat              "testthat"             "3.1.5"
## textshaping           "textshaping"          "0.3.6"
## TFEA.ChIP             "TFEA.ChIP"            "1.18.0"
## tibble                "tibble"               "3.1.8"
## tidygraph             "tidygraph"            "1.2.2"
## tidymodels            "tidymodels"           "1.0.0"
## tidyr                 "tidyr"                "1.2.1"
## tidyselect            "tidyselect"           "1.2.0"
## tidytree              "tidytree"             "0.4.2"
## tidyverse             "tidyverse"            "1.3.2"
## timechange            "timechange"           "0.1.1"
## timeDate              "timeDate"             "4021.107"
## tinytex               "tinytex"              "0.43"
## topGO                 "topGO"                "2.50.0"
## treeio                "treeio"               "1.22.0"
```

```
## truncnorm          "truncnorm"          "1.0-8"
## tune               "tune"               "1.0.1"
## tweenr             "tweenr"             "2.0.2"
## tzdb               "tzdb"               "0.3.0"
## uchardet           "uchardet"           "1.1.1"
## urlchecker         "urlchecker"         "1.0.1"
## usethis            "usethis"            "2.1.6"
## utf8               "utf8"               "1.2.2"
## uuid               "uuid"               "1.1-0"
## vctrs              "vctrs"              "0.5.1"
## vegan              "vegan"              "2.6-4"
## VennDiagram        "VennDiagram"        "1.7.3"
## viridis            "viridis"            "0.6.2"
## viridisLite        "viridisLite"        "0.4.1"
## visNetwork         "visNetwork"         "2.1.2"
## vroom              "vroom"              "1.6.0"
## waldo              "waldo"              "0.4.0"
## warp               "warp"               "0.2.0"
## whisker            "whisker"            "0.4"
## withr              "withr"              "2.5.0"
## workflows          "workflows"          "1.1.2"
## workflowsets       "workflowsets"       "1.0.0"
## xfun               "xfun"               "0.36"
## xgboost            "xgboost"            "1.6.0.1"
## XML                "XML"                "3.99-0.13"
## xml2               "xml2"               "1.3.3"
## xopen              "xopen"              "1.0.0"
## xtable             "xtable"             "1.8-4"
## XVector            "XVector"            "0.38.0"
## yaml               "yaml"               "2.3.6"
## yardstick          "yardstick"          "1.1.0"
## yarn               "yarn"               "1.24.0"
## yulab.utils        "yulab.utils"        "0.0.6"
## zip                "zip"                "2.2.2"
## zlibbioc           "zlibbioc"           "1.44.0"
## base               "base"               "4.2.2"
## boot               "boot"               "1.3-28"
## class              "class"              "7.3-20"
## cluster            "cluster"            "2.1.4"
## codetools          "codetools"          "0.2-18"
## compiler           "compiler"           "4.2.2"
## datasets           "datasets"           "4.2.2"
## foreign            "foreign"            "0.8-83"
## graphics           "graphics"           "4.2.2"
## grDevices          "grDevices"          "4.2.2"
## grid               "grid"               "4.2.2"
## KernSmooth         "KernSmooth"         "2.23-20"
## lattice            "lattice"            "0.20-45"
## MASS               "MASS"               "7.3-58.1"
## Matrix             "Matrix"             "1.5-1"
## methods            "methods"            "4.2.2"
## mgcv               "mgcv"               "1.8-41"
```

```
## nlme              "nlme"           "3.1-160"
## nnet              "nnet"           "7.3-18"
## parallel          "parallel"       "4.2.2"
## rpart             "rpart"          "4.1.19"
## spatial           "spatial"        "7.3-15"
## splines           "splines"        "4.2.2"
## stats             "stats"          "4.2.2"
## stats4            "stats4"         "4.2.2"
## survival          "survival"       "3.4-0"
## tcltk             "tcltk"          "4.2.2"
## tools             "tools"          "4.2.2"
## utils             "utils"          "4.2.2"
```

230510_rstudio_sex_bias_drugs_singularity

Jennifer Fisher

05/10/2023

```
System which operations were done on:
cheaha

GitHub Repo:
230321_JLF_Sex_bias_adverse_events

Directory of operations:
/data/project/lasseigne_lab/JLF_scratch/230321_JLF_Sex_bias_adverse_events

GitHub Repo:
230321_JLF_Sex_bias_adverse_events

Docker:
rstudio_sex_bias_drugs (singularity)
```

```
sessionInfo()
```

```
## R version 4.2.2 (2022-10-31)
## Platform: x86_64-pc-linux-gnu (64-bit)
## Running under: Ubuntu 22.04.1 LTS
##
## Matrix products: default
## BLAS:   /usr/lib/x86_64-linux-gnu/openblas-pthread/libblas.so.3
## LAPACK: /usr/lib/x86_64-linux-gnu/openblas-pthread/libopenblasp-r0.3.20.so
##
## locale:
##  [1] LC_CTYPE=en_US.UTF-8       LC_NUMERIC=C
##  [3] LC_TIME=en_US.UTF-8        LC_COLLATE=en_US.UTF-8
##  [5] LC_MONETARY=en_US.UTF-8    LC_MESSAGES=en_US.UTF-8
##  [7] LC_PAPER=en_US.UTF-8       LC_NAME=C
##  [9] LC_ADDRESS=C               LC_TELEPHONE=C
## [11] LC_MEASUREMENT=en_US.UTF-8 LC_IDENTIFICATION=C
##
## attached base packages:
## [1] stats     graphics  grDevices utils     datasets  methods   base
##
## loaded via a namespace (and not attached):
##  [1] digest_0.6.31  R6_2.5.1        lifecycle_1.0.3 jsonlite_1.8.4
##  [5] magrittr_2.0.3 evaluate_0.19  stringi_1.7.8   cachem_1.0.6
##  [9] rlang_1.0.6    cli_3.5.0      rstudioapi_0.14 jquerylib_0.1.4
## [13] bslib_0.4.2    vctrs_0.5.1    rmarkdown_2.19  tools_4.2.2
## [17] stringr_1.5.0  glue_1.6.2     xfun_0.36       yaml_2.3.6
## [21] fastmap_1.1.0  compiler_4.2.2 htmltools_0.5.4 knitr_1.41
## [25] sass_0.4.4
```

```
# Listing packages
installed.packages()[,c(1,3)]
```

```
##                        Package                   Version
## abind                  "abind"                   "1.4-5"
## affy                   "affy"                    "1.76.0"
## affyio                 "affyio"                  "1.68.0"
## amap                   "amap"                    "0.8-19"
## annotate               "annotate"                "1.76.0"
## AnnotationDbi          "AnnotationDbi"           "1.60.0"
## AnnotationFilter       "AnnotationFilter"        "1.22.0"
## AnnotationForge        "AnnotationForge"         "1.40.0"
## AnnotationHub          "AnnotationHub"           "3.6.0"
## apcluster              "apcluster"               "1.4.10"
## ape                    "ape"                     "5.6-2"
## aplot                  "aplot"                   "0.1.9"
## ashr                   "ashr"                    "2.2-54"
## askpass                "askpass"                 "1.1"
## assertthat             "assertthat"              "0.2.1"
## backports              "backports"               "1.4.1"
## base64                 "base64"                  "2.0.1"
## base64enc              "base64enc"               "0.1-3"
## base64url              "base64url"               "1.4"
## bayestestR             "bayestestR"              "0.13.0"
## beanplot               "beanplot"                "1.3.1"
## bench                  "bench"                   "1.1.2"
## BgeeDB                 "BgeeDB"                  "2.24.0"
## BH                     "BH"                      "1.78.0-0"
## Biobase                "Biobase"                 "2.58.0"
## BiocBaseUtils          "BiocBaseUtils"           "1.0.0"
## BiocFileCache          "BiocFileCache"           "2.6.0"
## BiocGenerics           "BiocGenerics"            "0.44.0"
## BiocIO                 "BiocIO"                   "1.8.0"
## BiocManager            "BiocManager"             "1.30.19"
## BiocParallel           "BiocParallel"            "1.32.5"
## BiocVersion            "BiocVersion"             "3.16.0"
## biomaRt                "biomaRt"                 "2.54.0"
## Biostrings             "Biostrings"              "2.66.0"
## bit                    "bit"                     "4.0.5"
## bit64                  "bit64"                   "4.0.5"
## bitops                 "bitops"                  "1.0-7"
## biwt                   "biwt"                    "1.0.1"
## blob                   "blob"                    "1.2.3"
## brew                   "brew"                    "1.0-8"
## brio                   "brio"                    "1.1.3"
## broom                  "broom"                   "1.0.2"
## broom.mixed            "broom.mixed"             "0.2.9.4"
## bslib                  "bslib"                   "0.4.2"
## bumphunter             "bumphunter"              "1.40.0"
## BumpyMatrix            "BumpyMatrix"             "1.6.0"
## cachem                 "cachem"                  "1.0.6"
## callr                  "callr"                   "3.7.3"
## car                    "car"                     "3.1-1"
## carData                "carData"                 "3.0-5"
## caret                  "caret"                   "6.0-93"
## Category               "Category"                "2.64.0"
## caTools                "caTools"                 "1.18.2"
```

```
## celestial             "celestial"            "1.4.6"
## cellranger            "cellranger"           "1.1.0"
## checkmate             "checkmate"            "2.1.0"
## ChemmineR             "ChemmineR"            "3.50.0"
## chron                 "chron"                "2.3-58"
## circlize              "circlize"             "0.4.15"
## classInt              "classInt"             "0.4-8"
## cli                   "cli"                  "3.5.0"
## clipr                 "clipr"                "0.8.0"
## clock                 "clock"                "0.6.1"
## clue                  "clue"                 "0.3-63"
## clusterProfiler       "clusterProfiler"      "4.6.0"
## coda                  "coda"                 "0.19-4"
## CoGAPS                "CoGAPS"               "3.18.0"
## cogena                "cogena"               "1.32.0"
## colorspace            "colorspace"           "2.0-3"
## combinat              "combinat"             "0.0-8"
## commonmark            "commonmark"           "1.8.1"
## ComplexHeatmap        "ComplexHeatmap"       "2.14.0"
## ComplexUpset          "ComplexUpset"         "1.3.3"
## conflicted            "conflicted"           "1.1.0"
## coop                  "coop"                 "0.6-3"
## CoreGx                "CoreGx"               "2.2.0"
## corrplot              "corrplot"             "0.92"
## cowplot               "cowplot"              "1.1.1"
## cpp11                 "cpp11"                "0.4.3"
## crayon                "crayon"               "1.5.2"
## credentials           "credentials"          "1.3.2"
## crosstalk             "crosstalk"            "1.2.0"
## curl                  "curl"                 "4.3.3"
## customCMPdb           "customCMPdb"          "1.8.0"
## data.table           "data.table"           "1.14.6"
## datawizard            "datawizard"           "0.6.5"
## DBI                   "DBI"                  "1.1.3"
## dbplyr                "dbplyr"               "2.2.1"
## DelayedArray          "DelayedArray"         "0.24.0"
## DelayedMatrixStats    "DelayedMatrixStats"   "1.20.0"
## dendextend            "dendextend"           "1.16.0"
## DEoptimR              "DEoptimR"             "1.0-11"
## desc                  "desc"                 "1.4.2"
## DESeq2                "DESeq2"               "1.38.2"
## devtools              "devtools"             "2.4.5"
## DEXSeq                "DEXSeq"               "1.44.0"
## dials                 "dials"                "1.1.0"
## DiceDesign            "DiceDesign"           "1.9"
## diffobj               "diffobj"              "0.3.5"
## digest                "digest"               "0.6.31"
## discrim               "discrim"              "1.0.0"
## docopt                "docopt"               "0.7.1"
## doParallel            "doParallel"           "1.0.17"
## doRNG                 "doRNG"                "1.8.3"
## DOSE                  "DOSE"                 "3.24.2"
## dotwhisker            "dotwhisker"           "0.7.4"
## downlit               "downlit"              "0.4.2"
## downloader            "downloader"           "0.4"
```

```
## dplyr                 "dplyr"                 "1.0.10"
## drugbankR             "drugbankR"             "1.5"
## DT                    "DT"                    "0.26"
## dtplyr                "dtplyr"                "1.2.2"
## e1071                 "e1071"                 "1.7-12"
## earth                 "earth"                 "5.3.1"
## edgeR                 "edgeR"                 "3.40.1"
## ellipse               "ellipse"               "0.4.3"
## ellipsis              "ellipsis"              "0.3.2"
## emmeans               "emmeans"               "1.8.3"
## enrichplot            "enrichplot"            "1.18.3"
## EnsDb.Hsapiens.v75    "EnsDb.Hsapiens.v75"    "2.99.0"
## ensembldb             "ensembldb"             "2.22.0"
## estimability          "estimability"          "1.4.1"
## etrunct               "etrunct"               "0.1"
## evaluate              "evaluate"              "0.19"
## ExperimentHub         "ExperimentHub"         "2.6.0"
## factoextra            "factoextra"            "1.0.7"
## FactoMineR            "FactoMineR"            "2.7"
## fansi                 "fansi"                 "1.0.3"
## farver                "farver"                "2.1.1"
## fastcluster           "fastcluster"           "1.2.3"
## fastmap               "fastmap"               "1.1.0"
## fastmatch             "fastmatch"             "1.1-3"
## fgsea                 "fgsea"                 "1.24.0"
## filelock              "filelock"              "1.0.2"
## flashClust            "flashClust"            "1.01-2"
## fmcsR                 "fmcsR"                 "1.40.0"
## fontawesome           "fontawesome"           "0.4.0"
## forcats               "forcats"               "0.5.2"
## foreach               "foreach"               "1.5.2"
## formatR               "formatR"               "1.13"
## Formula               "Formula"               "1.2-4"
## fs                    "fs"                    "1.5.2"
## furrr                 "furrr"                 "0.3.1"
## futile.logger         "futile.logger"         "1.4.3"
## futile.options        "futile.options"        "1.0.1"
## future                "future"                "1.30.0"
## future.apply          "future.apply"          "1.10.0"
## gargle                "gargle"                "1.2.1"
## gbm                   "gbm"                   "2.1.8.1"
## genefilter            "genefilter"            "1.80.2"
## geneplotter           "geneplotter"           "1.76.0"
## generics              "generics"              "0.1.3"
## GenomeInfoDb          "GenomeInfoDb"          "1.34.4"
## GenomeInfoDbData      "GenomeInfoDbData"      "1.2.9"
## GenomicAlignments     "GenomicAlignments"     "1.34.0"
## GenomicFeatures       "GenomicFeatures"       "1.50.3"
## GenomicRanges         "GenomicRanges"         "1.50.2"
## GEOquery              "GEOquery"              "2.66.0"
## gert                  "gert"                  "1.9.1"
## GetoptLong            "GetoptLong"            "1.0.5"
## ggalluvial            "ggalluvial"            "0.12.3"
## ggdendro              "ggdendro"              "0.1.23"
## ggforce               "ggforce"               "0.4.1"
```

```
## ggfun              "ggfun"            "0.0.9"
## ggnewscale         "ggnewscale"       "0.4.8"
## ggplot2            "ggplot2"          "3.4.0"
## ggplotify          "ggplotify"        "0.1.0"
## ggpubr             "ggpubr"           "0.5.0"
## ggraph             "ggraph"           "2.1.0"
## ggrepel            "ggrepel"          "0.9.2"
## ggsci              "ggsci"            "2.9"
## ggsignif           "ggsignif"         "0.6.4"
## ggstance           "ggstance"         "0.3.6"
## ggtree             "ggtree"           "3.6.2"
## gh                 "gh"               "1.3.1"
## gitcreds           "gitcreds"         "0.1.2"
## glmnet             "glmnet"           "4.1-6"
## GlobalOptions      "GlobalOptions"    "0.1.2"
## globals            "globals"          "0.16.2"
## glue               "glue"             "1.6.2"
## GO.db              "GO.db"            "3.16.0"
## googledrive        "googledrive"      "2.0.0"
## googlesheets4      "googlesheets4"    "1.0.1"
## GOSemSim           "GOSemSim"         "2.24.0"
## GOstats            "GOstats"          "2.64.0"
## gower              "gower"            "1.0.1"
## GPfit              "GPfit"            "1.0-8"
## gplots             "gplots"           "3.1.3"
## gprofiler2         "gprofiler2"       "0.2.1"
## graph              "graph"            "1.76.0"
## graphlayouts       "graphlayouts"     "0.8.4"
## gridBase           "gridBase"         "0.4-7"
## gridExtra          "gridExtra"        "2.3"
## gridGraphics       "gridGraphics"     "0.5-1"
## GSEABase           "GSEABase"         "1.60.0"
## gson               "gson"             "0.0.9"
## gsubfn             "gsubfn"           "0.7"
## gtable             "gtable"           "0.3.1"
## gtools             "gtools"           "3.9.4"
## hardhat            "hardhat"          "1.2.0"
## hash               "hash"             "2.2.6.2"
## haven              "haven"            "2.5.1"
## HDF5Array          "HDF5Array"        "1.26.0"
## HDO.db             "HDO.db"           "0.99.1"
## here               "here"             "1.0.1"
## hexbin             "hexbin"           "1.28.2"
## highr              "highr"            "0.10"
## hms                "hms"              "1.1.2"
## htmltools          "htmltools"        "0.5.4"
## htmlwidgets        "htmlwidgets"      "1.6.0"
## httpuv             "httpuv"           "1.6.7"
## httr               "httr"             "1.4.4"
## hwriter            "hwriter"          "1.3.2.1"
## ids                "ids"              "1.0.1"
## igraph             "igraph"           "1.3.5"
## illuminaio         "illuminaio"       "0.40.0"
## infer              "infer"            "1.0.4"
## ini                "ini"              "0.3.1"
```

```
## insight                 "insight"                 "0.18.8"
## interactiveDisplayBase   "interactiveDisplayBase"  "1.36.0"
## inum                     "inum"                    "1.0-4"
## invgamma                 "invgamma"                "1.1"
## ipred                    "ipred"                   "0.9-13"
## IRanges                  "IRanges"                 "2.32.0"
## IRdisplay                "IRdisplay"               "1.1"
## IRkernel                 "IRkernel"                "1.3.1"
## irlba                    "irlba"                   "2.3.5.1"
## isoband                  "isoband"                 "0.2.7"
## iterators                "iterators"               "1.0.14"
## jquerylib                "jquerylib"               "0.1.4"
## jsonlite                 "jsonlite"                "1.8.4"
## KEGGREST                 "KEGGREST"                "1.38.0"
## kernlab                  "kernlab"                 "0.9-31"
## klaR                     "klaR"                    "1.7-1"
## knitr                    "knitr"                   "1.41"
## kohonen                  "kohonen"                 "3.0.11"
## labeling                 "labeling"                "0.4.2"
## labelled                 "labelled"                "2.10.0"
## lambda.r                 "lambda.r"                "1.2.4"
## later                    "later"                   "1.3.0"
## lava                     "lava"                    "1.7.0"
## lazyeval                 "lazyeval"                "0.2.2"
## leaps                    "leaps"                   "3.1"
## lhs                      "lhs"                     "1.1.6"
## libcoin                  "libcoin"                 "1.0-9"
## LiblineaR                "LiblineaR"               "2.10-22"
## lifecycle                "lifecycle"               "1.0.3"
## limma                    "limma"                   "3.54.0"
## listenv                  "listenv"                 "0.9.0"
## littler                  "littler"                 "0.3.17"
## lme4                     "lme4"                    "1.1-31"
## locfit                   "locfit"                  "1.5-9.7"
## lsa                      "lsa"                     "0.73.3"
## lubridate                "lubridate"               "1.9.0"
## magicaxis                "magicaxis"               "2.2.14"
## magrittr                 "magrittr"                "2.0.3"
## mapproj                  "mapproj"                 "1.2.9"
## maps                     "maps"                    "3.4.1"
## margins                  "margins"                 "0.3.26"
## markdown                 "markdown"                "1.4"
## marray                   "marray"                  "1.76.0"
## mashr                    "mashr"                   "0.2.69"
## MASS                     "MASS"                    "7.3-58.1"
## matrixcalc               "matrixcalc"              "1.0-6"
## MatrixGenerics           "MatrixGenerics"          "1.10.0"
## MatrixModels             "MatrixModels"            "0.5-1"
## matrixStats              "matrixStats"             "0.63.0"
## mclust                   "mclust"                  "6.0.0"
## memoise                  "memoise"                 "2.0.1"
## mime                     "mime"                    "0.12"
## minfi                    "minfi"                   "1.44.0"
## miniUI                   "miniUI"                  "0.1.1.1"
## minqa                    "minqa"                   "1.2.5"
```

```
## mixsqp                   "mixsqp"                  "0.3-48"
## modeldata                "modeldata"               "1.0.1"
## modelenv                 "modelenv"                "0.1.0"
## ModelMetrics             "ModelMetrics"            "1.2.2.2"
## modelr                   "modelr"                  "0.1.10"
## multcompView             "multcompView"            "0.1-8"
## MultiAssayExperiment     "MultiAssayExperiment"    "1.24.0"
## multtest                 "multtest"                "2.54.0"
## munsell                  "munsell"                 "0.5.0"
## mvtnorm                  "mvtnorm"                 "1.1-3"
## naivebayes               "naivebayes"              "0.9.7"
## netZooR                  "netZooR"                 "1.2.1"
## NISTunits                "NISTunits"               "1.0.1"
## nloptr                   "nloptr"                  "2.0.3"
## NMF                      "NMF"                     "0.25"
## nnet                     "nnet"                    "7.3-18"
## nor1mix                  "nor1mix"                 "1.3-0"
## numDeriv                 "numDeriv"                "2016.8-1.1"
## openssl                  "openssl"                 "2.0.5"
## org.Hs.eg.db             "org.Hs.eg.db"            "3.16.0"
## pamr                     "pamr"                    "1.56.1"
## pandaR                   "pandaR"                  "1.30.0"
## parallelly               "parallelly"              "1.33.0"
## parameters               "parameters"              "0.20.0"
## parsnip                  "parsnip"                 "1.0.3"
## partykit                 "partykit"                "1.2-16"
## pasilla                  "pasilla"                 "1.26.0"
## patchwork                "patchwork"               "1.1.2"
## pbdZMQ                   "pbdZMQ"                   "0.3-8"
## pbkrtest                 "pbkrtest"                "0.5.1"
## penalized                "penalized"               "0.9-52"
## permute                  "permute"                 "0.9-7"
## PharmacoGx               "PharmacoGx"              "3.2.0"
## pheatmap                 "pheatmap"                "1.0.12"
## piano                    "piano"                   "2.14.0"
## pillar                   "pillar"                  "1.8.1"
## pkgbuild                 "pkgbuild"                "1.3.1"
## pkgconfig                "pkgconfig"               "2.0.3"
## pkgdown                  "pkgdown"                 "2.0.6"
## pkgload                  "pkgload"                 "1.3.1"
## PLIER                    "PLIER"                   "0.99.0"
## plogr                    "plogr"                   "0.2.0"
## plotly                   "plotly"                  "4.10.1"
## plotmo                   "plotmo"                  "3.6.2"
## plotrix                  "plotrix"                 "3.8-2"
## plyr                     "plyr"                    "1.8.8"
## png                      "png"                     "0.1-8"
## polyclip                 "polyclip"                "1.10-4"
## polynom                  "polynom"                 "1.4-1"
## pracma                   "pracma"                  "2.4.2"
## praise                   "praise"                  "1.0.0"
## prediction               "prediction"              "0.3.14"
## preprocessCore           "preprocessCore"          "1.60.1"
## prettyunits              "prettyunits"             "1.1.1"
## pROC                     "pROC"                    "1.18.0"
```

```
## processx              "processx"              "3.8.0"
## prodlim               "prodlim"               "2019.11.13"
## profmem               "profmem"               "0.6.0"
## profvis               "profvis"               "0.3.7"
## progress              "progress"              "1.2.2"
## progressr             "progressr"             "0.12.0"
## projectR              "projectR"              "1.14.0"
## ProliferativeIndex    "ProliferativeIndex"    "1.0.1"
## promises              "promises"              "1.2.0.1"
## ProtGenerics          "ProtGenerics"          "1.30.0"
## proto                 "proto"                 "1.0.0"
## proxy                 "proxy"                 "0.4-27"
## ps                    "ps"                    "1.7.2"
## purrr                 "purrr"                 "1.0.0"
## quadprog              "quadprog"              "1.5-8"
## quantreg              "quantreg"              "5.94"
## quantro               "quantro"               "1.32.0"
## questionr             "questionr"             "0.7.7"
## qvalue                "qvalue"                "2.30.0"
## R.cache               "R.cache"               "0.16.0"
## R.methodsS3           "R.methodsS3"           "1.8.2"
## R.oo                  "R.oo"                  "1.25.0"
## R.utils               "R.utils"               "2.12.2"
## R6                    "R6"                    "2.5.1"
## ragg                  "ragg"                  "1.2.4"
## randomForest          "randomForest"          "4.7-1.1"
## ranger                "ranger"                "0.14.1"
## RANN                  "RANN"                  "2.6.1"
## rappdirs              "rappdirs"              "0.3.3"
## RBGL                  "RBGL"                  "1.74.0"
## rcmdcheck             "rcmdcheck"             "1.4.0"
## RColorBrewer          "RColorBrewer"          "1.1-3"
## Rcpp                  "Rcpp"                  "1.0.9"
## RcppArmadillo         "RcppArmadillo"         "0.11.4.2.1"
## RcppEigen             "RcppEigen"             "0.3.3.9.3"
## RcppGSL               "RcppGSL"               "0.3.12"
## RcppTOML              "RcppTOML"              "0.1.7"
## RCurl                 "RCurl"                 "1.98-1.9"
## RCy3                  "RCy3"                  "2.18.0"
## reactome.db           "reactome.db"           "1.82.0"
## readr                 "readr"                 "2.1.3"
## readxl                "readxl"                "1.4.1"
## recipes               "recipes"               "1.0.3"
## recount3              "recount3"              "1.8.0"
## registry              "registry"              "0.5-1"
## relations             "relations"             "0.6-12"
## rematch               "rematch"               "1.0.1"
## rematch2              "rematch2"              "2.1.2"
## remotes               "remotes"               "2.4.2"
## repr                  "repr"                  "1.1.4"
## reprex                "reprex"                "2.0.2"
## reshape               "reshape"               "0.8.9"
## reshape2              "reshape2"              "1.4.4"
## restfulr              "restfulr"              "0.0.15"
## reticulate            "reticulate"            "1.26"
```

```
## Rgraphviz            "Rgraphviz"            "2.42.0"
## rhdf5                "rhdf5"                "2.42.0"
## rhdf5filters         "rhdf5filters"         "1.10.0"
## Rhdf5lib             "Rhdf5lib"             "1.20.0"
## Rhtslib              "Rhtslib"              "2.0.0"
## rJava                "rJava"                "1.0-6"
## rjson                "rjson"                "0.2.21"
## RJSONIO              "RJSONIO"              "1.3-1.6"
## rlang                "rlang"                "1.0.6"
## rmarkdown            "rmarkdown"            "2.19"
## rmeta                "rmeta"                "3.0"
## rngtools             "rngtools"             "1.5.2"
## robustbase           "robustbase"           "0.95-0"
## ROCR                 "ROCR"                 "1.0-11"
## roxygen2             "roxygen2"             "7.2.1"
## rpart                "rpart"                "4.1.19"
## rprojroot            "rprojroot"            "2.0.3"
## rsample              "rsample"              "1.1.1"
## Rsamtools            "Rsamtools"            "2.14.0"
## RSQLite              "RSQLite"              "2.2.20"
## rstatix              "rstatix"              "0.7.1"
## rstudioapi           "rstudioapi"           "0.14"
## rsvd                 "rsvd"                 "1.0.5"
## rsvg                 "rsvg"                 "2.4.0"
## rtracklayer          "rtracklayer"          "1.58.0"
## RUnit                "RUnit"                "0.4.32"
## rversions            "rversions"            "2.1.2"
## rvest                "rvest"                "1.0.3"
## RWeka                "RWeka"                "0.4-44"
## RWekajars            "RWekajars"            "3.9.3-2"
## S4Vectors            "S4Vectors"            "0.36.1"
## sass                 "sass"                 "0.4.4"
## scales               "scales"               "1.2.1"
## scatterpie           "scatterpie"           "0.1.8"
## scatterplot3d        "scatterplot3d"        "0.3-42"
## scrime               "scrime"               "1.3.5"
## selectr              "selectr"              "0.4-2"
## sessioninfo          "sessioninfo"          "1.2.2"
## sets                 "sets"                 "1.0-21"
## shadowtext           "shadowtext"           "0.1.2"
## shape                "shape"                "1.4.6"
## shiny                "shiny"                "1.7.4"
## shinydashboard       "shinydashboard"       "0.7.2"
## shinyjs              "shinyjs"              "2.1.0"
## siggenes             "siggenes"             "1.72.0"
## signatureSearch      "signatureSearch"      "1.11.1"
## signatureSearchData  "signatureSearchData"  "1.12.0"
## SingleCellExperiment "SingleCellExperiment" "1.20.0"
## skimr                "skimr"                "2.1.5"
## slam                 "slam"                 "0.1-50"
## slider               "slider"               "0.3.0"
## sm                   "sm"                   "2.2-5.7.1"
## snow                 "snow"                 "0.4-4"
## SnowballC            "SnowballC"            "0.7.0"
## softImpute           "softImpute"           "1.4-1"
```

```
## sourcetools            "sourcetools"           "0.1.7"
## SparseM                "SparseM"               "1.81"
## sparseMatrixStats      "sparseMatrixStats"     "1.10.0"
## sqldf                  "sqldf"                 "0.4-11"
## SQUAREM                "SQUAREM"               "2021.1"
## statmod                "statmod"               "1.4.37"
## STRINGdb               "STRINGdb"              "2.10.0"
## stringi                "stringi"               "1.7.8"
## stringr                "stringr"               "1.5.0"
## styler                 "styler"                "1.8.1"
## SummarizedExperiment   "SummarizedExperiment"  "1.28.0"
## sys                    "sys"                   "3.4.1"
## systemfonts            "systemfonts"           "1.0.4"
## TeachingDemos          "TeachingDemos"         "2.12"
## testthat               "testthat"              "3.1.5"
## textshaping            "textshaping"           "0.3.6"
## TFEA.ChIP              "TFEA.ChIP"             "1.18.0"
## tibble                 "tibble"                "3.1.8"
## tidygraph              "tidygraph"             "1.2.2"
## tidymodels             "tidymodels"            "1.0.0"
## tidyr                  "tidyr"                 "1.2.1"
## tidyselect             "tidyselect"            "1.2.0"
## tidytree               "tidytree"              "0.4.2"
## tidyverse              "tidyverse"             "1.3.2"
## timechange             "timechange"            "0.1.1"
## timeDate               "timeDate"              "4021.107"
## tinytex                "tinytex"               "0.43"
## topGO                  "topGO"                 "2.50.0"
## treeio                 "treeio"                "1.22.0"
## truncnorm              "truncnorm"             "1.0-8"
## tune                   "tune"                  "1.0.1"
## tweenr                 "tweenr"                "2.0.2"
## tzdb                   "tzdb"                  "0.3.0"
## uchardet               "uchardet"              "1.1.1"
## urlchecker             "urlchecker"            "1.0.1"
## usethis                "usethis"               "2.1.6"
## utf8                   "utf8"                  "1.2.2"
## uuid                   "uuid"                  "1.1-0"
## vctrs                  "vctrs"                 "0.5.1"
## vegan                  "vegan"                 "2.6-4"
## VennDiagram            "VennDiagram"           "1.7.3"
## viridis                "viridis"               "0.6.2"
## viridisLite            "viridisLite"           "0.4.1"
## visNetwork             "visNetwork"            "2.1.2"
## vroom                  "vroom"                 "1.6.0"
## waldo                  "waldo"                 "0.4.0"
## warp                   "warp"                  "0.2.0"
## whisker                "whisker"               "0.4"
## withr                  "withr"                 "2.5.0"
## workflows              "workflows"             "1.1.2"
## workflowsets           "workflowsets"          "1.0.0"
## xfun                   "xfun"                  "0.36"
## xgboost                "xgboost"               "1.6.0.1"
## XML                    "XML"                   "3.99-0.13"
## xml2                   "xml2"                  "1.3.3"
```

```
## xopen              "xopen"              "1.0.0"
## xtable             "xtable"             "1.8-4"
## XVector            "XVector"            "0.38.0"
## yaml               "yaml"               "2.3.6"
## yardstick          "yardstick"          "1.1.0"
## yarn               "yarn"               "1.24.0"
## yulab.utils        "yulab.utils"        "0.0.6"
## zip                "zip"                "2.2.2"
## zlibbioc           "zlibbioc"           "1.44.0"
## base               "base"               "4.2.2"
## boot               "boot"               "1.3-28"
## class              "class"              "7.3-20"
## cluster            "cluster"            "2.1.4"
## codetools          "codetools"          "0.2-18"
## compiler           "compiler"           "4.2.2"
## datasets           "datasets"           "4.2.2"
## foreign            "foreign"            "0.8-83"
## graphics           "graphics"           "4.2.2"
## grDevices          "grDevices"          "4.2.2"
## grid               "grid"               "4.2.2"
## KernSmooth         "KernSmooth"         "2.23-20"
## lattice            "lattice"            "0.20-45"
## MASS               "MASS"               "7.3-58.1"
## Matrix             "Matrix"             "1.5-1"
## methods            "methods"            "4.2.2"
## mgcv               "mgcv"               "1.8-41"
## nlme               "nlme"               "3.1-160"
## nnet               "nnet"               "7.3-18"
## parallel           "parallel"           "4.2.2"
## rpart              "rpart"              "4.1.19"
## spatial            "spatial"            "7.3-15"
## splines            "splines"            "4.2.2"
## stats              "stats"              "4.2.2"
## stats4             "stats4"             "4.2.2"
## survival           "survival"           "3.4-0"
## tcltk              "tcltk"              "4.2.2"
## tools              "tools"              "4.2.2"
## utils              "utils"              "4.2.2"
```

```
R version 4.0.5 (2021-03-31)
Platform: x86_64-conda-linux-gnu (64-bit)
Running under: Red Hat Enterprise Linux

Matrix products: default
BLAS/LAPACK: /data/user/jfisher7/.conda/envs/SR_TAU_CELL/lib/
libopenblasp-r0.3.18.so

locale:
[1] C

attached base packages:
[1] stats     graphics  grDevices utils     datasets  methods   base

loaded via a namespace (and not attached):
[1] compiler_4.0.5
[1] "Listing packages"
                        Package                 Version
AnnotationDbi           "AnnotationDbi"         "1.52.0"
AnnotationHub           "AnnotationHub"         "2.22.1"
BH                      "BH"                    "1.78.0-0"
Biobase                 "Biobase"               "2.50.0"
BiocFileCache           "BiocFileCache"         "1.14.0"
BiocGenerics            "BiocGenerics"          "0.36.1"
BiocManager             "BiocManager"           "1.30.16"
BiocParallel            "BiocParallel"          "1.24.1"
BiocVersion             "BiocVersion"           "3.12.0"
DBI                     "DBI"                   "1.1.2"
DO.db                   "DO.db"                 "2.9"
DOSE                    "DOSE"                  "3.16.0"
DT                      "DT"                    "0.20"
DelayedArray            "DelayedArray"          "0.16.3"
ExperimentHub           "ExperimentHub"         "1.16.1"
GO.db                   "GO.db"                 "3.12.1"
GOSemSim                "GOSemSim"              "2.16.1"
GSEABase                "GSEABase"              "1.52.1"
GenomeInfoDb            "GenomeInfoDb"          "1.26.7"
GenomeInfoDbData        "GenomeInfoDbData"      "1.2.4"
GenomicRanges           "GenomicRanges"         "1.42.0"
HDF5Array               "HDF5Array"             "1.18.1"
IRanges                 "IRanges"               "2.24.1"
MASS                    "MASS"                  "7.3-55"
Matrix                  "Matrix"                "1.4-0"
MatrixGenerics          "MatrixGenerics"        "1.2.1"
R.methodsS3             "R.methodsS3"           "1.8.1"
R.oo                    "R.oo"                  "1.24.0"
R.utils                 "R.utils"               "2.11.0"
R6                      "R6"                    "2.5.1"
RColorBrewer            "RColorBrewer"          "1.1-2"
RCurl                   "RCurl"                 "1.98-1.5"
```

```
RSQLite                 "RSQLite"                   "2.2.9"
Rcpp                    "Rcpp"                      "1.0.8"
RcppArmadillo           "RcppArmadillo"             "0.10.8.1.0"
RcppEigen               "RcppEigen"                 "0.3.3.9.1"
Rhdf5lib                "Rhdf5lib"                  "1.12.1"
S4Vectors               "S4Vectors"                 "0.28.1"
SummarizedExperiment    "SummarizedExperiment"      "1.20.0"
XML                     "XML"                       "3.99-0.8"
XVector                 "XVector"                   "0.30.0"
affy                    "affy"                      "1.68.0"
affyio                  "affyio"                    "1.60.0"
annotate                "annotate"                  "1.68.0"
askpass                 "askpass"                   "1.1"
assertthat              "assertthat"                "0.2.1"
backports               "backports"                 "1.4.1"
base                    "base"                      "4.0.5"
base64enc               "base64enc"                 "0.1-3"
bit                     "bit"                       "4.0.4"
bit64                   "bit64"                     "4.0.5"
bitops                  "bitops"                    "1.0-7"
blob                    "blob"                      "1.2.2"
brio                    "brio"                      "1.1.3"
broom                   "broom"                     "0.7.12"
bslib                   "bslib"                     "0.3.1"
cachem                  "cachem"                    "1.0.6"
callr                   "callr"                     "3.7.0"
cellranger              "cellranger"                "1.1.0"
cli                     "cli"                       "3.1.1"
clipr                   "clipr"                     "0.7.1"
clusterProfiler         "clusterProfiler"           "3.18.1"
colorspace              "colorspace"                "2.0-2"
commonmark              "commonmark"                "1.7"
compiler                "compiler"                  "4.0.5"
cowplot                 "cowplot"                   "1.1.1"
cpp11                   "cpp11"                     "0.4.2"
crayon                  "crayon"                    "1.4.2"
crosstalk               "crosstalk"                 "1.2.0"
curl                    "curl"                      "4.3.2"
data.table              "data.table"                "1.14.2"
datasets                "datasets"                  "4.0.5"
dbplyr                  "dbplyr"                    "2.1.1"
desc                    "desc"                      "1.4.0"
diffobj                 "diffobj"                   "0.3.5"
digest                  "digest"                    "0.6.29"
downloader              "downloader"                "0.4"
dplyr                   "dplyr"                     "1.0.7"
dtplyr                  "dtplyr"                    "1.2.1"
ellipsis                "ellipsis"                  "0.3.2"
enrichplot              "enrichplot"                "1.10.2"
evaluate                "evaluate"                  "0.14"
```

```
fansi                 "fansi"                 "1.0.2"
farver                "farver"                "2.1.0"
fastmap               "fastmap"               "1.1.0"
fastmatch             "fastmatch"             "1.1-3"
fgsea                 "fgsea"                 "1.16.0"
fontawesome           "fontawesome"           "0.2.2"
forcats               "forcats"               "0.5.1"
formatR               "formatR"               "1.11"
fs                    "fs"                    "1.5.2"
futile.logger         "futile.logger"         "1.4.3"
futile.options        "futile.options"        "1.0.1"
gargle                "gargle"                "1.2.0"
generics              "generics"              "0.1.2"
ggforce               "ggforce"               "0.3.3"
ggfun                 "ggfun"                 "0.0.5"
ggplot2               "ggplot2"               "3.3.5"
ggraph                "ggraph"                "2.0.5"
ggrepel               "ggrepel"               "0.9.1"
glue                  "glue"                  "1.6.1"
googledrive           "googledrive"           "2.0.0"
googlesheets4         "googlesheets4"         "1.0.0"
grDevices             "grDevices"             "4.0.5"
graph                 "graph"                 "1.68.0"
graphics              "graphics"              "4.0.5"
graphlayouts          "graphlayouts"          "0.8.0"
grid                  "grid"                  "4.0.5"
gridExtra             "gridExtra"             "2.3"
gtable                "gtable"                "0.3.0"
haven                 "haven"                 "2.4.3"
highr                 "highr"                 "0.9"
hms                   "hms"                   "1.1.1"
htmltools             "htmltools"             "0.5.2"
htmlwidgets           "htmlwidgets"           "1.5.4"
httpuv                "httpuv"                "1.6.5"
httr                  "httr"                  "1.4.2"
ids                   "ids"                   "1.0.1"
igraph                "igraph"                "1.2.11"
interactiveDisplayBase "interactiveDisplayBase" "1.28.0"
isoband               "isoband"               "0.2.5"
jquerylib             "jquerylib"             "0.1.4"
jsonlite              "jsonlite"              "1.7.3"
knitr                 "knitr"                 "1.37"
labeling              "labeling"              "0.4.2"
lambda.r              "lambda.r"              "1.2.4"
later                 "later"                 "1.3.0"
lattice               "lattice"               "0.20-45"
lazyeval              "lazyeval"              "0.2.2"
lifecycle             "lifecycle"             "1.0.1"
limma                 "limma"                 "3.46.0"
lubridate             "lubridate"             "1.8.0"
```

```
magrittr               "magrittr"                "2.0.2"
matrixStats            "matrixStats"             "0.61.0"
memoise                "memoise"                 "2.0.1"
methods                "methods"                 "4.0.5"
mgcv                   "mgcv"                    "1.8-38"
mime                   "mime"                    "0.12"
modelr                 "modelr"                  "0.1.8"
munsell                "munsell"                 "0.5.0"
nlme                   "nlme"                    "3.1-155"
openssl                "openssl"                 "1.4.6"
parallel               "parallel"                "4.0.5"
pillar                 "pillar"                  "1.7.0"
pkgconfig              "pkgconfig"               "2.0.3"
pkgload                "pkgload"                 "1.2.4"
plogr                  "plogr"                   "0.2.0"
plyr                   "plyr"                    "1.8.6"
polyclip               "polyclip"                "1.10-0"
praise                 "praise"                  "1.0.0"
preprocessCore         "preprocessCore"          "1.52.1"
prettyunits            "prettyunits"             "1.1.1"
processx               "processx"                "3.5.2"
progress               "progress"                "1.2.2"
promises               "promises"                "1.2.0.1"
ps                     "ps"                      "1.6.0"
purrr                  "purrr"                   "0.3.4"
qvalue                 "qvalue"                  "2.22.0"
rappdirs               "rappdirs"                "0.3.3"
reactome.db            "reactome.db"             "1.74.0"
readr                  "readr"                   "2.1.2"
readxl                 "readxl"                  "1.3.1"
rematch                "rematch"                 "1.0.1"
rematch2               "rematch2"                "2.1.2"
reprex                 "reprex"                  "2.0.1"
reshape2               "reshape2"                "1.4.4"
rhdf5                  "rhdf5"                   "2.34.0"
rhdf5filters           "rhdf5filters"            "1.2.1"
rlang                  "rlang"                   "1.0.0"
rmarkdown              "rmarkdown"               "2.11"
rprojroot              "rprojroot"               "2.0.2"
rstudioapi             "rstudioapi"              "0.13"
rvcheck                "rvcheck"                 "0.2.1"
rvest                  "rvest"                   "1.0.2"
sass                   "sass"                    "0.4.0"
scales                 "scales"                  "1.1.1"
scatterpie             "scatterpie"              "0.1.7"
selectr                "selectr"                 "0.4-2"
shadowtext             "shadowtext"              "0.1.1"
shiny                  "shiny"                   "1.7.1"
signatureSearch        "signatureSearch"         "1.4.6"
signatureSearchData    "signatureSearchData"     "1.4.0"
```

```
snow             "snow"           "0.4-4"
sourcetools      "sourcetools"    "0.1.7"
splines          "splines"        "4.0.5"
stats            "stats"          "4.0.5"
stats4           "stats4"         "4.0.5"
stringi          "stringi"        "1.7.6"
stringr          "stringr"        "1.4.0"
sys              "sys"            "3.4"
tcltk            "tcltk"          "4.0.5"
testthat         "testthat"       "3.1.2"
tibble           "tibble"         "3.1.6"
tidygraph        "tidygraph"      "1.2.0"
tidyr            "tidyr"          "1.2.0"
tidyselect       "tidyselect"     "1.1.1"
tidyverse        "tidyverse"      "1.3.1"
tinytex          "tinytex"        "0.36"
tools            "tools"          "4.0.5"
tweenr           "tweenr"         "1.0.2"
tzdb             "tzdb"           "0.2.0"
utf8             "utf8"           "1.2.2"
utils            "utils"          "4.0.5"
uuid             "uuid"           "1.0-3"
vctrs            "vctrs"          "0.3.8"
viridis          "viridis"        "0.6.2"
viridisLite      "viridisLite"    "0.4.0"
visNetwork       "visNetwork"     "2.1.0"
vroom            "vroom"          "1.5.7"
waldo            "waldo"          "0.3.1"
withr            "withr"          "2.4.3"
xfun             "xfun"           "0.29"
xml2             "xml2"           "1.3.3"
xtable           "xtable"         "1.8-4"
yaml             "yaml"           "2.2.2"
yulab.utils      "yulab.utils"    "0.0.4"
zlibbioc         "zlibbioc"       "1.36.0"
```