ExpVar: Gene Expression and Genetic Variants

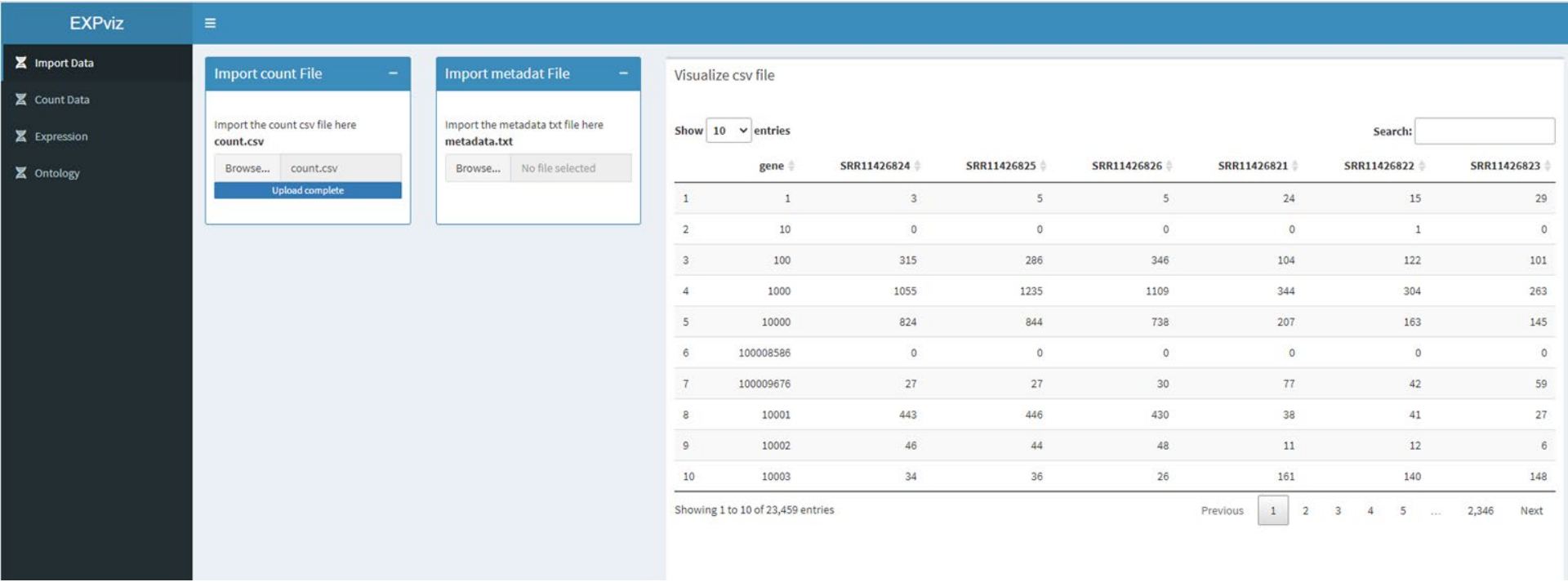
Data Analysis And Visualization R package

EXPviz, SNPviz and CNVviz apps

EXPviz App

For genetic expression data visualization

1. EXPviz

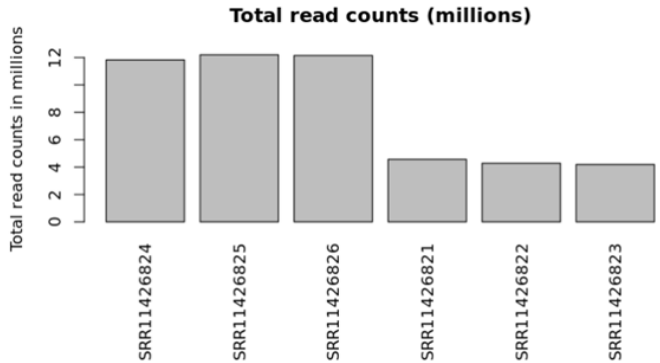

EXPviz
Import Data
Count Data
Expression
Ontology
Import count File
Import the count csv file here
count.csv
Browse...
count.csv
Upload complete
Import metadat File
Import the metadata txt file here
metadata.txt
Browse...
No file selected
Visualize csv file
Show 10 entries
Search:
gene
SRR11426824
SRR11426825
SRR11426826
SRR11426821
SRR11426822
SRR11426823
1 1 3 5 5 24 15 29
2 10 0 0 0 0 1 0
3 100 315 286 346 104 122 101
4 1000 1055 1235 1109 344 304 263
5 10000 824 844 738 207 163 145
6 100008586 0 0 0 0 0 0
7 100009676 27 27 30 77 42 59
8 10001 443 446 430 38 41 27
9 10002 46 44 48 11 12 6
10 10003 34 36 26 161 140 148
Showing 1 to 10 of 23,459 entries
Previous
1
2
3
4
5
...
2,346
Next

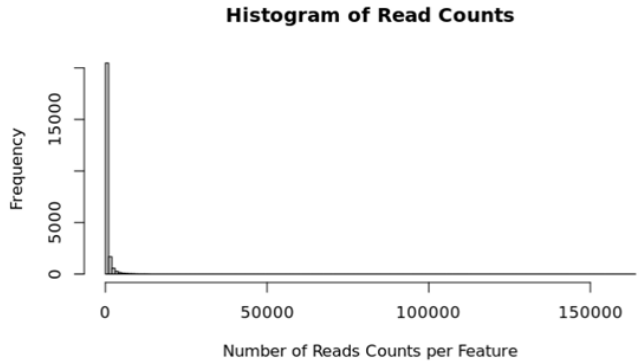
Expression

Ontology

Read_Count1

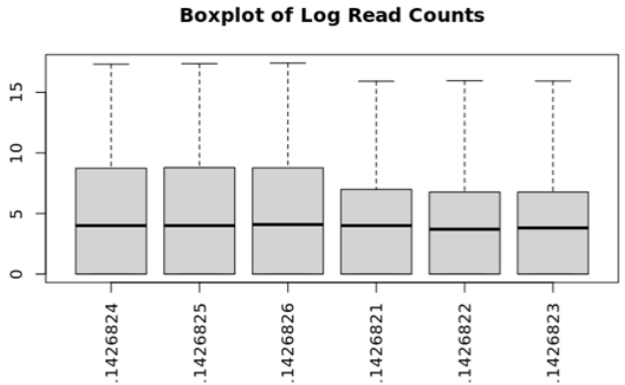
Before log2 transformation





Read_Count2 density plot scatter plot

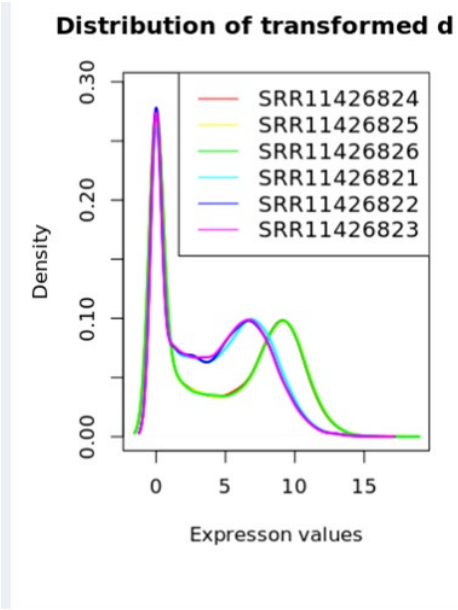
After log2 transformation



Read_Count1

Read Count before log2 transformation

Before log2 transformation



Read_Count2 | density plot | scatter plot

Read Count after log2 transformation

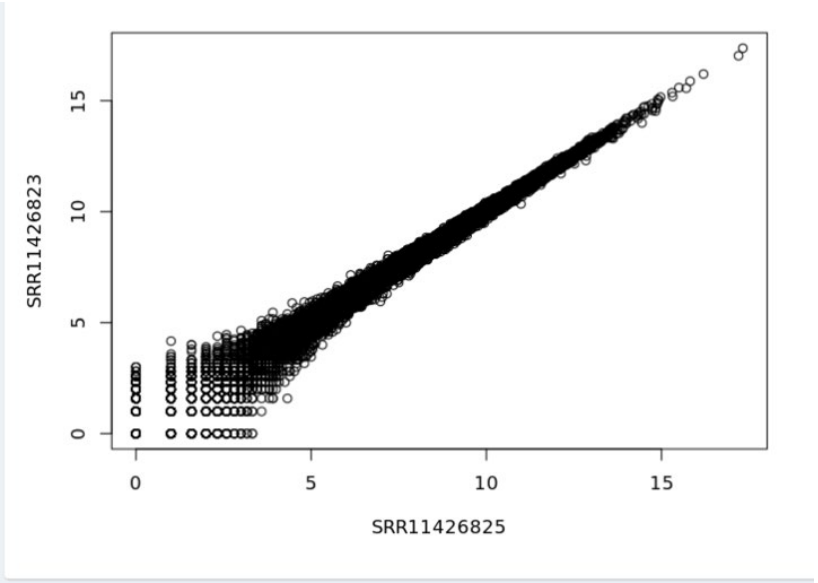
scatter plot

sample ID

eg: SRR11426825

sample ID

eg: SRR11426823



- Import Data
- Count Data
- Expression
- Ontology

expression

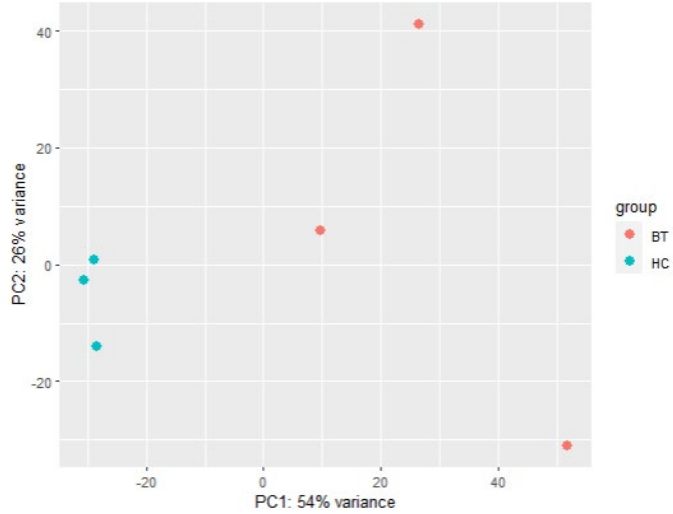
P value

0.05

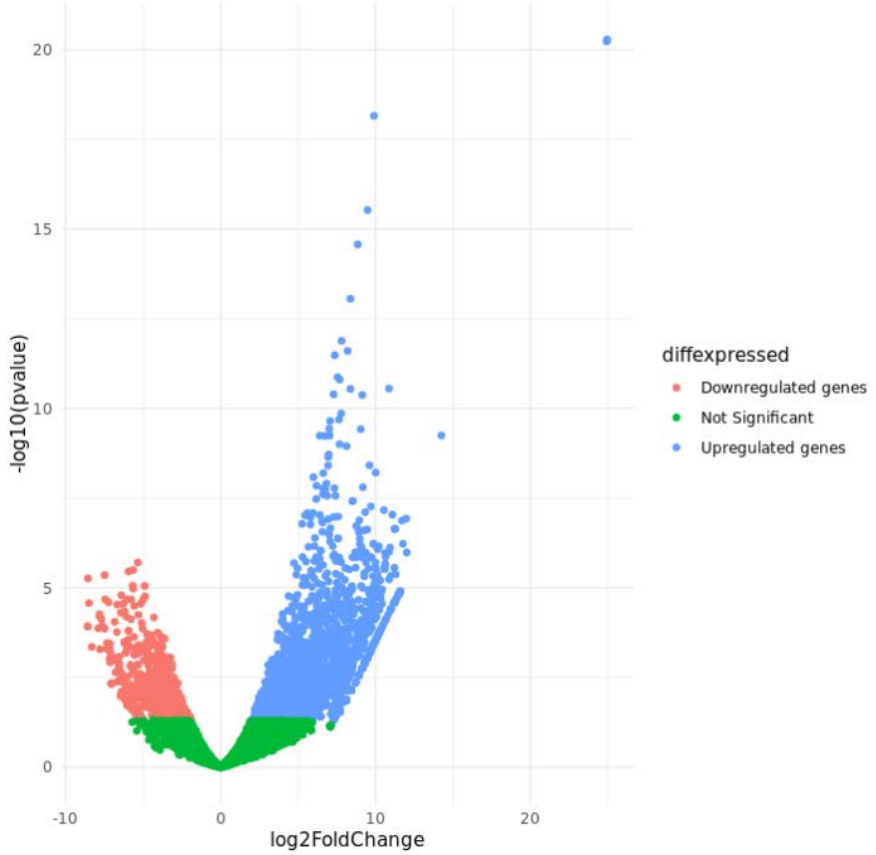
LogFC

2

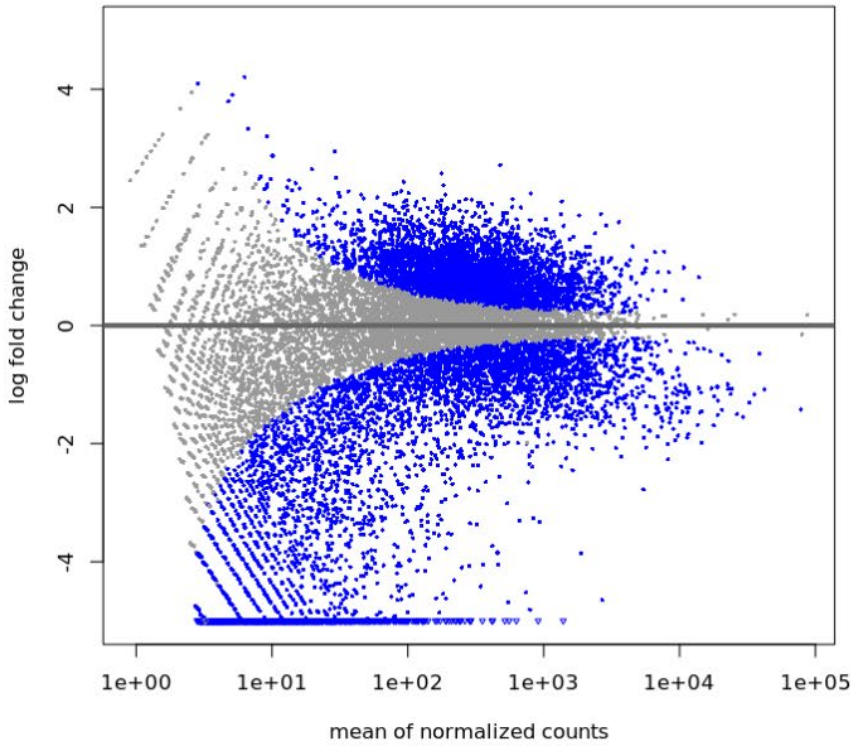
PCA PCA plot



volcano Volcano plot

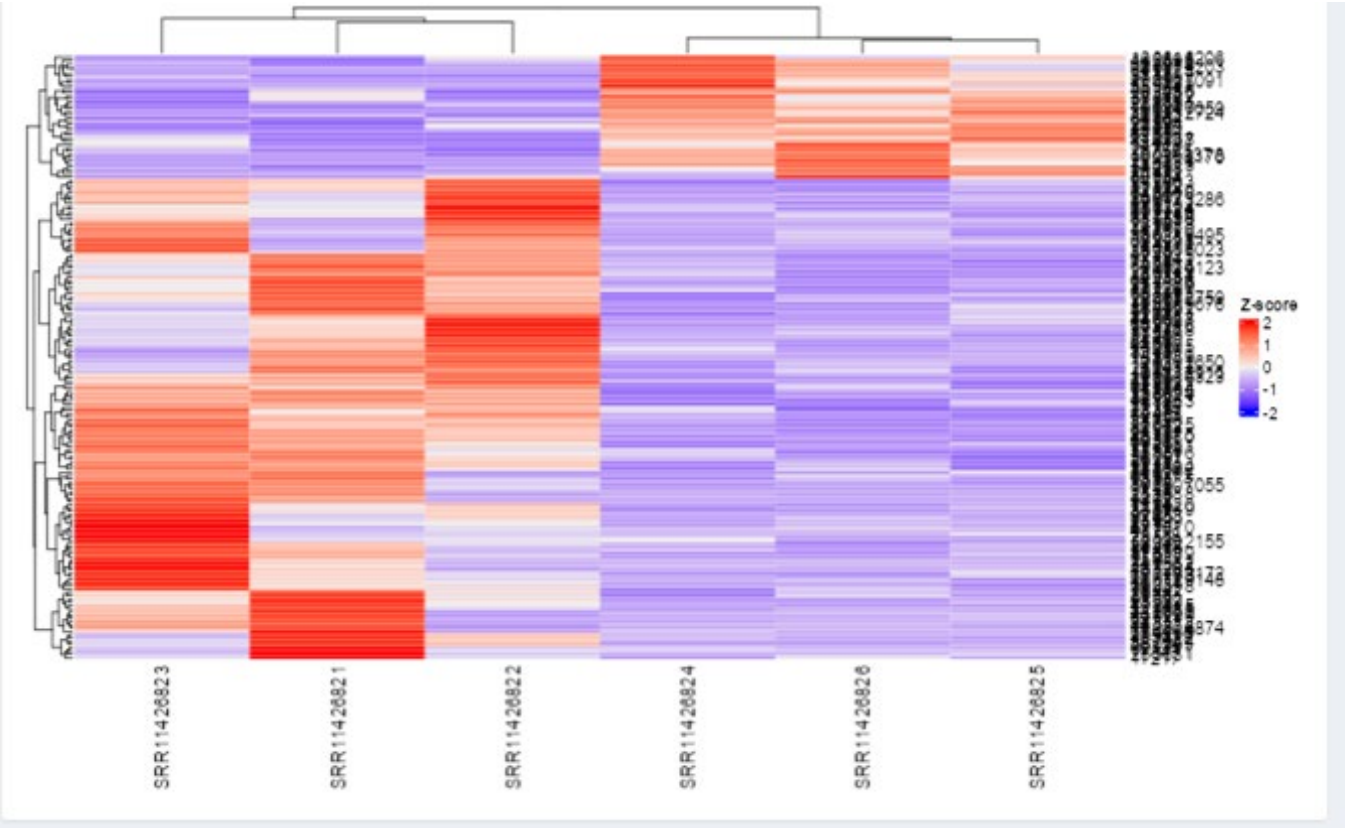


MA MA plot



Heatmap | HeatmapDEGs

Heatmap



EXPviz

Import Data

Count Data

Expression

Ontology

Filters

Genes to analyze Note: DEGs= Differentially expressed genes

Choose gene group

all DEGs

all DEGs

Upregulated genes

Downregulated genes

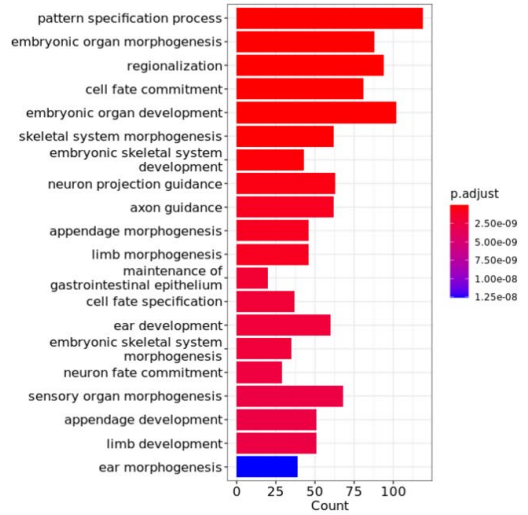
Top Ontologies

20

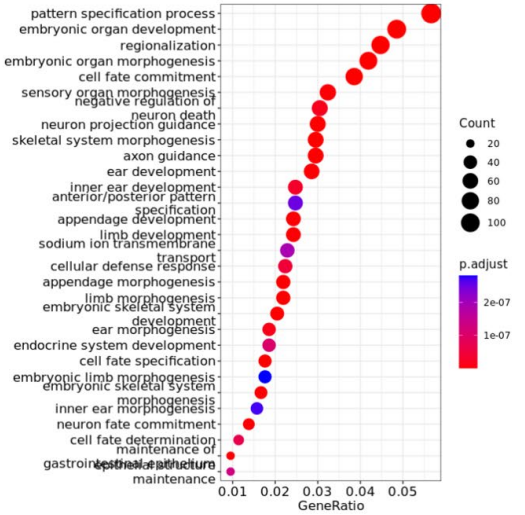
Biological Processes | Molecular Functions | Cellular Compenant

Ontology

Barplot1 BP Barplot

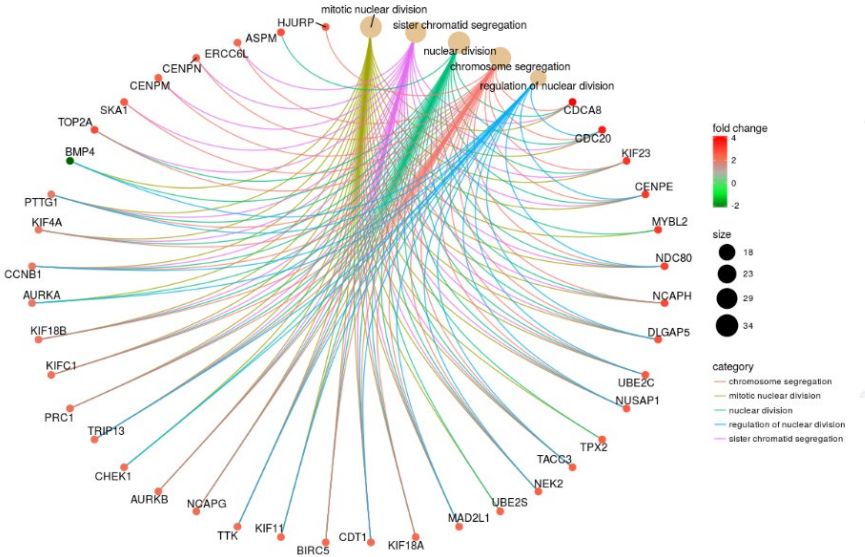


Dotplot1 BP dotplot

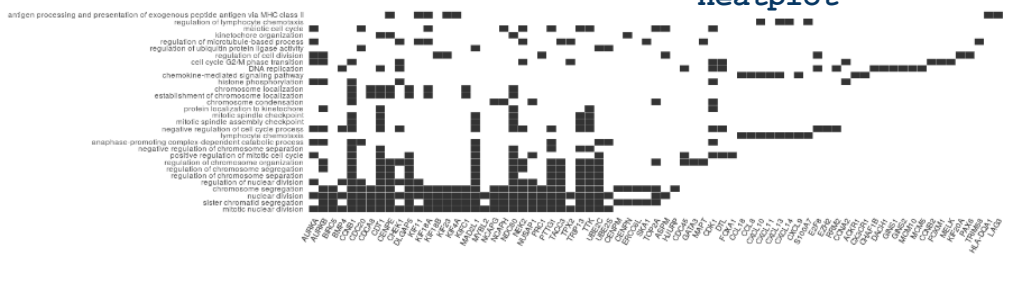


Gene-Concept Network

`cnetplot`

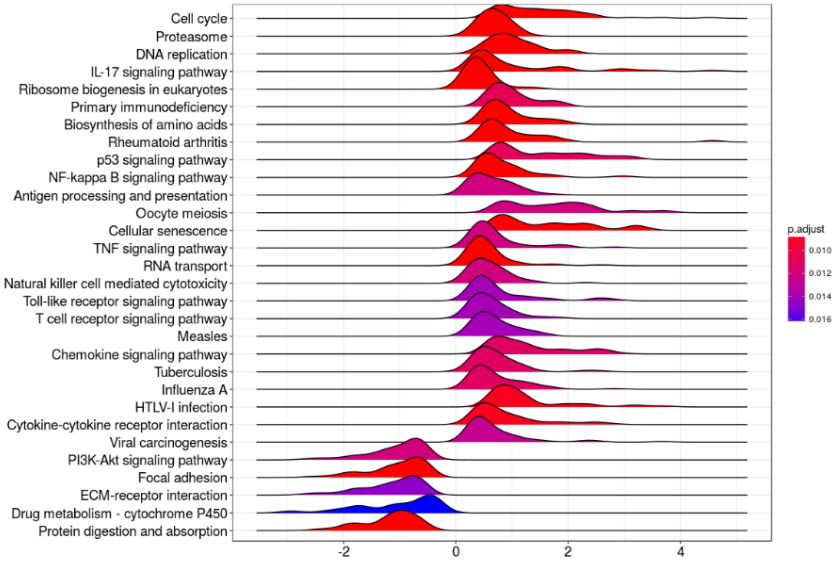


`heatplot`

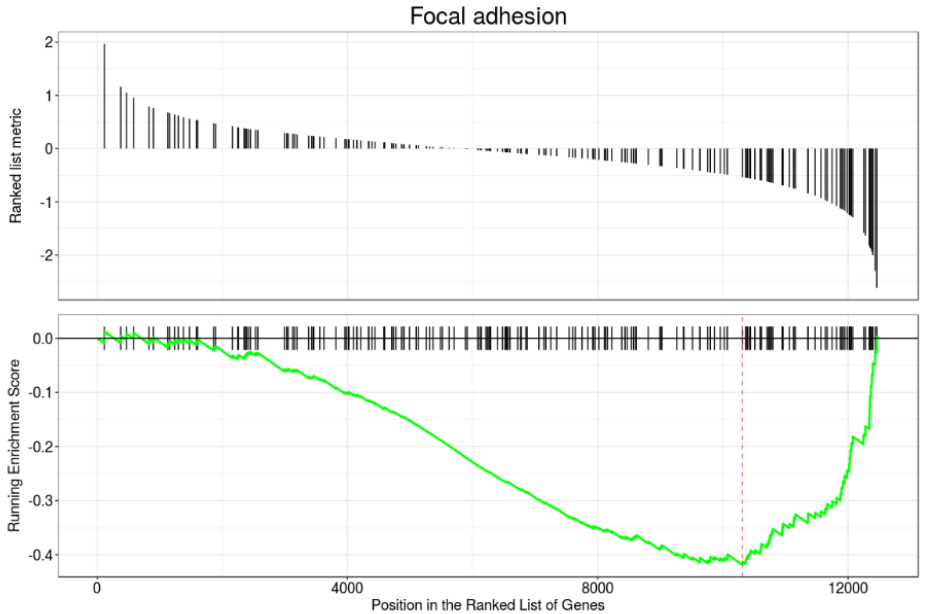


expression distribution of GSEA result

`ridgeplot`



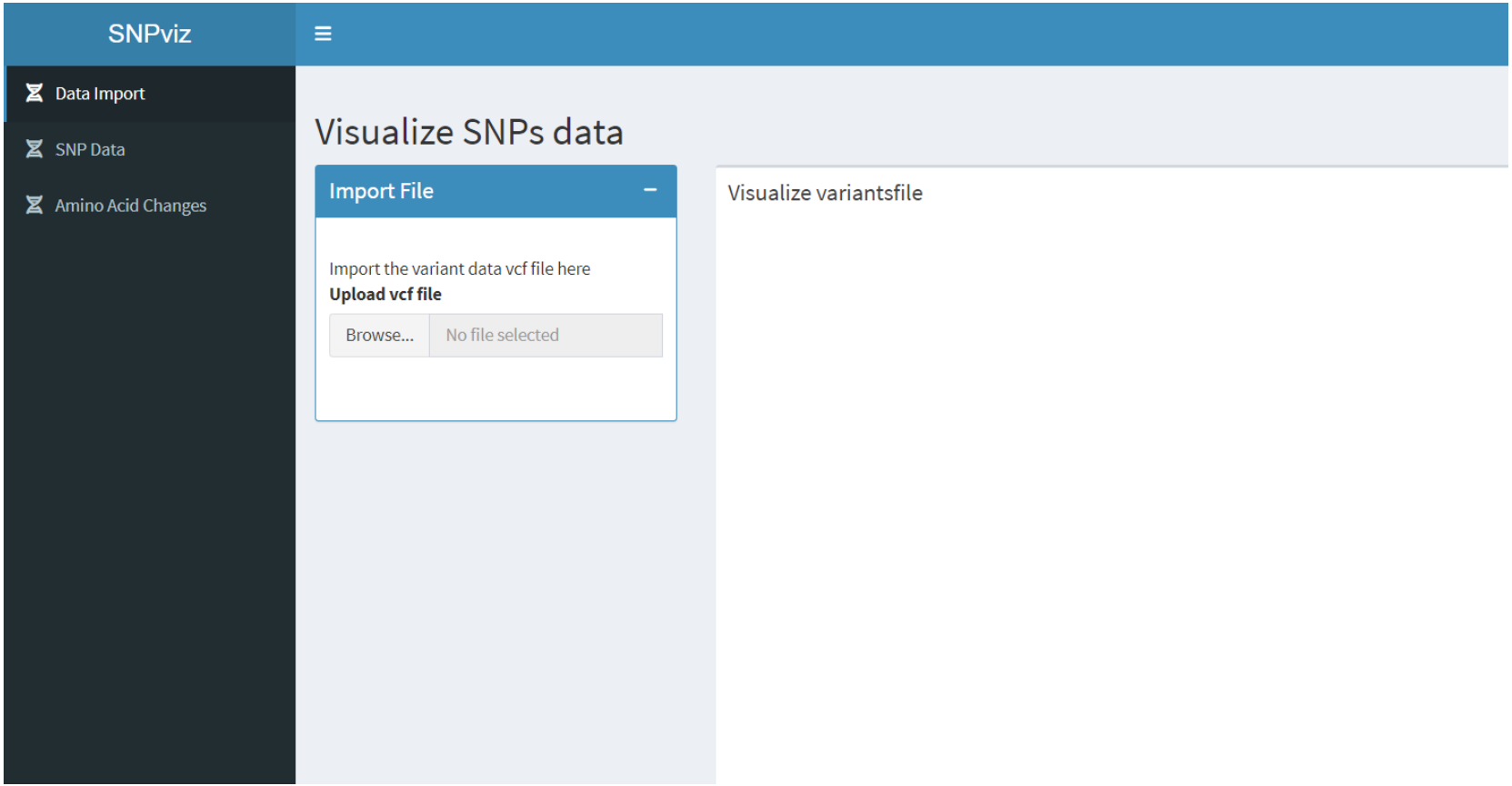
`gseaplot`



SNPviz App

For SNP data visualization

2. SNPviz


SNPviz
Data Import
SNP Data
Amino Acid Changes
Visualize SNPs data
Import File
Import the variant data vcf file here
Upload vcf file
Browse...
No file selected
Visualize variantsfile

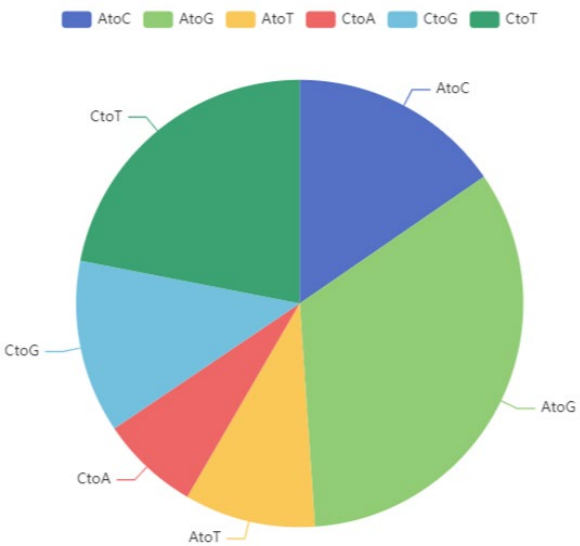
SNPviz

Data Import

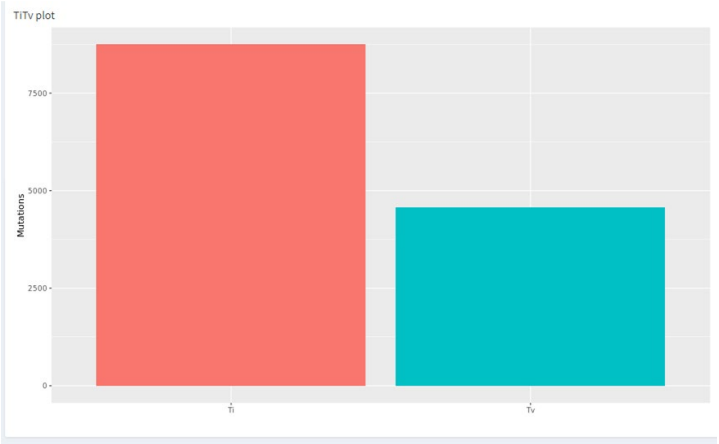
SNP Data

Amino Acid Changes

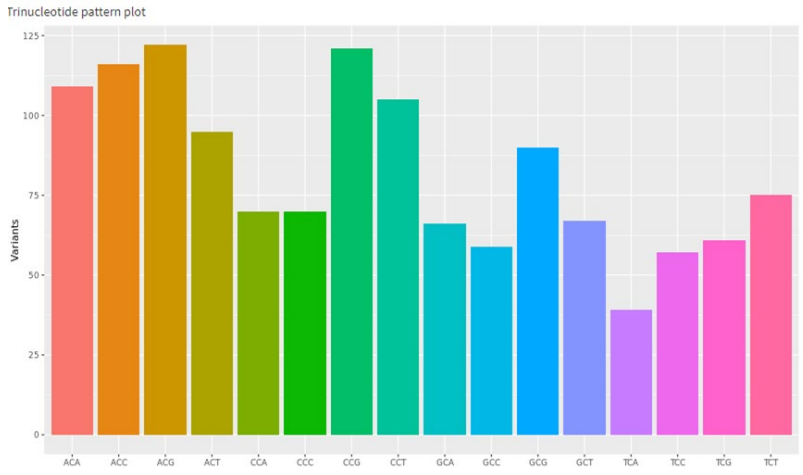
SNPs types Pie plot pie of SNPs types



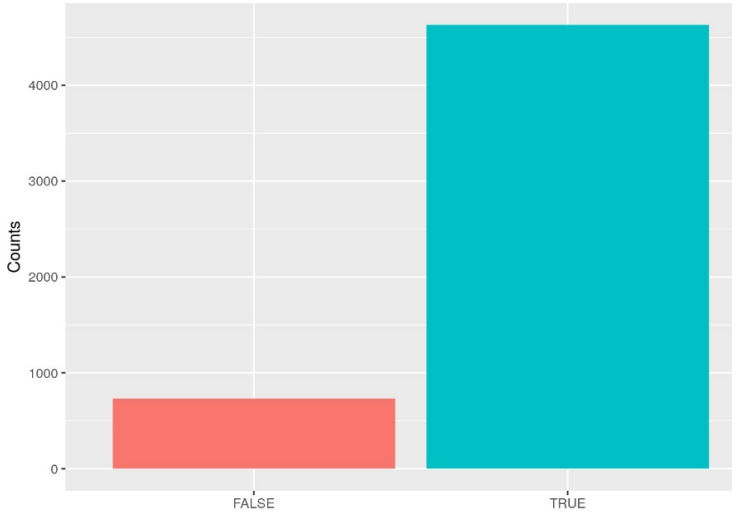
TiTv distribution TiTv plot



Trinucleotide pattern plot Trinucleotide pattern plot



True and False variants count



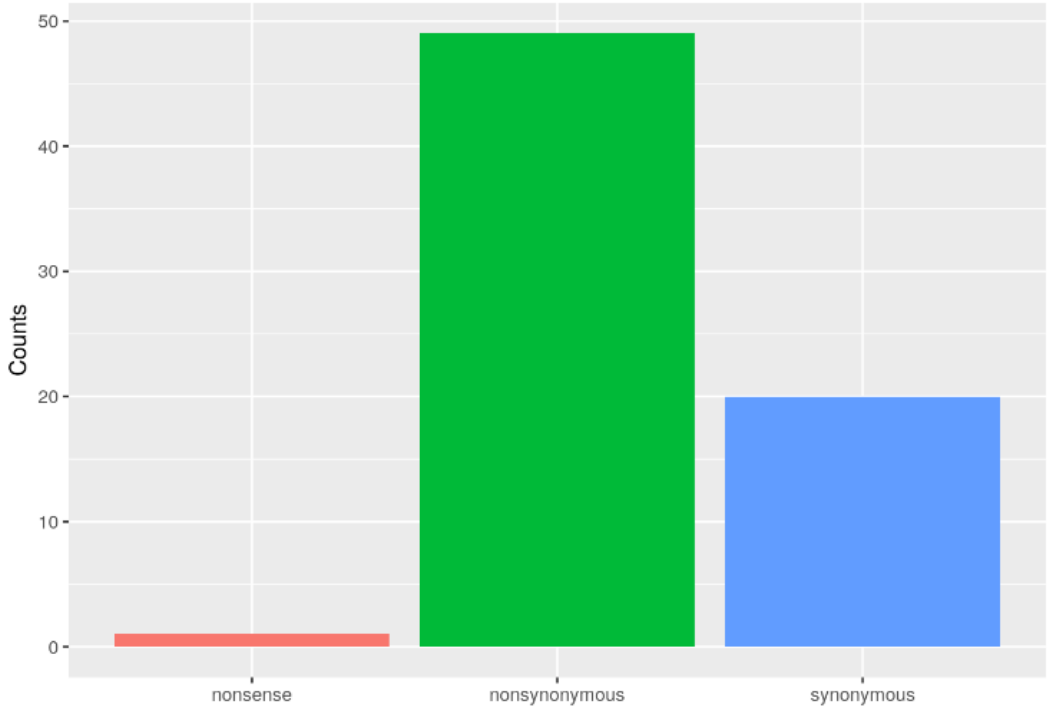
SNPviz

Data Import

SNP Data

Amino Acid Changes

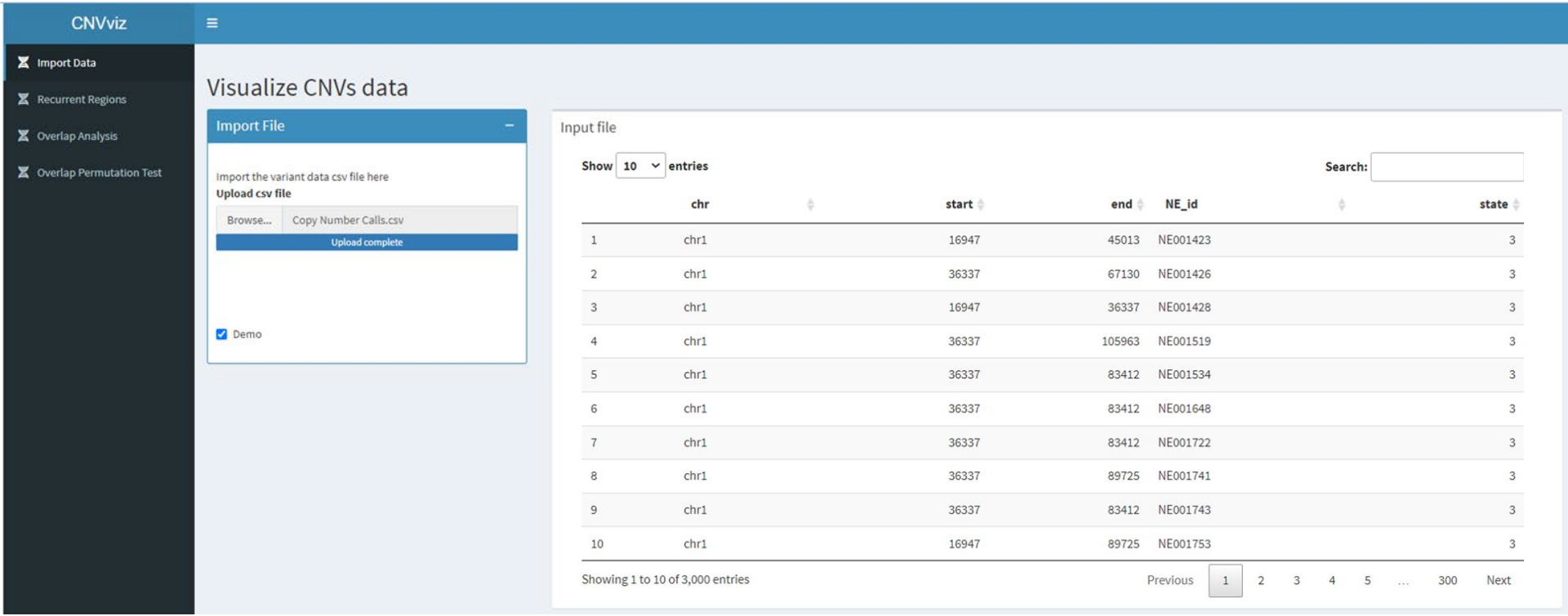
The Amino Acid Changes



CNVviz App

For CNV data visualization

3. CNVviz


CNVviz
Import Data
Recurrent Regions
Overlap Analysis
Overlap Permutation Test
Visualize CNVs data
Import File
Import the variant data csv file here
Upload csv file
Browse...
Copy Number Calls.csv
Upload complete
Demo
Input file
Show 10 entries
Search:
chr start end NE_id state
1 chr1 16947 45013 NE001423 3
2 chr1 36337 67130 NE001426 3
3 chr1 16947 36337 NE001428 3
4 chr1 36337 105963 NE001519 3
5 chr1 36337 83412 NE001534 3
6 chr1 36337 83412 NE001648 3
7 chr1 36337 83412 NE001722 3
8 chr1 36337 89725 NE001741 3
9 chr1 36337 83412 NE001743 3
10 chr1 16947 89725 NE001753 3
Showing 1 to 10 of 3,000 entries
Previous 1 2 3 4 5 … 300 Next

CNVviz

- Import Data
- Recurrent Regions
- Overlap Analysis
- Overlap Permutation Test

Identifying recurrent regions

About

The The GISTIC method is used to identify those regions of the genome that are aberrant more often than would be expected by chance, with greater weight given to high amplitude events (high-level copy-number gains or homozygous deletions) that are less likely to represent random aberrations (Beroukhim et al., 2007).

Please define the significance threshold to filter recurrent CNVs.

P value

0.05

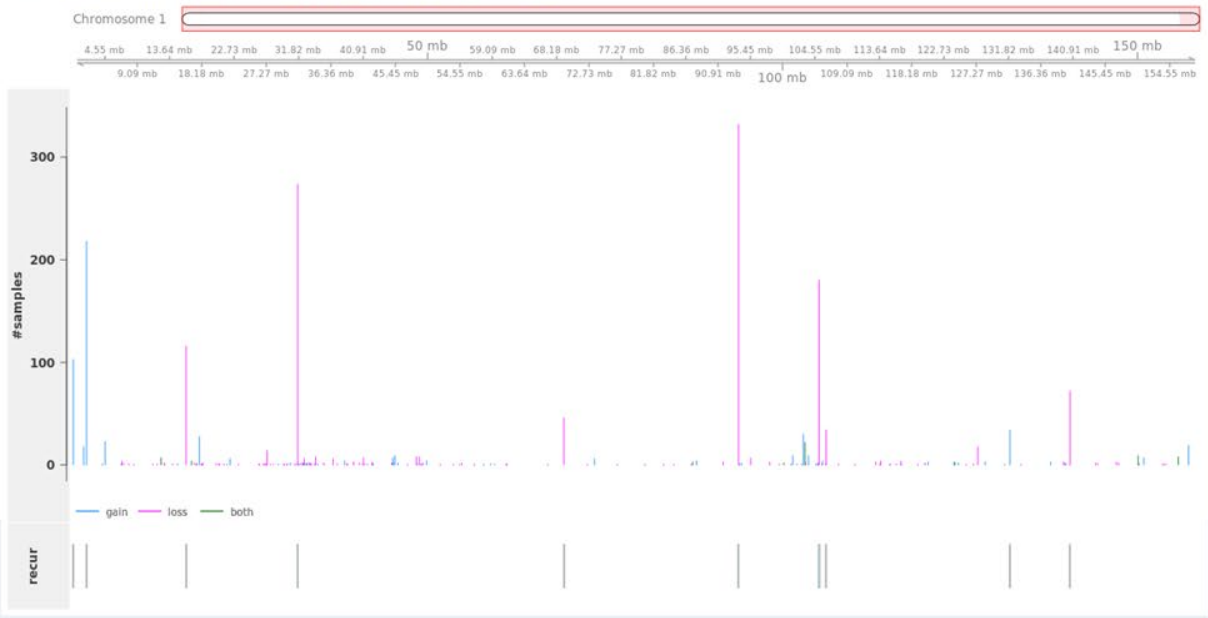
Please define the chromosome

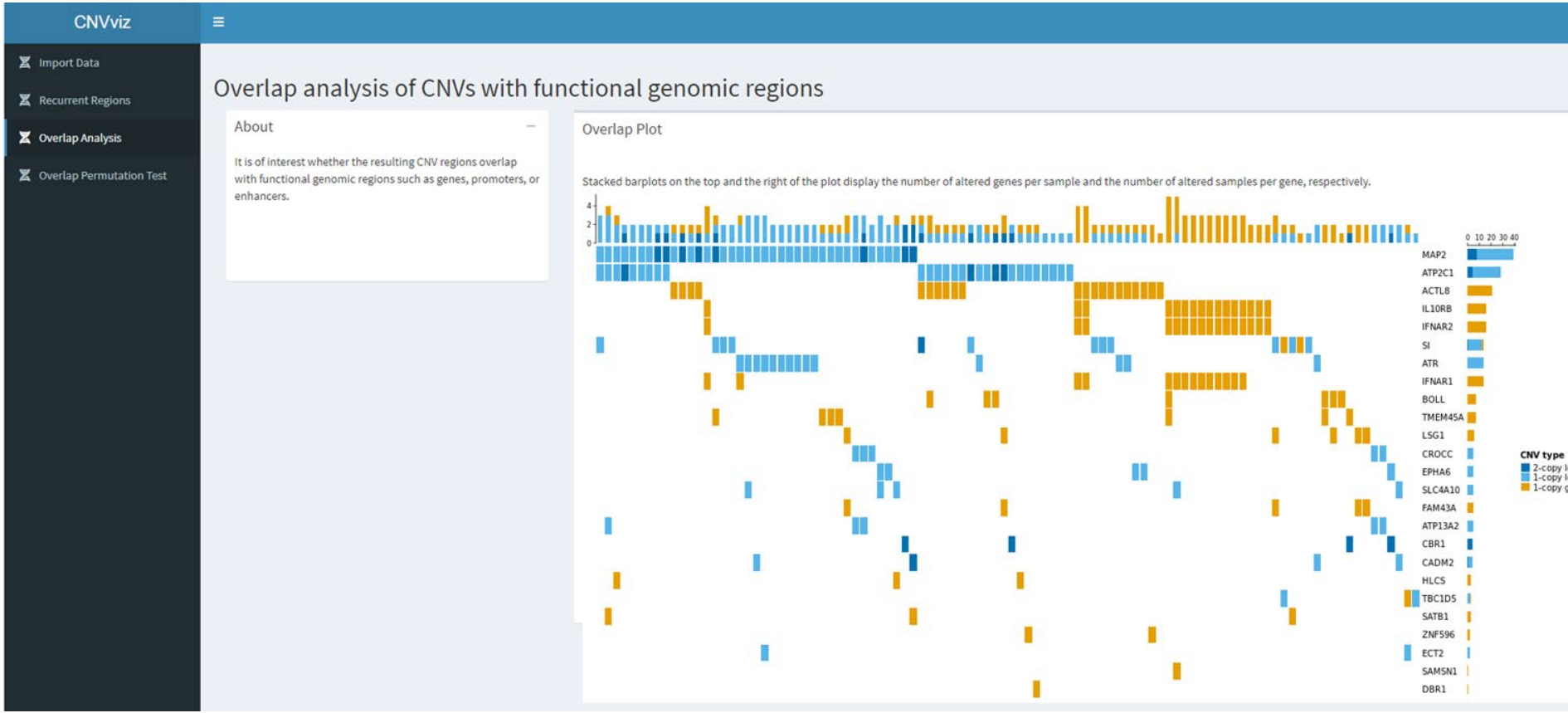
Chromosome

chr1

Recurrent

The plot summarize CNV regions, a valid UCSC genome assembly, and a chromosome of interest.





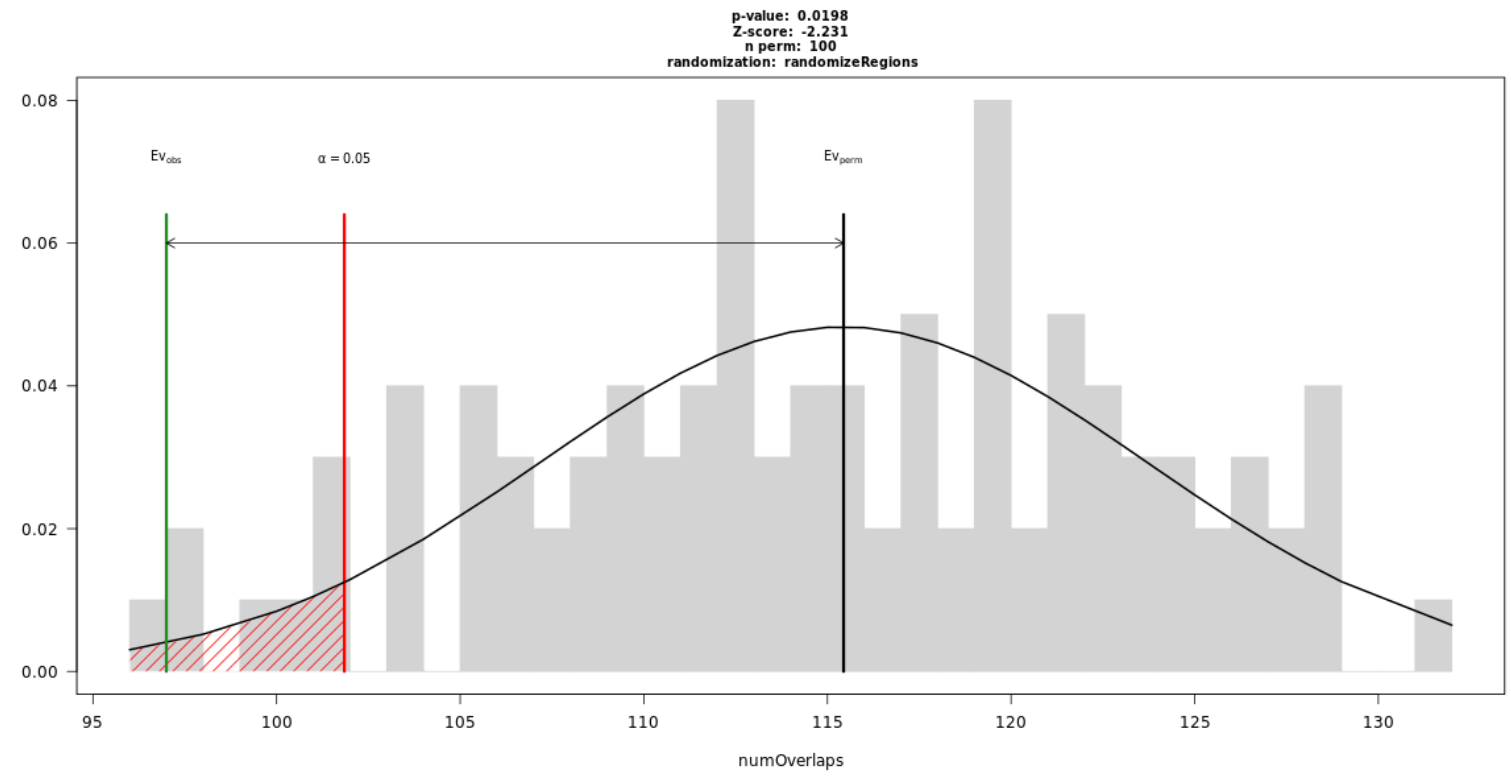
OncoPrint plot
= illustrate the original CNV calls on overlapping protein-coding genes

CNVviz

- Import Data
- Recurrent Regions
- Overlap Analysis
- Overlap Permutation Test

Overlap permutation test

Overlap Plot



Acknowledgements

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- The Office of Data Science Strategy (ODSS)
- and the National Center for Biotechnology Information (NCBI)

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