

# Package ‘GeneticMediation’

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**Type** Package

**Title** Genetic Causal Mediation

**Version** 1.1.0

**License** GPL-3

**URL** <https://tydarnell.github.io/GeneticMediation>,  
<https://github.com/tydarnell/GeneticMediation>

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**Description** Provides methods for conducting causal mediation analysis on data from the ROSMAP study and for cleaning, matching, and preparing the data for analysis.

**Encoding** UTF-8

**LazyData** true

**RoxygenNote** 7.1.0

**Imports** data.table, IRanges, mediation, readr, stats

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chr_numeric	<i>Chromosome Numeric</i>
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### Description

Convert chromosome names from character to numeric. Useful when sorting a dataframe by chromosome number.

### Usage

```
chr_numeric(Chr)
```

### Arguments

Chr                      a character column or vector of chromosome names

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clean_data	<i>Clean Data</i>
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### Description

Clean snp.info, peak.info data and save as data/chipseq.RData

### Usage

```
clean_data(snp.path, peak.path)
```

### Arguments

snp.path              path to SNP information dataframe  
peak.path              path to Peak annotation dataframe

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data_by_chr	<i>Data by Chromosome</i>
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**Description**

save snp.info, peak.info for each chromosome as "data/chipseq\_chr.RData"

**Usage**

```
data_by_chr(chrs, snps, peaks)
```

**Arguments**

chrs	Character vector of chromosomes names
snps	SNP information dataframe
peaks	Peak information dataframe

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data_prep_spc	<i>SNP-Peak-Clinical Data Prep Helper</i>
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**Description**

Helper function for SNP-Peak-Clinical mediation data. Combine projid, SNPs, PCs, membership, age, gender, peaks, and outcome data for a chromosome

**Usage**

```
data_prep_spc(chr)
```

**Arguments**

chr	chromosome name
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data_prep_spg	<i>SNP-Peak-Gene Data Prep Helper</i>
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**Description**

Helper function for SNP-Peak-Gene data prep. Combine projid, SNPs, PCs, membership, age, gender, peaks, gene and outcome data for a chromosome.

**Usage**

```
data_prep_spg(chr)
```

**Arguments**

chr	chromosome name
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GeneticMediation	<i>GeneticMediation: A package for conducting causal mediation analysis on ROSMAP data</i>
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**Description**

GeneticMediation provides methods for conducting causal mediation analysis on data from the ROSMAP study. It also provides methods for cleaning, matching, and preparing the data for analysis.

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last_to_first	<i>Last to First</i>
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**Description**

Make the last column the first column in a dataframe

**Usage**

```
last_to_first(df)
```

**Arguments**

df	dataframe
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lu	<i>Length Unique</i>
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**Description**

Get the length of unique values in a vector

**Usage**

```
lu(x)
```

**Arguments**

x	vector
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make_folder	<i>Make Folder</i>
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**Description**

Make a folder only if the folder does not already exist

**Usage**

```
make_folder(path)
```

**Arguments**

path	path for new folder
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match_all	<i>Match All Chromosomes</i>
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**Description**

Match SNPs and Peaks in all chromosomes and return dataframe of matches

**Usage**

```
match_all(snp.info, peak.info, chrs)
```

**Arguments**

snp.info	SNP information
peak.info	Peak information
chrs	character vector of chromosome names

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match_chr	<i>Match Chromosome</i>
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**Description**

Match Peaks and SNPs in a chromosome

**Usage**

```
match_chr(snp.info, peak.info)
```

**Arguments**

snp.info	SNP information
peak.info	Peak information

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med.res_spc	<i>SNP-Peak-Clinical Mediation Data Prep</i>
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**Description**

Prepare a chromosome of SNP-Peak-Clinical data for mediation analysis and save as "data/med.res/res\_chr.RData"

**Usage**

```
med.res_spc(chr, all_matches)
```

**Arguments**

chr	chromosome name
all_matches	dataframe of SNP-Peak matches for all chromosomes

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med.res_spg	<i>SNP-Peak-Gene Mediation Data Prep</i>
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**Description**

Prepare a chromosome SNP-Peak-Gene data for mediation analysis data and save as "data/gene.res/res\_chr.RData"

**Usage**

```
med.res_spg(chr, med.data, matches)
```

**Arguments**

chr	chromosome name
med.data	gene mediation data
matches	SNP-Peak-Gene matches dataframe

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med_all_spc	<i>SNP-Peak-Clinical Mediation Table</i>
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**Description**

Create a table of SNP-Peak-Clinical mediation results for all chromosomes

**Usage**

```
med_all_spc(chrs, covar, simulations)
```

**Arguments**

chrs	character vector of chromosome names
covar	covariates string, each covariate separated by +
simulations	number of simulations to run

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med_chr_spc	<i>SNP-Peak-Clinical Mediation Table Chromosome</i>
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**Description**

Create SNP-Peak-Clinical mediation table for SNP-Peak matches in a chromosome

**Usage**

```
med_chr_spc(matches, med.res.data, covar, simulations)
```

**Arguments**

matches	SNP-Peak matches dataframe for a chromosome
med.res.data	mediation data
covar	covariates string, separate covariates with +
simulations	number of simulations to run

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med_chr_spg	<i>SNP-Peak-Gene Mediation Table Chromosome</i>
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**Description**

Create a SNP-Peak-Gene mediation table for a chromosome

**Usage**

```
med_chr_spg(chr, gene_matches, simulations)
```

**Arguments**

chr	chromosome name
gene_matches	list of peak-SNP matches for each gene
simulations	number of simulations to run

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med_table_spc	<i>SNP-Peak-Clinical Mediation Table</i>
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**Description**

Create SNP-Peak-Clinical mediation table for a SNP-Peak match

**Usage**

```
med_table_spc(med.res.data, match_row, covar, simulations)
```

**Arguments**

med.res.data	mediation data
match_row	row in match dataframe, should have 2 columns
covar	covariates character variable, separate covariates with +
simulations	number of simulations to run

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med_table_spg	<i>SNP-Peak-Gene Mediation Table</i>
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**Description**

Create a mediation table for one SNP-Peak-Gene match

**Usage**

```
med_table_spg(med_dat, match_row, simulations)
```

**Arguments**

med_dat	gene mediation data
match_row	row in match dataframe: col1 SNP, col2 Peak, col3 Gene
simulations	number of simulations to run

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sum_zero	<i>Sum Zero</i>
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**Description**

Get names of columns that have a sum of zero

**Usage**

```
sum_zero(df)
```

**Arguments**

df	dataframe
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transpose_readcount	<i>Transpose Readcount</i>
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**Description**

Read in and transpose ChIP-seq Readcount dataframe and match project id

**Usage**

```
transpose_readcount(readcount.path)
```

**Arguments**

readcount.path ChIP-seq readcount dataframe file path

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