

Package ‘UCSCXenaShiny’

May 7, 2026

Title Interactive Analysis of UCSC Xena Data

Version 2.2.1

Maintainer Shixiang Wang <w_shixiang@163.com>

Description Provides functions and a Shiny application for downloading, analyzing and visualizing datasets from UCSC Xena (<<http://xena.ucsc.edu/>>), which is a collection of UCSC-hosted public databases such as TCGA, ICGC, TARGET, GTEx, CCLE, and others.

License GPL (>= 3)

URL <https://github.com/openbiox/UCSCXenaShiny>,
<https://openbiox.github.io/UCSCXenaShiny/>

BugReports <https://github.com/openbiox/UCSCXenaShiny/issues>

Depends R (>= 4.1)

Imports digest, dplyr (>= 0.8.3), ezcox, forcats, ggplot2 (>= 3.2.0),
ggpubr (>= 0.2), httr, magrittr (>= 1.5), ppcor, psych, purrr,
rlang, shiny (>= 1.3.2), stats, stringr, tibble (>= 2.1.3),
tidyr, UCSCXenaTools, utils

Suggests covr (>= 3.2.1), cowplot, DT (>= 0.5), funkyheatmap, furr,
future, ggrepel, ggstatsplot, glue, knitr, pacman, plotly,
plyr, RColorBrewer (>= 1.1.2), readr, rmarkdown, Rtsne, scales,
survival, survminer, testthat (>= 2.0.1), umap

VignetteBuilder knitr

Encoding UTF-8

LazyData true

NeedsCompilation no

RoxygenNote 7.3.2

Author Shixiang Wang [aut, cre] (ORCID:

<<https://orcid.org/0000-0001-9855-7357>>),

Shensuo Li [aut],

Yi Xiong [aut] (ORCID: <<https://orcid.org/0000-0002-4370-9824>>),

Longfei Zhao [aut] (ORCID: <<https://orcid.org/0000-0002-6277-0137>>),

Kai Gu [aut] (ORCID: <<https://orcid.org/0000-0002-0177-0774>>),
 Yin Li [aut],
 Fei Zhao [aut]

Repository CRAN

Date/Publication 2026-05-05 14:14:38 UTC

Contents

.opt_pancan	3
analyze_gene_drug_response_asso	4
analyze_gene_drug_response_diff	5
app_run	6
app_run2	7
available_hosts	8
calc_pw_mut_cnv	8
cele_absolute	9
cele_info	9
cele_info_fine	10
ezcor	10
ezcor_batch	11
ezcor_partial_cor	12
get_ccle_cn_value	13
get_nonomics_value	16
keep_cat_cols	17
load_data	18
mol_quick_analysis	19
pcawg_info	20
pcawg_info_fine	20
pcawg_purity	21
query_general_value	21
query_molecule_value	22
query_pancan_value	23
query_tcga_group	25
query_toil_value_df	27
tcga_survival_analysis	28
TCGA.organ	30
tcga_clinical	30
tcga_clinical_fine	31
tcga_genome_instability	31
tcga_gtex	32
tcga_purity	32
tcga_subtypes	33
tcga_surv	33
tcga_tmb	34
toil_info	34
vis_ccle_gene_cor	35
vis_ccle_tpm	36

vis_dim_dist	36
vis_gene_cor	38
vis_gene_cor_cancer	39
vis_gene_cross_omics	40
vis_gene_drug_response_asso	41
vis_gene_drug_response_diff	41
vis_gene_immune_cor	42
vis_gene_msi_cor	43
vis_gene_pw_cor	44
vis_gene_stemness_cor	45
vis_gene_TIL_cor	46
vis_gene_tmb_cor	47
vis_identifier_cor	48
vis_identifier_dim_dist	49
vis_identifier_grp_comparison	50
vis_identifier_grp_surv	52
vis_identifier_multi_cor	54
vis_pancan_anatomy	55
vis_pathway_cross_omics	56
vis_pcawg_dist	57
vis_pcawg_gene_cor	58
vis_pcawg_unicox_tree	59
vis_toil_Mut	60
vis_toil_Mut_cancer	61
vis_toil_TvsN	62
vis_toil_TvsN_cancer	63
vis_unicox_tree	64

Index **66**

.opt_pancan *A default setting for pan-cancer studies*

Description

A default setting for pan-cancer studies

Usage

.opt_pancan

Format

An object of class list of length 16.

```
analyze_gene_drug_response_asso
```

Analyze Association between Gene (Signature) and Drug Response with CCLE Data

Description

Analyze partial correlation of gene-drug association after controlling for tissue average expression.

Usage

```
analyze_gene_drug_response_asso(gene_list, combine = FALSE)
```

Arguments

gene_list	a gene symbol list.
combine	if TRUE, combine the expression of gene list as a gene signature.

Value

a data.frame

- If combine is TRUE, genes are combined as signature.
- mean.diff and median.diff indicate mean and median of normalized expression difference between High IC50 cells and Low IC50 cells. The cutoff between High and Low are median IC50.

Examples

```
## Not run:
analyze_gene_drug_response_asso("TP53")
analyze_gene_drug_response_asso(c("TP53", "KRAS"))
analyze_gene_drug_response_asso(c("TP53", "KRAS"), combine = TRUE)

# Visualization
vis_gene_drug_response_asso("TP53")

## End(Not run)
```

`analyze_gene_drug_response_diff`

Analyze Difference of Drug Response (IC50 Value (uM)) between Gene (Signature) High and Low Expression with CCLE Data

Description

Analyze Difference of Drug Response (IC50 Value (uM)) between Gene (Signature) High and Low Expression with CCLE Data

Usage

```
analyze_gene_drug_response_diff(  
  gene_list,  
  drug = "ALL",  
  tissue = "ALL",  
  combine = FALSE,  
  cutpoint = c(50, 50)  
)
```

Arguments

<code>gene_list</code>	a gene symbol list.
<code>drug</code>	a drug name. Check examples.
<code>tissue</code>	a tissue name. Check examples.
<code>combine</code>	if TRUE, combine the expression of gene list as a gene signature.
<code>cutpoint</code>	cut point (in percent) for High and Low group, default is c(50, 50).

Value

a data.frame.

Examples

```
tissue_list <- c(  
  "prostate", "central_nervous_system", "urinary_tract", "haematopoietic_and_lymphoid_tissue",  
  "kidney", "thyroid", "soft_tissue", "skin", "salivary_gland",  
  "ovary", "lung", "bone", "endometrium", "pancreas", "breast",  
  "large_intestine", "upper_aerodigestive_tract", "autonomic_ganglia",  
  "stomach", "liver", "biliary_tract", "pleura", "oesophagus"  
)  
  
drug_list <- c(  
  "AEW541", "Nilotinib", "17-AAG", "PHA-665752", "Lapatinib",  
  "Nutlin-3", "AZD0530", "PF2341066", "L-685458", "ZD-6474", "Panobinostat",  
  "Sorafenib", "Irinotecan", "Topotecan", "LBW242", "PD-0325901",  
  "PD-0332991", "Paclitaxel", "AZD6244", "PLX4720", "RAF265", "TAE684",
```

```

    "TKI258", "Erlotinib"
  )

  target_list <- c(
    "IGF1R", "ABL", "HSP90", "c-MET", "EGFR", "MDM2", "GS", "HDAC",
    "RTK", "TOP1", "XIAP", "MEK", "CDK4", "TUBB1", "RAF", "ALK", "FGFR"
  )
  ## Not run:
  analyze_gene_drug_response_diff("TP53")
  analyze_gene_drug_response_diff(c("TP53", "KRAS"), drug = "AEW541")
  analyze_gene_drug_response_diff(c("TP53", "KRAS"),
    tissue = "kidney",
    combine = TRUE
  )

  # Visualization
  vis_gene_drug_response_diff("TP53")

  ## End(Not run)

```

app_run

Run UCSC Xena Shiny App

Description

Run UCSC Xena Shiny App

Usage

```
app_run(runMode = "client", port = getOption("shiny.port"))
```

Arguments

runMode	default is 'client' for personal user, set it to 'server' for running on server.
port	The TCP port that the application should listen on. If the port is not specified, and the shiny.port option is set (with options(shiny.port = XX)), then that port will be used. Otherwise, use a random port between 3000:8000, excluding ports that are blocked by Google Chrome for being considered unsafe: 3659, 4045, 5060, 5061, 6000, 6566, 6665:6669 and 6697. Up to twenty random ports will be tried.

Examples

```

## Not run:
app_run()

## End(Not run)

```

`app_run2`*Run UCSC Xena Shiny App with specific content*

Description

Run UCSC Xena Shiny App with specific content

Usage

```
app_run2(  
  runMode = "client",  
  port = getOption("shiny.port"),  
  content = c("a", "s", "q", "p", "d")  
)
```

Arguments

<code>runMode</code>	default is 'client' for personal user, set it to 'server' for running on server.
<code>port</code>	The TCP port that the application should listen on. If the <code>port</code> is not specified, and the <code>shiny.port</code> option is set (with <code>options(shiny.port = XX)</code>), then that port will be used. Otherwise, use a random port between 3000:8000, excluding ports that are blocked by Google Chrome for being considered unsafe: 3659, 4045, 5060, 5061, 6000, 6566, 6665:6669 and 6697. Up to twenty random ports will be tried.
<code>content</code>	Modules to enable. <ul style="list-style-type: none">• a: all modules• s: only loading basic modules;• q: add tpc (TCGA, PCAWG, CCLE) modules• p: add tpc pipelines• d: add pharmacogenomics modules

Examples

```
## Not run:  
app_run2(content = "s")  
  
## End(Not run)
```

available_hosts	<i>Show Available Hosts</i>
-----------------	-----------------------------

Description

Show Available Hosts

Usage

```
available_hosts()
```

Value

hosts

Examples

```
available_hosts()
```

calc_pw_mut_cnv	<i>Prepare Mut/CNV data of pathways given specific samples</i>
-----------------	--

Description

Prepare Mut/CNV data of pathways given specific samples

Usage

```
calc_pw_mut_cnv(tumor_samples = NULL)
```

Arguments

tumor_samples Select specific tumor samples. Default NULL, indicating all tumor samples.

`ccl_absolute`*ABSOLUTE Result of CCLE Database*

Description

ABSOLUTE Result of CCLE Database

Format

A `data.frame`

Source

see "data_source" attribute.

Examples

```
data("ccl_absolute")
```

`ccl_info`*Phenotype Info of CCLE Database*

Description

Phenotype Info of CCLE Database

Format

A `data.frame`

Source

UCSC Xena.

Examples

```
data("ccl_info")
```

cclinfo_fine	<i>Cleaned Phenotype Info of CCLE Database for grouping</i>
--------------	---

Description

Cleaned Phenotype Info of CCLE Database for grouping

Format

A `data.frame`

Source

UCSC Xena.

Examples

```
data("cclinfo_fine")
```

ezcor	<i>Run Correlation between Two Variables and Support Group by a Variable</i>
-------	--

Description

Run Correlation between Two Variables and Support Group by a Variable

Usage

```
ezcor(  
  data = NULL,  
  split = FALSE,  
  split_var = NULL,  
  var1 = NULL,  
  var2 = NULL,  
  cor_method = "pearson",  
  adjust_method = "none",  
  use = "complete",  
  sig_label = TRUE,  
  verbose = TRUE  
)
```

Arguments

data	a data.frame containing variables
split	whether perform correlation grouped by a variable, default is 'FALSE'
split_var	a character, the group variable
var1	a character, the first variable in correlation
var2	a character, the second variable in correlation
cor_method	method="pearson" is the default value. The alternatives to be passed to cor are "spearman" and "kendall"
adjust_method	What adjustment for multiple tests should be used? ("holm", "hochberg", "holm", "bonferroni", "BH", "BY", "fdr", "none")
use	use="pairwise" will do pairwise deletion of cases. use="complete" will select just complete cases
sig_label	whether add symbol of significance. P < 0.001,***; P < 0.01,**; P < 0.05,*; P >=0.05,""
verbose	if TRUE, print extra info.

Value

a data.frame

Author(s)

Yi Xiong

ezcor_batch	<i>Run correlation between two variables in a batch mode and support group by a variable</i>
-------------	--

Description

Run correlation between two variables in a batch mode and support group by a variable

Usage

```
ezcor_batch(
  data,
  var1,
  var2,
  split = FALSE,
  split_var = NULL,
  cor_method = "pearson",
  adjust_method = "none",
  use = "complete",
  sig_label = TRUE,
  parallel = FALSE,
  verbose = FALSE
)
```

Arguments

data	a data.frame containing variables
var1	a character, the first variable in correlation
var2	a character, the second variable in correlation
split	whether perform correlation grouped by a variable, default is 'FALSE'
split_var	a character, the group variable
cor_method	method="pearson" is the default value. The alternatives to be passed to cor are "spearman" and "kendall"
adjust_method	What adjustment for multiple tests should be used? ("holm", "hochberg", "hommel", "bonferroni", "BH", "BY", "fdr", "none")
use	use="pairwise" will do pairwise deletion of cases. use="complete" will select just complete cases
sig_label	whether add symbol of significance. P < 0.001,***; P < 0.01,**; P < 0.05,*; P >=0.05,""
parallel	if TRUE, do parallel computation by furrr package.
verbose	if TRUE, print extra info.

Value

a data.frame

Author(s)

Yi Xiong, Shixiang Wang

ezcor_partial_cor *Run partial correlation*

Description

Run partial correlation

Usage

```
ezcor_partial_cor(
  data = NULL,
  split = FALSE,
  split_var = NULL,
  var1 = NULL,
  var2 = NULL,
  var3 = NULL,
  cor_method = "pearson",
  sig_label = TRUE,
  ...
)
```

Arguments

data	a data.frame containing variables
split	whether perform correlation grouped by a variable, default is 'FALSE'
split_var	a character, the group variable
var1	a character, the first variable in correlation
var2	a character, the second variable in correlation
var3	a character or character vector, the third variable in correlation
cor_method	method="pearson" is the default value. The alternatives to be passed to cor are "spearman" and "kendall"
sig_label	whether add symbol of significance. $P < 0.001$, ""; $P < 0.01$, ""; $P < 0.05$, ""; $P \geq 0.05$, ""
...	other arguments passed to methods

Value

a data.frame

Author(s)

Yi Xiong

See Also

[ppcor::pcor.test\(\)](#) which this function wraps.

get_ccle_cn_value *Fetch Identifier Value from Pan-cancer Dataset*

Description

Identifier includes gene/probe etc.

Usage

```
get_ccle_cn_value(identifier)

get_ccle_gene_value(identifier, norm = c("rpkm", "nc"))

get_ccle_protein_value(identifier)

get_ccle_mutation_status(identifier)

get_pancan_value(
  identifier,
  subtype = NULL,
```

```

dataset = NULL,
host = available_hosts(),
samples = NULL,
...
)

get_pancan_gene_value(identifier, norm = c("tpm", "fpkm", "nc"))

get_pancan_transcript_value(identifier, norm = c("tpm", "fpkm", "isopct"))

get_pancan_protein_value(identifier)

get_pancan_mutation_status(identifier)

get_pancan_cn_value(identifier, gistic2 = TRUE, use_thresholded_data = FALSE)

get_pancan_methylation_value(
  identifier,
  type = c("450K", "27K"),
  rule_out = NULL,
  aggr = c("NA", "mean", "Q0", "Q25", "Q50", "Q75", "Q100")
)

get_pancan_miRNA_value(identifier)

get_pcawg_gene_value(identifier)

get_pcawg_fusion_value(identifier)

get_pcawg_promoter_value(identifier, type = c("raw", "relative", "outlier"))

get_pcawg_miRNA_value(identifier, norm = c("TMM", "UQ"))

get_pcawg_APOBEC_mutagenesis_value(
  identifier = c("tCa_MutLoad_MinEstimate", "APOBECtCa_enrich", "A3A_or_A3B",
    "APOBEC_tCa_enrich_quartile", "APOBECrtCa_enrich", "APOBECytCa_enrich",
    "APOBECytCa_enrich-APOBECrtCa_enrich", "BH_Fisher_p-value_tCa", "ntca+tgan",
    "rtCa_to_G+rtCa_to_T", "rtca+tgay", "tCa_to_G+tCa_to_T",
    "ytCa_rtCa_BH_Fisher_p-value", "ytCa_rtCa_Fisher_p-value", "ytCa_to_G+ytCa_to_T",
    "ytca+tgar")
)

```

Arguments

<code>identifier</code>	a length-1 character representing a gene symbol, ensembl gene id, or probe id. Gene symbol is highly recommended.
<code>norm</code>	the normalization method.
<code>subtype</code>	a length-1 chracter representing a regular expression for matching DataSubtype

	column of UCSCXenaTools::XenaData .
dataset	a length-1 character representing a regular expression for matching XenaDatasets of UCSCXenaTools::XenaData .
host	a character vector representing host name(s), e.g. "toilHub".
samples	a character vector representing samples want to be returned.
...	other parameters.
gistic2	if TRUE (default), use GISTIC2 data.
use_thresholded_data	if TRUE, use GISTIC2-thresholded value.
type	methylation type, one of "450K" and "27K". for function <code>get_pcawg_promoter_value</code> , it can be one of "raw", "relative", "outlier".
rule_out	methylation sites to rule out before analyzing.
aggr	approaches to aggregate the methylation data, default is 'NA', in such case, a mean value is obtained for gene-level methylation. Allowed value is one of <code>c("NA", "mean", "Q0", "Q25", "Q50", "Q75", "Q100")</code> . Here, Q50 is median.

Value

a named vector or list.

Functions

- `get_ccle_cn_value()`: Fetch copy number value from CCLE dataset
- `get_ccle_gene_value()`: Fetch gene expression value from CCLE dataset
- `get_ccle_protein_value()`: Fetch gene protein expression value from CCLE dataset
- `get_ccle_mutation_status()`: Fetch gene mutation info from CCLE dataset
- `get_pancan_value()`: Fetch identifier value from pan-cancer dataset
- `get_pancan_gene_value()`: Fetch gene expression value from pan-cancer dataset
- `get_pancan_transcript_value()`: Fetch gene transcript expression value from pan-cancer dataset
- `get_pancan_protein_value()`: Fetch protein expression value from pan-cancer dataset
- `get_pancan_mutation_status()`: Fetch mutation status value from pan-cancer dataset
- `get_pancan_cn_value()`: Fetch gene copy number value from pan-cancer dataset processed by GISTIC 2.0
- `get_pancan_methylation_value()`: Fetch gene expression value from CCLE dataset
- `get_pancan_miRNA_value()`: Fetch miRNA expression value from pan-cancer dataset
- `get_pcawg_gene_value()`: Fetch specimen-level gene expression value from PCAWG cohort
- `get_pcawg_fusion_value()`: Fetch specimen-level gene fusion value from PCAWG cohort
- `get_pcawg_promoter_value()`: Fetch specimen-level gene promoter activity value from PCAWG cohort
- `get_pcawg_miRNA_value()`: Fetch specimen-level miRNA value from PCAWG cohort
- `get_pcawg_APOBEC_mutagenesis_value()`: Fetch specimen-level gene fusion value from PCAWG cohort

Examples

```
## Not run:
# Fetch TP53 expression value from pan-cancer dataset
t1 <- get_pancan_value("TP53",
  dataset = "TcgaTargetGtex_rsem_isoform_tpm",
  host = "toilHub"
)
t2 <- get_pancan_gene_value("TP53")
t3 <- get_pancan_protein_value("AKT")
t4 <- get_pancan_mutation_status("TP53")
t5 <- get_pancan_cn_value("TP53")

## End(Not run)
```

get_nonomics_value *Fetch non-omics data of all samples from relevant databases*

Description

Fetch non-omics data of all samples from relevant databases

Usage

```
get_nonomics_value(
  database = c("toil", "pcawg", "ccle"),
  type = c("immune", "pathway", "tumor_index"),
  subtype = NULL
)
```

Arguments

database	one of "toil" (tcga), "pcawg", "ccle"
type	one of "immune", "pathway", "tumor_index"
subtype	For "immune" type of toil/pcawg database, one of "CIBERSORT", "CIBERSORT-ABS", "EPIC", "MCPCOUNTER", "QUANTISEQ", "TIMER", "XCELL". For "pathway" type of toil/pcawg database, one of "HALLMARK", "KEGG", "IOBR". For "tumor_index" type of toil database, one of "Tumor_Purity", "Tumor_Stemness", "Tumor_Mutation_Burden", "Genome_Instability". For "tumor_index" type of pcawg/ccle database, set NULL. If subtype is NULL, return all subtypes.

Value

dataframe

Examples

```
## Not run:
tcga_immune_xcell = get_nonomics_value(database = "toil", type = "immune", subtype = "XCELL")

tcga_pathway_kegg = get_nonomics_value(database = "toil", type = "pathway", subtype = "KEGG")

# Combined with sample information

head(tcga_clinical_fine)
head(tcga_surv)

head(pcawg_info_fine)

head(ccle_info_fine)

## End(Not run)
```

keep_cat_cols

Keep Only Columns Used for Sample Selection

Description

Keep Only Columns Used for Sample Selection

Usage

```
keep_cat_cols(x, keep_sam_cols = TRUE, return_idx = TRUE)
```

Arguments

x a data.frame with many columns.
keep_sam_cols if TRUE (default), keep columns with pattern 'sample', 'patient', etc.
return_idx if TRUE (default), return index of 5 (at most) columns, it is useful in Shiny.

Value

a data.frame or a list.

load_data

Load Dataset Provided by This Package

Description

Load data from builtin or Zenodo. Option `xena.zenodoDir` can be used to set default path for storing extra data from Zenodo, e.g., `options(xena.zenodoDir = "/home/xxx/dataset")`.

Usage

```
load_data(name)
```

Arguments

name

a dataset name. Could be one of

Builtin datasets:

- `ccl_e_absolute`: CCLE ABSOLUTE result.
- `ccl_e_info`: CCLE information.
- `ccl_e_info_fine`: cleaned CCLE information for TPC analysis.
- `pcawg_info`: PCAWG information.
- `pcawg_info_fine`: cleaned PCAWG information for TPC analysis.
- `pcawg_purity`: PCAWG tumor purity, ploidy and WGD data.
- `tcga_clinical`: TCGA clinical data.
- `tcga_clinical_fine`: cleaned TCGA information for TPC analysis.
- `tcga_genome_instability`: TCGA genome instability data.
- `tcga_gtex`: TCGA and GTEX sample info.
- `tcga_purity`: TCGA tumor purity data.
- `tcga_subtypes`: TCGA subtypes data.
- `tcga_surv`: TCGA survival data.
- `TCGA.organ`: TCGA organ data.
- `toil_info`: Toil hub information.

Remote datasets stored in *Zenodo*:

- `pcawg_promoter_id`: PCAWG promoter identifiers.
- `transcript_identifier`: Common transcript identifiers.
- `ccl_e_expr_and_drug_response`: CCLE expression and drug response data.
- `ccl_e_drug_response_extend`: CCLE drug response extended data.
- `pancan_MSI`: Pan-cancer MSI data.
- `tcga_chr_alteration`: TCGA chromosome alteration data.
- `tcga_MSI`: TCGA MSI data.
- `tcga_pan_immune_signature`: TCGA pan-cancer immune signature.
- `tcga_stemness`: TCGA tumor stemness data.
- `tcga_TIL`: TCGA TIL data.

- tcga_PW: ssGSEA scores of HALLMARK, KEGG, IOBR terms for TCGA samples.
- tcga_PW_meta: metadata annotation for HALLMARK, KEGG, IOBR terms.
- tcga_tmb: TCGA TMB data.
- tcga_armcalls: TCGA arm alteration calls and Aneuploidy data.
- tcga_dna_repair: TCGA DNA repair data.
- pancancer_conserved_immune_subtype: Pan-cancer conserved immune subtypes.
- pcawg_TIL: PCAWG TIL data.
- pcawg_PW: ssGSEA scores of HALLMARK, KEGG, IOBR terms for PCAWG samples.
- ...

Value

a dataset, typically a data.frame.

Examples

```
data1 <- load_data("tcga_surv")
data1

data2 <- load_data("tcga_armcalls")
data2
```

mol_quick_analysis *Quick molecule analysis and report generation*

Description

Quick molecule analysis and report generation

Usage

```
mol_quick_analysis(molecule, data_type, out_dir = ".", out_report = FALSE)
```

Arguments

molecule	a molecular identifier (e.g., "TP53") or a formula specifying genomic signature ("TP53 + 2 * KRAS - 1.3 * PTEN").
data_type	data type. Can be one of "mRNA", "transcript", "protein", "mutation", "cnv", "methylation", "miRNA".
out_dir	path to save analysis result and report, default is '.'
out_report	logical value whether to generate html report

Value

a list.

pcawg_info

Phenotype Info of PCAWG Database

Description

Phenotype Info of PCAWG Database

Format

A data.frame

Source

UCSC Xena.

Examples

```
data("pcawg_info")
```

pcawg_info_fine

Cleaned Phenotype Info of PCAWG Database for grouping

Description

Cleaned Phenotype Info of PCAWG Database for grouping

Format

A data.frame

Source

UCSC Xena.

Examples

```
data("pcawg_info_fine")
```

pcawg_purity	<i>Purity Data of PCAWG</i>
--------------	-----------------------------

Description

Purity Data of PCAWG

Format

A data.frame

Source

UCSC Xena.

Examples

```
data("pcawg_purity")
```

query_general_value	<i>Download data for shiny general analysis</i>
---------------------	---

Description

Download data for shiny general analysis

Usage

```
query_general_value(  
  L1,  
  L2,  
  L3,  
  database = c("toil", "pcawg", "ccle"),  
  tpc_value_nonomics = NULL,  
  opt_pancan = NULL,  
  custom_metadata = NULL  
)
```

Arguments

L1	level 1 main datatype
L2	level 2 sub datatype
L3	level 3 identifier
database	one of c("toil","pcawg","ccle")

```

tpc_value_nonomics      non-omics matrix data of one database
opt_pancan              molecular datasets parameters
custom_metadata         user customized metadata

```

Examples

```

## Not run:
general_value_id <- UCSCXenaShiny:::query_general_id()
tcga_value_option <- general_value_id[["value"]][[1]]
tcga_index_value <- tcga_value_option[["Tumor index"]]
tcga_immune_value <- tcga_value_option[["Immune Infiltration"]]
tcga_pathway_value <- tcga_value_option[["Pathway activity"]]
tcga_phenotype_value <- tcga_value_option[["Phenotype data"]]

clinical_phe = tcga_phenotype_value[["Clinical Phenotype"]]
x_data = UCSCXenaShiny:::query_general_value(
  "Molecular profile", "mRNA Expression", "TP53", "toil",
  tcga_index_value, tcga_immune_value, tcga_pathway_value,
  clinical_phe)

y_data = UCSCXenaShiny:::query_general_value(
  "Immune Infiltration", "CIBERSORT", "Monocyte", "toil",
  tcga_index_value, tcga_immune_value, tcga_pathway_value,
  clinical_phe)

## End(Not run)

```

query_molecule_value *Get Molecule or Signature Data Values from Dense (Genomic) Matrix Dataset of UCSC Xena Data Hubs*

Description

Get Molecule or Signature Data Values from Dense (Genomic) Matrix Dataset of UCSC Xena Data Hubs

Usage

```
query_molecule_value(dataset, molecule, host = NULL)
```

Arguments

dataset	a UCSC Xena dataset in dense matrix format (rows are features (e.g., gene, cell line) and columns are samples).
molecule	a molecular identifier (e.g., "TP53") or a formula specifying genomic signature ("TP53 + 2 * KRAS - 1.3 * PTEN"). NOTE , when a signature is specified, a space must exist in the input.
host	a UCSC Xena host, default is NULL, auto-detect from the dataset.

Value

a named vector.

Examples

```
# What does dense matrix mean?
table(UCSCXenaTools::XenaData$Type)
# It is a the UCSC Xena dataset with "Type" equals to "genomicMatrix"
## Not run:
dataset <- "ccle/CCLC_copynumber_byGene_2013-12-03"
x <- query_molecule_value(dataset, "TP53")
head(x)

signature <- "TP53 + 2*KRAS - 1.3*PTEN" # a space must exist in the string
y <- query_molecule_value(dataset, signature)
head(y)

## End(Not run)
```

query_pancan_value *Query Single Identifier or Signature Value from Pan-cancer Database*

Description

Query Single Identifier or Signature Value from Pan-cancer Database

Usage

```
query_pancan_value(
  molecule,
  data_type = c("mRNA", "transcript", "protein", "mutation", "cnv", "methylation",
    "miRNA", "fusion", "promoter", "APOBEC"),
  database = c("toil", "ccle", "pcawg"),
  reset_id = NULL,
  opt_pancan = .opt_pancan
)
```

Arguments

molecule	a molecular identifier (e.g., "TP53") or a formula specifying genomic signature ("TP53 + 2 * KRAS - 1.3 * PTEN").
data_type	data type. Can be one of "mRNA", "transcript", "protein", "mutation", "cnv", "methylation", "miRNA".
database	database, either 'toil' for TCGA TARGET GTEx, or 'ccle' for CCLE.
reset_id	if not NULL, set the specified variable at parent frame to "Signature".
opt_pancan	other extra parameters passing to the underlying functions.

Details

query_pancan_value() provide convenient interface to download multi-omics data from 3 databases by specifying one or several canonical datasets. It is derived from query_pancan_value() and support query for genomic signature. To query comprehensive datasets that UCSCXena supports, users can check UCSCXenaTools::XenaData and use get_pancan_value() directly.

Option opt_pancan is a nested list and allow to adjust the downloading details. For now, only cnv(toil),methylation(toil),miRNA(toil),miRNA(pcowg),promoter(pcowg) support optional parameters. The default set is .opt_pancan and we check meanings of sublist(parameters) through the following relationship.

Value

a list.

"toil" database

1. mRNA-get_pancan_gene_value()
2. transcript-get_pancan_transcript_value()
3. protein-get_pancan_protein_value()
4. mutation-get_pancan_mutation_status()
5. cnv-get_pancan_cn_value()
6. methylation-get_pancan_methylation_value()
7. miRNA-get_pancan_miRNA_value()

"ccle" database

1. mRNA-get_ccle_gene_value()
2. protein-get_ccle_protein_value()
3. mutation-get_ccle_mutation_status()
4. cnv-get_ccle_cn_value()

"pcawg" database

1. mRNA-get_pcowg_gene_value()
2. miRNA-get_pcowg_miRNA_value()
3. promoter-get_pcowg_promoter_value()
4. fusion-get_pcowg_fusion_value()
5. APOBEC-get_pcowg_APOBEC_mutagenesis_value()

Examples

```
## Not run:
query_pancan_value("KRAS")
query_pancan_value("KRAS", database = "ccle")
query_pancan_value("KRAS", database = "pcawg")

query_pancan_value("ENSG0000000419",
  database = "pcawg",
  data_type = "fusion"
) # gene symbol also work

.opt_pancan

opt_pancan <- list(toil_cnv = list(use_thresholded_data = FALSE))
query_pancan_value("PTEN", data_type = "cnv", database = "toil", opt_pancan = opt_pancan)

opt_pancan <- list(toil_methylation = list(type = "450K", rule_out = "cg21115430", aggr = "Q25"))
query_pancan_value("PTEN", data_type = "methylation", database = "toil", opt_pancan = opt_pancan)

## End(Not run)
```

query_tcga_group	<i>Group TPC samples by build-in or custom phenotype and support filtering or merging operations</i>
------------------	--

Description

Group TPC samples by build-in or custom phenotype and support filtering or merging operations

Usage

```
query_tcga_group(
  database = c("toil", "pcawg", "ccle"),
  cancer = NULL,
  custom = NULL,
  group = "Gender",
  filter_by = NULL,
  filter_id = NULL,
  merge_by = NULL,
  merge_quantile = FALSE,
  return_all = FALSE
)
```

Arguments

database one of c("toil","pcawg","ccle")

cancer	select cancer cohort(s)
custom	upload custom phenotype data
group	target group names
filter_by	filter samples by one or multiple criterion
filter_id	directly filter samples by provided sample ids
merge_by	merge the target group for main categories
merge_quantile	whether to merge numerical variable by percentiles
return_all	return the all phenotype data

Value

a list object with grouping samples and statistics

Examples

```
## Not run:
query_tcga_group(group = "Age")

query_tcga_group(
  cancer = "BRCA",
  group = "Stage_ajcc"
)

query_tcga_group(
  cancer = "BRCA",
  group = "Stage_ajcc",
  filter_by = list(
    c("Code", c("TP"), "+"),
    c("Stage_ajcc", c(NA), "-")
  )
)

query_tcga_group(
  cancer = "BRCA",
  group = "Stage_ajcc",
  filter_by = list(
    c("Age", c(0.5), "%>")
  )
)

query_tcga_group(
  cancer = "BRCA",
  group = "Stage_ajcc",
  filter_by = list(
    c("Age", c(60), ">")
  )
)

query_tcga_group(
  cancer = "BRCA",
```

```

    group = "Stage_ajcc",
    merge_by = list(
      "Early" = c("Stage I"),
      "Late" = c("Stage II", "Stage III", "Stage IV")
    )
  )

query_tcga_group(
  cancer = "BRCA",
  group = "Age",
  merge_by = list(
    "Young" = c(20, 60),
    "Old" = c(60, NA)
  )
)

query_tcga_group(
  cancer = "BRCA",
  group = "Age",
  merge_quantile = TRUE,
  merge_by = list(
    "Young" = c(0, 0.5),
    "Old" = c(0.5, 1)
  )
)

## End(Not run)

```

query_toil_value_df *Obtain ToilHub Info for Single Molecule*

Description

Obtain ToilHub Info for Single Molecule

Obtain ToilHub Info for Single Gene

Usage

```
query_toil_value_df(identifier = "TP53")
```

```
query_toil_value_df(identifier = "TP53")
```

Arguments

identifier a length-1 character representing a gene symbol, ensembl gene id, or probe id. Gene symbol is highly recommended.

Value

a tibble
a tibble

Examples

```
## Not run:  
t <- query_toil_value_df()  
t  
  
## End(Not run)  
## Not run:  
t <- query_toil_value_df()  
t  
  
## End(Not run)
```

tcga survival analysis

TCGA Survival Analysis

Description

- Firstly, get merged data of one molecular profile value and associated clinical data from TCGA Pan-Cancer dataset.
- Secondly, filter data as your wish.
- Finally, show K-M plot.

Usage

```
tcga_surv_get(  
  item,  
  TCGA_cohort = "LUAD",  
  profile = c("mRNA", "miRNA", "methylation", "transcript", "protein", "mutation", "cnv"),  
  TCGA_cli_data = dplyr::full_join(load_data("tcga_clinical"), load_data("tcga_surv"), by  
    = "sample"),  
  opt_pancan = .opt_pancan  
)  
  
tcga_surv_plot(  
  data,  
  time = "time",  
  status = "status",  
  cutoff_mode = c("Auto", "Custom"),  
  cutpoint = c(50, 50),  
  cnv_type = c("Duplicated", "Normal", "Deleted"),
```

```

  profile = c("mRNA", "miRNA", "methylation", "transcript", "protein", "mutation", "cnv"),
  palette = "aaas",
  ...
)

```

Arguments

<code>item</code>	a molecular identifier, can be gene symbol (common cases), protein symbol, etc.
<code>TCGA_cohort</code>	a TCGA cohort, e.g. "LUAD" (default), "LUSC", "ACC".
<code>profile</code>	a molecular profile. Option can be one of "mRNA" (default), "miRNA", "methylation", "transcript", "protein", "mutation", "cnv".
<code>TCGA_cli_data</code>	a <code>data.frame</code> containing TCGA clinical data. Default use pre-compiled TCGA clinical data in this package.
<code>opt_pancan</code>	specify one dataset for some molecular profiles
<code>data</code>	a subset of result from <code>tcga_surv_get()</code> .
<code>time</code>	the column name for "time".
<code>status</code>	the column name for "status".
<code>cutoff_mode</code>	mode for grouping samples, can be "Auto" (default) or "Custom".
<code>cutpoint</code>	cut point (in percent) for "Custom" mode, default is <code>c(50, 50)</code> .
<code>cnv_type</code>	only used when profile is "cnv", can select from <code>c("Duplicated", "Normal", "Deleted")</code> .
<code>palette</code>	color palette, can be "hue", "grey", "RdBu", "Blues", "npg", "aaas", etc. More see <code>?survminer::ggsurvplot</code> .
<code>...</code>	other parameters passing to <code>survminer::ggsurvplot</code>

Value

a `data.frame` or a plot.

Examples

```

## Not run:
# 1. get data
data <- tcga_surv_get("TP53")
# 2. filter data (optional)

# 3. show K-M plot
tcga_surv_plot(data, time = "DSS.time", status = "DSS")

## End(Not run)

```

TCGA.organ

TCGA: Organ Data

Description

TCGA: Organ Data

Format

A [data.frame](#)

Examples

```
data("TCGA.organ")
```

tcga_clinical

Toil Hub: TCGA Clinical Data

Description

See `tcga_surv` for TCGA survival data.

Format

A [data.frame](#)

Source

Generate from data-raw

Examples

```
data("tcga_clinical")
```

tcga_clinical_fine *Toil Hub: Cleaned TCGA Clinical Data for grouping*

Description

See tcga_surv for TCGA survival data.

Format

A [data.frame](#)

Source

Generate from data-raw

Examples

```
data("tcga_clinical_fine")
```

tcga_genome_instability
TCGA: Genome Instability Data

Description

TCGA: Genome Instability Data

Format

A [data.frame](#)

Source

<https://gdc.cancer.gov/about-data/publications/PanCanStemness-2018>

Examples

```
data("tcga_genome_instability")
```

tcga_gtex

Toil Hub: Merged TCGA GTEEx Selected Phenotype

Description

Toil Hub: Merged TCGA GTEEx Selected Phenotype

Format

A [data.frame](#)

Examples

```
data("tcga_gtex")
```

tcga_purity

TCGA: Purity Data

Description

TCGA: Purity Data

Format

A [data.frame](#)

Source

<https://www.nature.com/articles/ncomms9971#Sec14>

Examples

```
data("tcga_purity")
```

`tcga_subtypes`*TCGA Subtype Data*

Description

TCGA Subtype Data

FormatA [data.frame](#)**Source**

UCSC Xena.

Examples

```
data("tcga_subtypes")
```

`tcga_surv`*Toil Hub: TCGA Survival Data*

Description

Toil Hub: TCGA Survival Data

FormatA [data.frame](#)**Source**

Generate from data-raw

Examples

```
data("tcga_surv")
```

tcga_tmb

TCGA: TMB (Tumor Mutation Burden) Data

Description

TCGA: TMB (Tumor Mutation Burden) Data

Format

A [data.frame](#)

Source

<https://gdc.cancer.gov/about-data/publications/panimmune>

Examples

```
data("tcga_tmb")
```

toil_info

Toil Hub: TCGA TARGET GTEX Selected Phenotype

Description

Toil Hub: TCGA TARGET GTEX Selected Phenotype

Format

A [data.frame](#)

Source

Generate from data-raw

Examples

```
data("toil_info")
```

 vis_ccle_gene_cor *Visualize CCLE Gene Expression Correlation*

Description

Visualize CCLE Gene Expression Correlation

Usage

```
vis_ccle_gene_cor(
  Gene1 = "CSF1R",
  Gene2 = "JAK3",
  data_type1 = "mRNA",
  data_type2 = "mRNA",
  cor_method = "spearman",
  use_log_x = FALSE,
  use_log_y = FALSE,
  use_regline = TRUE,
  SitePrimary = "prostate",
  use_all = FALSE,
  alpha = 0.5,
  color = "#000000",
  opt_pancan = .opt_pancan
)
```

Arguments

Gene1	a molecular identifier (e.g., "TP53") or a formula specifying genomic signature ("TP53 + 2 * KRAS - 1.3 * PTEN").
Gene2	a molecular identifier (e.g., "TP53") or a formula specifying genomic signature ("TP53 + 2 * KRAS - 1.3 * PTEN").
data_type1	choose gene profile type for the first gene, including "mRNA", "transcript", "methylation", "miRNA", "prote"
data_type2	choose gene profile type for the second gene, including "mRNA", "transcript", "methylation", "miRNA", "pr"
cor_method	correlation method
use_log_x	if TRUE, log X values.
use_log_y	if TRUE, log Y values.
use_regline	if TRUE, add regression line.
SitePrimary	select cell line origin tissue.
use_all	use all sample, default FALSE.
alpha	dot alpha.
color	dot color.
opt_pancan	specify one dataset for some molecular profiles

Value

a ggplot object

vis_ccle_tpm	<i>Visualize CCLE Gene Expression</i>
--------------	---------------------------------------

Description

Visualize CCLE Gene Expression

Usage

```
vis_ccle_tpm(
  Gene = "TP53",
  data_type = "mRNA",
  use_log = FALSE,
  opt_pancan = .opt_pancan
)
```

Arguments

Gene	a molecular identifier (e.g., "TP53") or a formula specifying genomic signature ("TP53 + 2 * KRAS - 1.3 * PTEN").
data_type	support genomic profile for CCLE, currently "mRNA", "protein", "cnv" are supported
use_log	if TRUE, log values.
opt_pancan	specify one dataset for some molecular profiles

Value

a ggplot object

vis_dim_dist	<i>Visualize the distribution difference of samples after dimensionality reduction analysis</i>
--------------	---

Description

Visualize the distribution difference of samples after dimensionality reduction analysis

Usage

```
vis_dim_dist(  
  ids = c("TP53", "KRAS", "PTEN", "MDM2", "CDKN1A"),  
  data_type = "mRNA",  
  group_info = NULL,  
  DR_method = c("PCA", "UMAP", "tSNE"),  
  palette = "Set1",  
  add_margin = NULL,  
  opt_pancan = .opt_pancan  
)
```

Arguments

ids	molecular identifiers (≥ 3)
data_type	molecular types, refer to query_pancan_value() function
group_info	two-column grouping information with names 'Sample', 'Group'
DR_method	the dimensionality reduction method
palette	the color setting of RColorBrewer
add_margin	the marginal plot (NULL, "density", "boxplot")
opt_pancan	specify one dataset for some molecular profiles

Value

a ggplot object or rawdata list

Examples

```
## Not run:  
group_info <- tcga_clinical_fine %>%  
  dplyr::filter(Cancer == "BRCA") %>%  
  dplyr::select(Sample, Code) %>%  
  dplyr::rename(Group = Code)  
  
vis_dim_dist(  
  ids = c("TP53", "KRAS", "PTEN", "MDM2", "CDKN1A"),  
  group_info = group_info  
)  
  
## End(Not run)
```

vis_gene_cor

*Visualize Gene-Gene Correlation in TCGA***Description**

Visualize Gene-Gene Correlation in TCGA

Usage

```
vis_gene_cor(
  Gene1 = "CSF1R",
  Gene2 = "JAK3",
  data_type1 = "mRNA",
  data_type2 = "mRNA",
  use_regline = TRUE,
  purity_adj = TRUE,
  alpha = 0.5,
  color = "#000000",
  filter_tumor = TRUE,
  opt_pancan = .opt_pancan
)
```

Arguments

Gene1	a molecular identifier (e.g., "TP53") or a formula specifying genomic signature ("TP53 + 2 * KRAS - 1.3 * PTEN").
Gene2	a molecular identifier (e.g., "TP53") or a formula specifying genomic signature ("TP53 + 2 * KRAS - 1.3 * PTEN").
data_type1	choose gene profile type for the first gene, including "mRNA", "transcript", "methylation", "miRNA", "prote"
data_type2	choose gene profile type for the second gene, including "mRNA", "transcript", "methylation", "miRNA", "pr"
use_regline	if TRUE, add regression line.
purity_adj	whether performing partial correlation adjusted by purity
alpha	dot alpha.
color	dot color.
filter_tumor	whether use tumor sample only, default TRUE
opt_pancan	specify one dataset for some molercular profiles

vis_gene_cor_cancer *Visualize Gene-Gene Correlation in a TCGA Cancer Type*

Description

Visualize Gene-Gene Correlation in a TCGA Cancer Type

Usage

```
vis_gene_cor_cancer(
  Gene1 = "CSF1R",
  Gene2 = "JAK3",
  data_type1 = "mRNA",
  data_type2 = "mRNA",
  purity_adj = TRUE,
  cancer_choose = "GBM",
  use_regline = TRUE,
  cor_method = "spearman",
  use_all = FALSE,
  alpha = 0.5,
  color = "#000000",
  opt_pancan = .opt_pancan
)
```

Arguments

Gene1	a molecular identifier (e.g., "TP53") or a formula specifying genomic signature ("TP53 + 2 * KRAS - 1.3 * PTEN").
Gene2	a molecular identifier (e.g., "TP53") or a formula specifying genomic signature ("TP53 + 2 * KRAS - 1.3 * PTEN").
data_type1	choose gene profile type for the first gene, including "mRNA", "transcript", "methylation", "miRNA", "prote"
data_type2	choose gene profile type for the second gene, including "mRNA", "transcript", "methylation", "miRNA", "pr"
purity_adj	whether performing partial correlation adjusted by purity
cancer_choose	TCGA cohort name, e.g. "ACC".
use_regline	if TRUE, add regression line.
cor_method	correlation method.
use_all	use all sample, default FALSE.
alpha	dot alpha.
color	dot color.
opt_pancan	specify one dataset for some molercular profiles

vis_gene_cross_omics *Visualize cross-omics of one gene among pan-cancers*

Description

Visualize cross-omics of one gene among pan-cancers

Usage

```
vis_gene_cross_omics(  
  gene = "TP53",  
  tumor_projects = NULL,  
  tumor_samples = NULL,  
  n_trans = 5,  
  n_methy = 5,  
  seed = 42,  
  add_mean_trans = TRUE,  
  add_mean_methy = TRUE,  
  pval_mrna = c(0.05, 0.01, 0.001),  
  return_list = FALSE  
)
```

Arguments

gene	a gene symbol identifier (e.g., "TP53")
tumor_projects	Select specific TCGA projects. Default NULL, indicating all TCGA projects.
tumor_samples	Select specific tumor samples. Default NULL, indicating all tumor samples.
n_trans	The number of sampling transcripts or specific transcript identifiers.
n_methy	The number of sampling CpG sites or specific CpG identifiers.
seed	The seed of sampling.
add_mean_trans	Add overall column to display the mean values of all gene's transcripts.
add_mean_methy	Add overall column to display the mean values of all gene's cpG sites.
pval_mrna	The P value thresholds
return_list	TRUE returns a list including plot object and data. FALSE just returns plot.

Value

funkyheatmap

`vis_gene_drug_response_asso`*Visualize Gene and Drug-Target Association with CCLE Data*

Description

See [analyze_gene_drug_response_asso](#) for examples.

Usage

```
vis_gene_drug_response_asso(  
  Gene = "TP53",  
  x_axis_type = c("mean.diff", "median.diff"),  
  output_form = c("plotly", "ggplot2")  
)
```

Arguments

Gene	a molecular identifier (e.g., "TP53") or a formula specifying genomic signature ("TP53 + 2 * KRAS - 1.3 * PTEN").
x_axis_type	set the value type for X axis.
output_form	plotly or ggplot2.

Value

plotly or ggplot2 object.

`vis_gene_drug_response_diff`*Visualize Gene and Drug Response Difference with CCLE Data*

Description

See [analyze_gene_drug_response_diff](#) for examples.

Usage

```
vis_gene_drug_response_diff(  
  Gene = "TP53",  
  tissue = "lung",  
  Show.P.label = TRUE,  
  Method = "wilcox.test",  
  values = c("#DF2020", "#DDDF21"),  
  alpha = 0.5  
)
```

Arguments

Gene	a molecular identifier (e.g., "TP53") or a formula specifying genomic signature ("TP53 + 2 * KRAS - 1.3 * PTEN").
tissue	select cell line origin tissue.
Show.P.label	TRUE or FALSE present p value with number or label *, **, *** and ****
Method	default method is wilcox.test
values	the color to fill tumor or normal
alpha	set alpha for dots.

Value

a ggplot object.

vis_gene_immune_cor *Heatmap for Correlation between Gene and Immune Signatures*

Description

Heatmap for Correlation between Gene and Immune Signatures

Usage

```
vis_gene_immune_cor(
  Gene = "TP53",
  cor_method = "spearman",
  data_type = "mRNA",
  Immune_sig_type = "Cibersort",
  Plot = "TRUE",
  opt_pancan = .opt_pancan
)
```

Arguments

Gene	a molecular identifier (e.g., "TP53") or a formula specifying genomic signature ("TP53 + 2 * KRAS - 1.3 * PTEN").
cor_method	correlation method
data_type	choose gene profile type, including "mRNA", "transcript", "protein", "mutation", "cnv", "methylation", "miRNA".
Immune_sig_type	quantification method, default is "Cibersort"
Plot	output the plot directly, default 'TRUE'
opt_pancan	specify one dataset for some molecular profiles

Examples

```
## Not run:
p <- vis_gene_immune_cor(Gene = "TP53")

## End(Not run)
```

vis_gene_msi_cor	<i>Visualize Correlation between Gene and MSI (Microsatellite instability)</i>
------------------	--

Description

Visualize Correlation between Gene and MSI (Microsatellite instability)

Usage

```
vis_gene_msi_cor(
  Gene = "TP53",
  cor_method = "spearman",
  data_type = "mRNA",
  Plot = "TRUE",
  opt_pancan = .opt_pancan
)
```

Arguments

Gene	a molecular identifier (e.g., "TP53") or a formula specifying genomic signature ("TP53 + 2 * KRAS - 1.3 * PTEN").
cor_method	correlation method
data_type	choose gene profile type, including "mRNA", "transcript", "protein", "mutation", "cnv", "methylation", "miRNA".
Plot	output the plot directly, default 'TRUE'
opt_pancan	specify one dataset for some molecular profiles

Examples

```
## Not run:
p <- vis_gene_msi_cor(Gene = "TP53")

## End(Not run)
```

vis_gene_pw_cor *Visualize Correlation between Gene and Pathway signature Score*

Description

Visualize Correlation between Gene and Pathway signature Score

Usage

```
vis_gene_pw_cor(
  Gene = "TP53",
  data_type = "mRNA",
  pw_name = "HALLMARK_ADIPOGENESIS",
  cancer_choose = "GBM",
  use_regline = TRUE,
  cor_method = "spearman",
  use_all = FALSE,
  alpha = 0.5,
  color = "#000000",
  filter_tumor = TRUE,
  opt_pancan = .opt_pancan
)
```

Arguments

Gene	a molecular identifier (e.g., "TP53") or a formula specifying genomic signature ("TP53 + 2 * KRAS - 1.3 * PTEN").
data_type	choose gene profile type, including "mRNA", "transcript", "protein", "mutation", "cnv", "methylation", "miRNA".
pw_name	the queried Pathway name, see the supported pathway from 'load("toil_sig_score")' default is NULL
cancer_choose	select cancer cohort(s)
use_regline	if TRUE, add regression line.
cor_method	select correlation coefficient (pearson/spearman)
use_all	use all sample, default FALSE.
alpha	dot alpha.
color	dot color.
filter_tumor	whether use tumor sample only, default TRUE
opt_pancan	specify one dataset for some molecular profiles

Value

a ggplot object or dataframe

Examples

```
## Not run:
vis_gene_pw_cor(
  Gene = "TP53", data_type = "mRNA",
  pw_name = "HALLMARK_ADIPOGENESIS",
  cancer_choose = "BRCA"
)

## End(Not run)
```

vis_gene_stemness_cor *Visualize Correlation between Gene and Tumor Stemness*

Description

Visualize Correlation between Gene and Tumor Stemness

Usage

```
vis_gene_stemness_cor(
  Gene = "TP53",
  cor_method = "spearman",
  data_type = "mRNA",
  Plot = "TRUE",
  opt_pancan = .opt_pancan
)
```

Arguments

Gene	a molecular identifier (e.g., "TP53") or a formula specifying genomic signature ("TP53 + 2 * KRAS - 1.3 * PTEN").
cor_method	correlation method
data_type	choose gene profile type, including "mRNA", "transcript", "protein", "mutation", "cnv", "methylation", "miRNA".
Plot	output the plot directly, default 'TRUE'
opt_pancan	specify one dataset for some molecular profiles

Examples

```
## Not run:
p <- vis_gene_stemness_cor(Gene = "TP53")
p

## End(Not run)
## To generate a radar plot, uncomment the following code
# pdata <- p$data %>%
#   dplyr::mutate(cor = round(cor, digits = 3), p.value = round(p.value, digits = 3))
```

```

#
# df <- pdata %>%
#   select(cor, cancer) %>%
#   pivot_wider(names_from = cancer, values_from = cor)
#
# ggradar::ggradar(
#   df[1, ],
#   font.radar = "sans",
#   values.radar = c("-1", "0", "1"),
#   grid.min = -1, grid.mid = 0, grid.max = 1,
#   # Background and grid lines
#   background.circle.colour = "white",
#   gridline.mid.colour = "grey",
#   # Polygons
#   group.line.width = 1,
#   group.point.size = 3,
#   group.colours = "#00AFBB" +
#   theme(plot.title = element_text(hjust = .5))

```

vis_gene_TIL_cor	<i>Heatmap for Correlation between Gene and Tumor Immune Infiltration (TIL)</i>
------------------	---

Description

Heatmap for Correlation between Gene and Tumor Immune Infiltration (TIL)

Usage

```

vis_gene_TIL_cor(
  Gene = "TP53",
  cor_method = "spearman",
  data_type = "mRNA",
  sig = c("B cell_TIMER", "T cell CD4+_TIMER", "T cell CD8+_TIMER", "Neutrophil_TIMER",
    "Macrophage_TIMER", "Myeloid dendritic cell_TIMER"),
  Plot = "TRUE",
  opt_pancan = .opt_pancan
)

```

Arguments

Gene	a molecular identifier (e.g., "TP53") or a formula specifying genomic signature ("TP53 + 2 * KRAS - 1.3 * PTEN").
cor_method	correlation method
data_type	choose gene profile type, including "mRNA", "transcript", "protein", "mutation", "cnv", "methylation", "miRNA".
sig	Immune Signature, default: result from TIMER
Plot	output the plot directly, default 'TRUE'
opt_pancan	specify one dataset for some molecular profiles

Examples

```
## Not run:
p <- vis_gene_TIL_cor(Gene = "TP53")

## End(Not run)
```

vis_gene_tmb_cor	<i>Visualize Correlation between Gene and TMB (Tumor Mutation Burden)</i>
------------------	---

Description

Visualize Correlation between Gene and TMB (Tumor Mutation Burden)

Usage

```
vis_gene_tmb_cor(
  Gene = "TP53",
  cor_method = "spearman",
  data_type = "mRNA",
  Plot = "TRUE",
  opt_pancan = .opt_pancan
)
```

Arguments

Gene	a molecular identifier (e.g., "TP53") or a formula specifying genomic signature ("TP53 + 2 * KRAS - 1.3 * PTEN").
cor_method	correlation method
data_type	choose gene profile type, including "mRNA", "transcript", "protein", "mutation", "cnv", "methylation", "miRNA".
Plot	output the plot directly, default 'TRUE'
opt_pancan	specify one dataset for some molecular profiles

Examples

```
## Not run:
p <- vis_gene_tmb_cor(Gene = "TP53")

## End(Not run)
```

vis_identifier_cor *Visualize Identifier-Identifier Correlation*

Description

NOTE: the dataset must be dense matrix in UCSC Xena data hubs.

Usage

```
vis_identifier_cor(  
  dataset1,  
  id1,  
  dataset2,  
  id2,  
  samples = NULL,  
  use_ggstats = FALSE,  
  use_simple_axis_label = TRUE,  
  line_color = "blue",  
  alpha = 0.5,  
  ...  
)
```

Arguments

dataset1	the dataset to obtain id1.
id1	the first molecule identifier.
dataset2	the dataset to obtain id2.
id2	the second molecule identifier.
samples	default is NULL, can be common sample names for two datasets.
use_ggstats	if TRUE, use <code>ggstatsplot</code> package for plotting.
use_simple_axis_label	if TRUE (default), use simple axis labels. Otherwise, data subtype will be labeled.
line_color	set the color for regression line.
alpha	set the alpha for dots.
...	other parameters passing to <code>ggscatter</code> .

Value

a (gg)plot object.

Examples

```
## Not run:
dataset <- "TcgaTargetGtex_rsem_isoform_tpm"
id1 <- "TP53"
id2 <- "KRAS"
vis_identifier_cor(dataset, id1, dataset, id2)

samples <- c(
  "TCGA-D5-5538-01", "TCGA-VM-A8C8-01",
  "TCGA-ZN-A9VQ-01", "TCGA-EE-A17X-06",
  "TCGA-05-4420-01"
)
vis_identifier_cor(dataset, id1, dataset, id2, samples)

dataset1 <- "TCGA-BLCA.htseq_counts.tsv"
dataset2 <- "TCGA-BLCA.gistic.tsv"
id1 <- "TP53"
id2 <- "KRAS"
vis_identifier_cor(dataset1, id1, dataset2, id2)

## End(Not run)
```

vis_identifier_dim_dist

Visualize the distribution difference of samples after Molecule Identifier dimensionality reduction analysis

Description

NOTE: the dataset must be dense matrix in UCSC Xena data hubs.

Usage

```
vis_identifier_dim_dist(
  dataset = NULL,
  ids = NULL,
  grp_df,
  samples = NULL,
  return.data = FALSE,
  DR_method = c("PCA", "UMAP", "tSNE"),
  add_margin = NULL,
  palette = "Set1"
)
```

Arguments

dataset	the dataset to obtain identifiers.
ids	the molecule identifiers.

grp_df	When dataset and id are all not NULL, it should be a data.frame with 2 columns. <ul style="list-style-type: none">• The first column refers to sample ID.• The second column refers to groups indicated in axis X.
samples	default is NULL, can be common sample names for two datasets.
return.data	whether to return the raw meta/matrix data (list) instead of plot
DR_method	the dimensionality reduction method
add_margin	the marginal plot (NULL, "density", "boxplot")
palette	the color setting of RColorBrewer

Value

a ggplot object.

Examples

```
# vis_identifier_dim_dist(expr_dataset, ids, grp_df, DR_method="PCA")
```

vis_identifier_grp_comparison

Visualize Comparison of an Molecule Identifier between Groups

Description

NOTE: the dataset must be dense matrix in UCSC Xena data hubs.

Usage

```
vis_identifier_grp_comparison(  
  dataset = NULL,  
  id = NULL,  
  grp_df,  
  samples = NULL,  
  fun_type = c("betweenstats", "withinstats"),  
  type = c("parametric", "nonparametric", "robust", "bayes"),  
  pairwise.comparisons = TRUE,  
  p.adjust.method = c("holm", "hochberg", "hommel", "bonferroni", "BH", "BY", "fdr",  
    "none"),  
  ggtheme = cowplot::theme_cowplot(),  
  ...  
)
```

Arguments

dataset	the dataset to obtain identifiers.
id	the molecule identifier.
grp_df	When dataset and id are all not NULL, it should be a data.frame with 2 or 3 columns. <ul style="list-style-type: none"> • The first column refers to sample ID. • The second column refers to groups indicated in axis X. • The third column is optional, which indicates facet variable. When any of dataset and id is NULL, it should be a data.frame with 3 or 4 columns. • The first column refers to sample ID. • The second column refers to values indicated in axis Y. • The third column refers to groups indicated in axis X. • The fourth column is optional, which indicates facet variable.
samples	default is NULL, can be common sample names for two datasets.
fun_type	select the function to compare groups.
type	A character specifying the type of statistical approach: <ul style="list-style-type: none"> • "parametric" • "nonparametric" • "robust" • "bayes" <p>You can specify just the initial letter.</p>
pairwise.comparisons	whether pairwise comparison
p.adjust.method	Adjustment method for p -values for multiple comparisons. Possible methods are: "holm" (default), "hochberg", "hommel", "bonferroni", "BH", "BY", "fdr", "none".
ggtheme	A {ggplot2} theme. Default value is <code>theme_ggstatsplot()</code> . Any of the {ggplot2} themes (e.g., <code>ggplot2::theme_bw()</code>), or themes from extension packages are allowed (e.g., <code>ggthemes::theme_fivethirtyeight()</code> , <code>hrbrthemes::theme_ipsum_ps()</code> etc.). But note that sometimes these themes will remove some of the details that {ggstatsplot} plots typically contains. For example, if relevant, <code>ggbetweenstats()</code> shows details about multiple comparison test as a label on the secondary Y-axis. Some themes (e.g. <code>ggthemes::theme_fivethirtyeight()</code>) will remove the secondary Y-axis and thus the details as well.
...	other parameters passing to <code>ggstatsplot::ggbetweenstats</code> or <code>ggstatsplot::ggwithinstats</code> .

Value

a (gg)plot object.

Examples

```
## Not run:
library(UCSCXenaTools)
expr_dataset <- "TCGA.LUAD.sampleMap/HiSeqV2_percentile"
cli_dataset <- "TCGA.LUAD.sampleMap/LUAD_clinicalMatrix"
id <- "TP53"
cli_df <- XenaGenerate(
  subset = XenaDatasets == "TCGA.LUAD.sampleMap/LUAD_clinicalMatrix"
) %>%
  XenaQuery() %>%
  XenaDownload() %>%
  XenaPrepare()

# group data.frame with 2 columns
vis_identifier_grp_comparison(expr_dataset, id, cli_df[, c("sampleID", "gender")])
# group data.frame with 3 columns
vis_identifier_grp_comparison(
  expr_dataset, id,
  cli_df[, c("sampleID", "pathologic_M", "gender")] %>%
  dplyr::filter(pathologic_M %in% c("M0", "MX"))
)

# When not use the value of `identifier` from `dataset`
vis_identifier_grp_comparison(grp_df = cli_df[, c(1, 2, 71)])
vis_identifier_grp_comparison(grp_df = cli_df[, c(1, 2, 71, 111)])

## End(Not run)
```

```
vis_identifier_grp_surv
```

Visualize Identifier Group Survival Difference

Description

NOTE: the dataset must be dense matrix in UCSC Xena data hubs.

Usage

```
vis_identifier_grp_surv(
  dataset = NULL,
  id = NULL,
  surv_df,
  samples = NULL,
  cutoff_mode = c("Auto", "Custom", "None"),
  cutpoint = c(50, 50),
  palette = "aaas",
  ...
)
```

Arguments

dataset	the dataset to obtain identifiers.
id	the molecule identifier.
surv_df	a data.frame. The "time" should be in unit of "days". <ul style="list-style-type: none"> • If there are 3 columns, the names should be "sample", "time", "status". • If there are 4 columns, the names should be "sample", "value", "time", "status".
samples	default is NULL, can be common sample names for two datasets.
cutoff_mode	mode for grouping samples, can be "Auto" (default) or "Custom" or "None" (for groups have been prepared).
cutpoint	cut point (in percent) for "Custom" mode, default is c(50, 50).
palette	color palette, can be "hue", "grey", "RdBu", "Blues", "npg", "aaas", etc. More see ?survminer::ggsurvplot.
...	other parameters passing to survminer::ggsurvplot

Value

a (gg)plot object.

Examples

```
## Not run:
library(UCSCXenaTools)
expr_dataset <- "TCGA.LUAD.sampleMap/HiSeqV2_percentile"
cli_dataset <- "TCGA.LUAD.sampleMap/LUAD_clinicalMatrix"
id <- "KRAS"
cli_df <- XenaGenerate(
  subset = XenaDatasets == "TCGA.LUAD.sampleMap/LUAD_clinicalMatrix"
) %>%
  XenaQuery() %>%
  XenaDownload() %>%
  XenaPrepare()

# Use individual survival data
surv_df1 <- cli_df[, c("sampleID", "ABSOLUTE_Ploidy", "days_to_death", "vital_status")]
surv_df1$vital_status <- ifelse(surv_df1$vital_status == "DECEASED", 1, 0)
vis_identifier_grp_surv(surv_df = surv_df1)

# Use both dataset argument and vis_identifier_grp_surv(surv_df = surv_df1)
surv_df2 <- surv_df1[, c(1, 3, 4)]
vis_identifier_grp_surv(expr_dataset, id, surv_df = surv_df2)
vis_identifier_grp_surv(expr_dataset, id,
  surv_df = surv_df2,
  cutoff_mode = "Custom", cutpoint = c(25, 75)
)

## End(Not run)
```

 vis_identifier_multi_cor

Visualize Correlation for Multiple Identifiers

Description

NOTE: the dataset must be dense matrix in UCSC Xena data hubs.

Usage

```
vis_identifier_multi_cor(
  dataset,
  ids,
  samples = NULL,
  matrix.type = c("full", "upper", "lower"),
  type = c("parametric", "nonparametric", "robust", "bayes"),
  partial = FALSE,
  sig.level = 0.05,
  p.adjust.method = c("holm", "hochberg", "hommel", "bonferroni", "BH", "BY", "fdr",
    "none"),
  color_low = "#E69F00",
  color_high = "#009E73",
  ...
)
```

Arguments

dataset	the dataset to obtain identifiers.
ids	the molecule identifiers.
samples	default is NULL, can be common sample names for two datasets.
matrix.type	Character, "upper" (default), "lower", or "full", display full matrix, lower triangular or upper triangular matrix.
type	A character specifying the type of statistical approach: <ul style="list-style-type: none"> • "parametric" • "nonparametric" • "robust" • "bayes" You can specify just the initial letter.
partial	Can be TRUE for partial correlations. For Bayesian partial correlations, "full" instead of pseudo-Bayesian partial correlations (i.e., Bayesian correlation based on frequentist partialization) are returned.
sig.level	Significance level (Default: 0.05). If the p -value in p -value matrix is bigger than sig.level, then the corresponding correlation coefficient is regarded as insignificant and flagged as such in the plot.

p.adjust.method Adjustment method for p -values for multiple comparisons. Possible methods are: "holm" (default), "hochberg", "hommel", "bonferroni", "BH", "BY", "fdr", "none".

color_low the color code for lower value mapping.

color_high the color code for higher value mapping.

... other parameters passing to [ggstatsplot::ggcormat](#).

Value

a (gg)plot object.

Examples

```
## Not run:
dataset <- "TcgaTargetGtex_rsem_isoform_tpm"
ids <- c("TP53", "KRAS", "PTEN")
vis_identifler_multi_cor(dataset, ids)

## End(Not run)
```

vis_pancan_anatomy *Visualize Single Gene Expression in Anatomy Location*

Description

Visualize Single Gene Expression in Anatomy Location

Usage

```
vis_pancan_anatomy(
  Gene = "TP53",
  Gender = c("Female", "Male"),
  data_type = "mRNA",
  option = "D",
  opt_pancan = .opt_pancan
)
```

Arguments

Gene a molecular identifier (e.g., "TP53") or a formula specifying genomic signature ("TP53 + 2 * KRAS - 1.3 * PTEN").

Gender a string, "Female" (default) or "Male".

data_type choose gene profile type, including "mRNA", "transcript", "methylation", "miRNA", "protein", "cnv"

option A character string indicating the color map option to use. Eight options are available:

- "magma" (or "A")
 - "inferno" (or "B")
 - "plasma" (or "C")
 - "viridis" (or "D")
 - "cividis" (or "E")
 - "rocket" (or "F")
 - "mako" (or "G")
 - "turbo" (or "H")
- opt_pancan specify one dataset for some molecular profiles

Value

a ggplot object

vis_pathway_cross_omics

Visualize cross-omics of one pathway among pan-cancers

Description

Visualize cross-omics of one pathway among pan-cancers

Usage

```
vis_pathway_cross_omics(
  pw = "HALLMARK_ADIPOGENESIS",
  tumor_projects = NULL,
  tumor_samples = NULL,
  pval_mrna = c(0.05, 0.01, 0.001),
  return_list = FALSE
)
```

Arguments

pw pathway name

tumor_projects Select specific TCGA projects. Default NULL, indicating all TCGA projects.

tumor_samples Select specific tumor samples. Default NULL, indicating all tumor samples.

pval_mrna The P value thresholds

return_list TRUE returns a list including plot object and data. FALSE just returns plot.

Value

funkyheatmap

vis_pcawg_dist	<i>Visualize molecular profile in PCAWG</i>
----------------	---

Description

Visualize molecular profile in PCAWG

Usage

```
vis_pcawg_dist(
  Gene = "TP53",
  Mode = c("Boxplot", "Violinplot"),
  data_type = "mRNA",
  Show.P.value = TRUE,
  Show.P.label = TRUE,
  Method = c("wilcox.test", "t.test"),
  values = c("#DF2020", "#DDDF21"),
  draw_quantiles = c(0.25, 0.5, 0.75),
  trim = TRUE,
  opt_pancan = .opt_pancan
)
```

Arguments

Gene	a molecular identifier (e.g., "TP53") or a formula specifying genomic signature ("TP53 + 2 * KRAS - 1.3 * PTEN").
Mode	"Boxplot" or "Violinplot" to represent data
data_type	choose gene profile type, including "mRNA", "transcript", "protein", "mutation", "cnv", "methylation", "miRNA".
Show.P.value	TRUE or FALSE whether to count P value
Show.P.label	TRUE or FALSE present p value with number or label *, **, *** and ****
Method	default method is wilcox.test
values	the color to fill tumor or normal
draw_quantiles	draw quantiles for violinplot
trim	whether trim the violin
opt_pancan	specify one dataset for some molecular profiles

Value

a ggplot object

Examples

```
## Not run:
p <- vis_pcawg_dist(Gene = "TP53")

## End(Not run)
```

vis_pcawg_gene_cor *Visualize Gene-Gene Correlation in TCGA*

Description

Visualize Gene-Gene Correlation in TCGA

Usage

```
vis_pcawg_gene_cor(
  Gene1 = "CSF1R",
  Gene2 = "JAK3",
  data_type1 = "mRNA",
  data_type2 = "mRNA",
  cor_method = "spearman",
  purity_adj = TRUE,
  use_log_x = FALSE,
  use_log_y = FALSE,
  use_regline = TRUE,
  dcc_project_code_choose = "BLCA-US",
  use_all = FALSE,
  filter_tumor = TRUE,
  alpha = 0.5,
  color = "#000000",
  opt_pancan = .opt_pancan
)
```

Arguments

Gene1	a molecular identifier (e.g., "TP53") or a formula specifying genomic signature ("TP53 + 2 * KRAS - 1.3 * PTEN").
Gene2	a molecular identifier (e.g., "TP53") or a formula specifying genomic signature ("TP53 + 2 * KRAS - 1.3 * PTEN").
data_type1	choose gene profile type for the first gene, including "mRNA", "transcript", "methylation", "miRNA", "prote"
data_type2	choose gene profile type for the second gene, including "mRNA", "transcript", "methylation", "miRNA", "pr"
cor_method	correlation method
purity_adj	whether performing partial correlation adjusted by purity
use_log_x	if TRUE, log X values.
use_log_y	if TRUE, log Y values.

use_regline if TRUE, add regression line.
 dcc_project_code_choose select project code.
 use_all use all sample, default FALSE.
 filter_tumor whether use tumor sample only, default TRUE
 alpha dot alpha.
 color dot color.
 opt_pancan specify one dataset for some molecular profiles

Value

a ggplot object

vis_pcawg_unicox_tree *Visualize Single Gene Univariable Cox Result in PCAWG*

Description

Visualize Single Gene Univariable Cox Result in PCAWG

Usage

```
vis_pcawg_unicox_tree(
  Gene = "TP53",
  measure = "OS",
  data_type = "mRNA",
  use_optimal_cutoff = FALSE,
  values = c("grey", "#E31A1C", "#377DB8"),
  opt_pancan = .opt_pancan
)
```

Arguments

Gene a molecular identifier (e.g., "TP53") or a formula specifying genomic signature ("TP53 + 2 * KRAS - 1.3 * PTEN").
 measure a survival measure, e.g. "OS".
 data_type choose gene profile type, including "mRNA", "transcript", "methylation", "miRNA", "protein", "cnv"
 use_optimal_cutoff use surv_cutpoint from survminer package for thresholding samples in each cancer type.
 values the color to fill tumor or normal
 opt_pancan specify one dataset for some molecular profiles

Value

a ggplot object

Examples

```
## Not run:
p <- vis_pcawg_unicox_tree(Gene = "TP53")

## End(Not run)
```

vis_toil_Mut	<i>Visualize molecular profile difference between mutation and wild status of queried gene</i>
--------------	--

Description

Visualize molecular profile difference between mutation and wild status of queried gene

Usage

```
vis_toil_Mut(
  mut_Gene = "TP53",
  Gene = NULL,
  data_type = NULL,
  Mode = c("Boxplot", "Violinplot"),
  Show.P.value = TRUE,
  Show.P.label = TRUE,
  Method = c("wilcox.test", "t.test"),
  values = c("#DF2020", "#DDDF21"),
  draw_quantiles = c(0.25, 0.5, 0.75),
  trim = TRUE,
  opt_pancan = .opt_pancan
)
```

Arguments

mut_Gene	the queried gene to determine grouping based on mutation and wild status
Gene	a molecular identifier (e.g., "TP53") or a formula specifying genomic signature ("TP53 + 2 * KRAS - 1.3 * PTEN").
data_type	choose gene profile type, including "mRNA", "transcript", "methylation", "miRNA".
Mode	choose one visualize mode to represent data
Show.P.value	TRUE or FALSE whether to count P value
Show.P.label	TRUE or FALSE present p value with number or label *, **, *** and ****
Method	default method is wilcox.test
values	the color to fill mutation or wild status

draw_quantiles draw quantiles for violinplot
 trim whether to trim the violin
 opt_pancan specify one dataset for some molecular profiles

Value

a ggplot object or a tibble data.frame

Examples

```
## Not run:
p <- vis_toil_Mut(mut_Gene = "TP53")
p <- vis_toil_Mut(mut_Gene = "TP53", Gene = "TNF")
p <- vis_toil_Mut(mut_Gene = "TP53", Gene = "hsa-let-7d-3p", data_type = "miRNA")

## End(Not run)
```

vis_toil_Mut_cancer *Visualize molecular profile difference between mutation and wild status of queried gene in Single Cancer Type*

Description

Visualize molecular profile difference between mutation and wild status of queried gene in Single Cancer Type

Usage

```
vis_toil_Mut_cancer(
  mut_Gene = "TP53",
  Gene = NULL,
  data_type = NULL,
  Mode = c("Dotplot", "Violinplot"),
  Show.P.value = TRUE,
  Show.P.label = TRUE,
  Method = c("wilcox.test", "t.test"),
  values = c("#DF2020", "#DDDF21"),
  draw_quantiles = c(0.25, 0.5, 0.75),
  trim = TRUE,
  Cancer = "ACC",
  opt_pancan = .opt_pancan
)
```

Arguments

mut_Gene	the queried gene to determine grouping based on mutation and wild status
Gene	a molecular identifier (e.g., "TP53") or a formula specifying genomic signature ("TP53 + 2 * KRAS - 1.3 * PTEN").
data_type	choose gene profile type, including "mRNA", "transcript", "methylation", "miRNA".
Mode	choose one visualize mode to represent data
Show.P.value	TRUE or FALSE whether to count P value
Show.P.label	TRUE or FALSE present p value with number or label *, **, *** and ****
Method	default method is wilcox.test
values	the color to fill mutation or wild status
draw_quantiles	draw quantiles for violinplot
trim	whether to trim the violin
Cancer	select cancer cohort(s).
opt_pancan	specify one dataset for some molecular profiles

Value

a ggplot object or a tibble data.frame.

vis_toil_TvsN	<i>Visualize Pan-cancer TPM (tumor (TCGA) vs Normal (TCGA & GTEx))</i>
---------------	--

Description

Visualize Pan-cancer TPM (tumor (TCGA) vs Normal (TCGA & GTEx))

Usage

```
vis_toil_TvsN(
  Gene = "TP53",
  Mode = c("Boxplot", "Violinplot"),
  data_type = "mRNA",
  Show.P.value = TRUE,
  Show.P.label = TRUE,
  Method = c("wilcox.test", "t.test"),
  values = c("#DF2020", "#DDDF21"),
  TCGA.only = FALSE,
  draw_quantiles = c(0.25, 0.5, 0.75),
  trim = TRUE,
  include.Tumor.only = FALSE,
  opt_pancan = .opt_pancan
)
```

Arguments

Gene	a molecular identifier (e.g., "TP53") or a formula specifying genomic signature ("TP53 + 2 * KRAS - 1.3 * PTEN").
Mode	"Boxplot" or "Violinplot" to represent data
data_type	choose gene profile type, including "mRNA", "transcript", "protein", "mutation", "cnv", "methylation", "miRNA".
Show.P.value	TRUE or FALSE whether to count P value
Show.P.label	TRUE or FALSE present p value with number or label *, **, *** and ****
Method	default method is wilcox.test
values	the color to fill tumor or normal
TCGA.only	include samples only from TCGA dataset
draw_quantiles	draw quantiles for violinplot
trim	whether trim the violin
include.Tumor.only	if TRUE, include "UVM" and "MESO" these two types with matched normals samples.
opt_pancan	specify one dataset for some molecular profiles

Value

a ggplot object

Examples

```
## Not run:
p <- vis_toil_TvsN(Gene = "TP53", Mode = "Violinplot", Show.P.value = FALSE, Show.P.label = FALSE)
p <- vis_toil_TvsN(Gene = "TP53", Mode = "Boxplot", Show.P.value = FALSE, Show.P.label = FALSE)

## End(Not run)
```

vis_toil_TvsN_cancer *Visualize Gene TPM in Single Cancer Type (Tumor (TCGA) vs Normal (TCGA & GTEx))*

Description

Visualize Gene TPM in Single Cancer Type (Tumor (TCGA) vs Normal (TCGA & GTEx))

Usage

```
vis_toil_TvsN_cancer(
  Gene = "TP53",
  Mode = c("Violinplot", "Dotplot"),
  data_type = "mRNA",
  Show.P.value = FALSE,
  Show.P.label = FALSE,
  Method = "wilcox.test",
  values = c("#DF2020", "#DDDF21"),
  TCGA.only = FALSE,
  Cancer = "ACC",
  opt_pancan = .opt_pancan
)
```

Arguments

Gene	a molecular identifier (e.g., "TP53") or a formula specifying genomic signature ("TP53 + 2 * KRAS - 1.3 * PTEN").
Mode	"Boxplot" or "Violinplot" to represent data
data_type	choose gene profile type, including "mRNA", "transcript", "protein", "mutation", "cnv", "methylation", "miRNA".
Show.P.value	TRUE or FALSE whether to count P value
Show.P.label	TRUE or FALSE present p value with number or label *, **, *** and ****
Method	default method is wilcox.test
values	the color to fill tumor or normal
TCGA.only	include samples only from TCGA dataset
Cancer	select cancer cohort(s).
opt_pancan	specify one dataset for some molecular profiles

Value

a ggplot object.

vis_unicox_tree

Visualize Single Gene Univariable Cox Result from Toil Data Hub

Description

Visualize Single Gene Univariable Cox Result from Toil Data Hub

Usage

```
vis_unicox_tree(  
  Gene = "TP53",  
  measure = "OS",  
  data_type = "mRNA",  
  use_optimal_cutoff = FALSE,  
  values = c("grey", "#E31A1C", "#377DB8"),  
  opt_pancan = .opt_pancan  
)
```

Arguments

Gene	a molecular identifier (e.g., "TP53") or a formula specifying genomic signature ("TP53 + 2 * KRAS - 1.3 * PTEN").
measure	a survival measure, e.g. "OS".
data_type	choose gene profile type, including "mRNA", "transcript", "methylation", "miRNA", "protein", "mutation", "mutation", "mutation".
use_optimal_cutoff	use surv_cutpoint from survminer package for thresholding samples in each cancer type.
values	the color to fill tumor or normal
opt_pancan	specify one dataset for some molecular profiles

Value

a ggplot object

Examples

```
## Not run:  
p <- vis_unicox_tree(Gene = "TP53")  
  
## End(Not run)
```

Index

* datasets

- .opt_pancan, 3
- .opt_pancan, 3
- analyze_gene_drug_response_asso, 4, 41
- analyze_gene_drug_response_diff, 5, 41
- app_run, 6
- app_run2, 7
- available_hosts, 8

- calc_pw_mut_cnv, 8
- cclle_absolute, 9
- cclle_info, 9
- cclle_info_fine, 10

- data.frame, 30–34

- ezcor, 10
- ezcor_batch, 11
- ezcor_partial_cor, 12

- get_cclle_cn_value, 13
- get_cclle_gene_value
 - (get_cclle_cn_value), 13
- get_cclle_mutation_status
 - (get_cclle_cn_value), 13
- get_cclle_protein_value
 - (get_cclle_cn_value), 13
- get_nonomics_value, 16
- get_pancan_cn_value
 - (get_cclle_cn_value), 13
- get_pancan_gene_value
 - (get_cclle_cn_value), 13
- get_pancan_methylation_value
 - (get_cclle_cn_value), 13
- get_pancan_miRNA_value
 - (get_cclle_cn_value), 13
- get_pancan_mutation_status
 - (get_cclle_cn_value), 13
- get_pancan_protein_value
 - (get_cclle_cn_value), 13

- get_pancan_transcript_value
 - (get_cclle_cn_value), 13
- get_pancan_value (get_cclle_cn_value), 13
- get_pcawg_APOBEC_mutagenesis_value
 - (get_cclle_cn_value), 13
- get_pcawg_fusion_value
 - (get_cclle_cn_value), 13
- get_pcawg_gene_value
 - (get_cclle_cn_value), 13
- get_pcawg_miRNA_value
 - (get_cclle_cn_value), 13
- get_pcawg_promoter_value
 - (get_cclle_cn_value), 13

- ggbetweenstats(), 51
- ggplot2::theme_bw(), 51
- ggstatsplot::ggbetweenstats, 51
- ggstatsplot::ggcorrmat, 55
- ggstatsplot::ggwithinstats, 51

- keep_cat_cols, 17

- load_data, 18

- mol_quick_analysis, 19

- pcawg_info, 20
- pcawg_info_fine, 20
- pcawg_purity, 21
- ppcor::pcor.test(), 13

- query_general_value, 21
- query_molecule_value, 22
- query_pancan_value, 23
- query_tcga_group, 25
- query_toil_value_df, 27

- tcga survival analysis, 28
- TCGA.org, 30
- tcga_clinical, 30
- tcga_clinical_fine, 31
- tcga_genome_instability, 31

tcga_gtex, [32](#)
tcga_purity, [32](#)
tcga_subtypes, [33](#)
tcga_surv, [33](#)
tcga_surv_get(tcga survival analysis),
[28](#)
tcga_surv_plot(tcga survival
analysis), [28](#)
tcga_tmb, [34](#)
theme_ggstatsplot(), [51](#)
toil_info, [34](#)

UCSCXenaTools::XenaData, [15](#)

vis_ccle_gene_cor, [35](#)
vis_ccle_tpm, [36](#)
vis_dim_dist, [36](#)
vis_gene_cor, [38](#)
vis_gene_cor_cancer, [39](#)
vis_gene_cross_omics, [40](#)
vis_gene_drug_response_asso, [41](#)
vis_gene_drug_response_diff, [41](#)
vis_gene_immune_cor, [42](#)
vis_gene_msi_cor, [43](#)
vis_gene_pw_cor, [44](#)
vis_gene_stemness_cor, [45](#)
vis_gene_TIL_cor, [46](#)
vis_gene_tmb_cor, [47](#)
vis_identifier_cor, [48](#)
vis_identifier_dim_dist, [49](#)
vis_identifier_grp_comparison, [50](#)
vis_identifier_grp_surv, [52](#)
vis_identifier_multi_cor, [54](#)
vis_pancan_anatomy, [55](#)
vis_pathway_cross_omics, [56](#)
vis_pcawg_dist, [57](#)
vis_pcawg_gene_cor, [58](#)
vis_pcawg_unicox_tree, [59](#)
vis_toil_Mut, [60](#)
vis_toil_Mut_cancer, [61](#)
vis_toil_TvsN, [62](#)
vis_toil_TvsN_cancer, [63](#)
vis_unicox_tree, [64](#)