IDWAS User's guide

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This file will demonstrate a simple use case for the idwas R package. This package will allow one to preform an IDWAS using drug response imputations from the pRRophetic R package.

First, load the library.

```
> library(idwas)
> library(ggplot2)
> library(pRRophetic)
> set.seed(12345)
```

1 IDWAS on a subset of the GDSC data for a few drugs

```
> data("testIdwas") # clinicalExpressionData_tcga, clinicalGenomicsData_tcga, clinicalCoVa
> dataOut <- idwas(clinicalExpressionData_tcga, clinicalGenomicsData_tcga, clinicalCoVaria

Imputing drug response scores for all drugs:


 11503  gene identifiers overlap between the supplied expression matrices...


 4396 low variabilty genes filtered.
Fitting Ridge Regression model... Done

Calculating predicted phenotype...Done


 11503  gene identifiers overlap between the supplied expression matrices...


 4394 low variabilty genes filtered.
Fitting Ridge Regression model... Done

Calculating predicted phenotype...Done


 11503  gene identifiers overlap between the supplied expression matrices...
```

```
 4393 low variabilty genes filtered.
Fitting Ridge Regression model... Done

Calculating predicted phenotype...Done

Calculating P-values for Nutlin.3a...
Calculating P-values for PD.0332991...
Calculating P-values for PD.0325901...
Calculating adjusted P-values and outputting data...

> print(dataOut[1:10,])

                     P-value          FDR       Beta
Nutlin.3a.TP53    2.193116e-75 2.258910e-72  0.2590205
PD.0332991.RB1    1.239520e-39 1.276705e-36  0.5726526
PD.0325901.TP53   3.428127e-25 3.530971e-22  0.1644142
PD.0325901.RB1    2.418876e-14 1.245721e-11  0.3030451
PD.0332991.TP53   6.317022e-11 3.253266e-08  0.1143108
Nutlin.3a.IDH1    4.469259e-10 2.301668e-07  0.2549223
PD.0325901.KRAS   1.006798e-09 3.456674e-07 -0.2307133
PD.0325901.BRAF   1.958435e-08 4.235975e-06 -0.1848254
PD.0325901.CASP8  2.056298e-08 4.235975e-06 -0.3141246
Nutlin.3a.RB1     4.250113e-08 1.459206e-05  0.1959338
                 FDR Adjusted for Number of Drug-Models
Nutlin.3a.TP53                           6.776730e-72
PD.0332991.RB1                           3.830116e-36
PD.0325901.TP53                          1.059291e-21
PD.0325901.RB1                           3.737164e-11
PD.0332991.TP53                          9.759798e-08
Nutlin.3a.IDH1                           6.905004e-07
PD.0325901.KRAS                          1.037002e-06
PD.0325901.BRAF                          1.270792e-05
PD.0325901.CASP8                         1.270792e-05
Nutlin.3a.RB1                            4.377617e-05
```