

# Package ‘GWASExactHW’

February 19, 2015

**Type** Package

**Title** Exact Hardy-Weinburg testing for Genome Wide Association Studies

**Version** 1.01

**Date** 2013-01-04

**Author** Ian Painter, University of Washington

**Maintainer** Ian Painter <ipainter@u.washington.edu>

**Description** This package contains a function to do exact Hardy-Weinburg testing (using Fisher's test) for SNP genotypes as typically obtained in a Genome Wide Association Study (GWAS).

**License** GPL-3

**LazyLoad** yes

**Repository** CRAN

**Date/Publication** 2013-01-05 08:54:06

**NeedsCompilation** yes

## R topics documented:

GWASExactHW-package . . . . .	1
HWExact . . . . .	2

<b>Index</b>	<b>4</b>
--------------	----------

---

GWASExactHW-package    *Exact Hardy-Weinburg testing for Genome Wide Association Studies*

---

## Description

This package contains a function to do exact Hardy-Weinburg testing (using Fisher's test) over all or a selection of SNP genotypes as typically obtained in a Genome Wide Association Study (GWAS).

## Details

Package: GWASExactHW  
Type: Package  
Version: 1.01  
Date: 2013-01-04  
License: GNU  
LazyLoad: yes

The function HWExact runs fast Hardy-Weinberg testing for a set of bi-allelic genotypes.

### Author(s)

Ian Painter, University of Washington  
Maintainer: Ian Painter <ipainter@u.washington.edu>

### References

Wigginton, JE, Cutler, DJ, and Abecasis, GR (2005) A Note on Exact Tests of Hardy-Weinberg Equilibrium. *American Journal of Human Genetics*. 76

---

HWExact

*Function to calculate Hardy-Weinberg exact p-values*

---

### Description

This function calculates Hardy-Weinberg (Fisher's) exact p-values for GWAS SNP data.

### Usage

```
HWExact(GenotypeCounts)
```

### Arguments

GenotypeCounts A dataframe of genotype counts, with columns called nAA, nAa and naa, one row for each SNP.

### Value

A vector of exact p-values.

### Note

This function uses a C function SNPHWE.c written by Jan Wigginton as described in the above reference.

### Author(s)

Ian Painter

**References**

Wigginton, JE, Cutler, DJ, and Abecasis, GR (2005) A Note on Exact Tests of Hardy-Weinberg Equilibrium. *American Journal of Human Genetics*. 76

**Examples**

```
pA<- runif(1)
pAA<- pA^2
pAa<- 2*pA*(1-pA)
paa<- (1-pA)^2

counts<- rmultinom(1000, 3000, c(pAA, pAa, paa) )
genotypes<- data.frame(nAA = counts[1,], nAa = counts[2,], naa = counts[3,])
hwPvalues<- HWExact(genotypes)
```

# Index

\*Topic **htest**

HWExact, [2](#)

\*Topic **package**

GWSExactHW-package, [1](#)

GWSExactHW (GWSExactHW-package), [1](#)

GWSExactHW-package, [1](#)

HWExact, [2](#)