

gof_peas.R

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# gof_peas.R
# Goodness-of-fit test for Mendel data

# Load necessary libraries
library(DescTools)

## Warning: package 'DescTools' was built under R version 3.5.1

# Data values
obsfreq <- c(315,101,108,32)

# Probabilities and expected frequencies under H0
p0 <- c(0.5625,0.1875,0.1875,0.0625)
expfreq <- sum(obsfreq)*p0

# Observed and expected frequencies
rbind(obsfreq,expfreq)

##           [,1]  [,2]  [,3]  [,4]
## obsfreq 315.00 101.00 108.00 32.00
## expfreq 312.75 104.25 104.25 34.75

# X2 Goodness-of-fit test
# Asymptotic test
chisq.test(obsfreq,p=p0)

##
## Chi-squared test for given probabilities
##
## data:  obsfreq
## X-squared = 0.47002, df = 3, p-value = 0.9254

# X2 exact test using simulation
chisq.test(obsfreq,p=p0,simulate.p.value=TRUE)

##
## Chi-squared test for given probabilities with simulated p-value
## (based on 2000 replicates)
##
## data:  obsfreq
## X-squared = 0.47002, df = NA, p-value = 0.9165

# G2 goodness-of-fit test
GTest(obsfreq,p=p0)

##
## Log likelihood ratio (G-test) goodness of fit test
##
## data:  obsfreq
## G = 0.47545, X-squared df = 3, p-value = 0.9243
```