source("http://jonsmitchell.com/code/fxn05.R")

Pop1<- simPop(Popsize = 50, nGenerations = 100, initial\_p = 0.5, h =1, s = 0)

plot (1:nrow (Pop1), Pop1 [,1], ylim=c (0,1), type = "l", xlab="generation", ylab="allele freq.", lwd=2)

lines(1:nrow(Pop1), Pop1[,2], lwd=2, col='red')

legend("topleft", legend = c("a", "b"), col = c("black", "red"), lwd = 2, bty="n")

plotFit( nruns = 10, n = 50, ngens = 100, init\_p=0.5, h = 1, s = 0 )

Expectation <- c(10, 10, 10, 10)

Observed <- c(15, 15, 5, 5)

Chisq <- sum(((Expectation-Observed)^2)/Expectation)

barplot(rbind(Expectation, Observed), beeside=T, main=bquote(chi^2 ~ "=" ~.(Chisq)), legend.text=c("expected", "observed"))

results<- read.csv("http://jonsmitchell.com/data/biol112labresults.csv", stringsAsFactors=F)

counts<- results[,c("yellow","red","green","blue","black","tan")]

backgrounds <- c("White" ,"Red" ,"Yellow" ,"Green" ,"Blue" ,"Black")

backgroundCol <- c ("white", "#d53e4f", "#fee08b", "#abdda4", "#3288bd", "black")

calcChi(counts[1,])

Chisqs <- apply(counts, 1, calcChi)

plotChis(counts)

#not very even

#Chi-squared is very even when it is low

Avg <- mean(Chisqs)

#they look similar

# chi square differs by background in my opinion

backgroundAvgs <- tapply(Chisqs, results[,3], mean)

propSig <- length( which( Chisqs > 11.70))/length(Chisqs)

percSig <- round(100 \* propSig)

#i think that it could be a issue

par(las = 1, mar = c(4, 4, 1, 1), mgp = c(2, 0.5, 0), tck = -0.01, cex.axis=1)

hist(Chisqs, main="", xlab="chi-squared values", ylab="frequency")

par(las=1, mar=c(4, 4, 1, 1), mgp=c(2, 0.5, 0), tck = -0.01, cex.axis=1)

plot(1, 1, xlim=c(0, 400), ylim=c(1, 8.5), xlab="", ylab="", type="n", yaxt="n")

axis(2, at = 1:length(backgrounds), labels = backgrounds)

mtext(side=1, expression(chi^2), cex=1.75, line=2.5)

counter <- 1

for (i in backgrounds){

Data <- Chisqs[which(results[,3] == i)]

addHist(Y=counter, Dat=Data, Color=backgroundCol[counter])

counter <- counter +1

}

abline( v = 11.70, lty=2, lwd=2, col='black')

#no

Simulation <- simDraws(10000)

addHist(Y=7, Dat=Simulation, Color="lightgray")

mtext(side=2, at=7, line=0, "simulated")

abline(v=11.70, lty=2, lwd=2)

Fit<- c(1, 1, 1, 1, 1, 1)

names(Fit)<- 1:6

Simulation2<- simDraws(1e4, w=Fit)

addHist(Y=8, Dat=Simulation2, Color=rgb(0,0,0,0.25))

Fit <- c(0.1, 1, 1, 1, 1, 1)

names(Fit)<- 1:6

Simulation3 <- simDraws(1e4, w=Fit)

addHist(Y=8, Dat=Simulation3, Color=rgb(0,0,0,0.25))

Fit <- c(0.5, 0.6, 0.7, 1, 1, 1)

names(Fit)<- 1:6

Simulation4 <- simDraws(1e4, w=Fit)

addHist(Y=8, Dat=Simulation4, Color=rgb(0,0,0,0.25))

Fit <- c(0.1, 0.2, 0.3, 0.4, 0.5, 1)

names(Fit) <- 1:6

Simulation5 <- simDraws(1e4, w=Fit)

addHist(Y=8, Dat=Simulation5, Color=rgb(0,0,0,0.25))

Fit<- c(0.1, 0.1, 0.1, 0.1, 0.1, 1)

names(Fit)<- 1:6

Simulation6<- simDraws(1e4, w=Fit)

addHist(Y=8, Dat=Simulation6, Color=rgb(0,0,0,0.25))

mtext(side=2, at=8, line=0, "sel.sim")

Simulation7 <- c(Simulation2, Simulation3, Simulation4, Simulation5, Simulation6)

addHist(Y=8, Dat=Simulation7, Color=rgb(0,0,1,0.25))