

# FEL results preliminary

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## check one alignment

### zeiformes nd1 FEL results

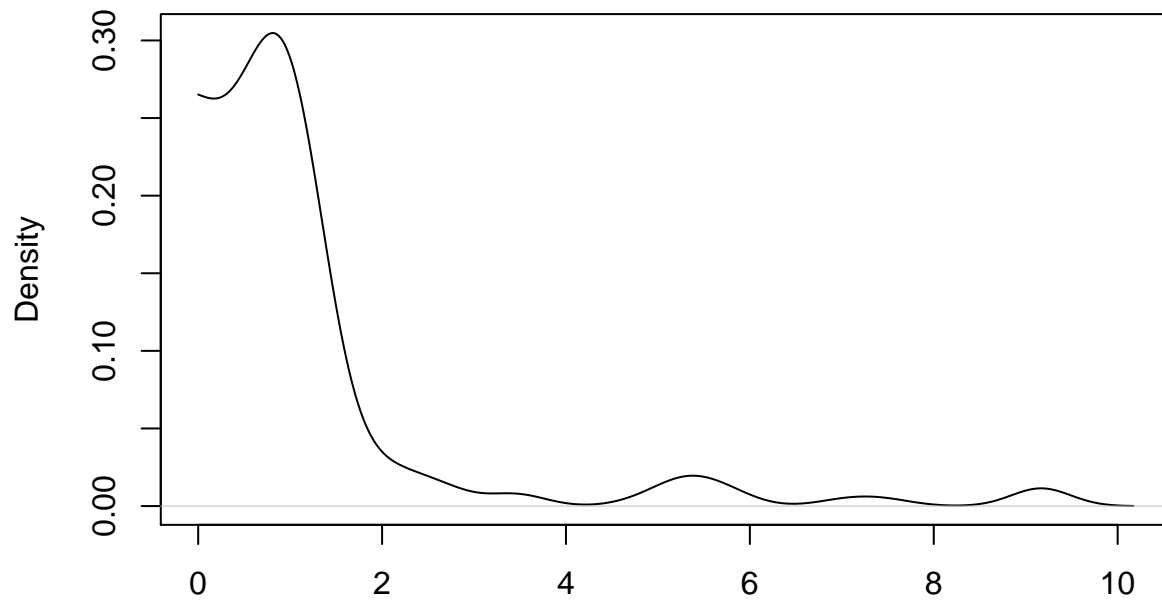
```
filepath <- read_json("~/bin/mtDNA_redo/data/FEL/zeiformes-nd1-align-dna.fas.FEL.json") #read in json
heads <- filepath$MLE$headers %>% unlist() %>% .[c(TRUE,FALSE)] #get headers and ignore header descrip
#get MLE contents and make them a data frame
temp <- filepath$MLE$content$`0` %>% unlist %>% matrix(ncol = 6, byrow = TRUE) %>% as.data.frame()
#make the headers the variable names
names(temp) <- heads
```

## kernel density and plots?

### Kernel density and plot for alpha for single FEL result

```
d_alpha <- density(log(temp$alpha), kernel = "gaussian", from = 0) #Kernel density for alpha rate estim
#start from 0 and log transform to control outliers
d_alpha %>% plot() #plot the density
```

```
density.default(x = log(temp$alpha), kernel = "gaussian", from = 0)
```



N = 325 Bandwidth = 0.32

what is the variability of the distribution?

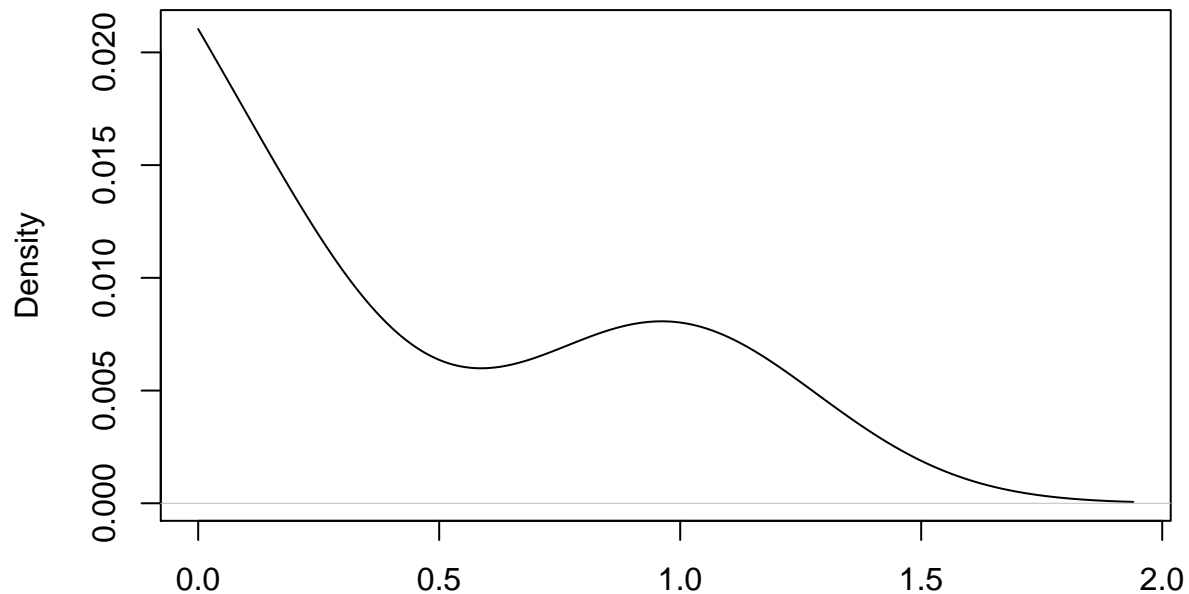
```
d_a_var <- d_alpha$x %>% var()

# t.a <- temp$alpha
# t.a[which(temp$alpha<=0)] <- 0
# t.a[which(temp$alpha== -Inf)] <- 0
# log(t.a)%>% var()
```

Kernel density and plot for beta for single FEL result

```
d_beta <- density(log(temp$beta), kernel = "gaussian", from = 0) #Kernel density for the beta rate est
d_beta %>% plot() #plot the density
```

**density.default(x = log(temp\$beta), kernel = "gaussian", from = 0)**



N = 325 Bandwidth = 0.3038

check a second alignment:

acipenseriformes at8 FEL results

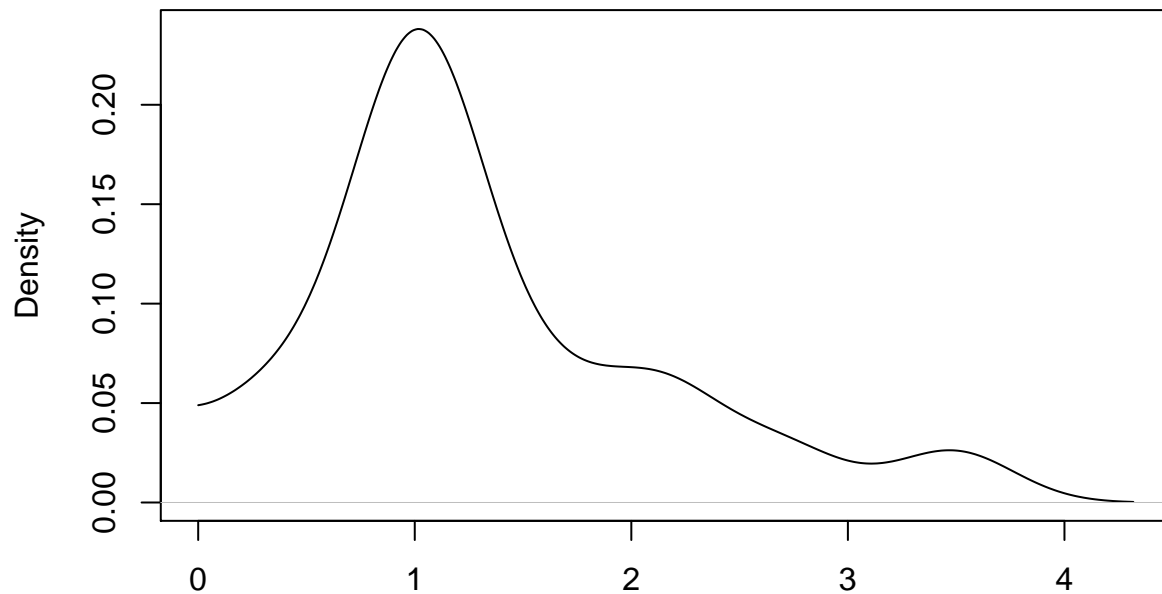
```
filepath <- read_json("~/bin/mtDNA_redo/data/FEL/acipenseriformes-atp8-align-dna.fas.FEL.json") #read i
heads <- filepath$MLE$headers %>% unlist() %>% .[c(TRUE,FALSE)] #get headers and ignore header descrip
#get MLE contents and make them a data frame
temp_2 <- filepath$MLE$content$`0` %>% unlist %>% matrix(ncol = 6, byrow = TRUE) %>% as.data.frame()
#make the headers the variable names
names(temp_2) <- heads
```

kernel density and plots?

Kernel density and plot for alpha for single FEL result

```
d_alpha_2 <- density(log(temp_2$alpha), kernel = "gaussian", from = 0)
d_alpha_2 %>% plot()
```

```
density.default(x = log(temp_2$alpha), kernel = "gaussian", from = 0)
```



N = 56 Bandwidth = 0.2771

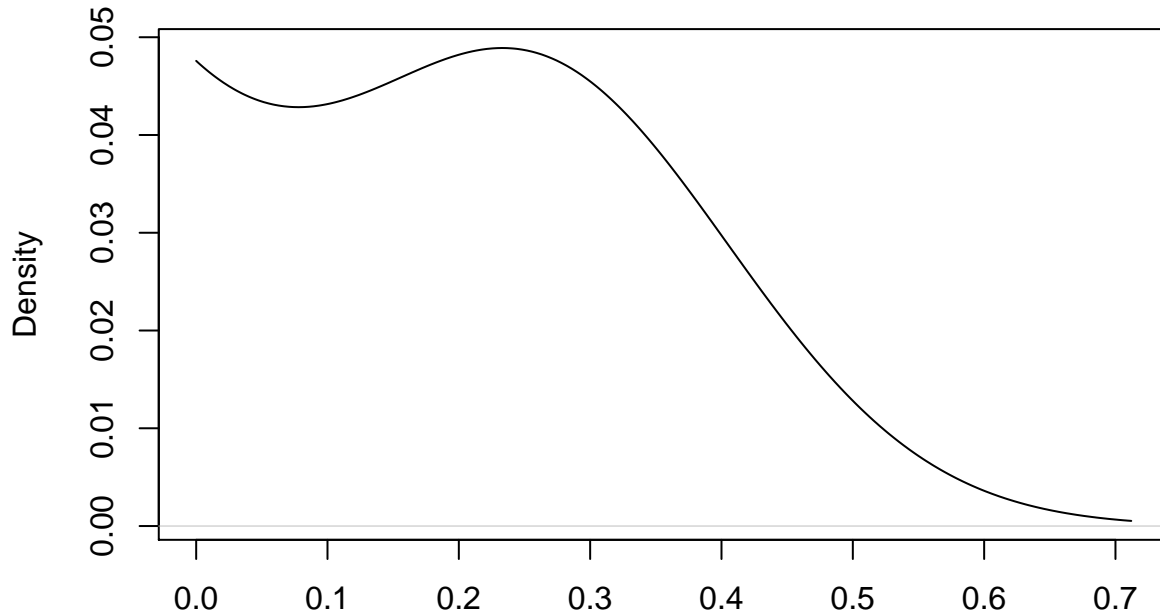
what is the variability of the distribution?

```
d_a_2_var <- d_alpha_2$x %>% var()
```

**Kernel density and plot for beta for single FEL result**

```
d_beta_2 <- density(log(temp_2$beta), from = 0)
d_beta_2 %>% plot()
```

**density.default(x = log(temp\_2\$beta), from = 0)**



N = 56 Bandwidth = 0.1526

#try

different ways of calculating the KL or JSD ##using the entropy library:

*#uses entropy library to calculate Kullback-Leibler divergence (KL) as it is needed to do the JSD*  
`library("entropy")`

```
KL <- KL.plugin(freqs1 = d_alpha$x, freqs2 = d_beta$x)
```

```
## Warning in KL.plugin(freqs1 = d_alpha$x, freqs2 = d_beta$x): Vanishing value(s)
## in argument freqs2!
```

```
KL_2 <- KL.plugin(freqs1 = d_alpha_2$x, freqs2 = d_beta_2$x)
```

```
## Warning in KL.plugin(freqs1 = d_alpha_2$x, freqs2 = d_beta_2$x): Vanishing
## value(s) in argument freqs2!
```

*#both of these return an error: Vanishing value(s) in argument freqs2!*

Using a calculation from stackoverflow:

```
#from stackoverflow https://stackoverflow.com/questions/11226627/jensen-shannon-divergence-in-r
p <- d_beta_2$x
q <- d_alpha_2$x
n <- 0.5 * (p + q)
JS <- 0.5 * (sum(p * log(p / n)) + sum(q * log(q / n))) #returns an NaN
```

Using a formula from a website:

```
#actually, lets try the way this site does it: https://enterotype.embl.de/enterotypes.html
JSD<- function(x,y) sqrt(0.5 * KLD(x, (x+y)/2) + 0.5 * KLD(y, (x+y)/2))
```

```

KLD <- function(x,y) sum(x * log(x/y))

KLD(d_beta_2$x, d_alpha_2$x)

## [1] NaN

JSD(d_beta_2$x, d_alpha_2$x)

## [1] NaN

dist.JSD <- function(inMatrix, pseudocount=0.000001, ...) {
  KLD <- function(x,y) sum(x *log(x/y))
  JSD<- function(x,y) sqrt(0.5 * KLD(x, (x+y)/2) + 0.5 * KLD(y, (x+y)/2))
  matrixColSize <- length(colnames(inMatrix))
  matrixRowSize <- length(rownames(inMatrix))
  colnames <- colnames(inMatrix)
  resultsMatrix <- matrix(0, matrixColSize, matrixColSize)

  inMatrix = apply(inMatrix,1:2,function(x) ifelse (x==0,pseudocount,x))

  for(i in 1:matrixColSize) {
    for(j in 1:matrixColSize) {
      resultsMatrix[i,j]=JSD(as.vector(inMatrix[,i]),
                             as.vector(inMatrix[,j]))
    }
  }
  colnames -> colnames(resultsMatrix) -> rownames(resultsMatrix)
  as.dist(resultsMatrix)->resultsMatrix
  attr(resultsMatrix, "method") <- "dist"
  return(resultsMatrix)
}

```

calculate the JSD between alpha and beta

```

d.temp <- dist.JSD(temp %>% select(alpha, beta))

d.temp

```

```

##          alpha
## beta 108.0882

```

this last method works and gives me the JSD between the nonsynonymous (beta) and synonymous (alpha) rate distributions.

so now what if we want the distance for every FEL result?

first, get list of all FEL results:

```

dir <- "~/bin/mtDNA_redo/data/FEL"
FEL_jsons <- list.files(path = dir,
                        pattern = '*FEL.json', recursive = TRUE, full.names = TRUE)

```

write function for JSD calculation:

```

d.temp <- NULL
JSD.calc <- function(filename){

  results <- read_json(filename) #read in json

```

```

heads <- results$MLE$headers %>% unlist() %>% .[c(TRUE,FALSE)] #get headers and ignore header descri

#get MLE contents and make them a data frame
temp <- results$MLE$content$`0` %>% unlist %>% matrix(ncol = 6, byrow = TRUE) %>% as.data.frame()
#make the headers the variable names
names(temp) <- heads

#Kernel density for alpha rate estimation
#start from 0 and log transform to control outliers
d_alpha <- density(log(temp$alpha), kernel = "gaussian", from = 0)
d_beta <- density(log(temp$beta), kernel = "gaussian", from = 0)

d_alpha_var<- d_alpha$x %>% var()
d_beta_var<- d_beta$x %>% var()

dist.temp <- dist.JSD(temp %>% select(alpha, beta))
d.temp <- cbind(d.temp, filename, dist.temp, d_alpha_var, d_beta_var)

return(d.temp)
}

```

check that it works:

```
JSD.calc(paste0(FEL_jsons[1]))
```

```

##      filename
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/acipenseriformes-atp6-align-dna.fas.FEL.json"
##      dist.temp      d_alpha_var      d_beta_var
## [1,] "60.1693123631767" "8.64937340783265" "0.136574441064125"

```

this returns a named number of JSD calculations

```

t <- sapply(FEL_jsons, JSD.calc)
t %>% head()

```

```

##      /Users/Sadie/bin/mtDNA_redo/data/FEL/acipenseriformes-atp6-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/acipenseriformes-atp6-align-dna.fas.FEL.json"
## [2,] "60.1693123631767"
## [3,] "8.64937340783265"
## [4,] "0.136574441064125"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/acipenseriformes-atp8-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/acipenseriformes-atp8-align-dna.fas.FEL.json"
## [2,] "6.09108060888451"
## [3,] "1.56287060825456"
## [4,] "0.0424984395608993"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/acipenseriformes-cox1-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/acipenseriformes-cox1-align-dna.fas.FEL.json"
## [2,] "19.644186611923"
## [3,] "1.51440980841311"
## [4,] "0.00116842453774546"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/acipenseriformes-cox2-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/acipenseriformes-cox2-align-dna.fas.FEL.json"
## [2,] "58.1551710886484"
## [3,] "8.59631059504859"
## [4,] "0.194168105809044"

```

```

##      /Users/Sadie/bin/mtDNA_redo/data/FEL/acipenseriformes-cox3-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/acipenseriformes-cox3-align-dna.fas.FEL.json"
## [2,] "28.2511289292689"
## [3,] "5.84988805261992"
## [4,] "0.14359526520719"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/acipenseriformes-nd1-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/acipenseriformes-nd1-align-dna.fas.FEL.json"
## [2,] "84.3809172867015"
## [3,] "8.3322762187667"
## [4,] "0.055406830790742"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/acipenseriformes-nd2-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/acipenseriformes-nd2-align-dna.fas.FEL.json"
## [2,] "97.8256070263873"
## [3,] "8.40198687190735"
## [4,] "2.16722797739578"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/acipenseriformes-nd3-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/acipenseriformes-nd3-align-dna.fas.FEL.json"
## [2,] "8.51376751404863"
## [3,] "1.30995178504494"
## [4,] "0.316570692738439"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/acipenseriformes-nd5-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/acipenseriformes-nd5-align-dna.fas.FEL.json"
## [2,] "35.0844529902486"
## [3,] "5.10731741815124"
## [4,] "0.458073563230716"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/acipenseriformes-nd6-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/acipenseriformes-nd6-align-dna.fas.FEL.json"
## [2,] "22.2316634026965"
## [3,] "4.89545730397033"
## [4,] "0.286596561344742"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Anguilliformes-ATP6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anguilliformes-ATP6-Aligned-DNA.fas.FEL.json"
## [2,] "135.55666049318"
## [3,] "8.40877255281832"
## [4,] "0.0231876077582717"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Anguilliformes-ATP8-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anguilliformes-ATP8-Aligned-DNA.fas.FEL.json"
## [2,] "59.6080049635601"
## [3,] "9.09243633854142"
## [4,] "0.126035005669629"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Anguilliformes-COX1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anguilliformes-COX1-Aligned-DNA.fas.FEL.json"
## [2,] "151.820598863693"
## [3,] "8.06249370130211"
## [4,] "0.0481690986622474"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Anguilliformes-COX3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anguilliformes-COX3-Aligned-DNA.fas.FEL.json"
## [2,] "67.7325562860474"
## [3,] "8.3158314464964"
## [4,] "0.00997522612226759"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Anguilliformes-CYTB-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anguilliformes-CYTB-Aligned-DNA.fas.FEL.json"
## [2,] "162.059069327552"
## [3,] "8.36663395103786"

```



```

## [4,] "0.71520833694362"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Anguilliformes-ND1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anguilliformes-ND1-Aligned-DNA.fas.FEL.json"
## [2,] "173.38683510399"
## [3,] "8.32653866287244"
## [4,] "0.0115628962664555"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Anguilliformes-ND2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anguilliformes-ND2-Aligned-DNA.fas.FEL.json"
## [2,] "275.185404283894"
## [3,] "8.39262163980327"
## [4,] "0.416020751804749"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Anguilliformes-ND3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anguilliformes-ND3-Aligned-DNA.fas.FEL.json"
## [2,] "76.2457216129273"
## [3,] "8.30309377980941"
## [4,] "0.019237678557221"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Anguilliformes-ND4-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anguilliformes-ND4-Aligned-DNA.fas.FEL.json"
## [2,] "200.552960707368"
## [3,] "8.25837564657739"
## [4,] "0.0602108711076667"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Anguilliformes-ND4L-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anguilliformes-ND4L-Aligned-DNA.fas.FEL.json"
## [2,] "109.813098819383"
## [3,] "8.73016092021557"
## [4,] "0.103918592868774"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Anguilliformes-ND5-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anguilliformes-ND5-Aligned-DNA.fas.FEL.json"
## [2,] "290.644862385054"
## [3,] "8.2428304599706"
## [4,] "0.0961852407950792"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Anguilliformes-ND6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anguilliformes-ND6-Aligned-DNA.fas.FEL.json"
## [2,] "102.447704301066"
## [3,] "8.89452113741757"
## [4,] "0.0444905416689888"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Anseriformes-ATP6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anseriformes-ATP6-Aligned-DNA.fas.FEL.json"
## [2,] "11.5023719061522"
## [3,] "1.50590274587758"
## [4,] "0.0808801493079726"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Anseriformes-ATP8-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anseriformes-ATP8-Aligned-DNA.fas.FEL.json"
## [2,] "5.58145361040219"
## [3,] "1.07866326377611"
## [4,] "0.131074127093387"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Anseriformes-COX1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anseriformes-COX1-Aligned-DNA.fas.FEL.json"
## [2,] "112.686289183084"
## [3,] "8.53990364065292"
## [4,] "0.107182528189694"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Anseriformes-COX2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anseriformes-COX2-Aligned-DNA.fas.FEL.json"
## [2,] "56.6955794121175"

```

```

## [3,] "8.33125453934986"
## [4,] "0.00101897904866755"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Anseriformes-COX3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anseriformes-COX3-Aligned-DNA.fas.FEL.json"
## [2,] "111.005407763064"
## [3,] "8.68349470646725"
## [4,] "0.0478196811481715"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Anseriformes-CYTB-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anseriformes-CYTB-Aligned-DNA.fas.FEL.json"
## [2,] "74.6076430417636"
## [3,] "8.53691971280517"
## [4,] "0.00934008977883181"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Anseriformes-ND1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anseriformes-ND1-Aligned-DNA.fas.FEL.json"
## [2,] "44.5790005950127"
## [3,] "7.21395514776476"
## [4,] "0.0567718329157742"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Anseriformes-ND2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anseriformes-ND2-Aligned-DNA.fas.FEL.json"
## [2,] "36.703963426198"
## [3,] "5.44356715532023"
## [4,] "0.0534470940361781"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Anseriformes-ND3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anseriformes-ND3-Aligned-DNA.fas.FEL.json"
## [2,] "8.6128958617192"
## [3,] "1.25177540872046"
## [4,] "0.28921461227689"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Anseriformes-ND4L-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anseriformes-ND4L-Aligned-DNA.fas.FEL.json"
## [2,] "59.3546684728338"
## [3,] "8.93443807106769"
## [4,] "0.00809643690949972"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Anseriformes-ND5-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anseriformes-ND5-Aligned-DNA.fas.FEL.json"
## [2,] "109.52242664002"
## [3,] "8.55414570200955"
## [4,] "0.0724753418618772"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Anseriformes-ND6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anseriformes-ND6-Aligned-DNA.fas.FEL.json"
## [2,] "11.4155994469821"
## [3,] "2.47256587721548"
## [4,] "0.260239841463517"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Anura-ATP6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anura-ATP6-Aligned-DNA.fas.FEL.json"
## [2,] "315.765689326038"
## [3,] "9.9923384846658"
## [4,] "0.0400546300773978"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Anura-COX1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anura-COX1-Aligned-DNA.fas.FEL.json"
## [2,] "332.144119249184"
## [3,] "8.97177182275856"
## [4,] "0.207863314672298"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Anura-COX2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anura-COX2-Aligned-DNA.fas.FEL.json"

```

```

## [2,] "272.394974265428"
## [3,] "10.3579938530104"
## [4,] "0.0557268815138656"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Anura-COX3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anura-COX3-Aligned-DNA.fas.FEL.json"
## [2,] "267.281481818722"
## [3,] "9.87304597177053"
## [4,] "0.0115539693069344"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Anura-CYTB-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anura-CYTB-Aligned-DNA.fas.FEL.json"
## [2,] "330.1180977787"
## [3,] "9.24685372473829"
## [4,] "2.85158711784839"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Anura-ND1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anura-ND1-Aligned-DNA.fas.FEL.json"
## [2,] "352.351371427185"
## [3,] "9.23374682612596"
## [4,] "0.0566400414850247"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Anura-ND2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anura-ND2-Aligned-DNA.fas.FEL.json"
## [2,] "404.360993534191"
## [3,] "9.28771459593377"
## [4,] "1.16541310430535"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Anura-ND3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anura-ND3-Aligned-DNA.fas.FEL.json"
## [2,] "218.436568838235"
## [3,] "8.59856929167693"
## [4,] "0.153623096331383"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Anura-ND4-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anura-ND4-Aligned-DNA.fas.FEL.json"
## [2,] "522.179031783295"
## [3,] "10.4164169983139"
## [4,] "0.0377043422310911"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Anura-ND4L-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anura-ND4L-Aligned-DNA.fas.FEL.json"
## [2,] "231.416943327604"
## [3,] "10.775277880261"
## [4,] "0.0160824122039882"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Anura-ND6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Anura-ND6-Aligned-DNA.fas.FEL.json"
## [2,] "367.694120473654"
## [3,] "12.2172019129838"
## [4,] "0.639626400975361"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/araneae-atp6-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/araneae-atp6-align-dna.fas.FEL.json"
## [2,] "423.90264714929"
## [3,] "16.4450219765207"
## [4,] "3.40413707466181"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/araneae-atp8-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/araneae-atp8-align-dna.fas.FEL.json"
## [2,] "102.001726618347"
## [3,] "10.5724000985562"
## [4,] "0.770075750147735"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/araneae-cox1-align-dna.fas.FEL.json

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## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/araneae-cox1-align-dna.fas.FEL.json"
## [2,] "577.682730400321"
## [3,] "10.7487939242057"
## [4,] "1.87943429384219"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/araneae-cox2-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/araneae-cox2-align-dna.fas.FEL.json"
## [2,] "451.816432503085"
## [3,] "17.4967017451539"
## [4,] "0.592808376783699"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/araneae-cox3-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/araneae-cox3-align-dna.fas.FEL.json"
## [2,] "391.567242259295"
## [3,] "13.3109815634441"
## [4,] "2.16384811215531"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/araneae-cytb-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/araneae-cytb-align-dna.fas.FEL.json"
## [2,] "467.336990322321"
## [3,] "10.0503117674655"
## [4,] "0.925978037671956"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/araneae-nd1-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/araneae-nd1-align-dna.fas.FEL.json"
## [2,] "444.324480179658"
## [3,] "10.5794295744791"
## [4,] "2.28166442468113"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/araneae-nd2-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/araneae-nd2-align-dna.fas.FEL.json"
## [2,] "444.546529611536"
## [3,] "9.21014666364261"
## [4,] "2.33593741450295"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/araneae-nd3-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/araneae-nd3-align-dna.fas.FEL.json"
## [2,] "348.98994035752"
## [3,] "18.3839538061542"
## [4,] "1.30141330740221"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/araneae-nd4-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/araneae-nd4-align-dna.fas.FEL.json"
## [2,] "454.391234294836"
## [3,] "10.3750180069151"
## [4,] "7.51770307933564"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/araneae-nd4l-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/araneae-nd4l-align-dna.fas.FEL.json"
## [2,] "332.768624280647"
## [3,] "19.2494786516898"
## [4,] "0.535653393865847"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/araneae-nd5-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/araneae-nd5-align-dna.fas.FEL.json"
## [2,] "824.133382596861"
## [3,] "15.474415001668"
## [4,] "1.7265608414911"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/araneae-nd6-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/araneae-nd6-align-dna.fas.FEL.json"
## [2,] "0.53274808455072"
## [3,] "0.00498689658541042"
## [4,] "0.00337545697177576"

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##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Ascaridida-ATP6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Ascaridida-ATP6-Aligned-DNA.fas.FEL.json"
## [2,] "242.326401755396"
## [3,] "11.5251447293533"
## [4,] "0.00872456837047725"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Ascaridida-COX1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Ascaridida-COX1-Aligned-DNA.fas.FEL.json"
## [2,] "216.481068911231"
## [3,] "11.058670402318"
## [4,] "0.192891907820452"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Ascaridida-COX2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Ascaridida-COX2-Aligned-DNA.fas.FEL.json"
## [2,] "145.723873496759"
## [3,] "10.6303021725609"
## [4,] "0.299505853212869"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Ascaridida-COX3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Ascaridida-COX3-Aligned-DNA.fas.FEL.json"
## [2,] "212.834532537088"
## [3,] "11.1672097375427"
## [4,] "3.27665193854894"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Ascaridida-CYTB-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Ascaridida-CYTB-Aligned-DNA.fas.FEL.json"
## [2,] "311.966492785234"
## [3,] "11.9175803665341"
## [4,] "0.357789059388918"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Ascaridida-ND1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Ascaridida-ND1-Aligned-DNA.fas.FEL.json"
## [2,] "223.0581801835"
## [3,] "11.1034457560594"
## [4,] "0.022155647347052"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Ascaridida-ND2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Ascaridida-ND2-Aligned-DNA.fas.FEL.json"
## [2,] "188.655751606929"
## [3,] "10.1334351211022"
## [4,] "3.43953128886307"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Ascaridida-ND3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Ascaridida-ND3-Aligned-DNA.fas.FEL.json"
## [2,] "140.996584467867"
## [3,] "13.0884242544418"
## [4,] "0.124355444726551"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Ascaridida-ND4-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Ascaridida-ND4-Aligned-DNA.fas.FEL.json"
## [2,] "318.832925686178"
## [3,] "11.9326399195317"
## [4,] "0.148925982007673"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Ascaridida-ND4L-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Ascaridida-ND4L-Aligned-DNA.fas.FEL.json"
## [2,] "134.982630614649"
## [3,] "14.7212633375261"
## [4,] "0.00470890472128162"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Ascaridida-ND6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Ascaridida-ND6-Aligned-DNA.fas.FEL.json"
## [2,] "150.92862258837"
## [3,] "10.0511351817088"

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## [4,] "0.0783129965075068"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Beloniformes-ATP6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Beloniformes-ATP6-Aligned-DNA.fas.FEL.json"
## [2,] "121.739867003085"
## [3,] "8.57692985316482"
## [4,] "0.00196844328954391"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Beloniformes-ATP8-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Beloniformes-ATP8-Aligned-DNA.fas.FEL.json"
## [2,] "84.5709279529722"
## [3,] "9.44137356993923"
## [4,] "0.00528440894714296"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Beloniformes-COX1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Beloniformes-COX1-Aligned-DNA.fas.FEL.json"
## [2,] "173.921663561917"
## [3,] "8.27567500279805"
## [4,] "0.00294186590965263"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Beloniformes-COX2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Beloniformes-COX2-Aligned-DNA.fas.FEL.json"
## [2,] "45.7607004752644"
## [3,] "5.90403444092622"
## [4,] "0.00971650494656281"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Beloniformes-ND1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Beloniformes-ND1-Aligned-DNA.fas.FEL.json"
## [2,] "170.828745339953"
## [3,] "8.6406272533464"
## [4,] "0.0157383014838724"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Beloniformes-ND2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Beloniformes-ND2-Aligned-DNA.fas.FEL.json"
## [2,] "259.44903443108"
## [3,] "8.58414487967544"
## [4,] "0.329022129680115"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Beloniformes-ND4-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Beloniformes-ND4-Aligned-DNA.fas.FEL.json"
## [2,] "201.855947462581"
## [3,] "8.323120933676"
## [4,] "0.0992889352833406"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Beloniformes-ND4L-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Beloniformes-ND4L-Aligned-DNA.fas.FEL.json"
## [2,] "60.9612421566015"
## [3,] "9.21871978248132"
## [4,] "0.00487673126899796"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Beloniformes-ND5-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Beloniformes-ND5-Aligned-DNA.fas.FEL.json"
## [2,] "313.38261223736"
## [3,] "8.60493698945122"
## [4,] "0.190334340559132"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Beloniformes-ND6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Beloniformes-ND6-Aligned-DNA.fas.FEL.json"
## [2,] "196.423686739847"
## [3,] "9.3288012644419"
## [4,] "0.0762833693337861"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/beryciformes-atp6-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/beryciformes-atp6-align-dna.fas.FEL.json"
## [2,] "73.1834935864026"

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## [3,] "8.62214042723778"
## [4,] "0.0261790342386264"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/beryciformes-atp8-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/beryciformes-atp8-align-dna.fas.FEL.json"
## [2,] "16.3331453724385"
## [3,] "5.0367438124695"
## [4,] "0.0289155764050341"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/beryciformes-cox1-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/beryciformes-cox1-align-dna.fas.FEL.json"
## [2,] "126.543447276869"
## [3,] "8.22949832805052"
## [4,] "0.00287785946906317"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/beryciformes-cox2-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/beryciformes-cox2-align-dna.fas.FEL.json"
## [2,] "52.737822384682"
## [3,] "6.93833702475457"
## [4,] "0.00285341127416291"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/beryciformes-cox3-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/beryciformes-cox3-align-dna.fas.FEL.json"
## [2,] "56.2206162969775"
## [3,] "6.75635391133086"
## [4,] "0.00323848100901373"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/beryciformes-cytb-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/beryciformes-cytb-align-dna.fas.FEL.json"
## [2,] "119.710337156842"
## [3,] "8.46218645577984"
## [4,] "0.0975477290165695"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/beryciformes-nd1-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/beryciformes-nd1-align-dna.fas.FEL.json"
## [2,] "79.5026968026191"
## [3,] "8.50014745163417"
## [4,] "0.00244668356352668"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/beryciformes-nd2-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/beryciformes-nd2-align-dna.fas.FEL.json"
## [2,] "163.312188093454"
## [3,] "8.58332471514554"
## [4,] "0.0151371263243177"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/beryciformes-nd3-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/beryciformes-nd3-align-dna.fas.FEL.json"
## [2,] "21.0526619328015"
## [3,] "4.97727876504919"
## [4,] "0.118816392040008"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/beryciformes-nd4-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/beryciformes-nd4-align-dna.fas.FEL.json"
## [2,] "158.991797271604"
## [3,] "8.2543169952703"
## [4,] "0.0667593293661438"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/beryciformes-nd4l-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/beryciformes-nd4l-align-dna.fas.FEL.json"
## [2,] "52.2098358134598"
## [3,] "7.78515681521464"
## [4,] "0.00304162921255673"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/beryciformes-nd5-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/beryciformes-nd5-align-dna.fas.FEL.json"

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## [2,] "143.521241674027"
## [3,] "8.28651317246405"
## [4,] "0.0368371559264069"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/beryciformes-nd6-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/beryciformes-nd6-align-dna.fas.FEL.json"
## [2,] "132.013730853047"
## [3,] "8.9523013653672"
## [4,] "0.00307815603798088"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/carnivores-atp6-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/carnivores-atp6-align-dna.fas.FEL.json"
## [2,] "72.4539755618391"
## [3,] "8.73676363272188"
## [4,] "0.131239225911658"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/carnivores-atp8-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/carnivores-atp8-align-dna.fas.FEL.json"
## [2,] "59.2112073822567"
## [3,] "9.24190723144116"
## [4,] "0.276947324804402"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/carnivores-cox1-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/carnivores-cox1-align-dna.fas.FEL.json"
## [2,] "86.8802888976672"
## [3,] "7.12982550325011"
## [4,] "0.00890651503331419"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/carnivores-cox2-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/carnivores-cox2-align-dna.fas.FEL.json"
## [2,] "77.2932813360142"
## [3,] "8.59949523116346"
## [4,] "0.00603831231159103"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/carnivores-cytb-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/carnivores-cytb-align-dna.fas.FEL.json"
## [2,] "80.1989644194031"
## [3,] "8.35217134751013"
## [4,] "0.0237998768812912"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/carnivores-nd1-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/carnivores-nd1-align-dna.fas.FEL.json"
## [2,] "82.2676047371326"
## [3,] "8.7395725258392"
## [4,] "0.049862436376526"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/carnivores-nd2-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/carnivores-nd2-align-dna.fas.FEL.json"
## [2,] "84.7607137710062"
## [3,] "8.66490816217263"
## [4,] "0.0254665573862303"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/carnivores-nd4l-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/carnivores-nd4l-align-dna.fas.FEL.json"
## [2,] "62.0364782418458"
## [3,] "9.1315599886062"
## [4,] "0.00716636976739285"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/carnivores-nd5-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/carnivores-nd5-align-dna.fas.FEL.json"
## [2,] "86.4024145866374"
## [3,] "8.35147346781813"
## [4,] "0.17554757129084"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/carnivores-nd6-align-dna.fas.FEL.json

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## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/carnivores-nd6-align-dna.fas.FEL.json"
## [2,] "41.687227293642"
## [3,] "6.44697737730082"
## [4,] "0.0178880328603649"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Cetacea-ATP6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Cetacea-ATP6-Aligned-DNA.fas.FEL.json"
## [2,] "29.8523635597066"
## [3,] "5.6861173731291"
## [4,] "0.069562640358766"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Cetacea-ATP8-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Cetacea-ATP8-Aligned-DNA.fas.FEL.json"
## [2,] "5.27778187356713"
## [3,] "1.0885890992639"
## [4,] "0.494593000539651"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Cetacea-COX1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Cetacea-COX1-Aligned-DNA.fas.FEL.json"
## [2,] "85.3163772097108"
## [3,] "7.75448819218616"
## [4,] "0.132216582074546"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Cetacea-COX2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Cetacea-COX2-Aligned-DNA.fas.FEL.json"
## [2,] "16.8450988875281"
## [3,] "3.43308151497582"
## [4,] "0.0347292394438973"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Cetacea-COX3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Cetacea-COX3-Aligned-DNA.fas.FEL.json"
## [2,] "91.8966390842581"
## [3,] "8.2258532408934"
## [4,] "0.0182509976259332"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Cetacea-CYTB-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Cetacea-CYTB-Aligned-DNA.fas.FEL.json"
## [2,] "129.807477163049"
## [3,] "8.22991641342113"
## [4,] "0.0361544921842843"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Cetacea-ND1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Cetacea-ND1-Aligned-DNA.fas.FEL.json"
## [2,] "103.221022341891"
## [3,] "8.31812164101919"
## [4,] "0.0576592558202735"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Cetacea-ND2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Cetacea-ND2-Aligned-DNA.fas.FEL.json"
## [2,] "104.3518888052"
## [3,] "8.30520273098276"
## [4,] "0.0409215181935316"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Cetacea-ND4L-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Cetacea-ND4L-Aligned-DNA.fas.FEL.json"
## [2,] "18.421102001693"
## [3,] "4.18762549901682"
## [4,] "6.9612748003367e-05"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Cetacea-ND5-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Cetacea-ND5-Aligned-DNA.fas.FEL.json"
## [2,] "99.2313494676178"
## [3,] "8.19520473484435"
## [4,] "0.0853821272806551"

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```

##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Cetacea-ND6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Cetacea-ND6-Aligned-DNA.fas.FEL.json"
## [2,] "86.8413716189197"
## [3,] "8.56354502791184"
## [4,] "0.127107501643653"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Characiformes-ATP6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Characiformes-ATP6-Aligned-DNA.fas.FEL.json"
## [2,] "235.682412477703"
## [3,] "8.56762849842986"
## [4,] "0.00235561017489393"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Characiformes-ATP8-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Characiformes-ATP8-Aligned-DNA.fas.FEL.json"
## [2,] "92.6073334679388"
## [3,] "9.58846862190545"
## [4,] "0.0152677054662931"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Characiformes-COX1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Characiformes-COX1-Aligned-DNA.fas.FEL.json"
## [2,] "229.688112676795"
## [3,] "8.51594768515834"
## [4,] "0.0784513603169913"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Characiformes-COX2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Characiformes-COX2-Aligned-DNA.fas.FEL.json"
## [2,] "159.615520609816"
## [3,] "8.45248070678788"
## [4,] "0.00249246032319974"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Characiformes-CYTB-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Characiformes-CYTB-Aligned-DNA.fas.FEL.json"
## [2,] "151.841099345115"
## [3,] "8.50322054510714"
## [4,] "0.0409042456544102"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Characiformes-ND1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Characiformes-ND1-Aligned-DNA.fas.FEL.json"
## [2,] "131.649524566435"
## [3,] "8.49863324168911"
## [4,] "8.90187955347644e-05"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Characiformes-ND4L-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Characiformes-ND4L-Aligned-DNA.fas.FEL.json"
## [2,] "17.2662467009406"
## [3,] "3.82811091781608"
## [4,] "0.0455903149794027"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Characiformes-ND5-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Characiformes-ND5-Aligned-DNA.fas.FEL.json"
## [2,] "295.836421152887"
## [3,] "8.48183111762203"
## [4,] "0.0698044429782112"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Characiformes-ND6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Characiformes-ND6-Aligned-DNA.fas.FEL.json"
## [2,] "159.380357542903"
## [3,] "8.64382712361295"
## [4,] "0.0456040773467387"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Chimaeriforms-ATP6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Chimaeriforms-ATP6-Aligned-DNA.fas.FEL.json"
## [2,] "33.2994238217862"
## [3,] "5.2966118924307"

```

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## [4,] "0.0382106186569454"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Chimaeriforms-ATP8-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Chimaeriforms-ATP8-Aligned-DNA.fas.FEL.json"
## [2,] "4.91313518408473"
## [3,] "1.36700451945939"
## [4,] "0.449710590655221"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Chimaeriforms-COX1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Chimaeriforms-COX1-Aligned-DNA.fas.FEL.json"
## [2,] "101.102135136896"
## [3,] "8.02491908020018"
## [4,] "0.00244429629050736"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Chimaeriforms-COX2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Chimaeriforms-COX2-Aligned-DNA.fas.FEL.json"
## [2,] "68.1076053334957"
## [3,] "8.32465056754833"
## [4,] "0.0408444623891105"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Chimaeriforms-COX3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Chimaeriforms-COX3-Aligned-DNA.fas.FEL.json"
## [2,] "70.7439384498102"
## [3,] "8.71397932422048"
## [4,] "0.0540228149611588"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Chimaeriforms-CYTB-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Chimaeriforms-CYTB-Aligned-DNA.fas.FEL.json"
## [2,] "82.6433201349145"
## [3,] "8.15624000005467"
## [4,] "0.028790466134601"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Chimaeriforms-ND1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Chimaeriforms-ND1-Aligned-DNA.fas.FEL.json"
## [2,] "85.639336793449"
## [3,] "8.42712866372386"
## [4,] "0.0083636260811962"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Chimaeriforms-ND2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Chimaeriforms-ND2-Aligned-DNA.fas.FEL.json"
## [2,] "115.33549456418"
## [3,] "8.5630120711431"
## [4,] "0.0910579722524101"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Chimaeriforms-ND4L-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Chimaeriforms-ND4L-Aligned-DNA.fas.FEL.json"
## [2,] "13.8776047299772"
## [3,] "4.12093598256165"
## [4,] "0.0167543623400992"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Chimaeriforms-ND5-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Chimaeriforms-ND5-Aligned-DNA.fas.FEL.json"
## [2,] "116.251705193302"
## [3,] "8.3451924317202"
## [4,] "0.0372903333999296"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Chimaeriforms-ND6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Chimaeriforms-ND6-Aligned-DNA.fas.FEL.json"
## [2,] "58.0491542611301"
## [3,] "8.64531203846635"
## [4,] "0.377487610418564"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/chiroptera-atp6-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/chiroptera-atp6-align-dna.fas.FEL.json"
## [2,] "93.1358788483271"

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## [3,] "8.56753052163803"
## [4,] "0.00415194548904531"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/chiroptera-atp8-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/chiroptera-atp8-align-dna.fas.FEL.json"
## [2,] "102.220545038083"
## [3,] "9.32729608010951"
## [4,] "0.458907583224827"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/chiroptera-cox1-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/chiroptera-cox1-align-dna.fas.FEL.json"
## [2,] "98.96342839551"
## [3,] "7.49242984733697"
## [4,] "0.00289401811237025"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/chiroptera-cox2-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/chiroptera-cox2-align-dna.fas.FEL.json"
## [2,] "30.7991531579601"
## [3,] "4.68994564976235"
## [4,] "0.00440302763679871"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/chiroptera-cox3-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/chiroptera-cox3-align-dna.fas.FEL.json"
## [2,] "56.7198978502974"
## [3,] "7.39359867167207"
## [4,] "0.03163921104696"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/chiroptera-cytb-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/chiroptera-cytb-align-dna.fas.FEL.json"
## [2,] "98.7338415545125"
## [3,] "8.35460890949247"
## [4,] "0.0601738507025296"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/chiroptera-nd1-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/chiroptera-nd1-align-dna.fas.FEL.json"
## [2,] "144.97625550505"
## [3,] "8.45050633935951"
## [4,] "0.15482605569638"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/chiroptera-nd2-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/chiroptera-nd2-align-dna.fas.FEL.json"
## [2,] "115.395137635249"
## [3,] "8.66342877196459"
## [4,] "0.0325630145823497"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/chiroptera-nd3-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/chiroptera-nd3-align-dna.fas.FEL.json"
## [2,] "51.1531954802805"
## [3,] "7.47510390243497"
## [4,] "0.0996754353398791"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/chiroptera-nd4-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/chiroptera-nd4-align-dna.fas.FEL.json"
## [2,] "197.010725062333"
## [3,] "8.48507055467768"
## [4,] "0.0442286999098708"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/chiroptera-nd4l-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/chiroptera-nd4l-align-dna.fas.FEL.json"
## [2,] "102.414592562431"
## [3,] "8.94261931258282"
## [4,] "0.0262921475475245"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/chiroptera-nd5-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/chiroptera-nd5-align-dna.fas.FEL.json"

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## [2,] "212.677517964521"
## [3,] "8.41356190463794"
## [4,] "0.145598333008154"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/chiroptera-nd6-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/chiroptera-nd6-align-dna.fas.FEL.json"
## [2,] "161.866011488642"
## [3,] "8.63036592089556"
## [4,] "0.194345910772721"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/ciconiiformes-atp6-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/ciconiiformes-atp6-align-dna.fas.FEL.json"
## [2,] "84.1673464212818"
## [3,] "8.71714955418848"
## [4,] "0.0077039579161841"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/ciconiiformes-atp8-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/ciconiiformes-atp8-align-dna.fas.FEL.json"
## [2,] "59.0437859646641"
## [3,] "8.84445749726659"
## [4,] "0.240964202143387"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/ciconiiformes-cox1-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/ciconiiformes-cox1-align-dna.fas.FEL.json"
## [2,] "101.630166413185"
## [3,] "8.1934834768444"
## [4,] "0.000285393215860858"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/ciconiiformes-cox2-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/ciconiiformes-cox2-align-dna.fas.FEL.json"
## [2,] "92.2626905550297"
## [3,] "8.38099208122575"
## [4,] "0.0313409620114792"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/ciconiiformes-cytb-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/ciconiiformes-cytb-align-dna.fas.FEL.json"
## [2,] "105.91610614567"
## [3,] "8.43287535610122"
## [4,] "0.157898529583166"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/ciconiiformes-nd1-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/ciconiiformes-nd1-align-dna.fas.FEL.json"
## [2,] "84.3611886404123"
## [3,] "8.54314011966946"
## [4,] "0.0787014769385484"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/ciconiiformes-nd2-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/ciconiiformes-nd2-align-dna.fas.FEL.json"
## [2,] "100.017094390168"
## [3,] "8.41309056808943"
## [4,] "0.185108473524068"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/ciconiiformes-nd3-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/ciconiiformes-nd3-align-dna.fas.FEL.json"
## [2,] "76.9601610971766"
## [3,] "8.28556431566808"
## [4,] "0.0396894121973735"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/ciconiiformes-nd4l-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/ciconiiformes-nd4l-align-dna.fas.FEL.json"
## [2,] "8.09167069901252"
## [3,] "1.48088014255145"
## [4,] "0.00111166256901791"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/ciconiiformes-nd5-align-dna.fas.FEL.json

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## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/ciconiiformes-nd5-align-dna.fas.FEL.json"
## [2,] "66.1941701668324"
## [3,] "7.57204007202886"
## [4,] "0.164315438801822"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/ciconiiformes-nd6-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/ciconiiformes-nd6-align-dna.fas.FEL.json"
## [2,] "60.1446584975359"
## [3,] "8.89392935347568"
## [4,] "0.14970587888468"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Clupeiformes-ATP6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Clupeiformes-ATP6-Aligned-DNA.fas.FEL.json"
## [2,] "90.1273257573153"
## [3,] "8.22474876742221"
## [4,] "0.00717291180766473"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Clupeiformes-ATP8-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Clupeiformes-ATP8-Aligned-DNA.fas.FEL.json"
## [2,] "98.1515374926284"
## [3,] "8.45480225752302"
## [4,] "0.00342552434438924"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Clupeiformes-COX1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Clupeiformes-COX1-Aligned-DNA.fas.FEL.json"
## [2,] "99.2116089913926"
## [3,] "8.07682440786906"
## [4,] "0.000308292785498165"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Clupeiformes-ND1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Clupeiformes-ND1-Aligned-DNA.fas.FEL.json"
## [2,] "120.771970166405"
## [3,] "8.22036106241114"
## [4,] "0.00192680397092285"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Clupeiformes-ND2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Clupeiformes-ND2-Aligned-DNA.fas.FEL.json"
## [2,] "193.213021629322"
## [3,] "8.12808340105696"
## [4,] "0.023914307378986"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Clupeiformes-ND4-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Clupeiformes-ND4-Aligned-DNA.fas.FEL.json"
## [2,] "139.822945802809"
## [3,] "8.15591871080477"
## [4,] "0.0073506133530975"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Clupeiformes-ND4L-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Clupeiformes-ND4L-Aligned-DNA.fas.FEL.json"
## [2,] "10.5794854430639"
## [3,] "2.64097690900475"
## [4,] "0.0149412083961003"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Clupeiformes-ND5-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Clupeiformes-ND5-Aligned-DNA.fas.FEL.json"
## [2,] "209.103397061051"
## [3,] "8.13175947563821"
## [4,] "0.000991331457819481"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Clupeiformes-ND6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Clupeiformes-ND6-Aligned-DNA.fas.FEL.json"
## [2,] "132.287571859248"
## [3,] "8.65993402509845"
## [4,] "0.000227190006079922"

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##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Coleoptera-ATP6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Coleoptera-ATP6-Aligned-DNA.fas.FEL.json"
## [2,] "277.135845103446"
## [3,] "8.96857245857475"
## [4,] "1.01370277129219"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Coleoptera-ATP8-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Coleoptera-ATP8-Aligned-DNA.fas.FEL.json"
## [2,] "102.034080493608"
## [3,] "9.47848284037503"
## [4,] "0.103319734162803"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Coleoptera-COX1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Coleoptera-COX1-Aligned-DNA.fas.FEL.json"
## [2,] "343.479122149392"
## [3,] "8.35081755420762"
## [4,] "0.0286121130162444"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Coleoptera-COX2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Coleoptera-COX2-Aligned-DNA.fas.FEL.json"
## [2,] "339.851047054224"
## [3,] "9.29284540971437"
## [4,] "0.00168945860914358"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Coleoptera-COX3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Coleoptera-COX3-Aligned-DNA.fas.FEL.json"
## [2,] "264.991780321623"
## [3,] "9.10348113644388"
## [4,] "0.0083285689427014"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Coleoptera-CYTB-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Coleoptera-CYTB-Aligned-DNA.fas.FEL.json"
## [2,] "392.585322042918"
## [3,] "9.3745390365924"
## [4,] "0.0191831364734001"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Coleoptera-ND1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Coleoptera-ND1-Aligned-DNA.fas.FEL.json"
## [2,] "314.281072382876"
## [3,] "8.95284881241439"
## [4,] "0.0348996814097921"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Coleoptera-ND2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Coleoptera-ND2-Aligned-DNA.fas.FEL.json"
## [2,] "695.870021375606"
## [3,] "16.7869612595312"
## [4,] "1.88714650779529"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Coleoptera-ND3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Coleoptera-ND3-Aligned-DNA.fas.FEL.json"
## [2,] "334.844262191956"
## [3,] "17.8554692016011"
## [4,] "1.43439021117372"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Coleoptera-ND4-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Coleoptera-ND4-Aligned-DNA.fas.FEL.json"
## [2,] "414.546193384339"
## [3,] "9.33178392349486"
## [4,] "0.390005679232751"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Coleoptera-ND4L-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Coleoptera-ND4L-Aligned-DNA.fas.FEL.json"
## [2,] "195.814794289718"
## [3,] "9.56178529112029"

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## [4,] "0.162727944454204"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Coleoptera-ND5-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Coleoptera-ND5-Aligned-DNA.fas.FEL.json"
## [2,] "395.283898212656"
## [3,] "8.96237792125856"
## [4,] "0.150116262924233"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Coleoptera-ND6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Coleoptera-ND6-Aligned-DNA.fas.FEL.json"
## [2,] "390.148980265857"
## [3,] "15.6552287308381"
## [4,] "0.853346504316219"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/collembola-atp6-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/collembola-atp6-align-dna.fas.FEL.json"
## [2,] "526.258790199001"
## [3,] "16.1647070283082"
## [4,] "1.06503687545235"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/collembola-atp8-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/collembola-atp8-align-dna.fas.FEL.json"
## [2,] "234.358092472195"
## [3,] "18.6078192391502"
## [4,] "4.32548470704848"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/collembola-cox1-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/collembola-cox1-align-dna.fas.FEL.json"
## [2,] "621.976855236901"
## [3,] "10.6978950442853"
## [4,] "3.13723780949378"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/collembola-cox2-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/collembola-cox2-align-dna.fas.FEL.json"
## [2,] "439.710223611803"
## [3,] "16.4099415699663"
## [4,] "1.5970605668082"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/collembola-cox3-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/collembola-cox3-align-dna.fas.FEL.json"
## [2,] "510.081520863471"
## [3,] "15.9300763202065"
## [4,] "2.30914145600322"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/collembola-cytb-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/collembola-cytb-align-dna.fas.FEL.json"
## [2,] "677.86349958812"
## [3,] "16.1167919288247"
## [4,] "1.13944588318918"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/collembola-nd1-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/collembola-nd1-align-dna.fas.FEL.json"
## [2,] "343.207632938891"
## [3,] "11.9298059213466"
## [4,] "0.704966591495589"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/collembola-nd2-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/collembola-nd2-align-dna.fas.FEL.json"
## [2,] "382.400651309431"
## [3,] "11.0501530870221"
## [4,] "4.28273628571743"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/collembola-nd3-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/collembola-nd3-align-dna.fas.FEL.json"
## [2,] "140.386402709622"

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## [3,] "7.35493550758737"
## [4,] "0.0145154810728997"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/collembola-nd4-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/collembola-nd4-align-dna.fas.FEL.json"
## [2,] "539.918032084408"
## [3,] "10.5187525716349"
## [4,] "5.47330394408943"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/collembola-nd4l-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/collembola-nd4l-align-dna.fas.FEL.json"
## [2,] "342.223143093385"
## [3,] "19.6856025989432"
## [4,] "1.32059532397522"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/collembola-nd5-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/collembola-nd5-align-dna.fas.FEL.json"
## [2,] "518.456134486363"
## [3,] "9.91640069977336"
## [4,] "5.37505949392868"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/collembola-nd6-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/collembola-nd6-align-dna.fas.FEL.json"
## [2,] "411.880330353573"
## [3,] "16.7959369078961"
## [4,] "2.30603889891387"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/cyprinodontiformes-atp6-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/cyprinodontiformes-atp6-align-dna.fas.FEL.json"
## [2,] "147.029773125162"
## [3,] "8.68311957524082"
## [4,] "0.0193796969692366"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/cyprinodontiformes-atp8-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/cyprinodontiformes-atp8-align-dna.fas.FEL.json"
## [2,] "83.6152435839581"
## [3,] "8.67646586006285"
## [4,] "0.016369254513911"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/cyprinodontiformes-cox1-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/cyprinodontiformes-cox1-align-dna.fas.FEL.json"
## [2,] "172.018318994172"
## [3,] "8.26843174074668"
## [4,] "0.0219398819516557"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/cyprinodontiformes-cox2-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/cyprinodontiformes-cox2-align-dna.fas.FEL.json"
## [2,] "44.8545450104184"
## [3,] "5.85489439446236"
## [4,] "0.0163895559732094"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/cyprinodontiformes-cox3-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/cyprinodontiformes-cox3-align-dna.fas.FEL.json"
## [2,] "104.087006346516"
## [3,] "8.39233239984082"
## [4,] "0.0454290489948469"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/cyprinodontiformes-cytb-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/cyprinodontiformes-cytb-align-dna.fas.FEL.json"
## [2,] "130.937339133336"
## [3,] "8.64357330356536"
## [4,] "0.703829438623751"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/cyprinodontiformes-nd1-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/cyprinodontiformes-nd1-align-dna.fas.FEL.json"

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## [2,] "120.471064266774"
## [3,] "8.43849967237269"
## [4,] "0.140135314857267"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/cyprinodontiformes-nd2-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/cyprinodontiformes-nd2-align-dna.fas.FEL.json"
## [2,] "183.904318956263"
## [3,] "8.39096190484784"
## [4,] "0.0164859055685917"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/cyprinodontiformes-nd3-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/cyprinodontiformes-nd3-align-dna.fas.FEL.json"
## [2,] "84.4900574145975"
## [3,] "8.88761731747018"
## [4,] "0.393620854001731"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/cyprinodontiformes-nd4-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/cyprinodontiformes-nd4-align-dna.fas.FEL.json"
## [2,] "194.091363499944"
## [3,] "8.33641362795488"
## [4,] "0.402735610425691"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/cyprinodontiformes-nd4l-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/cyprinodontiformes-nd4l-align-dna.fas.FEL.json"
## [2,] "19.6222403970816"
## [3,] "4.52974000287376"
## [4,] "0.00627135404068641"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/cyprinodontiformes-nd5-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/cyprinodontiformes-nd5-align-dna.fas.FEL.json"
## [2,] "229.120853756196"
## [3,] "8.38949450045482"
## [4,] "0.191514742415426"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/cyprinodontiformes-nd6-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/cyprinodontiformes-nd6-align-dna.fas.FEL.json"
## [2,] "206.827101719373"
## [3,] "9.20525367020561"
## [4,] "0.033838030465357"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/dasyuromorphia-atp6-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/dasyuromorphia-atp6-align-dna.fas.FEL.json"
## [2,] "212.263796710037"
## [3,] "10.3147387823458"
## [4,] "0.255907370382386"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/dasyuromorphia-atp8-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/dasyuromorphia-atp8-align-dna.fas.FEL.json"
## [2,] "121.298900998486"
## [3,] "11.5209924247707"
## [4,] "0.24258743536135"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/dasyuromorphia-cox1-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/dasyuromorphia-cox1-align-dna.fas.FEL.json"
## [2,] "172.72027219942"
## [3,] "10.4401443913698"
## [4,] "0.00956656538299213"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/dasyuromorphia-cox2-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/dasyuromorphia-cox2-align-dna.fas.FEL.json"
## [2,] "166.770999079974"
## [3,] "9.84439982715117"
## [4,] "0.325414280900732"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/dasyuromorphia-cox3-align-dna.fas.FEL.json

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## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/dasyuromorphia-cox3-align-dna.fas.FEL.json"
## [2,] "146.204711196229"
## [3,] "11.1935952877576"
## [4,] "0.0440572838803533"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/dasyuromorphia-cytb-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/dasyuromorphia-cytb-align-dna.fas.FEL.json"
## [2,] "228.202155386458"
## [3,] "11.2131829662467"
## [4,] "0.0158077947703029"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/dasyuromorphia-nd1-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/dasyuromorphia-nd1-align-dna.fas.FEL.json"
## [2,] "244.394849998907"
## [3,] "10.2991803982845"
## [4,] "0.108787409006707"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/dasyuromorphia-nd2-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/dasyuromorphia-nd2-align-dna.fas.FEL.json"
## [2,] "375.588805512672"
## [3,] "11.8737494174448"
## [4,] "0.930693251575516"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/dasyuromorphia-nd3-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/dasyuromorphia-nd3-align-dna.fas.FEL.json"
## [2,] "235.086475100459"
## [3,] "10.8651498748228"
## [4,] "9.88837429808324e-06"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/dasyuromorphia-nd4-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/dasyuromorphia-nd4-align-dna.fas.FEL.json"
## [2,] "302.878102839752"
## [3,] "10.7114962343967"
## [4,] "0.530538555270865"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/dasyuromorphia-nd4l-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/dasyuromorphia-nd4l-align-dna.fas.FEL.json"
## [2,] "105.922182291912"
## [3,] "10.0354146531755"
## [4,] "0.014697889038747"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/dasyuromorphia-nd5-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/dasyuromorphia-nd5-align-dna.fas.FEL.json"
## [2,] "517.038522756598"
## [3,] "9.67971881236032"
## [4,] "1.90098452132029"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/dasyuromorphia-nd6-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/dasyuromorphia-nd6-align-dna.fas.FEL.json"
## [2,] "284.921855842585"
## [3,] "13.4979810446069"
## [4,] "0.468285227033657"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Decapoda-ATP6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Decapoda-ATP6-Aligned-DNA.fas.FEL.json"
## [2,] "258.49032749626"
## [3,] "9.03272370588062"
## [4,] "0.0298858727761127"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Decapoda-ATP8-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Decapoda-ATP8-Aligned-DNA.fas.FEL.json"
## [2,] "144.53598478317"
## [3,] "11.3125798669129"
## [4,] "0.0506127604117675"

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##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Decapoda-COX1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Decapoda-COX1-Aligned-DNA.fas.FEL.json"
## [2,] "315.929706915552"
## [3,] "8.55333496268228"
## [4,] "0.00550315696020915"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Decapoda-COX2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Decapoda-COX2-Aligned-DNA.fas.FEL.json"
## [2,] "218.93768035755"
## [3,] "9.35395085153631"
## [4,] "0.0145485731834229"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Decapoda-COX3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Decapoda-COX3-Aligned-DNA.fas.FEL.json"
## [2,] "230.787645751233"
## [3,] "8.85795034623233"
## [4,] "0.00503143943069983"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Decapoda-CYTB-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Decapoda-CYTB-Aligned-DNA.fas.FEL.json"
## [2,] "337.867282799923"
## [3,] "9.2516812679523"
## [4,] "0.143007616495271"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Decapoda-ND1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Decapoda-ND1-Aligned-DNA.fas.FEL.json"
## [2,] "254.328043066235"
## [3,] "9.23701525668884"
## [4,] "0.0121726476873931"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Decapoda-ND2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Decapoda-ND2-Aligned-DNA.fas.FEL.json"
## [2,] "436.773200546917"
## [3,] "9.66107293492434"
## [4,] "0.216619763480731"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Decapoda-ND3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Decapoda-ND3-Aligned-DNA.fas.FEL.json"
## [2,] "149.195480213953"
## [3,] "9.51971655646294"
## [4,] "3.90302586792698e-06"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Decapoda-ND4-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Decapoda-ND4-Aligned-DNA.fas.FEL.json"
## [2,] "406.765586998457"
## [3,] "9.37248215055545"
## [4,] "0.0178725684177963"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Decapoda-ND4L-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Decapoda-ND4L-Aligned-DNA.fas.FEL.json"
## [2,] "192.871272075794"
## [3,] "10.0602236876729"
## [4,] "0.0014620853972682"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Decapoda-ND5-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Decapoda-ND5-Aligned-DNA.fas.FEL.json"
## [2,] "423.582062512884"
## [3,] "8.99558637406183"
## [4,] "0.0295173947742577"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Decapoda-ND6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Decapoda-ND6-Aligned-DNA.fas.FEL.json"
## [2,] "357.283152001262"
## [3,] "12.5210102927581"

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## [4,] "0.101596058978373"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Diprotodontia-ATP6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Diprotodontia-ATP6-Aligned-DNA.fas.FEL.json"
## [2,] "127.323935216451"
## [3,] "8.63712217938481"
## [4,] "0.0232697965017278"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Diprotodontia-ATP8-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Diprotodontia-ATP8-Aligned-DNA.fas.FEL.json"
## [2,] "131.912677661421"
## [3,] "9.74627381317841"
## [4,] "0.359771483767564"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Diprotodontia-COX1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Diprotodontia-COX1-Aligned-DNA.fas.FEL.json"
## [2,] "183.693892239848"
## [3,] "8.40987253896847"
## [4,] "8.15536482194671e-05"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Diprotodontia-COX2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Diprotodontia-COX2-Aligned-DNA.fas.FEL.json"
## [2,] "130.288572438087"
## [3,] "8.97852424082945"
## [4,] "0.00020140494213939"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Diprotodontia-CYTB-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Diprotodontia-CYTB-Aligned-DNA.fas.FEL.json"
## [2,] "236.452869011096"
## [3,] "8.70745012332607"
## [4,] "0.0940852093180118"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Diprotodontia-ND1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Diprotodontia-ND1-Aligned-DNA.fas.FEL.json"
## [2,] "236.647172254844"
## [3,] "8.79924900165143"
## [4,] "0.018160142613137"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Diprotodontia-ND2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Diprotodontia-ND2-Aligned-DNA.fas.FEL.json"
## [2,] "224.242096319802"
## [3,] "8.5205964094571"
## [4,] "0.00699864939966526"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Diprotodontia-ND3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Diprotodontia-ND3-Aligned-DNA.fas.FEL.json"
## [2,] "133.28627014097"
## [3,] "9.2468236987635"
## [4,] "0.00955837069444557"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Diprotodontia-ND4L-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Diprotodontia-ND4L-Aligned-DNA.fas.FEL.json"
## [2,] "111.151941923815"
## [3,] "8.99218733117881"
## [4,] "0.0325248343404813"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Diprotodontia-ND5-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Diprotodontia-ND5-Aligned-DNA.fas.FEL.json"
## [2,] "340.030111426907"
## [3,] "8.5586495563574"
## [4,] "0.0830068854507333"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Diprotodontia-ND6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Diprotodontia-ND6-Aligned-DNA.fas.FEL.json"
## [2,] "111.616897229494"

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## [3,] "8.84715420144693"
## [4,] "0.00368471277003227"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Diptera-ATP6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Diptera-ATP6-Aligned-DNA.fas.FEL.json"
## [2,] "188.438428912411"
## [3,] "8.87289990122217"
## [4,] "5.71591644537559e-05"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Diptera-ATP8-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Diptera-ATP8-Aligned-DNA.fas.FEL.json"
## [2,] "117.861817848649"
## [3,] "10.3258339078921"
## [4,] "0.132001213082517"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Diptera-COX1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Diptera-COX1-Aligned-DNA.fas.FEL.json"
## [2,] "251.167656776153"
## [3,] "8.35928542322275"
## [4,] "0.191755135479465"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Diptera-COX2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Diptera-COX2-Aligned-DNA.fas.FEL.json"
## [2,] "163.311412600594"
## [3,] "8.61478834803456"
## [4,] "0.0111595127238617"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Diptera-COX3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Diptera-COX3-Aligned-DNA.fas.FEL.json"
## [2,] "116.91105497257"
## [3,] "8.55964121290498"
## [4,] "0.00663038173330999"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Diptera-CYTB-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Diptera-CYTB-Aligned-DNA.fas.FEL.json"
## [2,] "213.623963866867"
## [3,] "8.4631874309068"
## [4,] "0.00649096745188381"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Diptera-ND1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Diptera-ND1-Aligned-DNA.fas.FEL.json"
## [2,] "179.167289596108"
## [3,] "9.05213440757637"
## [4,] "0.122148627561195"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Diptera-ND2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Diptera-ND2-Aligned-DNA.fas.FEL.json"
## [2,] "205.21194153098"
## [3,] "9.18683080846444"
## [4,] "0.0447755115534745"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Diptera-ND3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Diptera-ND3-Aligned-DNA.fas.FEL.json"
## [2,] "155.342590848744"
## [3,] "10.6055830374296"
## [4,] "0.136227573202144"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Diptera-ND4L-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Diptera-ND4L-Aligned-DNA.fas.FEL.json"
## [2,] "118.203035884024"
## [3,] "9.07379544635346"
## [4,] "0.00261389899282275"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Diptera-ND5-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Diptera-ND5-Aligned-DNA.fas.FEL.json"

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## [2,] "354.015248925406"
## [3,] "8.9005687373939"
## [4,] "1.229341379975"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Diptera-ND6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Diptera-ND6-Aligned-DNA.fas.FEL.json"
## [2,] "178.095218725663"
## [3,] "9.53525017860775"
## [4,] "0.165503061320687"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Falconiformes-ATP6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Falconiformes-ATP6-Aligned-DNA.fas.FEL.json"
## [2,] "65.4723086276973"
## [3,] "8.38273720625311"
## [4,] "0.162070472808904"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Falconiformes-ATP8-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Falconiformes-ATP8-Aligned-DNA.fas.FEL.json"
## [2,] "4.75292103618431"
## [3,] "0.761831638509427"
## [4,] "0.372823558778779"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Falconiformes-COX1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Falconiformes-COX1-Aligned-DNA.fas.FEL.json"
## [2,] "153.08699448481"
## [3,] "8.42142649675262"
## [4,] "0.0190614507901739"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Falconiformes-COX2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Falconiformes-COX2-Aligned-DNA.fas.FEL.json"
## [2,] "77.3530392322273"
## [3,] "8.12410254126957"
## [4,] "0.00330377475881402"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Falconiformes-CYTB-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Falconiformes-CYTB-Aligned-DNA.fas.FEL.json"
## [2,] "94.6809751547251"
## [3,] "8.48623270532681"
## [4,] "0.0138943140454517"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Falconiformes-ND1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Falconiformes-ND1-Aligned-DNA.fas.FEL.json"
## [2,] "21.7530608261402"
## [3,] "4.86265483979603"
## [4,] "0.173409427287417"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Falconiformes-ND2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Falconiformes-ND2-Aligned-DNA.fas.FEL.json"
## [2,] "61.9988253469651"
## [3,] "8.2578399180074"
## [4,] "0.381540620753243"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Falconiformes-ND3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Falconiformes-ND3-Aligned-DNA.fas.FEL.json"
## [2,] "64.2721300540915"
## [3,] "8.68916152565078"
## [4,] "0.062675717258777"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Falconiformes-ND4-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Falconiformes-ND4-Aligned-DNA.fas.FEL.json"
## [2,] "160.982978776318"
## [3,] "8.38473006698425"
## [4,] "0.0625209549386178"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Falconiformes-ND4L-Aligned-DNA.fas.FEL.json

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## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Falconiformes-ND4L-Aligned-DNA.fas.FEL.json"
## [2,] "83.7971901240487"
## [3,] "8.81744560298858"
## [4,] "0.0304439613806181"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Falconiformes-ND5-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Falconiformes-ND5-Aligned-DNA.fas.FEL.json"
## [2,] "134.0463845914"
## [3,] "8.33866276187052"
## [4,] "0.223296924377376"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Falconiformes-ND6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Falconiformes-ND6-Aligned-DNA.fas.FEL.json"
## [2,] "106.253137857974"
## [3,] "8.59408274370995"
## [4,] "0.0845193643963669"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Gadiformes-ATP6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Gadiformes-ATP6-Aligned-DNA.fas.FEL.json"
## [2,] "84.2204868044845"
## [3,] "8.47044343544864"
## [4,] "0.000629934818882746"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Gadiformes-COX1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Gadiformes-COX1-Aligned-DNA.fas.FEL.json"
## [2,] "92.56455647686"
## [3,] "8.29320695123344"
## [4,] "2.51538385928293"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Gadiformes-COX2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Gadiformes-COX2-Aligned-DNA.fas.FEL.json"
## [2,] "60.0882486699143"
## [3,] "8.74117572143088"
## [4,] "0.0177309009379078"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Gadiformes-COX3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Gadiformes-COX3-Aligned-DNA.fas.FEL.json"
## [2,] "63.7134220875105"
## [3,] "8.41095317583494"
## [4,] "0.00461304451787104"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Gadiformes-CYTB-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Gadiformes-CYTB-Aligned-DNA.fas.FEL.json"
## [2,] "110.899164902404"
## [3,] "8.29391421736661"
## [4,] "0.00105361297433091"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Gadiformes-ND1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Gadiformes-ND1-Aligned-DNA.fas.FEL.json"
## [2,] "93.1569114580463"
## [3,] "8.42235949373448"
## [4,] "0.076188710839757"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Gadiformes-ND2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Gadiformes-ND2-Aligned-DNA.fas.FEL.json"
## [2,] "133.592285053026"
## [3,] "8.68259414334772"
## [4,] "0.0052462956343684"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Gadiformes-ND3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Gadiformes-ND3-Aligned-DNA.fas.FEL.json"
## [2,] "60.0004252654857"
## [3,] "8.44380821759191"
## [4,] "0.176271460250686"

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##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Gadiformes-ND4-Aligned-DNA.fas.FEL.json
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## [2,] "160.250105212847"
## [3,] "8.2654283746987"
## [4,] "1.0160003744101e-06"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Gadiformes-ND4L-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Gadiformes-ND4L-Aligned-DNA.fas.FEL.json"
## [2,] "59.2376382329796"
## [3,] "8.33062552546314"
## [4,] "0.000328856333199695"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Gadiformes-ND5-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Gadiformes-ND5-Aligned-DNA.fas.FEL.json"
## [2,] "217.372135383515"
## [3,] "8.28982913178845"
## [4,] "0.0349794500711644"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Gadiformes-ND6-Aligned-DNA.fas.FEL.json
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## [2,] "83.7392268829635"
## [3,] "8.92503856136385"
## [4,] "0.0390669893306632"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Galliformes-ATP6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Galliformes-ATP6-Aligned-DNA.fas.FEL.json"
## [2,] "66.5025352421816"
## [3,] "8.18681475210422"
## [4,] "0.00720696235656532"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Galliformes-ATP8-Aligned-DNA.fas.FEL.json
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## [3,] "1.82823352602437"
## [4,] "0.299703570516536"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Galliformes-COX1-Aligned-DNA.fas.FEL.json
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## [2,] "76.0872726662031"
## [3,] "7.93080061252639"
## [4,] "0.0347152101657063"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Galliformes-COX2-Aligned-DNA.fas.FEL.json
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## [2,] "37.3138313169302"
## [3,] "6.1338030090778"
## [4,] "0.0596276013981673"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Galliformes-CYTB-Aligned-DNA.fas.FEL.json
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## [2,] "118.005254997854"
## [3,] "8.38856473630349"
## [4,] "0.0893159650268348"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Galliformes-ND1-Aligned-DNA.fas.FEL.json
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## [3,] "8.29901946825931"
## [4,] "0.045174587823012"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Galliformes-ND2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Galliformes-ND2-Aligned-DNA.fas.FEL.json"
## [2,] "65.3398834661003"
## [3,] "8.32004575355906"

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## [4,] "0.0465642369709983"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Galliformes-ND3-Aligned-DNA.fas.FEL.json
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## [3,] "8.68815470648088"
## [4,] "0.101408926361819"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Galliformes-ND4L-Aligned-DNA.fas.FEL.json
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## [2,] "6.85051014049858"
## [3,] "0.758223648651301"
## [4,] "0.00218769065271442"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Galliformes-ND5-Aligned-DNA.fas.FEL.json
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## [2,] "193.319223941422"
## [3,] "8.11376191631206"
## [4,] "0.0871910087254652"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Galliformes-ND6-Aligned-DNA.fas.FEL.json
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## [2,] "63.731229594211"
## [3,] "8.48089450793506"
## [4,] "0.0949438326686728"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/gasterosteiformes-atp6-align-dna.fas.FEL.json
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## [2,] "72.0263495791023"
## [3,] "8.72466278883767"
## [4,] "0.0330441845881475"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/gasterosteiformes-cox1-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/gasterosteiformes-cox1-align-dna.fas.FEL.json"
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## [3,] "8.43918019789815"
## [4,] "0.0179565749318133"
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## [3,] "6.57847593418654"
## [4,] "0.000777031715104494"
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## [3,] "2.90571750784669"
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## [4,] "0.108878401669352"
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## [3,] "7.19874495728036"
## [4,] "0.0784992364057738"
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## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/gasterosteiformes-nd3-align-dna.fas.FEL.json"
## [2,] "9.93466238183339"

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## [3,] "2.7528842962682"
## [4,] "0.0943959914896458"
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## [2,] "67.1090317940121"
## [3,] "8.43435939699741"
## [4,] "0.0742155677464391"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/gasterosteiformes-nd4l-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/gasterosteiformes-nd4l-align-dna.fas.FEL.json"
## [2,] "7.37572152235715"
## [3,] "1.0875156787945"
## [4,] "0.00422999990496832"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/gasterosteiformes-nd5-align-dna.fas.FEL.json
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## [3,] "8.68073520899688"
## [4,] "0.666209593455351"
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## [4,] "0.242206190061236"
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## [3,] "10.0121792658694"
## [4,] "0.0483688140949204"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Gruiformes-ATP8-Aligned-DNA.fas.FEL.json
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## [4,] "0.053316602135953"
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## [4,] "0.000555639330513599"
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## [3,] "11.3042951399684"
## [4,] "0.250112779406597"
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## [3,] "10.4152823767087"
## [4,] "0.287878152354063"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Gruiformes-ND2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Gruiformes-ND2-Aligned-DNA.fas.FEL.json"

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## [2,] "244.050483109312"
## [3,] "9.0580092150188"
## [4,] "0.0815853019374128"
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## [3,] "10.6535130587203"
## [4,] "0.0522936807837471"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Gruiformes-ND4-Aligned-DNA.fas.FEL.json
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## [2,] "239.11140431035"
## [3,] "10.0036838450993"
## [4,] "0.320376763564072"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Gruiformes-ND4L-Aligned-DNA.fas.FEL.json
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## [3,] "10.0467518823407"
## [4,] "0.0112323176340412"
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## [3,] "9.44679086407763"
## [4,] "0.109471479655615"
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## [3,] "9.42884198177778"
## [4,] "0.139219820577808"
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## [4,] "0.00620866875486176"
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## [3,] "18.21773148898"
## [4,] "2.50308674899232"
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## [2,] "266.634664749049"
## [3,] "8.65733586370205"
## [4,] "0.0338162405889811"
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## [3,] "9.79700815699133"
## [4,] "1.44924046102392"
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## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Gymnophiona-ND1-Aligned-DNA.fas.FEL.json"
## [2,] "323.578812119411"
## [3,] "11.3033672452577"
## [4,] "0.283201761955433"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Gymnophiona-ND2-Aligned-DNA.fas.FEL.json

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## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Gymnophiona-ND2-Aligned-DNA.fas.FEL.json"
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## [3,] "9.98738902216347"
## [4,] "1.03445658955053"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Gymnophiona-ND3-Aligned-DNA.fas.FEL.json
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## [3,] "12.8461662817818"
## [4,] "0.00489307694229333"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Gymnophiona-ND4-Aligned-DNA.fas.FEL.json
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## [3,] "11.787260973541"
## [4,] "1.83759489907682"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Gymnophiona-ND4L-Aligned-DNA.fas.FEL.json
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## [3,] "12.8312725053658"
## [4,] "0.0698006478126997"
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## [3,] "9.52475640282318"
## [4,] "3.70107278784571"
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## [4,] "3.13692095560913"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Hemiptera-ATP6-Aligned-DNA.fas.FEL.json
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## [2,] "435.776759225778"
## [3,] "15.1655412819253"
## [4,] "2.15999253375032"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Hemiptera-ATP8-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Hemiptera-ATP8-Aligned-DNA.fas.FEL.json"
## [2,] "294.383097984387"
## [3,] "20.8089939927636"
## [4,] "2.3223303775894"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Hemiptera-COX1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Hemiptera-COX1-Aligned-DNA.fas.FEL.json"
## [2,] "448.77851591555"
## [3,] "9.63485507347604"
## [4,] "0.367483912575142"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Hemiptera-COX2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Hemiptera-COX2-Aligned-DNA.fas.FEL.json"
## [2,] "441.107210650693"
## [3,] "16.4595123304758"
## [4,] "0.598121599507758"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Hemiptera-COX3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Hemiptera-COX3-Aligned-DNA.fas.FEL.json"
## [2,] "418.142236497092"
## [3,] "10.3409750527867"
## [4,] "0.0415514863700515"

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##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Hemiptera-CYTB-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Hemiptera-CYTB-Aligned-DNA.fas.FEL.json"
## [2,] "530.192889678173"
## [3,] "12.1487246898284"
## [4,] "0.750103995665135"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Hemiptera-ND1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Hemiptera-ND1-Aligned-DNA.fas.FEL.json"
## [2,] "355.606079555104"
## [3,] "9.93983011677595"
## [4,] "5.20877621254743"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Hemiptera-ND2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Hemiptera-ND2-Aligned-DNA.fas.FEL.json"
## [2,] "492.422416325387"
## [3,] "8.84345805700559"
## [4,] "0.580280415354099"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Hemiptera-ND3-Aligned-DNA.fas.FEL.json
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## [2,] "288.493531359128"
## [3,] "12.4816434756367"
## [4,] "0.932762358590236"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Hemiptera-ND4-Aligned-DNA.fas.FEL.json
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## [2,] "514.504383395659"
## [3,] "9.68045888662315"
## [4,] "1.18822384612454"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Hemiptera-ND4L-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Hemiptera-ND4L-Aligned-DNA.fas.FEL.json"
## [2,] "242.930819091926"
## [3,] "10.3494339116494"
## [4,] "0.8000948484317"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Hemiptera-ND5-Aligned-DNA.fas.FEL.json
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## [2,] "674.511707199207"
## [3,] "12.7596362598439"
## [4,] "8.14610035219291"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Hemiptera-ND6-Aligned-DNA.fas.FEL.json
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## [3,] "7.11075383157992"
## [4,] "0.381117235463209"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/hymenoptera-atp6-align-dna.fas.FEL.json
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## [2,] "204.523350805181"
## [3,] "10.6273358524783"
## [4,] "0.028408774005801"
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## [2,] "117.825683130256"
## [3,] "9.87044226616732"
## [4,] "0.00474960888348232"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/hymenoptera-cox1-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/hymenoptera-cox1-align-dna.fas.FEL.json"
## [2,] "289.200276080026"
## [3,] "9.76738079327926"

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## [4,] "0.0628368086496932"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/hymenoptera-cox2-align-dna.fas.FEL.json
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## [2,] "204.526746416806"
## [3,] "10.1951572224857"
## [4,] "0.0201618326621019"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/hymenoptera-cox3-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/hymenoptera-cox3-align-dna.fas.FEL.json"
## [2,] "210.730332821327"
## [3,] "9.75831855453687"
## [4,] "0.09870075754764"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/hymenoptera-cytb-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/hymenoptera-cytb-align-dna.fas.FEL.json"
## [2,] "228.200375619923"
## [3,] "9.58509723764035"
## [4,] "0.749996980792291"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/hymenoptera-nd1-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/hymenoptera-nd1-align-dna.fas.FEL.json"
## [2,] "187.923849304708"
## [3,] "9.75383287647846"
## [4,] "0.107520874805647"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/hymenoptera-nd2-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/hymenoptera-nd2-align-dna.fas.FEL.json"
## [2,] "156.649017017124"
## [3,] "10.0841251426085"
## [4,] "1.52579352860763"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/hymenoptera-nd3-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/hymenoptera-nd3-align-dna.fas.FEL.json"
## [2,] "176.761280371318"
## [3,] "11.0037978593596"
## [4,] "0.0112210877881738"
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## [2,] "213.650155818707"
## [3,] "9.88404094014236"
## [4,] "0.617649687601831"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/hymenoptera-nd4l-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/hymenoptera-nd4l-align-dna.fas.FEL.json"
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## [4,] "0.000772182480390045"
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## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/hymenoptera-nd5-align-dna.fas.FEL.json"
## [2,] "323.339743128138"
## [3,] "9.78308884828147"
## [4,] "0.272074975178394"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/hymenoptera-nd6-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/hymenoptera-nd6-align-dna.fas.FEL.json"
## [2,] "165.997451377952"
## [3,] "11.0500719827272"
## [4,] "0.245994769107586"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Insectivora-ATP6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Insectivora-ATP6-Aligned-DNA.fas.FEL.json"
## [2,] "228.976508873849"

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## [3,] "10.1319599277615"
## [4,] "0.0109483714048654"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Insectivora-ATP8-Aligned-DNA.fas.FEL.json
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## [3,] "10.8583915761942"
## [4,] "0.286524009911498"
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## [2,] "247.779157380024"
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## [4,] "0.000424169906903466"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Insectivora-COX2-Aligned-DNA.fas.FEL.json
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## [2,] "176.212870687144"
## [3,] "9.51643072492046"
## [4,] "0.0125404212731462"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Insectivora-CYTB-Aligned-DNA.fas.FEL.json
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## [2,] "276.721745064465"
## [3,] "9.36304985644043"
## [4,] "0.0207007710789898"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Insectivora-ND1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Insectivora-ND1-Aligned-DNA.fas.FEL.json"
## [2,] "282.575351917044"
## [3,] "9.74345234911064"
## [4,] "0.00328746248957987"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Insectivora-ND2-Aligned-DNA.fas.FEL.json
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## [2,] "377.675313850873"
## [3,] "10.2826090326486"
## [4,] "0.131093397042115"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Insectivora-ND3-Aligned-DNA.fas.FEL.json
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## [2,] "200.608789519559"
## [3,] "12.8223653647244"
## [4,] "0.14353723241045"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Insectivora-ND4L-Aligned-DNA.fas.FEL.json
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## [2,] "141.166429138423"
## [3,] "9.86206992999621"
## [4,] "0.000822112961284776"
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## [2,] "422.266396244185"
## [3,] "9.70249649053226"
## [4,] "0.120549682956668"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Insectivora-ND6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Insectivora-ND6-Aligned-DNA.fas.FEL.json"
## [2,] "319.344133565258"
## [3,] "12.8772308235155"
## [4,] "0.016411994575648"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Ixodida-ATP6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Ixodida-ATP6-Aligned-DNA.fas.FEL.json"

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## [2,] "407.221440341048"
## [3,] "15.3044123274122"
## [4,] "1.46319444978325"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Ixodida-ATP8-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Ixodida-ATP8-Aligned-DNA.fas.FEL.json"
## [2,] "220.289991059673"
## [3,] "19.9488681833937"
## [4,] "1.6201998893516"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Ixodida-COX1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Ixodida-COX1-Aligned-DNA.fas.FEL.json"
## [2,] "328.145613582917"
## [3,] "10.3351682920554"
## [4,] "0.0123838597539236"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Ixodida-COX2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Ixodida-COX2-Aligned-DNA.fas.FEL.json"
## [2,] "329.910845693678"
## [3,] "12.772303174582"
## [4,] "2.86445889531519"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Ixodida-COX3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Ixodida-COX3-Aligned-DNA.fas.FEL.json"
## [2,] "434.043533118488"
## [3,] "14.9220791349792"
## [4,] "0.350025579230537"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Ixodida-CYTB-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Ixodida-CYTB-Aligned-DNA.fas.FEL.json"
## [2,] "406.166861570685"
## [3,] "11.1395756699522"
## [4,] "0.340590320611687"
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## [3,] "9.654441879717"
## [4,] "0.688272172196419"
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## [3,] "15.3107823009097"
## [4,] "1.82549873615685"
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## [3,] "17.8387688024963"
## [4,] "0.186608513582802"
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## [3,] "9.99486058416249"
## [4,] "2.29481747390448"
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## [2,] "293.901569277293"
## [3,] "18.0572831576288"
## [4,] "0.0411571579484625"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Ixodida-ND5-Aligned-DNA.fas.FEL.json

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## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Ixodida-ND5-Aligned-DNA.fas.FEL.json"
## [2,] "505.515590678616"
## [3,] "10.1961336339757"
## [4,] "0.284430041185362"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Ixodida-ND6-Aligned-DNA.fas.FEL.json
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## [2,] "317.193910085744"
## [3,] "11.5844996306529"
## [4,] "1.25223682950373"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Lagomorpha-ATP6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Lagomorpha-ATP6-Aligned-DNA.fas.FEL.json"
## [2,] "67.3805617966721"
## [3,] "7.99231625263463"
## [4,] "0.0508454947792392"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Lagomorpha-ATP8-Aligned-DNA.fas.FEL.json
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## [3,] "9.5370250882434"
## [4,] "0.428735022614967"
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## [4,] "0.0280436134294188"
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## [3,] "8.66580065516394"
## [4,] "0.00354707478631005"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Lagomorpha-CYTB-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Lagomorpha-CYTB-Aligned-DNA.fas.FEL.json"
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## [3,] "9.46748580295917"
## [4,] "0.000154184297657843"
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## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Lagomorpha-ND1-Aligned-DNA.fas.FEL.json"
## [2,] "117.761466182564"
## [3,] "9.7067177476796"
## [4,] "0.000340425032721854"
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## [3,] "8.84373687213353"
## [4,] "0.104924027772786"
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## [2,] "84.4940583295592"
## [3,] "9.46675262554821"
## [4,] "0.0574176142038478"
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## [2,] "213.202158670003"
## [3,] "8.70269242687302"
## [4,] "0.138955518010628"

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##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Lagomorpha-ND6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Lagomorpha-ND6-Aligned-DNA.fas.FEL.json"
## [2,] "146.284921917153"
## [3,] "9.53842949354679"
## [4,] "0.162533886620262"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Lepidoptera-ATP6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Lepidoptera-ATP6-Aligned-DNA.fas.FEL.json"
## [2,] "270.952332842543"
## [3,] "9.29281459653542"
## [4,] "0.0326833578105481"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Lepidoptera-ATP8-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Lepidoptera-ATP8-Aligned-DNA.fas.FEL.json"
## [2,] "176.783916869413"
## [3,] "14.2334730655721"
## [4,] "0.943078411830074"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Lepidoptera-COX1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Lepidoptera-COX1-Aligned-DNA.fas.FEL.json"
## [2,] "257.875792856732"
## [3,] "9.17777347931241"
## [4,] "0.0437323104378069"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Lepidoptera-COX2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Lepidoptera-COX2-Aligned-DNA.fas.FEL.json"
## [2,] "294.346762363926"
## [3,] "10.1692734306882"
## [4,] "0.148293665797804"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Lepidoptera-COX3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Lepidoptera-COX3-Aligned-DNA.fas.FEL.json"
## [2,] "254.456637769125"
## [3,] "9.53771585271816"
## [4,] "0.0116177524372985"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Lepidoptera-CYTB-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Lepidoptera-CYTB-Aligned-DNA.fas.FEL.json"
## [2,] "423.147279728372"
## [3,] "9.5995208074048"
## [4,] "0.0300693475808488"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Lepidoptera-ND1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Lepidoptera-ND1-Aligned-DNA.fas.FEL.json"
## [2,] "236.809388646159"
## [3,] "9.18135939391676"
## [4,] "0.176670648521186"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Lepidoptera-ND2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Lepidoptera-ND2-Aligned-DNA.fas.FEL.json"
## [2,] "353.298556517825"
## [3,] "9.53594020736999"
## [4,] "0.0199759637821354"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Lepidoptera-ND3-Aligned-DNA.fas.FEL.json
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## [2,] "235.884927035963"
## [3,] "10.8242000903096"
## [4,] "0.00472357639489118"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Lepidoptera-ND4-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Lepidoptera-ND4-Aligned-DNA.fas.FEL.json"
## [2,] "366.96265444694"
## [3,] "9.78683340135424"

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## [4,] "2.20860907186771"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Lepidoptera-ND4L-Aligned-DNA.fas.FEL.json
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## [2,] "228.16684069435"
## [3,] "11.0272622004989"
## [4,] "0.0871660625193335"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Lepidoptera-ND5-Aligned-DNA.fas.FEL.json
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## [2,] "343.731705214269"
## [3,] "8.95911387890822"
## [4,] "0.221790694261122"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Lepidoptera-ND6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Lepidoptera-ND6-Aligned-DNA.fas.FEL.json"
## [2,] "276.659434850791"
## [3,] "10.0257821645493"
## [4,] "0.141275611480685"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Lophiiformes-ATP6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Lophiiformes-ATP6-Aligned-DNA.fas.FEL.json"
## [2,] "59.7441371613529"
## [3,] "8.34703154066459"
## [4,] "0.205748092275633"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Lophiiformes-COX1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Lophiiformes-COX1-Aligned-DNA.fas.FEL.json"
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## [3,] "7.25787899339321"
## [4,] "0.494524013527897"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Lophiiformes-COX2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Lophiiformes-COX2-Aligned-DNA.fas.FEL.json"
## [2,] "11.2912023805816"
## [3,] "1.57529877515903"
## [4,] "0.00394145508286044"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Lophiiformes-COX3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Lophiiformes-COX3-Aligned-DNA.fas.FEL.json"
## [2,] "59.9815548177155"
## [3,] "8.23685475350784"
## [4,] "0.0281197769700372"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Lophiiformes-CYTB-Aligned-DNA.fas.FEL.json
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## [2,] "86.272980866715"
## [3,] "8.17963828457835"
## [4,] "0.0837119036321145"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Lophiiformes-ND1-Aligned-DNA.fas.FEL.json
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## [2,] "18.1092912446217"
## [3,] "4.03741403529324"
## [4,] "0.0302367182884564"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Lophiiformes-ND2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Lophiiformes-ND2-Aligned-DNA.fas.FEL.json"
## [2,] "102.94766787499"
## [3,] "8.19182099683155"
## [4,] "0.0702103641990758"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Lophiiformes-ND4L-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Lophiiformes-ND4L-Aligned-DNA.fas.FEL.json"
## [2,] "14.9333958678167"

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## [3,] "4.36015668248947"
## [4,] "0.00839305393346232"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Lophiiformes-ND5-Aligned-DNA.fas.FEL.json
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## [2,] "77.7748568659268"
## [3,] "8.02092176408338"
## [4,] "0.156524226939613"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Lophiiformes-ND6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Lophiiformes-ND6-Aligned-DNA.fas.FEL.json"
## [2,] "83.764683387347"
## [3,] "8.2782315705777"
## [4,] "0.132980790286847"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Mermithida-ATP6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Mermithida-ATP6-Aligned-DNA.fas.FEL.json"
## [2,] "320.200631978059"
## [3,] "11.8292599415424"
## [4,] "1.49306626765353"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Mermithida-COX1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Mermithida-COX1-Aligned-DNA.fas.FEL.json"
## [2,] "462.908254241391"
## [3,] "11.0469107581884"
## [4,] "1.97651338514071"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Mermithida-COX2-Aligned-DNA.fas.FEL.json
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## [3,] "11.7321656158982"
## [4,] "5.54209211919274"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Mermithida-COX3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Mermithida-COX3-Aligned-DNA.fas.FEL.json"
## [2,] "464.01319741781"
## [3,] "15.397389771203"
## [4,] "1.26179274877849"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Mermithida-CYTB-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Mermithida-CYTB-Aligned-DNA.fas.FEL.json"
## [2,] "546.088468890807"
## [3,] "15.4269330363927"
## [4,] "1.23530317204124"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Mermithida-ND1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Mermithida-ND1-Aligned-DNA.fas.FEL.json"
## [2,] "539.083050872117"
## [3,] "15.7637435739104"
## [4,] "2.24243403885439"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Mermithida-ND2-Aligned-DNA.fas.FEL.json
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## [2,] "545.398285889797"
## [3,] "15.6130767733513"
## [4,] "4.55390090084745"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Mermithida-ND3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Mermithida-ND3-Aligned-DNA.fas.FEL.json"
## [2,] "346.3910011455"
## [3,] "19.451312470913"
## [4,] "1.14057600578353"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Mermithida-ND4-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Mermithida-ND4-Aligned-DNA.fas.FEL.json"

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## [2,] "629.976542141794"
## [3,] "15.19689363835"
## [4,] "2.11594004849392"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Mermithida-ND4L-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Mermithida-ND4L-Aligned-DNA.fas.FEL.json"
## [2,] "306.049237120737"
## [3,] "19.3825615974423"
## [4,] "3.8407544006349"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Mermithida-ND5-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Mermithida-ND5-Aligned-DNA.fas.FEL.json"
## [2,] "654.645815432167"
## [3,] "14.9037732312173"
## [4,] "1.84956617498481"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Mermithida-ND6-Aligned-DNA.fas.FEL.json
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## [2,] "376.832362326024"
## [3,] "17.5926750696763"
## [4,] "1.55169661790141"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/neuroptera-atp6-align-dna.fas.FEL.json
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## [2,] "325.295555727687"
## [3,] "11.2388847187391"
## [4,] "0.0582155330690446"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/neuroptera-atp8-align-dna.fas.FEL.json
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## [2,] "58.871044148565"
## [3,] "7.11075378202171"
## [4,] "0.000892405346298406"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/neuroptera-cox1-align-dna.fas.FEL.json
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## [2,] "457.227086704546"
## [3,] "12.7175545452609"
## [4,] "0.0969794186567405"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/neuroptera-cox2-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/neuroptera-cox2-align-dna.fas.FEL.json"
## [2,] "182.617259731176"
## [3,] "11.4781706402334"
## [4,] "3.25920081121986"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/neuroptera-cox3-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/neuroptera-cox3-align-dna.fas.FEL.json"
## [2,] "254.490900517408"
## [3,] "12.6646790183577"
## [4,] "0.0122838670553026"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/neuroptera-cytb-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/neuroptera-cytb-align-dna.fas.FEL.json"
## [2,] "274.799089107218"
## [3,] "11.9299319459139"
## [4,] "2.97515468689856"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/neuroptera-nd1-align-dna.fas.FEL.json
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## [2,] "244.334156176106"
## [3,] "10.1276555043096"
## [4,] "0.139395113617828"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/neuroptera-nd2-align-dna.fas.FEL.json

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## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/neuroptera-nd2-align-dna.fas.FEL.json"
## [2,] "456.524864563313"
## [3,] "14.2048309799609"
## [4,] "3.85479296040707"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/neuroptera-nd3-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/neuroptera-nd3-align-dna.fas.FEL.json"
## [2,] "263.153111576586"
## [3,] "15.7839331836147"
## [4,] "0.299428055506634"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/neuroptera-nd4-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/neuroptera-nd4-align-dna.fas.FEL.json"
## [2,] "355.954126830812"
## [3,] "10.1812327276588"
## [4,] "1.12123808826043"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/neuroptera-nd4l-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/neuroptera-nd4l-align-dna.fas.FEL.json"
## [2,] "163.336475286822"
## [3,] "11.3830362247433"
## [4,] "0.591081183517483"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/neuroptera-nd5-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/neuroptera-nd5-align-dna.fas.FEL.json"
## [2,] "509.782355808708"
## [3,] "15.8777720440921"
## [4,] "8.30340365687249"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/neuroptera-nd6-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/neuroptera-nd6-align-dna.fas.FEL.json"
## [2,] "0.676476000529547"
## [3,] "0.0799133602829661"
## [4,] "3.35312645903538e-07"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Ophidiiformes-ATP6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Ophidiiformes-ATP6-Aligned-DNA.fas.FEL.json"
## [2,] "230.234630335834"
## [3,] "9.71542394584161"
## [4,] "0.0145730031846116"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Ophidiiformes-ATP8-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Ophidiiformes-ATP8-Aligned-DNA.fas.FEL.json"
## [2,] "118.168729430968"
## [3,] "11.8665190026916"
## [4,] "0.030287099371625"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Ophidiiformes-COX1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Ophidiiformes-COX1-Aligned-DNA.fas.FEL.json"
## [2,] "157.887813282459"
## [3,] "8.78061102645077"
## [4,] "0.268287719109911"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Ophidiiformes-ND1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Ophidiiformes-ND1-Aligned-DNA.fas.FEL.json"
## [2,] "256.998540880797"
## [3,] "9.91417683740037"
## [4,] "0.146428184075475"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Ophidiiformes-ND4L-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Ophidiiformes-ND4L-Aligned-DNA.fas.FEL.json"
## [2,] "119.955540062305"
## [3,] "10.0697284422101"
## [4,] "0.00468775343280348"

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##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Ophidiiformes-ND5-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Ophidiiformes-ND5-Aligned-DNA.fas.FEL.json"
## [2,] "387.744457431554"
## [3,] "9.0083412394551"
## [4,] "0.542599815834359"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Ophidiiformes-ND6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Ophidiiformes-ND6-Aligned-DNA.fas.FEL.json"
## [2,] "165.893060330263"
## [3,] "10.1468518298371"
## [4,] "0.0623356175108506"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Orthoptera-ATP6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Orthoptera-ATP6-Aligned-DNA.fas.FEL.json"
## [2,] "237.97511808051"
## [3,] "9.04890437290886"
## [4,] "0.00551717861376473"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Orthoptera-ATP8-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Orthoptera-ATP8-Aligned-DNA.fas.FEL.json"
## [2,] "117.870998361266"
## [3,] "10.4856684066828"
## [4,] "0.0145071463320673"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Orthoptera-COX1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Orthoptera-COX1-Aligned-DNA.fas.FEL.json"
## [2,] "277.159073118478"
## [3,] "8.3514428828137"
## [4,] "0.00177225808255829"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Orthoptera-COX2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Orthoptera-COX2-Aligned-DNA.fas.FEL.json"
## [2,] "243.488916823437"
## [3,] "8.95854343620047"
## [4,] "0.000424783781498734"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Orthoptera-COX3-Aligned-DNA.fas.FEL.json
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## [2,] "265.394079110428"
## [3,] "8.80267873123247"
## [4,] "0.175184176609506"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Orthoptera-CYTB-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Orthoptera-CYTB-Aligned-DNA.fas.FEL.json"
## [2,] "275.069237260784"
## [3,] "8.6868489840562"
## [4,] "0.00403969403421658"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Orthoptera-ND1-Aligned-DNA.fas.FEL.json
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## [2,] "256.113851662968"
## [3,] "8.84281426131776"
## [4,] "0.0618627220583783"
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## [2,] "156.842263337788"
## [3,] "8.99706646612459"
## [4,] "0.086176116916726"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Orthoptera-ND3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Orthoptera-ND3-Aligned-DNA.fas.FEL.json"
## [2,] "228.13241890612"
## [3,] "9.70726027577298"

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## [4,] "0.107322709113973"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Orthoptera-ND4-Aligned-DNA.fas.FEL.json
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## [2,] "315.205211122426"
## [3,] "8.64126947917562"
## [4,] "0.16635078446479"
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## [3,] "9.66924120794905"
## [4,] "0.0567974274583299"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Orthoptera-ND5-Aligned-DNA.fas.FEL.json
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## [2,] "381.121933241813"
## [3,] "8.7627200016529"
## [4,] "1.48971954609377"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Orthoptera-ND6-Aligned-DNA.fas.FEL.json
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## [4,] "0.181172791182936"
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## [2,] "23.3758983377321"
## [3,] "4.62550461302843"
## [4,] "0.00169401996243621"
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## [4,] "0.034935508417041"
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## [3,] "5.15546212711703"
## [4,] "0.0161226930832911"
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## [3,] "7.23965704438134"
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## [3,] "7.94925460716047"
## [4,] "0.00539265882348266"
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## [3,] "5.03405962502086"
## [4,] "0.00886291447102464"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Osmeriformes-ND2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Osmeriformes-ND2-Aligned-DNA.fas.FEL.json"
## [2,] "35.3412350354551"

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## [3,] "5.7373897299944"
## [4,] "0.018842208927901"
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## [3,] "0.579499384013135"
## [4,] "0.0352192518414716"
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## [3,] "8.13320612935355"
## [4,] "0.0151327536773742"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Osmeriformes-ND4L-Aligned-DNA.fas.FEL.json
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## [3,] "0.69094550411737"
## [4,] "0.000701931783409302"
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## [3,] "7.93935506821665"
## [4,] "0.0419837016546081"
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## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Osmeriformes-ND6-Aligned-DNA.fas.FEL.json"
## [2,] "81.890518121192"
## [3,] "8.21029453384693"
## [4,] "0.0501726630795872"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Osteoglossiformes-ATP6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Osteoglossiformes-ATP6-Aligned-DNA.fas.FEL.json"
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## [3,] "8.28607442913549"
## [4,] "0.00400566310057581"
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## [3,] "5.25042343154028"
## [4,] "0.0111981846757505"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Osteoglossiformes-COX1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Osteoglossiformes-COX1-Aligned-DNA.fas.FEL.json"
## [2,] "92.7589141844146"
## [3,] "8.05868969558695"
## [4,] "0.0102322169492031"
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## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Osteoglossiformes-COX3-Aligned-DNA.fas.FEL.json"
## [2,] "47.6170571138039"
## [3,] "6.95311235285529"
## [4,] "0.00298257571077432"
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## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Osteoglossiformes-ND1-Aligned-DNA.fas.FEL.json"
## [2,] "120.253524489366"
## [3,] "8.1747800353138"
## [4,] "0.00731535082293652"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Osteoglossiformes-ND2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Osteoglossiformes-ND2-Aligned-DNA.fas.FEL.json"

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## [2,] "191.873671142525"
## [3,] "8.32084244648776"
## [4,] "0.070732563342374"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Osteoglossiformes-ND3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Osteoglossiformes-ND3-Aligned-DNA.fas.FEL.json"
## [2,] "96.3262867080619"
## [3,] "8.28711689547067"
## [4,] "0.0112783081860564"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Osteoglossiformes-ND4L-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Osteoglossiformes-ND4L-Aligned-DNA.fas.FEL.json"
## [2,] "73.5767190788504"
## [3,] "8.70886497550043"
## [4,] "0.000302512856256537"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Osteoglossiformes-ND5-Aligned-DNA.fas.FEL.json
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## [2,] "236.337523621531"
## [3,] "8.03131761979232"
## [4,] "0.151451197383128"
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## [3,] "8.52333634797399"
## [4,] "0.0545480274072032"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Ostreoida-ATP6-Aligned-DNA.fas.FEL.json
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## [2,] "133.102434406377"
## [3,] "8.99372789033171"
## [4,] "1.88051259218403"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Ostreoida-COX1-Aligned-DNA.fas.FEL.json
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## [3,] "8.61919260432659"
## [4,] "0.208092599284663"
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## [3,] "5.66276114880829"
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## [3,] "8.66019870532015"
## [4,] "6.31485433640803"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Ostreoida-ND1-Aligned-DNA.fas.FEL.json
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## [2,] "92.1643565242858"
## [3,] "8.72306299934213"
## [4,] "0.080136182585895"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Ostreoida-ND2-Aligned-DNA.fas.FEL.json

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## [3,] "9.08006654499405"
## [4,] "0.0953046828144696"
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## [3,] "8.50370207788812"
## [4,] "0.519381603980672"
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## [2,] "59.3936083975929"
## [3,] "8.94803686779588"
## [4,] "0.118654203272271"
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## [3,] "8.87422692499006"
## [4,] "0.504238982096019"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Passeriformes-ATP6-Aligned-DNA.fas.FEL.json
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## [4,] "0.00168396370103805"
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## [3,] "2.59782577248266"
## [4,] "0.179597101454482"
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## [3,] "8.27343822878836"
## [4,] "0.000301945368411055"
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## [2,] "86.7184150814253"
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## [4,] "0.0422985631493618"

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##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Passeriformes-CYTB-Aligned-DNA.fas.FEL.json
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## [2,] "18.9869148152597"
## [3,] "3.52169680479586"
## [4,] "0.000744558590605866"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Passeriformes-ND1-Aligned-DNA.fas.FEL.json
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## [3,] "1.02862083505598"
## [4,] "0.0221051715750845"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Passeriformes-ND2-Aligned-DNA.fas.FEL.json
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## [3,] "1.62674274368464"
## [4,] "0.0983026628800474"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Passeriformes-ND3-Aligned-DNA.fas.FEL.json
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## [2,] "7.9059613625704"
## [3,] "1.07818665927434"
## [4,] "0.100262611440426"
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## [3,] "2.41792088518448"
## [4,] "0.0176898179959465"
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## [3,] "0.801724000932776"
## [4,] "0.0782858816185704"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Passeriformes-ND5-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Passeriformes-ND5-Aligned-DNA.fas.FEL.json"
## [2,] "119.685755618546"
## [3,] "8.23157795724148"
## [4,] "0.00897191677880647"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Passeriformes-ND6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Passeriformes-ND6-Aligned-DNA.fas.FEL.json"
## [2,] "10.6698449833442"
## [3,] "1.61646995432076"
## [4,] "0.35335374399603"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Pectinoida-ATP6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Pectinoida-ATP6-Aligned-DNA.fas.FEL.json"
## [2,] "69.3550219017845"
## [3,] "9.27601161777545"
## [4,] "1.11633733549794"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Pectinoida-COX1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Pectinoida-COX1-Aligned-DNA.fas.FEL.json"
## [2,] "63.1312000886331"
## [3,] "8.75729799858693"
## [4,] "2.35412362923639"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Pectinoida-COX3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Pectinoida-COX3-Aligned-DNA.fas.FEL.json"
## [2,] "70.5069286425694"
## [3,] "9.7562168225552"

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## [4,] "0.145210888990017"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Pectinoida-CYTB-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Pectinoida-CYTB-Aligned-DNA.fas.FEL.json"
## [2,] "119.876919818034"
## [3,] "8.96890594432655"
## [4,] "2.60606098465406"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Pectinoida-ND1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Pectinoida-ND1-Aligned-DNA.fas.FEL.json"
## [2,] "69.6236194200861"
## [3,] "8.78262429709458"
## [4,] "1.39308419743109"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Pectinoida-ND2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Pectinoida-ND2-Aligned-DNA.fas.FEL.json"
## [2,] "104.925689421268"
## [3,] "9.05958325378117"
## [4,] "3.38653926053021"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Pectinoida-ND3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Pectinoida-ND3-Aligned-DNA.fas.FEL.json"
## [2,] "31.2071370113028"
## [3,] "7.24670909462993"
## [4,] "0.446313272914844"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Pectinoida-ND4-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Pectinoida-ND4-Aligned-DNA.fas.FEL.json"
## [2,] "40.4904277467755"
## [3,] "6.64571999283627"
## [4,] "0.400972084662121"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Pectinoida-ND4L-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Pectinoida-ND4L-Aligned-DNA.fas.FEL.json"
## [2,] "60.0469305459131"
## [3,] "9.43334352042983"
## [4,] "3.37292583582874"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Pectinoida-ND5-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Pectinoida-ND5-Aligned-DNA.fas.FEL.json"
## [2,] "280.216598815046"
## [3,] "8.20187700517229"
## [4,] "6.85602088553962"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Pectinoida-ND6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Pectinoida-ND6-Aligned-DNA.fas.FEL.json"
## [2,] "145.02145983075"
## [3,] "8.80918489547127"
## [4,] "4.15083906315912"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/perissodactyla-atp6-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/perissodactyla-atp6-align-dna.fas.FEL.json"
## [2,] "109.774967598422"
## [3,] "8.54934235009715"
## [4,] "0.00434008598845958"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/perissodactyla-atp8-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/perissodactyla-atp8-align-dna.fas.FEL.json"
## [2,] "76.0590645850505"
## [3,] "9.00044527273031"
## [4,] "0.593913265463498"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/perissodactyla-cox1-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/perissodactyla-cox1-align-dna.fas.FEL.json"
## [2,] "86.6167499011567"

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## [3,] "7.15599545068706"
## [4,] "0.000676760184211826"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/perissodactyla-cox2-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/perissodactyla-cox2-align-dna.fas.FEL.json"
## [2,] "47.2496628134311"
## [3,] "6.67969040820277"
## [4,] "0.019869597230293"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/perissodactyla-cox3-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/perissodactyla-cox3-align-dna.fas.FEL.json"
## [2,] "79.4015387142111"
## [3,] "8.51425849780995"
## [4,] "0.0371195211471806"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/perissodactyla-cytb-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/perissodactyla-cytb-align-dna.fas.FEL.json"
## [2,] "88.1647812569583"
## [3,] "8.38268262678057"
## [4,] "0.181537011047264"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/perissodactyla-nd1-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/perissodactyla-nd1-align-dna.fas.FEL.json"
## [2,] "72.7705851818506"
## [3,] "7.94062325635128"
## [4,] "0.0677907266056748"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/perissodactyla-nd2-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/perissodactyla-nd2-align-dna.fas.FEL.json"
## [2,] "110.989670951649"
## [3,] "8.65466898909463"
## [4,] "0.0569244932213925"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/perissodactyla-nd3-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/perissodactyla-nd3-align-dna.fas.FEL.json"
## [2,] "26.7333997714657"
## [3,] "6.03882661941206"
## [4,] "0.063852346930994"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/perissodactyla-nd4-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/perissodactyla-nd4-align-dna.fas.FEL.json"
## [2,] "137.658976212101"
## [3,] "8.32781551416572"
## [4,] "0.584046695374965"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/perissodactyla-nd4l-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/perissodactyla-nd4l-align-dna.fas.FEL.json"
## [2,] "53.5107294002389"
## [3,] "8.19128109615774"
## [4,] "0.0426912042705315"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/perissodactyla-nd5-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/perissodactyla-nd5-align-dna.fas.FEL.json"
## [2,] "295.012675721836"
## [3,] "9.08376110597797"
## [4,] "0.204780252254812"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/perissodactyla-nd6-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/perissodactyla-nd6-align-dna.fas.FEL.json"
## [2,] "68.9293678879792"
## [3,] "9.15866759421597"
## [4,] "0.0731772728433345"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Phasmatodea-ATP6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Phasmatodea-ATP6-Aligned-DNA.fas.FEL.json"

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## [2,] "273.086645970984"
## [3,] "10.031922149458"
## [4,] "0.761857883119932"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Phasmatodea-ATP8-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Phasmatodea-ATP8-Aligned-DNA.fas.FEL.json"
## [2,] "0.137940882225234"
## [3,] "0.0106541797523505"
## [4,] "0.00337544021150814"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Phasmatodea-COX3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Phasmatodea-COX3-Aligned-DNA.fas.FEL.json"
## [2,] "252.695568319146"
## [3,] "9.92051424966735"
## [4,] "0.122101691316789"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Phasmatodea-CYTB-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Phasmatodea-CYTB-Aligned-DNA.fas.FEL.json"
## [2,] "368.814536527902"
## [3,] "11.99905586693"
## [4,] "0.167968383191205"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Phasmatodea-ND1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Phasmatodea-ND1-Aligned-DNA.fas.FEL.json"
## [2,] "281.762970399681"
## [3,] "11.5302201687941"
## [4,] "0.174168755363168"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Phasmatodea-ND2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Phasmatodea-ND2-Aligned-DNA.fas.FEL.json"
## [2,] "453.068649541283"
## [3,] "14.2186952692781"
## [4,] "0.186686774731033"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Phasmatodea-ND3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Phasmatodea-ND3-Aligned-DNA.fas.FEL.json"
## [2,] "205.134319255188"
## [3,] "13.0417143919673"
## [4,] "4.50587738552932"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Phasmatodea-ND4-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Phasmatodea-ND4-Aligned-DNA.fas.FEL.json"
## [2,] "490.782535241893"
## [3,] "14.0903218675981"
## [4,] "0.907237912964006"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Phasmatodea-ND4L-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Phasmatodea-ND4L-Aligned-DNA.fas.FEL.json"
## [2,] "85.454999912772"
## [3,] "10.0920442943778"
## [4,] "0.00137130486222482"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Phasmatodea-ND5-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Phasmatodea-ND5-Aligned-DNA.fas.FEL.json"
## [2,] "413.516559462145"
## [3,] "10.2947634415347"
## [4,] "3.23217329153568"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Phasmatodea-ND6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Phasmatodea-ND6-Aligned-DNA.fas.FEL.json"
## [2,] "265.524541664885"
## [3,] "15.1194495323748"
## [4,] "0.588173427241455"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Pleuronectiformes-ATP6-Aligned-DNA.fas.FEL.json

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## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Pleuronectiformes-ATP6-Aligned-DNA.fas.FEL.json"
## [2,] "99.4354865953697"
## [3,] "8.38793704103285"
## [4,] "0.0982198509128253"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Pleuronectiformes-ATP8-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Pleuronectiformes-ATP8-Aligned-DNA.fas.FEL.json"
## [2,] "6.39796234361034"
## [3,] "1.82958312092391"
## [4,] "0.00956081407556703"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Pleuronectiformes-COX1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Pleuronectiformes-COX1-Aligned-DNA.fas.FEL.json"
## [2,] "100.347656044655"
## [3,] "8.33100461464564"
## [4,] "0.088671147478623"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Pleuronectiformes-COX3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Pleuronectiformes-COX3-Aligned-DNA.fas.FEL.json"
## [2,] "87.1980856601273"
## [3,] "8.45989855232531"
## [4,] "8.22012659964166e-06"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Pleuronectiformes-CYTB-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Pleuronectiformes-CYTB-Aligned-DNA.fas.FEL.json"
## [2,] "107.918830951716"
## [3,] "8.54280470102361"
## [4,] "0.00745262992997547"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Pleuronectiformes-ND1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Pleuronectiformes-ND1-Aligned-DNA.fas.FEL.json"
## [2,] "104.543840337762"
## [3,] "8.44052221766552"
## [4,] "0.00896495243463295"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Pleuronectiformes-ND2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Pleuronectiformes-ND2-Aligned-DNA.fas.FEL.json"
## [2,] "134.372316024671"
## [3,] "8.44870182344198"
## [4,] "0.0644409881701707"
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## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Pleuronectiformes-ND3-Aligned-DNA.fas.FEL.json"
## [2,] "7.86134015839482"
## [3,] "1.15915832374622"
## [4,] "0.0230569915840522"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Pleuronectiformes-ND4-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Pleuronectiformes-ND4-Aligned-DNA.fas.FEL.json"
## [2,] "137.10605609062"
## [3,] "8.49357509554233"
## [4,] "0.0320612838013669"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Pleuronectiformes-ND4L-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Pleuronectiformes-ND4L-Aligned-DNA.fas.FEL.json"
## [2,] "8.77870473744018"
## [3,] "2.27913525110117"
## [4,] "0.00436411712665977"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Pleuronectiformes-ND5-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Pleuronectiformes-ND5-Aligned-DNA.fas.FEL.json"
## [2,] "80.2559474628975"
## [3,] "8.20814498234622"
## [4,] "0.156671023909322"

```

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##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Pleuronectiformes-ND6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Pleuronectiformes-ND6-Aligned-DNA.fas.FEL.json"
## [2,] "130.466748477505"
## [3,] "9.07494191500328"
## [4,] "0.107186915945977"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/primates-atp6-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/primates-atp6-align-dna.fas.FEL.json"
## [2,] "118.725137614829"
## [3,] "8.41100062199046"
## [4,] "0.0943097676047791"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/primates-atp8-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/primates-atp8-align-dna.fas.FEL.json"
## [2,] "83.4515863599821"
## [3,] "9.07973466845379"
## [4,] "0.284790034077904"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/primates-cox1-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/primates-cox1-align-dna.fas.FEL.json"
## [2,] "144.043348321814"
## [3,] "8.43274980363036"
## [4,] "0.211450018447858"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/primates-cox2-align-dna.fas.FEL.json
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## [2,] "91.3941852878375"
## [3,] "8.64435177127702"
## [4,] "0.000125147500856297"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/primates-cytb-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/primates-cytb-align-dna.fas.FEL.json"
## [2,] "125.695361125386"
## [3,] "8.33603048752456"
## [4,] "0.0914650069659345"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/primates-nd1-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/primates-nd1-align-dna.fas.FEL.json"
## [2,] "104.43379277398"
## [3,] "8.36768156905466"
## [4,] "0.0235151188186228"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/primates-nd2-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/primates-nd2-align-dna.fas.FEL.json"
## [2,] "169.030042466739"
## [3,] "8.40344813888943"
## [4,] "0.0857844186257725"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/primates-nd3-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/primates-nd3-align-dna.fas.FEL.json"
## [2,] "12.7830788421998"
## [3,] "3.83304090098661"
## [4,] "0.112736291760072"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/primates-nd4-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/primates-nd4-align-dna.fas.FEL.json"
## [2,] "123.721174074289"
## [3,] "8.31416936443035"
## [4,] "0.0722704112735365"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/primates-nd4l-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/primates-nd4l-align-dna.fas.FEL.json"
## [2,] "27.6045475270268"
## [3,] "5.99350258870534"

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## [4,] "0.0503863447569154"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/primates-nd5-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/primates-nd5-align-dna.fas.FEL.json"
## [2,] "215.520278392015"
## [3,] "8.2819408944883"
## [4,] "0.188583231268149"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/primates-nd6-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/primates-nd6-align-dna.fas.FEL.json"
## [2,] "106.642350694485"
## [3,] "8.58430434230923"
## [4,] "0.0826323298315323"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/psittaciformes-atp6-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/psittaciformes-atp6-align-dna.fas.FEL.json"
## [2,] "172.851773704986"
## [3,] "9.97101581343583"
## [4,] "0.722005936866732"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/psittaciformes-atp8-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/psittaciformes-atp8-align-dna.fas.FEL.json"
## [2,] "69.2380932251822"
## [3,] "8.9999466536367"
## [4,] "0.265010966283992"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/psittaciformes-cox1-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/psittaciformes-cox1-align-dna.fas.FEL.json"
## [2,] "191.625511711613"
## [3,] "10.4746656605151"
## [4,] "0.071196932609748"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/psittaciformes-cox2-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/psittaciformes-cox2-align-dna.fas.FEL.json"
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## [3,] "11.3391189069761"
## [4,] "0.125214130251593"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/psittaciformes-cox3-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/psittaciformes-cox3-align-dna.fas.FEL.json"
## [2,] "149.693316178824"
## [3,] "11.5062297554239"
## [4,] "0.0511700486289991"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/psittaciformes-cytb-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/psittaciformes-cytb-align-dna.fas.FEL.json"
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## [3,] "11.3363885027451"
## [4,] "0.0628815005114503"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/psittaciformes-nd1-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/psittaciformes-nd1-align-dna.fas.FEL.json"
## [2,] "104.132432763973"
## [3,] "9.83353729580646"
## [4,] "0.109685318534262"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/psittaciformes-nd2-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/psittaciformes-nd2-align-dna.fas.FEL.json"
## [2,] "213.167959956638"
## [3,] "10.5725230430314"
## [4,] "0.513076145106616"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/psittaciformes-nd3-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/psittaciformes-nd3-align-dna.fas.FEL.json"
## [2,] "79.2778769971552"

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## [3,] "9.20187710055095"
## [4,] "0.62076878444654"
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## [3,] "9.48059143251447"
## [4,] "0.302104536575293"
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## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/psittaciformes-nd4l-align-dna.fas.FEL.json"
## [2,] "85.4877717500924"
## [3,] "10.0624288910776"
## [4,] "0.123707090896753"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/psittaciformes-nd5-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/psittaciformes-nd5-align-dna.fas.FEL.json"
## [2,] "256.385054983727"
## [3,] "9.34331025913593"
## [4,] "1.37505021508337"
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## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/psittaciformes-nd6-align-dna.fas.FEL.json"
## [2,] "203.536301957338"
## [3,] "9.39845560349314"
## [4,] "2.74011661180602"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Rhabditida-ATP6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Rhabditida-ATP6-Aligned-DNA.fas.FEL.json"
## [2,] "346.074570564746"
## [3,] "10.9601095457609"
## [4,] "0.0233394762366128"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Rhabditida-COX1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Rhabditida-COX1-Aligned-DNA.fas.FEL.json"
## [2,] "202.822868889001"
## [3,] "8.63854865097983"
## [4,] "0.00168655140962907"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Rhabditida-COX2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Rhabditida-COX2-Aligned-DNA.fas.FEL.json"
## [2,] "224.879777308714"
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## [4,] "0.00345325562554889"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Rhabditida-COX3-Aligned-DNA.fas.FEL.json
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## [3,] "8.87336850562971"
## [4,] "0.000403147416535108"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Rhabditida-CYTB-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Rhabditida-CYTB-Aligned-DNA.fas.FEL.json"
## [2,] "351.421307854084"
## [3,] "9.65182925776271"
## [4,] "1.00585012209715"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Rhabditida-ND1-Aligned-DNA.fas.FEL.json
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## [2,] "302.685541079471"
## [3,] "10.0832788516582"
## [4,] "0.00762170400676111"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Rhabditida-ND2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Rhabditida-ND2-Aligned-DNA.fas.FEL.json"

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## [2,] "379.171531634182"
## [3,] "11.0310638341475"
## [4,] "6.34857626511403e-07"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Rhabditida-ND3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Rhabditida-ND3-Aligned-DNA.fas.FEL.json"
## [2,] "257.20069840879"
## [3,] "14.3610778020878"
## [4,] "0.385081276391505"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Rhabditida-ND4-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Rhabditida-ND4-Aligned-DNA.fas.FEL.json"
## [2,] "364.561416479502"
## [3,] "10.310321497257"
## [4,] "0.0513650376010979"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Rhabditida-ND4L-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Rhabditida-ND4L-Aligned-DNA.fas.FEL.json"
## [2,] "178.877377242202"
## [3,] "9.73476413284223"
## [4,] "0.028623821154972"
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## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Rhabditida-ND5-Aligned-DNA.fas.FEL.json"
## [2,] "418.411603487387"
## [3,] "10.0083900421897"
## [4,] "0.0640049456938618"
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## [2,] "317.196355686222"
## [3,] "11.8586502240991"
## [4,] "0.191925802836303"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Salmoniformes-ATP6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Salmoniformes-ATP6-Aligned-DNA.fas.FEL.json"
## [2,] "10.90662135338"
## [3,] "1.63307731983667"
## [4,] "0.0936104532096874"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Salmoniformes-COX1-Aligned-DNA.fas.FEL.json
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## [2,] "50.1061222795247"
## [3,] "7.59361949476594"
## [4,] "0.0562276748972504"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Salmoniformes-COX2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Salmoniformes-COX2-Aligned-DNA.fas.FEL.json"
## [2,] "10.914324816929"
## [3,] "0.984599740539297"
## [4,] "0.119976657832711"
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## [2,] "11.0713900142398"
## [3,] "1.02408738629834"
## [4,] "0.0116255812812969"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Salmoniformes-CYTB-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Salmoniformes-CYTB-Aligned-DNA.fas.FEL.json"
## [2,] "13.3199866688862"
## [3,] "0.953698928064343"
## [4,] "0.0605438322618194"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Salmoniformes-ND1-Aligned-DNA.fas.FEL.json

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## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Salmoniformes-ND1-Aligned-DNA.fas.FEL.json"
## [2,] "12.7205158234102"
## [3,] "1.95958894771085"
## [4,] "0.00967217614924204"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Salmoniformes-ND2-Aligned-DNA.fas.FEL.json
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## [3,] "1.6919101661585"
## [4,] "0.0164630718194249"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Salmoniformes-ND4-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Salmoniformes-ND4-Aligned-DNA.fas.FEL.json"
## [2,] "56.7101878958169"
## [3,] "7.40143161238039"
## [4,] "0.051331306720738"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Salmoniformes-ND5-Aligned-DNA.fas.FEL.json
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## [2,] "19.4434539067579"
## [3,] "3.24330858675969"
## [4,] "0.356606111712205"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Salmoniformes-ND6-Aligned-DNA.fas.FEL.json
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## [3,] "2.86950414242014"
## [4,] "0.0200439399626969"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Scorpaeniformes-ATP6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Scorpaeniformes-ATP6-Aligned-DNA.fas.FEL.json"
## [2,] "85.8176275569228"
## [3,] "8.84105941520881"
## [4,] "0.0206870513355071"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Scorpaeniformes-ATP8-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Scorpaeniformes-ATP8-Aligned-DNA.fas.FEL.json"
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## [3,] "9.50727856602546"
## [4,] "0.137917281389396"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Scorpaeniformes-COX1-Aligned-DNA.fas.FEL.json
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## [2,] "98.9948287794356"
## [3,] "8.22969275082268"
## [4,] "0.00140003301337419"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Scorpaeniformes-ND1-Aligned-DNA.fas.FEL.json
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## [3,] "8.56744137628963"
## [4,] "0.00435178066896179"
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## [3,] "8.50310097177189"
## [4,] "0.00774429935328671"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Scorpaeniformes-ND3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Scorpaeniformes-ND3-Aligned-DNA.fas.FEL.json"
## [2,] "17.6163469954718"
## [3,] "3.91434764102892"
## [4,] "0.00104232711876941"

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##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Scorpaeniformes-ND4-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Scorpaeniformes-ND4-Aligned-DNA.fas.FEL.json"
## [2,] "143.162533629053"
## [3,] "8.35482819901057"
## [4,] "0.11707730870019"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Scorpaeniformes-ND4L-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Scorpaeniformes-ND4L-Aligned-DNA.fas.FEL.json"
## [2,] "94.4718840148754"
## [3,] "9.38517901652002"
## [4,] "0.133525858622454"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Scorpaeniformes-ND5-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Scorpaeniformes-ND5-Aligned-DNA.fas.FEL.json"
## [2,] "228.68966223781"
## [3,] "8.29125512356101"
## [4,] "0.038238186483646"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Scorpaeniformes-ND6-Aligned-DNA.fas.FEL.json
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## [3,] "9.00515379919622"
## [4,] "0.0426830758656324"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/siluriformes-atp6-align-dna.fas.FEL.json
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## [2,] "79.8854990930361"
## [3,] "8.38553508960591"
## [4,] "0.00734820594055029"
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## [3,] "1.76612708565387"
## [4,] "0.0757630328402696"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/siluriformes-cox1-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/siluriformes-cox1-align-dna.fas.FEL.json"
## [2,] "31.6329848503001"
## [3,] "4.67069039102892"
## [4,] "0.00159843406829102"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/siluriformes-cox2-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/siluriformes-cox2-align-dna.fas.FEL.json"
## [2,] "23.004308963217"
## [3,] "4.5720939703251"
## [4,] "0.0322575215458683"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/siluriformes-cox3-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/siluriformes-cox3-align-dna.fas.FEL.json"
## [2,] "48.8216380741754"
## [3,] "7.73759170819518"
## [4,] "0.000270188347916342"
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## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/siluriformes-cytb-align-dna.fas.FEL.json"
## [2,] "89.4166219892685"
## [3,] "8.40564927075012"
## [4,] "0.0100546316416627"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/siluriformes-nd1-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/siluriformes-nd1-align-dna.fas.FEL.json"
## [2,] "103.099860467797"
## [3,] "8.47925568691176"

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## [4,] "0.186371955814524"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/siluriformes-nd2-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/siluriformes-nd2-align-dna.fas.FEL.json"
## [2,] "96.3552007280516"
## [3,] "8.24680083275047"
## [4,] "0.065428159895574"
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## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/siluriformes-nd3-align-dna.fas.FEL.json"
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## [3,] "8.53194948145289"
## [4,] "0.0560691102349473"
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## [3,] "8.29027923682289"
## [4,] "0.00673384147625992"
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## [3,] "6.84746160710971"
## [4,] "0.0734263640001413"
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## [3,] "1.75903610321383"
## [4,] "0.036240709147947"
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## [4,] "0.163512722198149"
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## [2,] "18.0735013354705"

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## [3,] "8.18730381810937"
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## [3,] "10.1769913117245"
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## [4,] "0.0348105788765689"
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## [3,] "10.5097532861282"
## [4,] "6.96640056177788"
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## [3,] "11.1259989691527"
## [4,] "0.170299505729172"
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## [4,] "2.81141860139322"
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## [4,] "0.0155520422459499"
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## [3,] "8.19301522149"
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## [4,] "0.0125217802255478"
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## [3,] "15.8763321844143"
## [4,] "0.0761073118971276"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Teuthida-COX1-Aligned-DNA.fas.FEL.json

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## [4,] "0.066275491852976"
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## [3,] "9.26528974721294"
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## [3,] "9.38245829556821"
## [4,] "0.0131560070146841"
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## [4,] "0.150924548076308"
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## [3,] "10.6031605462514"
## [4,] "0.172775521028282"
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## [4,] "0.0599605791195239"
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## [3,] "11.5088945126779"
## [4,] "4.28091519980123"
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## [3,] "9.67732211616359"
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## [3,] "9.6243648312366"
## [4,] "0.74962494374213"
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## [3,] "11.9589899407598"
## [4,] "0.828058440086447"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Trombidiformes-COX1-Aligned-DNA.fas.FEL.json
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## [3,] "8.98920060521255"
## [4,] "9.6780483415794e-06"
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## [4,] "0.0137099792417506"
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## [4,] "0.00300750042110624"
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## [3,] "9.80435734046756"
## [4,] "1.46334633388448"
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## [4,] "1.6676653632643"
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## [3,] "10.1423234814102"
## [4,] "1.05793128217205"
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## [3,] "9.76803075337732"
## [4,] "2.18121011986487"
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## [2,] "220.381188218303"
## [3,] "10.8340301881747"

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## [4,] "0.165419708250148"
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## [3,] "9.9071283222336"
## [4,] "2.70870117243701"
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## [4,] "1.44144780216016"
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## [4,] "2.09955945365899"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Unionoida-COX1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Unionoida-COX1-Aligned-DNA.fas.FEL.json"
## [2,] "187.346401284103"
## [3,] "8.53567241122688"
## [4,] "0.0848366492560239"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Unionoida-COX2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Unionoida-COX2-Aligned-DNA.fas.FEL.json"
## [2,] "332.064562318079"
## [3,] "9.38405523232532"
## [4,] "3.65904634533561"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Unionoida-COX3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Unionoida-COX3-Aligned-DNA.fas.FEL.json"
## [2,] "165.859026389441"
## [3,] "8.75067286039795"
## [4,] "0.142040722208753"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Unionoida-CYTB-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Unionoida-CYTB-Aligned-DNA.fas.FEL.json"
## [2,] "263.913094986177"
## [3,] "8.57519913611574"
## [4,] "0.22858930659661"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Unionoida-ND1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Unionoida-ND1-Aligned-DNA.fas.FEL.json"
## [2,] "152.08010045262"
## [3,] "8.49730067385444"
## [4,] "3.36934162459211"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Unionoida-ND2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Unionoida-ND2-Aligned-DNA.fas.FEL.json"
## [2,] "205.013633385583"
## [3,] "8.31502746878492"
## [4,] "0.134146570334523"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Unionoida-ND3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Unionoida-ND3-Aligned-DNA.fas.FEL.json"
## [2,] "198.397718509192"

```

```

## [3,] "9.2595220041219"
## [4,] "0.0794205827649666"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Unionoida-ND4-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Unionoida-ND4-Aligned-DNA.fas.FEL.json"
## [2,] "225.50847289634"
## [3,] "8.29546480770268"
## [4,] "0.251370678872221"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Unionoida-ND4L-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Unionoida-ND4L-Aligned-DNA.fas.FEL.json"
## [2,] "14.7791568043512"
## [3,] "4.56432221602516"
## [4,] "0.126644291991746"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Unionoida-ND5-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Unionoida-ND5-Aligned-DNA.fas.FEL.json"
## [2,] "333.546191574459"
## [3,] "8.4124376111344"
## [4,] "5.23559982858316"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Unionoida-ND6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Unionoida-ND6-Aligned-DNA.fas.FEL.json"
## [2,] "204.620793664449"
## [3,] "8.72186191428686"
## [4,] "0.116874086451593"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Veneroida-ATP6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Veneroida-ATP6-Aligned-DNA.fas.FEL.json"
## [2,] "29.3940929183202"
## [3,] "6.75486833174752"
## [4,] "0.406621835129286"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Veneroida-COX1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Veneroida-COX1-Aligned-DNA.fas.FEL.json"
## [2,] "120.818647589757"
## [3,] "9.50712740152155"
## [4,] "0.575307525399616"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Veneroida-COX2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Veneroida-COX2-Aligned-DNA.fas.FEL.json"
## [2,] "145.523631376714"
## [3,] "9.30404783440319"
## [4,] "1.83279976437845"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Veneroida-COX3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Veneroida-COX3-Aligned-DNA.fas.FEL.json"
## [2,] "84.8585775119445"
## [3,] "10.5786949721228"
## [4,] "0.369729381373723"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Veneroida-CYTB-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Veneroida-CYTB-Aligned-DNA.fas.FEL.json"
## [2,] "83.8770732755793"
## [3,] "9.33591715481319"
## [4,] "8.26711167040838"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Veneroida-ND1-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Veneroida-ND1-Aligned-DNA.fas.FEL.json"
## [2,] "118.607954970901"
## [3,] "9.48502176913588"
## [4,] "0.84440437437383"
##      /Users/Sadie/bin/mtDNA_redo/data/FEL/Veneroida-ND2-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Veneroida-ND2-Aligned-DNA.fas.FEL.json"

```

```

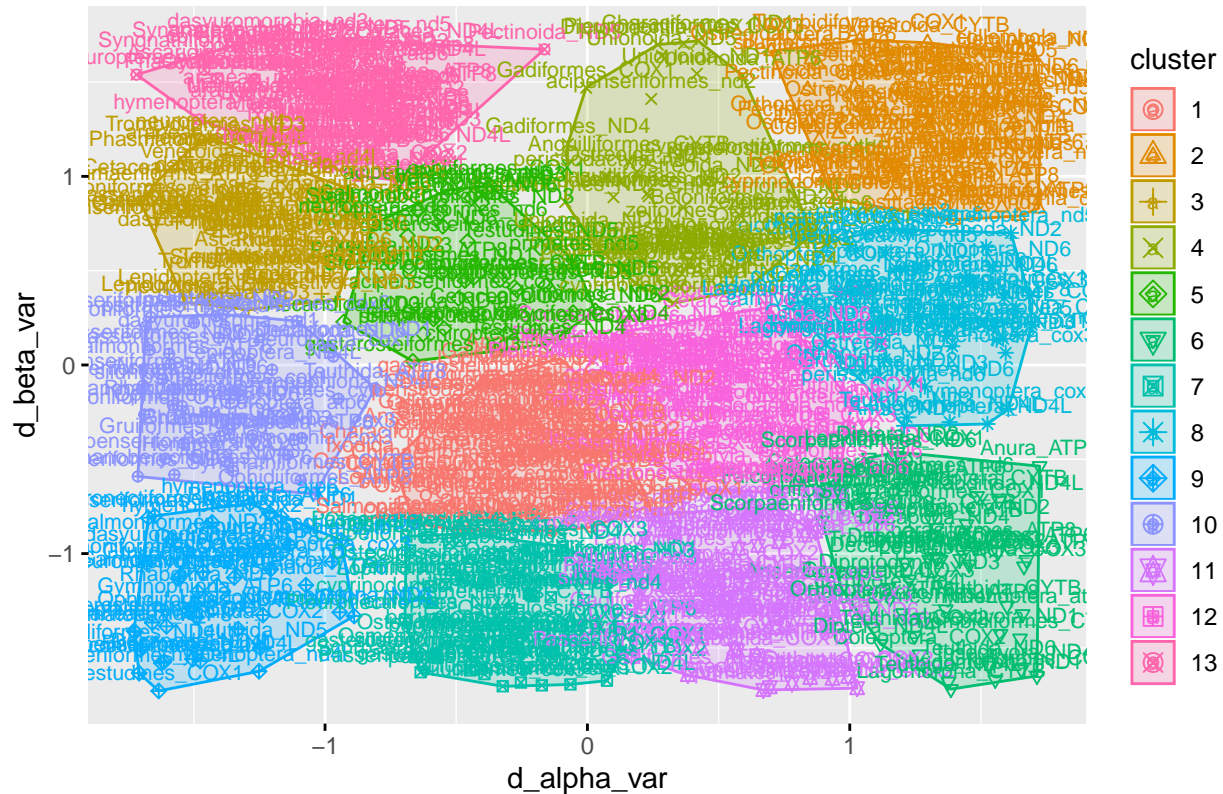
## [2,] "88.1262381384658"
## [3,] "9.60754859085077"
## [4,] "1.54221173486428"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Veneroida-ND3-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Veneroida-ND3-Aligned-DNA.fas.FEL.json"
## [2,] "106.271273143845"
## [3,] "10.2690642818211"
## [4,] "0.632595967975847"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Veneroida-ND4-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Veneroida-ND4-Aligned-DNA.fas.FEL.json"
## [2,] "134.521430440584"
## [3,] "9.14905102028882"
## [4,] "0.645308156149573"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Veneroida-ND4L-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Veneroida-ND4L-Aligned-DNA.fas.FEL.json"
## [2,] "11.2818741213156"
## [3,] "4.2020965193675"
## [4,] "0.848389369792843"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Veneroida-ND5-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Veneroida-ND5-Aligned-DNA.fas.FEL.json"
## [2,] "157.1095235317"
## [3,] "9.49356212959908"
## [4,] "0.48782027063563"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/Veneroida-ND6-Aligned-DNA.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/Veneroida-ND6-Aligned-DNA.fas.FEL.json"
## [2,] "119.217747605188"
## [3,] "9.52004925027626"
## [4,] "1.58641290642831"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/zeiformes-atp6-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/zeiformes-atp6-align-dna.fas.FEL.json"
## [2,] "75.2843074396534"
## [3,] "8.72566379535613"
## [4,] "0.301817780340234"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/zeiformes-atp8-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/zeiformes-atp8-align-dna.fas.FEL.json"
## [2,] "86.8787157056753"
## [3,] "9.63460459167207"
## [4,] "1.55071903340482"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/zeiformes-cox1-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/zeiformes-cox1-align-dna.fas.FEL.json"
## [2,] "111.820766686492"
## [3,] "8.4998279854888"
## [4,] "0.286358864814193"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/zeiformes-nd1-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/zeiformes-nd1-align-dna.fas.FEL.json"
## [2,] "108.08823031598"
## [3,] "8.67038980311143"
## [4,] "0.315494702153852"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/zeiformes-nd4l-align-dna.fas.FEL.json
## [1,] "/Users/Sadie/bin/mtDNA_redo/data/FEL/zeiformes-nd4l-align-dna.fas.FEL.json"
## [2,] "77.8975052706162"
## [3,] "8.66200347381877"
## [4,] "0.0308210122106784"
## /Users/Sadie/bin/mtDNA_redo/data/FEL/zeiformes-nd5-align-dna.fas.FEL.json

```





## Cluster plot



take that clean it up so you have gene, order, alpha/beta JSD.

```
# cleanup <- str_extract_all(names(t), "\\w+(?=)"), simplify = T)
# f <- tibble(order = cleanup[,1], gene = cleanup[,2], JSD_alpha_beta = t)
```

stopped here

```
# get_dist()
# fviz_dist()
```