TractMLESummary

This script is used to summarize IGC tract length model with 14 Yeast data sets.

```r
rm(list=ls())  # clean up workspace
setwd("/Users/xji3/GitFolders/YeastIGCTract/Code/")

finished.pairs <- readLines('../Filtered_pairs.txt')


for(dim in 1:2){
  JS.HKY.nonclock.summary <- NULL
  PSJS.HKY.nonclock.summary <- NULL
  for(pair in finished.pairs){

    summary.file.name <- paste("JS_HKY", pair, "One_rate_nonclock_summary.txt", sep = "_")
    summary_file <- paste("./summary/", summary.file.name, sep = "")
    all <- readLines(summary_file, n = -1)
    row.names <- strsplit(all[length(all)], ' ')[[1]][-1]
    summary_mat <- as.matrix(read.table(summary_file,
                                        row.names = row.names,
                                        col.names = pair))
    JS.HKY.nonclock.summary <- cbind(JS.HKY.nonclock.summary, summary_mat)



    summary.file.name <- paste("PSJS_dim" , toString(dim), "HKY", pair, "One_rate_init_30.0_nonclock_su
    summary_file <- paste("./summary/", summary.file.name, sep = "")
    all <- readLines(summary_file, n = -1)
    row.names <- strsplit(all[length(all)], ' ')[[1]][-1]
    summary_mat <- as.matrix(read.table(summary_file,
                                        row.names = row.names,
                                        col.names = pair))
    PSJS.HKY.nonclock.summary <- cbind(PSJS.HKY.nonclock.summary, summary_mat)

  }
  assign(paste("PSJS.HKY.dim", toString(dim), "nonclock.summary", sep = "."), PSJS.HKY.nonclock.summary]
}
```

Now show the estimated tract length and IGC initiation rates.

```r
# Estimated Tract length (unit: nucleotide)
rbind(PSJS.HKY.dim.1.nonclock.summary["tract_length", ], PSJS.HKY.dim.2.nonclock.summary["tract_length"
```

```
##       YLR406C_YDL075W YER131W_YGL189C YML026C_YDR450W YNL301C_YOL120C
## [1,]         2.680270        6.618387        1.198002        21.37209
## [2,]         2.677647        6.603230        1.194031        30.00190
##       YNL069C_YIL133C YMR143W_YDL083C YJL177W_YKL180W YBR191W_YPL079W
## [1,]         6.961052        2.252968        2.866165        8.103450
## [2,]         6.950846        2.356362        2.854502        8.102286
##       YER074W_YIL069C YDR418W_YEL054C YBL087C_YER117W YLR333C_YGR027C
## [1,]        43.38923        2.287572        13.71813         7.21618
```

```
## [2,]          43.39314        2.310891         13.84993         7.25674
##        YMR142C_YDL082W YER102W_YBL072C
## [1,]          28.4072        17.83908
## [2,]          30.0017        29.99800
```

```r
# Estimated Initial guess rate
rbind(PSJS.HKY.dim.1.nonclock.summary["init_rate", ], PSJS.HKY.dim.2.nonclock.summary["init_rate", ])
```

```
##        YLR406C_YDL075W YER131W_YGL189C YML026C_YDR450W YNL301C_YOL120C
## [1,]         2.989675        1.166681        12.49664       0.5135222
## [2,]         2.993007        1.169286        12.53704       0.3659625
##        YNL069C_YIL133C YMR143W_YDL083C YJL177W_YKL180W YBR191W_YPL079W
## [1,]        0.7348527        6.079352        3.527515        1.907803
## [2,]        0.7359258        5.812264        3.540403        1.908216
##        YER074W_YIL069C YDR418W_YEL054C YBL087C_YER117W YLR333C_YGR027C
## [1,]        0.5501929        3.528131        1.015829        1.537189
## [2,]        0.5498759        3.493682        1.006095        1.527766
##        YMR142C_YDL082W YER102W_YBL072C
## [1,]        0.5524475       0.8979608
## [2,]        0.5231800       0.5339212
```

```r
# lnL comparison between 1d and 2d search
rbind(PSJS.HKY.dim.1.nonclock.summary["ll", ], PSJS.HKY.dim.2.nonclock.summary["ll", ], PSJS.HKY.dim.1.
```

```
##        YLR406C_YDL075W YER131W_YGL189C YML026C_YDR450W YNL301C_YOL120C
## [1,]    -4.249835e+05   -4.635018e+05   -6.354074e+05   -1.244172e+06
## [2,]    -4.249835e+05   -4.635018e+05   -6.354074e+05   -1.244173e+06
## [3,]    -3.576226e-04    5.959944e-03    3.951896e-03    1.687985e+00
##        YNL069C_YIL133C YMR143W_YDL083C YJL177W_YKL180W YBR191W_YPL079W
## [1,]    -1.441304e+06   -5.308583e+05   -1.071864e+06   -7.382742e+05
## [2,]    -1.441304e+06   -5.308583e+05   -1.071864e+06   -7.382742e+05
## [3,]     3.931127e-03    4.619423e-03    1.420354e-02    3.168774e-03
##        YER074W_YIL069C YDR418W_YEL054C YBL087C_YER117W YLR333C_YGR027C
## [1,]    -5.210064e+05   -9.114781e+05   -5.981940e+05   -4.259553e+05
## [2,]    -5.210064e+05   -9.114781e+05   -5.981940e+05   -4.259553e+05
## [3,]    -3.484843e-02   -6.375714e-03    6.270676e-03   -3.536451e-03
##        YMR142C_YDL082W YER102W_YBL072C
## [1,]    -1.270098e+06   -1.255272e+06
## [2,]    -1.270098e+06   -1.255278e+06
## [3,]     4.850790e-02    6.016451e+00
```

```r
# lnL comparison between 1d and previous model
#rbind(PSJS.HKY.dim.1.nonclock.summary["ll", ], JS.HKY.nonclock.summary["ll", ], PSJS.HKY.dim.1.nonclo
```

```r
# Compare estimated Tau value
rbind(JS.HKY.nonclock.summary["Tau", ], PSJS.HKY.dim.1.nonclock.summary["tract_length", ] * PSJS.HKY.dim
      PSJS.HKY.dim.2.nonclock.summary["tract_length", ] * PSJS.HKY.dim.2.nonclock.summary["init_rate", ]
```

```
##        YLR406C_YDL075W YER131W_YGL189C YML026C_YDR450W YNL301C_YOL120C
## [1,]         8.013065        7.721608        14.96955        10.97745
## [2,]         8.013137        7.721544        14.97100        10.97504
```

```
## [3,]         8.014215         7.721063         14.96961         10.97957
##         YNL069C_YIL133C YMR143W_YDL083C YJL177W_YKL180W YBR191W_YPL079W
## [1,]         5.115741         13.69655         10.10570         15.45936
## [2,]         5.115348         13.69659         10.11044         15.45979
## [3,]         5.115307         13.69580         10.10609         15.46091
##         YER074W_YIL069C YDR418W_YEL054C YBL087C_YER117W YLR333C_YGR027C
## [1,]         23.87286         8.075072         13.93793         11.09265
## [2,]         23.87244         8.070853         13.93528         11.09263
## [3,]         23.86084         8.073517         13.93435         11.08660
##         YMR142C_YDL082W YER102W_YBL072C
## [1,]         15.69432         16.01962
## [2,]         15.69349         16.01880
## [3,]         15.69629         16.01657
```

Now plot 2 dimensional lnL for 2 pairs

```r
library("lattice")
plot.pairs <- c("YLR333C_YGR027C", "YLR406C_YDL075W")
# show estimated tract length
PSJS.HKY.nonclock.summary["tract_length", plot.pairs]
```

```
## YLR333C_YGR027C YLR406C_YDL075W
##         7.256740         2.677647
```

```r
for( pair in plot.pairs){
  plot.file.name <- paste("./plot/", pair, "_PSJS_lnL_TractLength.txt", sep = "")
  plot.data <- read.table(plot.file.name)
  plot(plot.data[, 2], plot.data[, 3], xlab = "init rate", ylab = "lnL", main = pair)
  assign(pair, plot.data)


  plot.file.name <- paste("./plot/", pair, "_PSJS_lnL_TractLength_zoomed.txt", sep = "")
  plot.data <- read.table(plot.file.name)
  plot(plot.data[, 2], plot.data[, 3], xlab = "init rate", ylab = "lnL", main = paste(pair, "_zoomed", s
  assign(paste(pair, ".zoomed", sep = ""), plot.data)
}
```
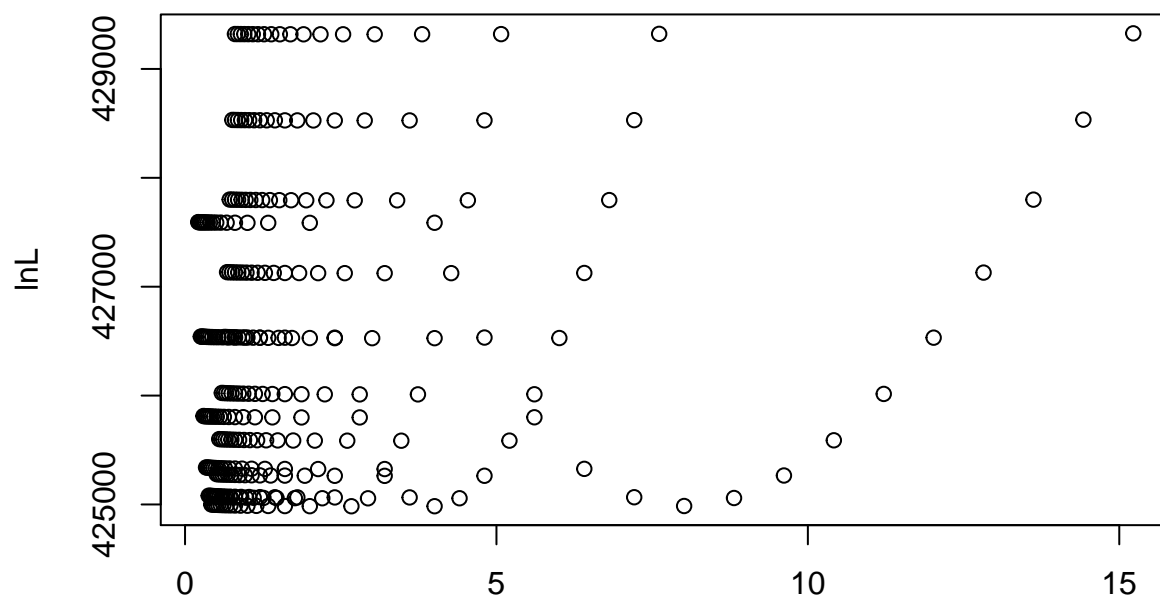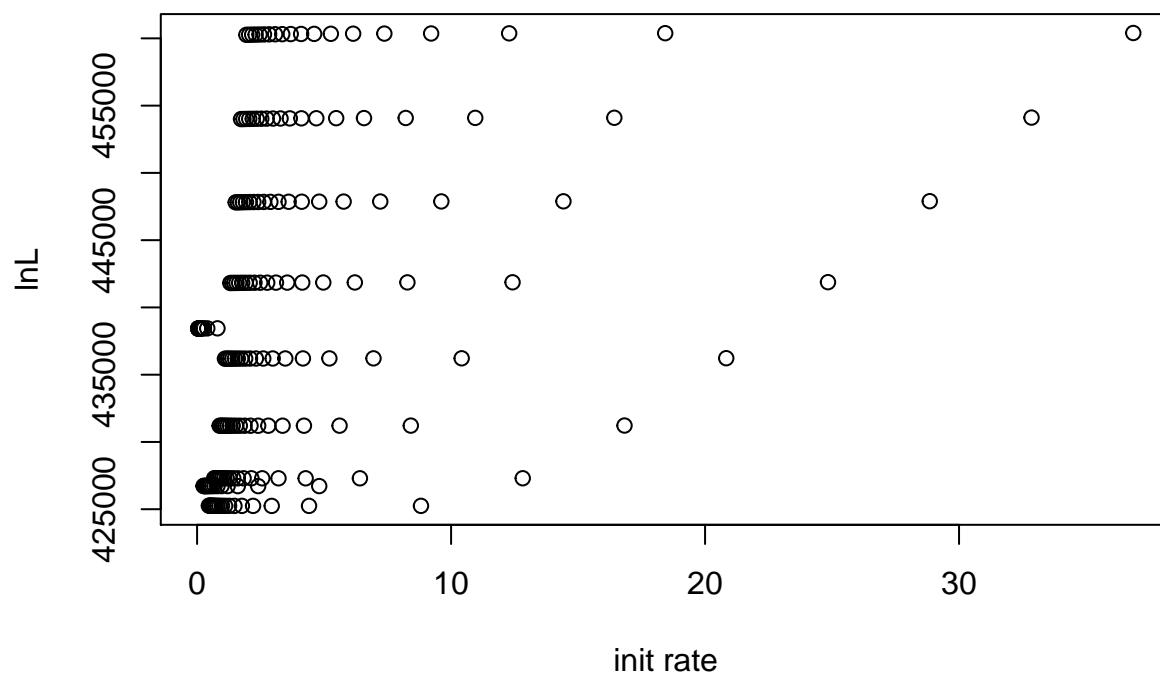
YLR333C_YGR027C
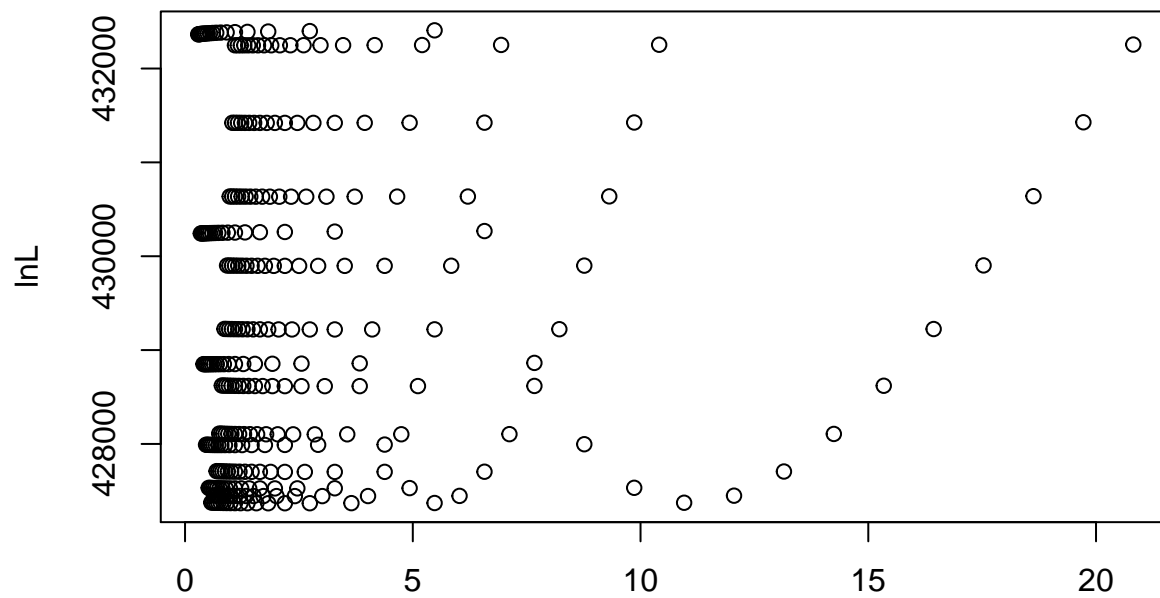
init rate

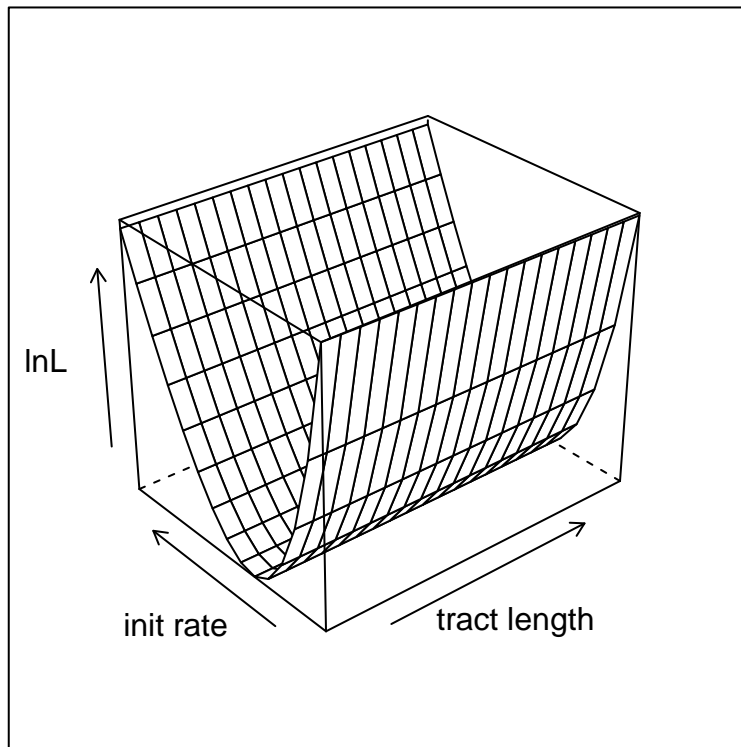# YLR333C_YGR027C_zoomed
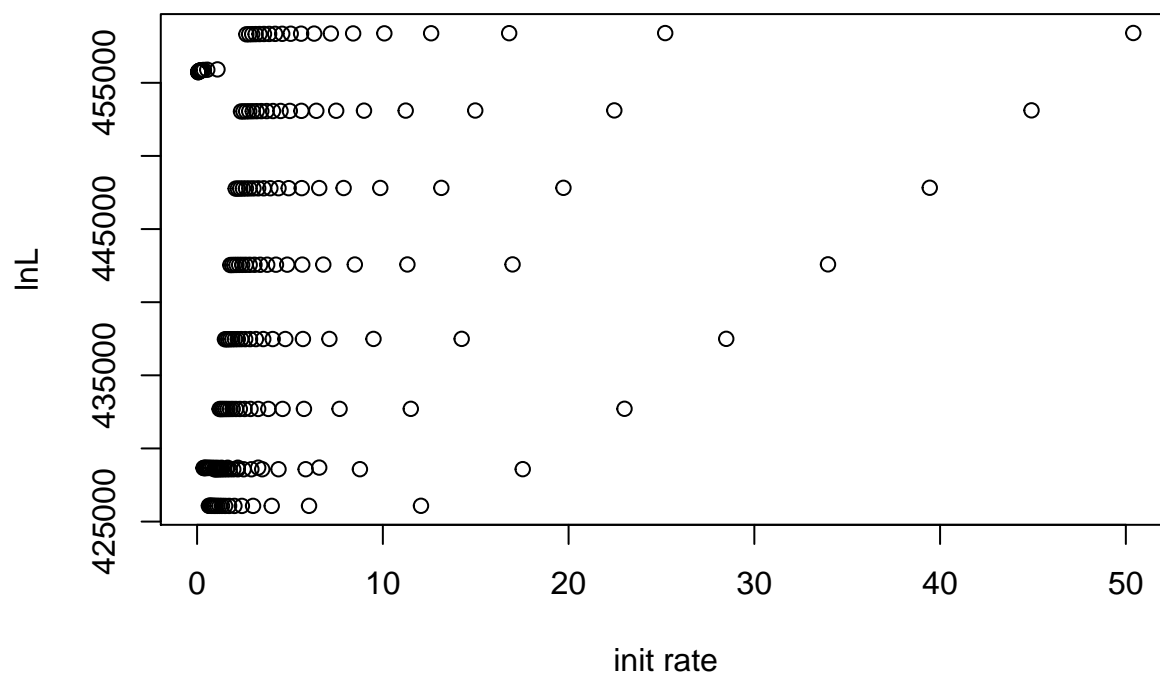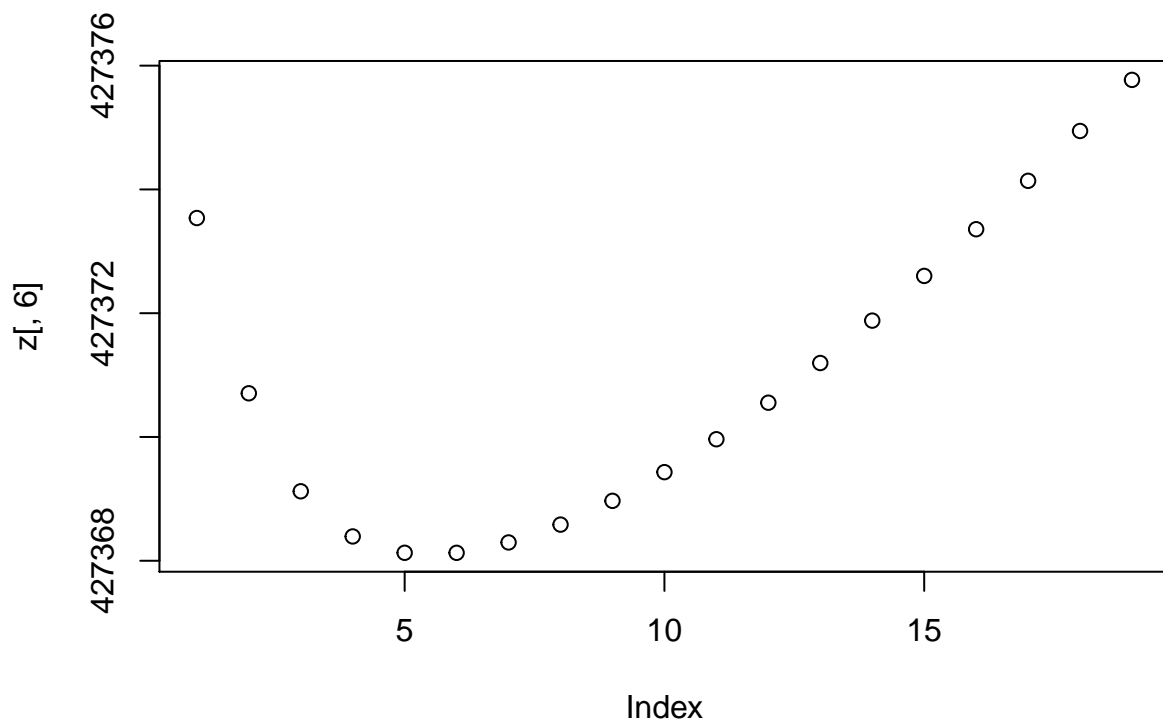

init rate

YLR406C_YDL075W

YLR406C_YDL075W_zoomed


```
x <- 1:19
y <- 5:19 * 0.1
z <- matrix(YLR333C_YGR027C[1 : (length(x) * length(y)), 3], nrow = length(x), ncol = length(y), byrow =
wireframe(z, row.values = x, col.values = y, xlab = "tract length", ylab = "init rate", zlab = "lnL", ma
```
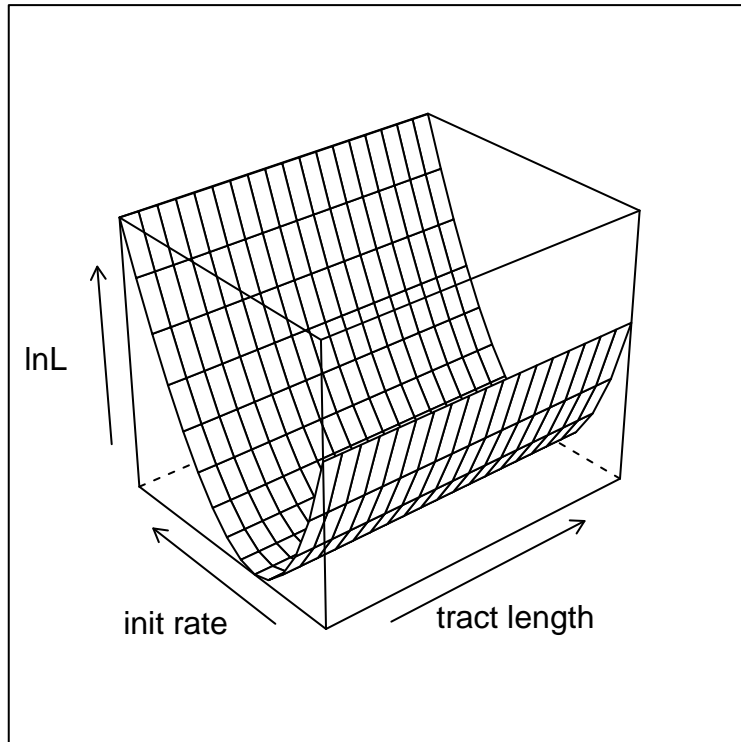
YLR333C_YGR027C

InL
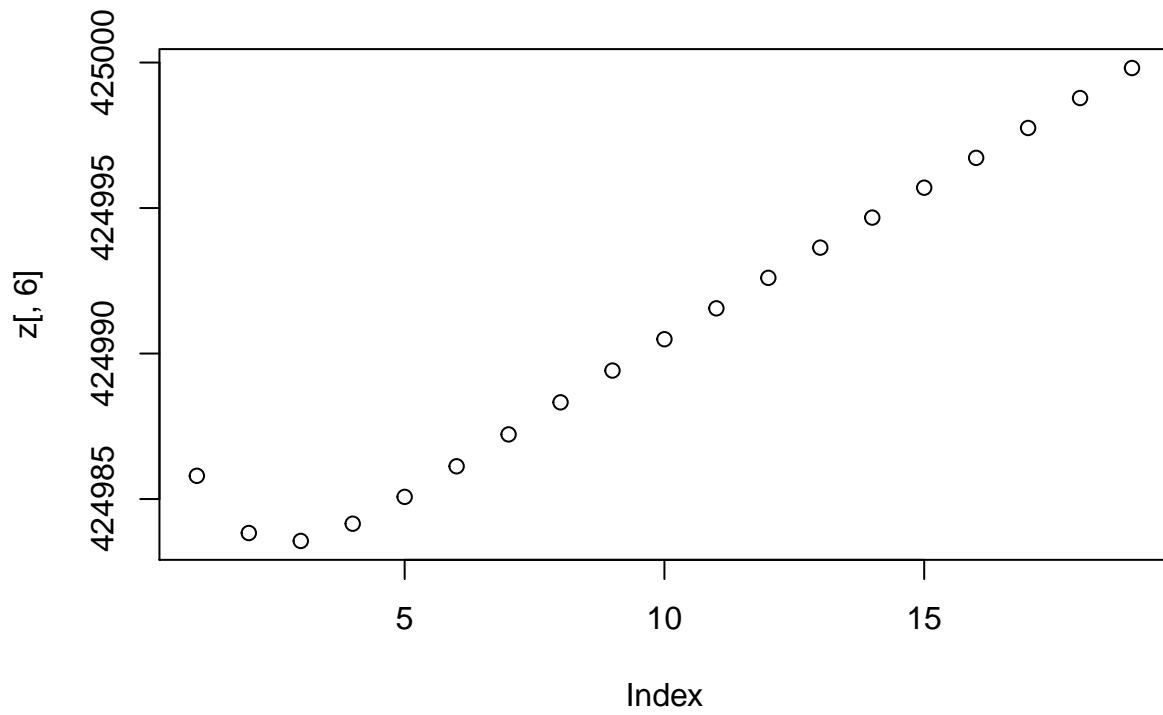
init rate

tract length

```
# plot the ridge
plot(z[, 6])
```

```
z <- matrix(YLR406C_YDL075W[1 : (length(x) * length(y)), 3], nrow = length(x), ncol = length(y), byrow =
wireframe(z, row.values = x, col.values = y, xlab = "tract length", ylab = "init rate", zlab = "lnL", ma
```

YLR406C_YDL075W


```
# plot the ridge
plot(z[, 6])
```

```
#image(x, y, z)
```

```
# Now export data
save.image(file = "./TractSummary.RData")
```