

Wrangling Data from microplate OD600 growth curve in 96WP

El Park

24 March, 2025

Load and wrangle data

```
#load data, change date
data<-read.csv("../data/20250228OD600.csv")
design<-read.csv("../reference/20250228OD600Design.csv", header=FALSE)

source("C:/Users/parke/OneDrive - Indiana University/GitHub/ASG-fitness-effects/microplate_fitness_assa
```

Prep Data

```
#FEP, Fitness Effects of Phage (subtract Ctrl Infection avgs from corr Strain/Media rows)
source("C:/Users/parke/OneDrive - Indiana University/GitHub/ASG-fitness-effects/microplate_fitness_assa

#FEM, Fitness effects of Media (subtract LB from DSM of corr Strain/Infection)
source("C:/Users/parke/OneDrive - Indiana University/GitHub/ASG-fitness-effects/microplate_fitness_assa

#FES, Fitness effects of Strain (subtract avg WT values from each corr Media/Infection rows)
source("C:/Users/parke/OneDrive - Indiana University/GitHub/ASG-fitness-effects/microplate_fitness_assa
```

Analysis

```
FEPa <- aov(total.OD ~ Media * Strain * Infection , data = FEP)
summary(FEPa)
```

```
##              Df Sum Sq Mean Sq F value    Pr(>F)
## Media          1   3749      3749    1.038  0.31333
## Strain          3 389316 129772    35.938 2.51e-12 ***
## Infection       2  21228   10614     2.939  0.06249 .
## Media:Strain     3  27374    9125     2.527  0.06847 .
## Media:Infection  2  41030   20515     5.681  0.00610 **
## Strain:Infection 6  82426   13738     3.804  0.00352 **
## Media:Strain:Infection 6  21452    3575     0.990  0.44263
## Residuals      48 173329    3611
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
FEMa<-aov(total.OD ~ Strain * Infection , data = FEM)
summary(FEMa)
```

```
##              Df Sum Sq Mean Sq F value    Pr(>F)
## Strain        3  64231   21410    9.469 0.000126 ***
## Infection     3  83934   27978   12.373 1.54e-05 ***
## Strain:Infection 9  56591    6288    2.781 0.015802 *
## Residuals    32  72357    2261
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
FESa <- aov(total.OD ~ Media * Strain * Infection , data = FES)
summary(FESa)
```

```
##              Df Sum Sq Mean Sq F value    Pr(>F)
## Media        1  56924   56924   24.554 9.39e-06 ***
## Strain       2  82462   41231   17.785 1.66e-06 ***
## Infection    3 605047  201682   86.996 < 2e-16 ***
## Media:Strain  2  17885    8942    3.857  0.0280 *
## Media:Infection 3  10872    3624    1.563  0.2105
## Strain:Infection 6  28493    4749    2.048  0.0772 .
## Media:Strain:Infection 6  25578    4263    1.839  0.1113
## Residuals   48 111278    2318
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```