Wrangling Data from microplate OD600 growth curve in 96WP

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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
```

```
OD.long6<-OD.long[(1:7008),]

#FEP6, Fitness Effects of Phage in 1st 6 hours
source("C:/Users/parke/OneDrive - Indiana University/GitHub/ASG-fitness-effects/microplate_fitness_assay

FEP6a <- aov(total.OD ~ Media * Strain * Infection , data = FEP6)
summary(FEP6a)
```

```
##                       Df Sum Sq Mean Sq F value   Pr(>F)
## Media                  1     92    91.7   3.258   0.0774 .
## Strain                 3   6944  2314.8  82.283  < 2e-16 ***
## Infection              2    310   155.1   5.512   0.0070 **
## Media:Strain           3    158    52.7   1.875   0.1464
## Media:Infection        2   1614   806.8  28.678 6.40e-09 ***
## Strain:Infection       6   2039   339.8  12.079 3.17e-08 ***
## Media:Strain:Infection 6    361    60.2   2.141   0.0655 .
## Residuals             48   1350    28.1
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```