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/20250311OD600.csv")
design<-read.csv("../reference/20250311OD600Design.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  10144   10144  15.404 0.000276 ***
## Strain                3  62762   20921  31.770 1.84e-11 ***
## Infection             2 169599   84800 128.778  < 2e-16 ***
## Media:Strain          3  57242   19081  28.976 7.69e-11 ***
## Media:Infection       2   3352    1676   2.546 0.088976 .
## Strain:Infection      6 468301   78050 118.528  < 2e-16 ***
## Media:Strain:Infection 6   4902     817   1.241 0.302643
## Residuals            48  31608     658
## ---
## 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  43828   14609   4.583 0.00885 **
## Infection      3  11777    3926   1.232 0.31436
## Strain:Infection 9 38424    4269   1.339 0.25634
## Residuals     32 102003    3188
## ---
## 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   66181   66181  76.723 1.61e-11 ***
## Strain               2   29243   14622  16.951 2.70e-06 ***
## Infection            3 1792935  597645 692.842  < 2e-16 ***
## Media:Strain         2    5369    2684   3.112   0.0536 .
## Media:Infection      3   39897   13299  15.417 3.72e-07 ***
## Strain:Infection     6   35758    5960   6.909 2.49e-05 ***
## Media:Strain:Infection 6  9238    1540   1.785   0.1222
## Residuals           48   41405     863
## ---
## 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   15.0    15.0  11.442 0.001437 **
## Strain               3  553.1   184.4 140.347  < 2e-16 ***
## Infection            2 1952.6   976.3 743.180  < 2e-16 ***
## Media:Strain         3   92.5    30.8  23.465 1.71e-09 ***
## Media:Infection      2  157.4    78.7  59.921 8.96e-14 ***
## Strain:Infection     6  557.5    92.9  70.726  < 2e-16 ***
## Media:Strain:Infection 6 42.1     7.0   5.345 0.000273 ***
## Residuals           48   63.1     1.3
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```