

Report: Testing hybrid vigor in the lab in response to *Eimeria*

Alice

25 August 2018

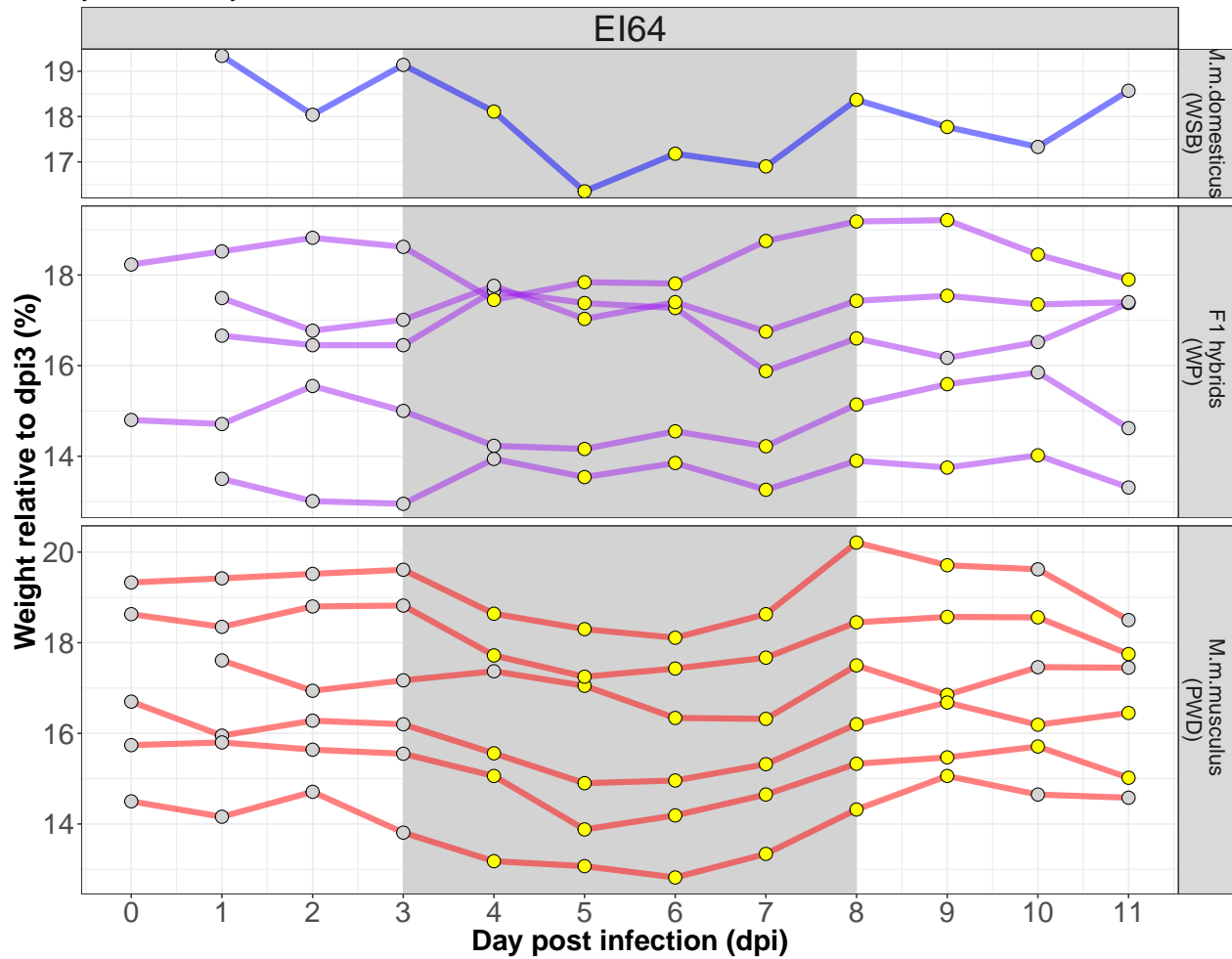
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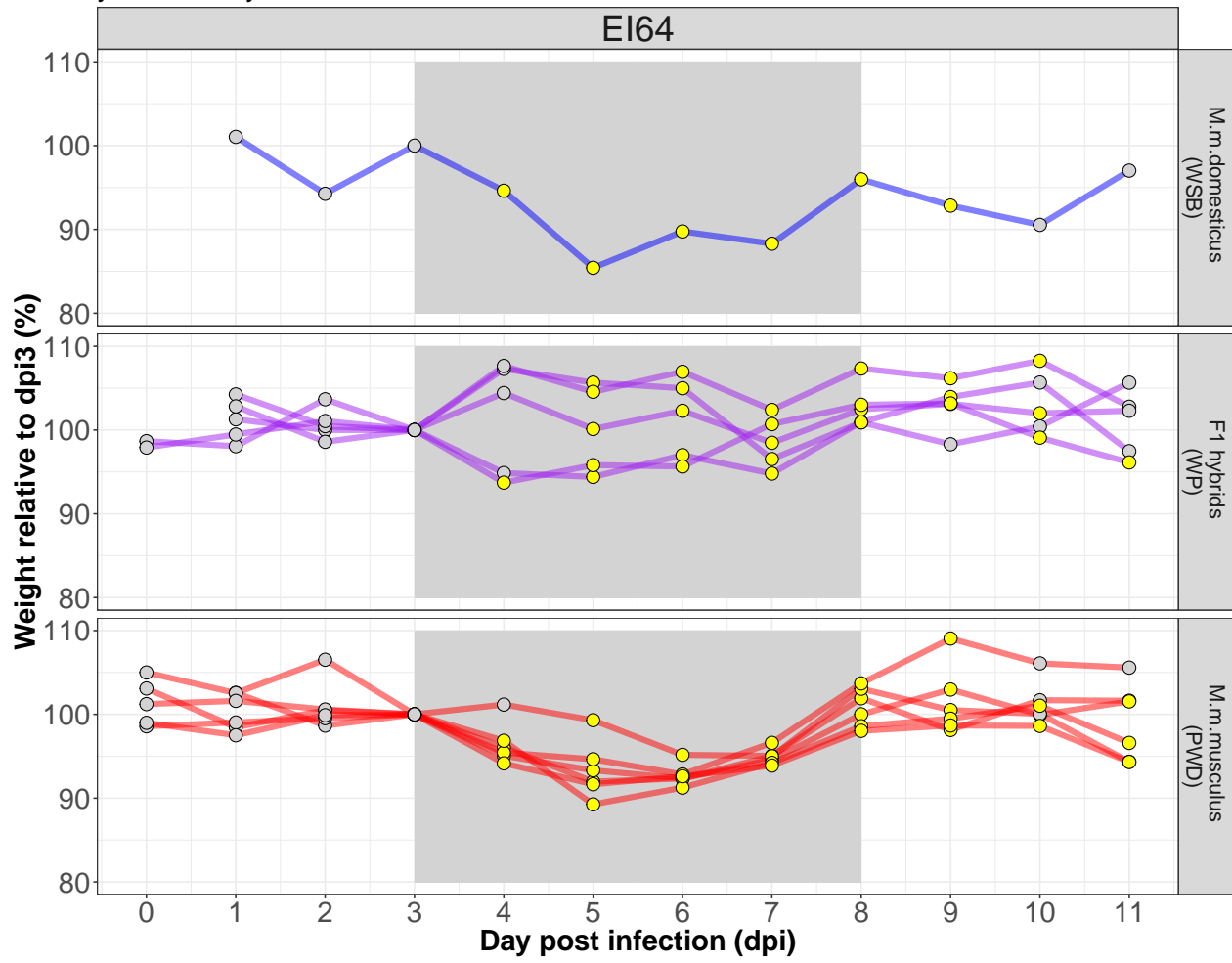
Expe_001, March 2017, Francisca's experiment. infection with E64 and Eflab

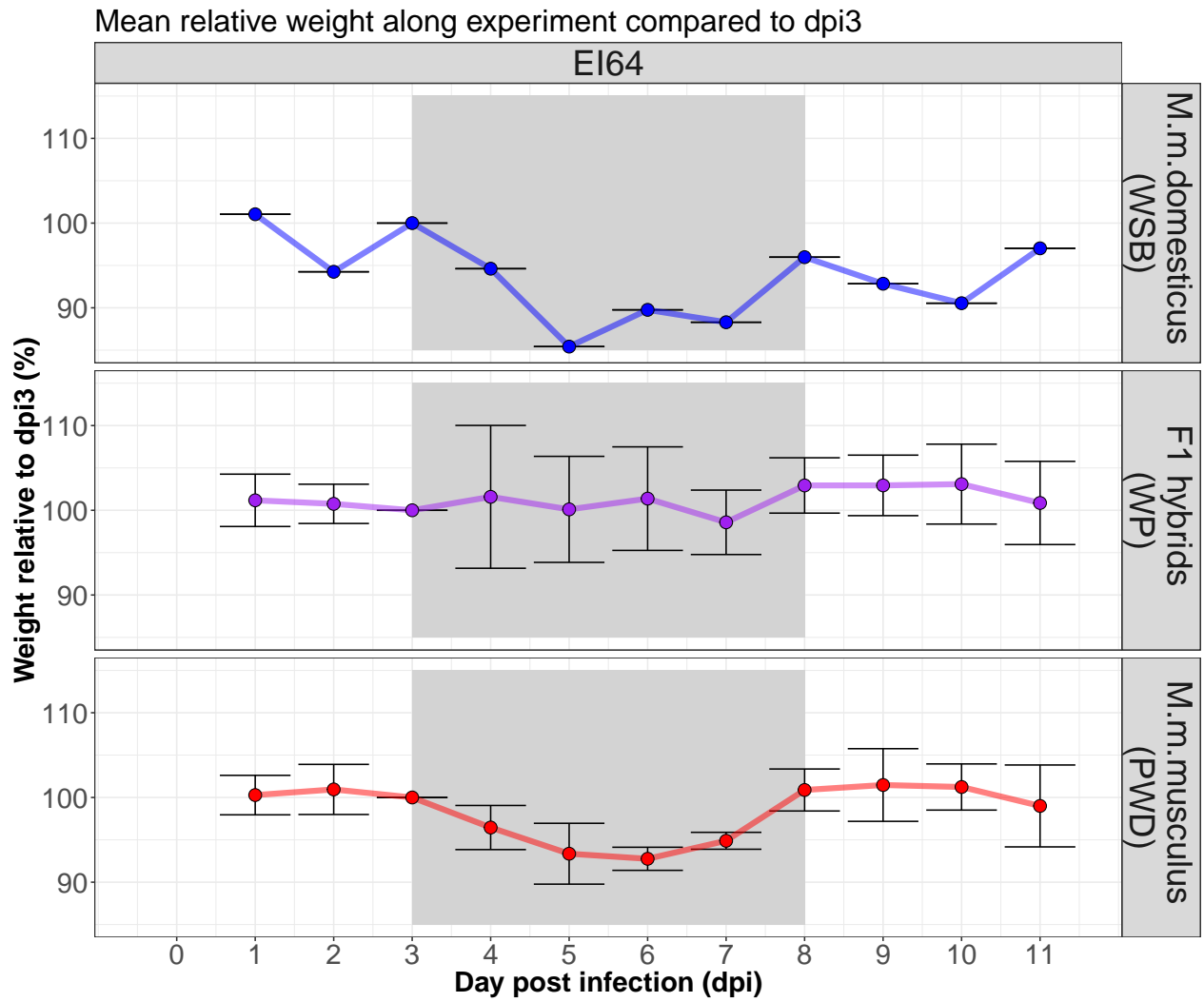
1. Weight loss

Weight along experiment compared to dpi3
yellow : oocysts detected in feces

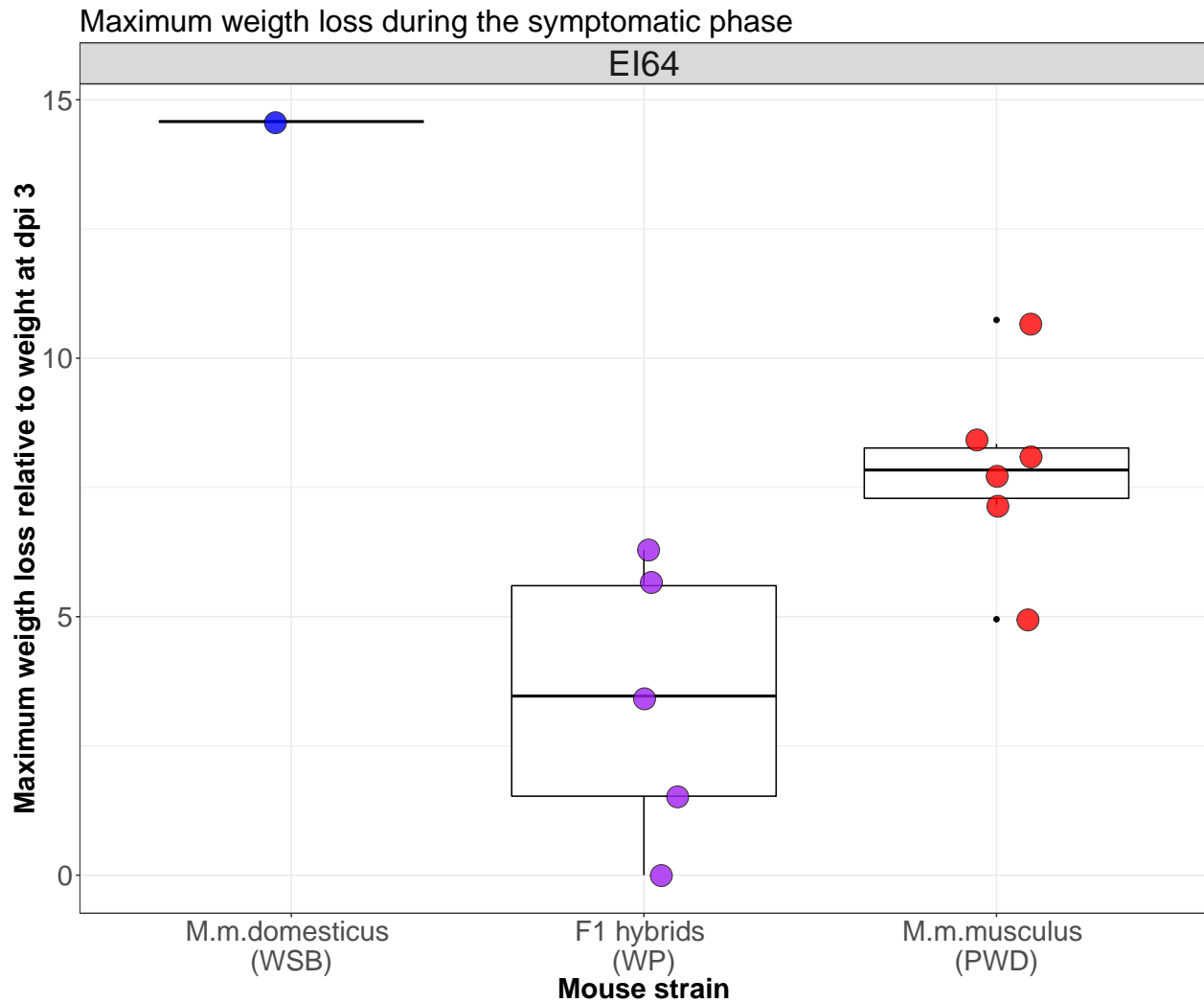


Relative weight along experiment compared to dpi3
 yellow : oocysts detected in feces



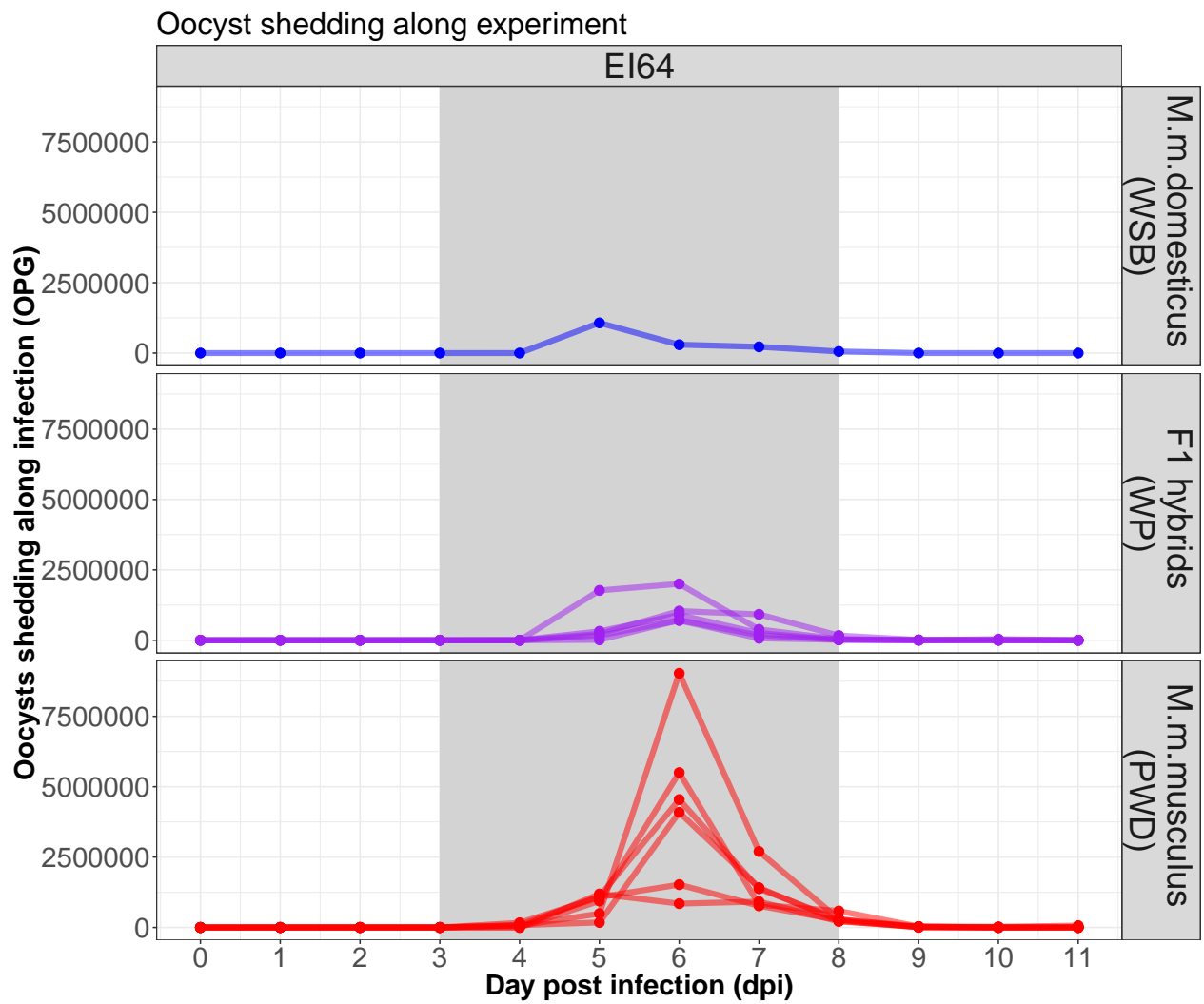


For statistical analysis, we compare the maximum relative weight loss between the different groups. We limit our analysis to the period : dpi3 to dpi8 (symptomatic period for E64 strain).

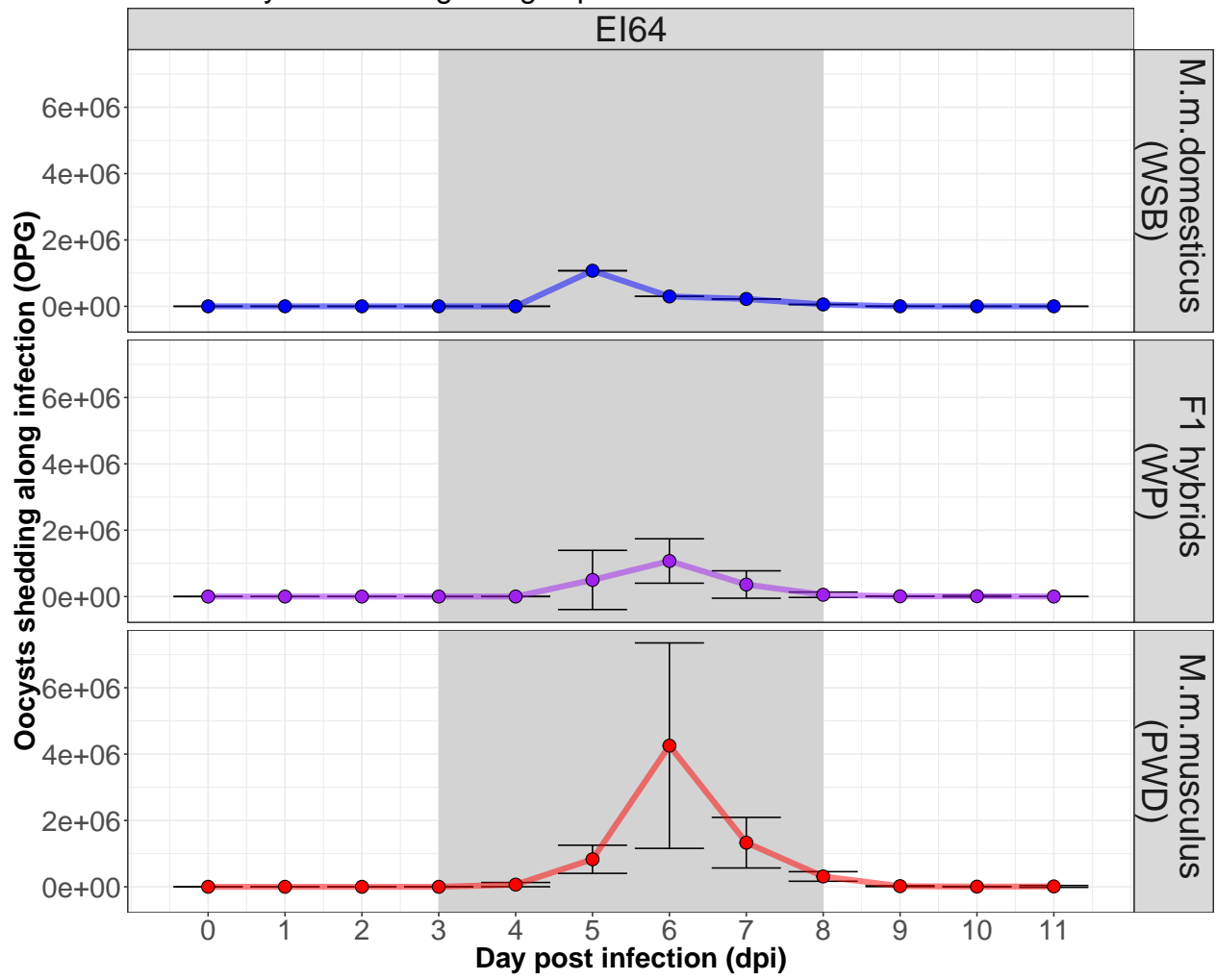


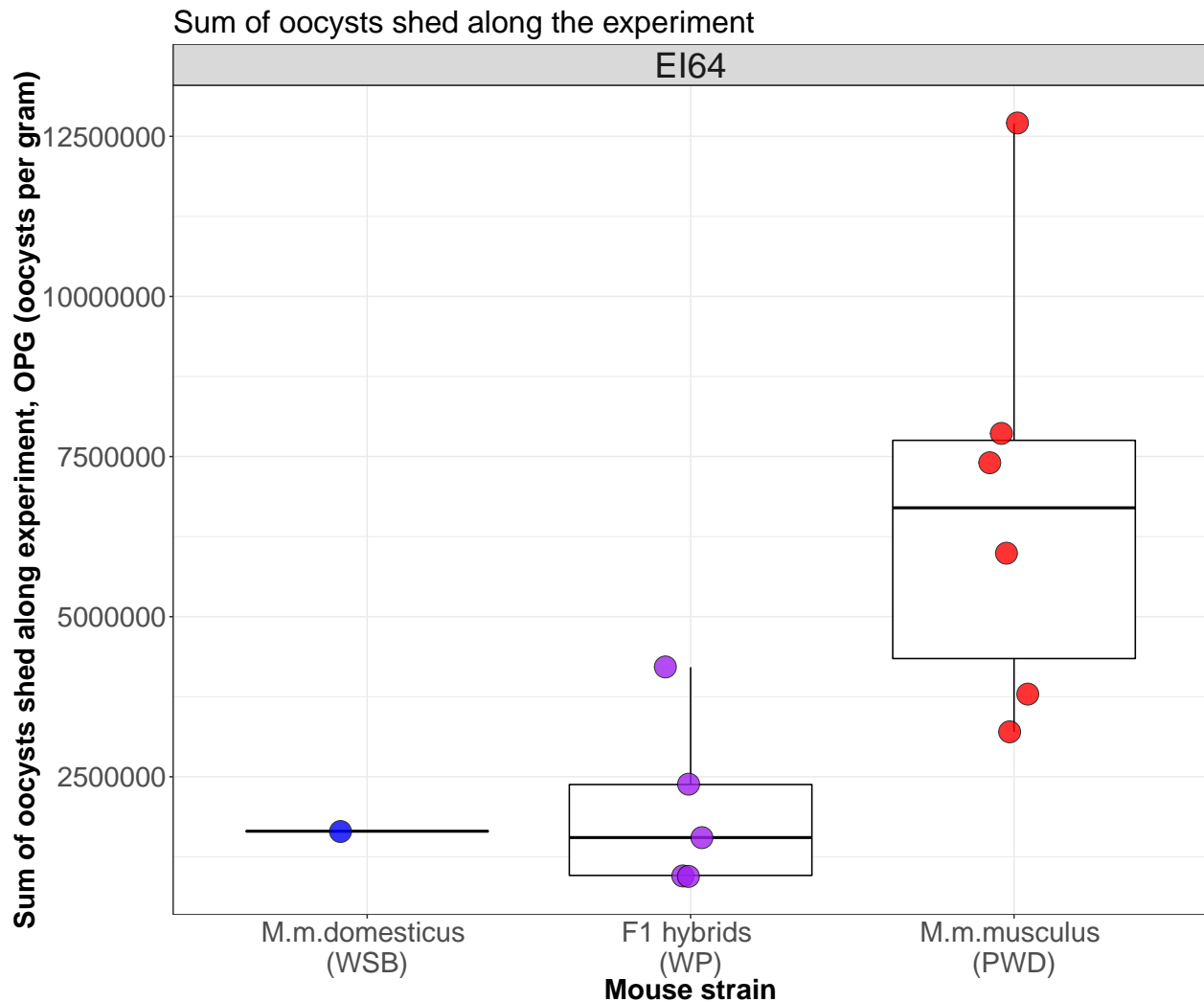
```
##
## Call:
## lm(formula = relativeWeight ~ Mouse_strain, data = max.loss_001)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -2.9271 -0.9534 -0.0448  0.9445  3.3754
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)      85.423      2.254   37.890 3.08e-11 ***
## Mouse_strainF1 hybrids \n(WP)      11.201      2.470    4.536  0.00141 **
## Mouse_strainM.m.musculus \n(PWD)     6.764      2.435    2.778  0.02148 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 2.254 on 9 degrees of freedom
## Multiple R-squared:  0.7311, Adjusted R-squared:  0.6714
## F-statistic: 12.24 on 2 and 9 DF, p-value: 0.002711
```

2. Parasite shedding



Mean oocysts shedding along experiment



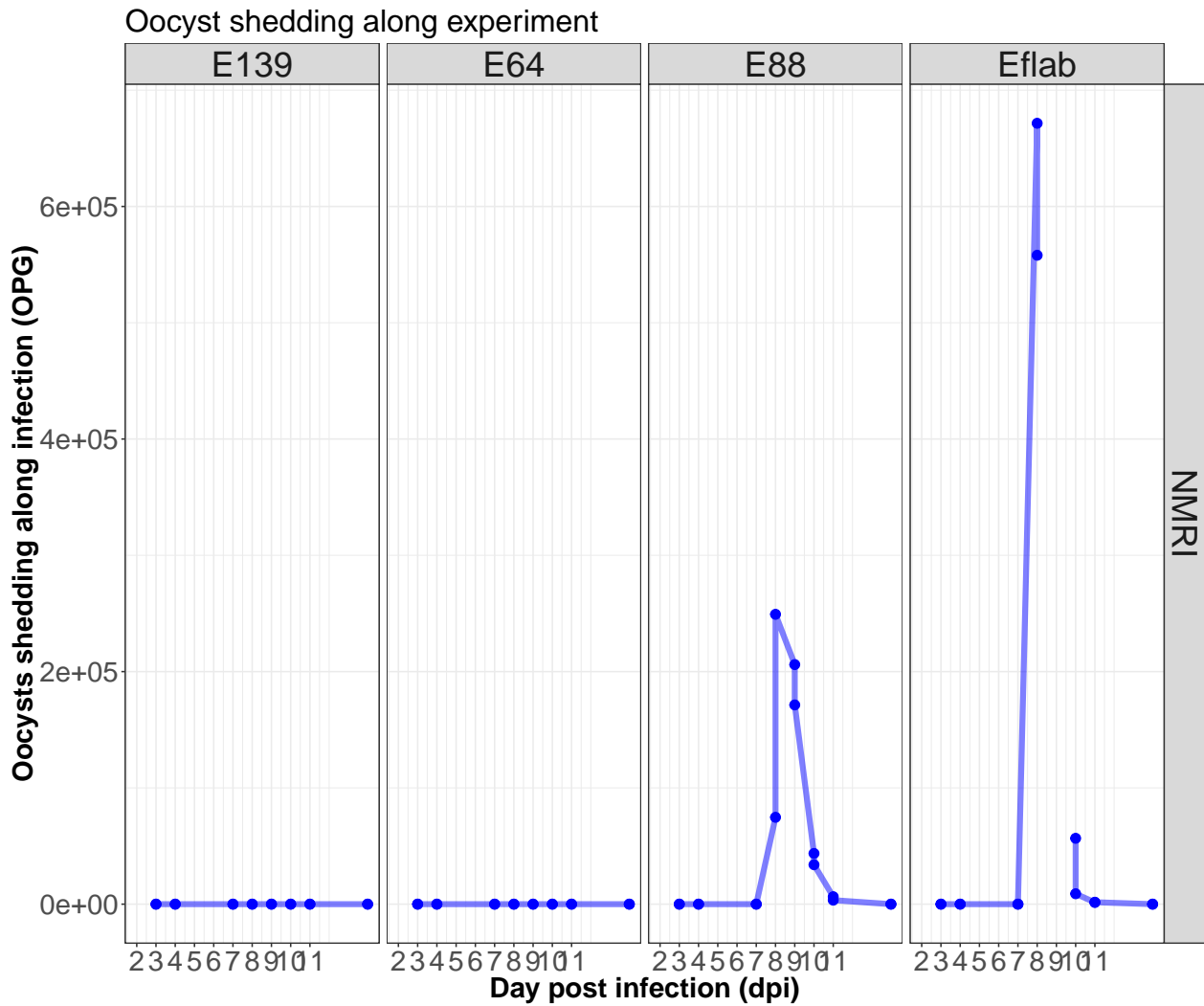


```
##
## Call:
## lm(formula = sum.oo ~ Mouse_strain, data = sum.oocysts_001)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -3628205 -1053694  -228126   693597  5872235
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    1649898    2716134   0.607   0.559
## Mouse_strainF1 hybrids \n(WP)    357449    2975376   0.120   0.907
## Mouse_strainM.m.musculus \n(PWD) 5177664    2933760   1.765   0.111
##
## Residual standard error: 2716000 on 9 degrees of freedom
## Multiple R-squared:  0.5187, Adjusted R-squared:  0.4117
## F-statistic: 4.849 on 2 and 9 DF, p-value: 0.03724
```


Pass001: Nov 2017, passaging 4 isolates (some missing data)

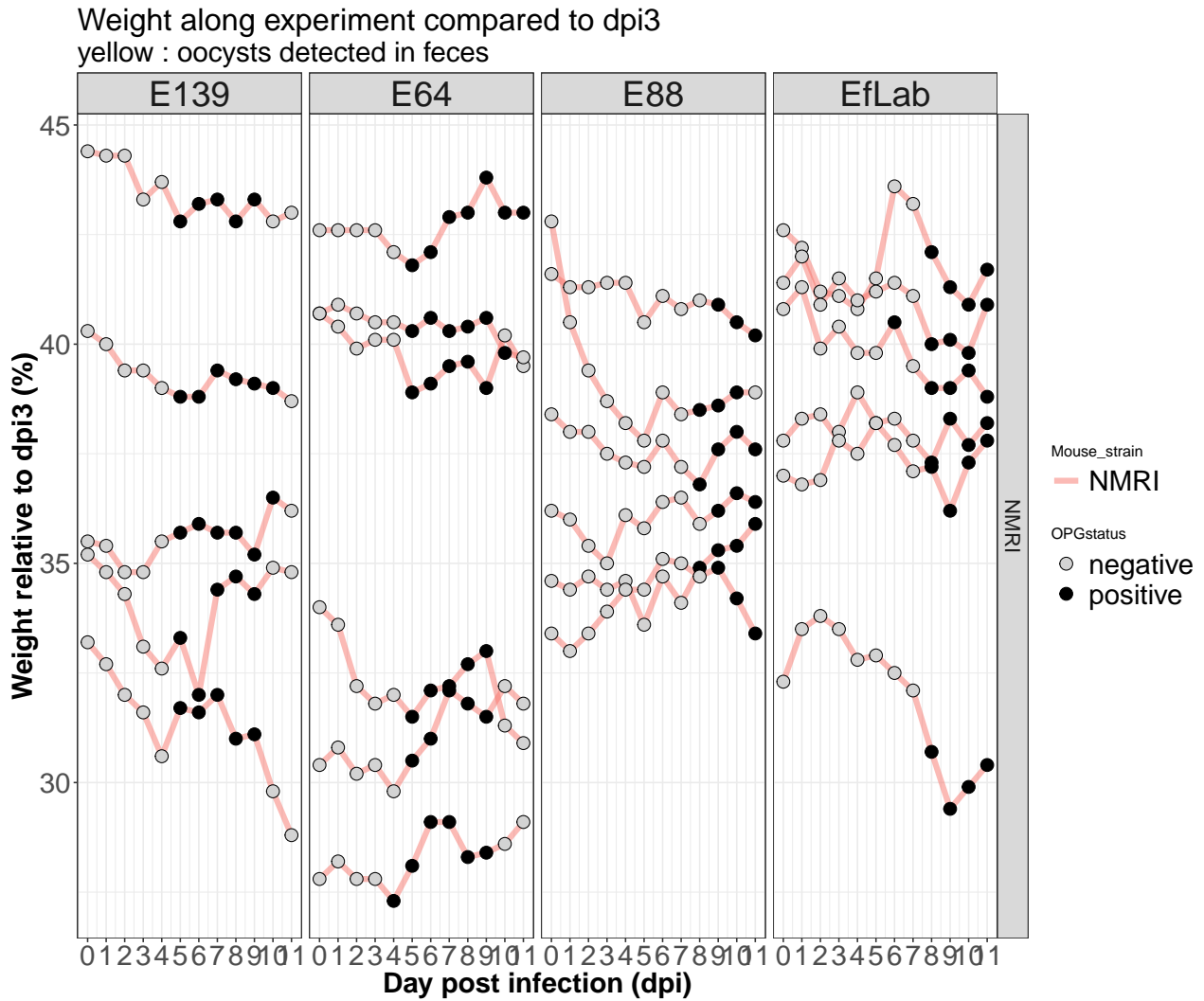
(Eflab, E88, E139, E64) in NMRI. 2 mice per cage. Only OPG recorded

Parasite shedding

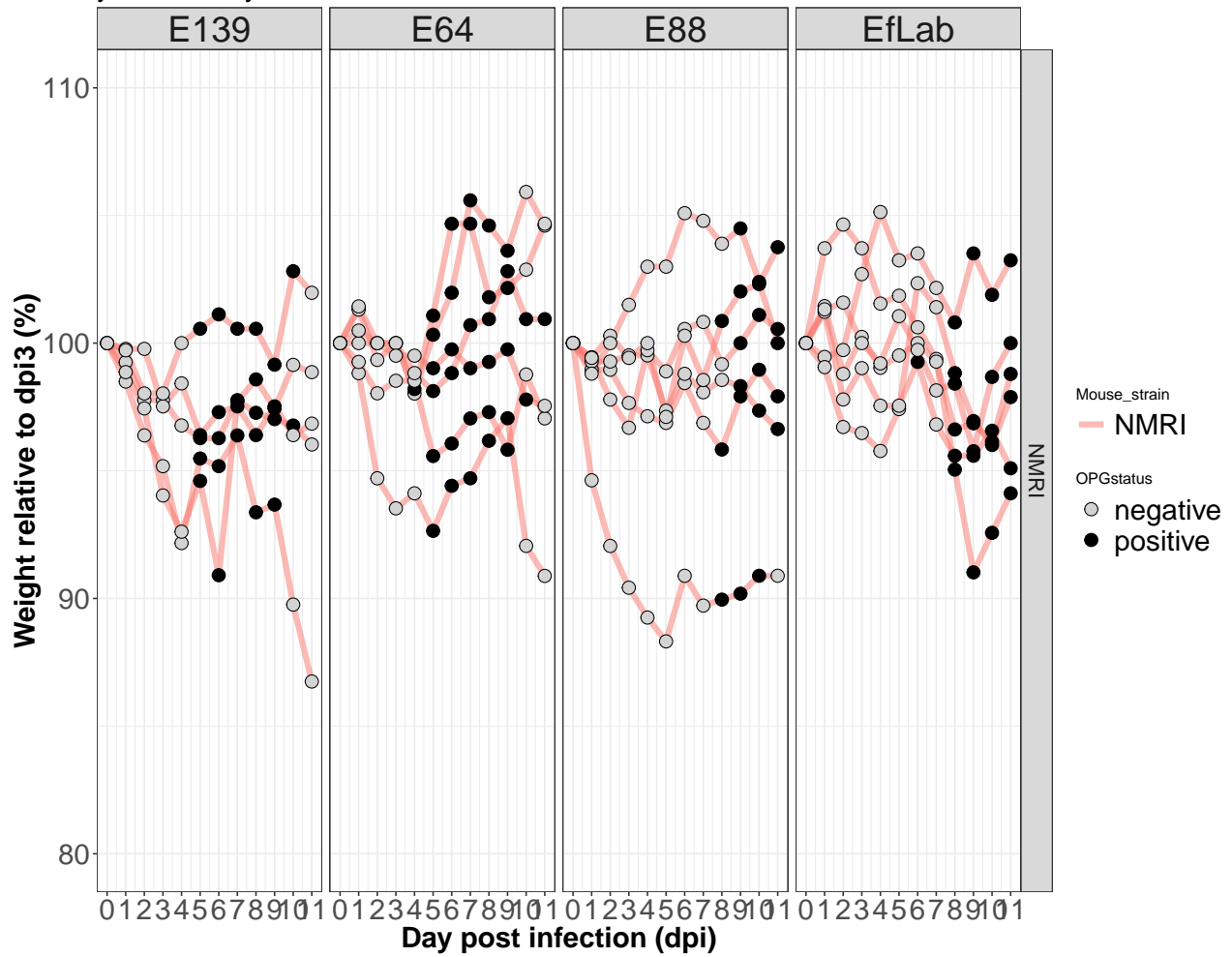


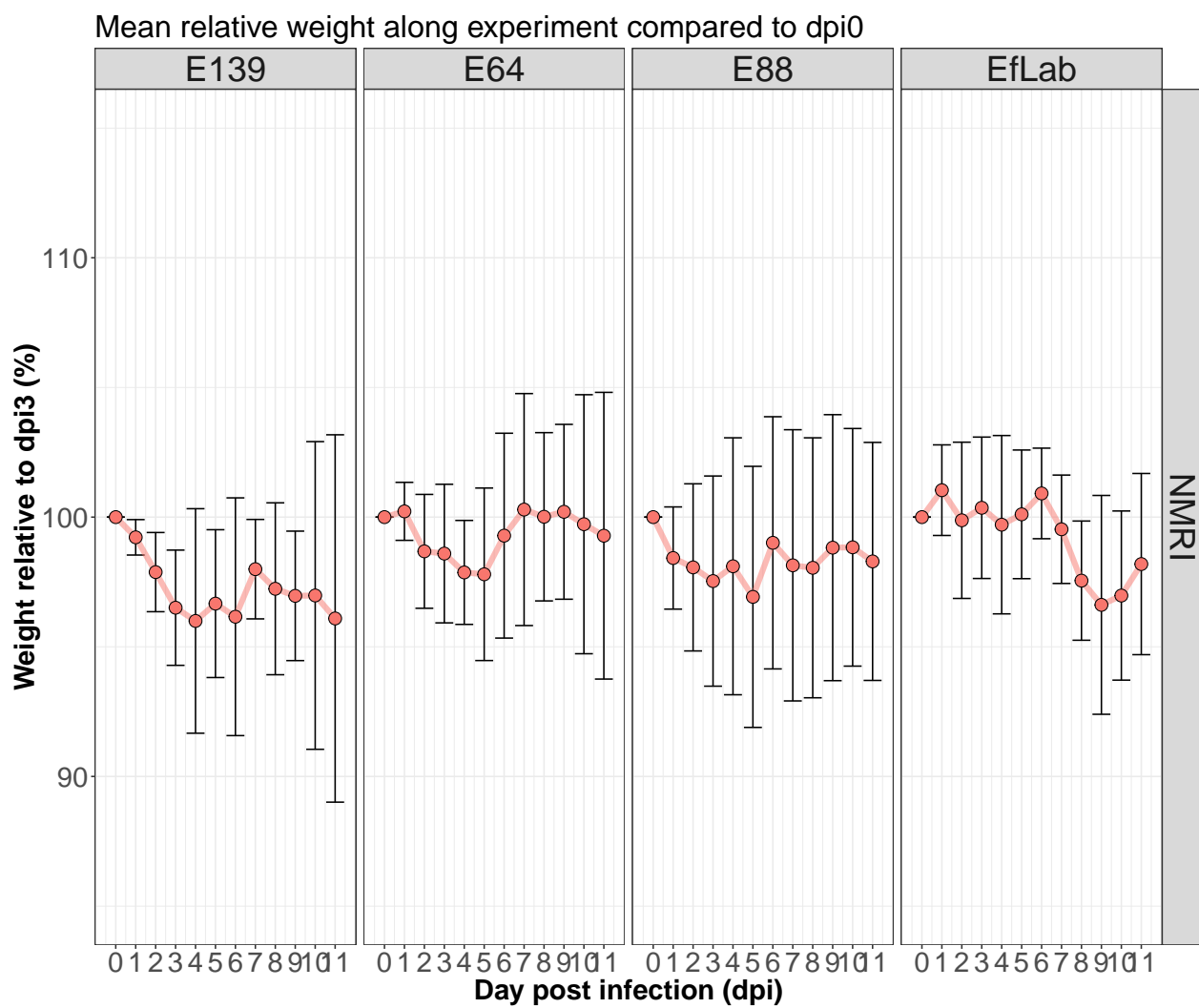
Expe_002: March 2018, NMRI mice infected with 4 *Eimeria* strains (Eflab, E88, E139, E64)

1. Weight loss

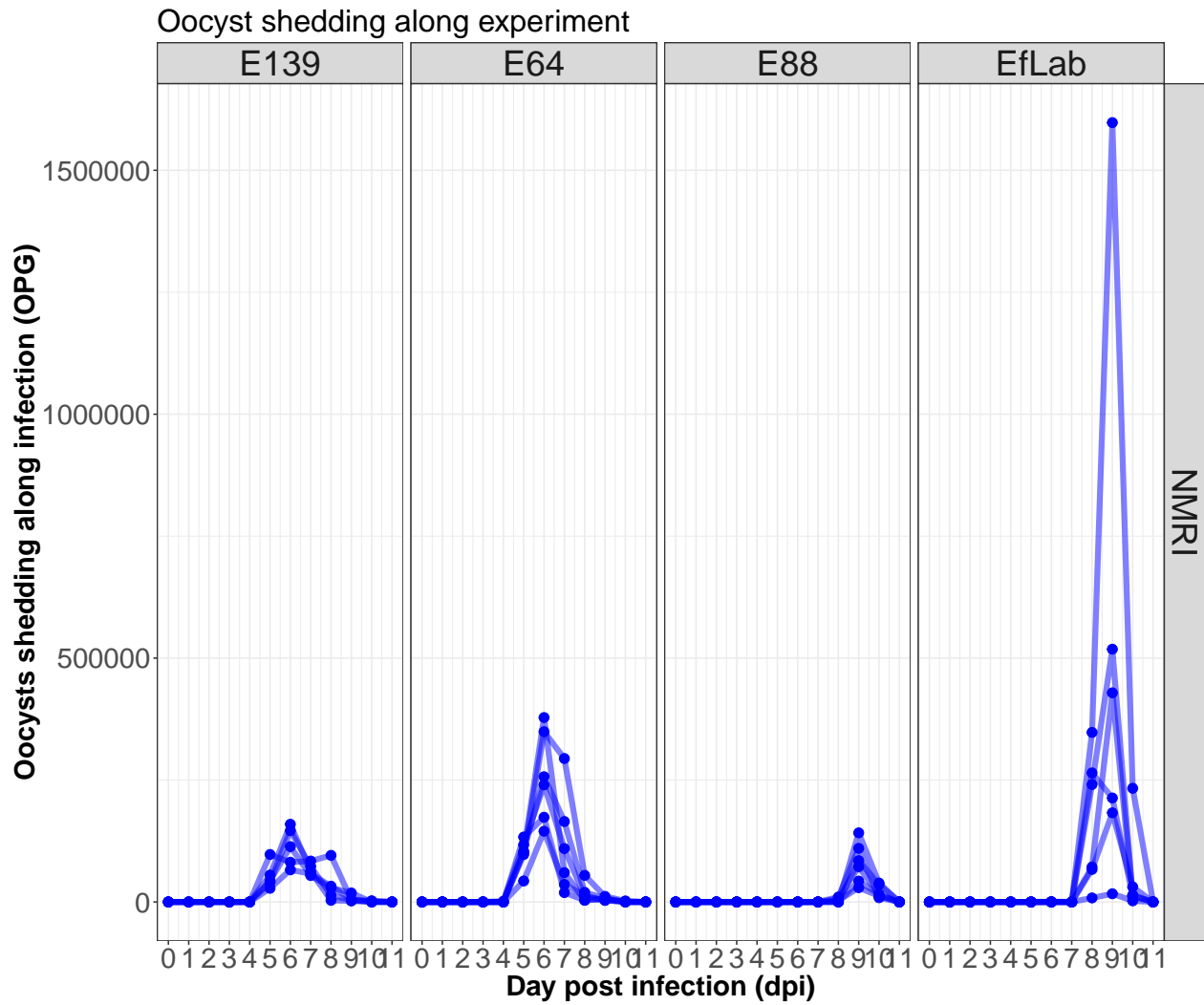


Relative weight along experiment compared to dpi3
yellow : oocysts detected in feces

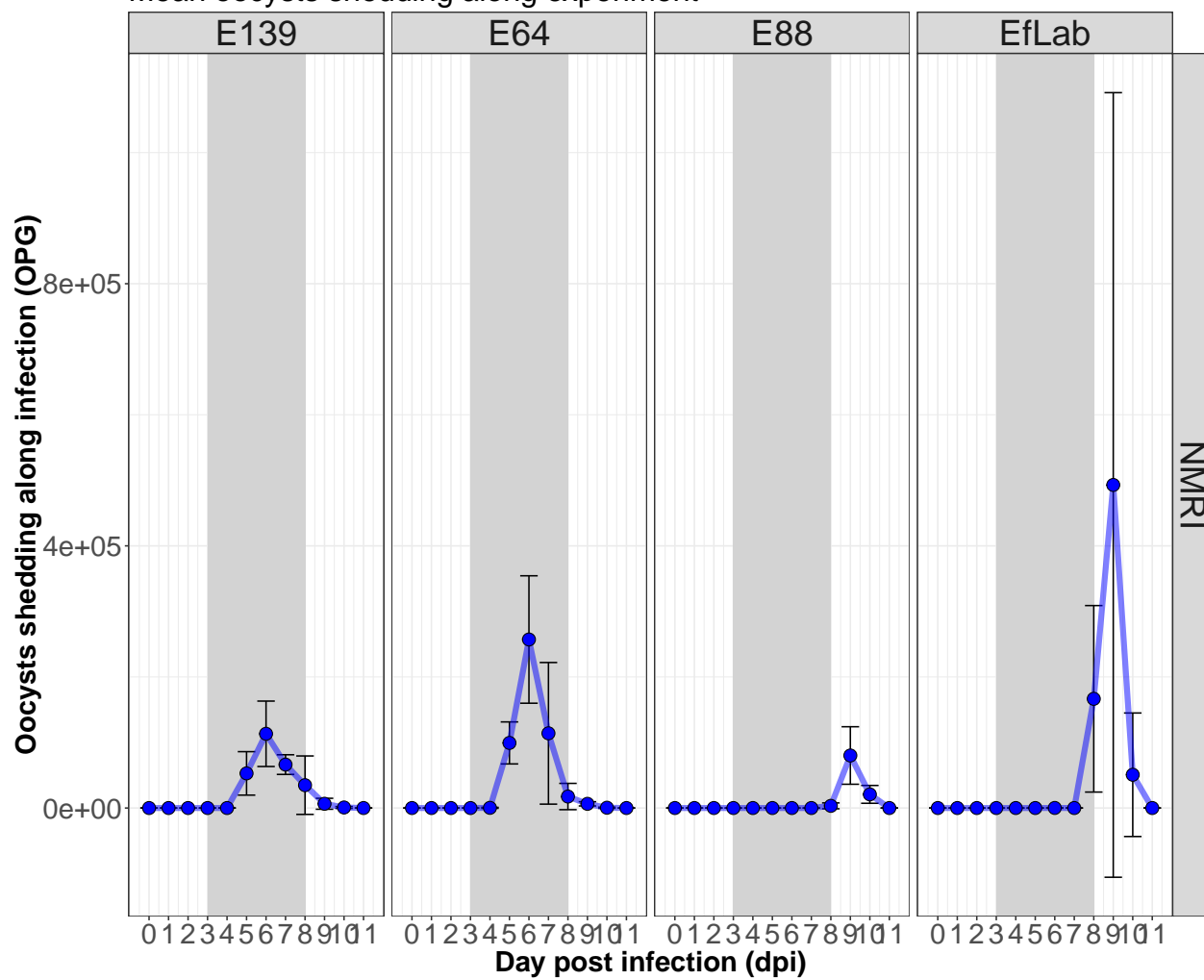




2. Parasite shedding



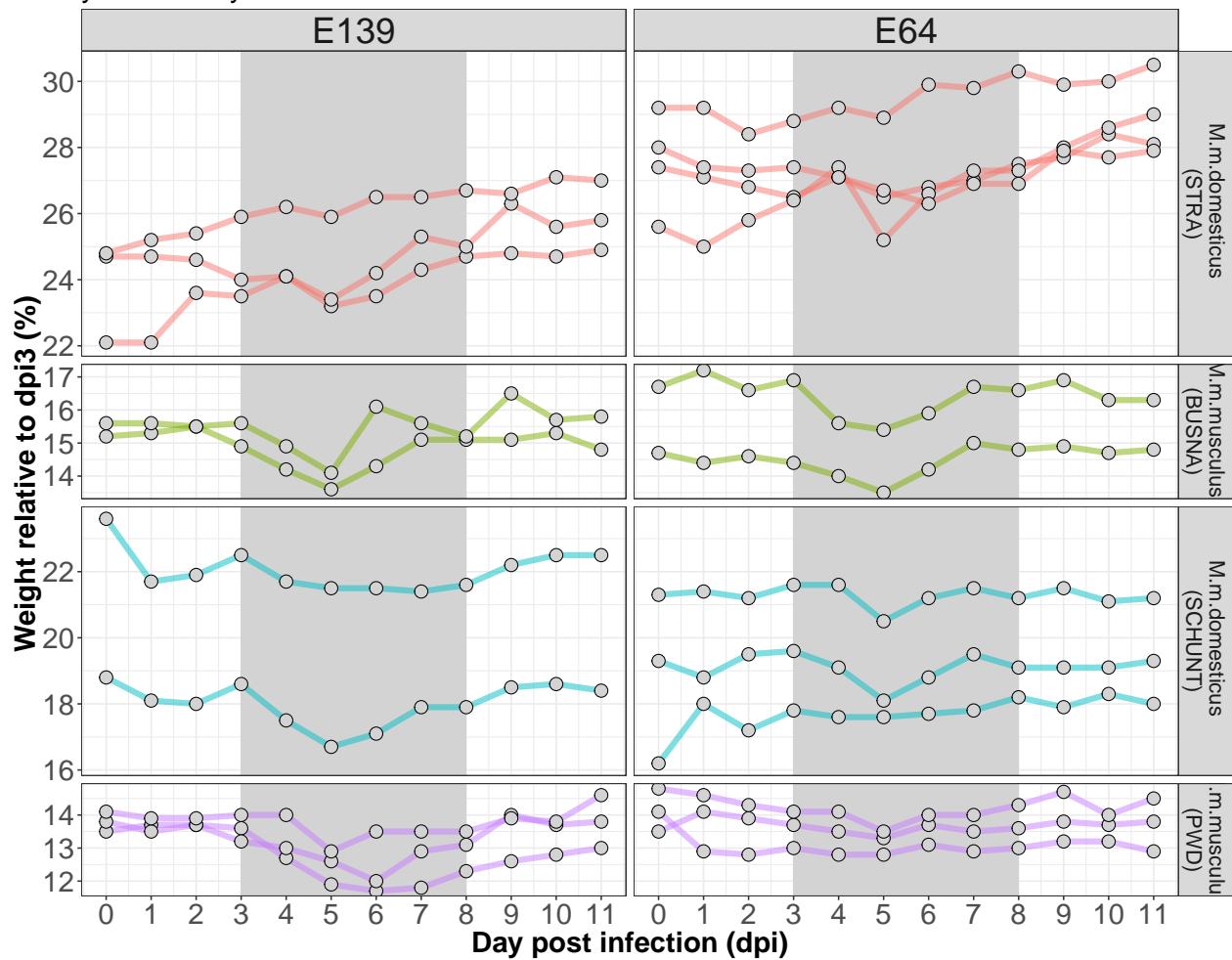
Mean oocysts shedding along experiment



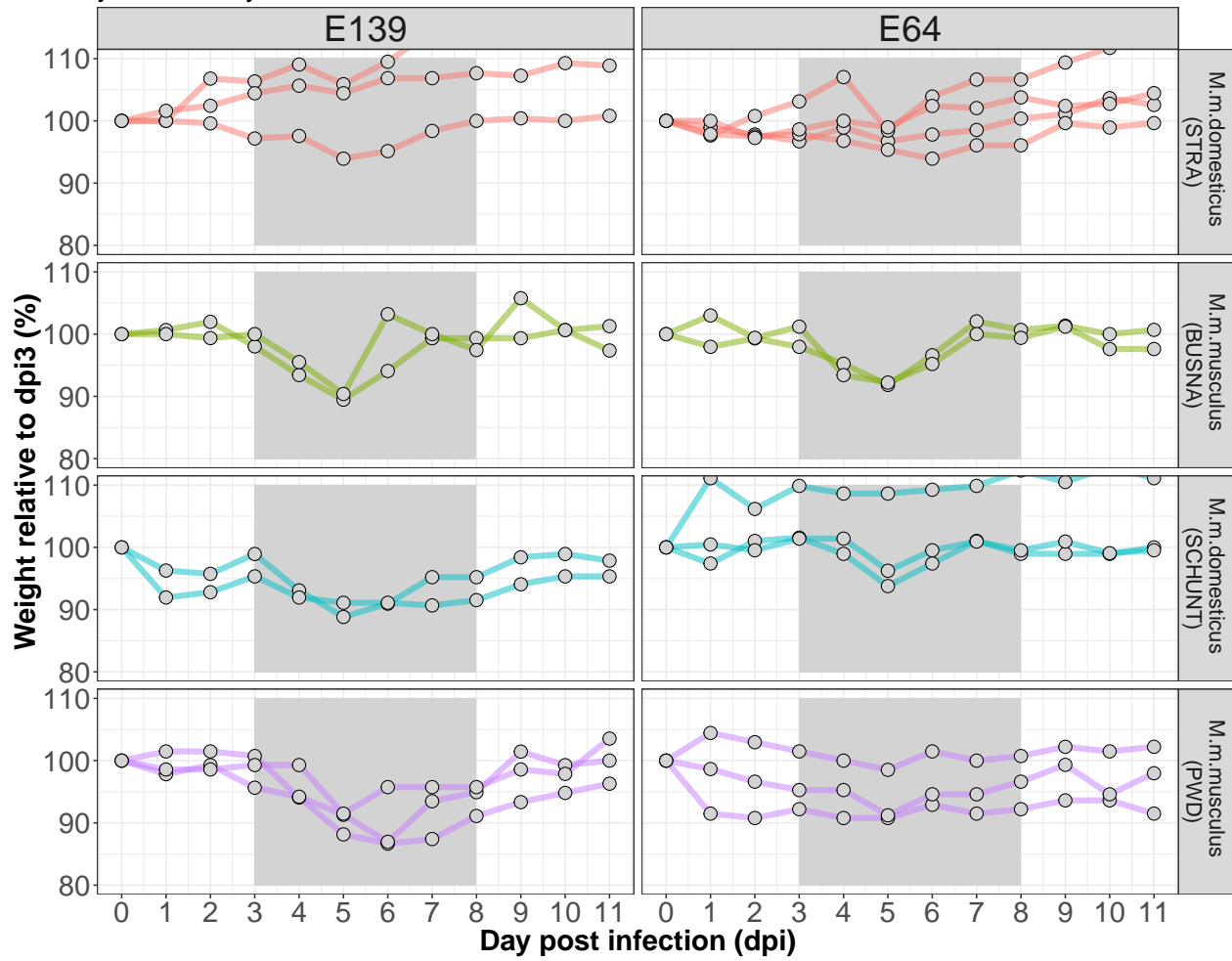
Expe_003, April-May 2018, first batch Parental strains (F0)
BUSNA, STRA, SCHUNT, PWD, infection with Eferrisi (E64 and
E139)

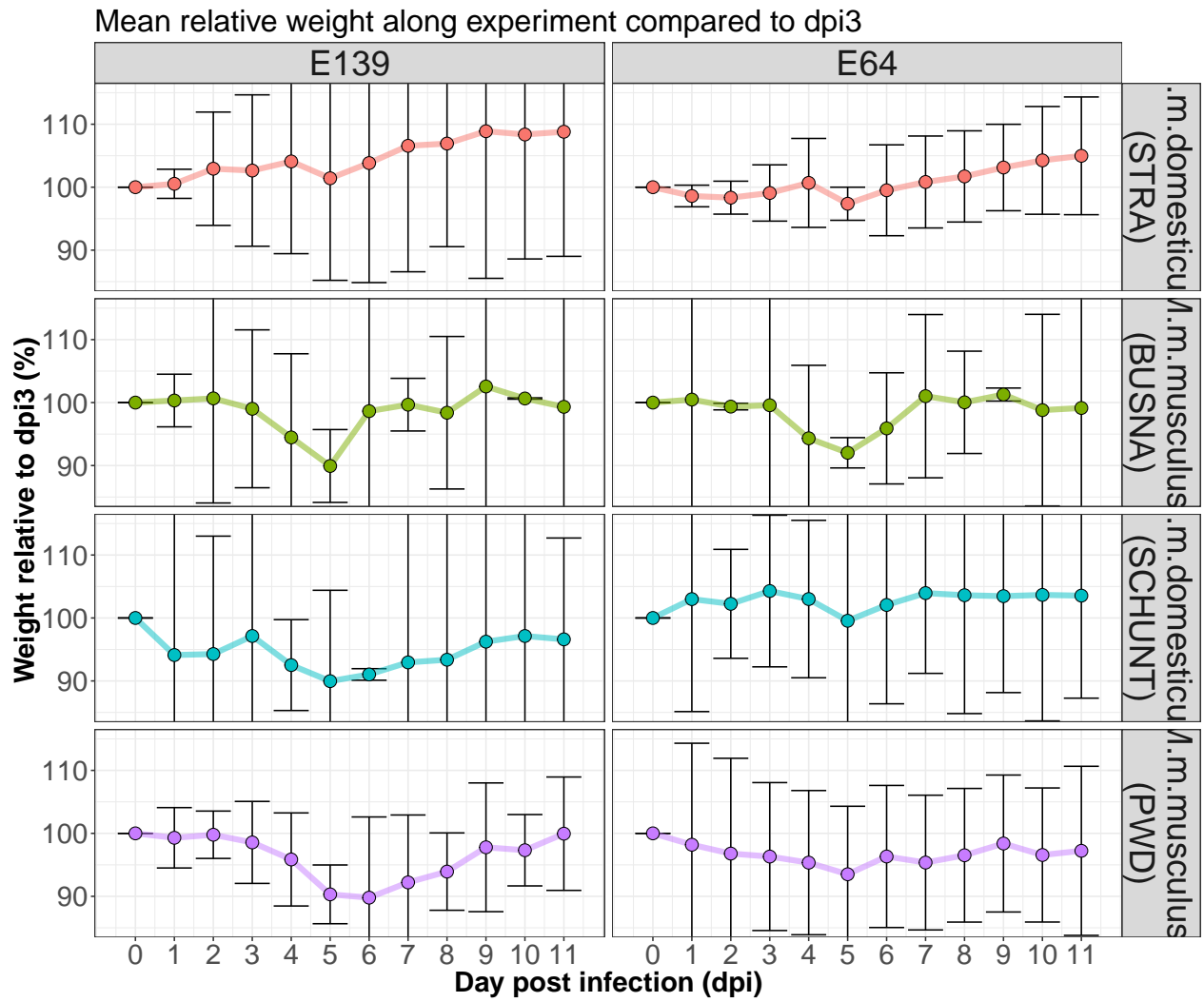
1. Weight loss

Weight along experiment compared to dpi3
yellow : oocysts detected in feces



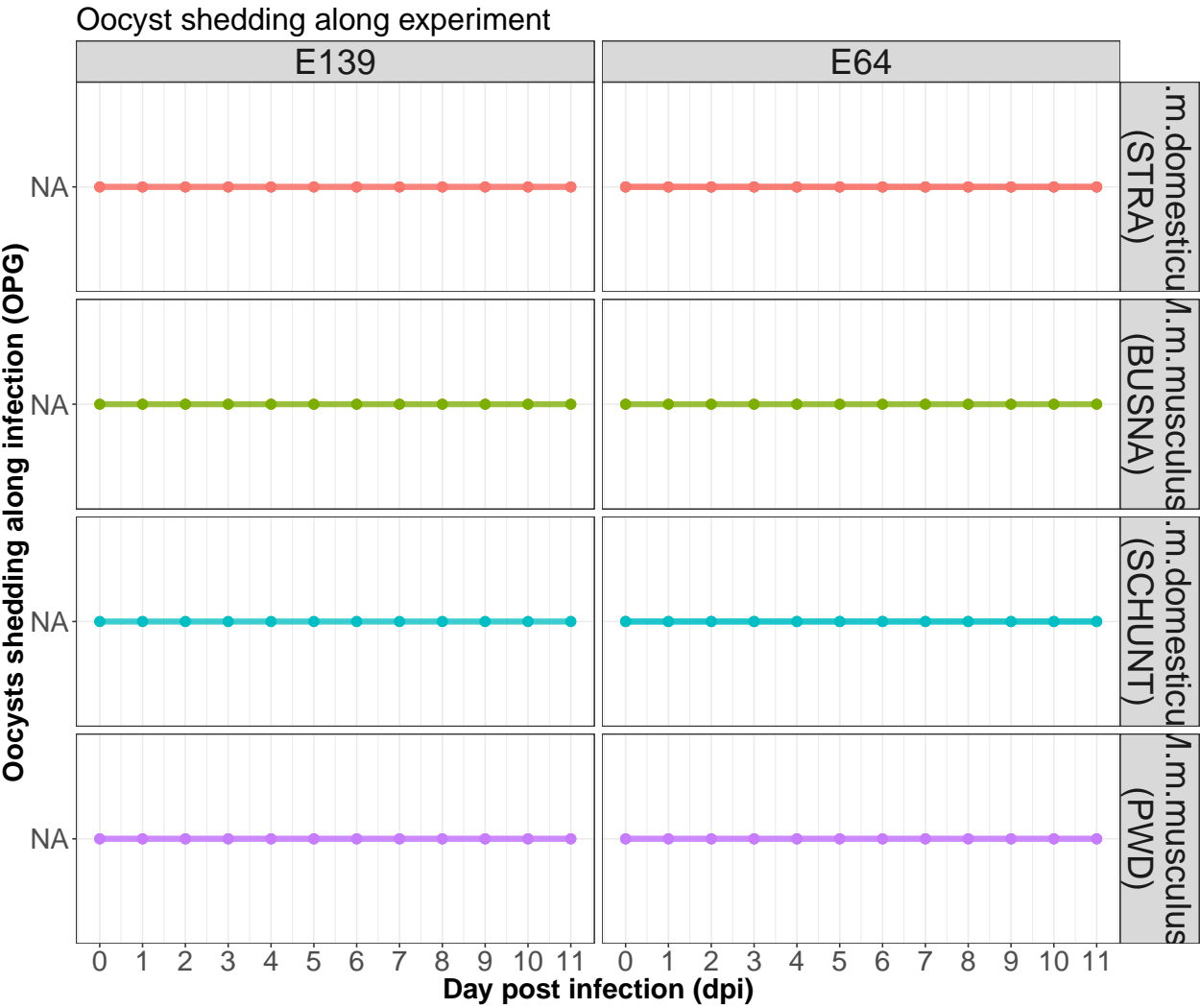
Relative weight along experiment compared to dpi3
yellow : oocysts detected in feces



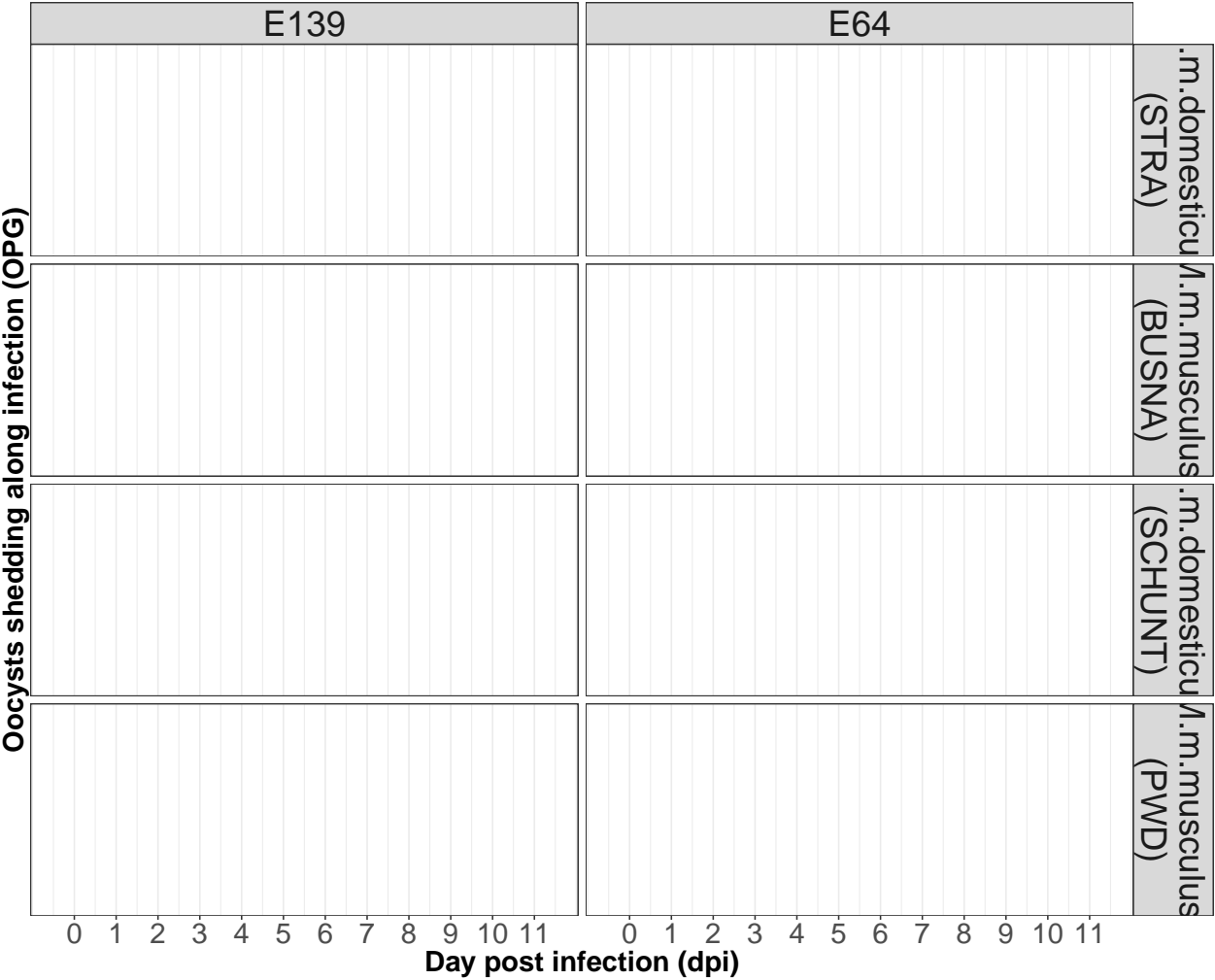


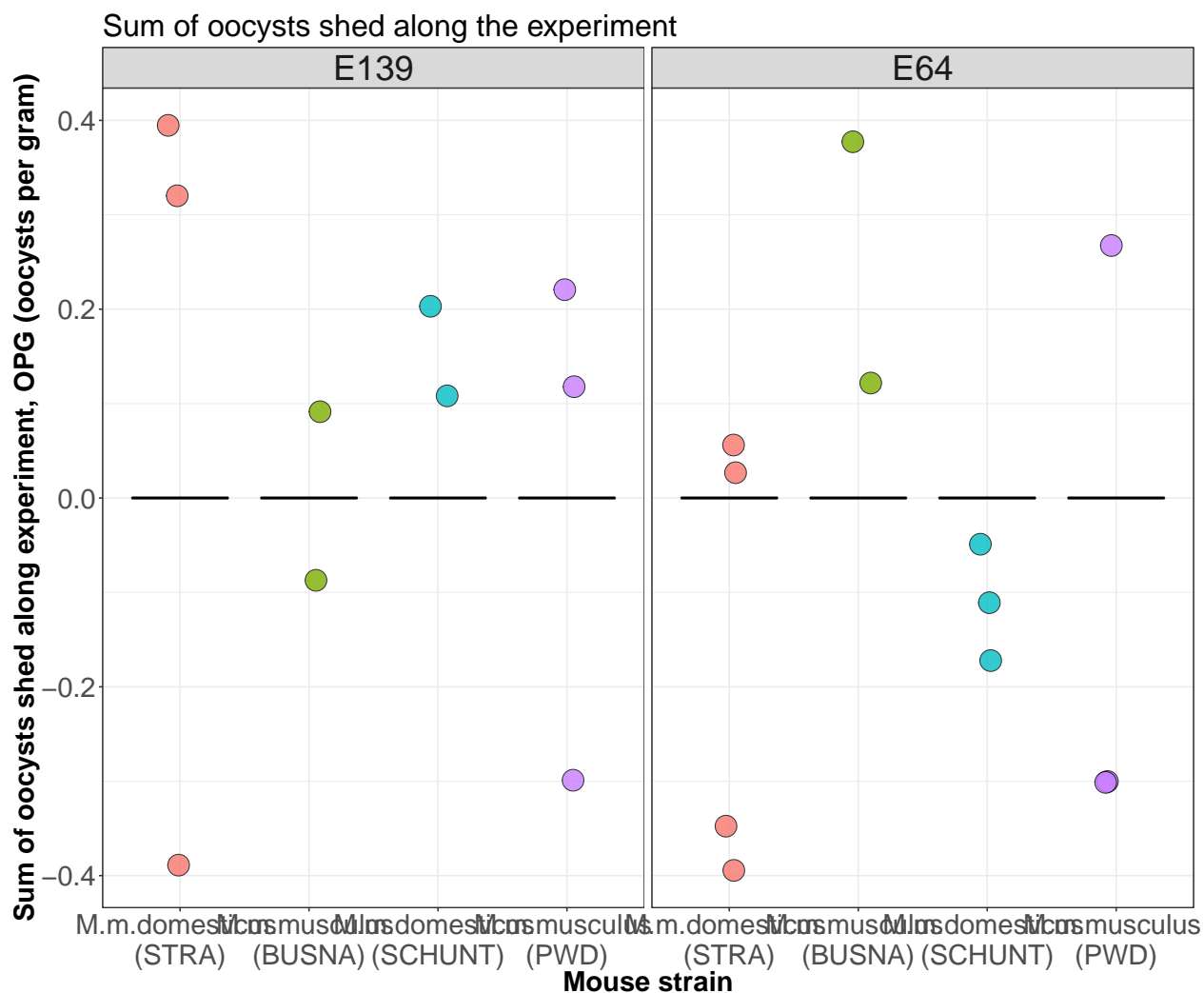
For statistical analysis, we compare the maximum relative weight loss between the different groups. We limit our analysis to the period : dpi3 to dpi8 (symptomatic period for E64 strain).

2. Parasite shedding



Mean oocysts shedding along experiment





```
##
## Call:
## lm(formula = sum.oo ~ Mouse_strain, data = sum.oocysts_003)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
##       0        0         0        0        0
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)           0          0      NA     NA
## Mouse_strainM.m.musculus \n(BUSNA)           0          0      NA     NA
## Mouse_strainM.m.domesticus \n(SCHUNT)           0          0      NA     NA
## Mouse_strainM.m.musculus \n(PWD)           0          0      NA     NA
##
## Residual standard error: 0 on 18 degrees of freedom
## Multiple R-squared:  NaN, Adjusted R-squared:  NaN
## F-statistic:  NaN on 3 and 18 DF, p-value: NA
```

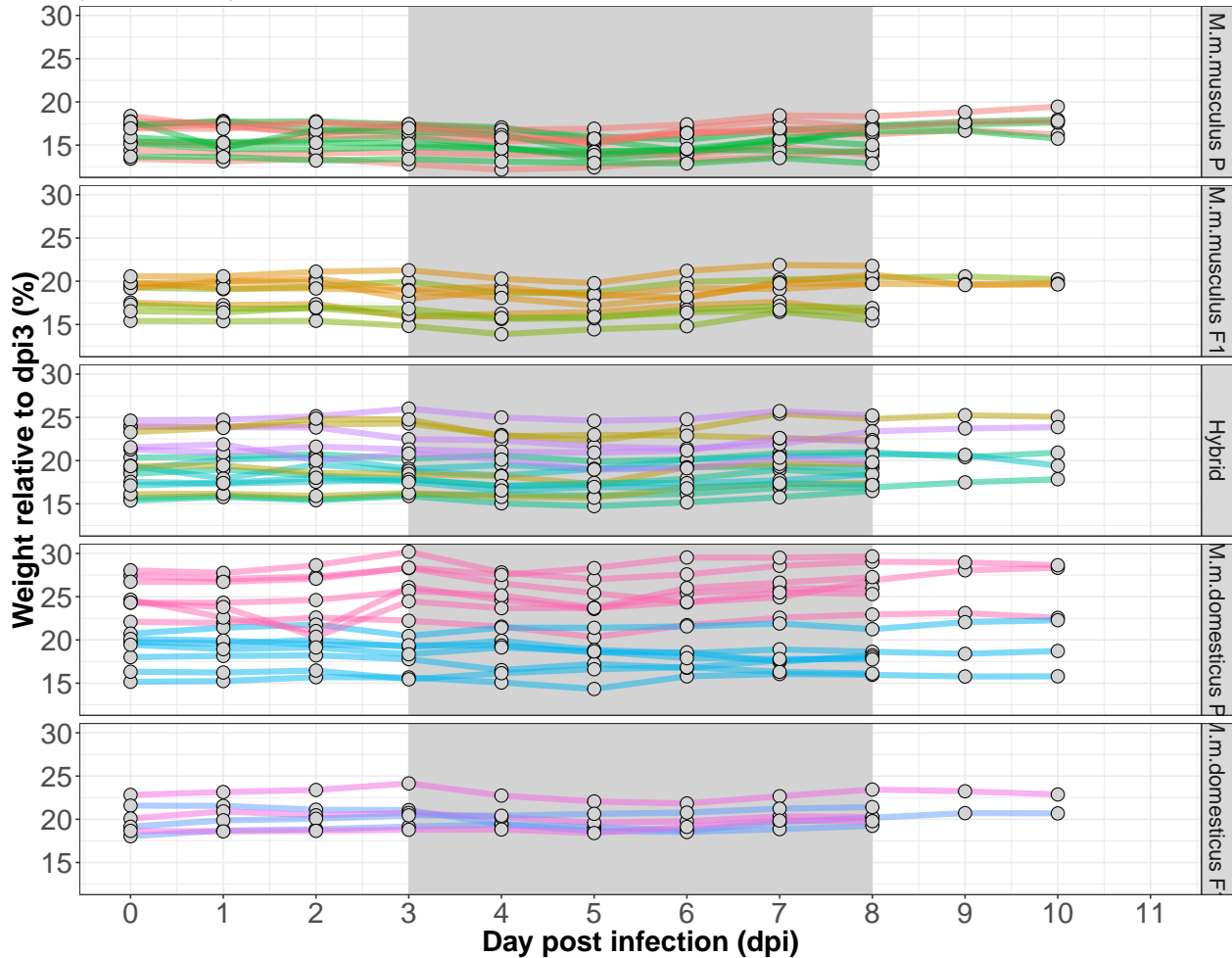
Expe_005, July 2018, FULL experiment (parents, intra specific and inter species hybrids) BUSNA, STRA, SCHUNT, PWD, infection with *E. ferrisi* and *E. falciformis* (E64 and E88)

1. Weight loss

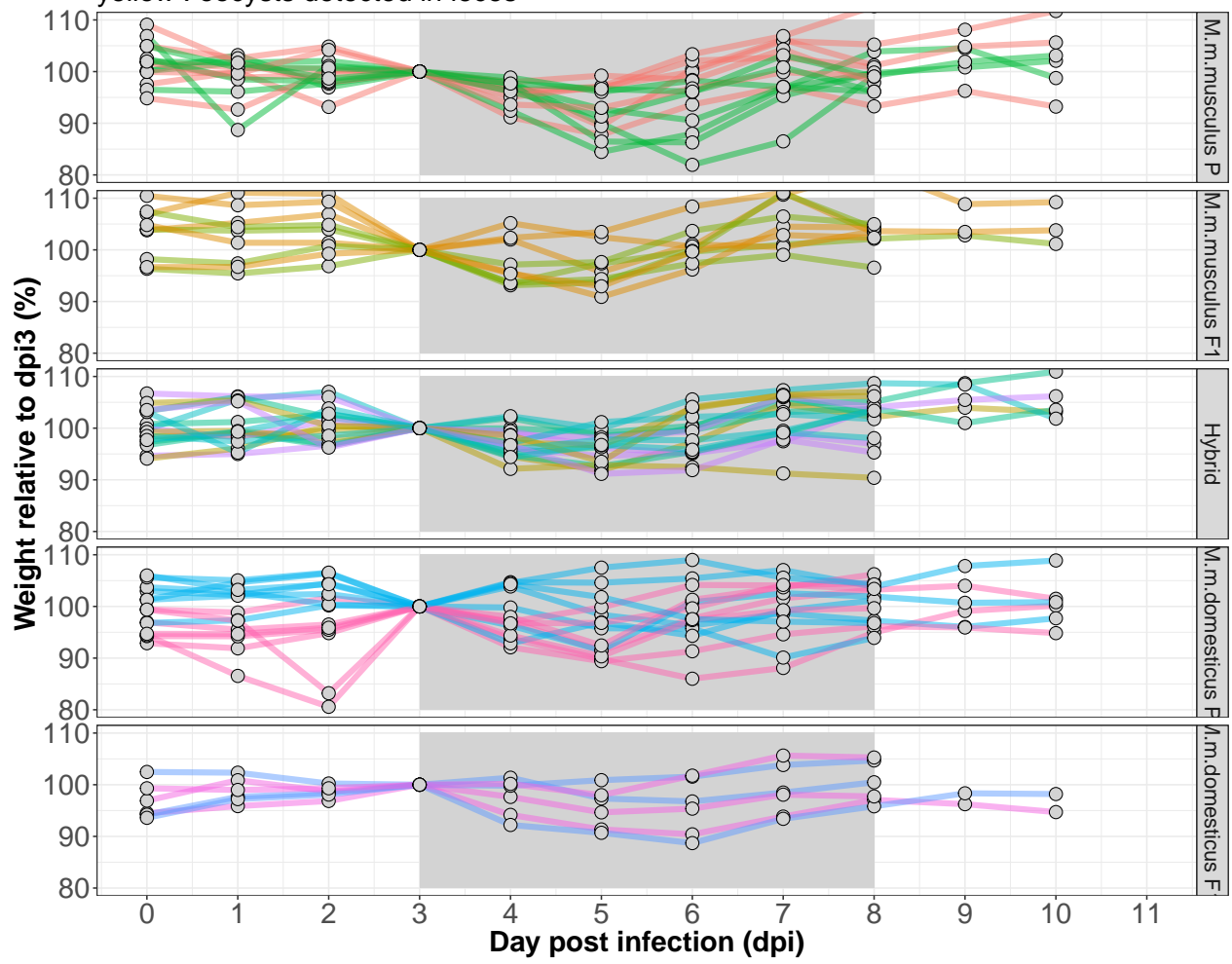
Eimeria ferrisi

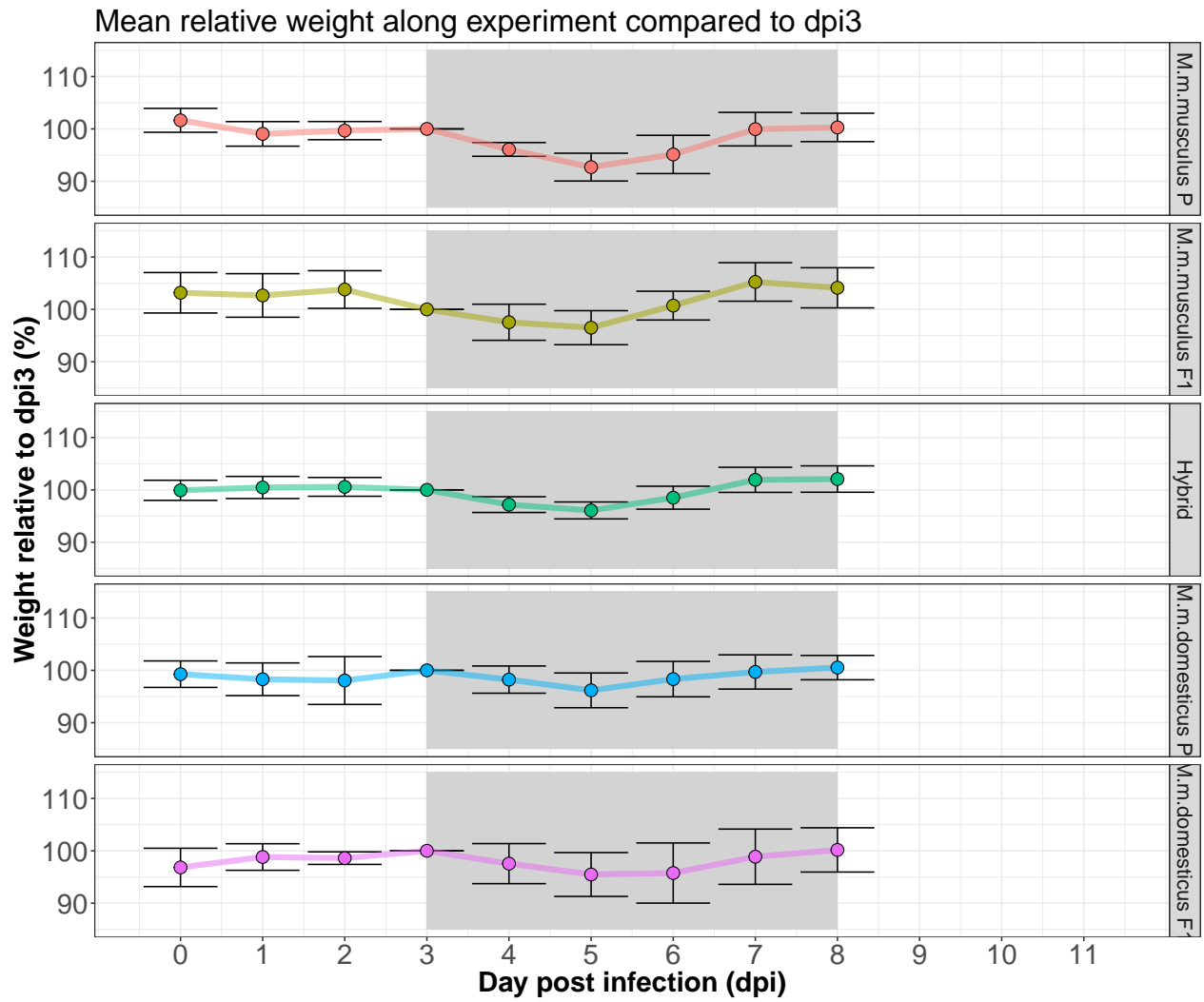
Weight along experiment compared to dpi3 (E64)

yellow : oocysts detected in feces

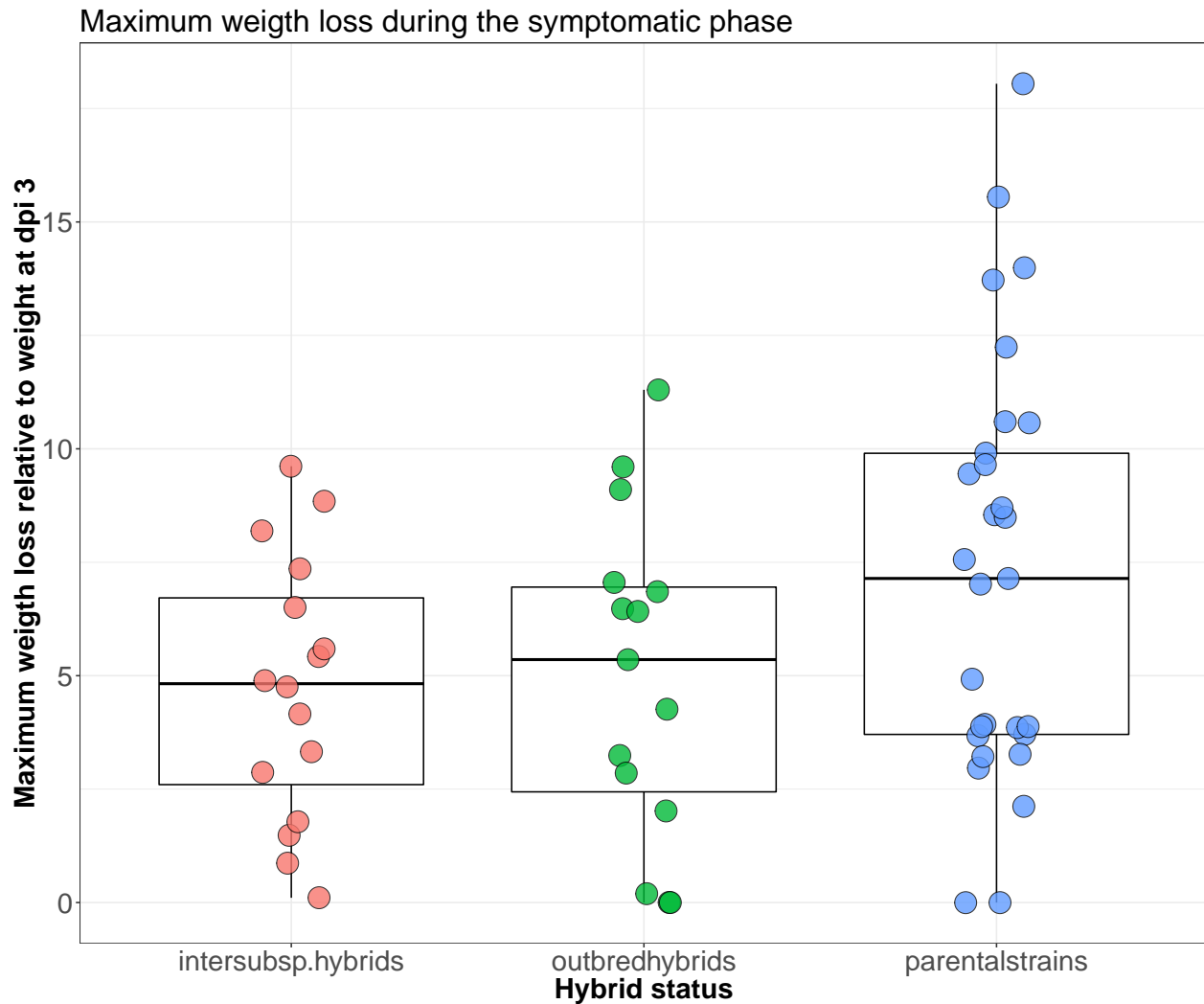


Relative weight along experiment compared to dpi3 (E64)
 yellow : oocysts detected in feces

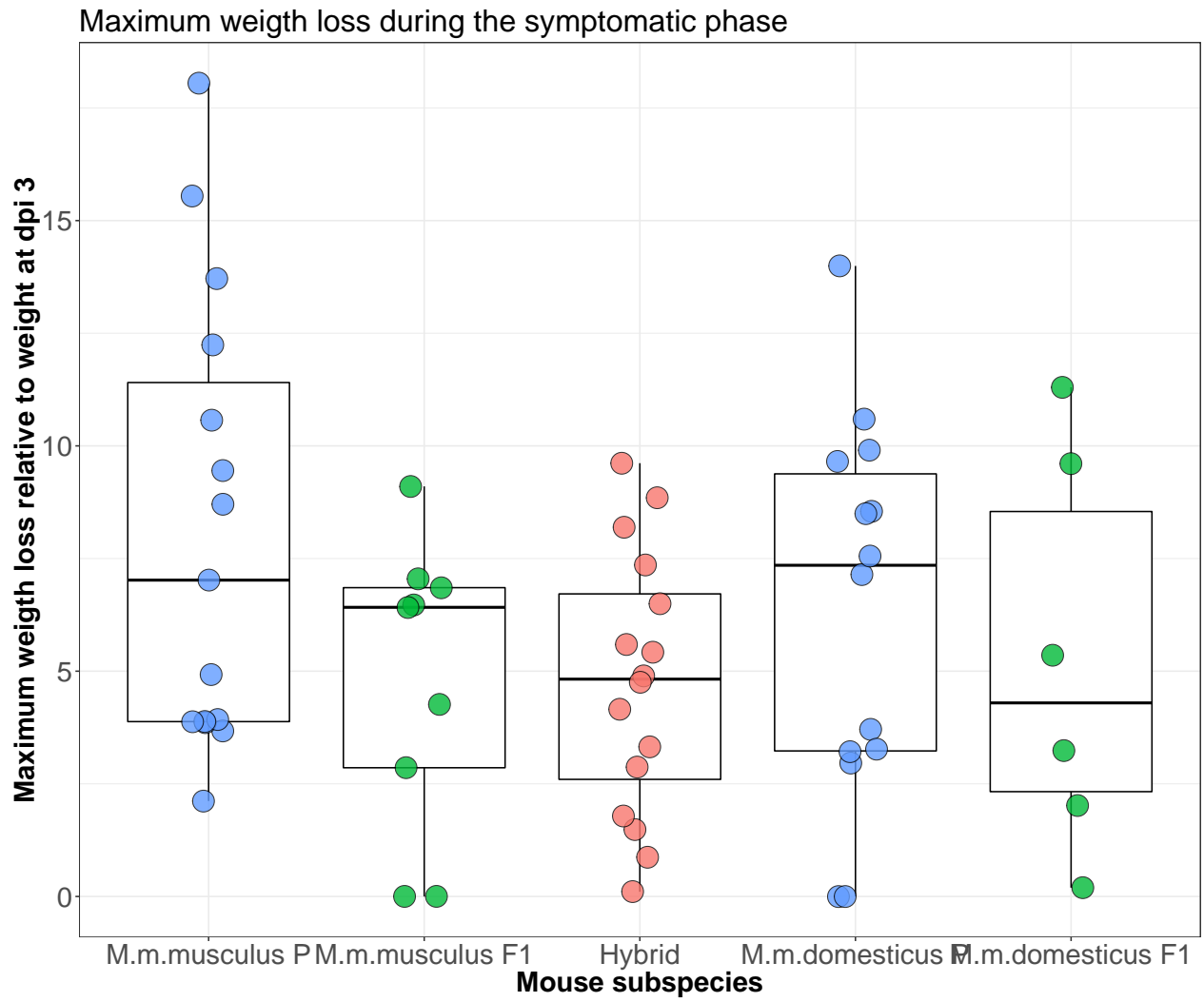




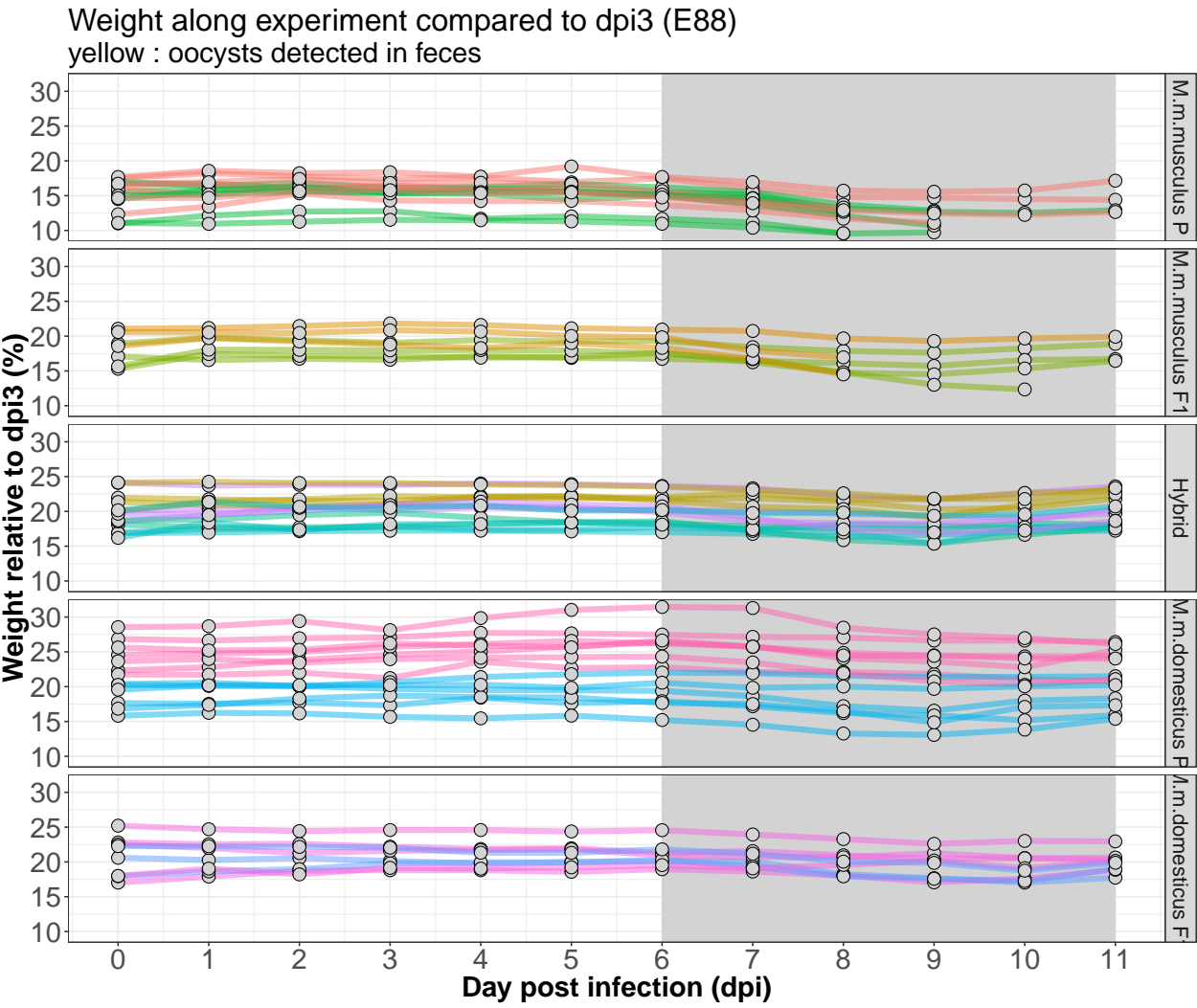
For statistical analysis, we compare the maximum relative weight loss between the different groups. We limit our analysis to the period : dpi3 to dpi8 (symptomatic period for E64 strain).



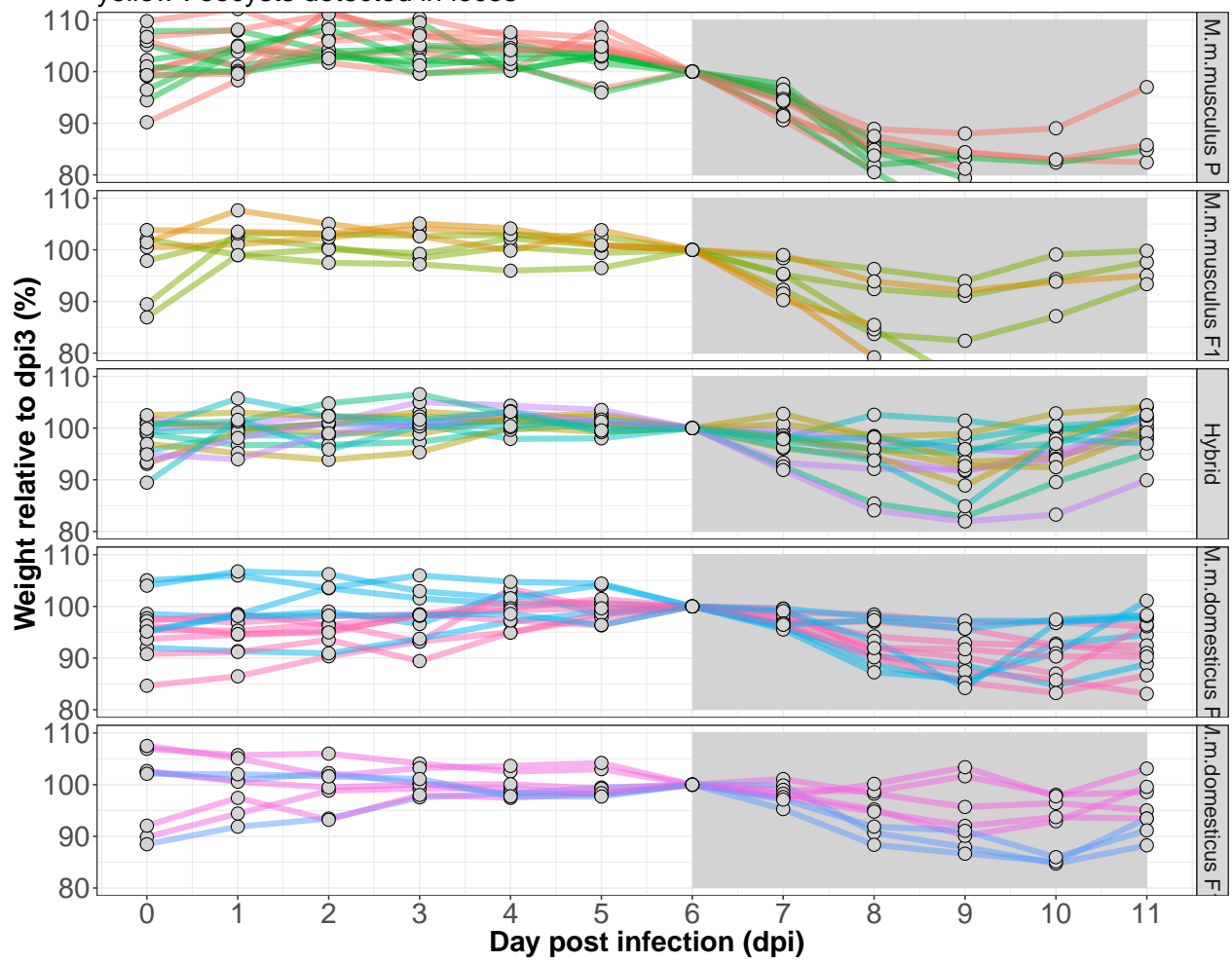
```
##
## Call:
## lm(formula = relativeWeight ~ HybridStatus, data = max.loss_005_E64)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -10.784  -2.451  -0.088   3.381   7.262
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    95.2644    0.9968  95.569  <2e-16 ***
## HybridStatusoutbredhybrids  -0.2467    1.4330  -0.172   0.8639
## HybridStatusparentalstrains -2.5264    1.2417  -2.035   0.0466 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 3.987 on 57 degrees of freedom
## Multiple R-squared:  0.08785,    Adjusted R-squared:  0.05585
## F-statistic: 2.745 on 2 and 57 DF,  p-value: 0.07275
```

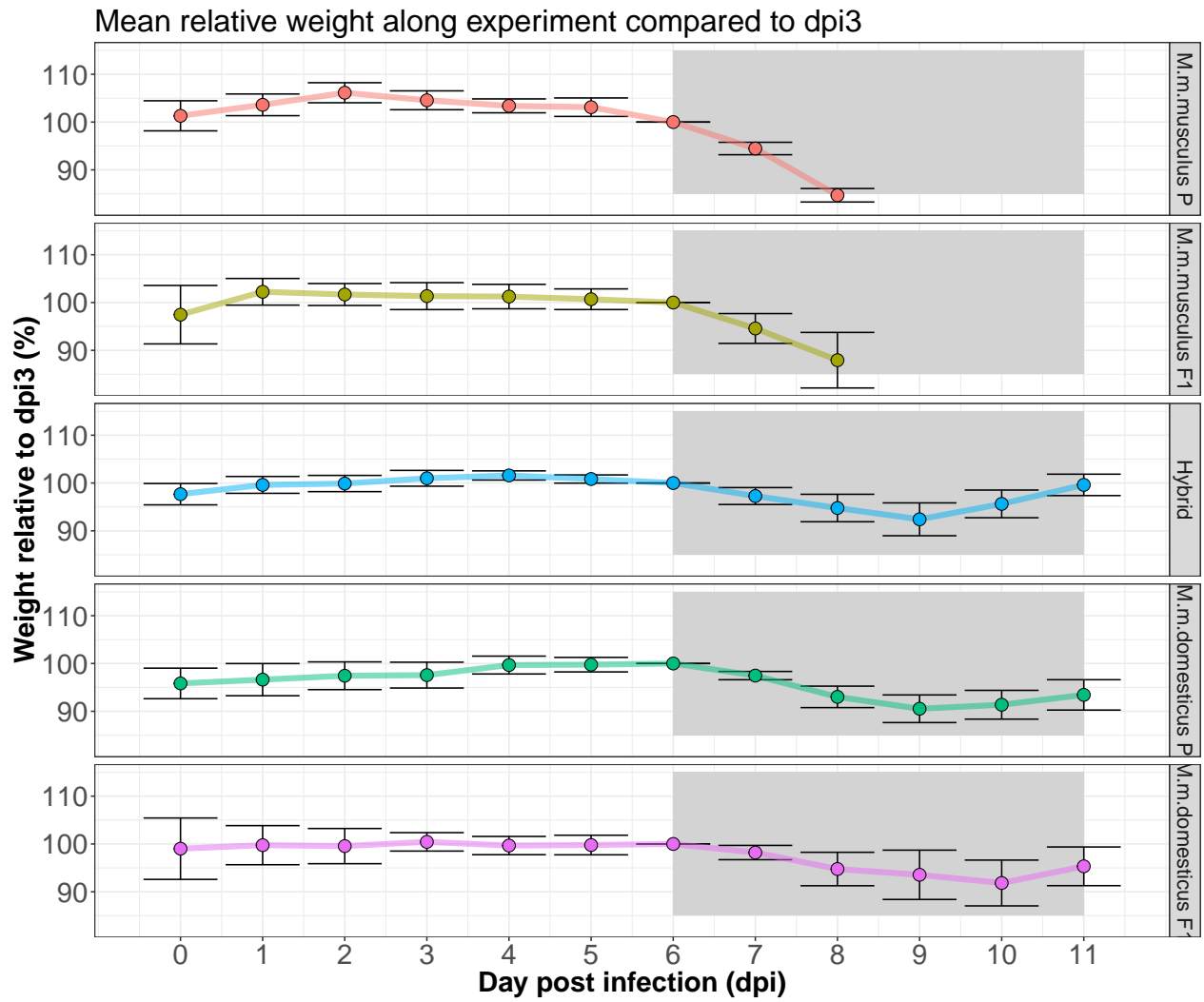



Eimeria falciformis

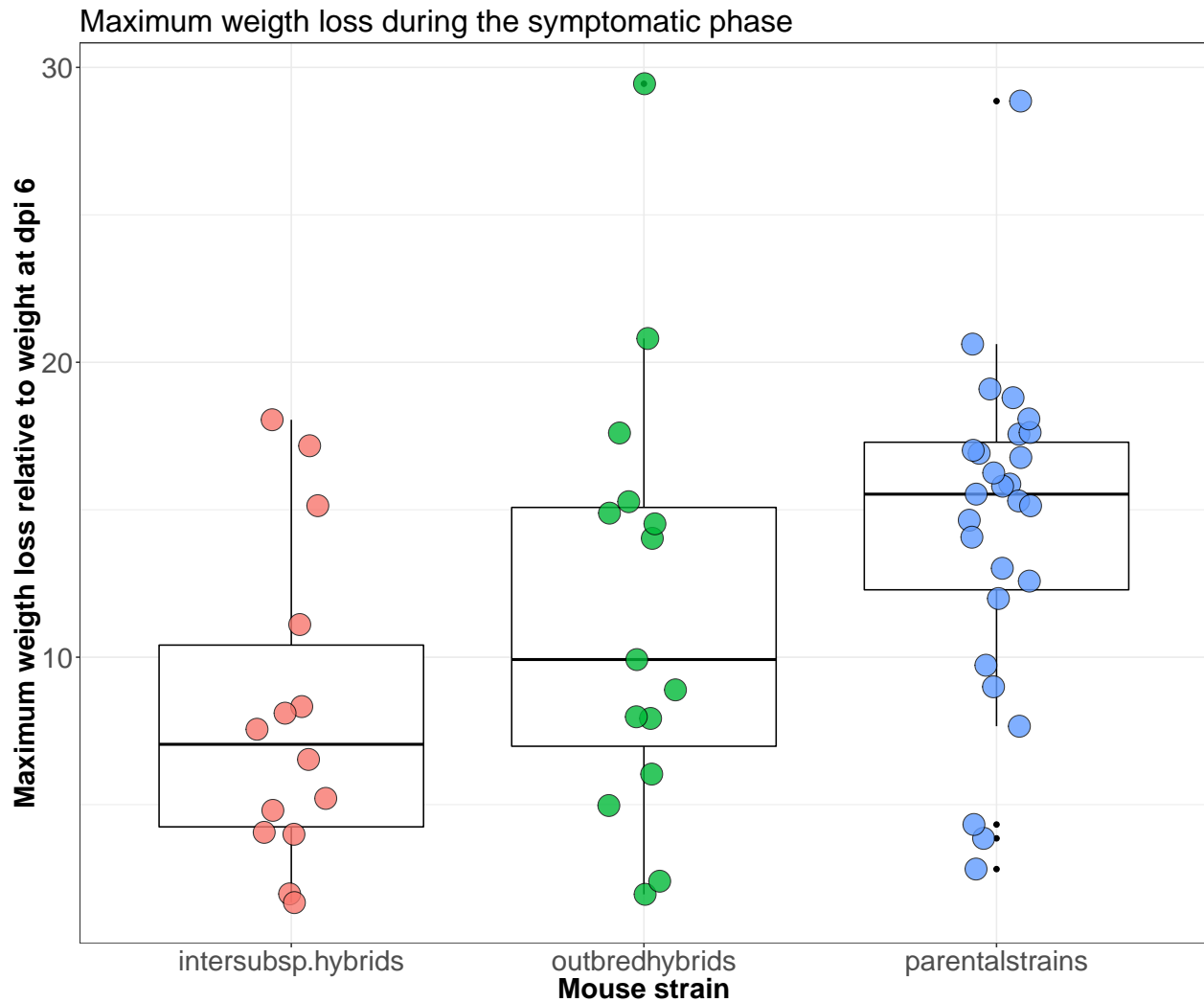


Relative weight along experiment compared to dpi3 (E88)
 yellow : oocysts detected in feces





For statistical analysis, we compare the maximum relative weight loss between the different groups. We limit our analysis to the period : dpi7 to dpi11 (symptomatic period for E88 strain).



```
##
## Call:
## lm(formula = relativeWeight ~ HybridStatus, data = max.loss_005_E88)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -17.6680  -3.1200  -0.2234   3.9057  11.5879
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)      91.877      1.620  56.723 < 2e-16 ***
## HybridStatusoutbredhybrids  -3.655      2.252  -1.623  0.11060
## HybridStatusparentalstrains -6.281      1.996  -3.147  0.00271 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 6.061 on 53 degrees of freedom
## Multiple R-squared:  0.1583, Adjusted R-squared:  0.1266
## F-statistic: 4.985 on 2 and 53 DF,  p-value: 0.01038
```

