

Figure 6-S1a₁

Comparing RMI during suppression against 0

```
# Fixed effect intercept only,  
# random intercept for neurons,  
# random intercept for experiments, nested within series  
lmer.a1.1 = lmer(suppressionrmi ~ 1 + (1 | uid) + (1 | sid/eid),  
               data = tbw %>% drop_na(suppressionrmi))  
  
display(lmer.a1.1)  
  
## lmer(formula = suppressionrmi ~ 1 + (1 | uid) + (1 | sid/eid),  
##      data = tbw %>% drop_na(suppressionrmi))  
##      coef.est  coef.se  
##      0.20     0.09  
##  
## Error terms:  
## Groups   Name          Std.Dev.  
## uid      (Intercept)  0.07  
## eid:sid  (Intercept)  0.02  
## sid      (Intercept)  0.24  
## Residual                    0.09  
## ---  
## number of obs: 57, groups: uid, 37; eid:sid, 9; sid, 7  
## AIC = -58.8, DIC = -74.8  
## deviance = -71.8
```

Mean firing rate RMI

Suppression: RMI = 0.20 ± 0.19
n = 37 neurons from 4 mice

Figure 6-S1a₂

Comparing RMI during suppression against 0

```
# LMM gives singular fits, even with a single random intercept for neurons.  
# We do ordinary regression instead:  
lm.a2.1 = lm(suppressionrmi ~ 1, data = tbw %>% drop_na(suppressionrmi))  
  
display(lm.a2.1)
```

```
## lm(formula = suppressionrmi ~ 1, data = tbw %>% drop_na(suppressionrmi))  
##           coef.est coef.se  
## (Intercept) -0.12      0.04  
## ---  
## n = 51, k = 1  
## residual sd = 0.30, R-Squared = 0.00
```

Mean burst ratio RMI

Suppression: RMI = -0.12 ± 0.08
n = 34 neurons from 3 mice

Figure 6-S1b₁

Slope of regression line

```
# Random intercept for neurons,  
# random intercept for experiments  
lmer.b1.1 = lmer(runfmi ~ sitfmi + (1 | uid) + (1 | eid),  
               data = tbw %>% drop_na(runfmi, sitfmi))  
  
display(lmer.b1.1)  
  
## lmer(formula = runfmi ~ sitfmi + (1 | uid) + (1 | eid), data = tbw %>%  
##   drop_na(runfmi, sitfmi))  
##           coef.est coef.se  
## (Intercept) 0.04    0.03  
## sitfmi      0.52    0.09  
##  
## Error terms:  
## Groups   Name      Std.Dev.  
## uid      (Intercept) 0.09  
## eid      (Intercept) 0.06  
## Residual                0.12  
## ---  
## number of obs: 57, groups: uid, 37; eid, 9  
## AIC = -35.7, DIC = -62.2  
## deviance = -53.9  
  
anova(lmer.b1.1)  
  
## Type III Analysis of Variance Table with Satterthwaite's method  
##           Sum Sq Mean Sq NumDF  DenDF F value    Pr(>F)  
## sitfmi 0.45992 0.45992     1 47.435  33.468 5.525e-07 ***  
## ---  
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1  
  
Slope of  $0.52 \pm 0.18$   
n = 37 neurons from 4 mice
```

Figure 6-S1b₂

Slope of regression line

```
# Random intercept for neurons,  
# random intercept for experiments, nested in series  
lmer.b2.1 = lmer(runfmi ~ sitfmi + (1 | uid) + (1 | sid/eid),  
               data = tbw %>% drop_na(runfmi, sitfmi))  
  
display(lmer.b2.1)  
  
## lmer(formula = runfmi ~ sitfmi + (1 | uid) + (1 | sid/eid), data = tbw %>%  
##   drop_na(runfmi, sitfmi))  
##           coef.est coef.se  
## (Intercept) -0.28    0.16  
## sitfmi      0.52    0.16  
##  
## Error terms:  
## Groups   Name      Std.Dev.  
## uid      (Intercept) 0.21  
## eid:sid  (Intercept) 0.11  
## sid      (Intercept) 0.27  
## Residual                0.19  
## ---  
## number of obs: 51, groups: uid, 33; eid:sid, 7; sid, 5  
## AIC = 36.2, DIC = 16.1  
## deviance = 20.2  
  
anova(lmer.b2.1)  
  
## Type III Analysis of Variance Table with Satterthwaite's method  
##           Sum Sq Mean Sq NumDF  DenDF F value  Pr(>F)  
## sitfmi 0.36662 0.36662     1 30.117  10.076 0.003451 **  
## ---  
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1  
  
Slope of  $0.52 \pm 0.33$   
n = 33 neurons from 3 mice
```

Figure 6-S1c₁

Slope of regression line

```
# Random intercept for neurons,  
# random intercept for experiments  
lmer.c1.1 = lmer(fmi ~ rmi + (1 | uid) + (1 | eid),  
               data = tbw %>% drop_na(fmi, rmi))  
  
display(lmer.c1.1)  
  
## lmer(formula = fmi ~ rmi + (1 | uid) + (1 | eid), data = tbw %>%  
##   drop_na(fmi, rmi))  
##           coef.est coef.se  
## (Intercept) 0.01      0.05  
## rmi          0.18      0.14  
##  
## Error terms:  
## Groups   Name      Std.Dev.  
## uid      (Intercept) 0.19  
## eid      (Intercept) 0.09  
## Residual                0.09  
## ---  
## number of obs: 57, groups: uid, 37; eid, 9  
## AIC = -16.2, DIC = -39.3  
## deviance = -32.8  
  
anova(lmer.c1.1)  
  
## Type III Analysis of Variance Table with Satterthwaite's method  
##      Sum Sq Mean Sq NumDF DenDF F value Pr(>F)  
## rmi 0.013502 0.013502     1 38.356  1.6842 0.2021
```

Slope of 0.18 ± 0.27

n = 37 neurons from 4 mice

Figure 6-S1c₂

Slope of regression line

```
# Random intercept for neurons,  
# random intercept for experiments, nested in series  
lmer.c2.1 = lmer(fmi ~ rmi + (1 | uid) + (1 | sid/eid),  
               data = tbw %>% drop_na(fmi, rmi))  
  
display(lmer.c2.1)  
  
## lmer(formula = fmi ~ rmi + (1 | uid) + (1 | sid/eid), data = tbw %>%  
##   drop_na(fmi, rmi))  
##           coef.est coef.se  
## (Intercept) -0.38      0.09  
## rmi          0.25      0.05  
##  
## Error terms:  
## Groups   Name          Std.Dev.  
## uid      (Intercept) 0.14  
## eid:sid (Intercept) 0.14  
## sid      (Intercept) 0.15  
## Residual                0.10  
## ---  
## number of obs: 51, groups: uid, 34; eid:sid, 7; sid, 5  
## AIC = -10, DIC = -36.3  
## deviance = -29.2  
  
anova(lmer.c2.1)  
  
## Type III Analysis of Variance Table with Satterthwaite's method  
##      Sum Sq Mean Sq NumDF DenDF F value    Pr(>F)  
## rmi 0.27033 0.27033     1 30.557  24.893 2.294e-05 ***  
## ---  
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1  
  
Slope of  $0.25 \pm 0.10$   
n = 34 neurons from 3 mice
```