Spacek et al., 2021, Figure 6-Supplement 1

Figure 6-S1a$_1$

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-S1a$_2$

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-S1b$_1$

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 ± 0.18
n = 37 neurons from 4 mice

Figure 6-S1b$_2$

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 ± 0.33
n = 33 neurons from 3 mice

Figure 6-S1c$_1$

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-S1c$_2$

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 ± 0.10
n = 34 neurons from 3 mice