

Figure 1-Supplement 5c

Effect of suppression on firing rate - movies

```
# Random intercept for neurons - including random slope gives singular fit
lmer.1_S5c = lmer(rates ~ feedback + (1 | uid),
                 data = tb %>% drop_na(rates))

display(lmer.1_S5c)

## lmer(formula = rates ~ feedback + (1 | uid), data = tb %>% drop_na(rates))
##           coef.est coef.se
## (Intercept) 8.30      1.50
## feedback    0.15      0.11
##
## Error terms:
## Groups   Name          Std.Dev.
## uid      (Intercept) 6.55
## Residual                4.58
## ---
## number of obs: 7600, groups: uid, 19
## AIC = 44844.9, DIC = 44836.9
## deviance = 44836.9

anova(lmer.1_S5c)

## Type III Analysis of Variance Table with Satterthwaite's method
##           Sum Sq Mean Sq NumDF DenDF F value Pr(>F)
## feedback 40.427  40.427     1  7580  1.9238 0.1655

Feedback: 8.45 spikes/s
Suppression: 8.30 spikes/s
n = 19 neurons from 1 mouse
```

Figure 1-Supplement 5d

Effect of suppression on burst ratio - movies

```
# Random intercept for neurons, including random slope gives singular fits
lmer.1_S5d = lmer(burstratios ~ feedback + (1 | uid),
                 data = tb %>% drop_na(burstratios))

display(lmer.1_S5d)
```

```
## lmer(formula = burstratios ~ feedback + (1 | uid), data = tb %>%
##   drop_na(burstratios))
##               coef.est coef.se
## (Intercept)  0.09      0.01
## feedback    0.01      0.00
##
## Error terms:
## Groups   Name          Std.Dev.
## uid      (Intercept)  0.05
## Residual                    0.20
## ---
## number of obs: 7442, groups: uid, 19
## AIC = -2986.2, DIC = -3025.9
## deviance = -3010.0
```

```
anova(lmer.1_S5d)
```

```
## Type III Analysis of Variance Table with Satterthwaite's method
##           Sum Sq Mean Sq NumDF DenDF F value Pr(>F)
## feedback 0.080736 0.080736     1  7422  2.0839 0.1489
```

Feedback: 0.096

Suppression: 0.089

n = 19 neurons from 1 mouse

Figure 1-Supplement 5h

Effect of suppression on firing rates - gratings

```
# Random intercept for neurons
lmer.1_S5h = lmer(rates ~ feedback + (1 | uid),
                 data = tb %>% drop_na(rates))

display(lmer.1_S5h)

## lmer(formula = rates ~ feedback + (1 | uid), data = tb %>% drop_na(rates))
##           coef.est coef.se
## (Intercept) 10.98      1.97
## feedback    -0.10      0.13
##
## Error terms:
## Groups   Name          Std.Dev.
## uid      (Intercept)  8.58
## Residual                    3.98
## ---
## number of obs: 3648, groups: uid, 19
## AIC = 20560.4, DIC = 20554.3
## deviance = 20553.3

anova(lmer.1_S5h)

## Type III Analysis of Variance Table with Satterthwaite's method
##           Sum Sq Mean Sq NumDF DenDF F value Pr(>F)
## feedback  9.0958  9.0958     1  3628  0.5749 0.4484

Feedback: 10.88 spikes/s
Suppression: 10.98 spikes/s
n = 19 neurons from 1 mouse
```

Figure 1-Supplement 5i

Effect of suppression on burst ratio - gratings

```
# Random intercept for neurons
lmer.1_S5i = lmer(burstratios ~ feedback + (1 | uid),
                 data = tb %>% drop_na(burstratios))

display(lmer.1_S5i)

## lmer(formula = burstratios ~ feedback + (1 | uid), data = tb %>%
##   drop_na(burstratios))
##               coef.est coef.se
## (Intercept)  0.02      0.01
## feedback    0.00      0.00
##
## Error terms:
## Groups   Name          Std.Dev.
## uid      (Intercept)  0.02
## Residual                0.06
## ---
## number of obs: 3527, groups: uid, 19
## AIC = -9690.5, DIC = -9737.2
## deviance = -9717.9

anova(lmer.1_S5i)

## Type III Analysis of Variance Table with Satterthwaite's method
##               Sum Sq   Mean Sq NumDF DenDF F value Pr(>F)
## feedback 0.0015428 0.0015428     1  3507  0.4213 0.5164

Feedback: 0.024
Suppression: 0.022
n = 19 neurons from 1 mouse
```