

6 Wk Tactile PNN Data

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Objective: Analyze 6 week tactile PNN data for collaborators

Step 1: Load needed packages

Step 2: Load in data

```
## X Cohort Condition Hemisphere Subregion Coordinates Map.ID Weight.1
## 1 0 061321B TacWT Left S1FL W1_1.3 19 0.5667325
## 2 1 061321B TacWT Left S1FL W1_1.4 20 0.5856841
## 3 2 061321B TacWT Left S1FL W1_1.2 21 0.6518424
## 4 3 061321B TacWT Left S1FL W1_2.1 22 0.6346161
## 5 4 061321B TacWT Left S1FL W1_2.2 23 0.6411017
## 6 5 061321B TacWT Left S1FL W1_1.5 24 0.7851328
## Weight.2 Mean.1 Mean.2 Variance.1 Variance.2 CV.1 CV.2 Index
## 1 0.4332675 29.79667 49.49040 53.14950 216.5945 0.2446707 0.2973739 0
## 2 0.4143159 41.25821 77.14259 153.02783 390.2604 0.2998298 0.2560844 1
## 3 0.3481576 33.03414 69.02697 126.25457 519.1158 0.3401422 0.3300755 2
## 4 0.3653839 40.64023 76.07431 159.53430 395.2388 0.3107927 0.2613315 3
## 5 0.3588983 38.69946 56.54638 95.64333 173.9268 0.2527100 0.2332268 4
## 6 0.2148672 31.31389 65.44744 91.31340 352.9410 0.3051618 0.2870506 5
## X..Delta..Mean X..Delta..Weight
## 1 19.69373 -0.1334650
## 2 35.88438 -0.1713681
## 3 35.99283 -0.3036849
## 4 35.43408 -0.2692321
## 5 17.84693 -0.2822034
## 6 34.13354 -0.5702655
```

Step 3: ICC Analysis

a) ICC analysis for combined hemispheres, individual subregions

ICC for 6 Week S1BF Combined Hemi Tactile PNN Data

Cohort	Map.ID	Coordinates
0.5162284	0.05638876	0.228791

ICC for 6 Week S1DZ Combined Hemi Tactile PNN Data

Cohort	Map.ID	Coordinates
0.1831018	0.1635538	0.1353907

ICC for 6 Week S1FL Combined Hemi Tactile PNN Data

Cohort	Map.ID	Coordinates
0.2502474	0.2722491	0.1967779

ICC for 6 Week S1HL Combined Hemi Tactile PNN Data

Cohort	Map.ID	Coordinates
0.2176195	0.3022059	0.2385641

ICC for 6 Week S1ULp Combined Hemi Tactile PNN Data

Cohort	Map.ID	Coordinates
0.3021244	0.3094172	0.2461296

b) ICC analysis for individual hemispheres, individual subregions

ICC for 6 Week S1BF Left Hemi Tactile PNN Data

Cohort	Map.ID	Coordinates
0.5449337	0.05691704	0.1012423

ICC for 6 Week S1BF Right Hemi Tactile PNN Data

Cohort	Map.ID	Coordinates
0.4706432	0.014343	-0.05546864

ICC for 6 Week S1DZ Left Hemi Tactile PNN Data

Cohort	Map.ID	Coordinates
0.1858697	0.1104278	0.06025534

ICC for 6 Week S1DZ Right Hemi Tactile PNN Data

Cohort	Map.ID	Coordinates
0.1684043	0.1429072	-0.05740942

ICC for 6 Week S1FL Left Hemi Tactile PNN Data

Cohort	Map.ID	Coordinates
0.325401	0.2507404	0.1113421

ICC for 6 Week S1FL Right Hemi Tactile PNN Data

Cohort	Map.ID	Coordinates
0.1782867	0.2454207	0.03675291

ICC for 6 Week S1HL Left Hemi Tactile PNN Data

Cohort	Map.ID	Coordinates
0.2694574	0.2500394	-0.09702795

ICC for 6 Week S1HL Right Hemi Tactile PNN Data

Cohort	Map.ID	Coordinates
0.1350448	0.3313962	0.1270715

ICC for 6 Week S1ULp Left Hemi Tactile PNN Data

Cohort	Map.ID	Coordinates
0.2530241	0.317825	0.1456366

ICC for 6 Week S1ULp Right Hemi Tactile PNN Data

Cohort	Map.ID	Coordinates
0.3457177	0.2652795	0.07544994

c) ICC analysis for combined hemispheres and combined subregions

ICC for 6 Week All Subregions Tactile PNN Data

Cohort	Map.ID	Coordinates	Subregion
0.2233726	0.042357	0.1057458	0.2628402

d) ICC analysis for newest tac data and old naive PNN data combined. Individual subregions, combined hemispheres

ICC for 6 Week All Subregions Tactile and Old PNN Data

Cohort	Map.ID	Subregion
0.2107178	0.02237537	0.2144483

ICC for 6 Week S1BF Tactile and Old PNN Data

Cohort	Map.ID
0.4830066	0.07264867

ICC for 6 Week S1DZ Tactile and Old PNN Data

Cohort	Map.ID
0.2231721	0.07379301

ICC for 6 Week S1FL Tactile and Old PNN Data

Cohort	Map.ID
--------	--------

0.2310419	0.1405626
-----------	-----------

ICC for 6 Week S1HL Tactile and Old PNN Data

Cohort	Map.ID
0.1785152	0.1923938

ICC for 6 Week S1ULp Tactile and Old PNN Data

Cohort	Map.ID
0.2777698	0.2384932

e) Individual hemispheres, individual subregions

ICC for 6 Week S1BF Left Hemisphere Tactile and Old PNN Data

Cohort	Map.ID
0.5414044	0.1070884

ICC for 6 Week S1BF Right Hemisphere Tactile and Old PNN Data

Cohort	Map.ID
0.4352121	0.04662749

ICC for 6 Week S1DZ Left Hemisphere Tactile and Old PNN Data

Cohort	Map.ID
0.2351605	0.07948318

ICC for 6 Week S1DZ Right Hemisphere Tactile and Old PNN Data

Cohort	Map.ID
0.2106621	0.05156046

ICC for 6 Week S1FL Left Hemisphere Tactile and Old PNN Data

Cohort	Map.ID
0.3001613	0.1121419

ICC for 6 Week S1FL Right Hemisphere Tactile and Old PNN Data

Cohort	Map.ID
0.1631606	0.1503723

ICC for 6 Week S1HL Left Hemisphere Tactile and Old PNN Data

Cohort	Map.ID
0.2422167	0.1578011

ICC for 6 Week S1HL Right Hemisphere Tactile and Old PNN Data

Cohort	Map.ID
0.1271044	0.2331157

ICC for 6 Week S1ULp Left Hemisphere Tactile and Old PNN Data

Cohort	Map.ID
0.2691348	0.2479255

ICC for 6 Week S1ULp Right Hemisphere Tactile and Old PNN Data

Cohort	Map.ID
0.294939	0.2449984

Step 4: Building MLEs to look at the statistical significant when accounting for the confounding variables

a) Combined hemispheres, individual subregions

```
## Type III Analysis of Variance Table with Kenward-Roger's method
##           Sum Sq Mean Sq NumDF DenDF F value Pr(>F)
## Condition 138.23  138.23      1 221.03  4.1118 0.04379 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

## Data: pnn_data_s1bf
## Models:
## obj.lmer0.ml: Mean.2 ~ 1 + (1 | Cohort) + (1 | Coordinates)
## obj.lmer.ml: Mean.2 ~ Condition + (1 | Cohort) + (1 | Coordinates)
##           npar      AIC      BIC logLik deviance Chisq Df Pr(>Chisq)
## obj.lmer0.ml     4 1581.4 1595.3 -786.70   1573.4
## obj.lmer.ml      5 1579.3 1596.7 -784.66   1569.3 4.0963  1    0.04298 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

## Type III Analysis of Variance Table with Kenward-Roger's method
##           Sum Sq Mean Sq NumDF DenDF F value Pr(>F)
## Condition  38.459  38.459      1 244.2  0.6881 0.4076

## Data: pnn_data_sidz
## Models:
## obj.lmer0.ml: Mean.2 ~ 1 + (1 | Cohort) + (1 | Coordinates) + (1 | Map.ID)
## obj.lmer.ml: Mean.2 ~ Condition + (1 | Cohort) + (1 | Coordinates) + (1 | Map.ID)
##           npar      AIC      BIC logLik deviance Chisq Df Pr(>Chisq)
## obj.lmer0.ml     5 1960.5 1978.5 -975.22   1950.5
## obj.lmer.ml      6 1961.7 1983.4 -974.87   1949.7 0.7068  1    0.4005
```

```

## Type III Analysis of Variance Table with Kenward-Roger's method
##           Sum Sq Mean Sq NumDF DenDF F value Pr(>F)
## Condition 5.1476  5.1476      1 197.04  0.1122  0.738

## Data: pnn_data_slfl
## Models:
## obj.lmer0.ml: Mean.2 ~ 1 + (1 | Cohort) + (1 | Coordinates) + (1 | Map.ID)
## obj.lmer.ml: Mean.2 ~ Condition + (1 | Cohort) + (1 | Coordinates) + (1 | Map.ID)
##           npar      AIC      BIC logLik deviance Chisq Df Pr(>Chisq)
## obj.lmer0.ml     5 1551.5 1568.6 -770.77   1541.5
## obj.lmer.ml      6 1553.4 1573.8 -770.71   1541.4 0.1187  1    0.7304

## Type III Analysis of Variance Table with Kenward-Roger's method
##           Sum Sq Mean Sq NumDF DenDF F value Pr(>F)
## Condition 0.36147 0.36147      1 147.7  0.0097 0.9215

## Data: pnn_data_slhl
## Models:
## obj.lmer0.ml: Mean.2 ~ 1 + (1 | Cohort) + (1 | Coordinates) + (1 | Map.ID)
## obj.lmer.ml: Mean.2 ~ Condition + (1 | Cohort) + (1 | Coordinates) + (1 | Map.ID)
##           npar      AIC      BIC logLik deviance Chisq Df Pr(>Chisq)
## obj.lmer0.ml     5 1217.2 1233.0 -603.58   1207.2
## obj.lmer.ml      6 1219.2 1238.2 -603.58   1207.2 0.0113  1    0.9155

## Type III Analysis of Variance Table with Kenward-Roger's method
##           Sum Sq Mean Sq NumDF DenDF F value Pr(>F)
## Condition 548.27  548.27      1 261.51  10.229 0.001553 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

## Warning in checkConv(attr(opt, "derivs"), opt$par, ctrl = control$checkConv, :
## Model failed to converge with max|grad| = 0.00282761 (tol = 0.002, component 1)

## Data: pnn_data_slulp
## Models:
## obj.lmer0.ml: Mean.2 ~ 1 + (1 | Cohort) + (1 | Coordinates) + (1 | Map.ID)
## obj.lmer.ml: Mean.2 ~ Condition + (1 | Cohort) + (1 | Coordinates) + (1 | Map.ID)
##           npar      AIC      BIC logLik deviance Chisq Df Pr(>Chisq)
## obj.lmer0.ml     5 2080.5 2098.9 -1035.3   2070.5
## obj.lmer.ml      6 2072.3 2094.3 -1030.2   2060.3 10.201  1    0.001403 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

```

b) Individual hemispheres, individual subregions

```

## Type III Analysis of Variance Table with Kenward-Roger's method
##           Sum Sq Mean Sq NumDF DenDF F value Pr(>F)
## Condition 33.049  33.049      1 106.06  0.8533 0.3577

## Data: pnn_data_slbf_left
## Models:
## obj.lmer0.ml: Mean.2 ~ 1 + (1 | Cohort) + (1 | Coordinates)
## obj.lmer.ml: Mean.2 ~ Condition + (1 | Cohort) + (1 | Coordinates)
##           npar      AIC      BIC logLik deviance Chisq Df Pr(>Chisq)
## obj.lmer0.ml     4 848.08 859.45 -420.04   840.08
## obj.lmer.ml      5 849.21 863.43 -419.60   839.21 0.8699  1    0.351

## Type III Analysis of Variance Table with Kenward-Roger's method

```

```

##          Sum Sq Mean Sq NumDF  DenDF F value Pr(>F)
## Condition 112.39  112.39      1 109.05  2.7416 0.1006

## Data: pnn_data_slbf_right
## Models:
## obj.lmer0.ml: Mean.2 ~ 1 + (1 | Cohort)
## obj.lmer.ml: Mean.2 ~ Condition + (1 | Cohort)
##          npar    AIC    BIC logLik deviance Chisq Df Pr(>Chisq)
## obj.lmer0.ml    3 757.26 765.44 -375.63   751.26
## obj.lmer.ml     4 756.50 767.41 -374.25   748.50 2.7656 1 0.09631 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

## Type III Analysis of Variance Table with Kenward-Roger's method
##          Sum Sq Mean Sq NumDF  DenDF F value Pr(>F)
## Condition  8.3538  8.3538      1 128.16  0.1044 0.7471

## Data: pnn_data_sldz_left
## Models:
## obj.lmer0.ml: Mean.2 ~ 1 + (1 | Cohort) + (1 | Map.ID)
## obj.lmer.ml: Mean.2 ~ Condition + (1 | Cohort) + (1 | Map.ID)
##          npar    AIC    BIC logLik deviance Chisq Df Pr(>Chisq)
## obj.lmer0.ml    4 1076.4 1088.3 -534.22   1068.4
## obj.lmer.ml     5 1078.3 1093.2 -534.17   1068.3 0.1056 1 0.7452

## Type III Analysis of Variance Table with Kenward-Roger's method
##          Sum Sq Mean Sq NumDF  DenDF F value Pr(>F)
## Condition 58.932  58.932      1 110.61  1.0045 0.3184

## Data: pnn_data_sldz_right
## Models:
## obj.lmer0.ml: Mean.2 ~ 1 + (1 | Cohort) + (1 | Map.ID)
## obj.lmer.ml: Mean.2 ~ Condition + (1 | Cohort) + (1 | Map.ID)
##          npar    AIC    BIC logLik deviance Chisq Df Pr(>Chisq)
## obj.lmer0.ml    4 919.22 930.62 -455.61   911.22
## obj.lmer.ml     5 920.17 934.43 -455.08   910.17 1.0507 1 0.3054

## Type III Analysis of Variance Table with Kenward-Roger's method
##          Sum Sq Mean Sq NumDF  DenDF F value Pr(>F)
## Condition 37.017  37.017      1 79.287  0.9153 0.3416

## Data: pnn_data_slfl_left
## Models:
## obj.lmer0.ml: Mean.2 ~ 1 + (1 | Cohort) + (1 | Coordinates) + (1 | Map.ID)
## obj.lmer.ml: Mean.2 ~ Condition + (1 | Cohort) + (1 | Coordinates) + (1 | Map.ID)
##          npar    AIC    BIC logLik deviance Chisq Df Pr(>Chisq)
## obj.lmer0.ml    5 807.80 821.48 -398.90   797.80
## obj.lmer.ml     6 808.87 825.29 -398.44   796.87 0.9292 1 0.3351

## Type III Analysis of Variance Table with Kenward-Roger's method
##          Sum Sq Mean Sq NumDF  DenDF F value Pr(>F)
## Condition 80.043  80.043      1 90.227  1.5965 0.2097

## Data: pnn_data_slfl_right
## Models:
## obj.lmer0.ml: Mean.2 ~ 1 + (1 | Cohort) + (1 | Map.ID)
## obj.lmer.ml: Mean.2 ~ Condition + (1 | Cohort) + (1 | Map.ID)
##          npar    AIC    BIC logLik deviance Chisq Df Pr(>Chisq)

```

```

## obj.lmer0.ml      4 775.36 786.09 -383.68   767.36
## obj.lmer.ml       5 775.71 789.12 -382.86   765.71 1.6502  1      0.1989

## Type III Analysis of Variance Table with Kenward-Roger's method
##           Sum Sq Mean Sq NumDF  DenDF F value Pr(>F)
## Condition 5.5285  5.5285      1 77.402  0.1079 0.7435

## Data: pnn_data_sihl_left
## Models:
## obj.lmer0.ml: Mean.2 ~ 1 + (1 | Cohort) + (1 | Map.ID)
## obj.lmer.ml: Mean.2 ~ Condition + (1 | Cohort) + (1 | Map.ID)
##           npar      AIC      BIC logLik deviance Chisq Df Pr(>Chisq)
## obj.lmer0.ml      4 658.10 668.19 -325.05   650.10
## obj.lmer.ml       5 659.99 672.60 -325.00   649.99 0.1105  1      0.7395

## Type III Analysis of Variance Table with Kenward-Roger's method
##           Sum Sq Mean Sq NumDF  DenDF F value Pr(>F)
## Condition 6.1418  6.1418      1 53.659  0.1383 0.7114

## Data: pnn_data_sihl_right
## Models:
## obj.lmer0.ml: Mean.2 ~ 1 + (1 | Cohort) + (1 | Coordinates) + (1 | Map.ID)
## obj.lmer.ml: Mean.2 ~ Condition + (1 | Cohort) + (1 | Coordinates) + (1 | Map.ID)
##           npar      AIC      BIC logLik deviance Chisq Df Pr(>Chisq)
## obj.lmer0.ml      5 595.00 607.15 -292.50   585.00
## obj.lmer.ml       6 596.86 611.45 -292.43   584.86 0.1365  1      0.7118

## Type III Analysis of Variance Table with Kenward-Roger's method
##           Sum Sq Mean Sq NumDF  DenDF F value Pr(>F)
## Condition 106.56  106.56      1 114.67  2.0816 0.1518

## Data: pnn_data_slulp_left
## Models:
## obj.lmer0.ml: Mean.2 ~ 1 + (1 | Cohort) + (1 | Coordinates) + (1 | Map.ID)
## obj.lmer.ml: Mean.2 ~ Condition + (1 | Cohort) + (1 | Coordinates) + (1 | Map.ID)
##           npar      AIC      BIC logLik deviance Chisq Df Pr(>Chisq)
## obj.lmer0.ml      5 1091.5 1106.6 -540.73   1081.5
## obj.lmer.ml       6 1091.3 1109.5 -539.67   1079.3 2.1179  1      0.1456

## Type III Analysis of Variance Table with Kenward-Roger's method
##           Sum Sq Mean Sq NumDF  DenDF F value  Pr(>F)
## Condition 430.35  430.35      1 116.38  7.0524 0.009025 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

## Data: pnn_data_slulp_right
## Models:
## obj.lmer0.ml: Mean.2 ~ 1 + (1 | Cohort) + (1 | Map.ID)
## obj.lmer.ml: Mean.2 ~ Condition + (1 | Cohort) + (1 | Map.ID)
##           npar      AIC      BIC logLik deviance Chisq Df Pr(>Chisq)
## obj.lmer0.ml      4 1027.0 1038.7 -509.47   1019.0
## obj.lmer.ml       5 1021.9 1036.6 -505.97   1011.9 7.0074  1      0.008117 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

```

c) Combined hemispheres, all subregions

```
## Linear mixed-effects model fit by REML
```



```

## Data: pnn_data
##      AIC      BIC    logLik
## 9009.593 9029.954 -4500.797
##
## Random effects:
## Formula: ~1 | Cohort
##      (Intercept) Residual
## StdDev:    5.300233 10.20112
##
## Fixed effects: Mean.2 ~ Condition
##      Value Std.Error   DF   t-value p-value
## (Intercept)  63.06236 3.0930786 1198 20.388217  0.0000
## ConditionTacWT -1.29165 0.5954515 1198 -2.169194  0.0303
## Correlation:
##      (Intr)
## ConditionTacWT -0.11
##
## Standardized Within-Group Residuals:
##      Min      Q1      Med      Q3      Max
## -3.10557780 -0.64942962  0.09110946  0.72761922  3.43049461
##
## Number of Observations: 1202
## Number of Groups: 3
##
## Linear mixed-effects model fit by REML
## Data: pnn_data
##      AIC      BIC    logLik
## 9156.137 9176.498 -4574.069
##
## Random effects:
## Formula: ~1 | Coordinates
##      (Intercept) Residual
## StdDev:    3.929084 10.55196
##
## Fixed effects: Mean.2 ~ Condition
##      Value Std.Error   DF   t-value p-value
## (Intercept)  63.40809 0.7100159 1131 89.30517  0.0000
## ConditionTacWT -1.81020 0.6486940 1131 -2.79053  0.0054
## Correlation:
##      (Intr)
## ConditionTacWT -0.538
##
## Standardized Within-Group Residuals:
##      Min      Q1      Med      Q3      Max
## -2.98902843 -0.65980115  0.07651366  0.67236124  3.26151911
##
## Number of Observations: 1202
## Number of Groups: 70
##
## Linear mixed-effects model fit by REML
## Data: pnn_data
##      AIC      BIC    logLik
## 8926.815 8947.176 -4459.408
##
## Random effects:

```

```
## Formula: ~1 | Subregion
## (Intercept) Residual
## StdDev: 6.276551 9.818609
##
## Fixed effects: Mean.2 ~ Condition
## Value Std.Error DF t-value p-value
## (Intercept) 62.16913 2.8406410 1196 21.885599 0.0000
## ConditionTacWT -1.49253 0.5724703 1196 -2.607171 0.0092
## Correlation:
## (Intr)
## ConditionTacWT -0.115
##
## Standardized Within-Group Residuals:
## Min Q1 Med Q3 Max
## -3.22374321 -0.65549977 0.02063752 0.68111328 3.57942303
##
## Number of Observations: 1202
## Number of Groups: 5
```

d) Naive data from previous cohorts vs. the TacWT and TacHet data of the newest dataset

```
## Type III Analysis of Variance Table with Kenward-Roger's method
## Sum Sq Mean Sq NumDF DenDF F value Pr(>F)
## Condition 3089.8 1029.9 3 28.473 12.431 2.247e-05 ***
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

## Data: pnn_data_tac_and_naive
## Models:
## obj.lmer0.ml: Mean.2 ~ 1 + (1 | Cohort) + (1 | Subregion)
## obj.lmer.ml: Mean.2 ~ Condition + (1 | Cohort) + (1 | Subregion)
## npar AIC BIC logLik deviance Chisq Df Pr(>Chisq)
## obj.lmer0.ml 4 33036 33062 -16514 33028
## obj.lmer.ml 7 33003 33048 -16495 32989 38.952 3 1.776e-08 ***
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

## Linear mixed model fit by REML. t-tests use Kenward-Roger's method [
## lmerModLmerTest]
## Formula: Mean.2 ~ Condition + (1 | Cohort) + (1 | Subregion)
## Data: pnn_data_tac_and_naive
##
## REML criterion at convergence: 32981
##
## Scaled residuals:
## Min 1Q Median 3Q Max
## -3.8441 -0.6229 0.0183 0.6632 4.5195
##
## Random effects:
## Groups Name Variance Std.Dev.
## Cohort (Intercept) 25.90 5.089
## Subregion (Intercept) 32.49 5.700
## Residual 79.20 8.899
## Number of obs: 4567, groups: Cohort, 8; Subregion, 5
##
```

```

## Fixed effects:
##           Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)    64.9661    3.4244    9.0830  18.972 1.29e-08 ***
## ConditionNW    -1.7711    0.3074 4553.1560  -5.762 8.88e-09 ***
## ConditionTacHet -2.5685    3.7435    6.1065  -0.686  0.518
## ConditionTacWT  -3.7766    3.7383    6.0730  -1.010  0.351
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##           (Intr) CndtNW CndtTH
## ConditionNW -0.044
## ConditnTcHt -0.408  0.040
## ConditnTcWT -0.408  0.041  0.990

## contrast      estimate      SE df z.ratio p.value
## NH - NW        1.771 0.307 Inf  5.762 <.0001
## NH - TacHet     2.568 3.743 Inf  0.686 0.9024
## NH - TacWT      3.777 3.738 Inf  1.010 0.7434
## NW - TacHet     0.797 3.744 Inf  0.213 0.9966
## NW - TacWT      2.006 3.739 Inf  0.536 0.9502
## TacHet - TacWT  1.208 0.519 Inf  2.326 0.0922
##
## Degrees-of-freedom method: asymptotic
## P value adjustment: tukey method for comparing a family of 4 estimates

## contrast      estimate      SE df z.ratio p.value
## NH - NW        1.771 0.307 Inf  5.762 <.0001
## TacHet - NW    -0.797 3.744 Inf -0.213 0.9819
## TacWT - NW     -2.006 3.739 Inf -0.536 0.8795
##
## Degrees-of-freedom method: asymptotic
## P value adjustment: dunnett method for 3 tests

Individual hemispheres, individual conditions

## Type III Analysis of Variance Table with Kenward-Roger's method
##           Sum Sq Mean Sq NumDF  DenDF F value Pr(>F)
## Condition 88.531  29.51      3 27.846  0.7977 0.5057

## Data: pnn_data_tac_and_naive_s1bf_left
## Models:
## obj.lmer0.ml: Mean.2 ~ 1 + (1 | Cohort)
## obj.lmer.ml: Mean.2 ~ Condition + (1 | Cohort)
##           npar      AIC      BIC logLik deviance Chisq Df Pr(>Chisq)
## obj.lmer0.ml    3 3605.2 3618.2 -1799.6  3599.2
## obj.lmer.ml     6 3608.7 3634.6 -1798.3  3596.7 2.513  3      0.473

## Linear mixed model fit by REML. t-tests use Kenward-Roger's method [
## lmerModLmerTest]
## Formula: Mean.2 ~ Condition + (1 | Cohort)
## Data: pnn_data_tac_and_naive_s1bf_left
##
## REML criterion at convergence: 3585.9
##
## Scaled residuals:
##           Min           1Q       Median           3Q           Max

```

```

## -2.85714 -0.61522 0.05404 0.51599 3.00912
##
## Random effects:
## Groups Name Variance Std.Dev.
## Cohort (Intercept) 39.87 6.314
## Residual 35.36 5.946
## Number of obs: 557, groups: Cohort, 8
##
## Fixed effects:
## Estimate Std. Error df t value Pr(>|t|)
## (Intercept) 70.36727 2.85301 6.07233 24.664 2.55e-07 ***
## ConditionNW -0.71853 0.57508 547.04255 -1.249 0.212
## ConditionTacHet -0.06034 4.70095 6.29443 -0.013 0.990
## ConditionTacWT -1.09906 4.68078 6.18709 -0.235 0.822
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
## (Intr) CndtNW CndtTH
## ConditionNW -0.095
## ConditnTcHt -0.607 0.058
## ConditnTcWT -0.610 0.058 0.974

## contrast estimate SE df t.ratio p.value
## NH - NW 0.7185 0.575 547.04 1.249 0.5956
## NH - TacHet 0.0603 4.701 6.29 0.013 1.0000
## NH - TacWT 1.0991 4.681 6.19 0.235 0.9950
## NW - TacHet -0.6582 4.703 6.30 -0.140 0.9989
## NW - TacWT 0.3805 4.683 6.20 0.081 0.9998
## TacHet - TacWT 1.0387 1.073 547.11 0.968 0.7675
##
## Degrees-of-freedom method: kenward-roger
## P value adjustment: tukey method for comparing a family of 4 estimates

## contrast estimate SE df t.ratio p.value
## NH - NW 0.719 0.575 547.0 1.249 0.4533
## TacHet - NW 0.658 4.703 6.3 0.140 0.9924
## TacWT - NW -0.381 4.683 6.2 -0.081 0.9975
##
## Degrees-of-freedom method: kenward-roger
## P value adjustment: dunnett method for 3 tests

## Type III Analysis of Variance Table with Kenward-Roger's method
## Sum Sq Mean Sq NumDF DenDF F value Pr(>F)
## Condition 117.99 39.33 3 27.951 0.9293 0.4396

## Data: pnn_data_tac_and_naive_s1bf_right
## Models:
## obj.lmer0.ml: Mean.2 ~ 1 + (1 | Cohort)
## obj.lmer.ml: Mean.2 ~ Condition + (1 | Cohort)
## npair AIC BIC logLik deviance Chisq Df Pr(>Chisq)
## obj.lmer0.ml 3 3579.3 3592.1 -1786.6 3573.3
## obj.lmer.ml 6 3582.3 3608.1 -1785.1 3570.3 2.9722 3 0.3959

## Linear mixed model fit by REML. t-tests use Kenward-Roger's method [
## lmerModLmerTest]

```

```

## Formula: Mean.2 ~ Condition + (1 | Cohort)
## Data: pnn_data_tac_and_naive_s1bf_right
##
## REML criterion at convergence: 3559.6
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -2.37736 -0.71013 -0.04933  0.65619  2.38943
##
## Random effects:
## Groups Name Variance Std.Dev.
## Cohort (Intercept) 31.22 5.587
## Residual 40.46 6.360
## Number of obs: 542, groups: Cohort, 8
##
## Fixed effects:
## Estimate Std. Error df t value Pr(>|t|)
## (Intercept) 70.4067 2.5400 6.1221 27.719 1.14e-07 ***
## ConditionNW -0.1218 0.6155 532.0415 -0.198 0.843
## ConditionTacHet -0.2301 4.2014 6.4448 -0.055 0.958
## ConditionTacWT -2.2447 4.1858 6.3496 -0.536 0.610
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
## (Intr) CndtNW CndtTH
## ConditionNW -0.125
## ConditnTcHt -0.605 0.076
## ConditnTcWT -0.607 0.076 0.959

## contrast estimate SE df t.ratio p.value
## NH - NW 0.122 0.615 532.04 0.198 0.9973
## NH - TacHet 0.230 4.201 6.44 0.055 0.9999
## NH - TacWT 2.245 4.186 6.35 0.536 0.9471
## NW - TacHet 0.108 4.200 6.44 0.026 1.0000
## NW - TacWT 2.123 4.184 6.34 0.507 0.9545
## TacHet - TacWT 2.015 1.207 532.28 1.669 0.3414
##
## Degrees-of-freedom method: kenward-roger
## P value adjustment: tukey method for comparing a family of 4 estimates

## contrast estimate SE df t.ratio p.value
## NH - NW 0.122 0.615 532.04 0.198 0.9845
## TacHet - NW -0.108 4.200 6.44 -0.026 0.9998
## TacWT - NW -2.123 4.184 6.34 -0.507 0.8966
##
## Degrees-of-freedom method: kenward-roger
## P value adjustment: dunnett method for 3 tests

## Type III Analysis of Variance Table with Kenward-Roger's method
## Sum Sq Mean Sq NumDF DenDF F value Pr(>F)
## Condition 149.39 49.798 3 27.968 0.4604 0.7122

## Data: pnn_data_tac_and_naive_s1dz_left
## Models:
## obj.lmer0.ml: Mean.2 ~ 1 + (1 | Cohort)

```

```

## obj.lmer.ml: Mean.2 ~ Condition + (1 | Cohort)
##          npar      AIC      BIC logLik deviance Chisq Df Pr(>Chisq)
## obj.lmer0.ml    3 3839.4 3852.1 -1916.7  3833.4
## obj.lmer.ml     6 3843.8 3869.2 -1915.9  3831.8 1.6847  3    0.6403

## Linear mixed model fit by REML. t-tests use Kenward-Roger's method [
## lmerModLmerTest]
## Formula: Mean.2 ~ Condition + (1 | Cohort)
## Data: pnn_data_tac_and_naive_sldz_left
##
## REML criterion at convergence: 3819.4
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -2.7161 -0.6579 -0.0284  0.6794  3.5418
##
## Random effects:
## Groups   Name      Variance Std.Dev.
## Cohort   (Intercept) 28.03    5.294
## Residual                103.41  10.169
## Number of obs: 510, groups: Cohort, 8
##
## Fixed effects:
##              Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)    64.8650     2.4852   6.4636 26.101 8.53e-08 ***
## ConditionNW     -0.1275     1.0714 500.5442  -0.119   0.905
## ConditionTacHet -3.5894     4.1537   7.0952  -0.864   0.416
## ConditionTacWT  -4.6205     4.0914   6.6800  -1.129   0.298
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr) CndtNW CndtTH
## ConditionNW -0.209
## ConditnTcHt -0.598  0.125
## ConditnTcWT -0.607  0.127  0.913

## contrast      estimate    SE      df t.ratio p.value
## NH - NW         0.127  1.07 500.54   0.119  0.9994
## NH - TacHet     3.589  4.15   7.10   0.864  0.8229
## NH - TacWT      4.620  4.09   6.68   1.129  0.6854
## NW - TacHet     3.462  4.16   7.12   0.833  0.8377
## NW - TacWT      4.493  4.10   6.71   1.097  0.7029
## TacHet - TacWT  1.031  1.72 500.18   0.601  0.9318
##
## Degrees-of-freedom method: kenward-roger
## P value adjustment: tukey method for comparing a family of 4 estimates

## contrast      estimate    SE      df t.ratio p.value
## NH - NW         0.127  1.07 500.54   0.119  0.9945
## TacHet - NW     -3.462  4.16   7.12  -0.833  0.7362
## TacWT - NW      -4.493  4.10   6.71  -1.097  0.5885
##
## Degrees-of-freedom method: kenward-roger
## P value adjustment: dunnetttx method for 3 tests

```

```

## Type III Analysis of Variance Table with Kenward-Roger's method
##          Sum Sq Mean Sq NumDF  DenDF F value Pr(>F)
## Condition 966.93  322.31      3 28.095  3.3583 0.0327 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

## Data: pnn_data_tac_and_naive_sldz_right
## Models:
## obj.lmer0.ml: Mean.2 ~ 1 + (1 | Cohort)
## obj.lmer.ml: Mean.2 ~ Condition + (1 | Cohort)
##          npar      AIC      BIC logLik deviance Chisq Df Pr(>Chisq)
## obj.lmer0.ml      3 3505.8 3518.3 -1749.9   3499.8
## obj.lmer.ml       6 3501.0 3526.0 -1744.5   3489.0 10.761  3    0.01309 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

## Linear mixed model fit by REML. t-tests use Kenward-Roger's method [
## lmerModLmerTest]
## Formula: Mean.2 ~ Condition + (1 | Cohort)
##      Data: pnn_data_tac_and_naive_sldz_right
##
## REML criterion at convergence: 3477.4
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -3.2778 -0.6130  0.0504  0.6995  2.7050
##
## Random effects:
##  Groups   Name      Variance Std.Dev.
## Cohort    (Intercept) 19.95     4.467
## Residual                    91.78     9.580
## Number of obs: 472, groups: Cohort, 8
##
## Fixed effects:
##              Estimate Std. Error    df t value Pr(>|t|)
## (Intercept)    65.317     2.132   6.631  30.634 2.16e-08 ***
## ConditionNW    -3.028     1.035  462.224  -2.926  0.00361 **
## ConditionTacHet -4.908     3.588   7.478  -1.368  0.21101
## ConditionTacWT  -6.163     3.531   7.014  -1.746  0.12432
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr) CndtNW CndtTH
## ConditionNW -0.244
## ConditnTcHt -0.594  0.145
## ConditnTcWT -0.604  0.148  0.884

## contrast      estimate    SE      df t.ratio p.value
## NH - NW        3.03  1.03  462.22   2.926  0.0189
## NH - TacHet     4.91  3.59   7.48   1.368  0.5522
## NH - TacWT      6.16  3.53   7.01   1.746  0.3703
## NW - TacHet     1.88  3.59   7.47   0.524  0.9507
## NW - TacWT      3.14  3.53   7.00   0.888  0.8113
## TacHet - TacWT  1.26  1.72  462.73   0.731  0.8848

```

```

##
## Degrees-of-freedom method: kenward-roger
## P value adjustment: tukey method for comparing a family of 4 estimates

## contrast      estimate    SE      df t.ratio p.value
## NH - NW        3.03 1.03 462.22   2.926  0.0103
## TacHet - NW    -1.88 3.59   7.47 -0.524  0.8891
## TacWT - NW     -3.14 3.53   7.00 -0.888  0.7054
##
## Degrees-of-freedom method: kenward-roger
## P value adjustment: dunnettx method for 3 tests

## Type III Analysis of Variance Table with Kenward-Roger's method
##           Sum Sq Mean Sq NumDF  DenDF F value Pr(>F)
## Condition 187.98  62.659     3 27.693  0.7729  0.519

## Data: pnn_data_tac_and_naive_s1fl_left
## Models:
## obj.lmer0.ml: Mean.2 ~ 1 + (1 | Cohort)
## obj.lmer.ml: Mean.2 ~ Condition + (1 | Cohort)
##           npar      AIC      BIC logLik deviance Chisq Df Pr(>Chisq)
## obj.lmer0.ml     3 2947.0 2959.0 -1470.5   2941.0
## obj.lmer.ml      6 2950.4 2974.4 -1469.2   2938.4 2.6483  3    0.4491

## Linear mixed model fit by REML. t-tests use Kenward-Roger's method [
## lmerModLmerTest]
## Formula: Mean.2 ~ Condition + (1 | Cohort)
## Data: pnn_data_tac_and_naive_s1fl_left
##
## REML criterion at convergence: 2925.9
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -2.88917 -0.68923  0.03473  0.77185  2.28909
##
## Random effects:
## Groups Name Variance Std.Dev.
## Cohort (Intercept) 31.55  5.617
## Residual 77.49  8.803
## Number of obs: 406, groups: Cohort, 8
##
## Fixed effects:
##           Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)  65.383    2.613   6.356  25.026 1.37e-07 ***
## ConditionNW  -1.254    1.040  396.567  -1.205   0.229
## ConditionTacHet -4.785    4.355   6.900  -1.099   0.309
## ConditionTacWT  -4.124    4.303   6.581  -0.958   0.372
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##           (Intr) CndtNW CndtTH
## ConditionNW -0.187
## ConditnTcHt -0.600  0.112
## ConditnTcWT -0.607  0.114  0.925

```



```

## contrast      estimate    SE      df t.ratio p.value
## NH - NW       1.254 1.04 396.57   1.205 0.6239
## NH - TacHet   4.785 4.35   6.90   1.099 0.7016
## NH - TacWT    4.124 4.30   6.58   0.958 0.7764
## NW - TacHet   3.531 4.36   6.95   0.809 0.8482
## NW - TacWT    2.870 4.31   6.63   0.666 0.9065
## TacHet - TacWT -0.661 1.67 396.17 -0.395 0.9790
##
## Degrees-of-freedom method: kenward-roger
## P value adjustment: tukey method for comparing a family of 4 estimates

## contrast      estimate    SE      df t.ratio p.value
## NH - NW       1.25 1.04 396.57   1.205 0.4810
## TacHet - NW   -3.53 4.36   6.95  -0.809 0.7494
## TacWT - NW    -2.87 4.31   6.63  -0.666 0.8251
##
## Degrees-of-freedom method: kenward-roger
## P value adjustment: dunnett method for 3 tests

## Type III Analysis of Variance Table with Kenward-Roger's method
##           Sum Sq Mean Sq NumDF  DenDF F value  Pr(>F)
## Condition  1137      379      3 27.958  3.8079 0.02089 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

## Data: pnn_data_tac_and_naive_s1fl_right
## Models:
## obj.lmer0.ml: Mean.2 ~ 1 + (1 | Cohort)
## obj.lmer.ml: Mean.2 ~ Condition + (1 | Cohort)
##           npar      AIC      BIC logLik deviance Chisq Df Pr(>Chisq)
## obj.lmer0.ml    3 2878.3 2890.2 -1436.2  2872.3
## obj.lmer.ml     6 2872.2 2895.9 -1430.1  2860.2 12.128  3  0.006958 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

## Linear mixed model fit by REML. t-tests use Kenward-Roger's method [
## lmerModLmerTest]
## Formula: Mean.2 ~ Condition + (1 | Cohort)
## Data: pnn_data_tac_and_naive_s1fl_right
##
## REML criterion at convergence: 2848.3
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -3.1039 -0.6132  0.0877  0.7212  2.5377
##
## Random effects:
## Groups Name Variance Std.Dev.
## Cohort (Intercept) 17.17  4.143
## Residual 95.20  9.757
## Number of obs: 385, groups: Cohort, 8
##
## Fixed effects:
##           Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)    65.418      2.039   6.968  32.083 7.9e-09 ***
## ConditionNW    -3.702      1.179 375.803  -3.140 0.00183 **

```

```

## ConditionTacHet    -4.401      3.451    8.046   -1.275   0.23783
## ConditionTacWT     -6.196      3.387    7.454   -1.830   0.10741
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##          (Intr) CndtNW CndtTH
## ConditionNW -0.293
## ConditnTcHt -0.591  0.173
## ConditnTcWT -0.602  0.176  0.845

## contrast      estimate    SE      df t.ratio p.value
## NH - NW        3.702  1.18  375.80   3.140  0.0098
## NH - TacHet     4.401  3.45    8.05   1.275  0.6014
## NH - TacWT      6.196  3.39    7.45   1.830  0.3318
## NW - TacHet     0.699  3.45    8.02   0.203  0.9968
## NW - TacWT      2.494  3.38    7.43   0.737  0.8794
## TacHet - TacWT  1.795  1.91  376.34   0.942  0.7824
##
## Degrees-of-freedom method: kenward-roger
## P value adjustment: tukey method for comparing a family of 4 estimates

## contrast      estimate    SE      df t.ratio p.value
## NH - NW        3.702  1.18  375.80   3.140  0.0053
## TacHet - NW    -0.699  3.45    8.02  -0.203  0.9839
## TacWT - NW     -2.494  3.38    7.43  -0.737  0.7875
##
## Degrees-of-freedom method: kenward-roger
## P value adjustment: dunnetttx method for 3 tests

## Type III Analysis of Variance Table with Kenward-Roger's method
##          Sum Sq Mean Sq NumDF  DenDF F value Pr(>F)
## Condition  221.79  73.929     3  27.706  1.0515 0.3855

## Data: pnn_data_tac_and_naive_s1hl_left
## Models:
## obj.lmer0.ml: Mean.2 ~ 1 + (1 | Cohort)
## obj.lmer.ml: Mean.2 ~ Condition + (1 | Cohort)
##          npar    AIC    BIC logLik deviance Chisq Df Pr(>Chisq)
## obj.lmer0.ml   3 2400.7 2412.1 -1197.3  2394.7
## obj.lmer.ml    6 2403.2 2426.1 -1195.6  2391.2 3.4531  3    0.3269

## Linear mixed model fit by REML. t-tests use Kenward-Roger's method [
## lmerModLmerTest]
## Formula: Mean.2 ~ Condition + (1 | Cohort)
## Data: pnn_data_tac_and_naive_s1hl_left
##
## REML criterion at convergence: 2379.4
##
## Scaled residuals:
##          Min         1Q       Median         3Q         Max
## -2.65949 -0.64778  0.07923  0.68358  2.92397
##
## Random effects:
## Groups   Name            Variance Std.Dev.
## Cohort   (Intercept)  21.39      4.625

```

```

## Residual          67.22    8.199
## Number of obs: 337, groups: Cohort, 8
##
## Fixed effects:
##              Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)    54.662     2.198    6.572  24.872 9.49e-08 ***
## ConditionNW     1.734     1.052  327.333   1.648   0.100
## ConditionTacHet -1.947     3.709   7.490  -0.525   0.615
## ConditionTacWT  -1.574     3.635   6.919  -0.433   0.678
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr) CndtNW CndtTH
## ConditionNW -0.236
## ConditnTcHt -0.593  0.140
## ConditnTcWT -0.605  0.143  0.888

## contrast      estimate    SE      df t.ratio p.value
## NH - NW        -1.734  1.05  327.33  -1.648  0.3531
## NH - TacHet     1.947  3.71   7.49   0.525  0.9505
## NH - TacWT      1.574  3.64   6.92   0.433  0.9708
## NW - TacHet     3.681  3.71   7.51   0.992  0.7583
## NW - TacWT      3.308  3.64   6.93   0.909  0.8009
## TacHet - TacWT  -0.373  1.74  327.36  -0.214  0.9965
##
## Degrees-of-freedom method: kenward-roger
## P value adjustment: tukey method for comparing a family of 4 estimates

## contrast      estimate    SE      df t.ratio p.value
## NH - NW        -1.73  1.05  327.33  -1.648  0.2418
## TacHet - NW     -3.68  3.71   7.51  -0.992  0.6447
## TacWT - NW      -3.31  3.64   6.93  -0.909  0.6938
##
## Degrees-of-freedom method: kenward-roger
## P value adjustment: dunnett method for 3 tests

## Type III Analysis of Variance Table with Kenward-Roger's method
##              Sum Sq Mean Sq NumDF  DenDF F value Pr(>F)
## Condition  281.64  93.879      3 28.509  1.0491  0.386

## Data: pnn_data_tac_and_naive_s1hl_right
## Models:
## obj.lmer0.ml: Mean.2 ~ 1 + (1 | Cohort)
## obj.lmer.ml: Mean.2 ~ Condition + (1 | Cohort)
##              npar      AIC      BIC logLik deviance Chisq Df Pr(>Chisq)
## obj.lmer0.ml     3 2374.5 2385.8 -1184.3  2368.5
## obj.lmer.ml      6 2377.0 2399.7 -1182.5  2365.0 3.4727  3    0.3243

## Linear mixed model fit by REML. t-tests use Kenward-Roger's method [
## lmerModLmerTest]
## Formula: Mean.2 ~ Condition + (1 | Cohort)
## Data: pnn_data_tac_and_naive_s1hl_right
##
## REML criterion at convergence: 2353.5
##

```

```

## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -2.5952 -0.7855  0.1061  0.7386  4.6290
##
## Random effects:
##      Groups   Name      Variance Std.Dev.
##      Cohort    (Intercept) 12.48    3.532
##      Residual                85.68    9.256
## Number of obs: 323, groups: Cohort, 8
##
## Fixed effects:
##              Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)    55.660      1.800    7.262  30.921 5.62e-09 ***
## ConditionNW     -1.784      1.201   313.419  -1.486    0.138
## ConditionTacHet  -4.070      3.129    9.314  -1.301    0.225
## ConditionTacWT   -3.009      3.038    8.257  -0.991    0.350
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr) CndtNW CndtTH
## ConditionNW -0.340
## ConditnTcHt -0.575  0.196
## ConditnTcWT -0.593  0.202  0.780
##
## contrast      estimate    SE      df t.ratio p.value
## NH - NW        1.78 1.20 313.42    1.486  0.4473
## NH - TacHet     4.07 3.13   9.31    1.301  0.5842
## NH - TacWT      3.01 3.04   8.26    0.991  0.7587
## NW - TacHet     2.29 3.12   9.25    0.732  0.8821
## NW - TacWT      1.23 3.03   8.20    0.404  0.9763
## TacHet - TacWT  -1.06 2.05 313.80   -0.518  0.9547
##
## Degrees-of-freedom method: kenward-roger
## P value adjustment: tukey method for comparing a family of 4 estimates
##
## contrast      estimate    SE      df t.ratio p.value
## NH - NW        1.78 1.20 313.42    1.486  0.3195
## TacHet - NW    -2.29 3.12   9.25   -0.732  0.7882
## TacWT - NW     -1.23 3.03   8.20   -0.404  0.9339
##
## Degrees-of-freedom method: kenward-roger
## P value adjustment: dunnett method for 3 tests
##
## Type III Analysis of Variance Table with Kenward-Roger's method
##              Sum Sq Mean Sq NumDF  DenDF F value    Pr(>F)
## Condition 2449.2  816.39      3 27.889  8.1657 0.0004666 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Data: pnn_data_tac_and_naive_s1ulp_left
## Models:
## obj.lmer0.ml: Mean.2 ~ 1 + (1 | Cohort)
## obj.lmer.ml: Mean.2 ~ Condition + (1 | Cohort)
##              npar      AIC      BIC logLik deviance Chisq Df Pr(>Chisq)
## obj.lmer0.ml      3 3966.0 3978.8 -1980.0  3960.0

```

```

## obj.lmer.ml      6 3946.8 3972.4 -1967.4   3934.8 25.195   3  1.405e-05 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

## Linear mixed model fit by REML. t-tests use Kenward-Roger's method [
## lmerModLmerTest]
## Formula: Mean.2 ~ Condition + (1 | Cohort)
##   Data: pnn_data_tac_and_naive_slulp_left
##
## REML criterion at convergence: 3922.2
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -3.3774 -0.7180 -0.0152  0.7410  2.4451
##
## Random effects:
##   Groups   Name                Variance Std.Dev.
##   Cohort   (Intercept)  35.55      5.962
##   Residual                    95.56      9.776
## Number of obs: 529, groups: Cohort, 8
##
## Fixed effects:
##              Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)    69.072     2.758    6.316  25.043 1.47e-07 ***
## ConditionNW    -4.978     1.014  519.459  -4.907 1.24e-06 ***
## ConditionTacHet -3.293     4.578    6.743  -0.719  0.496
## ConditionTacWT -5.160     4.533    6.480  -1.138  0.295
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr) CndtNW CndtTH
## ConditionNW -0.175
## ConditnTcHt -0.602  0.105
## ConditnTcWT -0.608  0.106  0.938

## contrast      estimate    SE      df t.ratio p.value
## NH - NW        4.978 1.01 519.46   4.907 <.0001
## NH - TacHet     3.293 4.58   6.74   0.719 0.8863
## NH - TacWT      5.160 4.53   6.48   1.138 0.6808
## NW - TacHet    -1.685 4.58   6.78  -0.367 0.9817
## NW - TacWT      0.182 4.54   6.51   0.040 1.0000
## TacHet - TacWT  1.867 1.61 519.22   1.160 0.6523
##
## Degrees-of-freedom method: kenward-roger
## P value adjustment: tukey method for comparing a family of 4 estimates

## contrast      estimate    SE      df t.ratio p.value
## NH - NW        4.978 1.01 519.46   4.907 <.0001
## TacHet - NW     1.685 4.58   6.78   0.367 0.9457
## TacWT - NW     -0.182 4.54   6.51  -0.040 0.9994
##
## Degrees-of-freedom method: kenward-roger
## P value adjustment: dunnetttx method for 3 tests
## Type III Analysis of Variance Table with Kenward-Roger's method

```

```

##          Sum Sq Mean Sq NumDF  DenDF F value  Pr(>F)
## Condition 1420.2  473.39      3 27.863   5.394 0.00469 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

## Data: pnn_data_tac_and_naive_slulp_right
## Models:
## obj.lmer0.ml: Mean.2 ~ 1 + (1 | Cohort)
## obj.lmer.ml: Mean.2 ~ Condition + (1 | Cohort)
##          npar      AIC      BIC logLik deviance Chisq Df Pr(>Chisq)
## obj.lmer0.ml      3 3722.4 3735.1 -1858.2   3716.4
## obj.lmer.ml       6 3711.7 3737.0 -1849.8   3699.7 16.789  3 0.0007811 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

## Linear mixed model fit by REML. t-tests use Kenward-Roger's method [
## lmerModLmerTest]
## Formula: Mean.2 ~ Condition + (1 | Cohort)
##   Data: pnn_data_tac_and_naive_slulp_right
##
## REML criterion at convergence: 3687.2
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -3.6448 -0.6029  0.0941  0.6748  3.0197
##
## Random effects:
##   Groups   Name      Variance Std.Dev.
##   Cohort   (Intercept) 37.41    6.116
##   Residual                83.89    9.159
## Number of obs: 506, groups: Cohort, 8
##
## Fixed effects:
##              Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)    69.1393     2.8211   6.3022  24.508 1.72e-07 ***
## ConditionNW    -3.2509     0.9578  496.0892  -3.394 0.000743 ***
## ConditionTacHet -0.4487     4.6672    6.6398  -0.096 0.926249
## ConditionTacWT  -4.0894     4.6408    6.4901  -0.881 0.409661
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr) CndtNW CndtTH
## ConditionNW -0.172
## ConditnTcHt -0.604  0.104
## ConditnTcWT -0.608  0.104  0.943

## contrast      estimate      SE      df t.ratio p.value
## NH - NW          3.251 0.958 496.09   3.394 0.0041
## NH - TacHet       0.449 4.667   6.64   0.096 0.9996
## NH - TacWT        4.089 4.641   6.49   0.881 0.8148
## NW - TacHet      -2.802 4.666   6.63  -0.601 0.9285
## NW - TacWT        0.839 4.640   6.48   0.181 0.9977
## TacHet - TacWT    3.641 1.570 496.40   2.319 0.0951
##

```

```
## Degrees-of-freedom method: kenward-roger
## P value adjustment: tukey method for comparing a family of 4 estimates

## contrast      estimate      SE      df t.ratio p.value
## NH - NW       3.251 0.958 496.09   3.394 0.0022
## TacHet - NW    2.802 4.666   6.63   0.601 0.8562
## TacWT - NW    -0.839 4.640   6.48  -0.181 0.9873
##
## Degrees-of-freedom method: kenward-roger
## P value adjustment: dunnettx method for 3 tests
```

e) Just individual subregions, hemispheres together

```
## Type III Analysis of Variance Table with Kenward-Roger's method
##           Sum Sq Mean Sq NumDF  DenDF F value Pr(>F)
## Condition 166.55  55.516      3 28.212  1.3824 0.2684

## Data: pnn_data_tac_and_naive_s1bf
## Models:
## obj.lmer0.ml: Mean.2 ~ 1 + (1 | Cohort)
## obj.lmer.ml: Mean.2 ~ Condition + (1 | Cohort)
##           npar      AIC      BIC logLik deviance Chisq Df Pr(>Chisq)
## obj.lmer0.ml    3 7171.6 7186.6 -3582.8   7165.6
## obj.lmer.ml     6 7173.3 7203.3 -3580.6   7161.3 4.3562 3    0.2255

## Linear mixed model fit by REML. t-tests use Kenward-Roger's method [
## lmerModLmerTest]
## Formula: Mean.2 ~ Condition + (1 | Cohort)
## Data: pnn_data_tac_and_naive_s1bf
##
## REML criterion at convergence: 7151.9
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -2.87379 -0.67844 -0.00816  0.54901  2.99766
##
## Random effects:
## Groups Name Variance Std.Dev.
## Cohort (Intercept) 35.05 5.920
## Residual 38.39 6.196
## Number of obs: 1099, groups: Cohort, 8
##
## Fixed effects:
##           Estimate Std. Error      df t value Pr(>|t|)
## (Intercept) 70.3876 2.6654 6.0483 26.408 1.77e-07 ***
## ConditionNW -0.4494 0.4232 1089.0273 -1.062 0.289
## ConditionTacHet -0.1572 4.3769 6.1850 -0.036 0.972
## ConditionTacWT -1.5997 4.3672 6.1303 -0.366 0.726
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##           (Intr) CndtNW CndtTH
## ConditionNW -0.079
## ConditnTcHt -0.609 0.048
## ConditnTcWT -0.610 0.048 0.983
```

```

## contrast      estimate      SE      df t.ratio p.value
## NH - NW       0.449 0.423 1089.03   1.062 0.7128
## NH - TacHet   0.157 4.377   6.18   0.036 1.0000
## NH - TacWT    1.600 4.367   6.13   0.366 0.9817
## NW - TacHet   -0.292 4.377   6.19  -0.067 0.9999
## NW - TacWT    1.150 4.367   6.13   0.263 0.9929
## TacHet - TacWT 1.442 0.809 1089.12   1.784 0.2817
##
## Degrees-of-freedom method: kenward-roger
## P value adjustment: tukey method for comparing a family of 4 estimates

## contrast      estimate      SE      df t.ratio p.value
## NH - NW       0.449 0.423 1089.03   1.062 0.5719
## TacHet - NW    0.292 4.377   6.19   0.067 0.9983
## TacWT - NW    -1.150 4.367   6.13  -0.263 0.9725
##
## Degrees-of-freedom method: kenward-roger
## P value adjustment: dunnett method for 3 tests

## Type III Analysis of Variance Table with Kenward-Roger's method
##           Sum Sq Mean Sq NumDF  DenDF F value Pr(>F)
## Condition  649.4  216.47     3 28.291  2.1083 0.1214

## Data: pnn_data_tac_and_naive_s1dz
## Models:
## obj.lmer0.ml: Mean.2 ~ 1 + (1 | Cohort)
## obj.lmer.ml: Mean.2 ~ Condition + (1 | Cohort)
##           npar      AIC      BIC logLik deviance Chisq Df Pr(>Chisq)
## obj.lmer0.ml     3 7326.4 7341.1 -3660.2   7320.4
## obj.lmer.ml      6 7325.6 7354.9 -3656.8   7313.6 6.8843  3    0.07568 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

## Linear mixed model fit by REML. t-tests use Kenward-Roger's method [
## lmerModLmerTest]
## Formula: Mean.2 ~ Condition + (1 | Cohort)
## Data: pnn_data_tac_and_naive_s1dz
##
## REML criterion at convergence: 7303
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -3.2403 -0.6701  0.0201  0.6678  3.9105
##
## Random effects:
## Groups Name Variance Std.Dev.
## Cohort (Intercept) 23.60  4.858
## Residual 98.16  9.907
## Number of obs: 982, groups: Cohort, 8
##
## Fixed effects:
##           Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)  65.1225     2.2368   6.2786  29.114 6.15e-08 ***
## ConditionNW  -1.5847     0.7462  972.2760  -2.124  0.0339 *
## ConditionTacHet -4.2849     3.7050   6.6465  -1.157  0.2873
## ConditionTacWT -5.3738     3.6736   6.4243  -1.463  0.1907

```



```

## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##      (Intr) CndtNW CndtTH
## ConditionNW -0.165
## ConditnTcHt -0.604  0.099
## ConditnTcWT -0.609  0.100  0.946

## contrast      estimate      SE      df t.ratio p.value
## NH - NW        1.58 0.746 972.28   2.124 0.1463
## NH - TacHet     4.28 3.705   6.65   1.157 0.6706
## NH - TacWT      5.37 3.674   6.42   1.463 0.5076
## NW - TacHet     2.70 3.706   6.65   0.729 0.8826
## NW - TacWT      3.79 3.675   6.43   1.031 0.7386
## TacHet - TacWT  1.09 1.216 972.20   0.896 0.8072
##
## Degrees-of-freedom method: kenward-roger
## P value adjustment: tukey method for comparing a family of 4 estimates

## contrast      estimate      SE      df t.ratio p.value
## NH - NW        1.58 0.746 972.28   2.124 0.0899
## TacHet - NW    -2.70 3.706   6.65  -0.729 0.7932
## TacWT - NW     -3.79 3.675   6.43  -1.031 0.6269
##
## Degrees-of-freedom method: kenward-roger
## P value adjustment: dunnett method for 3 tests

## Type III Analysis of Variance Table with Kenward-Roger's method
##      Sum Sq Mean Sq NumDF  DenDF F value Pr(>F)
## Condition 984.59   328.2     3 28.179  3.6222 0.02502 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

## Data: pnn_data_tac_and_naive_s1fl
## Models:
## obj.lmer0.ml: Mean.2 ~ 1 + (1 | Cohort)
## obj.lmer.ml: Mean.2 ~ Condition + (1 | Cohort)
##      npar      AIC      BIC logLik deviance Chisq Df Pr(>Chisq)
## obj.lmer0.ml    3 5813.6 5827.6 -2903.8   5807.6
## obj.lmer.ml     6 5808.0 5836.1 -2898.0   5796.0 11.582  3  0.008961 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

## Linear mixed model fit by REML. t-tests use Kenward-Roger's method [
## lmerModLmerTest]
## Formula: Mean.2 ~ Condition + (1 | Cohort)
##      Data: pnn_data_tac_and_naive_s1fl
##
## REML criterion at convergence: 5785.3
##
## Scaled residuals:
##      Min      1Q   Median      3Q      Max
## -3.5587 -0.6533  0.0991  0.7390  2.7158
##
## Random effects:

```

```

## Groups      Name      Variance Std.Dev.
## Cohort      (Intercept) 23.99    4.898
## Residual                86.62    9.307
## Number of obs: 791, groups: Cohort, 8
##
## Fixed effects:
##              Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)    65.4131     2.2591   6.2941  28.955 6.17e-08 ***
## ConditionNW    -2.5051     0.7853  781.6661  -3.190  0.00148 **
## ConditionTacHet -4.6405     3.7433   6.6721  -1.240  0.25691
## ConditionTacWT  -5.1451     3.7128   6.4575  -1.386  0.21178
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr) CndtNW CndtTH
## ConditionNW -0.169
## ConditnTcHt -0.604  0.102
## ConditnTcWT -0.608  0.103  0.943

## contrast      estimate      SE      df t.ratio p.value
## NH - NW        2.505 0.785 781.67    3.190  0.0080
## NH - TacHet     4.641 3.743   6.67    1.240  0.6249
## NH - TacWT      5.145 3.713   6.46    1.386  0.5472
## NW - TacHet     2.135 3.746   6.69    0.570  0.9378
## NW - TacWT      2.640 3.715   6.47    0.711  0.8896
## TacHet - TacWT  0.505 1.264 781.14    0.399  0.9784
##
## Degrees-of-freedom method: kenward-roger
## P value adjustment: tukey method for comparing a family of 4 estimates

## contrast      estimate      SE      df t.ratio p.value
## NH - NW        2.51 0.785 781.67    3.190  0.0043
## TacHet - NW     -2.14 3.746   6.69   -0.570  0.8698
## TacWT - NW      -2.64 3.715   6.47   -0.711  0.8028
##
## Degrees-of-freedom method: kenward-roger
## P value adjustment: dunnett method for 3 tests

## Type III Analysis of Variance Table with Kenward-Roger's method
##              Sum Sq Mean Sq NumDF DenDF F value Pr(>F)
## Condition 78.508  26.169      3 28.319  0.3252 0.8071

## Data: pnn_data_tac_and_naive_s1hl
## Models:
## obj.lmer0.ml: Mean.2 ~ 1 + (1 | Cohort)
## obj.lmer.ml: Mean.2 ~ Condition + (1 | Cohort)
##              npar      AIC      BIC logLik deviance Chisq Df Pr(>Chisq)
## obj.lmer0.ml     3 4765.5 4779.0 -2379.8  4759.5
## obj.lmer.ml      6 4770.3 4797.3 -2379.2  4758.3 1.1958 3      0.754

## Linear mixed model fit by REML. t-tests use Kenward-Roger's method [
## lmerModLmerTest]
## Formula: Mean.2 ~ Condition + (1 | Cohort)
## Data: pnn_data_tac_and_naive_s1hl
##

```

```

## REML criterion at convergence: 4748.1
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -3.0497 -0.6839  0.1334  0.7200  4.6815
##
## Random effects:
##   Groups   Name      Variance Std.Dev.
##   Cohort   (Intercept) 16.49    4.061
##   Residual                76.95    8.772
## Number of obs: 660, groups: Cohort, 8
##
## Fixed effects:
##              Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)   55.11093    1.90306   6.44125  28.959 4.58e-08 ***
## ConditionNW   -0.04738    0.79823  650.11974  -0.059   0.953
## ConditionTacHet -2.97808    3.18858    7.13706  -0.934   0.381
## ConditionTacWT -2.17600    3.14376    6.74427  -0.692   0.512
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr) CndtNW CndtTH
## ConditionNW -0.210
## ConditnTcHt -0.597  0.126
## ConditnTcWT -0.605  0.127  0.910
##
## contrast      estimate    SE      df t.ratio p.value
## NH - NW        0.0474 0.798 650.12   0.059 0.9999
## NH - TacHet     2.9781 3.189   7.14   0.934 0.7885
## NH - TacWT      2.1760 3.144   6.74   0.692 0.8968
## NW - TacHet     2.9307 3.188   7.13   0.919 0.7960
## NW - TacWT      2.1286 3.143   6.74   0.677 0.9024
## TacHet - TacWT  -0.8021 1.342 650.35  -0.598 0.9327
##
## Degrees-of-freedom method: kenward-roger
## P value adjustment: tukey method for comparing a family of 4 estimates
##
## contrast      estimate    SE      df t.ratio p.value
## NH - NW        0.0474 0.798 650.12   0.059 0.9987
## TacHet - NW    -2.9307 3.188   7.13  -0.919 0.6876
## TacWT - NW     -2.1286 3.143   6.74  -0.677 0.8193
##
## Degrees-of-freedom method: kenward-roger
## P value adjustment: dunnett method for 3 tests
##
## Type III Analysis of Variance Table with Kenward-Roger's method
##              Sum Sq Mean Sq NumDF DenDF F value    Pr(>F)
## Condition 3632.8  1210.9      3 28.21  12.807 1.837e-05 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Data: pnn_data_tac_and_naive_s1ulp
## Models:
## obj.lmer0.ml: Mean.2 ~ 1 + (1 | Cohort)
## obj.lmer.ml: Mean.2 ~ Condition + (1 | Cohort)

```

```

##               npar      AIC      BIC logLik deviance Chisq Df Pr(>Chisq)
## obj.lmerO.ml    3 7671.6 7686.4 -3832.8  7665.6
## obj.lmer.ml     6 7638.0 7667.7 -3813.0  7626.0 39.567  3 1.316e-08 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

## Linear mixed model fit by REML. t-tests use Kenward-Roger's method [
## lmerModLmerTest]
## Formula: Mean.2 ~ Condition + (1 | Cohort)
## Data: pnn_data_tac_and_naive_slulp
##
## REML criterion at convergence: 7614.9
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -3.6761 -0.6385  0.0470  0.7156  3.0531
##
## Random effects:
## Groups Name Variance Std.Dev.
## Cohort (Intercept) 36.09  6.007
## Residual          90.38  9.507
## Number of obs: 1035, groups: Cohort, 8
##
## Fixed effects:
##              Estimate Std. Error      df t value Pr(>|t|)
## (Intercept)   69.0804    2.7319   6.1596  25.287 1.86e-07 ***
## ConditionNW   -4.0640    0.6994 1025.2261  -5.810 8.32e-09 ***
## ConditionTacHet -1.8208    4.4958   6.3531  -0.405  0.699
## ConditionTacWT  -4.6532    4.4771   6.2484  -1.039  0.337
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Correlation of Fixed Effects:
##              (Intr) CndtNW CndtTH
## ConditionNW -0.125
## ConditnTcHt -0.608  0.076
## ConditnTcWT -0.610  0.077  0.969

## contrast      estimate    SE      df t.ratio p.value
## NH - NW         4.064 0.699 1025.23  5.810 <.0001
## NH - TacHet      1.821 4.496   6.35  0.405 0.9757
## NH - TacWT       4.653 4.477   6.25  1.039 0.7345
## NW - TacHet     -2.243 4.497   6.36 -0.499 0.9566
## NW - TacWT       0.589 4.478   6.25  0.132 0.9991
## TacHet - TacWT   2.832 1.126 1025.09  2.516 0.0581
##
## Degrees-of-freedom method: kenward-roger
## P value adjustment: tukey method for comparing a family of 4 estimates

## contrast      estimate    SE      df t.ratio p.value
## NH - NW         4.064 0.699 1025.23  5.810 <.0001
## TacHet - NW      2.243 4.497   6.36  0.499 0.9000
## TacWT - NW      -0.589 4.478   6.25 -0.132 0.9933
##
## Degrees-of-freedom method: kenward-roger

```

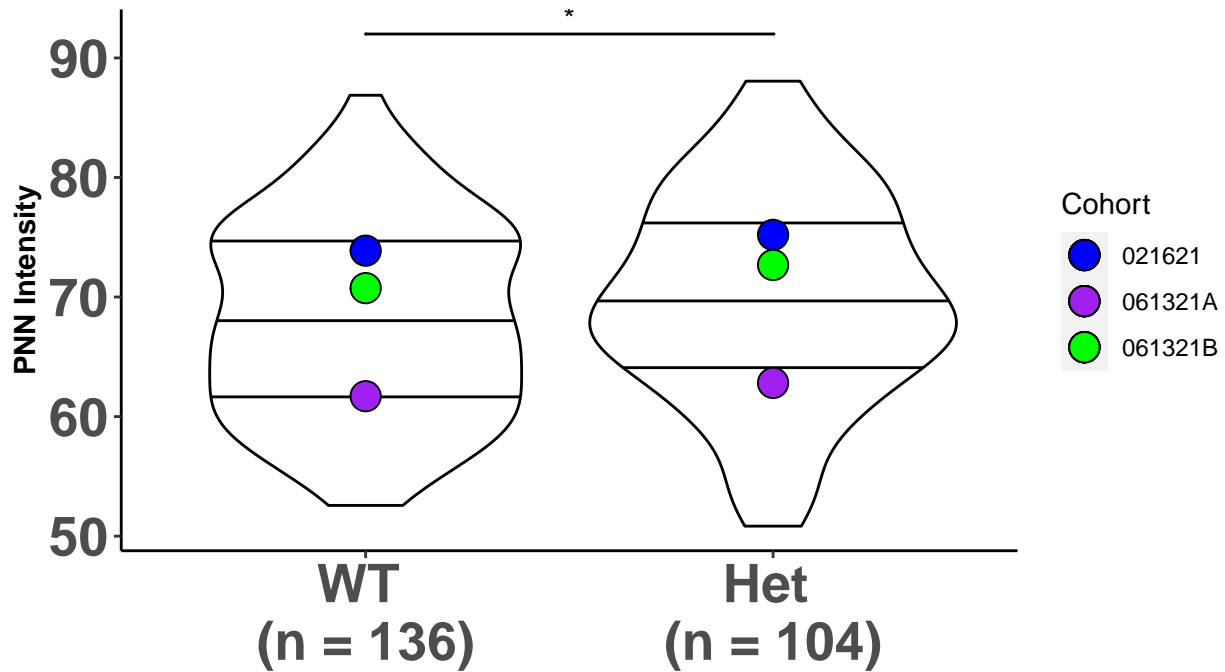
P value adjustment: dunnetttx method for 3 tests

Step 5: Plotting the LME Results between WT and Het (combined hemispheres, individual subregions)

a) S1BF subregion

6 Week Tactile S1BF Data

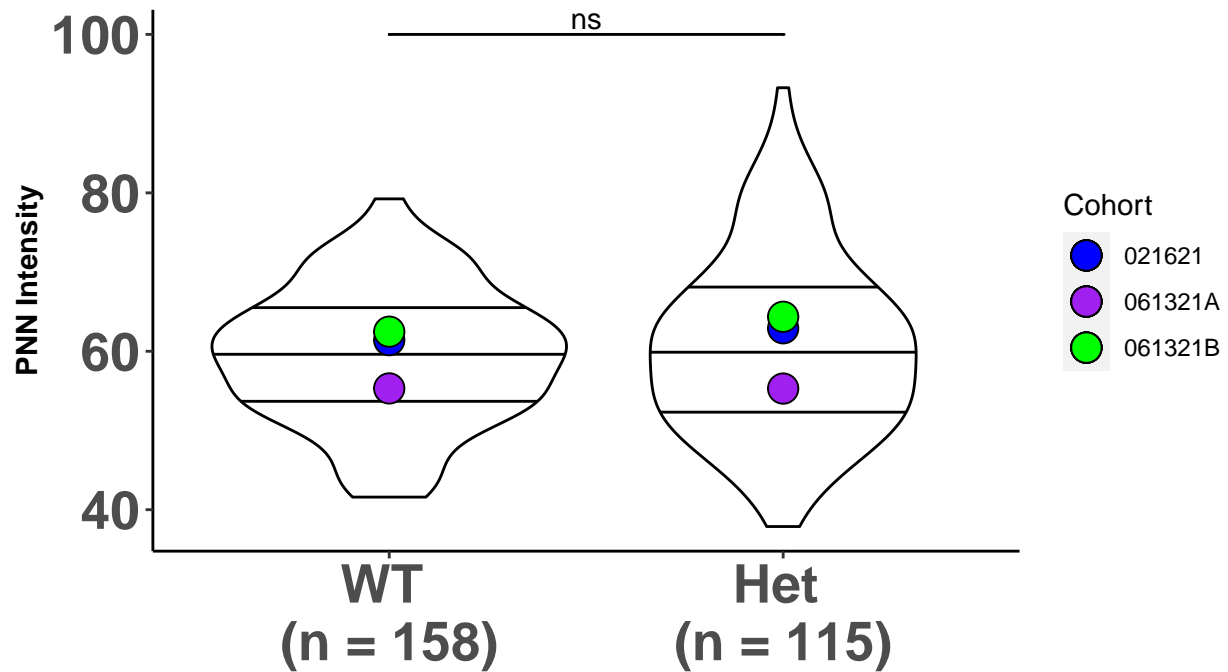
F-test, $F = 4.11$, $p = 0.04379$, $n = 240$



b) S1DZ subregion

6 Week Tactile S1DZ Data

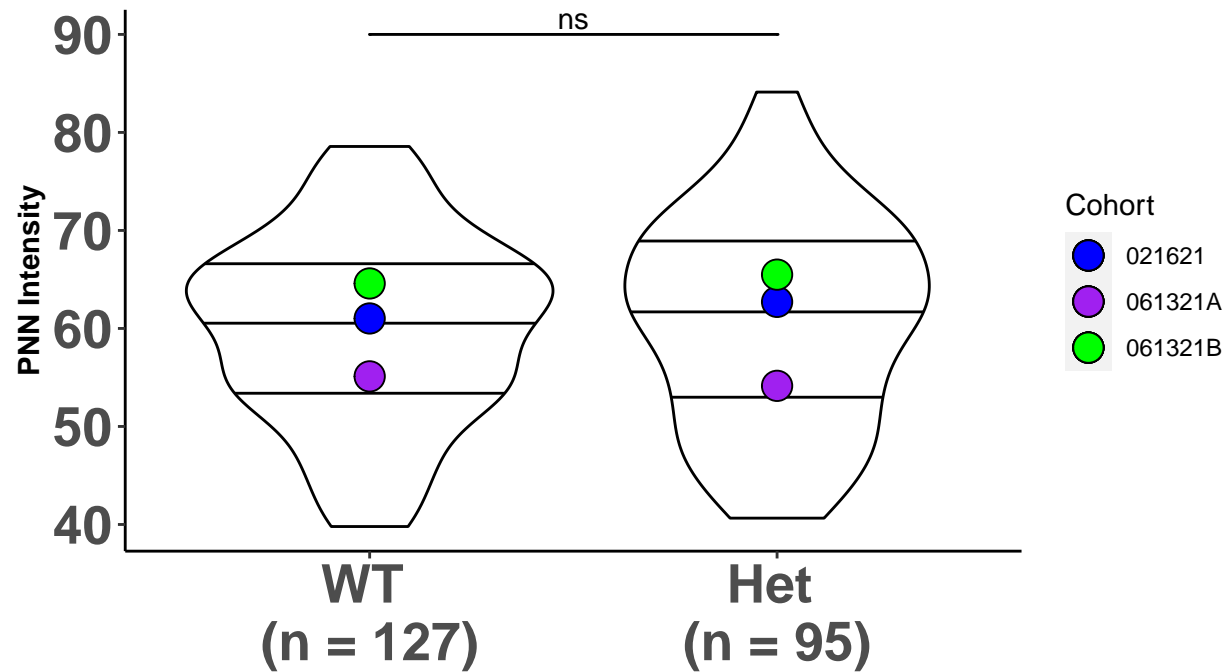
F-test, $F = 0.69$, $p = 0.4076$, $n = 273$



c) S1FL subregion

6 Week Tactile S1FL Data

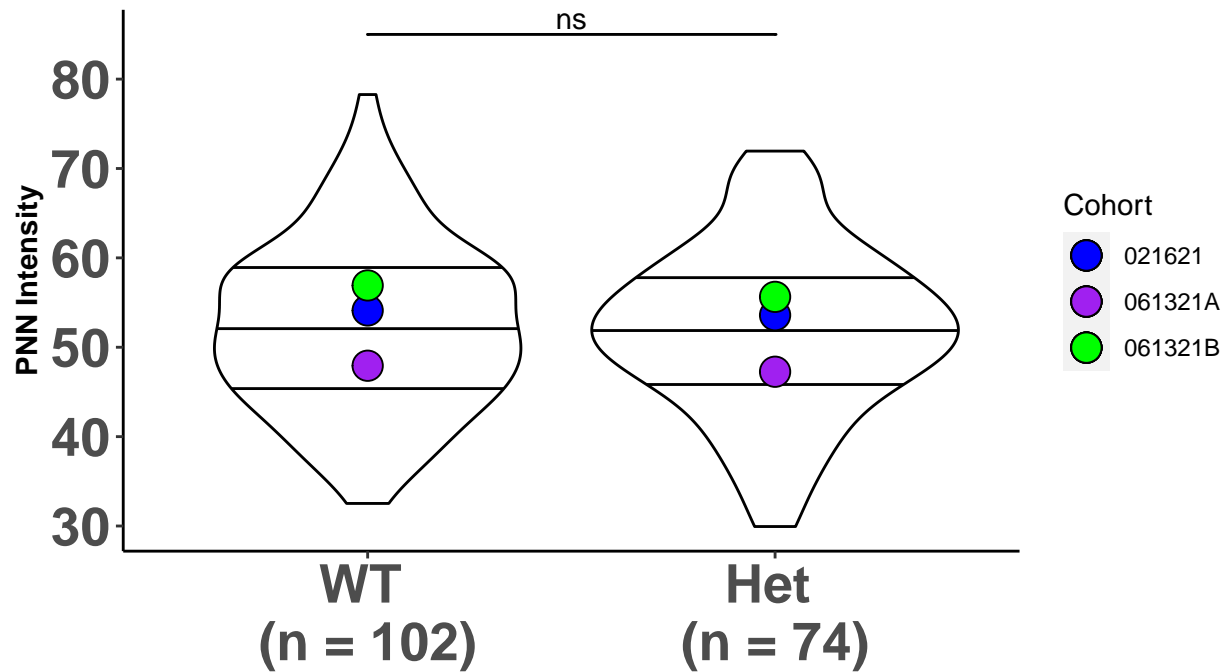
F-test, $F = 0.11$, $p = 0.738$, $n = 222$



d) S1HL Subregion

6 Week Tactile S1HL Data

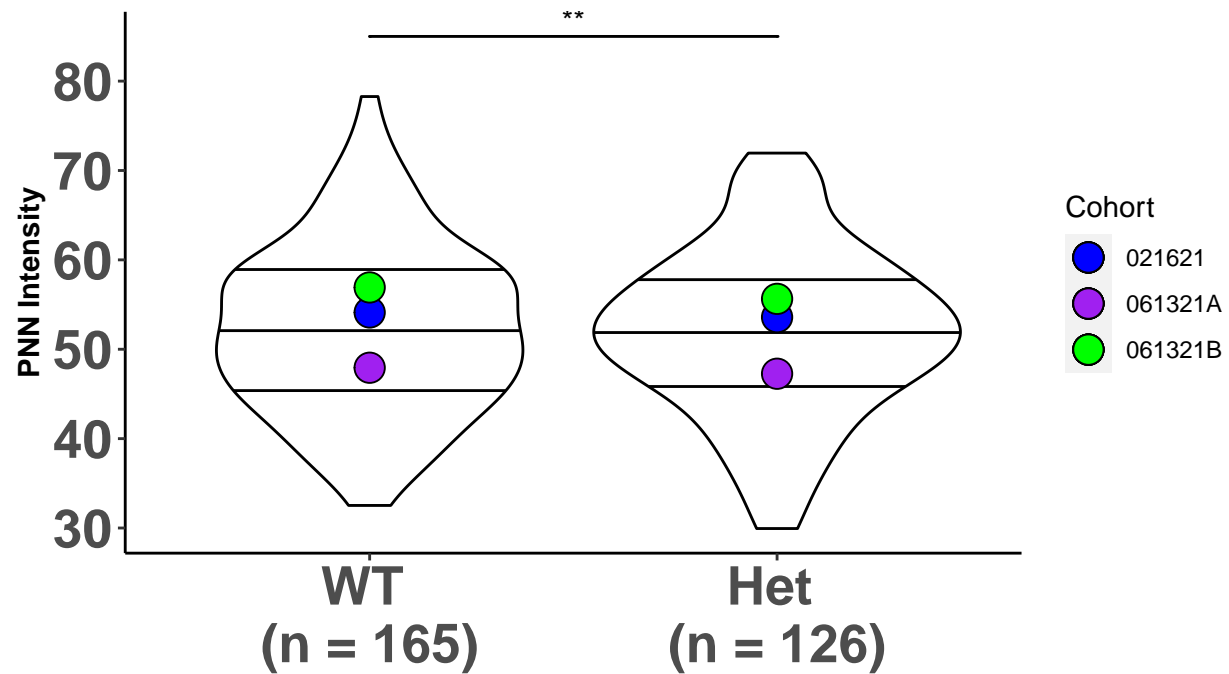
F-test, $F = 0.0097$, $p = 0.9215$, $n = 176$



e) S1ULp Subregion

6 Week Tactile S1ULp Data

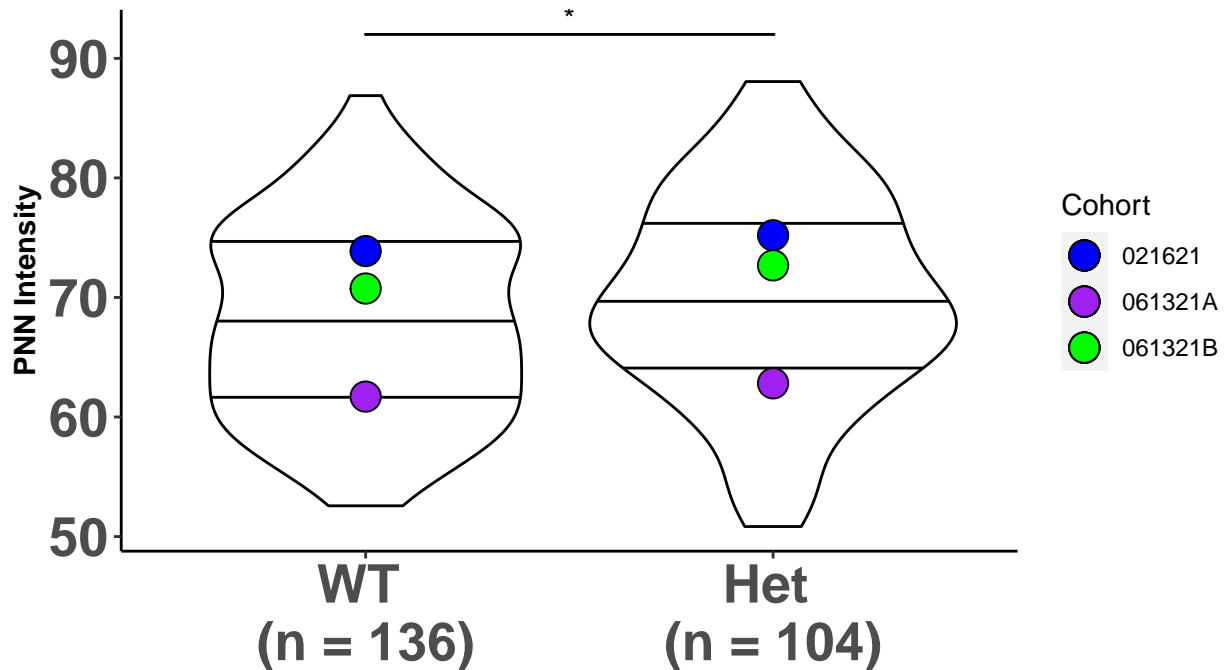
F-test, $F = 10.23$, $p = 0.001553$, $n = 291$



f) Saving the combined hemisphere, individual subregion plots to .png and .svg file formats

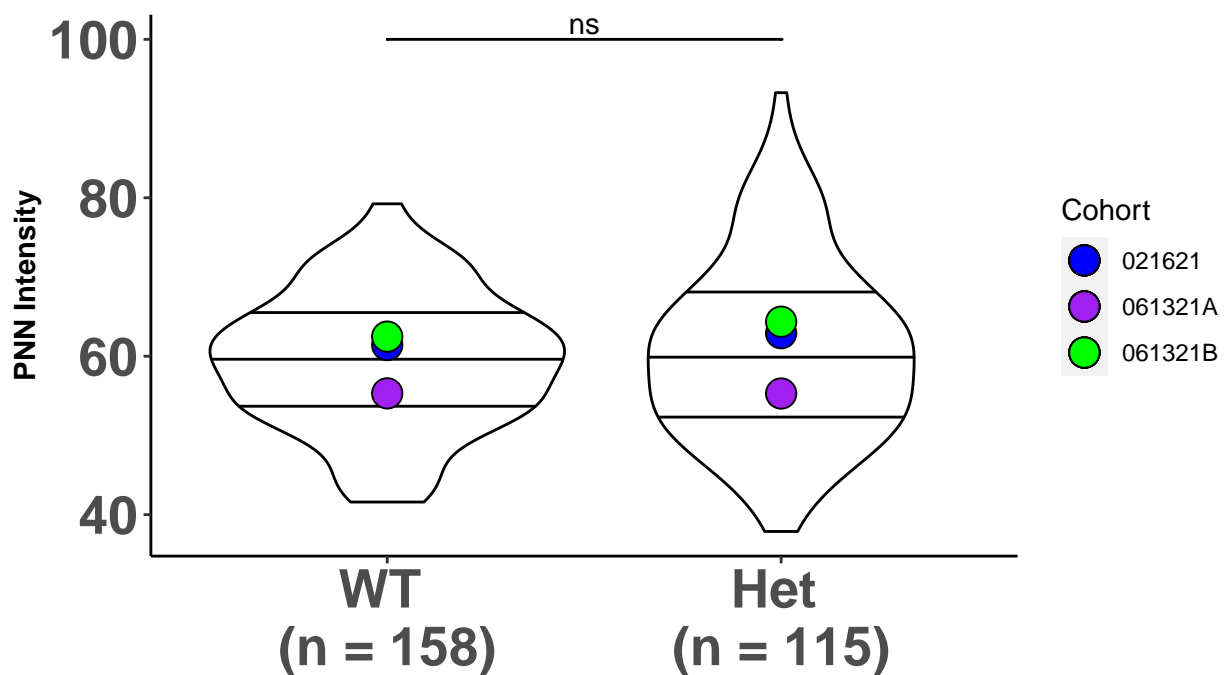
6 Week Tactile S1BF Data

F-test, $F = 4.11$, $p = 0.04379$, $n = 240$



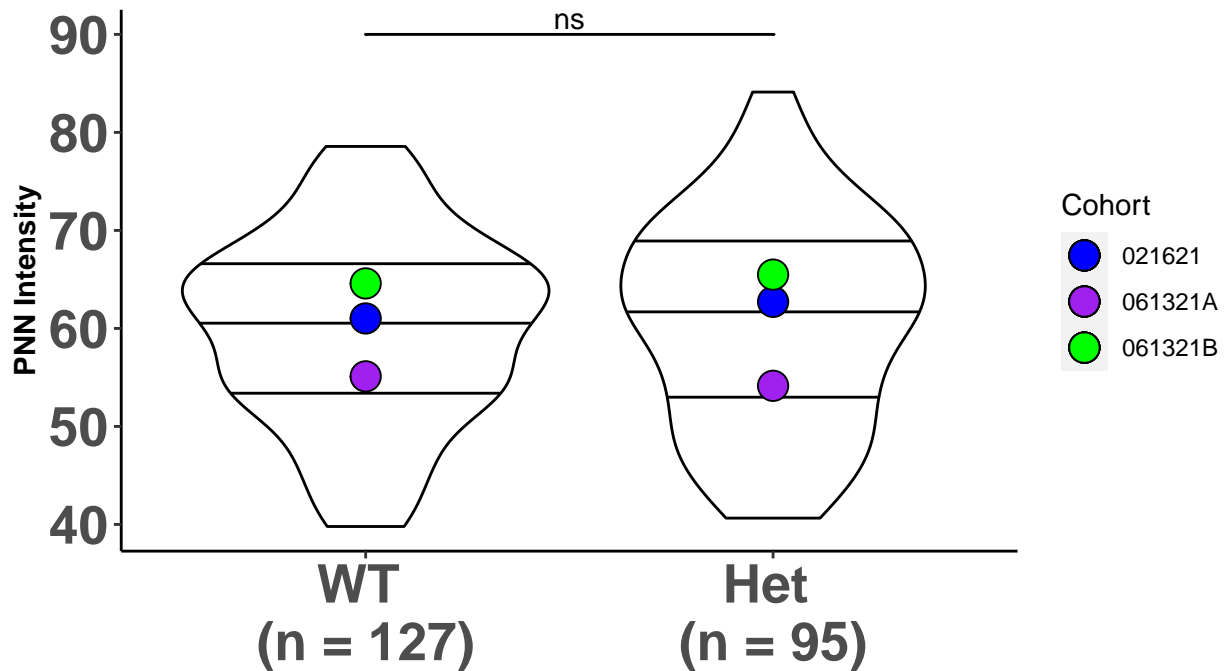
6 Week Tactile S1DZ Data

F-test, $F = 0.69$, $p = 0.4076$, $n = 273$



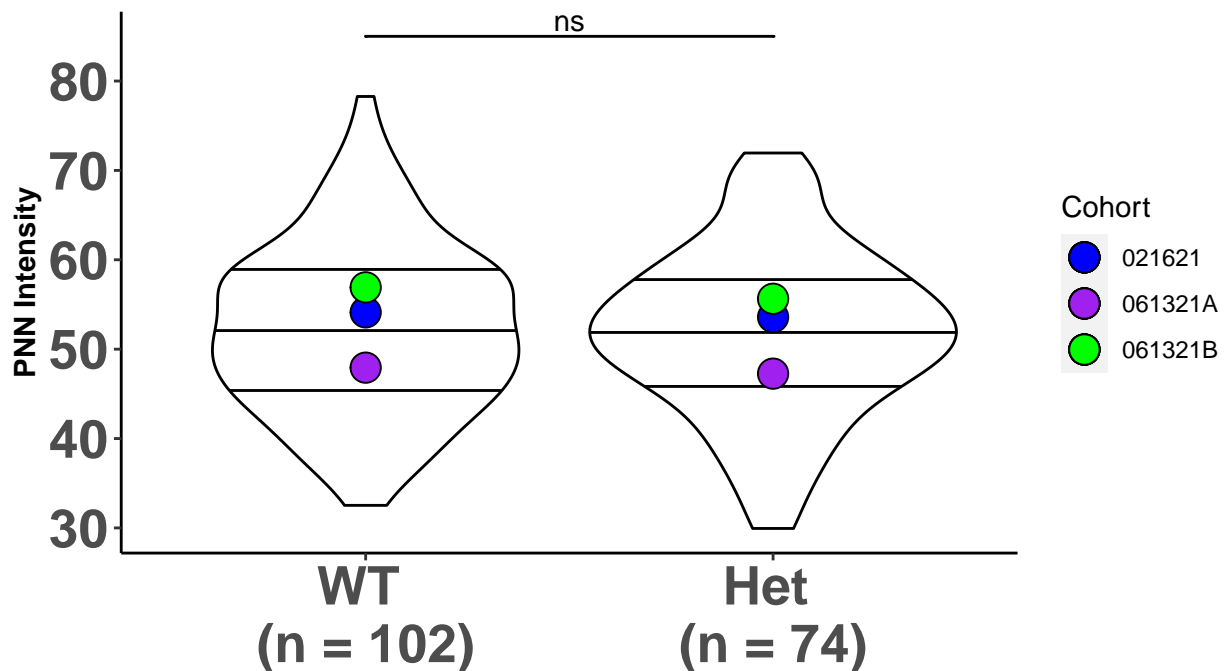
6 Week Tactile S1FL Data

F-test, $F = 0.11$, $p = 0.738$, $n = 222$



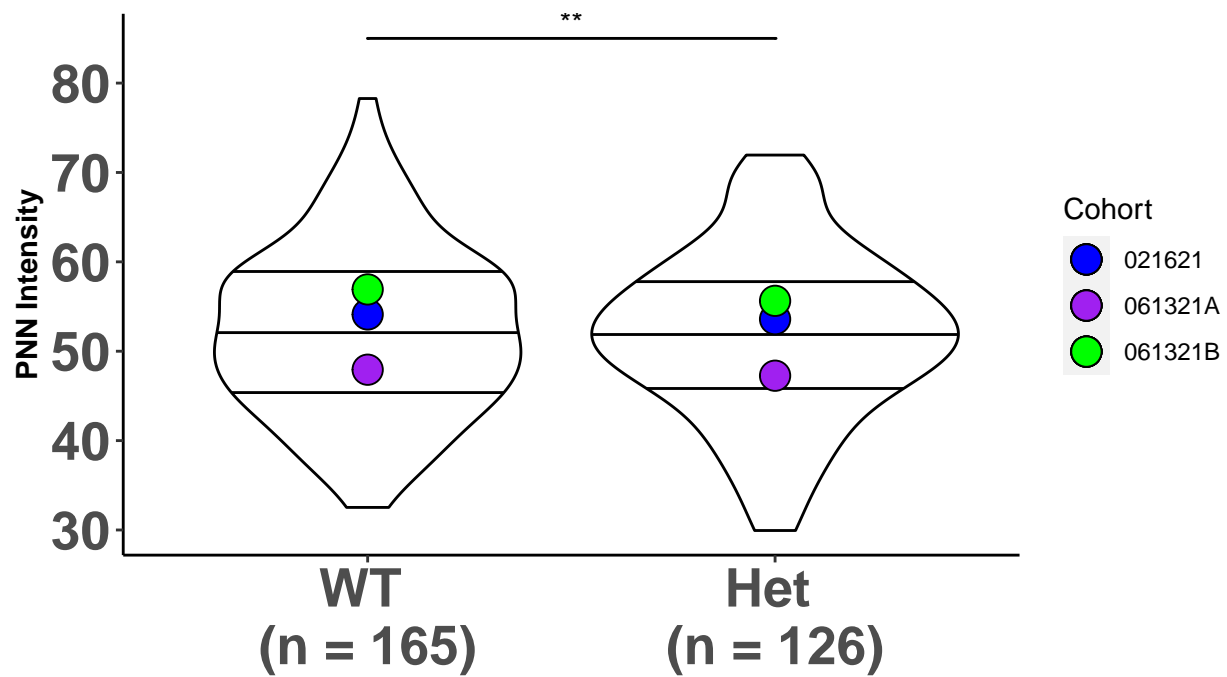
6 Week Tactile S1HL Data

F-test, $F = 0.0097$, $p = 0.9215$, $n = 176$



6 Week Tactile S1ULp Data

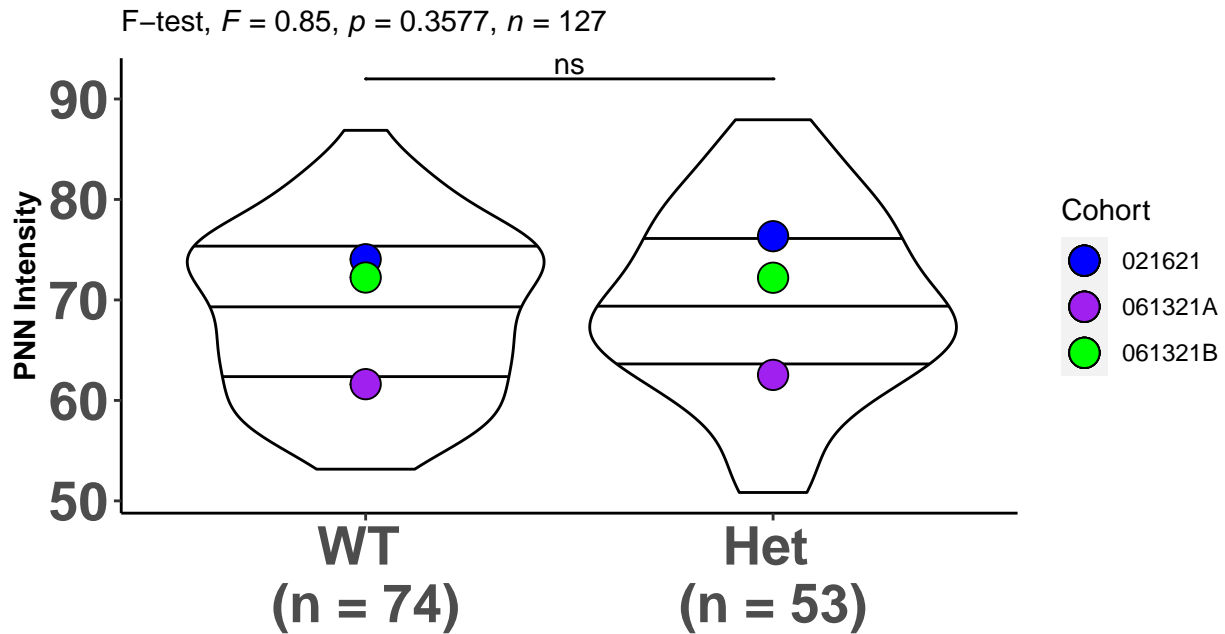
F-test, $F = 10.23$, $p = 0.001553$, $n = 291$



Step 6: Plotting the LME Results between WT and Het (individual hemispheres, individual subregions)

a) S1BF subregion, left hemisphere

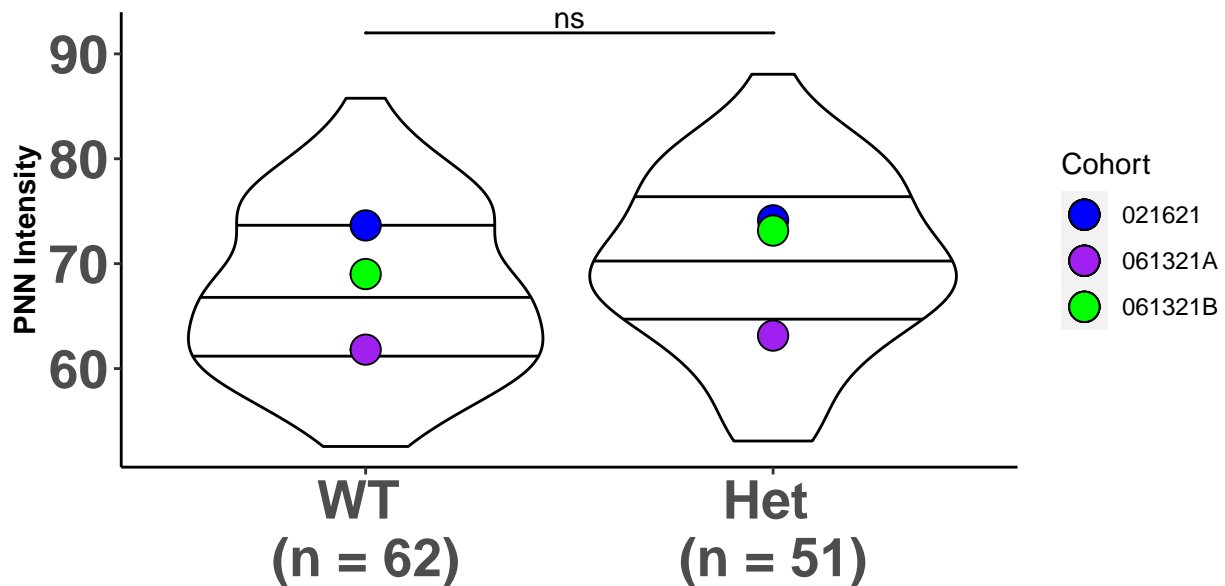
6 Week Tactile S1BF Left Hemisphere Data



b) S1BF subregion, right hemisphere

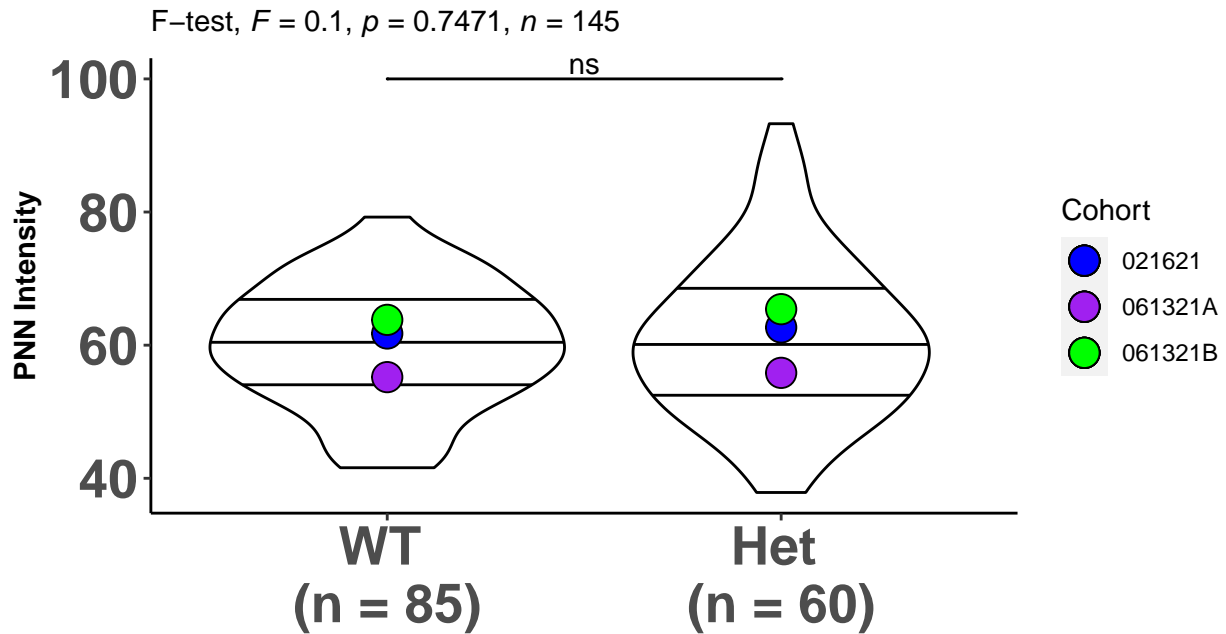
6 Week Tactile S1BF Right Hemisphere Data

F-test, $F = 2.74$, $p = 0.1006$, $n = 113$



c) S1DZ subregion, left hemisphere

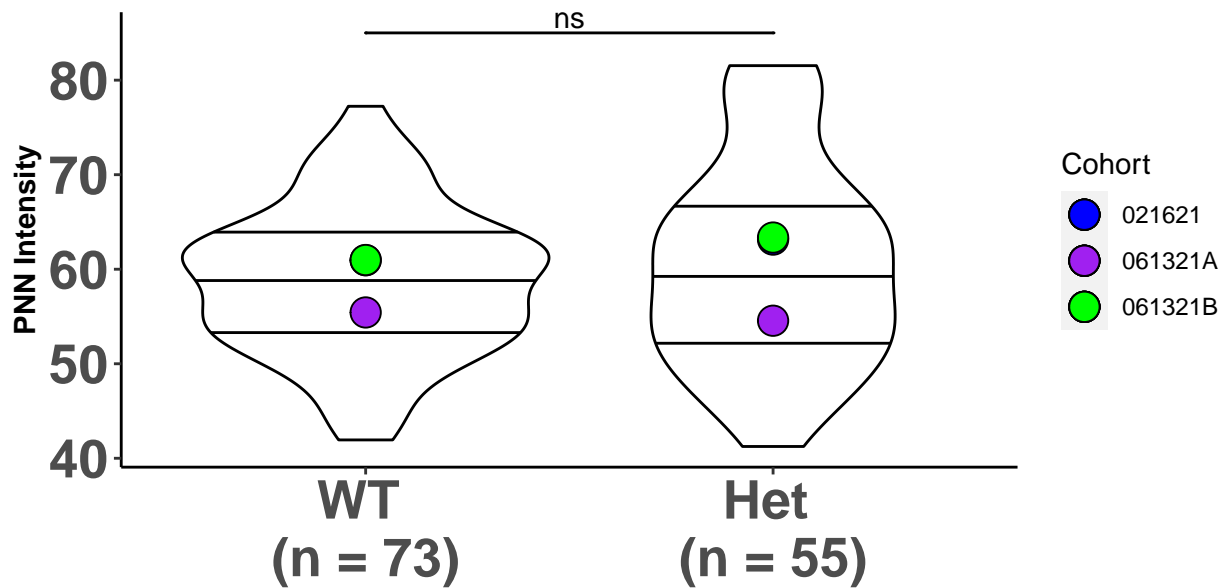
6 Week Tactile S1DZ Left Hemisphere Data



d) S1DZ subregion, right hemisphere

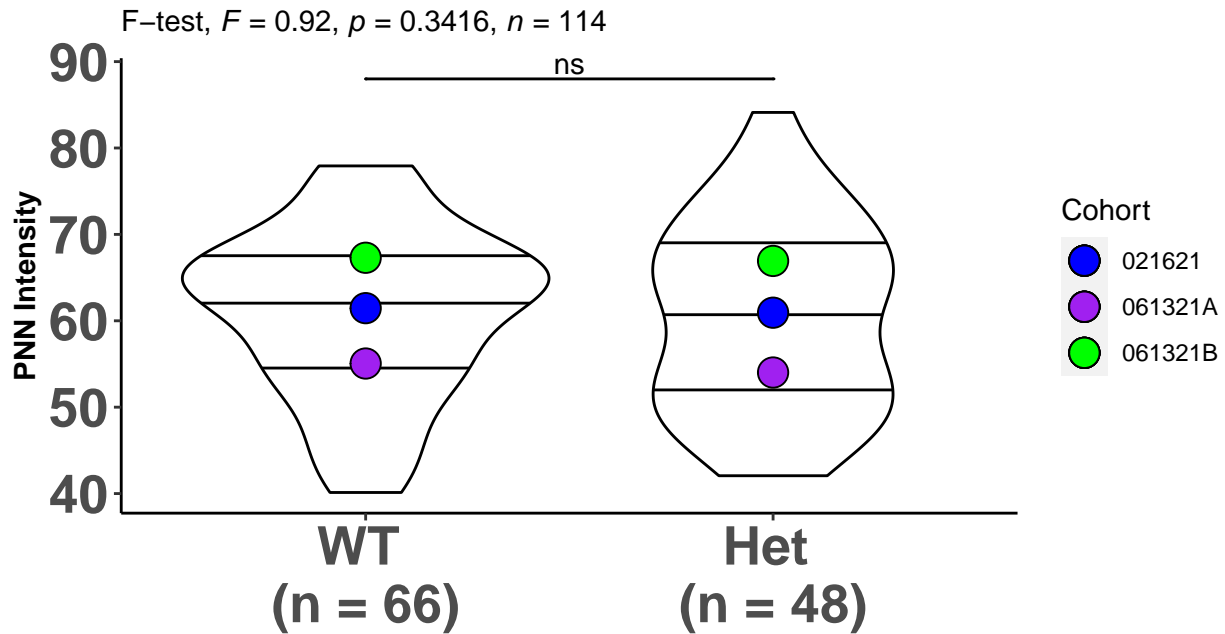
6 Week Tactile S1DZ Right Hemisphere Data

F-test, $F = 1$, $p = 0.3184$, $n = 128$



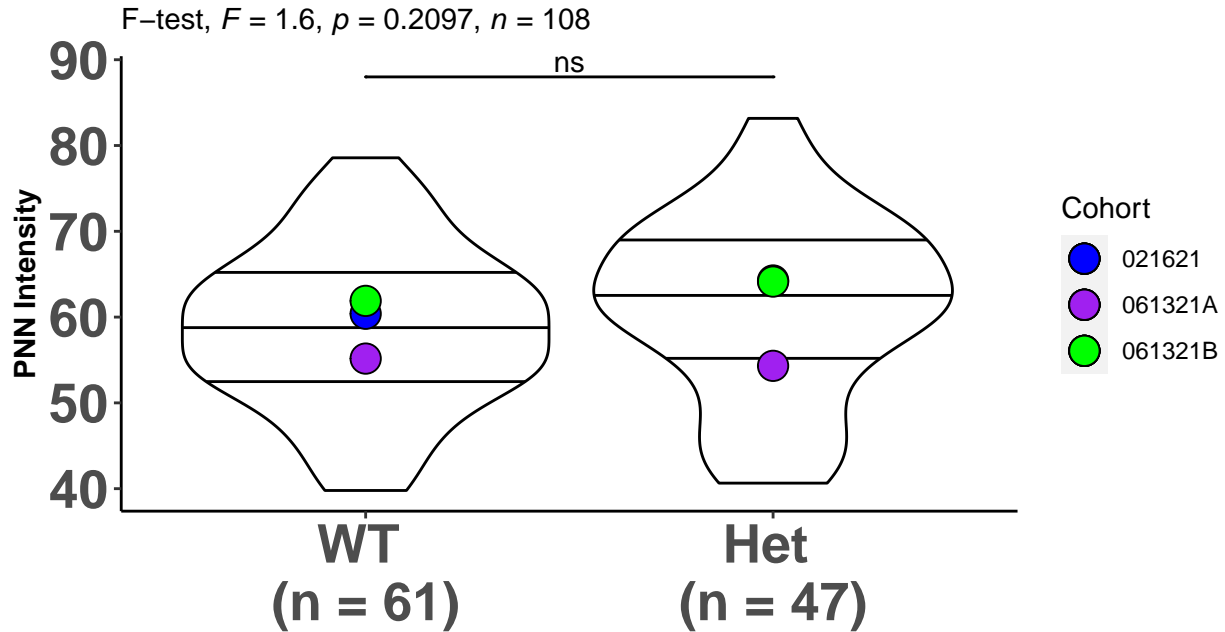
e) S1FL subregion, left hemisphere

6 Week Tactile S1FL Left Hemisphere Data



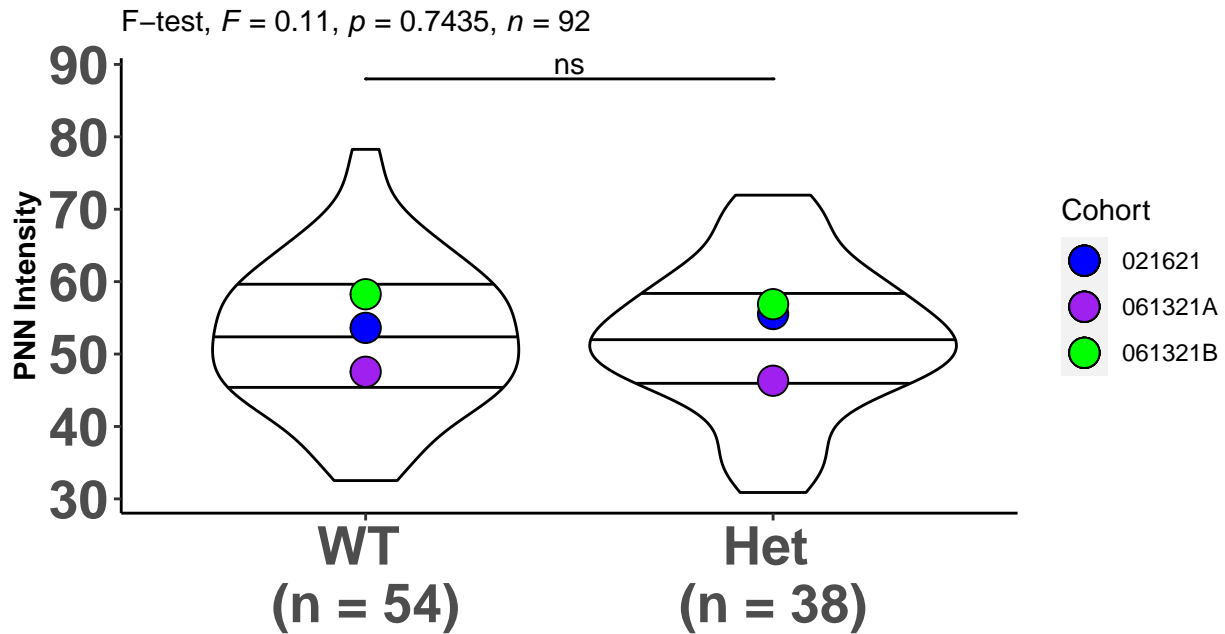
f) S1FL subregion, right hemisphere

6 Week Tactile S1FL Right Hemisphere Data



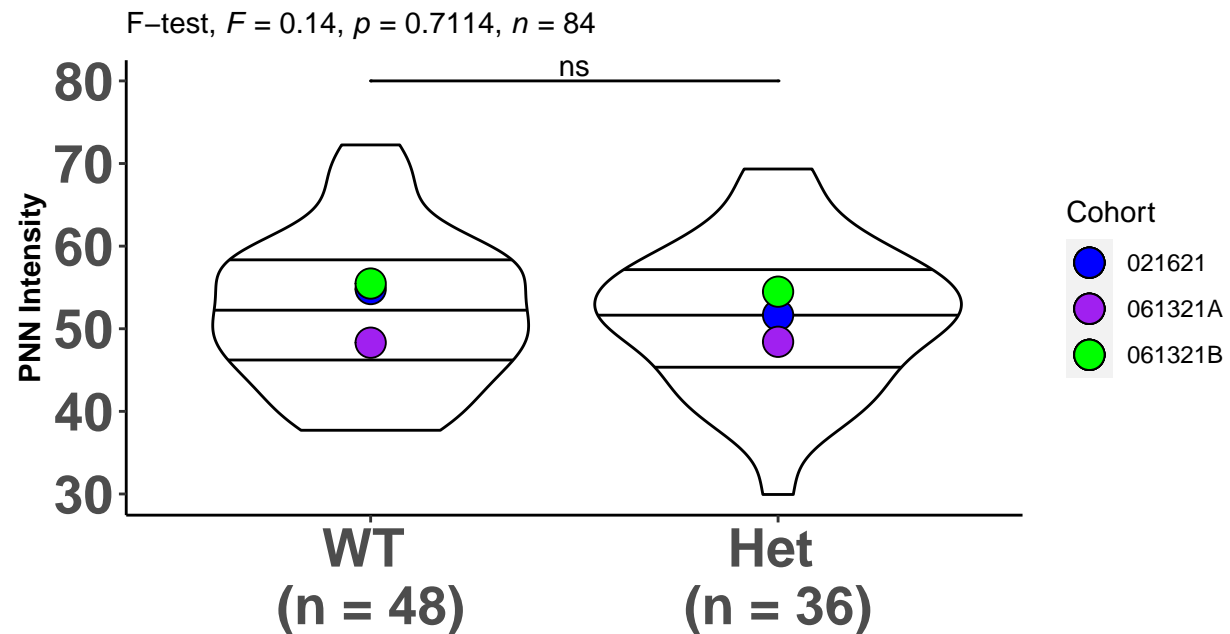
g) S1HL subregion, left hemisphere

6 Week Tactile S1HL Left Hemisphere Data



h) S1HL subregion, right hemisphere

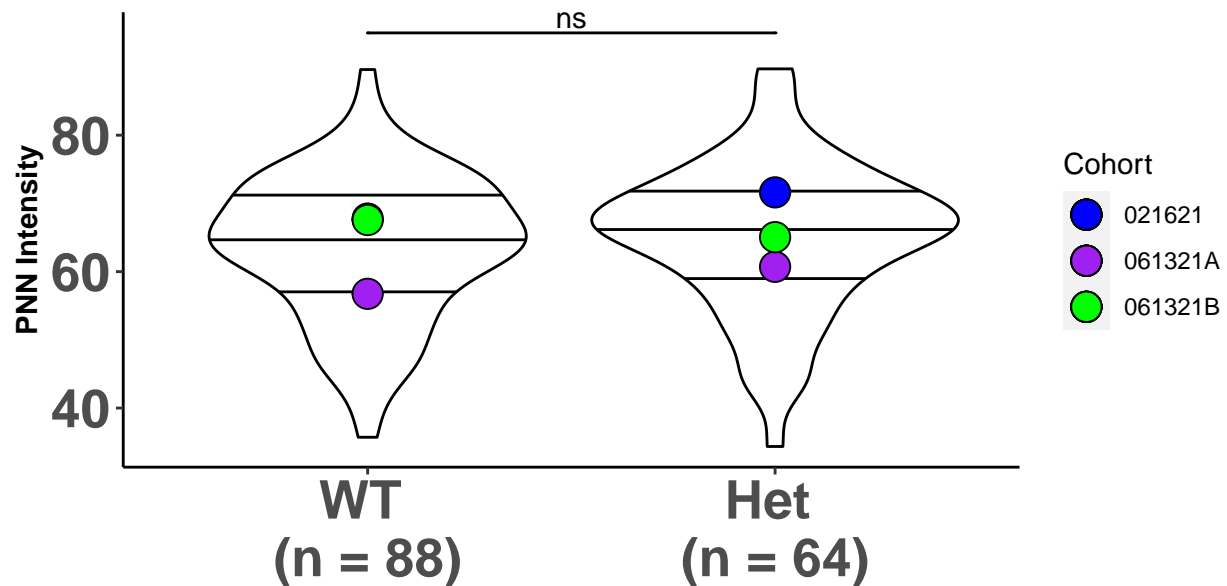
6 Week Tactile S1HL Right Hemisphere Data



i) S1ULp subregion, left hemisphere

6 Week Tactile S1ULp Left Hemisphere Data

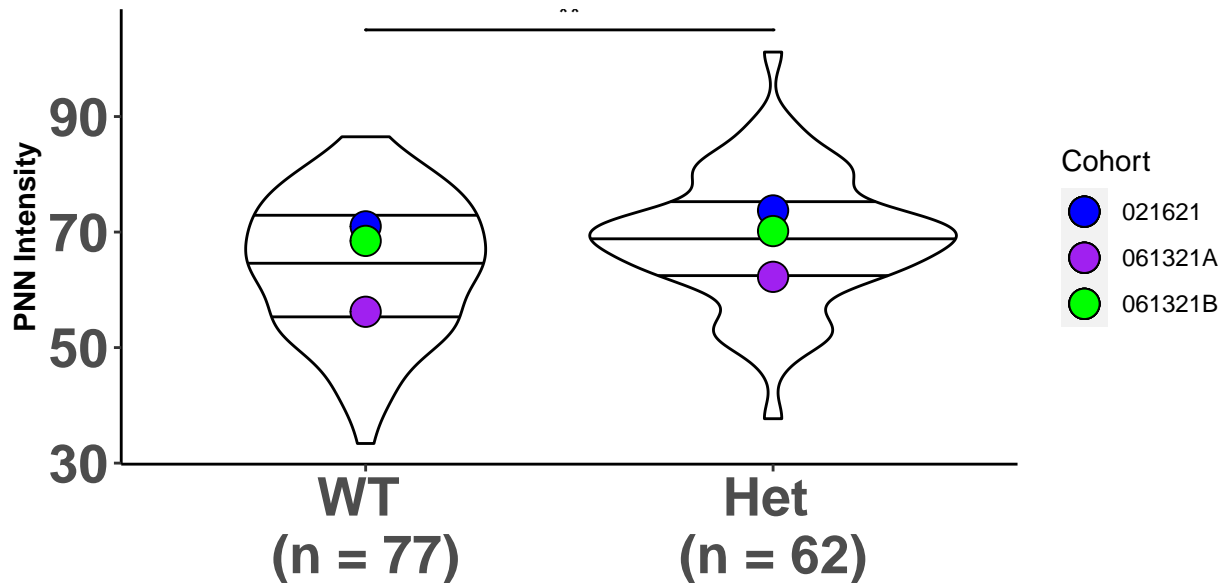
F-test, $F = 2.08$, $p = 0.1518$, $n = 152$



j) S1ULp subregion, right hemisphere

6 Week Tactile S1ULp Right Hemisphere Data

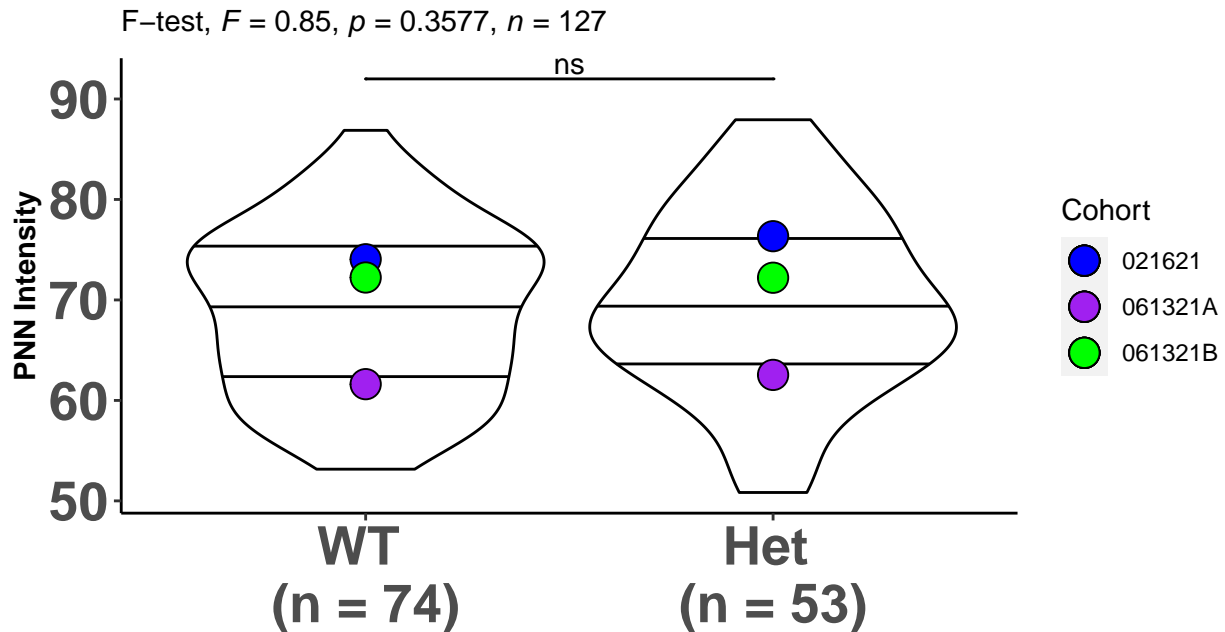
F-test, $F = 7.05$, $p = 0.009025$, $n = 139$



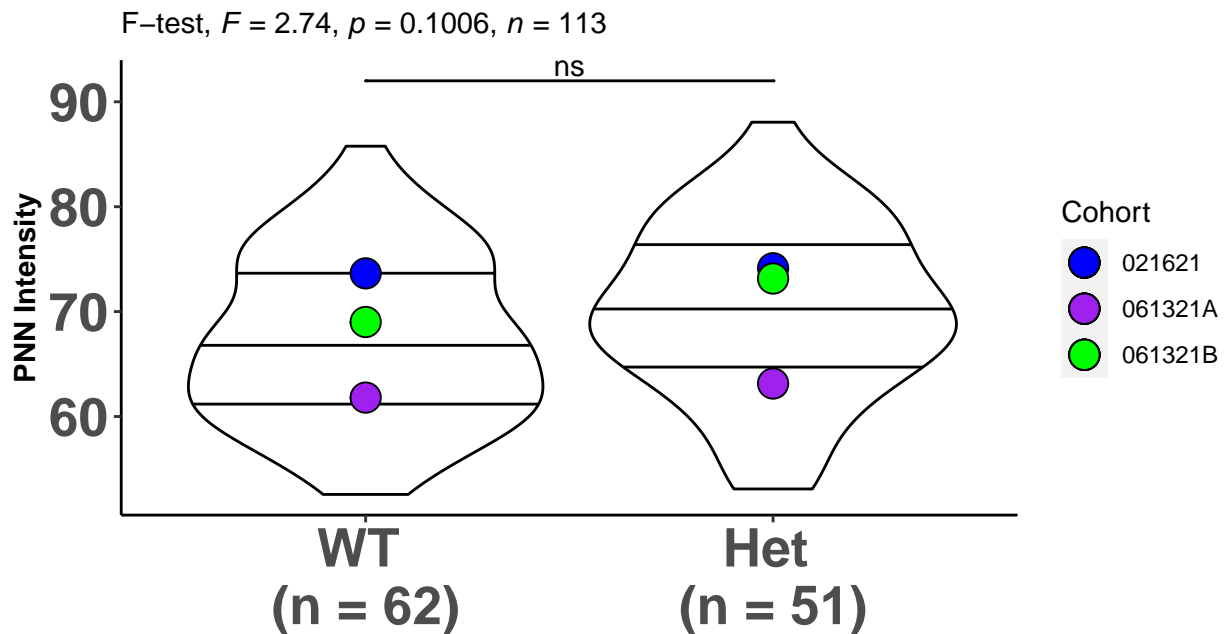
k) Combined plot with all combinations shown

1) Saving the plots to .png and .svg formats

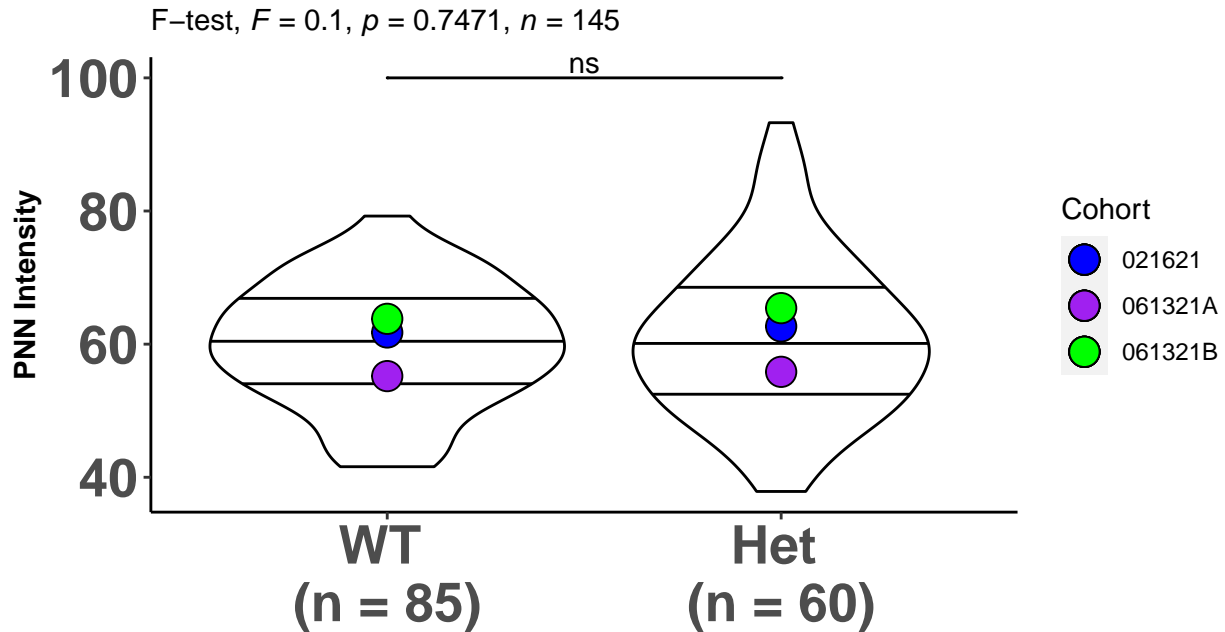
6 Week Tactile S1BF Left Hemisphere Data



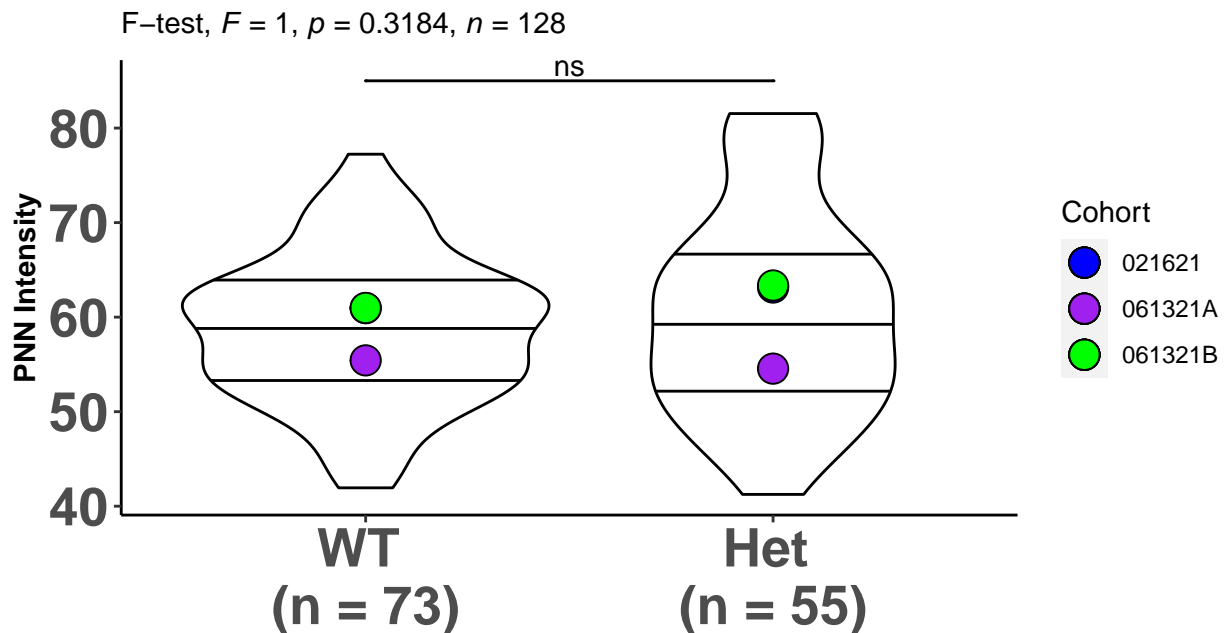
6 Week Tactile S1BF Right Hemisphere Data



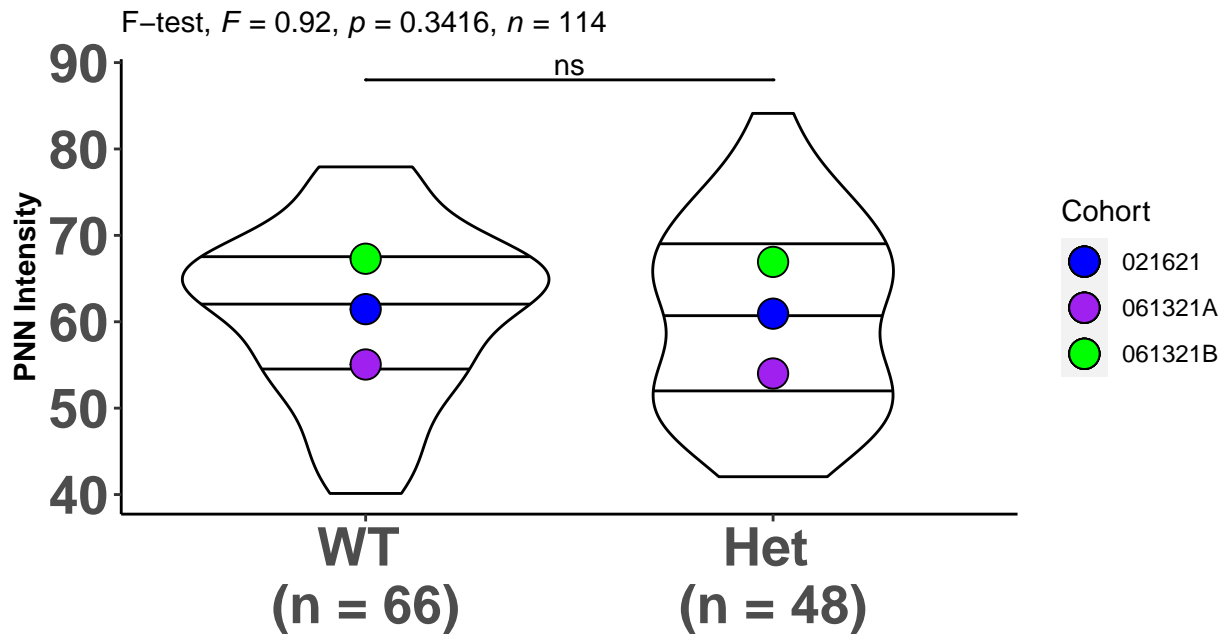
6 Week Tactile S1DZ Left Hemisphere Data



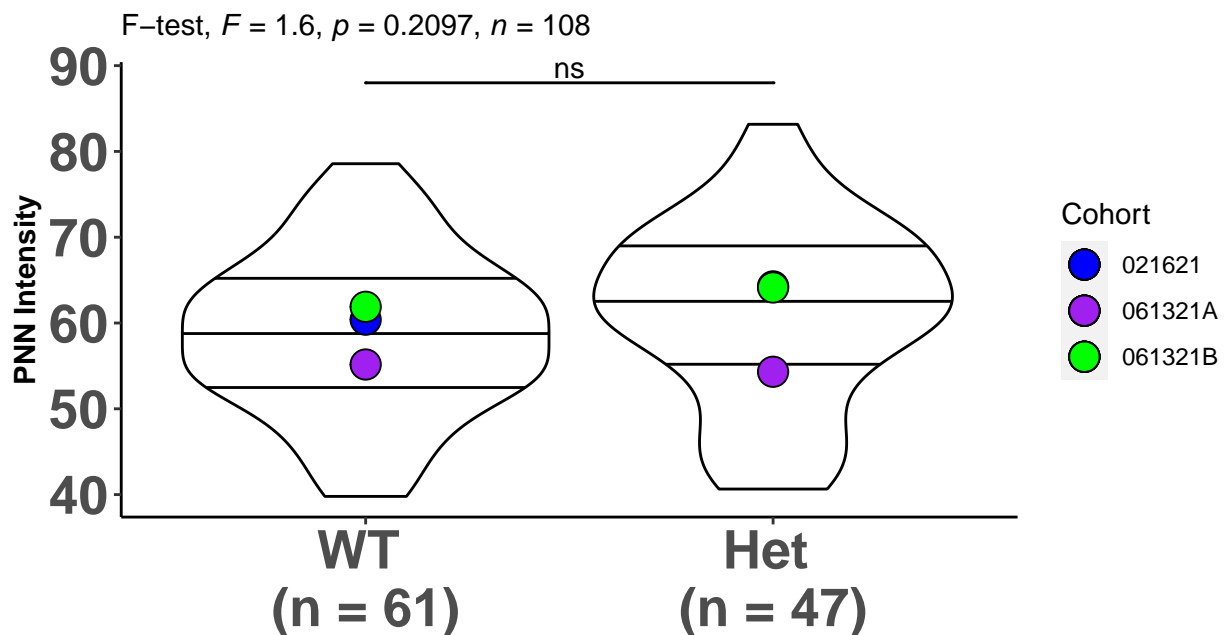
6 Week Tactile S1DZ Right Hemisphere Data



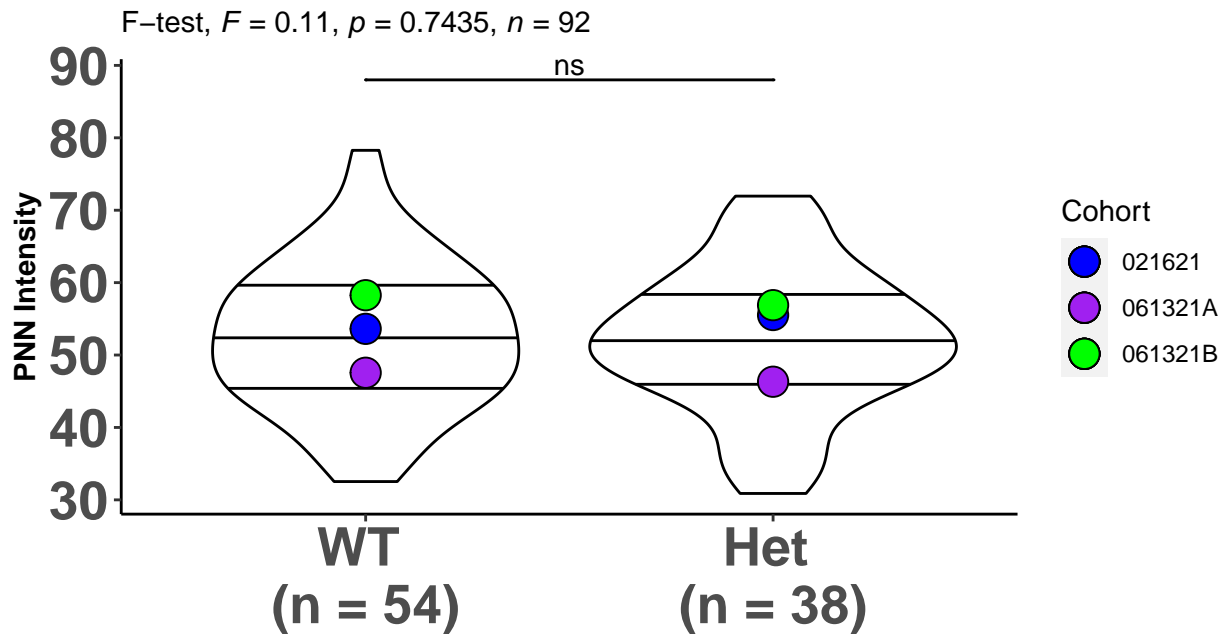
6 Week Tactile S1FL Left Hemisphere Data



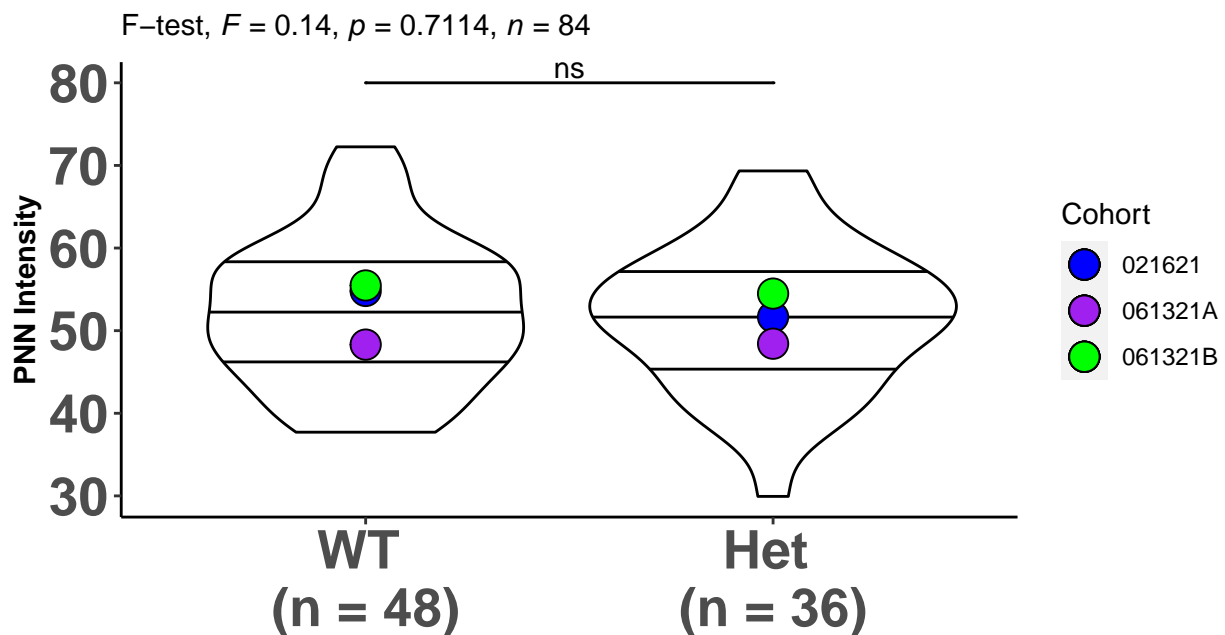
6 Week Tactile S1FL Right Hemisphere Data



6 Week Tactile S1HL Left Hemisphere Data

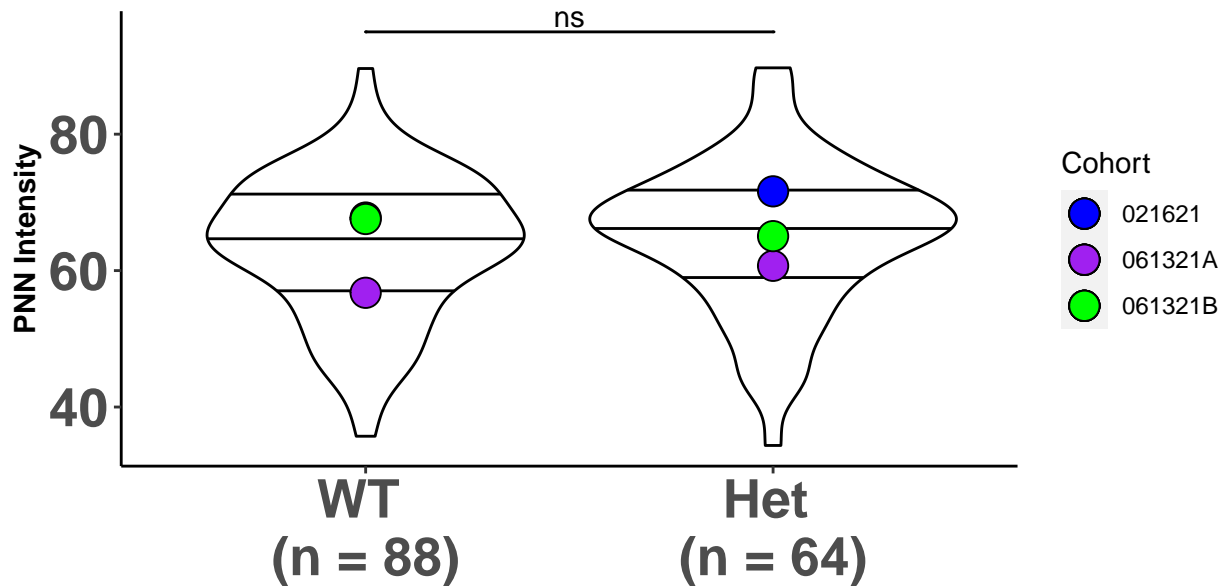


6 Week Tactile S1HL Right Hemisphere Data



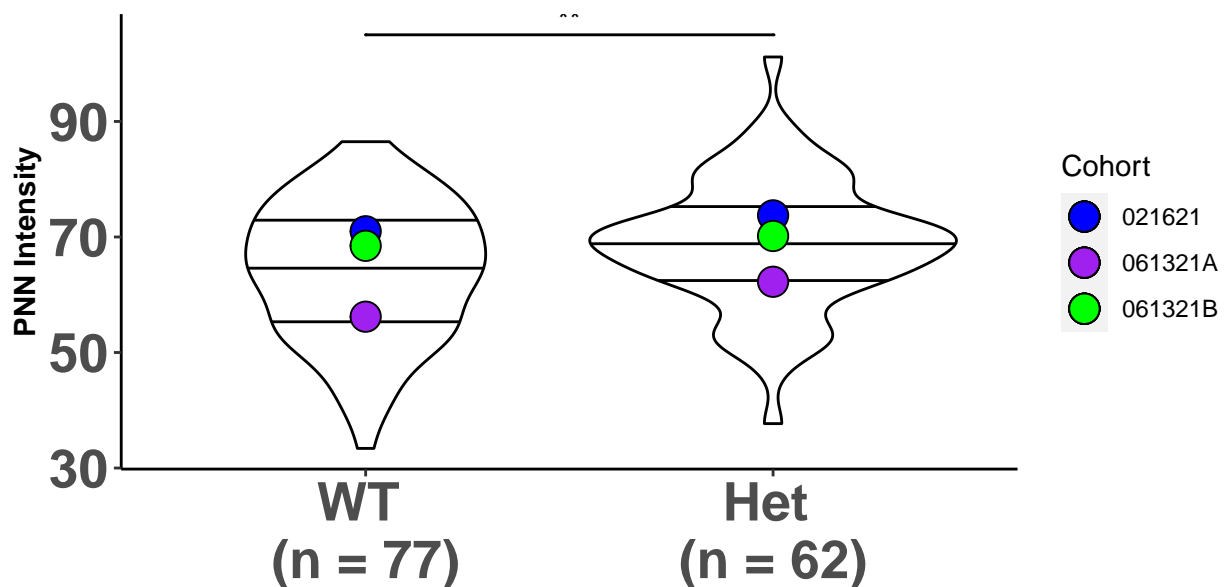
6 Week Tactile S1ULp Left Hemisphere Data

F-test, $F = 2.08$, $p = 0.1518$, $n = 152$



6 Week Tactile S1ULp Right Hemisphere Data

F-test, $F = 7.05$, $p = 0.009025$, $n = 139$

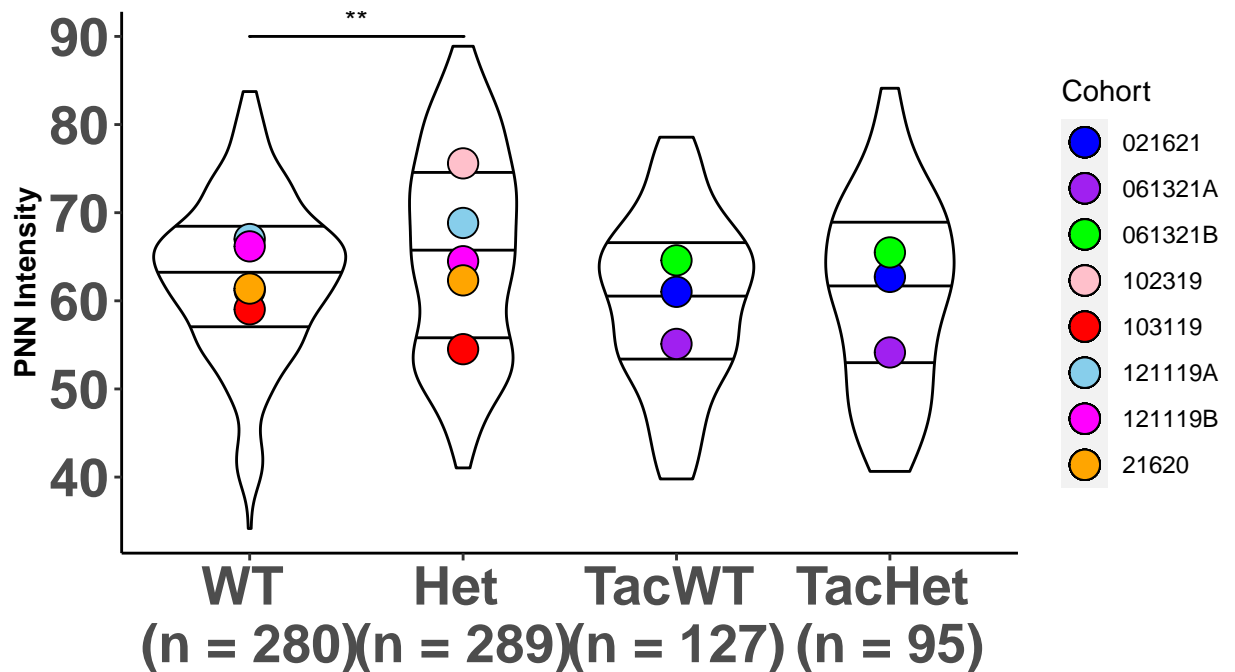


Step 7: Plotting the statistically significant different pairs of Tac data vs. old PNN Data

a) Combined hemisphere, individual subregion

◀ Tactile vs. Previous PNN S1FL ▶

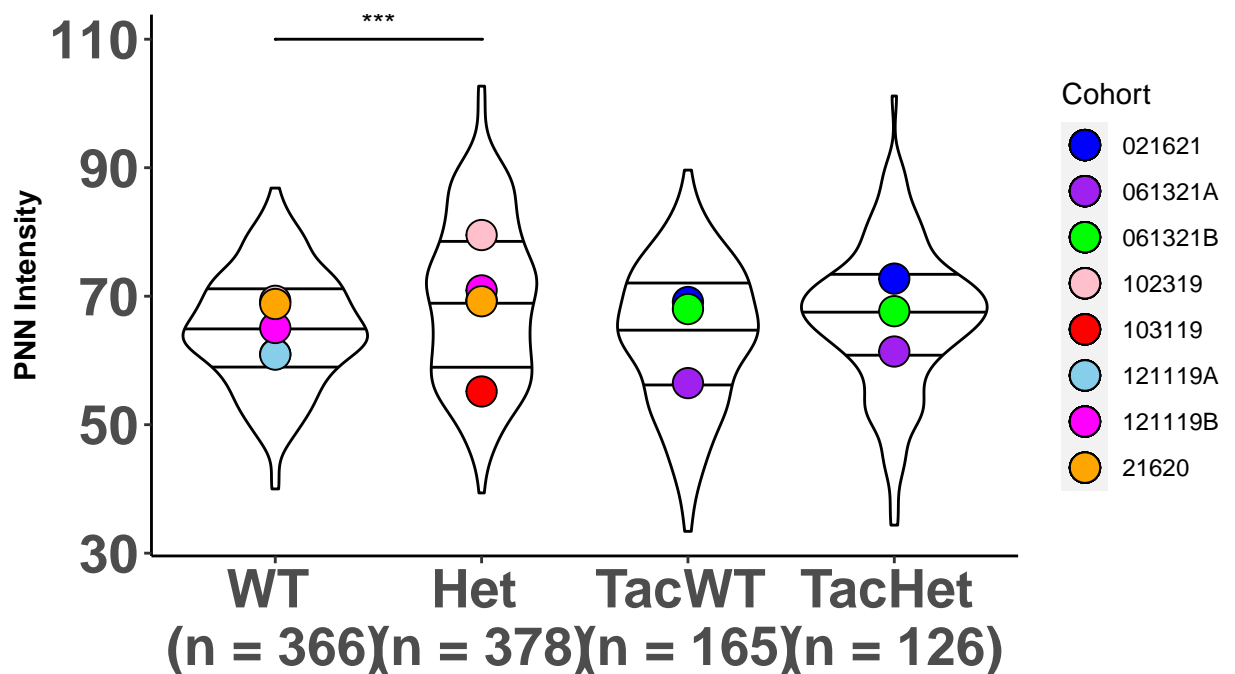
T-test, $T = 3.19$, $p = 0.0080$, $n = 791$



i) S1FL

◀ Tactile vs. Previous PNN S1ULp ▶

T-test, $T = 5.81$, $p < 0.0001$, $n = 1035$

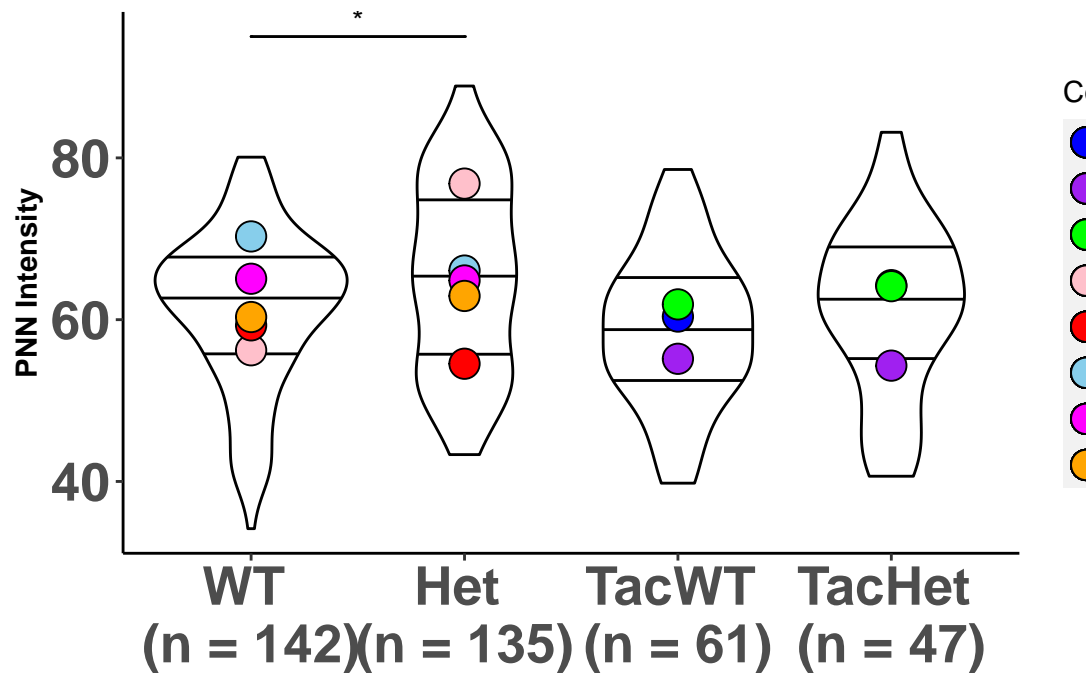


ii) S1ULp

i) S1DZ right hemisphere

's. Previous PNN S1FL Right

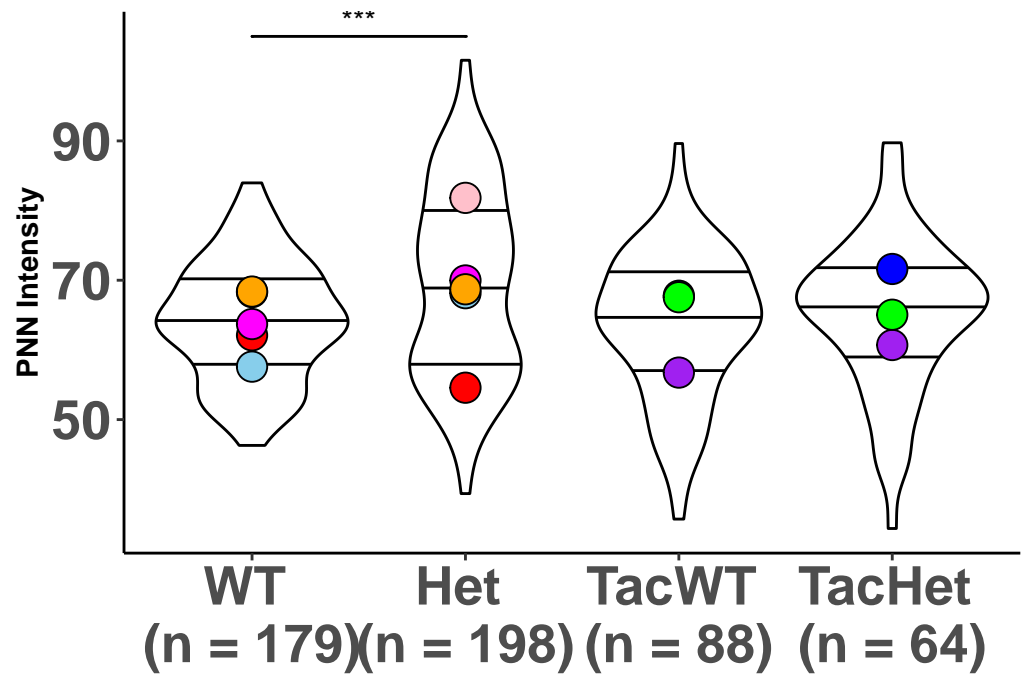
T-test, $T = 3.14$, $p = 0.0098$, $n = 385$



54

's. Previous PNN S1ULp Left

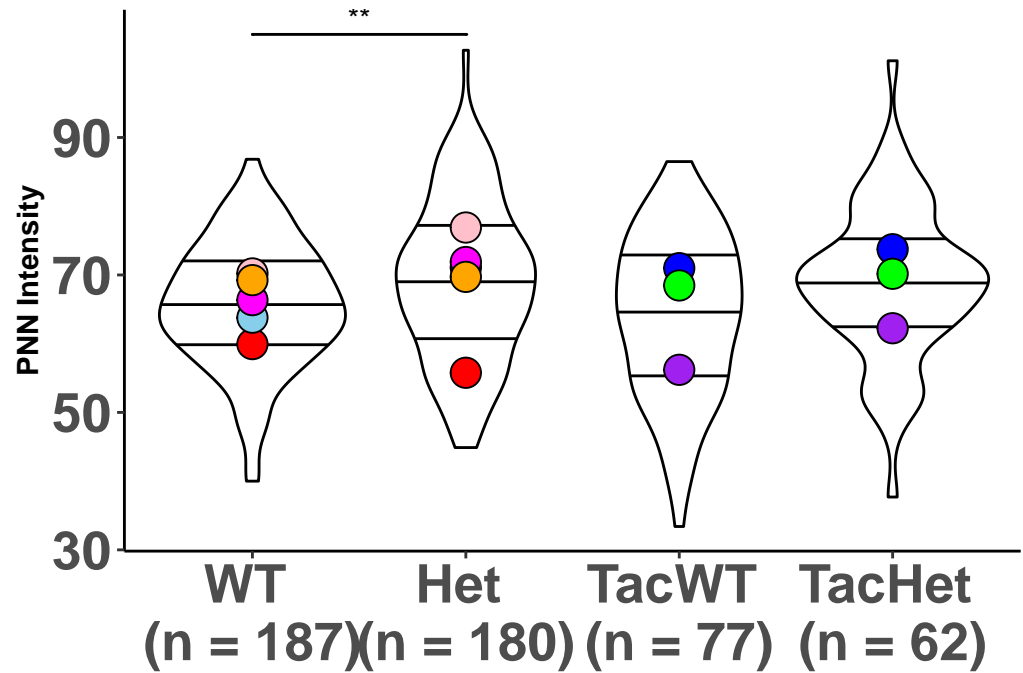
T-test, $T = 4.91$, $p = < 0.0001$, $n = 529$



iii) S1ULp left hemisphere

3. Previous PNN S1ULp Right

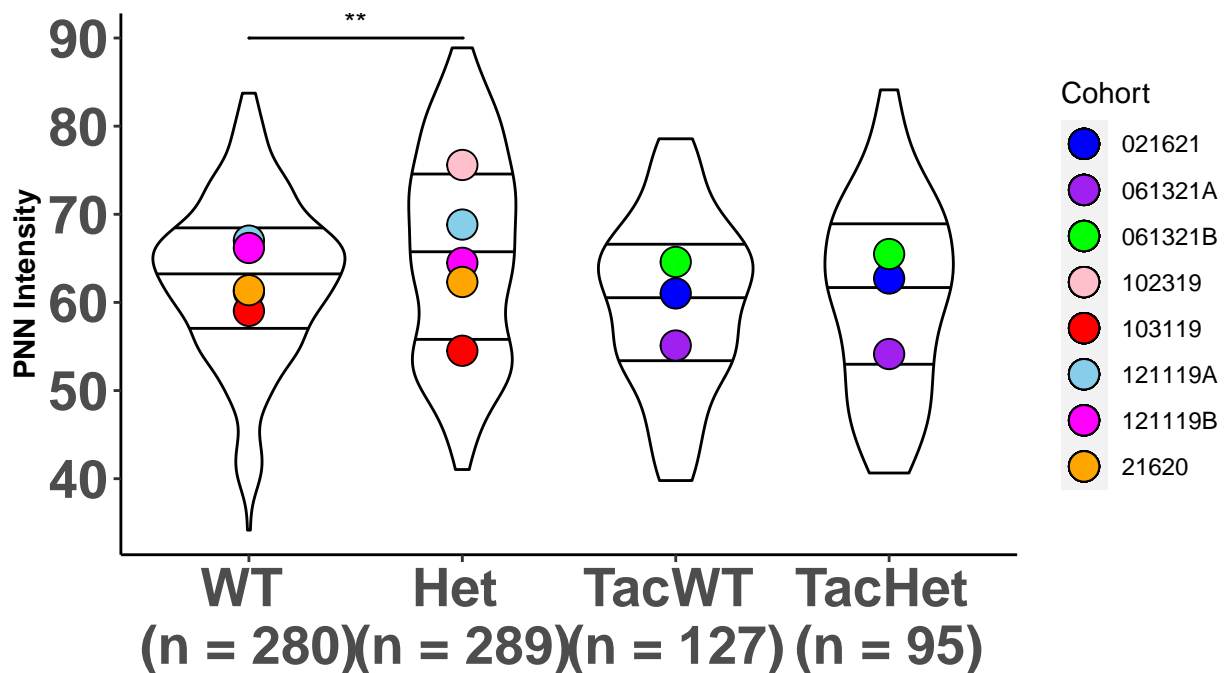
T-test, $T = 3.39$, $p = 0.0041$, $n = 506$



iv) S1ULp right hemisphere

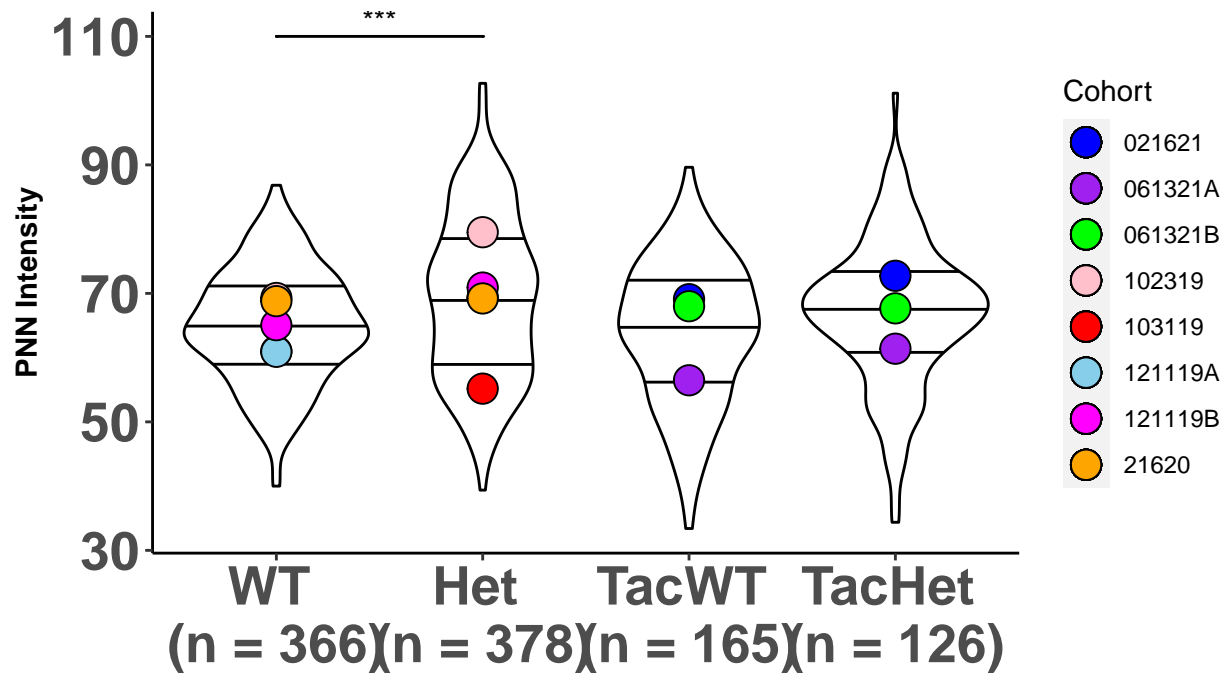
4. Tactile vs. Previous PNN S1FL I

T-test, $T = 3.19$, $p = 0.0080$, $n = 791$



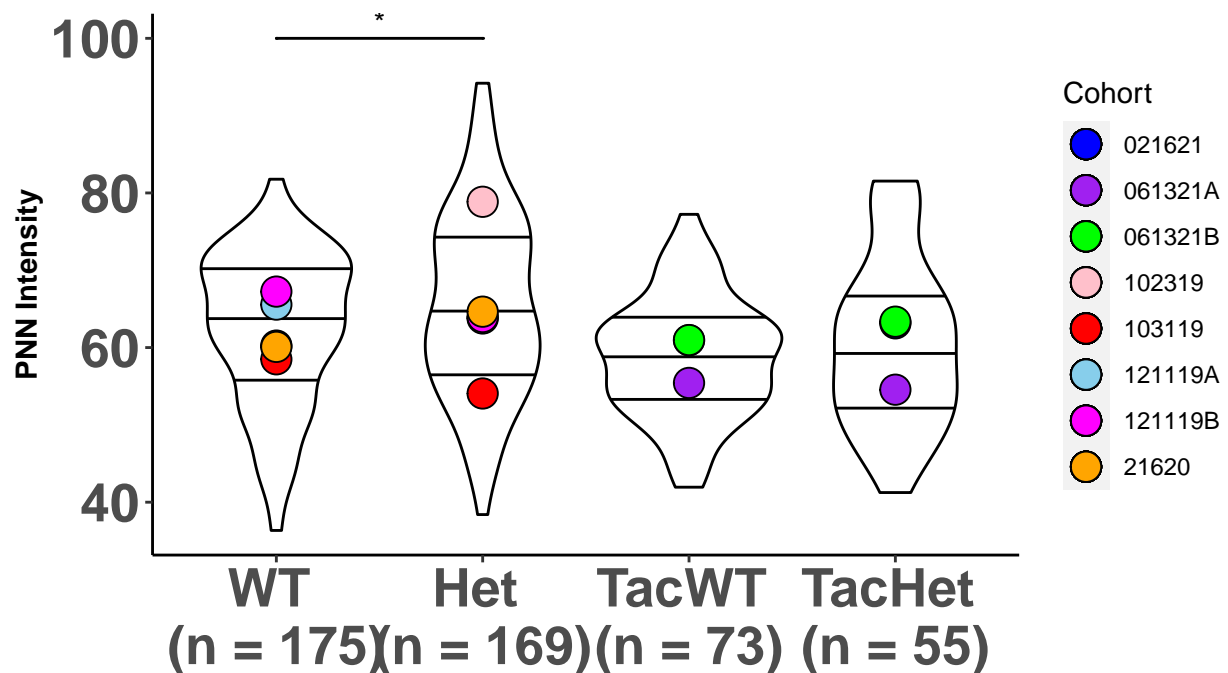
Tactile vs. Previous PNN S1ULp

T-test, $T = 5.81$, $p = < 0.0001$, $n = 1035$



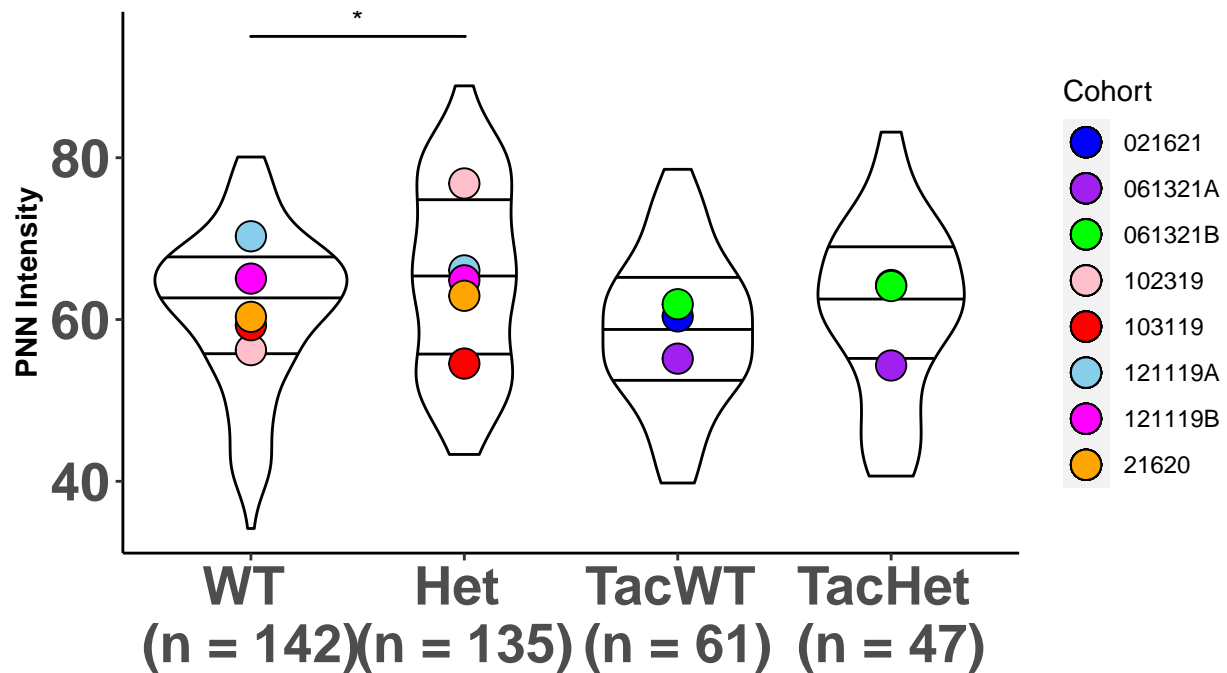
vs. Previous PNN S1DZ Right Hen

T-test, $T = 2.93$, $p = 0.0189$, $n = 472$



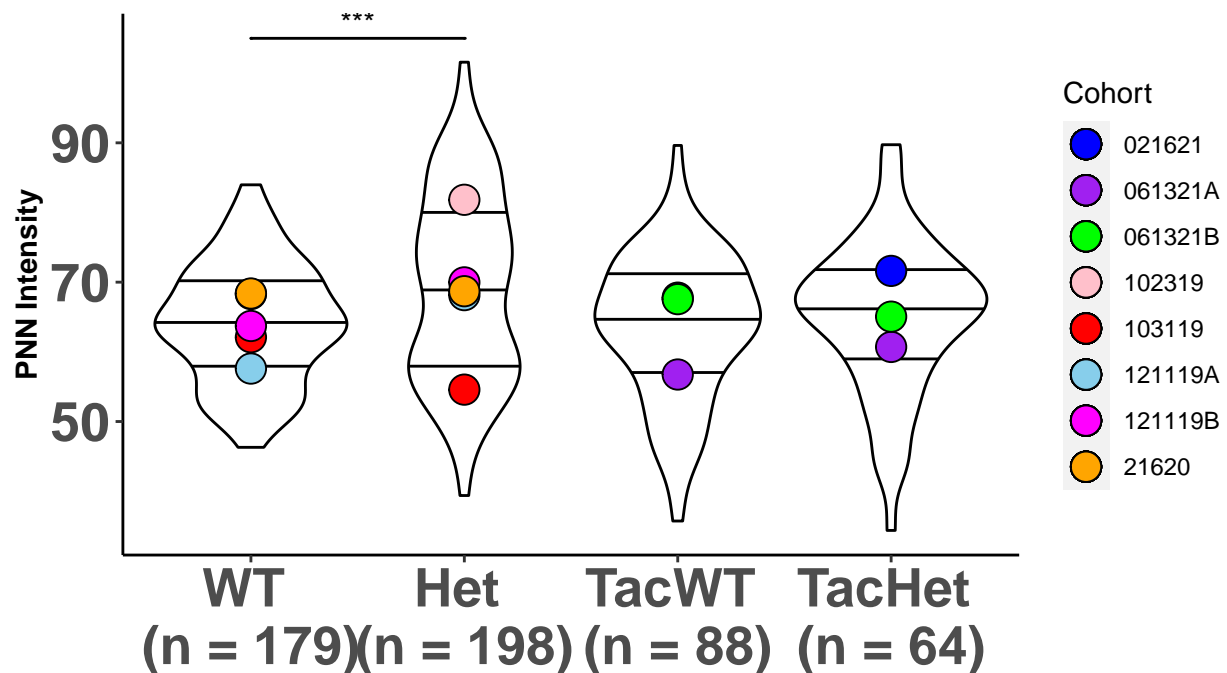
's. Previous PNN S1FL Right Hem

T-test, $T = 3.14$, $p = 0.0098$, $n = 385$



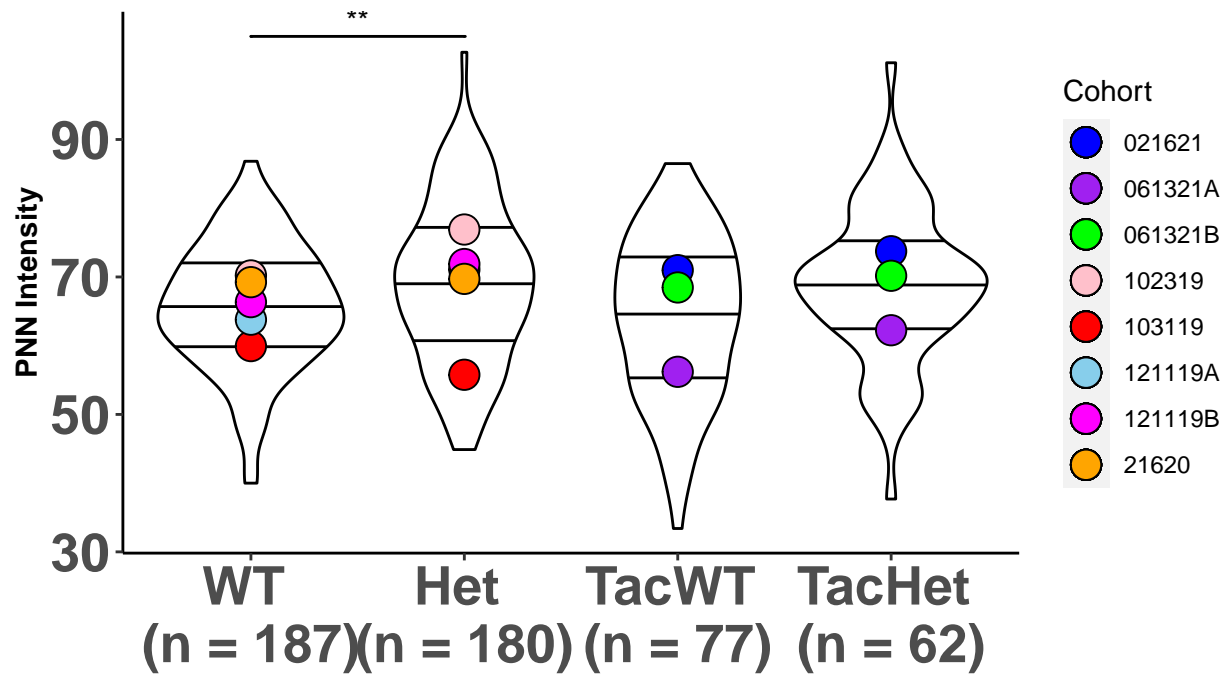
's. Previous PNN S1ULp Left Hem

T-test, $T = 4.91$, $p = < 0.0001$, $n = 529$



3. Previous PNN S1ULp Right Her

T-test, $T = 3.39$, $p = 0.0041$, $n = 506$



Overall conclusion: When considering the ICC values it is important to take into account possible confounding as it relates to Cohort and Subregion in the entire PNN dataset. These values have moderate data dependence based on their ICC values of 0.2233726 and 0.2628402 respectively. We can alleviate the possible confounding of subregion by only examining specific subregions. I have carried out analysis on the subregion that we were previously most interested in (S1BF) but I can easily extend this analysis to the other subregions if you all would like that. When the ICC analysis is carried out for Cohort, Map.ID, and Coordinates on the S1BF subregion data we see that Cohort has a high level of data dependence (0.5162284) and that there is moderate data dependence on Coordinates (0.228791). Given that we have two variables that have at least moderate data dependence we built an lme with two random effects (see here[<https://stackoverflow.com/questions/36398100/specifying-multiple-separate-random-effects-in-nlme>] and here[<https://stats.stackexchange.com/questions/228800/crossed-vs-nested-random-effects-how-do-they-differ-and-how-are-they-specified>] if you are interested in the stats) that take the data dependence of both into account. When carried out a linear mixed effects (lme) model analysis on just the S1BF subregion data we get a statistically significant result between the WT and Het groups. This holds true for both the Wald test and Maximum-likelihood with very similar p-values (which is typical, but always good to check). We see that when comparing the Tac results to the previous cohorts of PNN data we see no statistically significant difference between the Tac results and the previous datasets. The only comparison that is statistically significant when doing a pairwise comparison is the previous NW vs. NH. All p-values for the Tac vs. previous PNN naive data have had multiple testing correction done through the tukey method. It looks like S1ULp is the most common Condition by which we find statistically significant results. It also appears that statistically significant results are more often found in the right hemisphere than the left hemisphere. For the comparisons only datasets that yielded significant results were plotted when comparing the older PNN datasets to this newest Tac dataset. Also, only the statistically significant comparisons are shown in order to keep the plots from looking too crowded with many comparison lines. All of the plots are saved in .svg and .png formats. Let me know if you need another format.