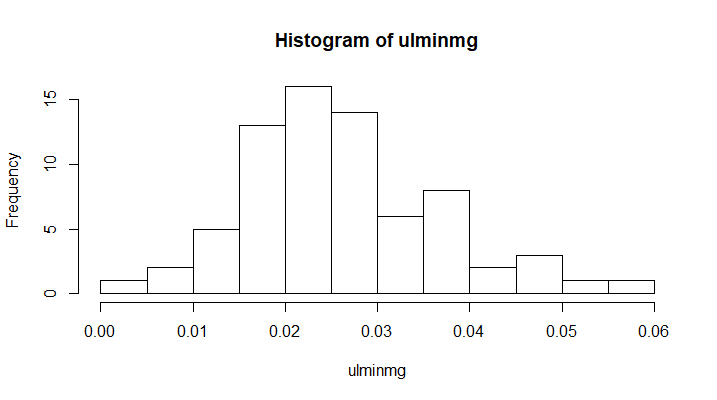
~~#Mass specific~~

~~~~

~~> summary(lmerint)~~

~~Linear mixed model fit by REML ['lmerMod']~~

~~Formula: ulminmg ~ Sex \* Act + chamber + (batch | Date)~~

~~REML criterion at convergence: -432.8~~

~~Scaled residuals:~~

~~Min 1Q Median 3Q Max~~

~~-1.8677 -0.4719 -0.1032 0.3137 2.7241~~

~~Random effects:~~

~~Groups Name Variance Std.Dev. Corr~~

~~Date (Intercept) 6.073e-05 0.007793~~

~~batchFour 2.417e-05 0.004916 -1.00~~

~~batchOne 7.988e-06 0.002826 -0.97 0.99~~

~~batchSix 1.054e-05 0.003246 1.00 -1.00 -0.97~~

~~batchThree 6.123e-05 0.007825 -1.00 1.00 0.97 -1.00~~

~~batchTwo 6.140e-05 0.007836 -1.00 1.00 0.97 -1.00 1.00~~

~~Residual 7.560e-05 0.008695~~

~~Number of obs: 72, groups: Date, 3~~

~~Fixed effects:~~

~~Estimate Std. Error t value~~

~~(Intercept) 0.0354751 0.0029998 11.826~~

~~SexM -0.0021292 0.0027503 -0.774~~

~~Act -0.0149883 0.0351095 -0.427~~

~~chamber -0.0009597 0.0002997 -3.203~~

~~SexM:Act 0.0211331 0.0476005 0.444~~

~~Correlation of Fixed Effects:~~

~~(Intr) SexM Act chambr~~

~~SexM -0.479~~

~~Act -0.439 0.467~~

~~chamber -0.596 -0.005 -0.103~~

~~SexM:Act 0.346 -0.667 -0.724 0.011~~

~~convergence code: 0~~

~~boundary (singular) fit: see ?isSingular~~

~~> lmer(ulminmg~Sex+Act+chamber+(batch|Date))->lmer~~

~~boundary (singular) fit: see ?isSingular~~

~~> anova(lmerint,lmer)~~

~~refitting model(s) with ML (instead of REML)~~

~~Data: NULL~~

~~Models:~~

~~lmer: ulminmg ~ Sex + Act + chamber + (batch | Date)~~

~~lmerint: ulminmg ~ Sex \* Act + chamber + (batch | Date)~~

~~Df AIC BIC logLik deviance Chisq Chi Df Pr(>Chisq)~~

~~lmer 26 -426.67 -367.47 239.33 -478.67~~

~~lmerint 27 -424.89 -363.42 239.44 -478.89 0.2212 1 0.6382~~

~~> summary(lmer)~~

~~Linear mixed model fit by REML ['lmerMod']~~

~~Formula: ulminmg ~ Sex + Act + chamber + (batch | Date)~~

~~REML criterion at convergence: -436.9~~

~~Scaled residuals:~~

~~Min 1Q Median 3Q Max~~

~~-1.84135 -0.47069 -0.08667 0.30826 2.70220~~

~~Random effects:~~

~~Groups Name Variance Std.Dev. Corr~~

~~Date (Intercept) 5.927e-05 0.007699~~

~~batchFour 2.138e-05 0.004624 -1.00~~

~~batchOne 6.512e-06 0.002552 -1.00 1.00~~

~~batchSix 1.168e-05 0.003417 1.00 -1.00 -1.00~~

~~batchThree 5.925e-05 0.007697 -1.00 1.00 1.00 -1.00~~

~~batchTwo 5.926e-05 0.007698 -1.00 1.00 1.00 -1.00 1.00~~

~~Residual 7.465e-05 0.008640~~

~~Number of obs: 72, groups: Date, 3~~

~~Fixed effects:~~

~~Estimate Std. Error t value~~

~~(Intercept) 0.0349699 0.0028026 12.478~~

~~SexM -0.0013153 0.0020373 -0.646~~

~~Act -0.0036813 0.0240918 -0.153~~

~~chamber -0.0009613 0.0002978 -3.228~~

~~Correlation of Fixed Effects:~~

~~(Intr) SexM Act~~

~~SexM -0.355~~

~~Act -0.294 -0.029~~

~~chamber -0.637 0.004 -0.137~~

~~convergence code: 0~~

~~boundary (singular) fit: see ?isSingular~~

~~> anova(lmer,lmernosex)~~

~~refitting model(s) with ML (instead of REML)~~

~~Data: NULL~~

~~Models:~~

~~lmernosex: ulminmg ~ Act + chamber + (batch | Date)~~

~~lmer: ulminmg ~ Sex + Act + chamber + (batch | Date)~~

~~Df AIC BIC logLik deviance Chisq Chi Df Pr(>Chisq)~~

~~lmernosex 25 -428.23 -371.31 239.12 -478.23~~

~~lmer 26 -426.67 -367.47 239.33 -478.67 0.4384 1 0.5079~~

~~> anova(lmer,lmernoact)~~

~~refitting model(s) with ML (instead of REML)~~

~~Data: NULL~~

~~Models:~~

~~lmernoact: ulminmg ~ Sex + chamber + (batch | Date)~~

~~lmer: ulminmg ~ Sex + Act + chamber + (batch | Date)~~

~~Df AIC BIC logLik deviance Chisq Chi Df Pr(>Chisq)~~

~~lmernoact 25 -428.64 -371.72 239.32 -478.64~~

~~lmer 26 -426.67 -367.47 239.33 -478.67 0.0325 1 0.8569~~

~~> anova(lmer,lmernochamber)~~

~~refitting model(s) with ML (instead of REML)~~

~~Data: NULL~~

~~Models:~~

~~lmernochamber: ulminmg ~ Sex + Act + (batch | Date)~~

~~lmer: ulminmg ~ Sex + Act + chamber + (batch | Date)~~

~~Df AIC BIC logLik deviance Chisq Chi Df Pr(>Chisq)~~

~~lmernochamber 25 -418.48 -361.56 234.24 -468.48~~

~~lmer 26 -426.67 -367.47 239.33 -478.67 10.186 1 0.001415 \*\*~~

~~---~~

~~Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1~~

~~#LMER NO ACT WAS NEW BASE MODEL~~

~~> summary(lmernoact)~~

~~Linear mixed model fit by REML ['lmerMod']~~

~~Formula: ulminmg ~ Sex + chamber + (batch | Date)~~

~~REML criterion at convergence: -442.5~~

~~Scaled residuals:~~

~~Min 1Q Median 3Q Max~~

~~-1.84933 -0.46445 -0.08477 0.30537 2.72805~~

~~Random effects:~~

~~Groups Name Variance Std.Dev. Corr~~

~~Date (Intercept) 5.959e-05 0.007720~~

~~batchFour 2.115e-05 0.004599 -1.00~~

~~batchOne 6.654e-06 0.002579 -0.98 0.99~~

~~batchSix 1.093e-05 0.003306 1.00 -1.00 -0.98~~

~~batchThree 5.957e-05 0.007718 -1.00 1.00 0.98 -1.00~~

~~batchTwo 5.971e-05 0.007727 -1.00 1.00 0.98 -1.00 1.00~~

~~Residual 7.355e-05 0.008576~~

~~Number of obs: 72, groups: Date, 3~~

~~Fixed effects:~~

~~Estimate Std. Error t value~~

~~(Intercept) 0.0348312 0.0026625 13.082~~

~~SexM -0.0013244 0.0020215 -0.655~~

~~chamber -0.0009675 0.0002928 -3.304~~

~~Correlation of Fixed Effects:~~

~~(Intr) SexM~~

~~SexM -0.380~~

~~chamber -0.715 0.000~~

~~convergence code: 0~~

~~boundary (singular) fit: see ?isSingular~~

~~> anova(lmernoact,lmernoactnosex)~~

~~refitting model(s) with ML (instead of REML)~~

~~Data: NULL~~

~~Models:~~

~~lmernoactnosex: ulminmg ~ chamber + (batch | Date)~~

~~lmernoact: ulminmg ~ Sex + chamber + (batch | Date)~~

~~Df AIC BIC logLik deviance Chisq Chi Df Pr(>Chisq)~~

~~lmernoactnosex 24 -430.19 -375.55 239.09 -478.19~~

~~lmernoact 25 -428.64 -371.72 239.32 -478.64 0.4461 1 0.5042~~

~~LMER NO ACT NO SEX WAS NEW BASE~~

~~> anova(lmernoactnosex,lmernoactnosexnochamber)~~

~~refitting model(s) with ML (instead of REML)~~

~~Data: NULL~~

~~Models:~~

~~lmernoactnosexnochamber: ulminmg ~ 1 + (batch | Date)~~

~~lmernoactnosex: ulminmg ~ chamber + (batch | Date)~~

~~Df AIC BIC logLik deviance Chisq Chi Df Pr(>Chisq)~~

~~lmernoactnosexnochamber 23 -421.70 -369.34 233.85 -467.70~~

~~lmernoactnosex 24 -430.19 -375.55 239.09 -478.19 10.484 1 0.001204 \*\*~~

~~---~~

~~Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1~~

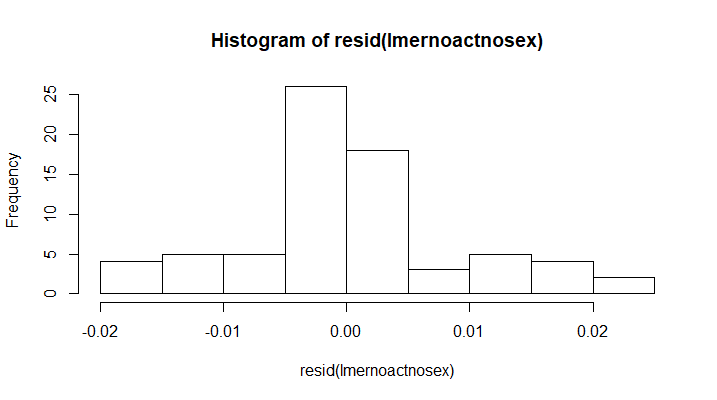
~~Minimal model for Male and Female mass specific resting MR was chamber only model~~

~~> shapiro.test(resid(lmernoactnosex))~~

~~Shapiro-Wilk normality test~~

~~data: resid(lmernoactnosex)~~

~~W = 0.95034, p-value = 0.006502~~

~~~~

~~> shapiro.test(resid(glmernoactnosex))~~

~~Shapiro-Wilk normality test~~

~~data: resid(glmernoactnosex)~~

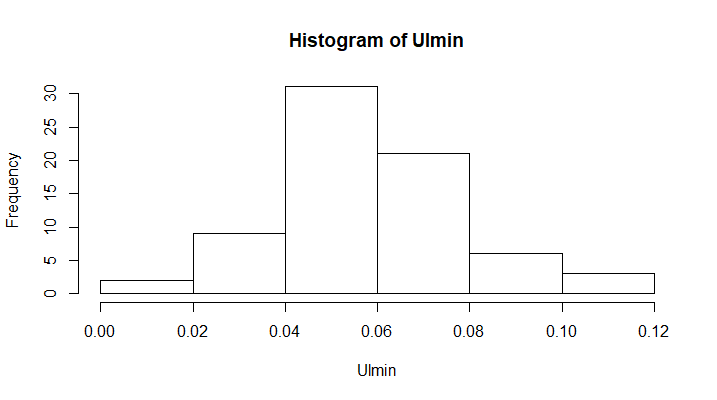
~~W = 0.92124, p-value = 0.0002433~~



\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

#Whole organism (Used this analysis)

USING AIC to Pick Sex or Mass



> summary(wmasslmer)

Linear mixed model fit by REML ['lmerMod']

Formula: Ulmin ~ Mass + Act + chamber + (batch | Date)

REML criterion at convergence: -347.9

Scaled residuals:

Min 1Q Median 3Q Max

-2.38583 -0.58855 -0.02868 0.63647 2.50515

Random effects:

Groups Name Variance Std.Dev. Corr

Date (Intercept) 7.083e-05 0.008416

batchFour 4.823e-05 0.006945 -0.97

batchOne 8.324e-05 0.009124 0.09 0.14

batchSix 1.190e-04 0.010910 1.00 -0.97 0.09

batchThree 7.102e-05 0.008428 -1.00 0.97 -0.09 -1.00

batchTwo 7.060e-05 0.008403 -1.00 0.97 -0.09 -1.00 1.00

Residual 2.773e-04 0.016653

Number of obs: 72, groups: Date, 3

Fixed effects:

Estimate Std. Error t value

(Intercept) 0.0658073 0.0111301 5.913

Mass 0.0033005 0.0045079 0.732

Act -0.0065913 0.0462194 -0.143

chamber -0.0020290 0.0005758 -3.524

Correlation of Fixed Effects:

(Intr) Mass Act

Mass -0.901

Act -0.201 0.073

chamber -0.235 -0.082 -0.141

convergence code: 0

boundary (singular) fit: see ?isSingular

> anova(wmasslmer,wmasslmernomass)

refitting model(s) with ML (instead of REML)

Data: NULL

Models:

wmasslmernomass: Ulmin ~ Act + chamber + (batch | Date)

wmasslmer: Ulmin ~ Mass + Act + chamber + (batch | Date)

Df AIC BIC logLik deviance Chisq Chi Df Pr(>Chisq)

wmasslmernomass 25 -333.94 -277.02 191.97 -383.94

wmasslmer 26 -332.37 -273.18 192.19 -384.37 0.4293 1 0.5123

> summary(wsexlmer)

Linear mixed model fit by REML ['lmerMod']

Formula: Ulmin ~ Sex + Act + chamber + (batch | Date)

REML criterion at convergence: -353.1

Scaled residuals:

Min 1Q Median 3Q Max

-2.22682 -0.61517 -0.07841 0.64111 2.85245

Random effects:

Groups Name Variance Std.Dev. Corr

Date (Intercept) 5.331e-05 0.007301

batchFour 3.677e-05 0.006064 -1.00

batchOne 4.590e-05 0.006775 0.71 -0.65

batchSix 1.332e-04 0.011541 1.00 -1.00 0.71

batchThree 5.361e-05 0.007322 -1.00 1.00 -0.71 -1.00

batchTwo 5.365e-05 0.007324 -1.00 1.00 -0.71 -1.00 1.00

Residual 2.553e-04 0.015979

Number of obs: 72, groups: Date, 3

Fixed effects:

Estimate Std. Error t value

(Intercept) 0.0779050 0.0049368 15.781

SexM -0.0094133 0.0037678 -2.498

Act -0.0087725 0.0442073 -0.198

chamber -0.0019948 0.0005506 -3.623

Correlation of Fixed Effects:

(Intr) SexM Act

SexM -0.373

Act -0.278 -0.029

chamber -0.674 0.004 -0.136

convergence code: 0

boundary (singular) fit: see ?isSingular

> AIC(wsexlmer,wmasslmer)

df AIC

wsexlmer 26 -301.0792

wmasslmer 26 -295.8525

#Sex is better model

> anova(wsexlmer,wsexlmernosex)

refitting model(s) with ML (instead of REML)

Data: NULL

Models:

wsexlmernosex: Ulmin ~ Act + chamber + (batch | Date)

wsexlmer: Ulmin ~ Sex + Act + chamber + (batch | Date)

Df AIC BIC logLik deviance Chisq Chi Df Pr(>Chisq)

wsexlmernosex 25 -333.94 -277.02 191.97 -383.94

wsexlmer 26 -338.25 -279.06 195.13 -390.25 6.3135 1 0.01198 \*

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> anova(wsexlmer,wsexlmernoact)

refitting model(s) with ML (instead of REML)

Data: NULL

Models:

wsexlmernoact: Ulmin ~ Sex + chamber + (batch | Date)

wsexlmer: Ulmin ~ Sex + Act + chamber + (batch | Date)

Df AIC BIC logLik deviance Chisq Chi Df Pr(>Chisq)

wsexlmernoact 25 -340.20 -283.28 195.10 -390.20

wsexlmer 26 -338.25 -279.06 195.13 -390.25 0.054 1 0.8163

> anova(wsexlmer,wsexlmernochamber)

refitting model(s) with ML (instead of REML)

Data: NULL

Models:

wsexlmernochamber: Ulmin ~ Sex + Act + (batch | Date)

wsexlmer: Ulmin ~ Sex + Act + chamber + (batch | Date)

Df AIC BIC logLik deviance Chisq Chi Df Pr(>Chisq)

wsexlmernochamber 25 -326.29 -269.37 188.14 -376.29

wsexlmer 26 -338.25 -279.06 195.13 -390.25 13.967 1 0.000186 \*\*\*

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

New minimal model was wsexlmernoact

> summary(wsexlmernoact)

Linear mixed model fit by REML ['lmerMod']

Formula: Ulmin ~ Sex + chamber + (batch | Date)

REML criterion at convergence: -357.4

Scaled residuals:

Min 1Q Median 3Q Max

-2.2356 -0.6050 -0.1040 0.6556 2.8839

Random effects:

Groups Name Variance Std.Dev. Corr

Date (Intercept) 5.321e-05 0.007294

batchFour 3.317e-05 0.005760 -1.00

batchOne 3.384e-05 0.005817 1.00 -1.00

batchSix 1.266e-04 0.011251 1.00 -1.00 1.00

batchThree 5.310e-05 0.007287 -1.00 1.00 -1.00 -1.00

batchTwo 5.324e-05 0.007297 -1.00 1.00 -1.00 -1.00 1.00

Residual 2.517e-04 0.015866

Number of obs: 72, groups: Date, 3

Fixed effects:

Estimate Std. Error t value

(Intercept) 0.0775876 0.0047161 16.452

SexM -0.0094350 0.0037398 -2.523

chamber -0.0020097 0.0005417 -3.710

Correlation of Fixed Effects:

(Intr) SexM

SexM -0.396

chamber -0.747 0.000

convergence code: 0

boundary (singular) fit: see ?isSingular

> anova(wsexlmernoact,wsexlmernoactnosex)

refitting model(s) with ML (instead of REML)

Data: NULL

Models:

wsexlmernoactnosex: Ulmin ~ chamber + (batch | Date)

wsexlmernoact: Ulmin ~ Sex + chamber + (batch | Date)

Df AIC BIC logLik deviance Chisq Chi Df Pr(>Chisq)

wsexlmernoactnosex 24 -335.85 -281.21 191.93 -383.85

wsexlmernoact 25 -340.20 -283.28 195.10 -390.20 6.3482 1 0.01175 \*

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> anova(wsexlmernoact,wsexlmernoactnochamber)

refitting model(s) with ML (instead of REML)

Data: NULL

Models:

wsexlmernoactnochamber: Ulmin ~ Sex + (batch | Date)

wsexlmernoact: Ulmin ~ Sex + chamber + (batch | Date)

Df AIC BIC logLik deviance Chisq Chi Df Pr(>Chisq)

wsexlmernoactnochamber 24 -329.13 -274.49 188.56 -377.13

wsexlmernoact 25 -340.20 -283.28 195.10 -390.20 13.071 1 3e-04 \*\*\*

---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> shapiro.test(resid(wsexlmernoact))

Shapiro-Wilk normality test

data: resid(wsexlmernoact)

W = 0.99123, p-value = 0.902

~~Considered the full model with only 1 random effect~~

~~> anova(lmernodate,lmernodatenosex)~~

~~refitting model(s) with ML (instead of REML)~~

~~Data: NULL~~

~~Models:~~

~~lmernodatenosex: Ulmin ~ Act + chamber + (1 | batch)~~

~~lmernodate: Ulmin ~ Act + Sex + chamber + (1 | batch)~~

~~Df AIC BIC logLik deviance Chisq Chi Df Pr(>Chisq)~~

~~lmernodatenosex 5 -366.39 -355.01 188.20 -376.39~~

~~lmernodate 6 -370.34 -356.68 191.17 -382.34 5.9454 1 0.01476 \*~~

~~---~~

~~Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1~~

~~> anova(lmernodate,lmernodatenoact)~~

~~refitting model(s) with ML (instead of REML)~~

~~Data: NULL~~

~~Models:~~

~~lmernodatenoact: Ulmin ~ Sex + chamber + (1 | batch)~~

~~lmernodate: Ulmin ~ Act + Sex + chamber + (1 | batch)~~

~~Df AIC BIC logLik deviance Chisq Chi Df Pr(>Chisq)~~

~~lmernodatenoact 5 -372.22 -360.84 191.11 -382.22~~

~~lmernodate 6 -370.34 -356.68 191.17 -382.34 0.1144 1 0.7352~~

~~> anova(lmernodate,lmernodatenochamber)~~

~~refitting model(s) with ML (instead of REML)~~

~~Data: NULL~~

~~Models:~~

~~lmernodatenochamber: Ulmin ~ Act + Sex + (1 | batch)~~

~~lmernodate: Ulmin ~ Act + Sex + chamber + (1 | batch)~~

~~Df AIC BIC logLik deviance Chisq Chi Df Pr(>Chisq)~~

~~lmernodatenochamber 5 -360.58 -349.20 185.29 -370.58~~

~~lmernodate 6 -370.34 -356.68 191.17 -382.34 11.753 1 0.0006075 \*\*\*~~

~~---~~

~~Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1~~

~~> anova(lmernobatch,lmernobatchnosex)~~

~~refitting model(s) with ML (instead of REML)~~

~~Data: NULL~~

~~Models:~~

~~lmernobatchnosex: Ulmin ~ Act + chamber + (1 | Date)~~

~~lmernobatch: Ulmin ~ Act + Sex + chamber + (1 | Date)~~

~~Df AIC BIC logLik deviance Chisq Chi Df Pr(>Chisq)~~

~~lmernobatchnosex 5 -366.06 -354.67 188.03 -376.06~~

~~lmernobatch 6 -369.79 -356.13 190.89 -381.79 5.7278 1 0.0167 \*~~

~~---~~

~~Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1~~

~~> anova(lmernobatch,lmernobatchnoact)~~

~~refitting model(s) with ML (instead of REML)~~

~~Data: NULL~~

~~Models:~~

~~lmernobatchnoact: Ulmin ~ Sex + chamber + (1 | Date)~~

~~lmernobatch: Ulmin ~ Act + Sex + chamber + (1 | Date)~~

~~Df AIC BIC logLik deviance Chisq Chi Df Pr(>Chisq)~~

~~lmernobatchnoact 5 -371.72 -360.33 190.86 -381.72~~

~~lmernobatch 6 -369.79 -356.13 190.89 -381.79 0.07 1 0.7914~~

~~> anova(lmernobatch,lmernobatchnochamber)~~

~~refitting model(s) with ML (instead of REML)~~

~~Data: NULL~~

~~Models:~~

~~lmernobatchnochamber: Ulmin ~ Sex + Act + (1 | Date)~~

~~lmernobatch: Ulmin ~ Act + Sex + chamber + (1 | Date)~~

~~Df AIC BIC logLik deviance Chisq Chi Df Pr(>Chisq)~~

~~lmernobatchnochamber 5 -360.00 -348.62 185.00 -370.00~~

~~lmernobatch 6 -369.79 -356.13 190.89 -381.79 11.784 1 0.0005974 \*\*\*~~

~~---~~

~~Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1~~

~~\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_~~

~~#Whole organismmmm~~

~~Models with sex and mass~~

~~> summary(wlmer)~~

~~Linear mixed model fit by REML ['lmerMod']~~

~~Formula:)~~

~~REML criterion at convergence: -344.1~~

~~Scaled residuals:~~

~~Min 1Q Median 3Q Max~~

~~-2.20995 -0.62018 -0.07768 0.63597 2.83496~~

~~Random effects:~~

~~Groups Name Variance Std.Dev. Corr~~

~~Date (Intercept) 5.577e-05 0.007468~~

~~batchFour 4.727e-05 0.006875 -0.98~~

~~batchOne 1.283e-04 0.011327 -0.09 0.27~~

~~batchSix 1.309e-04 0.011443 1.00 -0.98 -0.09~~

~~batchThree 5.627e-05 0.007501 -1.00 0.98 0.09 -1.00~~

~~batchTwo 5.599e-05 0.007483 -1.00 0.98 0.09 -1.00 1.00~~

~~Residual 2.592e-04 0.016100~~

~~Number of obs: 72, groups: Date, 3~~

~~Fixed effects:~~

~~Estimate Std. Error t value~~

~~(Intercept) 0.0772519 0.0115810 6.671~~

~~Mass 0.0002783 0.0044882 0.062~~

~~SexM -0.0093536 0.0039200 -2.386~~

~~Act -0.0082488 0.0446375 -0.185~~

~~chamber -0.0019983 0.0005567 -3.589~~

~~Correlation of Fixed Effects:~~

~~(Intr) Mass SexM Act~~

~~Mass -0.903~~

~~SexM -0.380 0.249~~

~~Act -0.178 0.065 -0.012~~

~~chamber -0.213 -0.083 -0.017 -0.140~~

~~convergence code: 0~~

~~boundary (singular) fit: see ?isSingular~~

~~> anova(wlmer,wlmernoact)~~

~~refitting model(s) with ML (instead of REML)~~

~~Data: NULL~~

~~Models:~~

~~wlmernoact: Ulmin ~ Mass + Sex + chamber + (batch | Date)~~

~~wlmer: Ulmin ~ Mass + Sex + Act + chamber + (batch | Date)~~

~~Df AIC BIC logLik deviance Chisq Chi Df Pr(>Chisq)~~

~~wlmernoact 26 -338.20 -279.01 195.10 -390.20~~

~~wlmer 27 -336.25 -274.78 195.13 -390.25 0.0517 1 0.8202~~

~~> anova(wlmer,wlmernosex)~~

~~refitting model(s) with ML (instead of REML)~~

~~Data: NULL~~

~~Models:~~

~~wlmernosex: Ulmin ~ Mass + Act + chamber + (batch | Date)~~

~~wlmer: Ulmin ~ Mass + Sex + Act + chamber + (batch | Date)~~

~~Df AIC BIC logLik deviance Chisq Chi Df Pr(>Chisq)~~

~~wlmernosex 26 -332.37 -273.18 192.19 -384.37~~

~~wlmer 27 -336.25 -274.78 195.13 -390.25 5.8843 1 0.01528 \*~~

~~---~~

~~Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1~~

~~> anova(wlmer,wlmernomass)~~

~~refitting model(s) with ML (instead of REML)~~

~~Data: NULL~~

~~Models:~~

~~wlmernomass: Ulmin ~ Sex + Act + chamber + (batch | Date)~~

~~wlmer: Ulmin ~ Mass + Sex + Act + chamber + (batch | Date)~~

~~Df AIC BIC logLik deviance Chisq Chi Df Pr(>Chisq)~~

~~wlmernomass 26 -338.25 -279.06 195.13 -390.25~~

~~wlmer 27 -336.25 -274.78 195.13 -390.25 1e-04 1 0.9914~~

~~> anova(wlmer,wlmernochamber)~~

~~refitting model(s) with ML (instead of REML)~~

~~Data: NULL~~

~~Models:~~

~~wlmernochamber: Ulmin ~ Mass + Sex + Act + (batch | Date)~~

~~wlmer: Ulmin ~ Mass + Sex + Act + chamber + (batch | Date)~~

~~Df AIC BIC logLik deviance Chisq Chi Df Pr(>Chisq)~~

~~wlmernochamber 26 -325.74 -266.55 188.87 -377.74~~

~~wlmer 27 -336.25 -274.78 195.13 -390.25 12.509 1 0.000405 \*\*\*~~

~~---~~

~~Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1~~

~~#Wlmernomass was new base model~~

~~> summary(wlmernomass)~~

~~Linear mixed model fit by REML ['lmerMod']~~

~~Formula: Ulmin ~ Sex + Act + chamber + (batch | Date)~~

~~REML criterion at convergence: -353.1~~

~~Scaled residuals:~~

~~Min 1Q Median 3Q Max~~

~~-2.22682 -0.61517 -0.07841 0.64111 2.85245~~

~~Random effects:~~

~~Groups Name Variance Std.Dev. Corr~~

~~Date (Intercept) 5.331e-05 0.007301~~

~~batchFour 3.677e-05 0.006064 -1.00~~

~~batchOne 4.590e-05 0.006775 0.71 -0.65~~

~~batchSix 1.332e-04 0.011541 1.00 -1.00 0.71~~

~~batchThree 5.361e-05 0.007322 -1.00 1.00 -0.71 -1.00~~

~~batchTwo 5.365e-05 0.007324 -1.00 1.00 -0.71 -1.00 1.00~~

~~Residual 2.553e-04 0.015979~~

~~Number of obs: 72, groups: Date, 3~~

~~Fixed effects:~~

~~Estimate Std. Error t value~~

~~(Intercept) 0.0779050 0.0049368 15.781~~

~~SexM -0.0094133 0.0037678 -2.498~~

~~Act -0.0087725 0.0442073 -0.198~~

~~chamber -0.0019948 0.0005506 -3.623~~

~~Correlation of Fixed Effects:~~

~~(Intr) SexM Act~~

~~SexM -0.373~~

~~Act -0.278 -0.029~~

~~chamber -0.674 0.004 -0.136~~

~~convergence code: 0~~

~~boundary (singular) fit: see ?isSingular~~

~~> anova(wlmernomass,wlmernomassnoact)~~

~~refitting model(s) with ML (instead of REML)~~

~~Data: NULL~~

~~Models:~~

~~wlmernomassnoact: Ulmin ~ Sex + chamber + (batch | Date)~~

~~wlmernomass: Ulmin ~ Sex + Act + chamber + (batch | Date)~~

~~Df AIC BIC logLik deviance Chisq Chi Df Pr(>Chisq)~~

~~wlmernomassnoact 25 -340.20 -283.28 195.10 -390.20~~

~~wlmernomass 26 -338.25 -279.06 195.13 -390.25 0.054 1 0.8163~~

~~> anova(wlmernomass,wlmernomassnosex)~~

~~refitting model(s) with ML (instead of REML)~~

~~Data: NULL~~

~~Models:~~

~~wlmernomassnosex: Ulmin ~ Act + chamber + (batch | Date)~~

~~wlmernomass: Ulmin ~ Sex + Act + chamber + (batch | Date)~~

~~Df AIC BIC logLik deviance Chisq Chi Df Pr(>Chisq)~~

~~wlmernomassnosex 25 -333.94 -277.02 191.97 -383.94~~

~~wlmernomass 26 -338.25 -279.06 195.13 -390.25 6.3135 1 0.01198 \*~~

~~---~~

~~Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1~~

~~> anova(wlmernomass,wlmernomassnochamber)~~

~~refitting model(s) with ML (instead of REML)~~

~~Data: NULL~~

~~Models:~~

~~wlmernomassnochamber: Ulmin ~ Sex + Act + (batch | Date)~~

~~wlmernomass: Ulmin ~ Sex + Act + chamber + (batch | Date)~~

~~Df AIC BIC logLik deviance Chisq Chi Df Pr(>Chisq)~~

~~wlmernomassnochamber 25 -326.29 -269.37 188.14 -376.29~~

~~wlmernomass 26 -338.25 -279.06 195.13 -390.25 13.967 1 0.000186 \*\*\*~~

~~---~~

~~Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1~~

~~#Wlmernomassnoact was new base model~~

~~> summary(wlmernomassnoact)~~

~~Linear mixed model fit by REML ['lmerMod']~~

~~Formula: Ulmin ~ Sex + chamber + (batch | Date)~~

~~REML criterion at convergence: -357.4~~

~~Scaled residuals:~~

~~Min 1Q Median 3Q Max~~

~~-2.2356 -0.6050 -0.1040 0.6556 2.8839~~

~~Random effects:~~

~~Groups Name Variance Std.Dev. Corr~~

~~Date (Intercept) 5.321e-05 0.007294~~

~~batchFour 3.317e-05 0.005760 -1.00~~

~~batchOne 3.384e-05 0.005817 1.00 -1.00~~

~~batchSix 1.266e-04 0.011251 1.00 -1.00 1.00~~

~~batchThree 5.310e-05 0.007287 -1.00 1.00 -1.00 -1.00~~

~~batchTwo 5.324e-05 0.007297 -1.00 1.00 -1.00 -1.00 1.00~~

~~Residual 2.517e-04 0.015866~~

~~Number of obs: 72, groups: Date, 3~~

~~Fixed effects:~~

~~Estimate Std. Error t value~~

~~(Intercept) 0.0775876 0.0047161 16.452~~

~~SexM -0.0094350 0.0037398 -2.523~~

~~chamber -0.0020097 0.0005417 -3.710~~

~~Correlation of Fixed Effects:~~

~~(Intr) SexM~~

~~SexM -0.396~~

~~chamber -0.747 0.000~~

~~convergence code: 0~~

~~boundary (singular) fit: see ?isSingular~~

~~> anova(wlmernomassnoact,wlmernomassnoactnochamber)~~

~~refitting model(s) with ML (instead of REML)~~

~~Data: NULL~~

~~Models:~~

~~wlmernomassnoactnochamber: Ulmin ~ Sex + (batch | Date)~~

~~wlmernomassnoact: Ulmin ~ Sex + chamber + (batch | Date)~~

~~Df AIC BIC logLik deviance Chisq Chi Df Pr(>Chisq)~~

~~wlmernomassnoactnochamber 24 -329.13 -274.49 188.56 -377.13~~

~~wlmernomassnoact 25 -340.20 -283.28 195.10 -390.20 13.071 1 3e-04 \*\*\*~~

~~---~~

~~Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1~~

~~> anova(wlmernomassnoact,wlmernomassnoactnosex)~~

~~refitting model(s) with ML (instead of REML)~~

~~Data: NULL~~

~~Models:~~

~~wlmernomassnoactnosex: Ulmin ~ chamber + (batch | Date)~~

~~wlmernomassnoact: Ulmin ~ Sex + chamber + (batch | Date)~~

~~Df AIC BIC logLik deviance Chisq Chi Df Pr(>Chisq)~~

~~wlmernomassnoactnosex 24 -335.85 -281.21 191.93 -383.85~~

~~wlmernomassnoact 25 -340.20 -283.28 195.10 -390.20 6.3482 1 0.01175 \*~~

~~---~~

~~Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1~~

~~> shapiro.test(resid((wlmernomassnoact))~~

~~+ )~~

~~Shapiro-Wilk normality test~~

~~data: resid((wlmernomassnoact))~~

~~W = 0.99123, p-value = 0.902~~

