**Nitrogen GLMM results by species random effects**

**A=0.025, B=0.050, C=0.075, D=0**

**BRDI all random**

Generalized linear mixed model fit by the Laplace approximation

Formula: germresp ~ TREAT + (1 | SHELF) + (1 | PETRI)

Data: brdi

AIC BIC logLik deviance

60.54 67.61 -24.27 48.54

Random effects:

Groups Name Variance Std.Dev.

PETRI (Intercept) 1.187724 1.08983

SHELF (Intercept) 0.026675 0.16333

Number of obs: 24, groups: PETRI, 24; SHELF, 4

Fixed effects:

Estimate Std. Error z value Pr(>|z|)

(Intercept) 4.0554 0.7387 5.490 4.02e-08 \*\*\*

TREATB -0.2113 1.0106 -0.209 0.834351

TREATC -2.6568 0.8896 -2.986 0.002823 \*\*

TREATD -3.0822 0.8819 -3.495 0.000474 \*\*\*

**BRDI shelf**

Generalized linear mixed model fit by the Laplace approximation

Formula: germ.resp ~ TREAT + (1 | SHELF)

Data: brdi

AIC BIC logLik deviance

94.05 99.94 -42.03 84.05

Random effects:

Groups Name Variance Std.Dev.

SHELF (Intercept) 0.37127 0.60932

Number of obs: 24, groups: SHELF, 4

Fixed effects:

Estimate Std. Error z value Pr(>|z|)

(Intercept) 3.9044 0.6032 6.472 9.65e-11 \*\*\*

TREATB -0.2492 0.6868 -0.363 0.717

TREATC -2.4771 0.5511 -4.495 6.96e-06 \*\*\*

TREATD -2.8598 0.5435 -5.262 1.43e-07 \*\*\*

---

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

Correlation of Fixed Effects:

(Intr) TREATB TREATC

TREATB -0.630

TREATC -0.787 0.690

TREATD -0.804 0.700 0.872

**BRDI petri**

Generalized linear mixed model fit by the Laplace approximation

Formula: germ.resp ~ TREAT + (1 | PETRI)

Data: brdi

AIC BIC logLik deviance

58.54 64.43 -24.27 48.54

Random effects:

Groups Name Variance Std.Dev.

PETRI (Intercept) 1.2092 1.0996

Number of obs: 24, groups: PETRI, 24

Fixed effects:

Estimate Std. Error z value Pr(>|z|)

(Intercept) 4.0338 0.7356 5.484 4.16e-08 \*\*\*

TREATB -0.2098 1.0146 -0.207 0.836170

TREATC -2.6462 0.8929 -2.964 0.003040 \*\*

TREATD -3.0765 0.8860 -3.472 0.000516 \*\*\*

---

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

Correlation of Fixed Effects:

(Intr) TREATB TREATC

TREATB -0.725

TREATC -0.824 0.597

TREATD -0.830 0.602 0.684

**MODEL COMPARISON all vs. shelf**

Data: brdi

Models:

bshelf: germ.resp ~ TREAT + (1 | SHELF)

bresults: germ.resp ~ TREAT + (1 | SHELF) + (1 | PETRI)

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

bshelf 5 94.052 99.942 -42.026

bresults 6 60.540 67.608 -24.270 35.512 1 2.534e-09 \*\*\*

---

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

**MODEL COMPARISON ALL vs. PETRI**

Data: brdi

Models:

bpetri: germ.resp ~ TREAT + (1 | PETRI)

bresults: germ.resp ~ TREAT + (1 | SHELF) + (1 | PETRI)

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

bpetri 5 58.545 64.435 -24.272

bresults 6 60.540 67.608 -24.270 0.0048 1 0.9445

**MODEL COMPARISON SHELF vs. PETRI**

Data: brdi

Models:

bshelf: germ.resp ~ TREAT + (1 | SHELF)

bpetri: germ.resp ~ TREAT + (1 | PETRI)

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

bshelf 5 94.052 99.942 -42.026

bpetri 5 58.545 64.435 -24.272 35.508 0 < 2.2e-16 \*\*\*

---

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

**OMNIBUS for petri vs. null**

Data: brdi

Models:

bpetri.null: germ.resp ~ 1 + (1 | PETRI)

bpetri: germ.resp ~ TREAT + (1 | PETRI)

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

bpetri.null 2 70.288 72.644 -33.144

bpetri 5 58.545 64.435 -24.272 17.743 3 0.0004968 \*\*\*

---

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

**SWITCH TO B AS INTERCEPT**

Generalized linear mixed model fit by the Laplace approximation

Formula: germ.resp ~ TREAT.B + (1 | PETRI)

Data: brdi

AIC BIC logLik deviance

58.54 64.43 -24.27 48.54

Random effects:

Groups Name Variance Std.Dev.

PETRI (Intercept) 1.2092 1.0996

Number of obs: 24, groups: PETRI, 24

Fixed effects:

Estimate Std. Error z value Pr(>|z|)

(Intercept) 3.8240 0.6988 5.472 4.45e-08 \*\*\*

TREAT.BA 0.2098 1.0146 0.207 0.836170

TREAT.BC -2.4363 0.8629 -2.824 0.004749 \*\*

TREAT.BD -2.8667 0.8558 -3.350 0.000809 \*\*\*

---

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

Correlation of Fixed Effects:

(Intr) TREAT.BA TREAT.BC

TREAT.BA -0.689

TREAT.BC -0.810 0.558

TREAT.BD -0.817 0.562 0.661

**SWITCH TO C AS INTERCEPT**

Generalized linear mixed model fit by the Laplace approximation

Formula: germ.resp ~ TREAT.C + (1 | PETRI)

Data: brdi

AIC BIC logLik deviance

58.54 64.43 -24.27 48.54

Random effects:

Groups Name Variance Std.Dev.

PETRI (Intercept) 1.2092 1.0996

Number of obs: 24, groups: PETRI, 24

Fixed effects:

Estimate Std. Error z value Pr(>|z|)

(Intercept) 1.3876 0.5061 2.742 0.00611 \*\*

TREAT.CA 2.6462 0.8929 2.964 0.00304 \*\*

TREAT.CB 2.4363 0.8629 2.824 0.00475 \*\*

TREAT.CD -0.4304 0.7072 -0.608 0.54283

---

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

Correlation of Fixed Effects:

(Intr) TREAT.CA TREAT.CB

TREAT.CA -0.567

TREAT.CB -0.587 0.332

TREAT.CD -0.716 0.406 0.420

**SWTICH TO D INTERCEPT**

Generalized linear mixed model fit by the Laplace approximation

Formula: germ.resp ~ TREAT.D + (1 | PETRI)

Data: brdi

AIC BIC logLik deviance

58.54 64.43 -24.27 48.54

Random effects:

Groups Name Variance Std.Dev.

PETRI (Intercept) 1.2092 1.0996

Number of obs: 24, groups: PETRI, 24

Fixed effects:

Estimate Std. Error z value Pr(>|z|)

(Intercept) 0.9573 0.4939 1.938 0.052604 .

TREAT.DA 3.0765 0.8860 3.472 0.000516 \*\*\*

TREAT.DB 2.8666 0.8558 3.350 0.000809 \*\*\*

TREAT.DC 0.4303 0.7072 0.608 0.542927

---

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

Correlation of Fixed Effects:

(Intr) TREAT.DA TREAT.DB

TREAT.DA -0.557

TREAT.DB -0.577 0.322

TREAT.DC -0.698 0.389 0.403

**HOMU ALL RANDOM**

Generalized linear mixed model fit by the Laplace approximation

Formula: horesp ~ TREAT + (1 | SHELF) + (1 | PETRI)

Data: homu

AIC BIC logLik deviance

61.79 68.86 -24.9 49.79

Random effects:

Groups Name Variance Std.Dev.

PETRI (Intercept) 0.4449 0.66701

SHELF (Intercept) 0.0000 0.00000

Number of obs: 24, groups: PETRI, 24; SHELF, 4

Fixed effects:

Estimate Std. Error z value Pr(>|z|)

(Intercept) -0.1480 0.3274 -0.452 0.651280

TREATB -1.7155 0.4991 -3.437 0.000588 \*\*\*

TREATC -1.3252 0.4786 -2.769 0.005630 \*\*

TREATD -0.9675 0.4715 -2.052 0.040200 \*

**HOMU SHELF**

Generalized linear mixed model fit by the Laplace approximation

Formula: germ.resp ~ TREAT + (1 | SHELF)

Data: homu

AIC BIC logLik deviance

74.76 80.65 -32.38 64.76

Random effects:

Groups Name Variance Std.Dev.

SHELF (Intercept) 0 0

Number of obs: 24, groups: SHELF, 4

Fixed effects:

Estimate Std. Error z value Pr(>|z|)

(Intercept) -0.1566 0.1773 -0.883 0.37725

TREATB -1.5390 0.3010 -5.113 3.18e-07 \*\*\*

TREATC -1.1946 0.2736 -4.366 1.26e-05 \*\*\*

TREATD -0.8406 0.2597 -3.236 0.00121 \*\*

---

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

Correlation of Fixed Effects:

(Intr) TREATB TREATC

TREATB -0.589

TREATC -0.648 0.382

TREATD -0.683 0.402 0.442

**HOMU PETRI**

Generalized linear mixed model fit by the Laplace approximation

Formula: germ.resp ~ TREAT + (1 | PETRI)

Data: homu

AIC BIC logLik deviance

59.79 65.68 -24.9 49.79

Random effects:

Groups Name Variance Std.Dev.

PETRI (Intercept) 0.44489 0.667

Number of obs: 24, groups: PETRI, 24

Fixed effects:

Estimate Std. Error z value Pr(>|z|)

(Intercept) -0.1480 0.3274 -0.452 0.651283

TREATB -1.7155 0.4991 -3.437 0.000588 \*\*\*

TREATC -1.3252 0.4786 -2.769 0.005630 \*\*

TREATD -0.9675 0.4715 -2.052 0.040193 \*

---

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

Correlation of Fixed Effects:

(Intr) TREATB TREATC

TREATB -0.656

TREATC -0.684 0.449

TREATD -0.694 0.455 0.475

**MODEL COMPARISON ALL VS. SHELF**

Data: homu

Models:

hshelf: germ.resp ~ TREAT + (1 | SHELF)

hresults: germ.resp ~ TREAT + (1 | SHELF) + (1 | PETRI)

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

hshelf 5 74.759 80.649 -32.379

hresults 6 61.794 68.862 -24.897 14.965 1 0.0001095 \*\*\*

---

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

**MODEL COMPARISON all vs. petri**

Data: homu

Models:

hshelf: germ.resp ~ TREAT + (1 | PETRI)

hresults: germ.resp ~ TREAT + (1 | SHELF) + (1 | PETRI)

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

hshelf 5 59.794 65.684 -24.897

hresults 6 61.794 68.862 -24.897 0 1 0.9999

**MODEL COMPARISON PETRI VS. SHELF**

Data: homu

Models:

hshelf: germ.resp ~ TREAT + (1 | SHELF)

hpetri: germ.resp ~ TREAT + (1 | PETRI)

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

hshelf 5 74.759 80.649 -32.379

hpetri 5 59.794 65.684 -24.897 14.965 0 < 2.2e-16 \*\*\*

---

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

**OMNIBUS for petri vs. null**

Data: homu

Models:

hpetri.null: germ.resp ~ 1 + (1 | PETRI)

hpetri: germ.resp ~ TREAT + (1 | PETRI)

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

hpetri.null 2 64.966 67.322 -30.483

hpetri 5 59.794 65.684 -24.897 11.172 3 0.01083 \*

---

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

**SWITCH TO B INTERCEPT**

Generalized linear mixed model fit by the Laplace approximation

Formula: germ.resp ~ TREAT.B + (1 | PETRI)

Data: homu

AIC BIC logLik deviance

59.79 65.68 -24.9 49.79

Random effects:

Groups Name Variance Std.Dev.

PETRI (Intercept) 0.4449 0.667

Number of obs: 24, groups: PETRI, 24

Fixed effects:

Estimate Std. Error z value Pr(>|z|)

(Intercept) -1.8635 0.3768 -4.946 7.58e-07 \*\*\*

TREAT.BA 1.7155 0.4991 3.437 0.000588 \*\*\*

TREAT.BC 0.3904 0.5137 0.760 0.447302

TREAT.BD 0.7480 0.5071 1.475 0.140166

---

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

Correlation of Fixed Effects:

(Intr) TREAT.BA TREAT.BC

TREAT.BA -0.755

TREAT.BC -0.733 0.554

TREAT.BD -0.743 0.561 0.545

**SWITCH TO C INTERCEPT**

Generalized linear mixed model fit by the Laplace approximation

Formula: germ.resp ~ TREAT.C + (1 | PETRI)

Data: homu

AIC BIC logLik deviance

59.79 65.68 -24.9 49.79

Random effects:

Groups Name Variance Std.Dev.

PETRI (Intercept) 0.4449 0.667

Number of obs: 24, groups: PETRI, 24

Fixed effects:

Estimate Std. Error z value Pr(>|z|)

(Intercept) -1.4731 0.3492 -4.219 2.45e-05 \*\*\*

TREAT.CA 1.3252 0.4786 2.769 0.00563 \*\*

TREAT.CB -0.3904 0.5137 -0.760 0.44730

TREAT.CD 0.3577 0.4869 0.735 0.46261

---

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

Correlation of Fixed Effects:

(Intr) TREAT.CA TREAT.CB

TREAT.CA -0.729

TREAT.CB -0.680 0.496

TREAT.CD -0.717 0.523 0.487

**SWITCH TO D INTERCEPT**

Generalized linear mixed model fit by the Laplace approximation

Formula: germ.resp ~ TREAT.D + (1 | PETRI)

Data: homu

AIC BIC logLik deviance

59.79 65.68 -24.9 49.79

Random effects:

Groups Name Variance Std.Dev.

PETRI (Intercept) 0.44489 0.667

Number of obs: 24, groups: PETRI, 24

Fixed effects:

Estimate Std. Error z value Pr(>|z|)

(Intercept) -1.1154 0.3394 -3.287 0.00101 \*\*

TREAT.DA 0.9675 0.4715 2.052 0.04020 \*

TREAT.DB -0.7481 0.5071 -1.475 0.14015

TREAT.DC -0.3577 0.4869 -0.735 0.46252

---

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

Correlation of Fixed Effects:

(Intr) TREAT.DA TREAT.DB

TREAT.DA -0.720

TREAT.DB -0.669 0.482

TREAT.DC -0.697 0.502 0.466

**SIIR ALL RANDOM**

Generalized linear mixed model fit by the Laplace approximation

Formula: siresp ~ TREAT + (1 | SHELF) + (1 | PETRI)

Data: siir

AIC BIC logLik deviance

53.92 60.98 -20.96 41.92

Random effects:

Groups Name Variance Std.Dev.

PETRI (Intercept) 2.6984e+00 1.6427e+00

SHELF (Intercept) 1.3570e-12 1.1649e-06

Number of obs: 24, groups: PETRI, 24; SHELF, 4

Fixed effects:

Estimate Std. Error z value Pr(>|z|)

(Intercept) 0.2427 0.7870 0.308 0.75780

TREATB -2.5219 1.2826 -1.966 0.04927 \*

TREATC -2.7170 1.1248 -2.416 0.01571 \*

TREATD 4.6409 1.7706 2.621 0.00877 \*\*

---

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

Correlation of Fixed Effects:

(Intr) TREATB TREATC

TREATB -0.614

TREATC -0.700 0.429

TREATD -0.444 0.273 0.311

**SIIR SHELF**

Generalized linear mixed model fit by the Laplace approximation

Formula: germ.resp ~ TREAT + (1 | SHELF)

Data: siir

AIC BIC logLik deviance

68.86 74.75 -29.43 58.86

Random effects:

Groups Name Variance Std.Dev.

SHELF (Intercept) 0.32396 0.56917

Number of obs: 24, groups: SHELF, 4

Fixed effects:

Estimate Std. Error z value Pr(>|z|)

(Intercept) 0.3714 0.4259 0.872 0.383178

TREATB -2.1176 0.6377 -3.321 0.000898 \*\*\*

TREATC -2.5755 0.4980 -5.172 2.32e-07 \*\*\*

TREATD 3.7188 1.0892 3.414 0.000640 \*\*\*

---

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

Correlation of Fixed Effects:

(Intr) TREATB TREATC

TREATB -0.350

TREATC -0.460 0.300

TREATD -0.197 0.124 0.156

**SIIR PETRI**

Generalized linear mixed model fit by the Laplace approximation

Formula: germ.resp ~ TREAT + (1 | PETRI)

Data: siir

AIC BIC logLik deviance

51.92 57.81 -20.96 41.92

Random effects:

Groups Name Variance Std.Dev.

PETRI (Intercept) 2.6985 1.6427

Number of obs: 24, groups: PETRI, 24

Fixed effects:

Estimate Std. Error z value Pr(>|z|)

(Intercept) 0.2427 0.7870 0.308 0.75780

TREATB -2.5219 1.2826 -1.966 0.04928 \*

TREATC -2.7170 1.1248 -2.415 0.01572 \*

TREATD 4.6409 1.7706 2.621 0.00877 \*\*

---

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

Correlation of Fixed Effects:

(Intr) TREATB TREATC

TREATB -0.614

TREATC -0.700 0.429

TREATD -0.444 0.273 0.311

**MODEL COMPARISON ALL VS. SHELF**

Data: siir

Models:

sshelf: germ.resp ~ TREAT + (1 | SHELF)

sresults: germ.resp ~ TREAT + (1 | SHELF) + (1 | PETRI)

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

sshelf 5 68.856 74.747 -29.428

sresults 6 53.915 60.984 -20.958 16.941 1 3.856e-05 \*\*\*

---

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

**MODEL COMPARISON ALL VS. PETRI**

Data: siir

Models:

spetri: germ.resp ~ TREAT + (1 | PETRI)

sresults: germ.resp ~ TREAT + (1 | SHELF) + (1 | PETRI)

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

spetri 5 51.915 57.806 -20.958

sresults 6 53.915 60.984 -20.958 0 1 1

**MODEL COMPARISON SHELF VS. PETRI**

Data: siir

Models:

sshelf: germ.resp ~ TREAT + (1 | SHELF)

spetri: germ.resp ~ TREAT + (1 | PETRI)

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

sshelf 5 68.856 74.747 -29.428

spetri 5 51.915 57.806 -20.958 16.941 0 < 2.2e-16 \*\*\*

---

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

**OMNIBUS for petri vs. null**

Data: siir

Models:

spetri.null: germ.resp ~ 1 + (1 | PETRI)

spetri: germ.resp ~ TREAT + (1 | PETRI)

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

spetri.null 2 71.166 73.523 -33.583

spetri 5 51.915 57.806 -20.958 25.251 3 1.368e-05 \*\*\*

---

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

**SWITCH TO B INTERCEPT**

Generalized linear mixed model fit by the Laplace approximation

Formula: germ.resp ~ TREAT.B + (1 | PETRI)

Data: siir

AIC BIC logLik deviance

51.92 57.81 -20.96 41.92

Random effects:

Groups Name Variance Std.Dev.

PETRI (Intercept) 2.6985 1.6427

Number of obs: 24, groups: PETRI, 24

Fixed effects:

Estimate Std. Error z value Pr(>|z|)

(Intercept) -2.2792 1.0128 -2.250 0.024422 \*

TREAT.BA 2.5219 1.2826 1.966 0.049276 \*

TREAT.BC -0.1951 1.2929 -0.151 0.880069

TREAT.BD 7.1627 1.8819 3.806 0.000141 \*\*\*

---

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

Correlation of Fixed Effects:

(Intr) TREAT.BA TREAT.BC

TREAT.BA -0.790

TREAT.BC -0.783 0.619

TREAT.BD -0.538 0.425 0.422

**SWITCH TO C INTERCEPT**

Generalized linear mixed model fit by the Laplace approximation

Formula: germ.resp ~ TREAT.C + (1 | PETRI)

Data: siir

AIC BIC logLik deviance

51.92 57.81 -20.96 41.92

Random effects:

Groups Name Variance Std.Dev.

PETRI (Intercept) 2.6985 1.6427

Number of obs: 24, groups: PETRI, 24

Fixed effects:

Estimate Std. Error z value Pr(>|z|)

(Intercept) -2.4743 0.8036 -3.079 0.00208 \*\*

TREAT.CA 2.7170 1.1248 2.415 0.01572 \*

TREAT.CB 0.1951 1.2929 0.151 0.88007

TREAT.CD 7.3578 1.7781 4.138 3.5e-05 \*\*\*

---

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

Correlation of Fixed Effects:

(Intr) TREAT.CA TREAT.CB

TREAT.CA -0.714

TREAT.CB -0.622 0.444

TREAT.CD -0.452 0.323 0.281

**SWITCH TO D INTERCEPT**

Generalized linear mixed model fit by the Laplace approximation

Formula: germ.resp ~ TREAT.D + (1 | PETRI)

Data: siir

AIC BIC logLik deviance

51.92 57.81 -20.96 41.92

Random effects:

Groups Name Variance Std.Dev.

PETRI (Intercept) 2.6985 1.6427

Number of obs: 24, groups: PETRI, 24

Fixed effects:

Estimate Std. Error z value Pr(>|z|)

(Intercept) 4.884 1.586 3.079 0.002077 \*\*

TREAT.DA -4.641 1.771 -2.621 0.008766 \*\*

TREAT.DB -7.163 1.882 -3.806 0.000141 \*\*\*

TREAT.DC -7.358 1.778 -4.138 3.5e-05 \*\*\*

---

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

Correlation of Fixed Effects:

(Intr) TREAT.DA TREAT.DB

TREAT.DA -0.896

TREAT.DB -0.843 0.755

TREAT.DC -0.892 0.799 0.752

**MIGU ALL RANDOM**

Generalized linear mixed model fit by the Laplace approximation

Formula: miresp ~ TREAT + (1 | SHELF) + (1 | PETRI)

Data: migu

AIC BIC logLik deviance

36.13 43.2 -12.07 24.13

Random effects:

Groups Name Variance Std.Dev.

PETRI (Intercept) 1.7651e-12 1.3286e-06

SHELF (Intercept) 0.0000e+00 0.0000e+00

Number of obs: 24, groups: PETRI, 24; SHELF, 4

Fixed effects:

Estimate Std. Error z value Pr(>|z|)

(Intercept) 3.44470 0.58650 5.873 4.27e-09 \*\*\*

TREATB -0.01072 0.82950 -0.013 0.9897

TREATC -0.27712 0.77750 -0.356 0.7215

TREATD -1.47860 0.71192 -2.077 0.0378 \*

---

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

Correlation of Fixed Effects:

(Intr) TREATB TREATC

TREATB -0.707

TREATC -0.754 0.533

TREATD -0.824 0.582 0.621

**MIGU SHELF**

Generalized linear mixed model fit by the Laplace approximation

Formula: germ.resp ~ TREAT + (1 | SHELF)

Data: migu

AIC BIC logLik deviance

34.13 40.02 -12.07 24.13

Random effects:

Groups Name Variance Std.Dev.

SHELF (Intercept) 0 0

Number of obs: 24, groups: SHELF, 4

Fixed effects:

Estimate Std. Error z value Pr(>|z|)

(Intercept) 3.44468 0.58649 5.873 4.27e-09 \*\*\*

TREATB -0.01069 0.82949 -0.013 0.9897

TREATC -0.27710 0.77749 -0.356 0.7215

TREATD -1.47860 0.71192 -2.077 0.0378 \*

---

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

Correlation of Fixed Effects:

(Intr) TREATB TREATC

TREATB -0.707

TREATC -0.754 0.533

TREATD -0.824 0.582 0.621

**MIGU PETRI**

Generalized linear mixed model fit by the Laplace approximation

Formula: germ.resp ~ TREAT + (1 | PETRI)

Data: migu

AIC BIC logLik deviance

34.13 40.02 -12.07 24.13

Random effects:

Groups Name Variance Std.Dev.

PETRI (Intercept) 0 0

Number of obs: 24, groups: PETRI, 24

Fixed effects:

Estimate Std. Error z value Pr(>|z|)

(Intercept) 3.44468 0.58649 5.873 4.27e-09 \*\*\*

TREATB -0.01069 0.82949 -0.013 0.9897

TREATC -0.27710 0.77749 -0.356 0.7215

TREATD -1.47859 0.71192 -2.077 0.0378 \*

---

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

Correlation of Fixed Effects:

(Intr) TREATB TREATC

TREATB -0.707

TREATC -0.754 0.533

TREATD -0.824 0.582 0.621

**MODEL COMPARISON ALL VS. SHELF**

Data: migu

Models:

mshelf: germ.resp ~ TREAT + (1 | SHELF)

mresults: germ.resp ~ TREAT + (1 | SHELF) + (1 | PETRI)

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

mshelf 5 34.132 40.023 -12.066

mresults 6 36.132 43.201 -12.066 0 1 1

**MODEL COMPARISON ALL VS. PETRI**

Data: migu

Models:

mpetri: germ.resp ~ TREAT + (1 | PETRI)

mresults: germ.resp ~ TREAT + (1 | SHELF) + (1 | PETRI)

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

mpetri 5 34.132 40.023 -12.066

mresults 6 36.132 43.201 -12.066 0 1 1

**MODEL COMPARISON SHELF VS. PETRI**

Data: migu

Models:

mshelf: germ.resp ~ TREAT + (1 | SHELF)

mpetri: germ.resp ~ TREAT + (1 | PETRI)

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

mshelf 5 34.132 40.023 -12.066

mpetri 5 34.132 40.023 -12.066 0 0 < 2.2e-16 \*\*\*

---

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

**OMNIBUS for petri vs. null**

Data: migu

Models:

mpetri.null: germ.resp ~ 1 + (1 | PETRI)

mpetri: germ.resp ~ TREAT + (1 | PETRI)

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

mpetri.null 2 34.524 36.880 -15.262

mpetri 5 34.132 40.023 -12.066 6.3916 3 0.09404 .

---

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

**NAOF ALL RANDOM**

Generalized linear mixed model fit by the Laplace approximation

Formula: naresp ~ TREAT + (1 | SHELF) + (1 | PETRI)

Data: naof

AIC BIC logLik deviance

12 19.07 -2.466e-10 4.932e-10

Random effects:

Groups Name Variance Std.Dev.

PETRI (Intercept) 0.66667 0.81650

SHELF (Intercept) 0.44444 0.66667

Number of obs: 24, groups: PETRI, 6; SHELF, 4

Fixed effects:

Estimate Std. Error z value Pr(>|z|)

(Intercept) 2.896e+01 1.589e+05 0 1

TREATB 7.478e-08 2.247e+05 0 1

TREATC 7.478e-08 2.247e+05 0 1

TREATD 8.968e-08 2.247e+05 0 1

Correlation of Fixed Effects:

(Intr) TREATB TREATC

TREATB -0.707

TREATC -0.707 0.500

TREATD -0.707 0.500 0.500

**NAOF SHELF**

Generalized linear mixed model fit by the Laplace approximation

Formula: germ.resp ~ TREAT + (1 | SHELF)

Data: naof

AIC BIC logLik deviance

10 15.89 -1.938e-10 3.875e-10

Random effects:

Groups Name Variance Std.Dev.

SHELF (Intercept) 0.44444 0.66667

Number of obs: 24, groups: SHELF, 4

Fixed effects:

Estimate Std. Error z value Pr(>|z|)

(Intercept) 2.896e+01 1.589e+05 0 1

TREATB 7.478e-08 2.247e+05 0 1

TREATC 7.478e-08 2.247e+05 0 1

TREATD 8.968e-08 2.247e+05 0 1

Correlation of Fixed Effects:

(Intr) TREATB TREATC

TREATB -0.707

TREATC -0.707 0.500

TREATD -0.707 0.500 0.500

**NAOF PETRI**

Generalized linear mixed model fit by the Laplace approximation

Formula: germ.resp ~ TREAT + (1 | PETRI)

Data: naof

AIC BIC logLik deviance

10 15.89 -3.698e-10 7.397e-10

Random effects:

Groups Name Variance Std.Dev.

PETRI (Intercept) 2.6667 1.633

Number of obs: 24, groups: PETRI, 24

Fixed effects:

Estimate Std. Error z value Pr(>|z|)

(Intercept) 2.896e+01 1.589e+05 0 1

TREATB 7.478e-08 2.247e+05 0 1

TREATC 7.478e-08 2.247e+05 0 1

TREATD 8.968e-08 2.247e+05 0 1

Correlation of Fixed Effects:

(Intr) TREATB TREATC

TREATB -0.707

TREATC -0.707 0.500

TREATD -0.707 0.500 0.500

**MODEL COMPARISON ALL VS. SHELF**

Data: naof

Models:

nshelf: germ.resp ~ TREAT + (1 | SHELF)

nresults: germ.resp ~ TREAT + (1 | SHELF) + (1 | PETRI)

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

nshelf 5 10 15.890 -1.9376e-10

nresults 6 12 19.068 -4.0505e-10 0 1 1

**MODEL COMPARISON ALL VS. PETRI**

Data: naof

Models:

npetri: germ.resp ~ TREAT + (1 | PETRI)

nresults: germ.resp ~ TREAT + (1 | SHELF) + (1 | PETRI)

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

npetri 5 10 15.890 -3.6984e-10

nresults 6 12 19.068 -4.0505e-10 0 1 1

**MODEL COMPARISON SHELF VS. PETRI**

Data: naof

Models:

nshelf: germ.resp ~ TREAT + (1 | SHELF)

npetri: germ.resp ~ TREAT + (1 | PETRI)

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

nshelf 5 10 15.89 -1.9376e-10

npetri 5 10 15.89 -3.6984e-10 0 0 1

**OMNIBUS for petri vs. null**

Data: naof

Models:

npetri.null: germ.resp ~ 1 + (1 | PETRI)

npetri: germ.resp ~ TREAT + (1 | PETRI)

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

npetri.null 2 4 6.3561 -3.6984e-10

npetri 5 10 15.8903 -3.6984e-10 0 3 1

**POMO ALL RANDOM**

Generalized linear mixed model fit by the Laplace approximation

Formula: poresp ~ TREAT + (1 | SHELF) + (1 | PETRI)

Data: pomo

AIC BIC logLik deviance

12 19.07 -4.051e-10 8.101e-10

Random effects:

Groups Name Variance Std.Dev.

PETRI (Intercept) 2.66667 1.63299

SHELF (Intercept) 0.44444 0.66667

Number of obs: 24, groups: PETRI, 24; SHELF, 4

Fixed effects:

Estimate Std. Error z value Pr(>|z|)

(Intercept) 2.896e+01 1.589e+05 0 1

TREATB 7.478e-08 2.247e+05 0 1

TREATC 7.478e-08 2.247e+05 0 1

TREATD 8.968e-08 2.247e+05 0 1

Correlation of Fixed Effects:

(Intr) TREATB TREATC

TREATB -0.707

TREATC -0.707 0.500

TREATD -0.707 0.500 0.500

**POMO SHELF**

Generalized linear mixed model fit by the Laplace approximation

Formula: germ.resp ~ TREAT + (1 | SHELF)

Data: pomo

AIC BIC logLik deviance

10 15.89 -1.936e-10 3.872e-10

Random effects:

Groups Name Variance Std.Dev.

SHELF (Intercept) 0.44444 0.66667

Number of obs: 24, groups: SHELF, 4

Fixed effects:

Estimate Std. Error z value Pr(>|z|)

(Intercept) 2.888e+01 1.587e+05 0 1

TREATB 5.339e-02 2.246e+05 0 1

TREATC 7.938e-02 2.246e+05 0 1

TREATD 2.651e-02 2.247e+05 0 1

Correlation of Fixed Effects:

(Intr) TREATB TREATC

TREATB -0.706

TREATC -0.707 0.499

TREATD -0.706 0.499 0.499

**POMO PETRI**

Generalized linear mixed model fit by the Laplace approximation

Formula: germ.resp ~ TREAT + (1 | PETRI)

Data: pomo

AIC BIC logLik deviance

10 15.89 -3.696e-10 7.391e-10

Random effects:

Groups Name Variance Std.Dev.

PETRI (Intercept) 2.6667 1.633

Number of obs: 24, groups: PETRI, 24

Fixed effects:

Estimate Std. Error z value Pr(>|z|)

(Intercept) 2.888e+01 1.587e+05 0 1

TREATB 5.339e-02 2.246e+05 0 1

TREATC 7.938e-02 2.246e+05 0 1

TREATD 2.651e-02 2.247e+05 0 1

Correlation of Fixed Effects:

(Intr) TREATB TREATC

TREATB -0.706

TREATC -0.707 0.499

TREATD -0.706 0.499 0.499

**MODEL COMPARISON ALL VS. SHELF**

Data: pomo

Models:

pshelf: germ.resp ~ TREAT + (1 | SHELF)

presults: germ.resp ~ TREAT + (1 | SHELF) + (1 | PETRI)

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

pshelf 5 10 15.890 -1.9359e-10

presults 6 12 19.068 -4.0476e-10 0 1 1

**MODEL COMPARISON ALL VS. PETRI**

Data: pomo

Models:

ppetri: germ.resp ~ TREAT + (1 | PETRI)

presults: germ.resp ~ TREAT + (1 | SHELF) + (1 | PETRI)

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

ppetri 5 10 15.890 -3.6957e-10

presults 6 12 19.068 -4.0476e-10 0 1 1

**MODEL COMPARISON SHELF VS. PETRI**

Data: pomo

Models:

pshelf: germ.resp ~ TREAT + (1 | SHELF)

ppetri: germ.resp ~ TREAT + (1 | PETRI)

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

pshelf 5 10 15.89 -1.9359e-10

ppetri 5 10 15.89 -3.6957e-10 0 0 1

**OMNIBUS for petri vs. null**

Data: pomo

Models:

ppetri.null: germ.resp ~ 1 + (1 | PETRI)

ppetri: germ.resp ~ TREAT + (1 | PETRI)

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

ppetri.null 2 4 6.3561 -3.6961e-10

ppetri 5 10 15.8903 -3.6957e-10 0 3 1

**VEAN ONLY FIXED**

**VEAN ALL RANDOM**

Generalized linear mixed model fit by the Laplace approximation

Formula: veresp ~ TREAT + (1 | SHELF) + (1 | PETRI)

Data: vean

AIC BIC logLik deviance

12 19.07 -4.047e-10 8.093e-10

Random effects:

Groups Name Variance Std.Dev.

PETRI (Intercept) 2.66667 1.63299

SHELF (Intercept) 0.44444 0.66667

Number of obs: 24, groups: PETRI, 24; SHELF, 4

Fixed effects:

Estimate Std. Error z value Pr(>|z|)

(Intercept) 2.896e+01 1.589e+05 0 1

TREATB -1.283e-02 2.248e+05 0 1

TREATC -2.598e-02 2.248e+05 0 1

TREATD 6.263e-06 2.247e+05 0 1

Correlation of Fixed Effects:

(Intr) TREATB TREATC

TREATB -0.707

TREATC -0.707 0.500

TREATD -0.707 0.500 0.500

**VEAN SHELF**

Generalized linear mixed model fit by the Laplace approximation

Formula: germ.resp ~ TREAT + (1 | SHELF)

Data: vean

AIC BIC logLik deviance

10 15.89 -1.936e-10 3.871e-10

Random effects:

Groups Name Variance Std.Dev.

SHELF (Intercept) 0.44444 0.66667

Number of obs: 24, groups: SHELF, 4

Fixed effects:

Estimate Std. Error z value Pr(>|z|)

(Intercept) 2.896e+01 1.589e+05 0 1

TREATB -1.283e-02 2.248e+05 0 1

TREATC -2.598e-02 2.248e+05 0 1

TREATD 6.263e-06 2.247e+05 0 1

Correlation of Fixed Effects:

(Intr) TREATB TREATC

TREATB -0.707

TREATC -0.707 0.500

TREATD -0.707 0.500 0.500

**VEAN PETRI**

Generalized linear mixed model fit by the Laplace approximation

Formula: germ.resp ~ TREAT + (1 | PETRI)

Data: vean

AIC BIC logLik deviance

10 15.89 -3.695e-10 7.39e-10

Random effects:

Groups Name Variance Std.Dev.

PETRI (Intercept) 2.6667 1.633

Number of obs: 24, groups: PETRI, 24

Fixed effects:

Estimate Std. Error z value Pr(>|z|)

(Intercept) 2.896e+01 1.589e+05 0 1

TREATB -1.283e-02 2.248e+05 0 1

TREATC -2.598e-02 2.248e+05 0 1

TREATD 6.263e-06 2.247e+05 0 1

Correlation of Fixed Effects:

(Intr) TREATB TREATC

TREATB -0.707

TREATC -0.707 0.500

TREATD -0.707 0.500 0.500

**MODEL COMPARISON ALL VS. SHELF**

Data: vean

Models:

vshelf: germ.resp ~ TREAT + (1 | SHELF)

vresults: germ.resp ~ TREAT + (1 | SHELF) + (1 | PETRI)

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

vshelf 5 10 15.890 -1.9355e-10

vresults 6 12 19.068 -4.0466e-10 0 1 1

**MODEL COMPARISON ALL VS. PETRI**

Data: vean

Models:

vpetri: germ.resp ~ TREAT + (1 | PETRI)

vresults: germ.resp ~ TREAT + (1 | SHELF) + (1 | PETRI)

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

vpetri 5 10 15.890 -3.6948e-10

vresults 6 12 19.068 -4.0466e-10 0 1 1

**MODEL COMPARISON SHELF VS. PETRI**

Data: vean

Models:

vpetri: germ.resp ~ TREAT + (1 | PETRI)

vshelf: germ.resp ~ TREAT + (1 | SHELF)

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

vpetri 5 10 15.89 -3.6948e-10

vshelf 5 10 15.89 -1.9355e-10 0 0 < 2.2e-16 \*\*\*

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

**OMNIBUS for petri vs. null**

Data: vean

Models:

vshelf.null: germ.resp ~ 1 + (1 | SHELF)

vshelf: germ.resp ~ TREAT + (1 | SHELF)

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

vshelf.null 2 4 6.3561 -1.9357e-10

vshelf 5 10 15.8903 -1.9355e-10 0 3 1