1. Eusociality as a function of haplodiploidy

**(With perfect correlation between eusociality and haplodiploidy)**

**Warning message:**

Graphical user interface, text, application, email

Description automatically generated

1. **IG10 model**

Call:

phyloglm(formula = Eusociality ~ Haplodiploidy, data = data\_hap1\_pr,

phy = tree\_hap1\_pr, method = c("logistic\_IG10"))

AIC logLik Pen.logLik

107.28 -50.64 -51.83

Method: logistic\_IG10

Mean tip height: 478.0884

Parameter estimate(s):

alpha: 0.00313568

Coefficients:

Estimate StdErr z.value p.value

(Intercept) -4.0477 2.0691 -1.9563 0.05043 .

Haplodiploidy 0.0000 1.5898 0.0000 1.00000

---

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

Note: Wald-type p-values for coefficients, conditional on alpha=0.00313568

1. **MPLE model**

**Warning message:**

Graphical user interface, text, application, email

Description automatically generated

Call:

phyloglm(formula = Eusociality ~ Haplodiploidy, data = data\_hap1\_pr,

phy = tree\_hap1\_pr, method = c("logistic\_MPLE"))

AIC logLik Pen.logLik

73.92 -33.96 -34.87

Method: logistic\_MPLE

Mean tip height: 478.0884

Parameter estimate(s):

alpha: 0.002071549

Coefficients:

Estimate StdErr z.value p.value

(Intercept) -8.7004 4.7767 -1.8214 0.06854 .

Haplodiploidy 6.6382 4.4769 1.4828 0.13813

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

Note: Wald-type p-values for coefficients, conditional on alpha=0.002071549

1. Eusociality as a function of haplodiploidy

**(No correlation between eusociality and haplodiploidy)**

1. **IG10 model**

Graphical user interface, text, application, email

Description automatically generated**Warning message:**

Call:

phyloglm(formula = Eusociality ~ Haplodiploidy, data = data\_hap2\_pr,

phy = tree\_hap2\_pr, method = c("logistic\_IG10"))

AIC logLik Pen.logLik

107.28 -50.64 -51.78

Method: logistic\_IG10

Mean tip height: 478.0884

Parameter estimate(s):

alpha: 0.00313568

Coefficients:

Estimate StdErr z.value p.value

(Intercept) -4.0477 2.0664 -1.9588 0.05013 .

Haplodiploidy 0.0000 1.5115 0.0000 1.00000

---

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

Note: Wald-type p-values for coefficients, conditional on alpha=0.00313568

1. **MPLE model**

**Warning message:**

Graphical user interface, text, application, email

Description automatically generated

Call:

phyloglm(formula = Eusociality ~ Haplodiploidy, data = data\_hap2\_pr,

phy = tree\_hap2\_pr, method = c("logistic\_MPLE"))

AIC logLik Pen.logLik

73.67 -33.83 -36.89

Method: logistic\_MPLE

Mean tip height: 478.0884

Parameter estimate(s):

alpha: 0.0008140813

Coefficients:

Estimate StdErr z.value p.value

(Intercept) -3.2567 3.5176 -0.9258 0.3545

Haplodiploidy -4.7484 6.0422 -0.7859 0.4319

Note: Wald-type p-values for coefficients, conditional on alpha=0.0008140813