|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **MutSpec vs Temperature (FishBase)** | **MutSpec vs Maturation (FishBase)** | | **MutSpec vs MaximalLifespan (AnAge)** | **MutSpec vs**  **Temperature + Maturation (Fish Base)** | |
| **Lm** | **Tm** | **Lm** | **Tm** |
| Correlation | Spearman's rank correlation rho:  data: TemperMut$A\_G and TemperMut$Temperature  S = 474663, p-value = 3.321e-05  alternative hypothesis: true rho is not equal to 0  sample estimates:  rho  -0.3581037  data: TemperMut$T\_C and TemperMut$Temperature  S = 256954, p-value = 0.002522  alternative hypothesis: true rho is not equal to 0  sample estimates:  rho  0.2648037  **AFTER NORMALIZATION**  Spearman's rank correlation rho  data: TemperMut$T\_C.NormalOnlyByT and TemperMut$Temperature  S = 325684, p-value = 0.4446  alternative hypothesis: true rho is not equal to 0  sample estimates:  rho  0.06815333  Spearman's rank correlation rho  data: TemperMut$A\_G.NormalOnlyByA and TemperMut$Temperature  S = 385666, p-value = 0.146  alternative hypothesis: true rho is not equal to 0  sample estimates:  rho  -0.1297411  **WHAT WITH A\_G?**  Call:  lm(formula = A\_G ~ scale(Temperature) \* scale(Tm), data = allparameters)  Residuals:  Min 1Q Median 3Q Max  -0.081267 -0.026615 -0.007707 0.014225 0.135117  Coefficients:  Estimate Std. Error t value Pr(>|t|)  (Intercept) 0.067337 0.006327 10.643 1.56e-15 \*\*\*  scale(Temperature) -0.014702 0.006348 -2.316 0.0239 \*  scale(Tm) -0.009556 0.006851 -1.395 0.1681  scale(Temperature):scale(Tm) -0.005560 0.007073 -0.786 0.4349  ---  Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1  Residual standard error: 0.04869 on 61 degrees of freedom  Multiple R-squared: 0.0903, Adjusted R-squared: 0.04556  F-statistic: 2.018 on 3 and 61 DF, p-value: 0.1207  **MOREOVER:**  **Call**:  lm(formula = Temperature ~ scale(T\_C) \* scale(A\_G), data = allparameters)  Residuals:  Min 1Q Median 3Q Max  -19.1572 -4.7552 0.7703 4.6829 11.5930  Coefficients:  Estimate Std. Error t value Pr(>|t|)  (Intercept) 16.0049 0.8609 18.590 < 2e-16 \*\*\*  scale(T\_C) 3.0589 0.8804 3.475 0.000948 \*\*\*  scale(A\_G) -1.1890 0.9333 -1.274 0.207495  scale(T\_C):scale(A\_G) 0.8792 0.9322 0.943 0.349346  ---  Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1  Residual standard error: 6.885 on 61 degrees of freedom  Multiple R-squared: 0.2167, Adjusted R-squared: 0.1782  F-statistic: 5.625 on 3 and 61 DF, p-value: 0.001802  **Call**:  lm(formula = Temperature ~ scale(T\_C) + scale(A\_G), data = allparameters)  Residuals:  Min 1Q Median 3Q Max  -19.3869 -4.7812 0.4572 4.5021 11.5473  Coefficients:  Estimate Std. Error t value Pr(>|t|)  (Intercept) 15.9015 0.8532 18.638 < 2e-16 \*\*\*  scale(T\_C) 2.9136 0.8660 3.364 0.00132 \*\*  scale(A\_G) -1.5153 0.8660 -1.750 0.08511 .  ---  Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1  Residual standard error: 6.879 on 62 degrees of freedom  Multiple R-squared: 0.2053, Adjusted R-squared: 0.1796  F-statistic: 8.007 on 2 and 62 DF, p-value: 0.0008065 | Spearman's rank correlation rho:  data: MATULmmut$G\_C and MATULmmut$Lm  S = 192684, p-value = 0.008235  alternative hypothesis: true rho is not equal to 0  sample estimates:  rho  -0.266859 | Spearman's rank correlation rho:  data: MATUTmmut$G\_C and MATUTmmut$Tm  S = 242544, p-value = 0.0222  alternative hypothesis: true rho is not equal to 0  sample estimates:  rho  -0.2219755 | Spearman's rank correlation rho  data: AnAgeMut$T\_C and AnAgeMut$Maximum.longevity..yrs.  S = 223911, p-value = 0.9219  alternative hypothesis: true rho is not equal to 0  sample estimates:  rho  -0.009449996 | Call:  lm(formula = T\_C ~ scale(Temperature) \* scale(Lm), data = allparameters)  Residuals:  Min 1Q Median 3Q Max  -0.150980 -0.040899 -0.009959 0.043756 0.150034  Coefficients:  Estimate Std. Error t value Pr(>|t|)  (Intercept) 0.133998 0.008373 16.003 <2e-16 \*\*\*  scale(Temperature) 0.019695 0.008442 2.333 0.023 \*  scale(Lm) -0.001413 0.009040 -0.156 0.876  scale(Temperature):scale(Lm) -0.003960 0.010934 -0.362 0.719  ---  Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1  Residual standard error: 0.06685 on 60 degrees of freedom  Multiple R-squared: 0.08655, Adjusted R-squared: 0.04088  F-statistic: 1.895 on 3 and 60 DF, p-value: 0.1401  Call:  lm(formula = T\_C ~ scale(Temperature) + scale(Lm), data = allparameters)  Residuals:  Min 1Q Median 3Q Max  -0.148531 -0.043140 -0.008988 0.044211 0.146448  Coefficients:  Estimate Std. Error t value Pr(>|t|)  (Intercept) 0.134190 0.008297 16.174 <2e-16 \*\*\*  scale(Temperature) 0.019552 0.008373 2.335 0.0228 \*  scale(Lm) -0.002592 0.008373 -0.310 0.7579  ---  Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1  Residual standard error: 0.06637 on 61 degrees of freedom  Multiple R-squared: 0.08455, Adjusted R-squared: 0.05454  F-statistic: 2.817 on 2 and 61 DF, p-value: 0.06758  Call:  lm(formula = scale(T\_C) ~ scale(Temperature) + scale(Lm), data = allparameters)  Residuals:  Min 1Q Median 3Q Max  -2.1759 -0.6320 -0.1317 0.6477 2.1454  Coefficients:  Estimate Std. Error t value Pr(>|t|)  (Intercept) 2.199e-16 1.215e-01 0.000 1.0000  scale(Temperature) 2.864e-01 1.227e-01 2.335 0.0228 \*  scale(Lm) -3.798e-02 1.227e-01 -0.310 0.7579  ---  Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1  Residual standard error: 0.9723 on 61 degrees of freedom  Multiple R-squared: 0.08455, Adjusted R-squared: 0.05454  F-statistic: 2.817 on 2 and 61 DF, p-value: 0.06758  Call:  lm(formula = scale(T\_C) ~ 0 + scale(Temperature) + scale(Lm),  data = allparameters)  Residuals:  Min 1Q Median 3Q Max  -2.1759 -0.6320 -0.1317 0.6477 2.1454  Coefficients:  Estimate Std. Error t value Pr(>|t|)  scale(Temperature) 0.28642 0.12166 2.354 0.0217 \*  scale(Lm) -0.03798 0.12166 -0.312 0.7560  ---  Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1  Residual standard error: 0.9645 on 62 degrees of freedom  Multiple R-squared: 0.08455, Adjusted R-squared: 0.05502  F-statistic: 2.863 on 2 and 62 DF, p-value: 0.06466  Call:  lm(formula = scale(T\_C) ~ 0 + scale(Temperature), data = allparameters)  Residuals:  Min 1Q Median 3Q Max  -2.1557 -0.6148 -0.1217 0.6598 2.1147  Coefficients:  Estimate Std. Error t value Pr(>|t|)  scale(Temperature) 0.2883 0.1206 2.39 0.0199 \*  ---  Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1  Residual standard error: 0.9575 on 63 degrees of freedom  Multiple R-squared: 0.08311, Adjusted R-squared: 0.06856  F-statistic: 5.711 on 1 and 63 DF, p-value: 0.01986 | Call:  lm(formula = T\_C ~ scale(Temperature) \* scale(Tm), data = allparameters)  Residuals:  Min 1Q Median 3Q Max  -0.115771 -0.040550 -0.007716 0.039935 0.136724  Coefficients:  Estimate Std. Error t value Pr(>|t|)  (Intercept) 0.131507 0.008055 16.325 < 2e-16 \*\*\*  scale(Temperature) 0.024866 0.008083 3.076 0.00313 \*\*  scale(Tm) -0.008903 0.008722 -1.021 0.31142  scale(Temperature):scale(Tm) -0.000811 0.009005 -0.090 0.92854  ---  Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1  Residual standard error: 0.062 on 61 degrees of freedom  Multiple R-squared: 0.1815, Adjusted R-squared: 0.1412  F-statistic: 4.508 on 3 and 61 DF, p-value: 0.006387  Call:  lm(formula = T\_C ~ scale(Temperature) + scale(Tm), data = allparameters)  Residuals:  Min 1Q Median 3Q Max  -0.11592 -0.04111 -0.00788 0.03984 0.13706  Coefficients:  Estimate Std. Error t value Pr(>|t|)  (Intercept) 0.131723 0.007628 17.269 < 2e-16 \*\*\*  scale(Temperature) 0.024931 0.007985 3.122 0.00273 \*\*  scale(Tm) -0.008600 0.007985 -1.077 0.28564  ---  Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1  Residual standard error: 0.0615 on 62 degrees of freedom  Multiple R-squared: 0.1814, Adjusted R-squared: 0.1549  F-statistic: 6.867 on 2 and 62 DF, p-value: 0.002023  Call:  lm(formula = scale(T\_C) ~ scale(Temperature) + scale(Tm), data = allparameters)  Residuals:  Min 1Q Median 3Q Max  -1.7327 -0.6145 -0.1178 0.5956 2.0488  Coefficients:  Estimate Std. Error t value Pr(>|t|)  (Intercept) -4.629e-16 1.140e-01 0.000 1.00000  scale(Temperature) 3.727e-01 1.194e-01 3.122 0.00273 \*\*  scale(Tm) -1.286e-01 1.194e-01 -1.077 0.28564  ---  Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1  Residual standard error: 0.9193 on 62 degrees of freedom  Multiple R-squared: 0.1814, Adjusted R-squared: 0.1549  F-statistic: 6.867 on 2 and 62 DF, p-value: 0.002023  Call:  lm(formula = scale(T\_C) ~ 0 + scale(Temperature) + scale(Tm),  data = allparameters)  Residuals:  Min 1Q Median 3Q Max  -1.7327 -0.6145 -0.1178 0.5956 2.0488  Coefficients:  Estimate Std. Error t value Pr(>|t|)  scale(Temperature) 0.3727 0.1184 3.147 0.00252 \*\*  scale(Tm) -0.1286 0.1184 -1.086 0.28176  ---  Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1  Residual standard error: 0.9119 on 63 degrees of freedom  Multiple R-squared: 0.1814, Adjusted R-squared: 0.1554  F-statistic: 6.978 on 2 and 63 DF, p-value: 0.00183  Call:  lm(formula = scale(T\_C) ~ 0 + scale(Temperature), data = allparameters)  Residuals:  Min 1Q Median 3Q Max  -1.67386 -0.63249 -0.04528 0.58369 2.15754  Coefficients:  Estimate Std. Error t value Pr(>|t|)  scale(Temperature) 0.4075 0.1142 3.57 0.000684 \*\*\*  ---  Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1  Residual standard error: 0.9132 on 64 degrees of freedom  Multiple R-squared: 0.166, Adjusted R-squared: 0.153  F-statistic: 12.74 on 1 and 64 DF, p-value: 0.0006844 |
| N of species | 128 | 97 | 106 | 110 | 64 | 65 |
| Script | <https://github.com/polarsong/mtDNA_mutspectrum/blob/Actinopterigii/Head/2Scripts/VertebratePolymorphisms.MutSpecComparisons.Analyses.Ecology.Actinopterygii.FishBaseData.ALL_RANK_CORR.R> | <https://github.com/polarsong/mtDNA_mutspectrum/blob/Actinopterigii/Head/2Scripts/VertebratePolymorphisms.MutSpecComparisons.Analyses.Ecology.Actinopterygii.FishBaseData.ALL_RANK_CORR.R> | <https://github.com/polarsong/mtDNA_mutspectrum/blob/Actinopterigii/Head/2Scripts/VertebratePolymorphisms.MutSpecComparisons.Analyses.Ecology.Actinopterygii.FishBaseData.ALL_RANK_CORR.R> | <https://github.com/polarsong/mtDNA_mutspectrum/blob/Actinopterigii/Head/2Scripts/VertebratePolymorphisms.MutSpecComparisons.Analyses.Ecology.Actinopterygii.FishBaseData.ALL_RANK_CORR.R> | https://github.com/polarsong/mtDNA\_mutspectrum/blob/Actinopterigii/Head/2Scripts/VertebratePolymorphisms.MutSpecComparisons.Analyses.Ecology.Actinopterygii.FishBaseData.MultipleReg\_Maturity~Temp.R | https://github.com/polarsong/mtDNA\_mutspectrum/blob/Actinopterigii/Head/2Scripts/VertebratePolymorphisms.MutSpecComparisons.Analyses.Ecology.Actinopterygii.FishBaseData.MultipleReg\_Maturity~Temp.R |
| Figures |  |  |  |  |  |  |

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|  | **WholeGenome vs Temperature (FishBase)** | **WholeGenome vs Maturation (FishBase)** | | **WholeGenome vs MaximalLifespan (AnAge)** | **WholeGenome vs Maturiation (AnAge)** | **WholeGenome vs Body Mass (AnAge)** | **WholeGenome vs Temperature(FishBase) + Maturation(FishBase)** | |
| **Lm** | **Tm** | **Lm** | **Tm** |
| Correlation | Pearson's product-moment correlation  data: log2(AGG$FemaleMaturityDays) and AGG$FrT  t = -2.7871, df = 300, p-value = 0.005657  alternative hypothesis: true correlation is not equal to 0  95 percent confidence interval:  -0.26694950 -0.04684676  sample estimates:  cor  -0.1588715  data: log2(AGG$FemaleMaturityDays) and AGG$FrG  t = -3.6769, df = 300, p-value = 0.0002796  alternative hypothesis: true correlation is not equal to 0  95 percent confidence interval:  -0.31318440 -0.09707033  sample estimates:  cor  -0.2076599 | Pearson's product-moment correlation  data: log2(AGG$FemaleMaturityDays) and AGG$FrA  t = 2.5363, df = 190, p-value = 0.01201  alternative hypothesis: true correlation is not equal to 0  95 percent confidence interval:  0.04038784 0.31450996  sample estimates:  cor  0.1809612  data: log2(AGG$FemaleMaturityDays) and AGG$FrT  t = -4.7702, df = 190, p-value = 3.657e-06  alternative hypothesis: true correlation is not equal to 0  95 percent confidence interval:  -0.4479050 -0.1944362  sample estimates:  cor  -0.3270399 | Pearson's product-moment correlation  data: log2(AGG$FemaleMaturityDays) and AGG$FrT  t = -4.0306, df = 186, p-value = 8.105e-05  alternative hypothesis: true correlation is not equal to 0  95 percent confidence interval:  -0.4099044 -0.1462413  sample estimates:  cor  -0.28342 | Pearson's product-moment correlation  data: log2(AGG$FemaleMaturityDays) and AGG$FrA  t = 2.9679, df = 204, p-value = 0.003357  alternative hypothesis: true correlation is not equal to 0  95 percent confidence interval:  0.06865682 0.33094580  sample estimates:  cor  0.2034487  data: log2(AGG$FemaleMaturityDays) and AGG$FrT  t = -7.3526, df = 204, p-value = 4.624e-12  alternative hypothesis: true correlation is not equal to 0  95 percent confidence interval:  -0.5593992 -0.3424218  sample estimates:  cor  -0.4576984  data: log2(AGG$FemaleMaturityDays) and AGG$FrC  t = 3.0345, df = 204, p-value = 0.002723  alternative hypothesis: true correlation is not equal to 0  95 percent confidence interval:  0.07319492 0.33500116  sample estimates:  cor  0.2078168 | Pearson's product-moment correlation  data: log2(AGG$FemaleMaturityDays) and AGG$FrT  t = -5.0863, df = 89, p-value = 2.01e-06  alternative hypothesis: true correlation is not equal to 0  95 percent confidence interval:  -0.6199221 -0.2977171  sample estimates:  cor  -0.4745648  data: log2(AGG$FemaleMaturityDays) and AGG$FrC  t = 2.4411, df = 89, p-value = 0.01662  alternative hypothesis: true correlation is not equal to 0  95 percent confidence interval:  0.04698102 0.43405429  sample estimates:  cor  0.2505021 | Pearson's product-moment correlation  data: log2(AGG$FemaleMaturityDays) and AGG$FrT  t = -3.7031, df = 124, p-value = 0.0003191  alternative hypothesis: true correlation is not equal to 0  95 percent confidence interval:  -0.4648112 -0.1488685  sample estimates:  cor  -0.3155589  data: log2(AGG$FemaleMaturityDays) and AGG$FrC  t = 2.7439, df = 124, p-value = 0.006972  alternative hypothesis: true correlation is not equal to 0  95 percent confidence interval:  0.0671575 0.3975257  sample estimates:  cor  0.2392541 | **Call:**  lm(formula = FrT ~ scale(Temperature) \* scale(Maturity), data = AGGTEMPE)  Residuals:  Min 1Q Median 3Q Max  -0.125078 -0.022805 0.002719 0.019496 0.115140  Coefficients:  Estimate Std. Error t value Pr(>|t|)  (Intercept) 0.215970 0.003838 56.273 < 2e-16 \*\*\*  scale(Temperature) -0.015026 0.003812 -3.942 0.000138 \*\*\*  scale(Maturity) -0.016741 0.003966 -4.221 4.85e-05 \*\*\*  scale(Temperature):scale(Maturity) -0.001854 0.004659 -0.398 0.691467  ---  Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1  Residual standard error: 0.03978 on 116 degrees of freedom  Multiple R-squared: 0.1882, Adjusted R-squared: 0.1672  F-statistic: 8.962 on 3 and 116 DF, p-value: 2.179e-05  **Call**:  lm(formula = FrT ~ scale(Temperature) + scale(Maturity), data = AGGTEMPE)  Residuals:  Min 1Q Median 3Q Max  -0.124858 -0.023289 0.002424 0.019246 0.114993  Coefficients:  Estimate Std. Error t value Pr(>|t|)  (Intercept) 0.216464 0.003619 59.819 < 2e-16 \*\*\*  scale(Temperature) -0.014851 0.003772 -3.937 0.000141 \*\*\*  scale(Maturity) -0.016271 0.003772 -4.313 3.38e-05 \*\*\*  ---  Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1  Residual standard error: 0.03964 on 117 degrees of freedom  Multiple R-squared: 0.1871, Adjusted R-squared: 0.1732  F-statistic: 13.46 on 2 and 117 DF, p-value: 5.475e-06  **Call**:  lm(formula = scale(FrT) ~ scale(Temperature) + scale(Maturity),  data = AGGTEMPE)  Residuals:  Min 1Q Median 3Q Max  -2.86412 -0.53423 0.05561 0.44147 2.63781  Coefficients:  Estimate Std. Error t value Pr(>|t|)  (Intercept) 4.712e-17 8.301e-02 0.000 1.000000  scale(Temperature) -3.407e-01 8.654e-02 -3.937 0.000141 \*\*\*  scale(Maturity) -3.732e-01 8.654e-02 -4.313 3.38e-05 \*\*\*  ---  Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1  Residual standard error: 0.9093 on 117 degrees of freedom  Multiple R-squared: 0.1871, Adjusted R-squared: 0.1732  F-statistic: 13.46 on 2 and 117 DF, p-value: 5.475e-06  **Call**:  lm(formula = scale(FrT) ~ 0 + scale(Temperature) + scale(Maturity),  data = AGGTEMPE)  Residuals:  Min 1Q Median 3Q Max  -2.86412 -0.53423 0.05561 0.44147 2.63781  Coefficients:  Estimate Std. Error t value Pr(>|t|)  scale(Temperature) -0.34067 0.08617 -3.954 0.000132 \*\*\*  scale(Maturity) -0.37325 0.08617 -4.332 3.13e-05 \*\*\*  ---  Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1  Residual standard error: 0.9054 on 118 degrees of freedom  Multiple R-squared: 0.1871, Adjusted R-squared: 0.1733  F-statistic: 13.58 on 2 and 118 DF, p-value: 4.936e-06  **Call**:  lm(formula = scale(FrT) ~ 0 + scale(Temperature), data = AGGTEMPE)  Residuals:  Min 1Q Median 3Q Max  -2.5877 -0.4248 0.0315 0.5867 2.7099  Coefficients:  Estimate Std. Error t value Pr(>|t|)  scale(Temperature) -0.24042 0.08898 -2.702 0.0079 \*\*  ---  Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1  Residual standard error: 0.9707 on 119 degrees of freedom  Multiple R-squared: 0.0578, Adjusted R-squared: 0.04988  F-statistic: 7.3 on 1 and 119 DF, p-value: 0.007903 | **Call**:  lm(formula = FrT ~ scale(Temperature) \* scale(Maturity), data = AGGTEMPE)  Residuals:  Min 1Q Median 3Q Max  -0.088755 -0.024531 -0.000606 0.020775 0.139422  Coefficients:  Estimate Std. Error t value Pr(>|t|)  (Intercept) 0.219415 0.004024 54.520 < 2e-16 \*\*\*  scale(Temperature) -0.021204 0.003880 -5.464 3.10e-07 \*\*\*  scale(Maturity) -0.023345 0.005685 -4.106 7.93e-05 \*\*\*  scale(Temperature):scale(Maturity) -0.008171 0.005267 -1.551 0.124  ---  Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1  Residual standard error: 0.03812 on 106 degrees of freedom  Multiple R-squared: 0.2674, Adjusted R-squared: 0.2467  F-statistic: 12.9 on 3 and 106 DF, p-value: 3.014e-07  **Call**:  lm(formula = FrT ~ scale(Temperature) + scale(Maturity), data = AGGTEMPE)  Residuals:  Min 1Q Median 3Q Max  -0.087127 -0.023234 0.000743 0.018729 0.141510  Coefficients:  Estimate Std. Error t value Pr(>|t|)  (Intercept) 0.222096 0.003659 60.706 < 2e-16 \*\*\*  scale(Temperature) -0.020756 0.003895 -5.329 5.53e-07 \*\*\*  scale(Maturity) -0.016883 0.003895 -4.335 3.31e-05 \*\*\*  ---  Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1  Residual standard error: 0.03837 on 107 degrees of freedom  Multiple R-squared: 0.2508, Adjusted R-squared: 0.2368  F-statistic: 17.91 on 2 and 107 DF, p-value: 1.956e-07  **Call**:  lm(formula = scale(FrT) ~ scale(Temperature) + scale(Maturity),  data = AGGTEMPE)  Residuals:  Min 1Q Median 3Q Max  -1.9837 -0.5290 0.0169 0.4264 3.2219  Coefficients:  Estimate Std. Error t value Pr(>|t|)  (Intercept) 9.747e-17 8.330e-02 0.000 1  scale(Temperature) -4.726e-01 8.868e-02 -5.329 5.53e-07 \*\*\*  scale(Maturity) -3.844e-01 8.868e-02 -4.335 3.31e-05 \*\*\*  ---  Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1  Residual standard error: 0.8736 on 107 degrees of freedom  Multiple R-squared: 0.2508, Adjusted R-squared: 0.2368  F-statistic: 17.91 on 2 and 107 DF, p-value: 1.956e-07  **Call**:  lm(formula = scale(FrT) ~ 0 + scale(Temperature) + scale(Maturity),  data = AGGTEMPE)  Residuals:  Min 1Q Median 3Q Max  -1.9837 -0.5290 0.0169 0.4264 3.2219  Coefficients:  Estimate Std. Error t value Pr(>|t|)  scale(Temperature) -0.47256 0.08827 -5.354 4.89e-07 \*\*\*  scale(Maturity) -0.38439 0.08827 -4.355 3.04e-05 \*\*\*  ---  Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1  Residual standard error: 0.8696 on 108 degrees of freedom  Multiple R-squared: 0.2508, Adjusted R-squared: 0.2369  F-statistic: 18.08 on 2 and 108 DF, p-value: 1.693e-07  **Call**:  lm(formula = scale(FrT) ~ 0 + scale(Temperature), data = AGGTEMPE)  Residuals:  Min 1Q Median 3Q Max  -2.4959 -0.4454 -0.0535 0.4359 3.4630  Coefficients:  Estimate Std. Error t value Pr(>|t|)  scale(Temperature) -0.34529 0.08989 -3.841 0.000206 \*\*\*  ---  Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1  Residual standard error: 0.9385 on 109 degrees of freedom  Multiple R-squared: 0.1192, Adjusted R-squared: 0.1111  F-statistic: 14.75 on 1 and 109 DF, p-value: 0.000206 |
| N of species | 302 | 192 | 188 | 206 | 91 | 126 | 120 | 110 |
| Script | https://github.com/polarsong/mtDNA\_mutspectrum/blob/WholeGenomesBranch/Head/2Scripts/WholeGenomeAnalyses.EcologyAndMutSpecChordata.NoOverlap.ActinopterygiiOnlyFishBase.R | https://github.com/polarsong/mtDNA\_mutspectrum/blob/WholeGenomesBranch/Head/2Scripts/WholeGenomeAnalyses.EcologyAndMutSpecChordata.NoOverlap.ActinopterygiiOnlyFishBase.R | https://github.com/polarsong/mtDNA\_mutspectrum/blob/WholeGenomesBranch/Head/2Scripts/WholeGenomeAnalyses.EcologyAndMutSpecChordata.NoOverlap.ActinopterygiiOnlyFishBase.R | https://github.com/polarsong/mtDNA\_mutspectrum/blob/WholeGenomesBranch/Head/2Scripts/WholeGenomeAnalyses.EcologyAndMutSpecChordata.NoOverlap.ActinopterygiiOnly.R | https://github.com/polarsong/mtDNA\_mutspectrum/blob/WholeGenomesBranch/Head/2Scripts/WholeGenomeAnalyses.EcologyAndMutSpecChordata.NoOverlap.ActinopterygiiOnly.R | https://github.com/polarsong/mtDNA\_mutspectrum/blob/WholeGenomesBranch/Head/2Scripts/WholeGenomeAnalyses.EcologyAndMutSpecChordata.NoOverlap.ActinopterygiiOnly.R | https://github.com/polarsong/mtDNA\_mutspectrum/blob/WholeGenomesBranch/Head/2Scripts/WholeGenomeAnalyses.EcologyAndMutSpecChordata.NoOverlap.ActinopterygiiOnlyFishBase.R | https://github.com/polarsong/mtDNA\_mutspectrum/blob/WholeGenomesBranch/Head/2Scripts/WholeGenomeAnalyses.EcologyAndMutSpecChordata.NoOverlap.ActinopterygiiOnlyFishBase.R |
| Figures |  |  |  |  |  |  |  |  |

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| --- | --- | --- | --- | --- | --- |
|  | **Maturation Lm vs ™ (FishBase)** | **Temperature vs Maturation Lm (FishBase)** | **Temperature vs Maturation Tm (FishBase)** | **Temperature (FishBase) vs MaximalLifespan (AnAge)** | **Maturation (FishBase)**  **vs MaximalLifespan (AnAge)** |
|
| Correlation | Spearman's rank correlation rho  data: MATULMTM$Lm and MATULMTM$Tm  S = 3838500, p-value < 2.2e-16  alternative hypothesis: true rho is not equal to 0  sample estimates:  rho  0.6823805 | Spearman's rank correlation rho  data: TEMPMATULM$Lm and TEMPMATULM$Temperature  S = 29562841, p-value = 1.282e-12  alternative hypothesis: true rho is not equal to 0  sample estimates:  rho  -0.3062001 | Spearman's rank correlation rho  data: TEMPMATUTM$Tm and TEMPMATUTM$Temperature  S = 21243590, p-value = 1.141e-11  alternative hypothesis: true rho is not equal to 0  sample estimates:  rho  -0.3095067 | Spearman's rank correlation rho  data: ANAGETEMP$Temperature and ANAGETEMP$Maximum.longevity..yrs.  S = 10501627, p-value = 3.03e-05  alternative hypothesis: true rho is not equal to 0  sample estimates:  rho  -0.2141839 | **Lm**  Spearman's rank correlation rho  data: ANAGEMATLM$Lm and ANAGEMATLM$Maximum.longevity..yrs.  S = 1020722, p-value < 2.2e-16  alternative hypothesis: true rho is not equal to 0  sample estimates:  rho  0.5399325  **Tm**  Spearman's rank correlation rho  data: ANAGEMATTM$Tm and ANAGEMATTM$Maximum.longevity..yrs.  S = 969449, p-value < 2.2e-16  alternative hypothesis: true rho is not equal to 0  sample estimates:  rho  0.7321639 |
| N of species | 417 | 514 | 460 | 376 | **Lm**  238  **Tm**  281 |
| Script | <https://github.com/polarsong/mtDNA_mutspectrum/blob/Actinopterigii/Head/2Scripts/VertebratePolymorphisms.MutSpecComparisons.Analyses.Ecology.Actinopterygii.FishBaseData.ALL_RANK_CORR.R> | <https://github.com/polarsong/mtDNA_mutspectrum/blob/Actinopterigii/Head/2Scripts/VertebratePolymorphisms.MutSpecComparisons.Analyses.Ecology.Actinopterygii.FishBaseData.ALL_RANK_CORR.R> | <https://github.com/polarsong/mtDNA_mutspectrum/blob/Actinopterigii/Head/2Scripts/VertebratePolymorphisms.MutSpecComparisons.Analyses.Ecology.Actinopterygii.FishBaseData.ALL_RANK_CORR.R> | <https://github.com/polarsong/mtDNA_mutspectrum/blob/Actinopterigii/Head/2Scripts/VertebratePolymorphisms.MutSpecComparisons.Analyses.Ecology.Actinopterygii.FishBaseData.ALL_RANK_CORR.R> | <https://github.com/polarsong/mtDNA_mutspectrum/blob/Actinopterigii/Head/2Scripts/VertebratePolymorphisms.MutSpecComparisons.Analyses.Ecology.Actinopterygii.FishBaseData.ALL_RANK_CORR.R> |
| Figures |  |  |  |  |  |