#### What did average mitochondria do?

When obtaining data using FlowJo, we got the geometric mean value for each event recorded in the flow cytometer after gatting for positive values in the dyes employed (see *Methods: Flow cytometry*). However, this is not informative about the effects per mitochondria. In other words, we might be loosing some resolution about the effects at a mitochondrial level rather than a cellular level. To further investigate the effects per mitochondrial unit, we repeated the models above but dividing each variable by mean mitochondrial density obtained for each individual.

Table SXX. Estimate of the contrasts between treatments for all the variables analysed, and pMCMC values testing the hypothesis that contrast is different from 0. In bold, the values that are significant at pMCMC < 0.05.

| Region | Variable | Predictor | Contrast | pMCMC contrast |
| --- | --- | --- | --- | --- |
| Olfactory bulbs | Mit potential | Temperature | 0.000 | 0.806 |
|  |  | CORT | -0.044 | 0.657 |
|  |  | Interaction | -0.184 | 0.224 |
|  | ROS | Temperature | -0.045 | 0.634 |
|  |  | CORT | 0.039 | 0.658 |
|  |  | Interaction | 0.161 | 0.263 |
|  | DNA damage | Temperature | -0.001 | 0.822 |
|  |  | CORT | 0.048 | 0.554 |
|  |  | Interaction | 0.082 | 0.449 |
|  | Lipid peroxidation | Temperature | -0.075 | 0.421 |
|  |  | CORT | 0.050 | 0.535 |
|  |  | Interaction | 0.104 | 0.345 |
| Optic tecta | Mit potential | Temperature | 0.055 | 0.645 |
|  |  | CORT | 0.048 | 0.653 |
|  |  | **Interaction** | **-0.207** | **< 0.05** |
|  | ROS | Temperature | -0.037 | 0.615 |
|  |  | CORT | 0.011 | 0.757 |
|  |  | Interaction | -0.092 | 0.426 |
|  | DNA damage | Temperature | 0.002 | 0.820 |
|  |  | CORT | 0.073 | 0.552 |
|  |  | Interaction | -0.189 | 0.272 |
|  | Lipid peroxidation | Temperature | 0.010 | 0.778 |
|  |  | CORT | 0.067 | 0.479 |
|  |  | Interaction | -0.095 | 0.432 |

Contrasts were done by:  
*Temperature*: βHot - βCold  
*CORT*: βCORT - βControl  
*Interaction*: (βControl-Hot - βCORT-Hot) - (βControl-Cold - βCORT-Cold)

Table SXX+1. Summary of the final models for Olfactory Bulbs.

| Variable | Predictors | Estimate Mean | 95% CI | PMCMC |
| --- | --- | --- | --- | --- |
| Mit potential | b\_Intercept | -0.017 | [-0.197 , 0.162] | 0.726 |
|  | b\_cortCORT | -0.047 | [-0.250 , 0.153] | 0.577 |
|  | b\_tempHot | -0.092 | [-0.295 , 0.109] | 0.369 |
|  | b\_cortCORT:tempHot | 0.184 | [-0.094 , 0.460] | 0.224 |
| ROS | b\_Intercept | 0.038 | [-0.114 , 0.186] | 0.550 |
|  | b\_cortCORT | 0.041 | [-0.151 , 0.233] | 0.591 |
|  | b\_tempHot | 0.036 | [-0.155 , 0.226] | 0.626 |
|  | b\_cortCORT:tempHot | -0.161 | [-0.425 , 0.104] | 0.263 |
| DNA damage | b\_Intercept | 0.135 | [-0.025 , 0.294] | 0.136 |
|  | b\_cortCORT | -0.007 | [-0.174 , 0.158] | 0.779 |
|  | b\_tempHot | 0.040 | [-0.131 , 0.215] | 0.574 |
|  | b\_cortCORT:tempHot | -0.082 | [-0.310 , 0.143] | 0.449 |
|  | b\_age\_euthanasia | 0.034 | [-0.151 , 0.218] | 0.623 |
|  | **b\_sexFemale** | **-0.147** | **[-0.269 , -0.024]** | **0.041** |
| Peroxidation | b\_Intercept | 0.026 | [-0.114 , 0.166] | 0.621 |
|  | b\_cortCORT | 0.002 | [-0.152 , 0.159] | 0.822 |
|  | b\_tempHot | -0.023 | [-0.188 , 0.138] | 0.667 |
|  | b\_cortCORT:tempHot | -0.104 | [-0.316 , 0.107] | 0.345 |
|  | b\_age\_euthanasia | 0.127 | [-0.048 , 0.306] | 0.193 |

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| Figure 7— NEW\_OB |

Table SXX+2. Summary of the final models for Optic Tecta.

| Variable | Predictors | Estimate Mean | 95% CI | PMCMC |
| --- | --- | --- | --- | --- |
| Mit potential | b\_Intercept | 0.125 | [0.016 , 0.236] | 0.050 |
|  | **b\_cortCORT** | **-0.151** | **[-0.259 , -0.042]** | **0.019** |
|  | b\_tempHot | -0.049 | [-0.157 , 0.060] | 0.381 |
|  | **b\_cortCORT:tempHot** | **0.207** | **[0.058 , 0.354]** | **0.018** |
| ROS | b\_Intercept | -0.003 | [-0.143 , 0.136] | 0.805 |
|  | b\_cortCORT | -0.057 | [-0.229 , 0.114] | 0.485 |
|  | b\_tempHot | -0.083 | [-0.254 , 0.088] | 0.348 |
|  | b\_cortCORT:tempHot | 0.092 | [-0.145 , 0.329] | 0.426 |
| DNA damage | b\_Intercept | -0.017 | [-0.171 , 0.137] | 0.711 |
|  | b\_cortCORT | -0.166 | [-0.340 , 0.008] | 0.096 |
|  | b\_tempHot | -0.092 | [-0.268 , 0.083] | 0.316 |
|  | b\_cortCORT:tempHot | 0.187 | [-0.055 , 0.428] | 0.163 |
|  | b\_sexFemale | 0.025 | [-0.104 , 0.155] | 0.625 |
| Peroxidation | b\_Intercept | 0.040 | [-0.112 , 0.191] | 0.541 |
|  | b\_cortCORT | -0.114 | [-0.292 , 0.065] | 0.240 |
|  | b\_tempHot | -0.037 | [-0.219 , 0.144] | 0.602 |
|  | b\_cortCORT:tempHot | 0.095 | [-0.150 , 0.340] | 0.432 |
|  | b\_age\_euthanasia | 0.017 | [-0.170 , 0.205] | 0.726 |

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| Figure 8— NEW\_OT |