

Disentangling interactions among mercury, immunity, and infection in a Neotropical bat community: Supplemental information

Daniel J. Becker, Kelly A. Speer, Jennifer M. Korstian, Dmitriy V. Volokhov, Hannah F. Droke, Alexis M. Brown, Catherene L. Bajjnauth, Ticha Padgett-Stewart, Hugh G. Broders, Raina K. Plowright, Thomas R. Rainwater, M. Brock Fenton, Nancy B. Simmons, Matthew M. Chumchal

Figure S1. Hypothesized causal pathway between fur THg concentrations, absolute WBC counts (neutrophils and lymphocytes), and bacterial infection status (hemoplasmas and *Bartonella* spp.). CMA estimates the total indirect relationship between THg and immunity (a) and immunity and infection (b) as well as the direct relationship between THg and infection (c'). The total effect (c) is the sum of the indirect effect (ab) and the direct effect (c'). The proportion mediated by immunity (P_M) is derived as the indirect effect (ab) divided by the estimated total effect (c): ab/c .

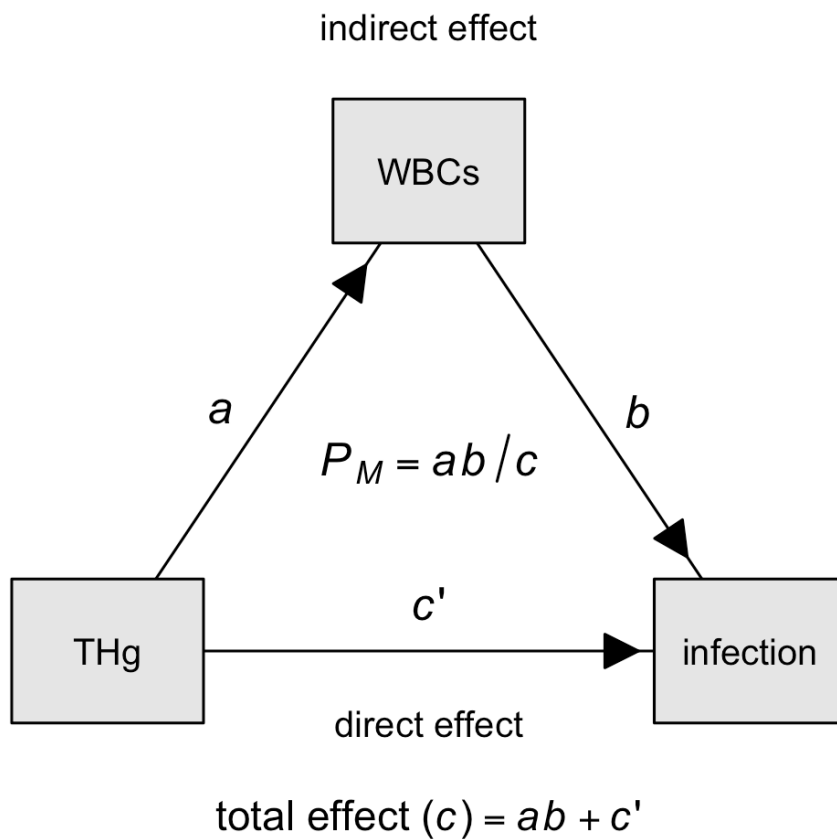


Table S1. Full results of the phylogenetic GLMMs predicting absolute leukocyte counts as a function of log fur THg concentration, bat sex, and bat body condition. All models include random effects for species and phylogeny. We report means and 95% HDIs for the estimated fixed effects, and estimates with 95% HDIs that do not cross zero are displayed in bold.

Coefficient	Neutrophils		Lymphocytes	
	Mean	95% HDI	Mean	95% HDI
Intercept	0.53	-0.24 to 1.28	0.06	-0.76 to 0.82
Log THg	-0.52	-0.96 to -0.17	-0.39	-0.88 to 0.03
Males	-0.15	-0.39 to 0.12	-0.10	-0.45 to 0.20
Condition	-0.12	-1.10 to 0.99	0.26	-0.87 to 1.46

Table S2. Results of the CMA among log fur THg, absolute leukocyte counts, and infection status. As described in Figure S1, we report the estimated direct (c') and total indirect (ab) effect alongside the proportion mediated by leukocyte counts (P_M). All analyses used phylogenetic GLMMs with random effects for species and phylogeny via the *brms* and *bayestestR* packages. Results are given as the posterior mean and 95% HDI for analyses considering neutrophil or lymphocyte counts as the mediator variable and with (i) hemoplasmas or (ii) *Bartonella* spp. as the outcome variable. Estimates with 95% HDIs that do not cross zero are displayed in bold.

		Neutrophils as mediator		Lymphocytes as mediator	
	Estimate	Mean	95% HDI	Mean	95% HDI
<i>i</i>	Direct effect	-3.63	-6.87 to -0.49	-2.34	-5.03 to 0.44
	Indirect effect	0.55	-0.43 to 1.93	-0.52	-1.65 to 0.18
	Proportion mediated	-0.18	-0.87 to 0.51	0.18	-0.26 to 0.62
<i>ii</i>	Direct effect	-4.43	-8.73 to -0.82	-3.37	-6.80 to -0.35
	Indirect effect	0.89	-0.27 to 2.57	0.25	-0.37 to 1.31
	Proportion mediated	-0.25	-1.07 to 0.57	-0.08	-0.53 to 0.37