

Warmer environmental temperature accelerates aging in mosquitoes, decreasing longevity and worsening infection outcomes

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Table S1. Cox non-proportional hazards with weighted estimation statistical information for Figure 3.

Table S1					
Mosquito Survival: 4 Immune Treatments at 3 Temperatures and 4 Ages					
Cox Non-proportional Hazards with Weighted Estimation					
survival(start, age of death + 1, censor) ~ temperature * age + strata(treat) + frailty(block)					
Infection Stratified Model	Coefficient	Hazard Ratio	Lower 95%	Upper 95%	P-value
Injured	0.2337	1.2633	1.1808	1.3516	<0.001
<i>E. coli</i> infected	1.1335	3.1066	2.9189	3.3063	<0.001
<i>M. luteus</i> infected	0.6018	1.8254	1.6828	1.9802	<0.001
Temperature	0.3286	1.3890	1.3542	1.4248	<0.001
Age	0.1608	1.1745	1.0777	1.2800	<0.001
Temperature:Age	-0.0025	0.9975	0.9945	1.0004	0.0932

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Table S2. Median survival and maximum lifespan summary table. (Part A)

Table S2				
Mosquito Survival: 4 Immune Treatments at 3 Temperatures and 4 Ages				
Median Survival and Maximum Lifespan Summary				
<i>Naïve</i>	1 Day		5 Days	
	Median Survival (Days)	Max Lifespan Survival (Days)	Median Survival (Days)	Max Lifespan Survival (Days)
27°C	21	38	21	38
30°C	12	29	12	26
32°C	8	24	10	19
<i>Injured</i>	1 Day		5 Days	
	Median Survival (Days)	Max Lifespan Survival (Days)	Median Survival (Days)	Max Lifespan Survival (Days)
27°C	20	38	18	40
30°C	11	30	10	20
32°C	7	20	9	17
<i>E. coli-infected</i>	1 Day		5 Days	
	Median Survival (Days)	Max Lifespan Survival (Days)	Median Survival (Days)	Max Lifespan Survival (Days)
27°C	9	44	11	34
30°C	4	17	7	15
32°C	3	16	7	17
<i>M. luteus-infected</i>	1 Day		5 Days	
	Median Survival (Days)	Max Lifespan Survival (Days)	Median Survival (Days)	Max Lifespan Survival (Days)
27°C	20	37	17	34
30°C	14	30	11	33
32°C	4	15	7	17

Table S2. Median survival and maximum lifespan summary table. (Part B)

Table S2				
Mosquito Survival: 4 Immune Treatments at 3 Temperatures and 4 Ages				
Median Survival and Maximum Lifespan Summary				
<i>Naïve</i>	10 Days		15 Days	
	Median Survival (Days)	Max Lifespan Survival (Days)	Median Survival (Days)	Max Lifespan Survival (Days)
27°C	17	33	22	37
30°C	14	26	17	24
32°C	13	17	N/A	N/A
<i>Injured</i>	10 Days		15 Days	
	Median Survival (Days)	Max Lifespan Survival (Days)	Median Survival (Days)	Max Lifespan Survival (Days)
27°C	19	36	19	37
30°C	12	24	17	26
32°C	11	22	N/A	N/A
<i>E. coli-infected</i>	10 Days		15 Days	
	Median Survival (Days)	Max Lifespan Survival (Days)	Median Survival (Days)	Max Lifespan Survival (Days)
27°C	12	22	18	32
30°C	11	16	16	19
32°C	11	13	N/A	N/A
<i>M. luteus-infected</i>	10 Days		15 Days	
	Median Survival (Days)	Max Lifespan Survival (Days)	Median Survival (Days)	Max Lifespan Survival (Days)
27°C	17.5	35	17	38
30°C	14	25	16	20
32°C	11	14	N/A	N/A

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Table S3. Cox non-proportional hazards with weighted estimation (stratified by immune treatment) statistical information for Figure 4.

Table S3					
Mosquito Survival: 4 Immune Treatments at 3 Temperatures and 4 Ages					
Cox Non-proportional Hazards with Weighted Estimation (Stratified by Treatment)					
survival(start, age of death + 1, censor) ~ temperature * age + frailty(block)					
<i>Naïve</i>	Coefficient	Hazard ratio	Lower 95%	Upper 95%	P-value
Temperature	0.4238	1.5278	1.4679	1.5900	<0.001
Age	0.2692	1.3090	1.1456	1.4955	<0.001
Temperature:Age	-0.0078	0.9923	0.9877	0.9968	<0.001
<i>Injured</i>	Coefficient	Hazard ratio	Lower 95%	Upper 95%	P-value
Temperature	0.2363	1.2666	1.2024	1.3343	<0.001
Age	-0.0185	0.9817	0.8206	1.1744	0.8396
Temperature:Age	0.0042	1.0042	0.9980	1.0103	0.1833
<i>E.coli-infected</i>	Coefficient	Hazard ratio	Lower 95%	Upper 95%	P-value
Temperature	0.2856	1.3306	1.2547	1.4111	<0.001
Age	0.3337	1.3961	1.0800	1.8046	0.0108
Temperature:Age	-0.0051	0.9949	0.9861	1.0037	0.2552
<i>M. luteus-infected</i>	Coefficient	Hazard ratio	Lower 95%	Upper 95%	P-value
Temperature	0.3778	1.4591	1.3692	1.5550	<0.001
Age	0.2777	1.3201	1.0780	1.6167	0.0072
Temperature:Age	-0.0049	0.9951	0.9883	1.0020	0.1619

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Table S4. Zero-inflated negative binomial regression model statistical information for Figure 5.

Table S4							
Infection Intensity: <i>E. coli</i> Infection at 3 Temperatures and 4 Ages; Infection at 3 Temperatures							
Zero-inflated Negative Binomial Regression Model							
CFUs ~ temperature + age + temperature*age 1							
	Estimate (log scale)	Std. Error	Bootstrapped Estimate (response scale)	Lower 95% (bcaLL)	Upper 95% (bcaUL)	P-value	Data Interpretation
Temperature	0.7089	0.0243	2.032	1.9297	2.1216	<0.0001	With every degree increase in temperature, the infection intensity more than doubles, given that age is held constant at the average.
Age	0.1585	0.0095	1.1717	1.1508	1.1940	<0.0001	With every day increase in age, the infection intensity increases by 17%, given that temperature is held constant at the average .
Temperature:Age	0.0240	0.0057	1.0243	1.0116	1.0388	<0.0001	Temperature and age interact significantly to increase infection intensity.