Supplementary Materials S1: Statistical models

A generalized linear model with zero-inflated beta distribution was used for the analysis of the bactericidal activity of plasma and a general linear model with lognormal distribution for the analysis of body mass. The relationship of BKA and body mass was not assessed because both explanatory variables are correlated in males, and the body mass of pregnant females is affected by the body mass of the fetus. These analyzes were executed in the R software, and the following statistical models were used to evaluate the effect of age and reproductive status in males and female sample across different seasons:

Age:

To evaluate the effect of age, only the cohorts captured in Sonora were selected; specifically lactating females were compared with young individuals from Sonora using plasma bactericidal activity as a response variable and age as explanatory variable (lactating females and male and female young) with the following model:

Simplified Statistical Model

BKA ~ Age

Body mass ~ Age

Statistical model in R

```
glmmTMB(BKA ~ Age, data =Lactating adult and young individuals of Sonora, ziformula = ~1,
                family = beta_family())
lm(log(Body_mass) ~ Age, data = data)
```

Reproductive condition:

Adult cohorts of females and males were independently analyzed to assess the effect of reproductive condition on BKA and body mass. The following statistical models were made from each sex:

Simplified Statistical Model

BKA ~ Reproductive status

Body mass ~ Reproductive status

Statistical model in R

```
glmmTMB(BKA ~ Reproductive status, data = Adult male or female, ziformula = ~1,
                        family = beta_family())

lm(log(Body_mass) ~ Reproductive status, data = Adult male or female)
```