**Supplemental file 1 : Individual effects on puppy weight at birth after model 2 (with covariates)**

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**Individual effect** **Increase by** **Effect size (grams)**

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Puppy sex\* +24.67

Litter size one puppy -11.40

Length of gestation one day +5.84

Adult weight dam one kilogram +5.30

Parity linear one parity +3.95

Parity quadratic -4.18

Year of birth one year +2.16

Inbreeding coefficient of puppy one percent -0.81

Inbreeding coefficient of dam one percent +1.01

\*relative to female puppies