Population cages with permuted diet

PLOS Genetics

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Cage Studies

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EXTERNAL LINK

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THIS PROTOCOL ACCOMPANIES THE FOLLOWING PUBLICATION

Aw WC, Towarnicki SG, Melvin RG, Youngson NA, Garvin MR, Hu Y, Nielsen S, Thomas T, Pickford R, Bustamante S, Vila-Sanjurjo A, Smyth GK, Ballard JWO (2018) Genotype to phenotype: Diet-by-mitochondrial DNA haplotype interactions drive metabolic flexibility and organismal fitness. PLoS Genet 14(11): e1007735. doi: 10.1371/journal.pgen.1007735

PROTOCOL STATUS

Working

1 Studies followed https://www.protocols.io/private/90C4D66F3DAF2BEDBF93273D5ED75E1F,Â but the diet was permuted over the 26 generations of the study.Â

2 Generations 1-4 were fed 1:2 P:C laboratory diet, 5-20 the 1:16 P:C diet and 21-26 the 1:2 P:C diet.

3 Two addition population cage studies were then completed.

4 In the first cage study the laboratory diet was replaced with natural fruits.

5 In the second study the two *D. melanogaster* mitotypes were completed against an inbred line of *D. simulans s*ll collected by JWOB in east Africa.

6 For the population cage and fruit studies, the mtDNA frequency of larvae harbouring Dahomey or Alstonville mtDNA was determined by allele-specific PCR and independently corroborated by Sanger sequencing, as above using the ND4L forward 5â€™-TAAACAAACTAATCTAACTAATA-3â€™, reverse 3â€™-GGTTGTGATATATTATCTTATGG-5â€™ and reverse 3â€™-TATATTAATTGGTATTTTTTCTG-5â€™ primer.

7 The fruit diet was constructed by adding 150 g of passionfruit or banana in a standard base containing 1% agar, 0.1% nipagen, 0.1% propionic acid and 0.001% phosphoric acid. The final volume was set at 300ml.