SUPPORTING INFORMATION

**Supporting methods**

**Mitochondrial Preparation and Complex Analyses**

Mitochondria from freshly prepared brain hemispheres were isolated as described previously [1]. Mitochondrial proteins were adjusted to 40 µg and enzymatic activities were measured in duplicates using a 96 well plate reader (Wallac 1420 Multilabel Counter). Complex I, ATPase activity, representing complex V and citrate synthase activity were assessed as described [2]. For complex II activity, isolated mitochondria were incubated in a reaction mixture containing 10 mM potassium phosphate buffer (pH 7.4), 2 mM EDTA, 1 mg/ml BSA, 0.2 mM ATP, 4 µM rotenone, 80 µM dichlorophenolindophenol and 10 mM succinate for 10 min at 30°C. The reaction was started by adding 0.135 mM decylubiquinone and enzymatic activity was determined by following absorbance at 600 nm every 30 sec for 5 min. The complex activities were presented relative to citrate synthase activity.

**Supporting Table S1** Oligonucleotides used in the study

|  |  |  |
| --- | --- | --- |
| Loci | Amplicon (nt) | Sequence (5’-3’)  |
| 12S | 206 | actcaaaggacttggcggta agcccatttcttcccatttc |
| 12S-F4 | 442 | cacgacagctaagacccaaacggtgtgtgcgtacttcatt |
| 12S-F6 | 682 | cacgggactcagcagtgatacggtgtgtgcgtacttcatt |
| Nd1 | 133 | ttacttctgccagcctgacc cggctgcgtattctacgtta |
| Nd3 | 82 | gcattctgactcccccaaatgacgtgcagagcttgtaggg |
| Nd5 | 111 | tcagacccaaacatcaatcg cccttctcagccaatgaaaa |
| Nd6 | 154 | aacaaccaaccaaaaaggctta gctgggtgatctttgtttgc |
| CoxI | 117 | ctgagcgggaatagtgggtaaaagcatgggcagttacgat |
| Cytb | 120 | cagccttttcatcagtaacacactcgtccgacatgaaggaat |

The primers were designed with Primer 3 (<http://frodo.wi.mit.edu/>) except for *12S* ribosomal RNA gene which was adapted from previous report [3]. Based on TaqI restriction sites in mtDNA genome, seven pairs of primers were chosen to screen different genes. All primer sets were optimized with mtDNA and mtRNA to give CT values within a reliable range.

**References**

 [1] R.Halsne, Y.Esbensen, W.Wang, K.Scheffler, R.Suganthan, M.Bjoras, L.Eide. Lack of the DNA glycosylases MYH and OGG1 in the cancer prone double mutant mouse does not increase mitochondrial DNA mutagenesis, DNA Repair (Amst) 11 (2012) 278-285.

 [2] A.Barrientos, F.Fontanesi, F.Diaz. Evaluation of the mitochondrial respiratory chain and oxidative phosphorylation system using polarography and spectrophotometric enzyme assays, Curr. Protoc. Hum. Genet. Chapter 19 (2009) Unit19.

 [3] M.Vermulst, J.H.Bielas, G.C.Kujoth, W.C.Ladiges, P.S.Rabinovitch, T.A.Prolla, L.A.Loeb. Mitochondrial point mutations do not limit the natural lifespan of mice, Nat. Genet. 39 (2007) 540-543.