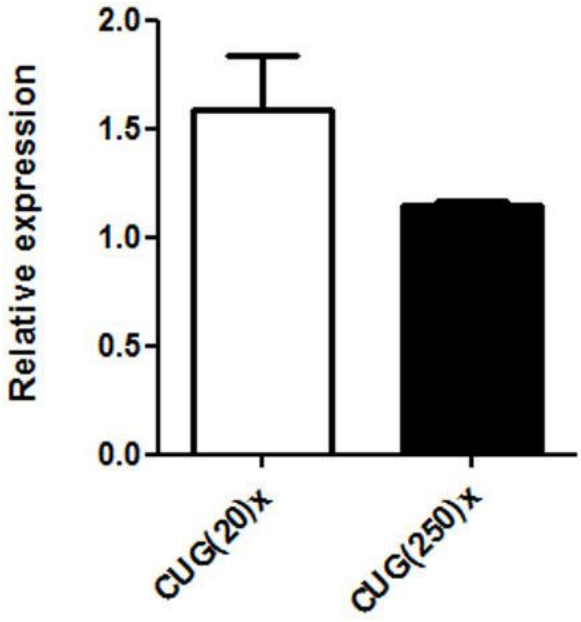


Fig S1: **Relative expression level of CUG repeats in DM1 model**: qPCR analysis showing the relative expression levels of UAS CTG(250)x and UAS CTG(20)x transgenes. In the fly lines used in this study expression levels of CUG(20)x and CUG(250)x RNA were similar (p value ns using t-student test). Measurements were normalized to the housekeeping gene Rp49.

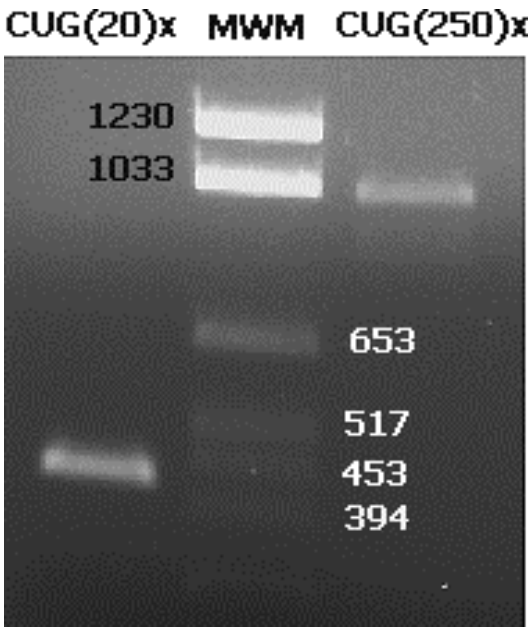


Fig S2: Quantification of the number of CTG repeat in the transgenes used in this study. Agarose gel showing the size of the amplicons obtained after PCR with specific primers to detect the length of the CTG repeats inserted in the genomic DNA of flies expressing short (lane 1) or long CTG repeats (lane 3). Lane 2 is a molecular weight marker (MWM) with sizes in base pairs. This PCR confirms that the short and long repeats have the expected size and also that they are stable as their length has not changed 1 year after the establishment of the fly stocks.

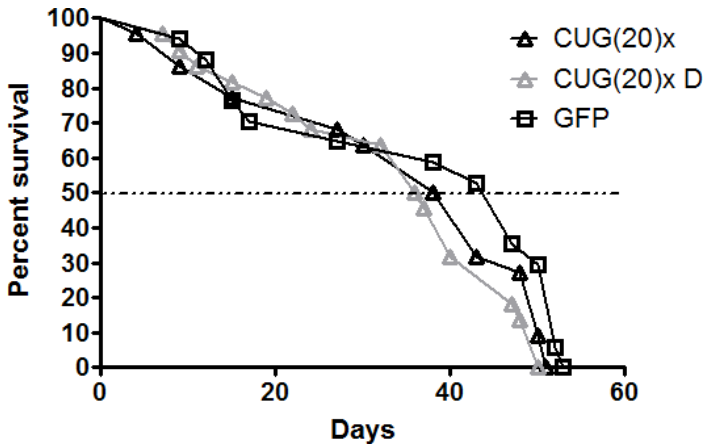


Fig S3: Survival curve of flies expressing short CUG repeats is similar to control flies and it is not altered by DMSO. Lifespan of flies expressing short CUG repeats under the control of GMH5-Gal4, fed with DMSO (CUG(20)x D) or not (CUG(20)x) is not significantly different from control flies expressing GFP. Mean life was slightly decreased, from 47 days in control flies to 40,5 days in CUG(20)x flies or 37 days in CUG(20)x D flies, but this difference was not statistically significant. Statistical analysis was performed with a log-rank test using the GraphPad Prism4 software.

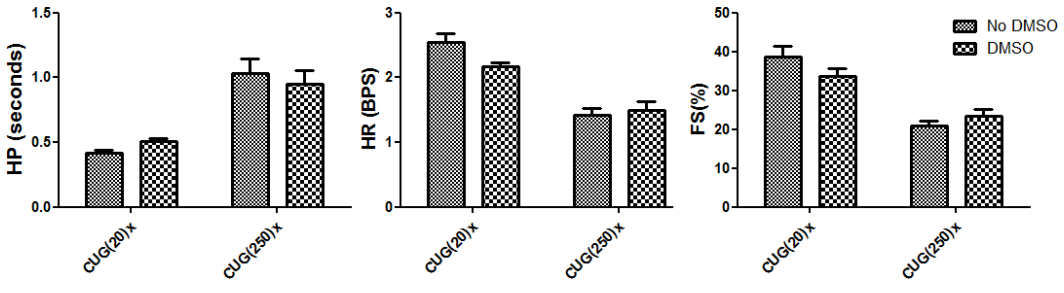
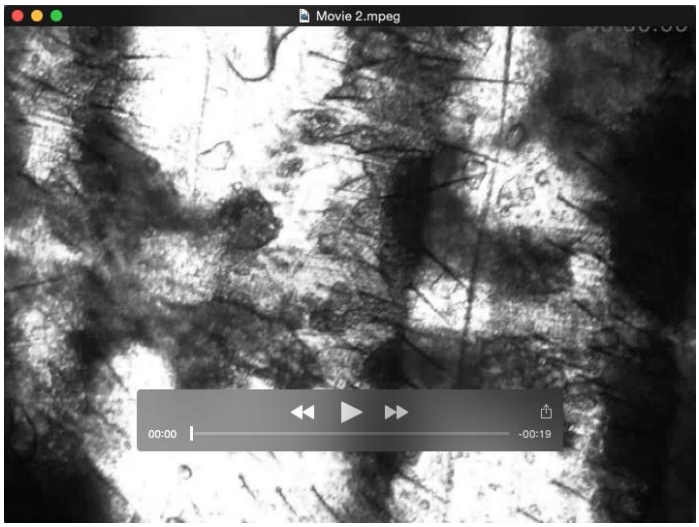


Fig S4: Effect of DMSO on heart performance. Comparison of heart period (HP), rate (HR) and fractional shortening (FS) obtained from both fly lines used in our study (long and short CUG repeats) fed with or without DMSO showed no significant difference between both condition in any case (two-way Anova test).

Movie 1: **Movie showing a representative dissected heart of a CTG(250)x D fly beating in artificial hemolymph.** All the flies were 7 days old when recorded. Anterior is right and posterior is left. The arrhythmicity, the reduced diameter of the heart tube and the morphological constrictions in different regions along the heart tube, are characteristic of the DM1 model flies.



Movie 2: Movie showing a representative dissected heart of a CTG(250)x P fly beating in artificial hemolymph. Model flies fed with pentamidine have a remarkable slower heart rate and more rhythmic and efficient contractions.