Supplementary Material

# Supplementary Material 1

**Crossing scheme to get a Red-eye GSS highly introgressed into a local genomic background**

*Abbreviations*

* re: the mutated allele for the red eye colour
* re+: the wild type allele for the black eye colour
* re+ > re: the wild type re+ is dominant over the re. That means that re+/re+ and re+/re genotypes are wild type (black), while only re/re genotypes are red
* The red eye locus is located on chromosome 1 of *Ae. aegypti* and is linked to the sex determining M locus. Therefore:
* re m / re m = red eye females
* re+ m / re m = black eye females
* re m / re+ m = black eye females
* re+ m / re+ m = black eye females
* re M / re m = red eye males
* re+ M / re m = black eye males
* re M / re+ m = black eye males
* re+ M / re+ m = black eye males

*Experimental approach*

* F0 (parental cross):
  + Re m/re m (red eye strain) x re+ M/re+ m (“wild type” strain) (P).
  + *F1 progeny are all wild type and with about 50% “wild type” genomic background.*
* F1:
  + Backcross F1 females with “wild type” males.
  + *F2 progeny are all wild type and with about 75% “wild type” genomic background.*
* F2:
  + Inbreed F2 males and females.
  + *F3 progeny have mainly black eyes but some are expected to have the red eye phenotype (mainly females). At the same time, they are considered to have about 75% “wild type” genomic background.*
* F3:
  + Backcross F3 red eye females with “wild type” males.
  + *F4 progeny are all wild type and with about 87.5 % “wild type” genomic background.*
* F4:
  + Backcross F4 females with “wild type” males.
  + *F5 progeny are all wild type and with about 93.625% “wild type” genomic background.*
* F5:
* Inbreed F5 males and females.
* *F6 progeny have mainly black eyes but some are expected to have the red eye phenotype (mainly females). At the same time, they are considered to have about 93.625 % “wild type” genomic background.*
* F6:
  + Backcross F6 red eye females with “wild type” males.
  + *F7 progeny are all wild type and with about 96.8% “wild type” genomic background.*
* F7:
  + Backcross F7 females with “wild type” males.
  + *F8 progeny are all wild type and with about 98.44% “wild type” genomic background.*
* F8:
  + Inbreed F8 males and females.
  + *F9 progeny have mainly black eyes but some are expected to have the red eye phenotype (mainly females). At the same time, they are considered to have about 98.44 % “wild type” genomic background.*
* F9:
* Backcross F9 red eye females with “wild type” males.

*F10a progeny are all wild type and with about 99.21 % “wild type” genomic background.*

* At the same time, inbreed F9 red eye females and red eye males (red eye males are very rare).

*This red eye line (F10b) can be considered as having about 98.44% “wild type” genomic background.*

* F10:
  + Cross F10b red eye females with F10a wild type males. This is a GSS that is considered to have a “wild type” genomic background of *about* 98.82 %.