|  |  |  |
| --- | --- | --- |
| **locus** | **Parental KD** | **5th-instar KD,****adult phenotype % (n total)** |
| n total females injected (n independent experiments) | **1st instar phenotype % (n total)** |
| egg viability | visible phenotype | molting to 2nd instar \* | viability | visible phenotype |
| ***DDC*** | 7 (1) | 5 (40)\* | pink,non-sclerotized  | NA(do not feed) | ND | ND |
| ***aaNATpreto***   | 7 (1) | 97.5 (40)\* | 0 (>200)  | 97 (39) | 75.83±10.67 (31) | dark body, smooth |
| ***black*** **(**2g)(6g) | -- | -- | -- | -- | 100 (7)80 (5) | no phenotype light thorax (low penetrance, ~60%) |
| ***ebony*** (P1 - 2g)(P2 - 6g) | 19 (4)2(1) | 73.72± (568)63.22 (87) | 00 | 86.66 (15)100 (15)\*\* | 62.91±30.19 (29)85.55±14.01 (15) | 0 0 |
| ***tan*** | 13 (3) | 78.10±28.67 (268) | 0  | 91.7 (24)  | 85.00±14.01 (25) | 0  |
| ***yellow***  | 14 (3) | 87.61± (556) | yellow body | 100 (40)yellow body | 76.68±17.10 (26) | yellow body |
| ***yellow C*** | 11 (3) | 85.60± (429) | 0 | 33.3 (88) | 73.32±17.31 (36) | yellow body(low penetrance, ~30%) |
| ***yellow-like*** | 10 (2) | 91.61±(167) | 0 | 68.08 (44) | 82.22±16.78 (19) | 0 |
| ***sepia*** | 7 (1) | 65 (40)\* | 0 (>200)  | 96 (26)  | 100 (10) | red body |
| ***white*** (P1 **-** 2g)(P2- 6g) | 7(1)7(1) | 100 (30)\*19.5 (118) | 0 (>200)white or pink eyes (~50%) | NDNA (die as 1st instar) | 100 (8)100±0 (15) | no phenotype unpigmented ommatidea, connexives; and body |
| ***scarlet***  | 30 (3) | 81.94± (543) | red eyes | 96.55 (290)red eyes | 83.32±23.57 (26) | red ommatideasubtly red body |
| ***ok A*** | 9 (3) | 93.38± (102) | 0  | 91.66 (36)  | 86.33±28.87 (20) | red body |
| ***ok B*** | 10 (2) | 69.32± (144) | 0 | 32.35 (34) | 66.65±23.55 (8) | unpigmented connexives |
| ***cinnabar*** | 14 (2) | 88.55± (757) | red eye ring  | 0 (100) | 88.88±15.72 (15) | reddish eye unpigmented connexives |
| **control** | 36 (>6) | 93.49± (807)  | 0  | 100 (40) | 85.77± (34) | 0 |

**Table S3.** Consolidated effects of gene knockdown for tyrosine (top), and tryptophan and pteridine (bottom) pathway associated loci. Adults and fifth instars were injected with 2g dsRNA, unless stated otherwise. "Unpigmented connexives" refers to lack of red pigment in veins that transport pigments to connexives (See Figure 5K-P). Unless stated, all phenotypes were 100% penetrant. For parental RNAi, the number of surviving females is displayed, among a minimum of 7 females injected per experiment. For fifth instar KDs, between 6 and 10 animals were injected per experiment, each knockdown performed at least as two independent experiments, with the exception of *sepia* that was performed once as a confirmatory KD phenotype for a downstream member of the pteridin pathway. For each experiment an independent control was performed. Control animals were those injected with double stranded RNA either for GFP or the bacterial gene *MalE* (Berni et al, 2014). These controls were gathered as one since they yielded comparable results.

\*In these experiments, only a subset of the eggs laid where used to define hatching rate and molting to second instar.

\*\*Among 55 first instar animals, only 15 fed. All 15 survived blood feeding.

"n total" of fifth instar KD corresponds to the number of animals that survived the injection procedure.

P1 and P2 correspond to different primer sets used in KD

ND= Not determined.

NA= Non applicable.

Viability is presented as average±SD