

Reporting Summary

Nature Portfolio wishes to improve the reproducibility of the work that we publish. This form provides structure for consistency and transparency in reporting. For further information on Nature Portfolio policies, see our [Editorial Policies](#) and the [Editorial Policy Checklist](#).

Statistics

For all statistical analyses, confirm that the following items are present in the figure legend, table legend, main text, or Methods section.

n/a Confirmed

- ☐ ☒ The exact sample size (n) for each experimental group/condition, given as a discrete number and unit of measurement
- ☐ ☒ A statement on whether measurements were taken from distinct samples or whether the same sample was measured repeatedly
- ☐ ☒ The statistical test(s) used AND whether they are one- or two-sided
Only common tests should be described solely by name; describe more complex techniques in the Methods section.
- ☒ ☐ A description of all covariates tested
- ☒ ☐ A description of any assumptions or corrections, such as tests of normality and adjustment for multiple comparisons
- ☐ ☒ A full description of the statistical parameters including central tendency (e.g. means) or other basic estimates (e.g. regression coefficient) AND variation (e.g. standard deviation) or associated estimates of uncertainty (e.g. confidence intervals)
- ☐ ☒ For null hypothesis testing, the test statistic (e.g. F , t , r) with confidence intervals, effect sizes, degrees of freedom and P value noted
Give P values as exact values whenever suitable.
- ☒ ☐ For Bayesian analysis, information on the choice of priors and Markov chain Monte Carlo settings
- ☒ ☐ For hierarchical and complex designs, identification of the appropriate level for tests and full reporting of outcomes
- ☒ ☐ Estimates of effect sizes (e.g. Cohen's d , Pearson's r), indicating how they were calculated

Our web collection on [statistics for biologists](#) contains articles on many of the points above.

Software and code

Policy information about [availability of computer code](#)

Data collection

Detailed description is part of materials and methods

Data analysis

Detailed description is part of materials and methods

For manuscripts utilizing custom algorithms or software that are central to the research but not yet described in published literature, software must be made available to editors and reviewers. We strongly encourage code deposition in a community repository (e.g. GitHub). See the Nature Portfolio [guidelines for submitting code & software](#) for further information.

Data

Policy information about [availability of data](#)

All manuscripts must include a [data availability statement](#). This statement should provide the following information, where applicable:

- Accession codes, unique identifiers, or web links for publicly available datasets
- A description of any restrictions on data availability
- For clinical datasets or third party data, please ensure that the statement adheres to our [policy](#)

All sequencing data are available in NCBI GEO database (GSE213456).

Human research participants

Policy information about [studies involving human research participants and Sex and Gender in Research.](#)

Reporting on sex and gender

Use the terms sex (biological attribute) and gender (shaped by social and cultural circumstances) carefully in order to avoid confusing both terms. Indicate if findings apply to only one sex or gender; describe whether sex and gender were considered in study design whether sex and/or gender was determined based on self-reporting or assigned and methods used. Provide in the source data disaggregated sex and gender data where this information has been collected, and consent has been obtained for sharing of individual-level data; provide overall numbers in this Reporting Summary. Please state if this information has not been collected. Report sex- and gender-based analyses where performed, justify reasons for lack of sex- and gender-based analysis.

Population characteristics

Describe the covariate-relevant population characteristics of the human research participants (e.g. age, genotypic information, past and current diagnosis and treatment categories). If you filled out the behavioural & social sciences study design questions and have nothing to add here, write "See above."

Recruitment

Describe how participants were recruited. Outline any potential self-selection bias or other biases that may be present and how these are likely to impact results.

Ethics oversight

Identify the organization(s) that approved the study protocol.

Note that full information on the approval of the study protocol must also be provided in the manuscript.

Field-specific reporting

Please select the one below that is the best fit for your research. If you are not sure, read the appropriate sections before making your selection.

☒ Life sciences ☐ Behavioural & social sciences ☐ Ecological, evolutionary & environmental sciences

For a reference copy of the document with all sections, see [nature.com/documents/nr-reporting-summary-flat.pdf](https://www.nature.com/documents/nr-reporting-summary-flat.pdf)

Life sciences study design

All studies must disclose on these points even when the disclosure is negative.

Sample size

For each RNA or DNA extraction, a pool of 50 to 100 flies was used to avoid inter-individual variations and to have a representation at the population scale.

Data exclusions

No data exclusions.

Replication

We had no problems of reproducibility with the experimental findings.

Randomization

For the different biological replicates, flies of the same genotype were randomly separated into groups of the same size.

Blinding

Not relevant for this study

Reporting for specific materials, systems and methods

We require information from authors about some types of materials, experimental systems and methods used in many studies. Here, indicate whether each material, system or method listed is relevant to your study. If you are not sure if a list item applies to your research, read the appropriate section before selecting a response.

Materials & experimental systems

n/a	Involved in the study
☐	☒ Antibodies
☒	☐ Eukaryotic cell lines
☒	☐ Palaeontology and archaeology
☐	☒ Animals and other organisms
☒	☐ Clinical data
☒	☐ Dual use research of concern

Methods

n/a	Involved in the study
☒	☐ ChIP-seq
☒	☐ Flow cytometry
☒	☐ MRI-based neuroimaging

Antibodies

Antibodies used

Primary antibody
 Goat anti-GFP abcam ab5450
 Rabbit anti-Aubergine Homemade (Eurogentec) - polyclonal antibody
 Rabbit anti-Gag-ZAM Homemade
 Rabbit anti Env-ZAM Homemade

Secondary antibody
 Alexa Fluor 488 donkey anti-goat IgG (H+L) Invitrogen (Fisher) - A11055
 Donkey anti-rabbit Alexa 488 IgG (H+L) 2mg/ml life tech - A21206
 Goat anti-rat Cy3 Jackson ImmunoResearch - 112-165-143

Validation

All antibodies have been validated on control lines before use. A negative and positive control have been performed to analyze the specificity and the efficiency of the antibodies used.

Animals and other research organisms

Policy information about [studies involving animals](#); [ARRIVE guidelines](#) recommended for reporting animal research, and [Sex and Gender in Research](#)

Laboratory animals

Drosophila melanogaster lines :

RNAi line white CG2759 BDSC_35573 y[1] sc[*] v[1] sev[21]; P{y[+t7.7] v[+t1.8]=TRiP.GL00094}attP2 Bloomington

RNAi line armitage CG11513 BDSC_34789 y[1] sc[*] v[1] sev[21]; P{y[+t7.7] v[+t1.8]=TRiP.HMS00098}attP2 Bloomington

RNAi line yb CG6272 VDRC_110056 P{KK105851}VIE-260B VDRC

RNAi line Piwi CG6122 BDSC_37483 y[1] sc[*] v[1] sev[21]; P{y[+t7.7] v[+t1.8]=TRiP.GL00626}attP40 Bloomington

RNAi line vreteno CG4771 VDRC_34897 w1118; P{GD11424}v34897 VDRC

RNAi line zucchini CG12314 BDSC_35227 y[1] sc[*] v[1] sev[21]; P{y[+t7.7] v[+t1.8]=TRiP.GL00111}attP2 Bloomington

RNAi line Argonaute 3 CG40300 BDSC_35232 y[1] sc[*] v[1] sev[21]; P{y[+t7.7] v[+t1.8]=TRiP.GL00117}attP2 Bloomington

RNAi line Aubergine CG6137 BDSC_35201 y[1] sc[*] v[1] sev[21]; P{y[+t7.7] v[+t1.8]=TRiP.GL00076}attP2 Bloomington

white mutant, otherwise wildtype white (w1118) BDSC_3605 w1118;;; Bloomington

Nos-Gal4 driver BDSC_4937 w[1118]; P{w[+mC]=GAL4::VP16-nos.UTR}CG6325[MVD1] Bloomington

Traffic jam gal4 driver w, Tjgal4/cyO ; Unknown

Revl-H2i2 Produced in the lab

Wild animals

The study did not involve wild animals.

Reporting on sex

Studies were performed on females.

Field-collected samples

This study involved no field-collected samples

Ethics oversight

No ethical approval was required for studies using Drosophila.

Note that full information on the approval of the study protocol must also be provided in the manuscript.