nature neuroscience

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# Main Figures:	7
# Supplementary Figures:	6
# Supplementary Tables:	0
# Supplementary Videos:	2

Reporting Checklist for Nature Neuroscience

This checklist is used to ensure good reporting standards and to improve the reproducibility of published results. For more information, please read Reporting Life Sciences Research.

Please note that in the event of publication, it is mandatory that authors include all relevant methodological and statistical information in the manuscript.

▶ Statistics reporting, by figure

- Please specify the following information for each panel reporting quantitative data, and where each item is reported (section, e.g. Results, & paragraph number).
- Each figure legend should ideally contain an exact sample size (n) for each experimental group/condition, where n is an exact number and not a range, a clear definition of how n is defined (for example x cells from x slices from x animals from x litters, collected over x days), a description of the statistical test used, the results of the tests, any descriptive statistics and clearly defined error bars if applicable.
- For any experiments using custom statistics, please indicate the test used and stats obtained for each experiment.
- Each figure legend should include a statement of how many times the experiment shown was replicated in the lab; the details of sample collection should be sufficiently clear so that the replicability of the experiment is obvious to the reader.
- For experiments reported in the text but not in the figures, please use the paragraph number instead of the figure number.

Note: Mean and standard deviation are not appropriate on small samples, and plotting independent data points is usually more informative. When technical replicates are reported, error and significance measures reflect the experimental variability and not the variability of the biological process; it is misleading not to state this clearly.

FIGURE NUMBER	TEST USED		n			DESCRIPTIVE STATS (AVERAGE, VARIANCE)		P VALUE		DEGREES OF FREEDOM & F/t/z/R/ETC VALUE	
	WHICH TEST?	SECTION & PARAGRAPH #	EXACT VALUE	DEFINED?	SECTION & PARAGRAPH #	REPORTED?	SECTION & PARAGRAPH #	EXACT VALUE	SECTION & PARAGRAPH #	VALUE	SECTION & PARAGRAPH #
example 1a	one-way ANOVA	Fig. legend	9, 9, 10, 15	mice from at least 3 litters/group	Methods para 8	error bars are mean +/- SEM	Fig. legend	p = 0.044	Fig. legend	F(3, 36) = 2.97	Fig. legend
example results, para 6	unpaired t-test	Results para 6	15	slices from 10 mice	Results para 6	error bars are mean +/- SEM	Results para 6	p = 0.0006	Results para 6	t(28) = 2.808	Results para 6

	FIGURE NUMBER	TEST USED		n			DESCRIPTIVE STATS (AVERAGE, VARIANCE)		P VALUE		DEGREES OF FREEDOM & F/t/z/R/ETC VALUE	
		WHICH TEST?	SECTION & PARAGRAPH #	EXACT VALUE	DEFINED?	SECTION & PARAGRAPH #	REPORTED?	SECTION & PARAGRAPH #	EXACT VALUE	SECTION & PARAGRAPH #	VALUE	SECTION & PARAGRAPH #
+ -	1a: H20 vs saliva	mann-whitney	fig. legend	7	mice from at least 3 litters	fig. legend	error bars are mean +/- SEM	fig. legend	p=0.0006	fig. legend	U=0	not reported
+ -	1b: bic vs minus bic	mann-whitney	fig. legend	4	mice from at least 2 litters	fig. legend	error bars are mean +/- SEM	fig. legend	p=0.0286	fig. legend	U=0	not reported
+ -	1d	mann-whitney	fig. legend	4	mice from at least 2 litters	fig. legend	error bars are mean +/- SEM	fig. legend	p=0.0286	fig. legend	U=0	not reported
+ -	2b: water vs water +ami	mann-whitney	fig. legend	4	mice from at least 2 litters	fig. legend	error bars are mean +/- SEM	fig. legend	p=0.2	fig. legend	U=3	not reported
+ -	2c: water vs water	mann-whitney	fig. legend	6	mice from at least 3 litters	fig. legend	error bars are mean +/- SEM	fig. legend	p=0.0022	fig. legend	U=0	not reported
+ -	7a: nerve 20mM control vs double	mann-whitney	fig. legend	6,4	mice from at least 2 litters	fig. legend	error bars are mean +/- SEM	fig. legend	p=0.0095	fig. legend	U=0	not reported
+ -	7b: nerve 48mW double vs control	mann-whitney	fig. legend	3,4	mice from at least 2 litters	fig. legend	error bars are mean +/- SEM	fig. legend	p=0.0286	fig. legend	U=0	not reported
+ -	3a: pH6.5 vs 7.5	2-tailed paired t test	fig. legend	4	mice from at least 2 litters	fig. legend	error bars are mean +/- SEM	fig. legend	p=0.0392	fig. legend	t=3.509	not reported
+ -	3b: water vs water	mann-whitney	fig. legend	5,3	mice from at least 2 litters	fig. legend	error bars are mean +/- SEM	fig. legend	p=0.0357	fig. legend	U=0	not reported
+ -	3c: d orz before vs after	2 tailed paired t test	fig. legend	9	mice from at least 3 litters	fig. legend	error bars are mean +/- SEM	fig. legend	p=0.0007	fig. legend	t=5.364	not reported

+ −	3C:b benz before vs after	2 tailed paired t test	fig. legend	6	mice from at least 3 litters	fig. legend	error bars are mean +/- SEM	fig. legend	p=0.0159	fig. legend	t=3.58	not reported
+ −	ex.fig .3a:C a4het water vs home water	mann-whitney	fig. legend	8,9	mice from at least 3 litters	fig. legend	error bars are mean +/- SEM	fig. legend	p=0.0464	fig. legend	U=15	not reported
+ −	ex.fig .3d:ri se time	two-tailed Paired t	fig. legend	7	mice from at least 3 litters	fig. legend	error bars are mean +/- SEM	fig. legend	p=0.0157	fig. legend	t=3.337	not reported
+ −	4c	mann-whitney	fig. legend	6	mice from at least 3 litters	fig. legend	error bars are mean +/- SEM	fig. legend	p=0.0022	fig. legend	U=0	not reported
+ −	4e: total light vs total water	two-tailed Paired t	fig. legend	3	mice from the same litter	fig. legend	error bars are mean +/- SEM	fig. legend	p=0.0145	fig. legend	t=8.226	not reported
+ −	4e: 3-10 min light vs water	two-tailed Paired t	fig. legend	3	mice from the same litter	fig. legend	error bars are mean +/- SEM	fig. legend	p=0.0213	fig. legend	t=6.736	not reported
+ −	5b	two-tailed Paired t	fig. legend	3	mice from 2 litters	fig. legend	error bars are mean +/- SEM	fig. legend	p=0.026	fig. legend	t=6.082	not reported
+ −	6c	two-tailed Paired t	fig. legend	6	mice from at least 3 litters	fig. legend	error bars are mean +/- SEM	fig. legend	p<0.0001	fig. legend	t=11.52	not reported
+ −	6e	two-tailed Mann-Whitney U	fig. legend	7 for PKD2L1TeNT and 6 for control	mice from at least 3 litters	fig. legend	error bars are mean +/- SEM	fig. legend	P=0.0012	fig. legend	U=0	not reported
+ −	Ex 6b: control at 5min water vs oil	two-tailed Paired t	fig. legend	4	mice from at least 2 litters	fig. legend	error bars are mean +/- SEM	fig. legend	0.0188	fig. legend	t=4.648	not reported
+ −	Ex 6c: TeNT water vs 4-5 trials	two-tailed Paired t	fig. legend	3	mice from at least 2 litters	fig. legend	error bars are mean +/- SEM	fig. legend	0.0467	fig. legend	t=4.463	not reported
+ −	Ex 6c control water vs 1-3 trials	two-tailed Paired t	fig. legend	4	mice from at least 2 litters	fig. legend	error bars are mean +/- SEM	fig. legend	0.0012	fig. legend	t=12.15	not reported

+ -	Ex 6c: control All vs water	two-tailed Paired t	fig. legend	4	mice from at least 2 litters	fig. legend	error bars are mean +/- SEM	fig. legend	0.0007	fig. legend	t=14.29	not reported

▸ Representative figures

1. Are any representative images shown (including Western blots and immunohistochemistry/staining) in the paper?

   If so, what figure(s)?

   > Figure 5 and Supplemental Figure 5

2. For each representative image, is there a clear statement of how many times this experiment was successfully repeated and a discussion of any limitations in repeatability?

   If so, where is this reported (section, paragraph #)?

   > Materials and Methods, Histology section

▸ Statistics and general methods

1. Is there a justification of the sample size?

   If so, how was it justified?

   Where (section, paragraph #)?

   Even if no sample size calculation was performed, authors should report why the sample size is adequate to measure their effect size.

   > Sample sizes were chosen based on prior literature in the field. This is mentioned in Methods section.

2. Are statistical tests justified as appropriate for every figure?

   Where (section, paragraph #)?

   > Statistical tests were chosen based on the nature of the data

   a. If there is a section summarizing the statistical methods in the methods, is the statistical test for each experiment clearly defined?

   > Each test used was defined in the figure legends

   b. Do the data meet the assumptions of the specific statistical test you chose (e.g. normality for a parametric test)?

   Where is this described (section, paragraph #)?

   > As is common in prior literature, the mann-whitney test was used so as not to assume a normal distribution of the data.

   c. Is there any estimate of variance within each group of data?

   Is the variance similar between groups that are being statistically compared?

   Where is this described (section, paragraph #)?

   > the standard error of the mean is reported in each figure. Variance is similar between different groups being compared

   d. Are tests specified as one- or two-sided?

   > Specified in Figure legends

   e. Are there adjustments for multiple comparisons?

   > No

3. To promote transparency, *Nature Neuroscience* has stopped allowing bar graphs to report statistics in the papers it publishes. If you have bar graphs in your paper, please make sure to switch them to dot-plots (with central and dispersion statistics displayed) or to box-and-whisker plots to show data distributions.

All bar graphs were switched to dot-plots.

4. Are criteria for excluding data points reported?

Was this criterion established prior to data collection?

Where is this described (section, paragraph #)?

Methods, Statistical analysis

5. Define the method of randomization used to assign subjects (or samples) to the experimental groups and to collect and process data.

If no randomization was used, state so.

Where does this appear (section, paragraph #)?

No randomization was used for the data collection.

6. Is a statement of the extent to which investigator knew the group allocation during the experiment and in assessing outcome included?

If no blinding was done, state so.

Where (section, paragraph #)?

No blinding was done for data used for the paper. However, key behavioral experiments such as light-driven drinking were repeated by other lab members in a blind fashion.

7. For experiments in live vertebrates, is a statement of compliance with ethical guidelines/regulations included?

Where (section, paragraph #)?

Methods, Animals section

8. Is the species of the animals used reported?

Where (section, paragraph #)?

Methods, Animals section

9. Is the strain of the animals (including background strains of KO/transgenic animals used) reported?

Where (section, paragraph #)?

Methods, Animals section

10. Is the sex of the animals/subjects used reported?

Where (section, paragraph #)?

Methods, Animals section

11. Is the age of the animals/subjects reported?

Where (section, paragraph #)?

Methods, Animals section

12. For animals housed in a vivarium, is the light/dark cycle reported?

Where (section, paragraph #)?

Methods, Animals section

13. For animals housed in a vivarium, is the housing group (i.e. number of animals per cage) reported?

Where (section, paragraph #)?

Methods, Animals section

14. For behavioral experiments, is the time of day reported (e.g. light or dark cycle)?

    Where (section, paragraph #)?

    > Methods, Animals section

15. Is the previous history of the animals/subjects (e.g. prior drug administration, surgery, behavioral testing) reported?

    Where (section, paragraph #)?

    > Methods, Animals section

    a. If multiple behavioral tests were conducted in the same group of animals, is this reported?

       Where (section, paragraph #)?

       > Methods, Animals section

16. If any animals/subjects were excluded from analysis, is this reported?

    Where (section, paragraph #)?

    > Methods, Statistics section

    a. How were the criteria for exclusion defined?

       Where is this described (section, paragraph #)?

       > Data points were excluded from the analysis if surgery was unsuccessful.

    b. Specify reasons for any discrepancy between the number of animals at the beginning and end of the study.

       Where is this described (section, paragraph #)?

       > N/A

▶ Reagents

1. Have antibodies been validated for use in the system under study (assay and species)?

   > Methods, Histology section

   a. Is antibody catalog number given?

      Where does this appear (section, paragraph #)?

      > Methods, Histology section

   b. Where were the validation data reported (citation, supplementary information, Antibodypedia)?

      Where does this appear (section, paragraph #)?

      > Methods, Histology section

2. Cell line identity

   > N/A

   a. Are any cell lines used in this paper listed in the database of commonly misidentified cell lines maintained by ICLAC and NCBI Biosample?

      Where (section, paragraph #)?

   b. If yes, include in the Methods section a scientific justification of their use--indicate here in which section and paragraph the justification can be found.

c. For each cell line, include in the Methods section a statement that specifies:

  - the source of the cell lines

  - have the cell lines been authenticated? If so, by which method?

  - have the cell lines been tested for mycoplasma contamination?

Where (section, paragraph #)?

▶ Data availability

Provide a Data availability statement in the Methods section under "Data availability", which should include, where applicable:
  • Accession codes for deposited data
  • Other unique identifiers (such as DOIs and hyperlinks for any other datasets)
  • At a minimum, a statement confirming that all relevant data are available from the authors
  • Formal citations of datasets that are assigned DOIs
  • A statement regarding data available in the manuscript as source data
  • A statement regarding data available with restrictions

See our data availability and data citations policy page for more information.

Data deposition in a public repository is mandatory for:

  a. Protein, DNA and RNA sequences
    b. Macromolecular structures
    c. Crystallographic data for small molecules
    d. Microarray data

Deposition is strongly recommended for many other datasets for which structured public repositories exist; more details on our data policy are available here. We encourage the provision of other source data in supplementary information or in unstructured repositories such as Figshare and Dryad.

We encourage publication of Data Descriptors (see Scientific Data) to maximize data reuse.

Where is the Data Availability statement provided (section, paragraph #)?

Methods, Data availability section; the source data was provided

▶ Computer code/software

Any custom algorithm/software that is central to the methods must be supplied by the authors in a usable and readable form for readers at the time of publication. However, referees may ask for this information at any time during the review process.

1. Identify all custom software or scripts that were required to conduct the study and where in the procedures each was used.

N/A

2. If computer code was used to generate results that are central to the paper's conclusions, include a statement in the Methods section under "**Code availability**" to indicate whether and how the code can be accessed. Include version information as necessary and any restrictions on availability.

> N/A

▶ Human subjects

1. Which IRB approved the protocol?

   Where is this stated (section, paragraph #)?

   > N/A

2. Is demographic information on all subjects provided?

   Where (section, paragraph #)?

3. Is the number of human subjects, their age and sex clearly defined?

   Where (section, paragraph #)?

4. Are the inclusion and exclusion criteria (if any) clearly specified?

   Where (section, paragraph #)?

5. How well were the groups matched?

   Where is this information described (section, paragraph #)?

6. Is a statement included confirming that informed consent was obtained from all subjects?

   Where (section, paragraph #)?

7. For publication of patient photos, is a statement included confirming that consent to publish was obtained?

   Where (section, paragraph #)?

▶ Additional comments

Additional Comments