nature portfolio

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Last updated by author(s): Dec 5, 2024

# 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<br>*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<br>*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 | No code was used. |
| Data analysis | All statistical analyses were conducted with GraphPad Prism (version 9.0; GraphPad Software). |

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

*Provide your data availability statement here.*

## Research involving human participants, their data, or biological material

Policy information about studies with human participants or human data. See also policy information about sex, gender (identity/presentation), and sexual orientation and race, ethnicity and racism.

| | |
|---|---|
| Reporting on sex and gender | The sex of the participants was reported as a number and percentage of the total number of participants. The sex and birth gender was based on self-reporting. |
| Reporting on race, ethnicity, or other socially relevant groupings | All participants are asian-pacific. |
| Population characteristics | All participants were included with age between 28 years to 65 years. Other than CKD, the participants were otherwise healthy as determined by the investigator or medically qualified designee based on a medical evaluation including medical history, physical examination, and laboratory tests. |
| Recruitment | The participants were recruited from the clinical sites using a combination of internal database searching and advertising as needed. The participant selection was based on strict inclusion/exclusion criteria that were prespecified in the protocol. |
| Ethics oversight | Human sample collection for research was conducted in accordance with the recognized ethical guideline of Declaration of Helsinki. |

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

# Life sciences study design

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

| | |
|---|---|
| Sample size | No statistical methods were used to pre-determine sample size, but our sample sizes are similar to those reported in previous publications (PMID: 34095867) and based on internal historical studies/data. |
| Data exclusions | No data were excluded from analysis. |
| Replication | All data are reproduced in n>=3 independent experiments. |
| Randomization | Animals were manually sorted so that there was no statistically significant differences in sorting parameters prior to study start. No program was used to determine group size, this was based on internal historical studies/data. |
| Blinding | Investigators were not blinded. |

# 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 |
| ☒ | ☐ Plants |

### Methods

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

## Antibodies

| | |
|---|---|
| Antibodies used | The primary antibodies used were: Chemerin (sc-373797; Santa Cruz Biotechnology, USA), CMKLR1 (SC-398769; Santa Cruz Biotechnology, USA), TNFa (60291-1-Ig; Proteintech, USA), IL-6 (21865-1-AP; Proteintech, USA), ACSL4 (22401-1-AP; Proteintech, USA), GPX4 (67763-1-Ig; Proteintech, USA), SLC7A11 (ab175186; Abcam, USA), p-NRF2 (PA5-67520; Invitrogen, USA), NRF2 (80593-1-RR; Proteintech, USA), AQP1 (ab168387; Abcam, USA), and Cytokeratin 19 (CK19; 60187-Ig; Proteintech, USA). |
| Validation | Validations of these commercial antibodies are provided in manufacturer production information. |

## Eukaryotic cell lines

Policy information about cell lines and Sex and Gender in Research

| | |
|---|---|
| Cell line source(s) | TCMK-1 cells were obtained from ATCC. |
| Authentication | Cell line was not independently authenticated. |
| Mycoplasma contamination | Cell line test negative for mycoplasma contamination. |
| Commonly misidentified lines (See ICLAC register) | None. |

## 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 | Male C57BL/6 mice (21 ± 3 g; 8 - 12 weeks) were used in this study. |
| Wild animals | No wild animals were used in this study. |
| Reporting on sex | Male mice were used in this study. |
| Field-collected samples | No field-collected samples were used in this study. |
| Ethics oversight | Animal procedures were approved by the Animal Experimentation Ethics Committee of the Nantong University (SYXK [SU] 2017-0046). |

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

## Clinical data

Policy information about clinical studies

All manuscripts should comply with the ICMJE guidelines for publication of clinical research and a completed CONSORT checklist must be included with all submissions.

| | |
|---|---|
| Clinical trial registration | 2022-138-01 |
| Study protocol | This study completed May 10, 2023 with the study protocol, which is provided in the manuscript. |
| Data collection | The clinical study was conducted at the affiliated hospital of Nantong University. The recruitment starts from August 2022 and completed in December 2022. The data were collected in May, 2023. |
| Outcomes | The blood samples were used for measuring serum chemerin, blood urea nitrogen, and creatinine. |

## Plants

| | |
|---|---|
| Seed stocks | N/A |
| Novel plant genotypes | N/A |
| Authentication | N/A |

# Flow Cytometry

## Plots

Confirm that:

☒ The axis labels state the marker and fluorochrome used (e.g. CD4-FITC).

☒ The axis scales are clearly visible. Include numbers along axes only for bottom left plot of group (a 'group' is an analysis of identical markers).

☒ All plots are contour plots with outliers or pseudocolor plots.

☒ A numerical value for number of cells or percentage (with statistics) is provided.

## Methodology

| | |
|---|---|
| Sample preparation | Mice were sacrificed at different time points (6, 12, 24 and 72 h) post-ischemia, and blood and kidney samples were collected for further analysis. For transmission electron microscopy, kidney sections were fixed in electron microscope fixative (Servicebio, G1102, China) for 24 h. The samples were then incubated in 1% osmium acid for 2 h at room temperature, followed by dehydrated using a gradient ethanol series. Afterward, the samples were embedded in epoxy resin and sectioned into 70 nm slices. The samples were subsequently stained with 3% citrate–uranyl acetate. For H&E staining, tissue samples were fixed in formalin, embedded in paraffin and sectioned into 5 μm thick slices. |
| Instrument | for Flow cytometry Acquisition: BD FACSCelesta, Multicolor Flow Cytometer |
| Software | Samples were analyzed by Flow Cytometry using a BD LSRFortessa analyzer (BD Biosciences). Data were acquired using BD FACSDiva software. |
| Cell population abundance | The cell population and abundance were determined by the Flow cytometry core personnel. |
| Gating strategy | We gated FSC to determine C11 BODIPY fluorescence intensity. We excluded doublets and then by using a fixable viability dye we excluded dead cells. Then, gating on the live cells we assessed the cells for the markers of interest. |

☒ Tick this box to confirm that a figure exemplifying the gating strategy is provided in the Supplementary Information.