

Life Sciences Reporting Summary

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For further information on the points included in this form, see [Reporting Life Sciences Research](#). For further information on Nature Research policies, including our [data availability policy](#), see [Authors & Referees](#) and the [Editorial Policy Checklist](#).

► Experimental design

1. Sample size

Describe how sample size was determined.

Sample size for cellular and animal experiments were determined according to the minimal number of independent biological replicates powered to significantly identify an effect. In vitro experiments were performed in triplicate independent measurements or more as indicated in the text. Mouse experiments were performed with $n = 8$ per cohort, which was expected to yield significant results based on previous experience using this mouse model.

2. Data exclusions

Describe any data exclusions.

No data was excluded.

3. Replication

Describe whether the experimental findings were reliably reproduced.

All experiments were independently replicated, with biological and technical replicates listed in the legends of the corresponding figures.

4. Randomization

Describe how samples/organisms/participants were allocated into experimental groups.

Mouse cohorts were randomized to match mean animal weight between groups.

5. Blinding

Describe whether the investigators were blinded to group allocation during data collection and/or analysis.

In vivo experiments were performed in a single blinded fashion, such that the researchers were not aware of the treatment identity until after completion and unblinding.

Note: all studies involving animals and/or human research participants must disclose whether blinding and randomization were used.

6. Statistical parameters

For all figures and tables that use statistical methods, confirm that the following items are present in relevant figure legends (or in the Methods section if additional space is needed).

n/a Confirmed

- ☐ ☒ The exact sample size (n) for each experimental group/condition, given as a discrete number and unit of measurement (animals, litters, cultures, etc.)
- ☐ ☒ A description of how samples were collected, noting whether measurements were taken from distinct samples or whether the same sample was measured repeatedly
- ☐ ☒ A statement indicating how many times each experiment was replicated
- ☐ ☒ The statistical test(s) used and whether they are one- or two-sided (note: only common tests should be described solely by name; more complex techniques should be described in the Methods section)
- ☐ ☒ A description of any assumptions or corrections, such as an adjustment for multiple comparisons
- ☐ ☒ The test results (e.g. P values) given as exact values whenever possible and with confidence intervals noted
- ☐ ☒ A clear description of statistics including central tendency (e.g. median, mean) and variation (e.g. standard deviation, interquartile range)
- ☐ ☒ Clearly defined error bars

See the web collection on [statistics for biologists](#) for further resources and guidance.

► Software

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

7. Software

Describe the software used to analyze the data in this study.

Graphs presented were generated in Prism 5.0, with analysis algorithms indicated in figure legends. Other software used for data analysis or processing are indicated in the corresponding Methods sections.

For manuscripts utilizing custom algorithms or software that are central to the paper but not yet described in the published literature, software must be made available to editors and reviewers upon request. We strongly encourage code deposition in a community repository (e.g. GitHub). *Nature Methods* [guidance for providing algorithms and software for publication](#) provides further information on this topic.

► Materials and reagents

Policy information about [availability of materials](#)

8. Materials availability

Indicate whether there are restrictions on availability of unique materials or if these materials are only available for distribution by a for-profit company.

All materials are available through commercial vendors or from the authors.

9. Antibodies

Describe the antibodies used and how they were validated for use in the system under study (i.e. assay and species).

Commercial Antibodies:
Anti-Biotin, Abcam (AB1227), rabbit
Anti-FLAG M2, Sigma Aldrich (F1804), mouse
Anti-GAPDH, Cell Signaling (2118S), rabbit
Anti-PGK1, Santa Cruz (SC-130335), mouse
Anti-TUBG, Cell Signaling (5886), rabbit
Anti-NQO1, Abcam (ab34173), rabbit
Anti-HMOX1, Enzo Life Sciences (ADI-SPA-894), rabbit
Anti-ACTB, Cell Signaling (4790), rabbit
Anti-KEAP1, Santa Cruz (SC-15246), goat
Anti-HSPA1A, Cell Signaling (4872), rabbit
Anti-NRF2, Santa Cruz (clone H300), rabbit
pan anti-pgK, reference 4, rabbit - generated, affinity purified and validated for pgK specificity as described in reference 4.

10. Eukaryotic cell lines

a. State the source of each eukaryotic cell line used.

All cell lines were obtained from the ATCC.

b. Describe the method of cell line authentication used.

None of the cell lines were profiled for authentication.

c. Report whether the cell lines were tested for mycoplasma contamination.

Cells lines used in this study tested negative for mycoplasma contamination.

d. If any of the cell lines used are listed in the database of commonly misidentified cell lines maintained by [ICLAC](#), provide a scientific rationale for their use.

No commonly misidentified cell lines were used in this study.

► Animals and human research participants

Policy information about [studies involving animals](#); when reporting animal research, follow the [ARRIVE guidelines](#)

11. Description of research animals

Provide details on animals and/or animal-derived materials used in the study.

Animal experiments involved male mice, of the Balb/c strain, aged approximately 3-6 months.

Policy information about [studies involving human research participants](#)

12. Description of human research participants

Describe the covariate-relevant population characteristics of the human research participants.

This study did not involve human subjects.