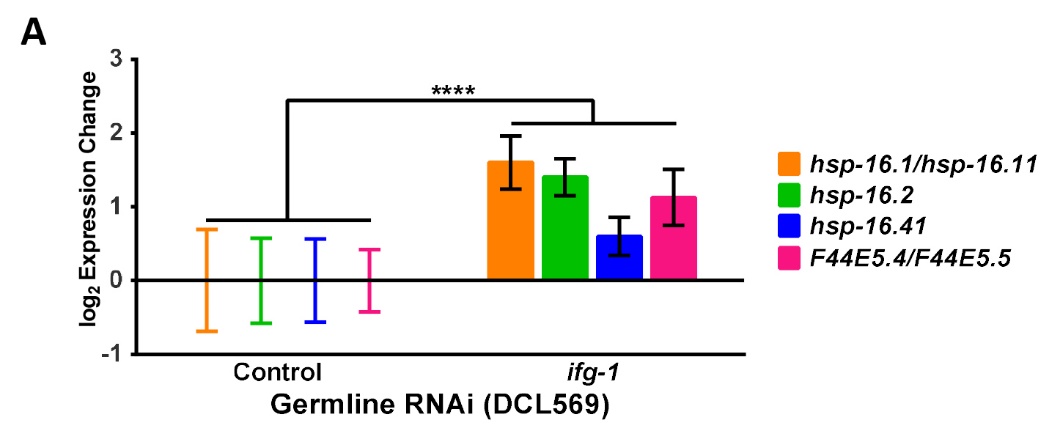
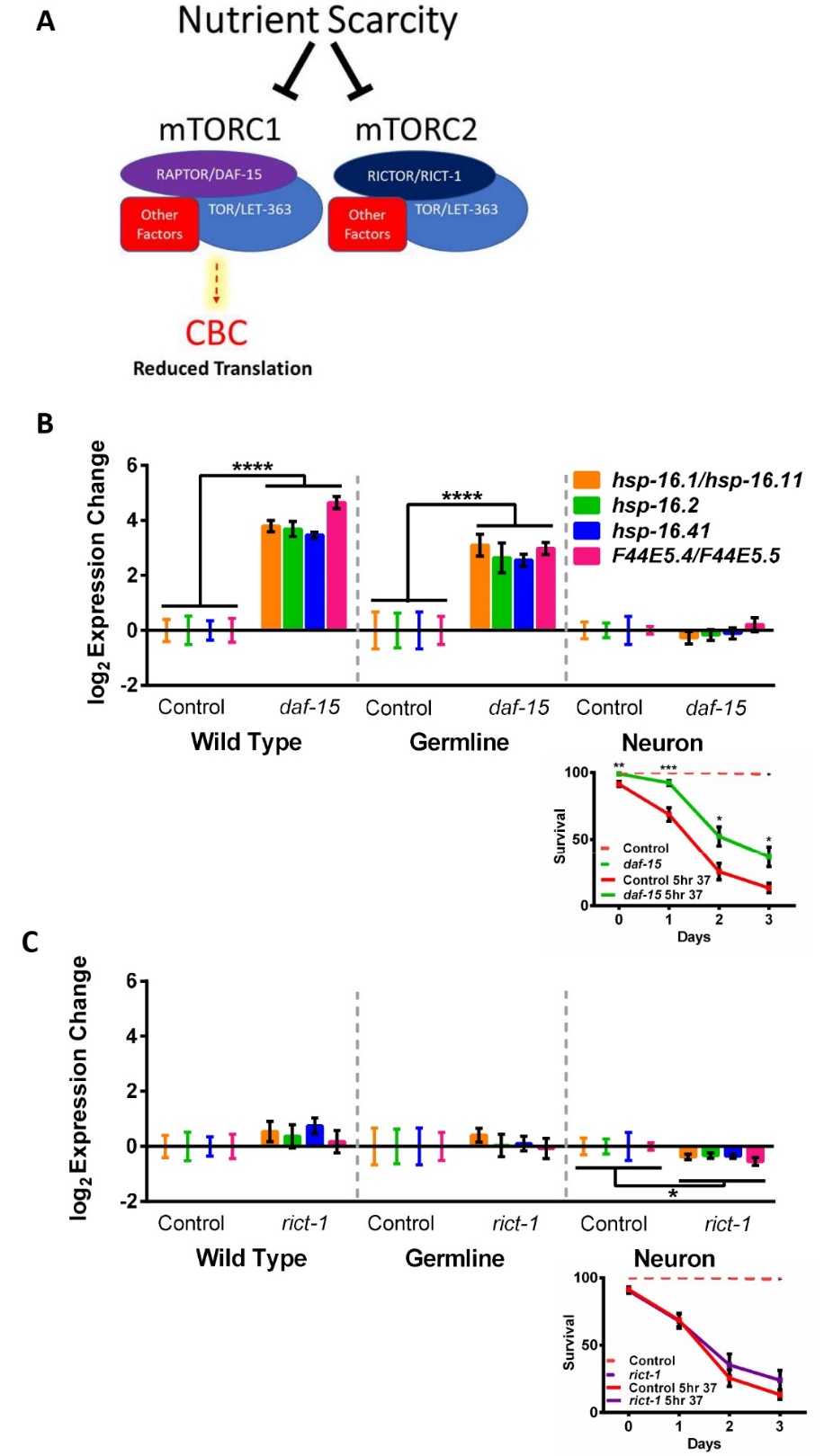
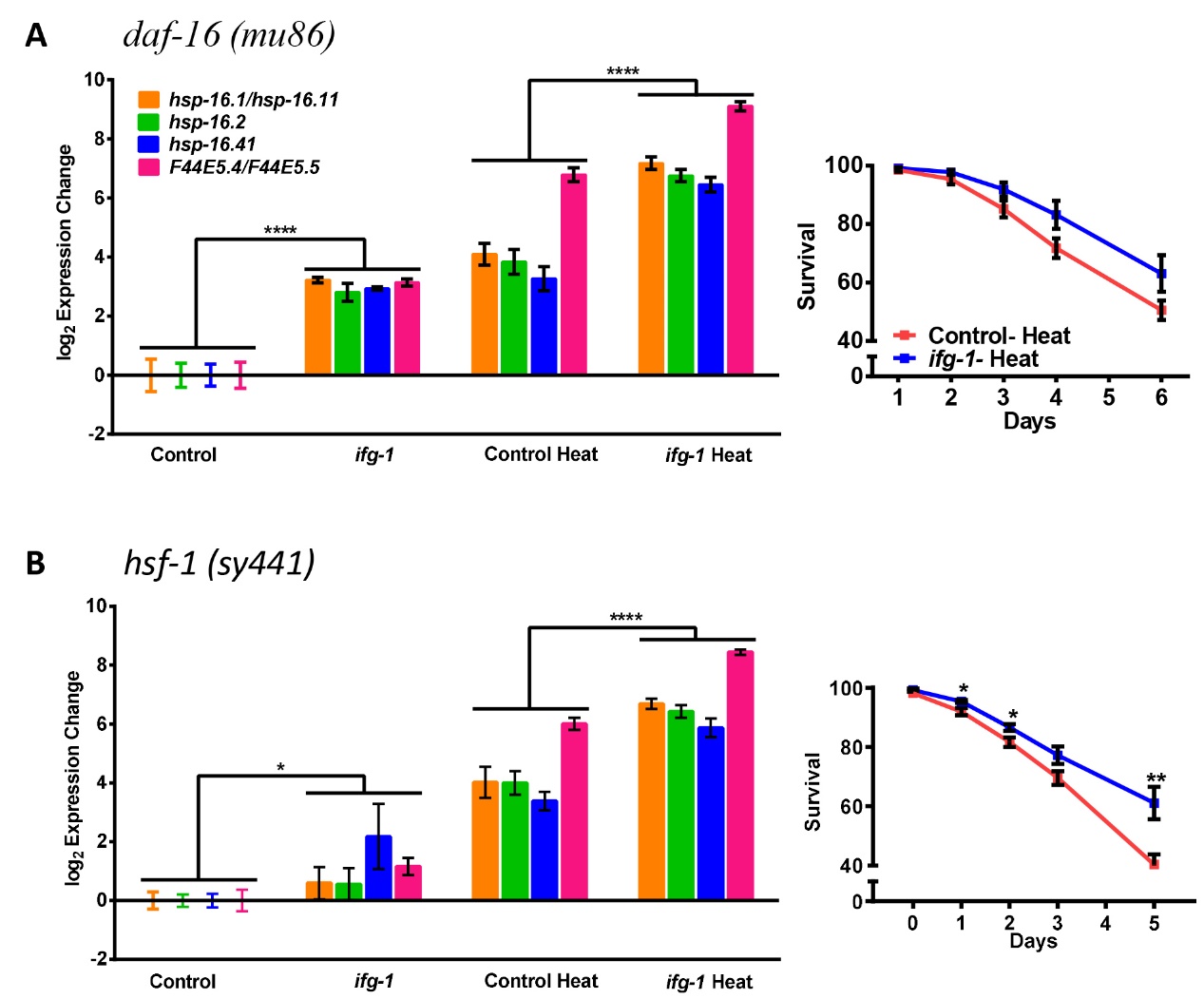
**Supplemental Figures**

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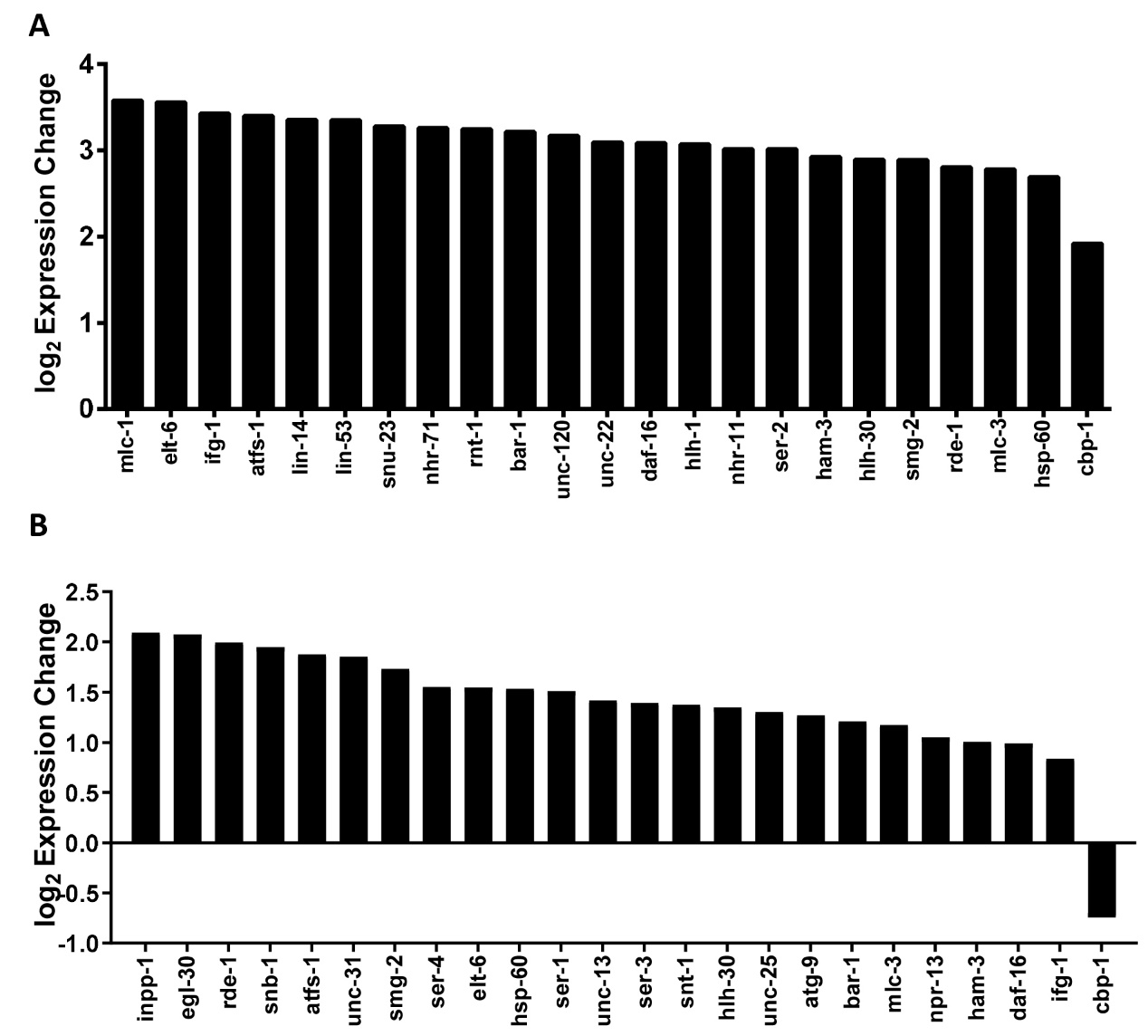
**Supplementary Fig 1.** **HSR priming using another germline-specific RNAi strain.** (A) Heat shock gene expression of the germline-specific RNAi strain (DCL569) after placing adults on control or *ifg-1* RNAi for 7 days. A two-way ANOVA was conducted by comparing ΔCts of all genes. Error bars represent means ± SEM. \* *p* <0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001, \*\*\*\* *p* < 0.0001.

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**Supplementary Fig 2.** **HSR priming through the mTOR pathway.** (A) Schematic showing the mTORC pathways inhibited by nutrient scarcity. Only mTORC1 regulates translation, particularly through the Cap-Binding Complex (CBC). (B) Upper panel shows HSR gene expression upon 7 days of exposure to control or *daf-15*/Raptor RNAi of wild-type N2, germline-specific RNAi strain MAH23, and neuron-specific RNAi strain TU3335. Two-way ANOVAs were run for each strain comparing ΔCts of all genes (**Supplementary** **Table** **16**). Lower panels show survival subsequent to heat exposure (5h at 37°C). Unpaired t-tests using Welch’s correction were run at each time point in the survival curves (**Supplementary** **Table** **17**). (C) Same as in (B) except for *rict-1*/Rictor RNAi as the test. Error bars represent means ± SEM. \* *p* <0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001, \*\*\*\* *p* < 0.0001.

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**Supplementary Fig 3.** **HSR response and thermotolerance in mutants of *daf-16* and *hsf-1*.** (A) Left panel shows heat shock gene expression of *daf-16* *(mu86)* animals on control and *ifg-1* RNAi for 7 days with and without thermal stress (4h at 35°C). Two-way ANOVAs were run for each strain comparing ΔCts of all genes. Right panel shows survival of *daf-16* *(mu86)* animals subjected to heat stress (4h at 35ºC). Unpaired t-tests using Welch’s correction were run at each time point (Table S18). (B) Same as in (A), but for *hsf-1 (sy441)* (**Supplementary** **Table** **18**). Error bars represent means ± SEM. \* *p* <0.05, \*\* *p* < 0.01, \*\*\* *p* < 0.001, \*\*\*\* *p* < 0.0001.

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**Supplementary Fig 4.** **RNAi screen for genes that subdue muscle gene expression changes under low translation conditions.** (A) *unc-54* expression of wild-type N2 animals who spent 2 days on *ifg-1* RNAi before being transferred to the RNAis shown for an additional 5 days. (B) Same as in (A) except that the screen was carried out using neuron-specific RNAi strain TU3335. See Supplementary Table S1 for full RNAi gene list used in both strains.