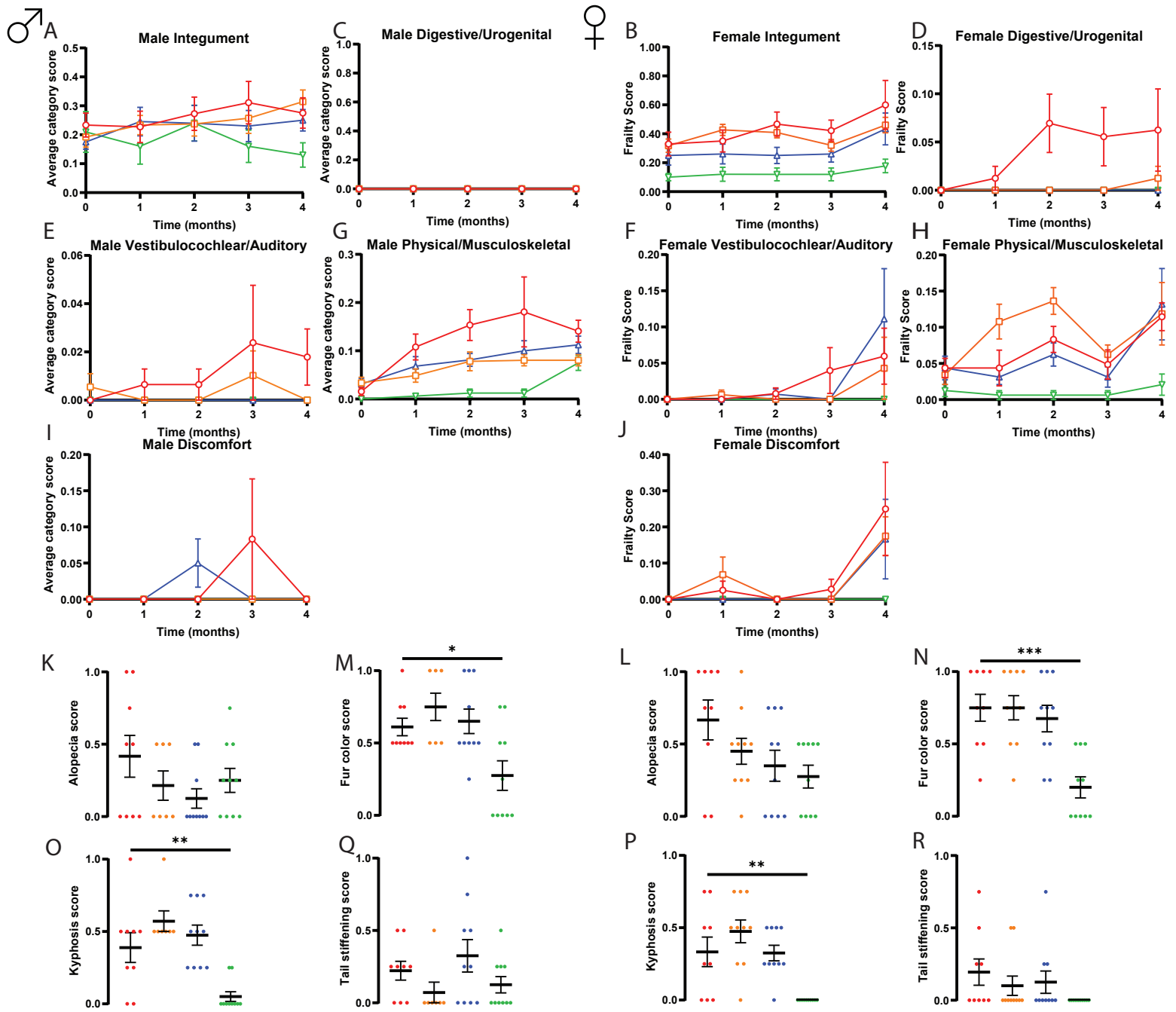


Supplemental Figure 1.

■ Aged Control
 ■ Aged Low Ile
 ■ Aged Low AA
 ■ Young Control



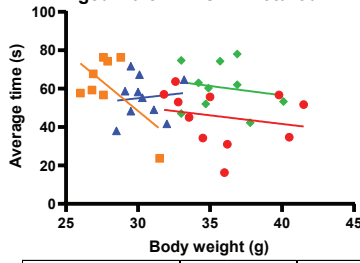
Supplemental Figure 1. Breakdown of the frailty data into subcategories and individual measurements.

A-L) Subcategories of the frailty data.

K-R) Selected individual frailty categories, presented as the average of 3- and 4-month scores. At the beginning of the experiments N = 10-13 each group. *p < 0.05, one-way ANOVA with Dunnett's post-hoc test.

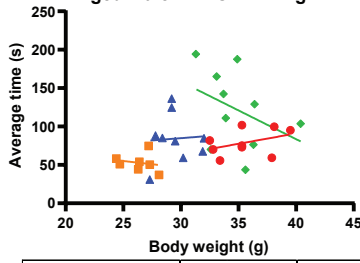
■ Aged Control ■ Aged Low Ile ■ Aged Low AA ■ Young Control

A Aged Male ANCOVA Rotarod*BW



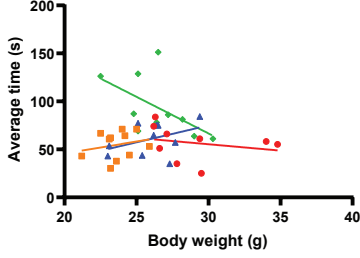
| Male group comparisons | Slope | | Elevation | |
|------------------------|---------|--------------|-----------|--------------|
| | p-value | Significance | p-value | Significance |
| Control vs | | | | |
| Low Ile | 0.17 | No | 0.83 | No |
| Low AA | 0.62 | No | 0.47 | No |
| Young Ctrl | 0.97 | No | 0.02 | Yes |

B Aged Male ANCOVA Cling*BW



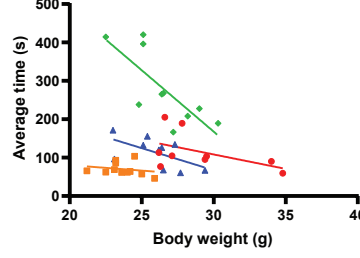
| Male group comparisons | Slope | | Elevation | |
|------------------------|---------|--------------|-----------|--------------|
| | p-value | Significance | p-value | Significance |
| Control vs | | | | |
| Low Ile | 0.40 | No | 0.66 | No |
| Low AA | 0.83 | No | 0.41 | No |
| Young Ctrl | 0.19 | No | 0.04 | Yes |

C Aged Female Rotarod*BW



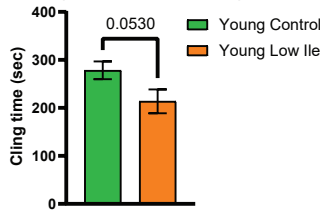
| Male group comparisons | Slope | | Elevation | |
|------------------------|---------|--------------|-----------|--------------|
| | p-value | Significance | p-value | Significance |
| Control vs | | | | |
| Low Ile | 0.41 | No | 0.63 | No |
| Low AA | 0.19 | No | 0.64 | No |
| Young Ctrl | 0.17 | No | 0.04 | Yes |

D Aged Female Cling*BW

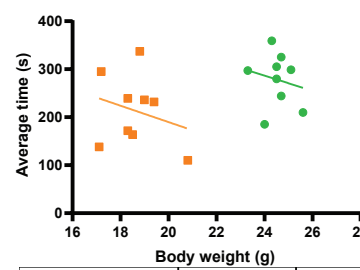


| Male group comparisons | Slope | | Elevation | |
|------------------------|---------|--------------|-----------|--------------|
| | p-value | Significance | p-value | Significance |
| Control vs | | | | |
| Low Ile | 0.61 | No | 0.002 | Yes |
| Low AA | 0.62 | No | 0.19 | No |
| Young Ctrl | 0.03 | Yes | N/A | N/A |

E Young Male Inverted Cling



F Young Male ANCOVA Cling*BW



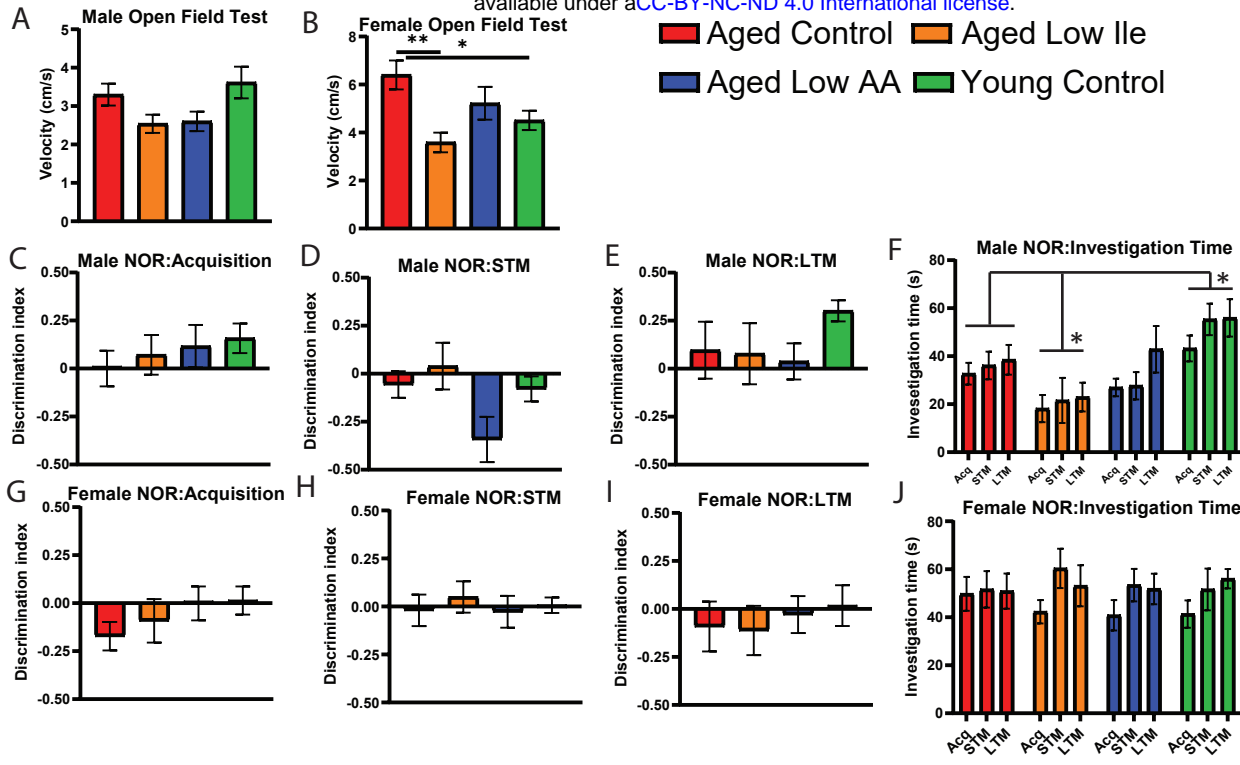
| Male group comparisons | Slope | | Elevation | |
|------------------------|---------|--------------|-----------|--------------|
| | p-value | Significance | p-value | Significance |
| Young Control vs | | | | |
| Young Low Ile | 0.98 | No | 0.16 | No |

Supplemental Figure 2. ANCOVA analysis of rotarod and inverted cling assay performance with body weight as a covariable.

A-D) Aged male and female mice rotarod and inverted cling ANCOVA analysis with body weight as a covariate.

E-F) Young 3-month old male mice were fed either Control or Low Ile diet for at least 1 month before inverted cling assay. N = 9/group, unpaired t-test.

Supplemental Figure 1



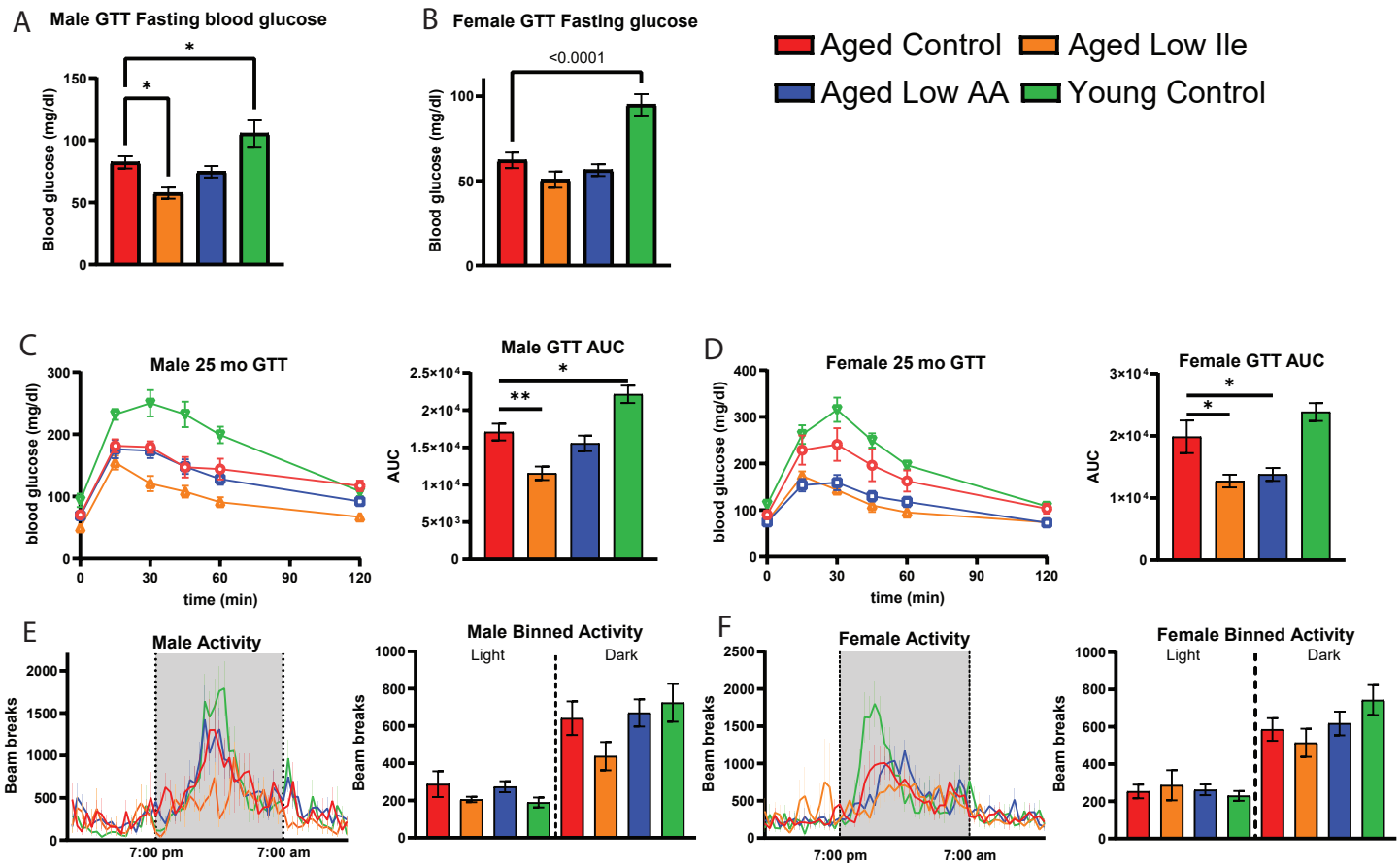
Supplemental Figure 3. Open field and novel object recognition test.

A-B) Male (A) and female (B) open field test.

C-F) Male mice novel object recognition test results and investigation time in each trial.

G-J) Female novel object recognition test results presented in the same order. A-J) N = 7-10/group. *p < 0.05, one-way ANOVA and two-way ANOVA with Dunnett's post-hoc test.

Supplemental Figure 4.



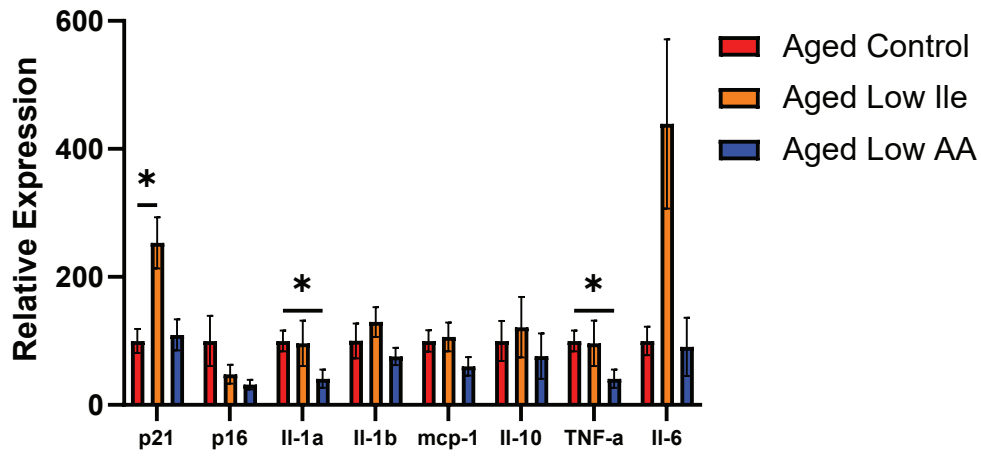
Supplemental Figure 4. Glucose tolerance test of advanced age mice, fasting blood glucose, and activity.

A-B) Male and female mice fasting blood glucose (16 hr) at 21 months of age after 3 weeks of dietary intervention. N = 10-13/group.

C-D) Male and female glucose tolerance test at 25 months of age after 3 weeks of dietary intervention. N = 5-10

E-F) Male and female activity data during metabolic chambers experiments, as in Fig. 3. N = 7-10/group. A-F)
* $p < 0.05$, one-way ANOVA with Dunnett's post-hoc test.

Liver Senescence



Supplemental Figure 5. rt-qPCR analysis of senescence markers in the male liver.

Expression analysis of the male liver lysate after dietary intervention for the senescence-related genes IL-10. N = 5-8/group. *p < 0.05, one-way ANOVA with Dunnett's post-hoc test.