

## Description of Additional Supplementary Files

File Name: Supplementary Data 1

Description: List of compounds tested in the screening shown in Figure 1 and Supplementary Figure 1.

File Name: Supplementary Data 2

Description: Spermidine quantification in C2C12 myotubes (Figure 3c) or liver (Figure 5r) of cells or mice treated with harmol.

File Name: Supplementary Data 3

Description: Harmol quantification in plasma, liver or brain from mice treated with harmol at eh indicated times after harmol administration, complementing Figure 4a-b.

File Name: Supplementary Data 4

Description: Survival data of *C. elegans* worms or *D. melanogaster* flies under the indicated treatments, complementing Figure 6.